

A treatise on the non-naturals. In which the great influence they have on human bodies is set forth, and mechanically accounted for. To which is subjoin'd, a short essay on the chin-cough: with a new method of treating that ... distemper / [John Burton].

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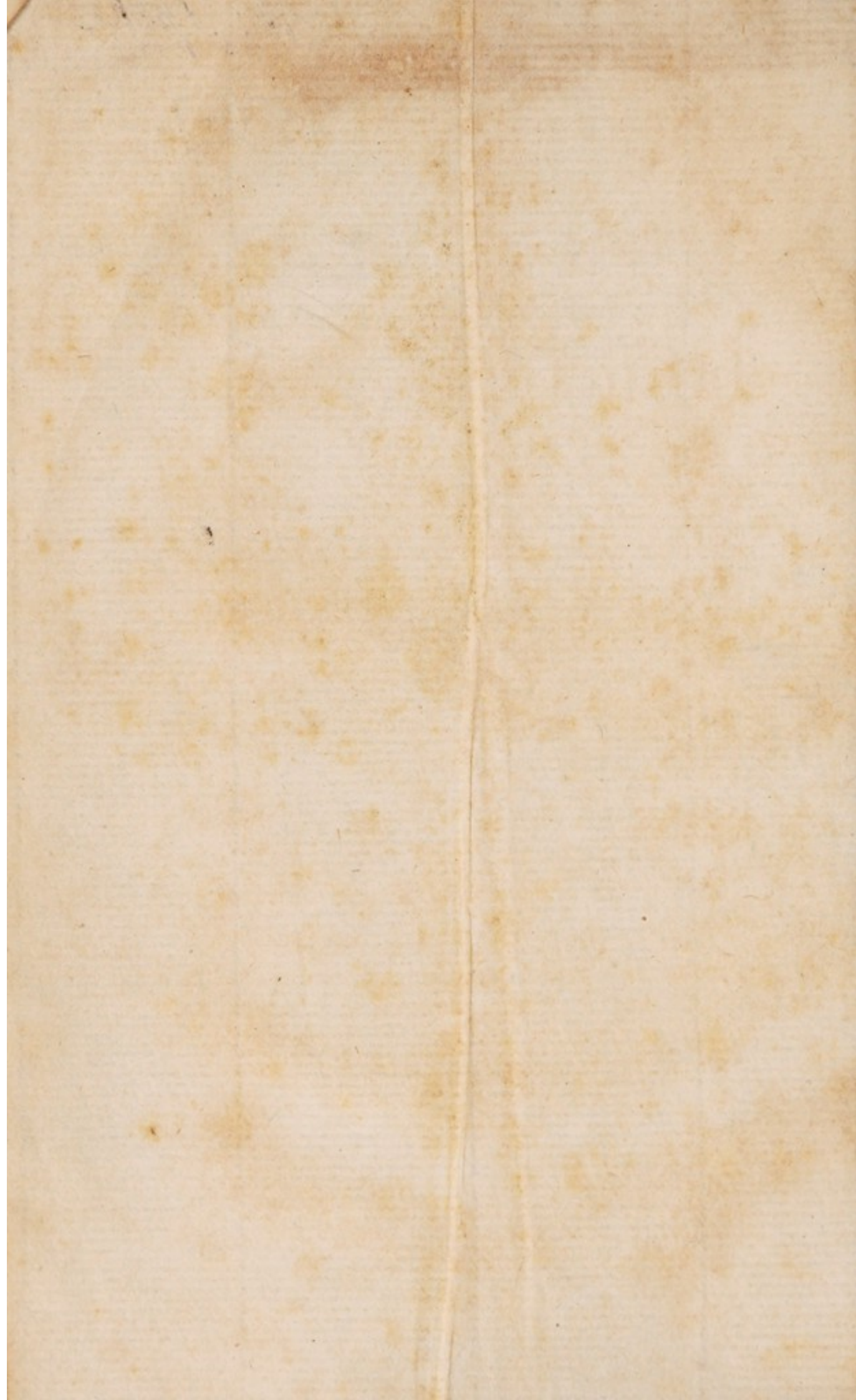
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A
T R E A T I S E
O N T H E
N O N - N A T U R A L S.

In which the Great Influence They have on

Human Bodies

I S

Set forth, and Mechanically accounted for.

To which is subjoin'd, A Short Essay on the

C H I N - C O U G H :

W I T H A

New Method of treating that Obsti-
nate Distemper.

B Y

J O H N B U R T O N,
M. B. Cantab. M. D. Rhem.

He that contemneth small Things, shall fall by little and little.
ECCLES. XIX. I.

T O R K :

Printed by A. STAPLES ; and sold by him and J. HILDYARD,
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TO THE
Learned and Judicious
Herman Boerhaave, M. D.
Professor of Physic at *Leyden.*

S I R,



Forming Compliments, the ordinary Matter of Dedications, I am neither skill'd nor studious: Besides, that nothing of this Nature could be us'd with Propriety
a in

in an Address to a Person, whose Sincerity and Candour stand foremost in a Throng of other shining Virtues and Accomplishments. There would indeed be no Danger here of transgressing the Bounds of Truth, where the utmost Praises that can be utter'd would scarcely reach it. When so many valuable Excellencies centre in one Man, that separate, would serve to make an hundred shine, Flattery can find no Place. It would be easy to run Encomiums on a Person, whom all the World agree to value and commend; but this is besides my Design. I confess, my Intention in this Address, is to screen the Performance, in some Measure, from the Contempt it may deserve, by letting the World know that I had
once

once the Honour to be instructed sitting at your Feet, where now I cast my Book: And ill-discerning Malice must proceed with Caution, least it blindly stumble on some solid Observation to censure, that has originally dropt from you. As I have gain'd my End, it would be unpardonable to detain you one Moment longer from the Public; your Time is a general Good, and whoever interrupts but an Hour of that Portion of it you have devoted to Business, is injurious to all Mankind. I can't make the World better Reparation for this my Trespas upon it, than by ardently begging the long Continuance of that Life and Health, on which the Life and Health of such Multitudes de-

DEDICATION.

pend. With these good Wishes,
I do myself Honour in subscrib-
ing myself

Your most dutiful Pupil,

and ever oblig'd Servant,

York, Dec.
11, 1737.

John Burton.





THE
P R E F A C E.



ANKIND have afforded no stronger Proof, that I know, of their being knit together in one Body, or that they are Political Members of each other, than in the Freedom they are pleas'd to take in demanding a Reason and Account of each other's Actions and Behaviour. Far be it from me to go about to disturb 'em in the peaceable Enjoyment of this Privilege, by enquiring into the ungrateful Original of it. They have been in Possession long enough to plead a prescriptive Right, and I quietly submit to their Authority, without so much as offering to ask who made 'em Examiners. But at the same Time, I shall be so bold, as to acknowledge that my Submission in this
Parti-

Particular, is not so much owing to any Sense I have of the Legality of this Dominion, which Mankind have so long exercised over each other, as from a certain executive Power they have lodg'd in themselves, of punishing those who are guilty of Contumacy towards them : For whoever has been so hardy and refractory, as to detain the Motives and Reasons of their Actions and Behaviour from the World, have always found that the World would supply the Deficiency, by forming ten times worse Reasons, than the true ones would have been. 'Tis purely to avoid this Inconvenience, that I give myself or my Readers the Trouble of any Preface at all.

But since it must be so, that some Account must be render'd of what has put me upon appearing in Print, I shall give this as the first and principal Reason, viz. to satisfy those, who are pleas'd to make it their Concern, that I have not wholly misemploy'd the Time spent by me at Leyden or at Cambridge. The Book itself must speak what sort of Advantage I have made of my Study in either University : All that I would be here understood to say, is that I have not been quite idle, a Circumstance, the World is very ready to understand in the Affirmative, unless they are well inform'd to the contrary.

My

My second Reason for printing these Sheets, is a Thirst of Gratitude, that I might have it in my Power to make public Acknowledgement of the many Obligations I am under to that first of learned Men the great Boerhaave, at whose Feet I had the Honour and Advantage to receive the greatest Part of my Education as a Physician.

After mentioning Gratitude as a Reason for turning Author, a great Love for the Public, and a strong Desire to do Good to my Fellow Creatures, might very decently occupy the Place of a third Reason: And this plausible Pretence lies as ready for my Hand as another's, and would become it as well, at least, as it does Thousands who make use of it altogether for the Advancement of their own private Interest. But I shall wave my Title to this third, to this best Reason imaginable, (provided it was but true) upon Condition only, that the World will forbear to give a fourth, and not say, it was the Vanity of being an early Author, that forc'd this indigested Treatise, this new Octavo, upon the Public.

Having thus paid my Compliments to the World in general, by laying before 'em this full and true Account of myself, and my Writing, I shall now cast about to bespeak the Courtesy, or at least to spoil the Edge of ill Nature, Envy and Detraction,

traction, *by being very free, and finding much Fault with the Book myself, this will, at least, so far as it goes, spoil the Novelty of the future Censure, and rob Calumny of its most poignant Pleasure, even that Pleasure it feels, when it raises new Matter of Grievance in another's Breast.*

I have met with a Story somewhere, of a facetious old Man, who having the Misfortune to be a Cuckold, could never vent any of his Pleasantry, but the Reproach of his Wife's Wants, and her irregular Method of supplying 'em, was ever retorted upon him: Thus all his Merriment had like to have been spoil'd, had he not be-thought himself of the following Stratagem; whenever he came into Company he intended to abide by, he never fail'd to relate the Misfortune himself, and confess the Cuckold; this disarm'd his Adversaries at once, and procur'd him Freedom of Speech, so long as he chose to stay amongst 'em. I wish myself heartily as good Success, while I follow this merry old Man's Method.

The Thing then that stands foremost in a Book, and offers itself first to the Reader's Eye, is the Diction and Style, and in this every Reader, that is, every one that can read, must be allow'd, if he pleases to demand it, to be a competent Judge. For my own Part, I look upon the

the following Pages to be, in this Respect, dry and lean; whoever therefore is of my Opinion I hope will do me the Justice to take me along with him; for I can assure him, I do as heartily, and as sincerely wish it had been better wrote, as he or any one can, who pretends to be offended at its being so bad as it is.

But notwithstanding some Comfort arises even here, from the many grave and sober People still left in the World, who look more for Matter than for Words, and who, if they meet with any Thing solid, and fit to entertain 'em, will attend as little to the Manner in which these Things are deliver'd, as the Author did whilst he was employ'd in writing them. My chief Care, I must confess, has been employ'd in collecting and laying up such Materials for the Work, as are sound and good, and not controverted, and to deliver 'em closely and concisely, by plain, clear and significant Expressions, rather than by Rhetorical Flourishes, which oftner obscure the Sense, than enliven it (though in some Peoples Imaginations they make the Author shine) and are therefore not much to be regarded, where the Design is only to inform the Ignorant; pardon a Quotation from Celsus, much to the Purpose; Morbos autem non elo-
b *quentia*

quentia sed remediis curari^{*}; therefore if what I have wrote answers this End, viz. to instruct the Ignorant, the unpolish'd Style need never give me much Trouble or Concern.

There is indeed one Part of the Book, that which gives a long Detail of the Weather for many successive Seasons, together with the partial Aphorisms which are drawn from 'em, this, though as useful as any Part of the Book, is yet so very dull, that I would advise every hasty Reader to pass it by, but, however, it could not be well omitted, without maiming the Subject; and there are People in the World a many, whose Conversation seldom rises higher than this, who may possibly find Entertainment even here.

If it be objected to me (as why should it not?) that the Book is a mere Collection from others, or what I have pick'd up from Boerhaave's Lectures and Conversation, and that there is nothing new in it, or of my own, nothing need be further said in Answer to this, than that the numerous Quotations in the Margin, with Regard to the Authors that I have made use of, confess as much as may serve to satisfy the first Part of the Objection. What I have remember'd and put down from that great Man, and most accom-

* Præfat. pag. 10. lin. 33.

accomplish'd Physician is of the utmost Value, as coming from one, whose Observations and Reasons upon 'em have a peculiar Excellence, and which the World might possibly have never receiv'd the Benefit of, if they were not thus transmitted to 'em by those who have had the Advantage of his Conversation and Instruction, and if the Book abounded with more of these, they would have added much to its Value, as well as to the Reader's Benefit. But if this Objection must take Place, it is merely just that I should have the Benefit of it, and the less that is properly my own, the less I have to be accountable for. However, thus much Merit cannot fairly be denied me, that I have brought abundance of Matter together within a small Compass, and made it to be cheaply procur'd, which could not have been so easily come at, if these Things had laid scatter'd up and down the Works of those many Authors from whence I have drawn 'em.

Health is the greatest earthly Blessing, and therefore Mankind can't have the Notices, which are proper to preserve it, given too often, or in too great a Variety of Shapes. This Objection therefore, that there is nothing new, might be pleaded rather as a Merit in the Book, if I were dispos'd to defend it as far as the Argument would bear, inasmuch as there is no-

thing advanc'd without sufficient Vouchers, which may, by some, be look'd upon as commendable a Thing in a Physician, as in Divines, who in the publishing their Thoughts, make it a Part of their Study, to advance nothing but what is agreeable to the establish'd Standard of Faith.

But however, this Objection is not strictly true; for in the little Treatise of the Chin-Cough, there is a Method of Cure laid down, which is wholly my own, and which no one ever practis'd before myself; and if it prove generally successful, as I have Reason from my own Experience to hope it will, the Credit of that, however, I may claim as my own; and if this was all, it is a Merit many more bulky Books than mine have not to plead

Mr. Lock, in his Preface to a large Quarto Volume, makes no other Apology for writing the Whole, than the Explanation of one single Passage in St. Paul; and I hope the Authority of that great Man in Point may defend my slender Pretences.

Another Thing I expect will stand in the Way of the Book, is my Want of Years and Experience; and this is an Objection, I confess, I know not how to come off of. Comforts of their Hearts who have the Advantage of Age to plead; for my own Part, I own it is a Blessing I am very easy to have at a Distance: This therefore

therefore is an Objection that I must leave with those, who have the Happiness to hit upon it, to make their most of, for 'tis what I can't possibly help.

There is one Thing more, that it stands me much upon to defend, as what will bring upon me the most bitter Resentment of some few Gentlemen of the Faculty; and that is the great Freedom I have taken, in decrying Mathematics as useless in the Cure of Diseases; though by the way, the Benefit of it was never well made out, either to their own, or other Peoples Satisfaction: But however, as this smart Objection is ready form'd to their Hands, I doubt not but it will be vigorously discharg'd upon me; and my Quarrel to the Mathematics will surely be said to be the same with the Poor's Quarrel to the Rich, or the Ignorant to the Learned; and that I decry this truly valuable Branch of Learning, because I am possess'd of a very small Share, or nothing of it: I shall be bold to keep it to myself, whether I understand this Science or not, and only say in my Excuse, that I have not deliver'd one tenth Part of what I could have done, against this showy, but false Pretence. A late ingenious Author and good Physician, has furnish'd Matter sufficient upon this Head; and it was a Point of Curtesy, as well as Self-denial, that a great deal of it

was not produc'd. Least I should be thought to boast of Materials that I have rejected without sufficient Grounds, I shall venture to make one Quotation here, which, if it serve for nothing else, will, at least, divide the Odium, and direct the Reader to much more of the same, if he be dispos'd to look for it: The Passage (and a severe one it is) is this; The Pretence to Mathematics, or the Usefulness of it in the Cure of Diseases, is a Cheat, and as errant a Piece of Quackery, as a Stage and a Merry-Andrew.

It will not be improper at Parting, just to caution the Reader against being surpris'd, or over-witty, when he finds the most common, ordinary and lowest Facts in Nature here taken Notice of. In Subjects of this Importance, Invention and smart Conceits, which afford the principal Entertainment to light Minds, who can relish nothing of greater Weight, are not at all to be admitted; whilst many of the most important Consequences may be drawn from the Observation of the meanest Things in Nature. And I hope that those who will give themselves the Trouble of reading over the Whole, with a grave Attention, will find, after all, that it is not altogether an useless Speculation.

I should here, before I have done, make an Apology for the many Errors of the Press, but as no Human Prudence can prevent

prevent gross Blunders creeping into an Impression of this Kind, I hope the Reader will not be over severe, in charging them upon me.

This is all I can find in my Heart to say against my Book, and to say any Thing more in its Defence may not be thought becoming: But in Truth, whatever may be said by me here, the Book must nevertheless stand or fall by its own intrinsic Merit, now it is submitted to the Public. And though it should so happen, that it procure neither Credit to the Author, nor Advantage to the Reader, which is the worst that can be dreaded, I promise to bear the Disappointment, since it is no such uncommon Case, without much Wonder or Concern.



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E R R A T A.

PA G E 4. last line in the Notes, for *Empirics*, read *Emperics*; p. 19. l. 19. for *Lencophlegmatia's*, r. *Leucophlegmatia's*; p. 31. l. the last in the Notes, for *Prideux*, r. *Prideaux*; p. 38. l. 23. for *Cæra*, r. *Cera*; p. 39. l. last but one, for *Expen.* r. *Exper.* p. 41. l. 21. for *putri- fy'd*, r. *putrefy'd*; p. 42. l. 21. for *Putrification*, r. *Putre- faction*; p. 43. l. 19. after *Paræus*, dele the Comma; p. 46. l. 6. for *Senitantes*, r. *Scrutantes*; p. 55. l. 27. for *Ramazani*, r. *Ramazini*; p. 57. l. 14. after *other*, r. *were*; p. 72. l. 2. for *bilioſe*, r. *bilious*; Ib. l. 5. for *bilioſe*, r. *bi- lious*; p. 76. l. 16. for *Lencophlegmatia's*, r. *Leucophlegma- tia's*; p. 78. l. 1. for *ædematous*, r. *œdematous*; p. 84. l. 24. for *Bronchiæ*, r. *Brouchia*; p. 102. l. 1. for *flow*, r. *flow'd*; ib. l. 5. before *Wintringham*, r. § 3. ib. l. 24. for *does*, r. *do*; p. 109. l. 27. for *are*, r. *were*; p. 110. l. 11. for *bilioſe*, r. *bilious*; p. 117. l. 15. for *are*, r. *were*; p. 118. l. 11. for *are*, r. *were*; p. 128. l. 25. after *of*, r. *the*; p. 144. l. 12. for *seems*, r. *seem*; p. 147. l. 26. for *does*, r. *do*; p. 149. l. 15. after *Peripneumonies*, r. *appear'd*; ib. l. ib. after *true*, make a Colon; p. 150. l. 14. for *Epe- demics*, r. *Epidemics*; p. 151. l. 2. after *Winds*, make a Comma; p. 153. l. 7. after *Phlegm*, make a Comma; p. 158. l. 22. for § 16. r. § 18. p. 173. l. 19. for *Pyſician*, r. *Physician*; p. 190. the marginal Note should be at § 2. p. 208. in the marginal Note, for *Importante*, r. *Importance*; p. 224. l. 2. for *ſlip'd*, r. *ſlit*; p. 253. l. last, in the Note, for *and* r. *ad*; p. 255. l. 23. for *quæ*, r. *quæ*; p. 260. l. 13. for *Hoyer*, r. *Floyer*; p. 262. l. last save one, after *Wideness of*, r. *the*; p. 299. l. last, for *Motgag*. r. *Morgag*. p. 300. l. 19. for *it*, r. *they*; ib. l. 20. for *mixes*, r. *mix*; p. 305. l. 16. for *ſubtle*, r. *ſubtile*; p. 306. l. 21. for *ſubtle*, r. *ſubtile*; p. 307. l. 24. for *litur*, r. *liter*; p. 308. l. 23. for *ſubtle*, r. *ſubtile*; p. 318. l. 8. for *Cohæſion*, r. *Coke- ſion*; for *Diarrhæa*, r. *Diarrhæa* through the Book; for many Semicolons, put Comma's; for *Fæces*, r. *Fæces* quite through the Book.



INTRODUCTION.

§ I.



THE Theory of Physic has, in all Ages, been influenced by the Philosophy then in Vogue; thus the Ancients introduc'd

*The Theory of
Physic influ-
enc'd by the
Philosophy in
Vogue.*

the Elements, and their four Qualities, from whence they deriv'd their Temperaments : Others have had Recourse to innate Heat, radical Moisture, a presiding Spirit, astral Powers, occult Qualities, Sympathies and Antipathies, and many such like absurd Notions ; by which, they endeavour'd to account for the several Phænomena of Diseases. But the Moderns, with a great deal of Reason, have quite exploded such a fantastical Way of

A

philos-

philosophising; and with much Industry and Success, have endeavour'd to account for every Thing that relates to the Animal OEconomy upon Mechanical Principles. This they have done, both as being the best Means of getting clear of all supposititious, delusory Hypotheses; and also, the only Way, by which, we are enabled to arrive at any satisfactory Knowledge in the Works of Nature.

*The Necessity of
a True Method
of Studying
Physick;*

§ 2. It is well known that a true, short, rational Method of Studying, is of the utmost Importance; more especially in our Universities, where there are so few Instructors in this Science: For how many a bright Genius, at first setting out in these Studies, have been so embarrassed and perplex'd with these various, absurd, and unintelligible Systems of philosophising; that finding themselves unable to account for the several Phænomena of Diseases from them, they have been plung'd in such endless Labyrinths of Error, as they could never extricate themselves out of.

§ 3. But

§ 3. But *Boerhaave*, that second *Hip-*<sup>which is shewn
by Boerhaave :</sup>
pocrates (who by an uncommon Sagacity,
and unparallel'd Industry, has search'd
deeper into the Arcana of Nature, than
any who have wrote before him) has re-
duc'd the Study of this Science to so
short, easy and rational a Method, that
Persons, with a proper Application and
Capacity, may in much less Time acquire
that clear, satisfactory Knowledge there-
in, which they in vain flatter'd them-
selves with the Hopes of attaining, by
pursuing their former injudicious Me-
thods: For he has wisely applied the noble
Discoveries that have been made; and
from a great Variety of Chemical, Me-
chanical, and Anatomical Experiments,
and a compleat Knowledge of the Anci-
ents, has form'd the concise and best
System, that has ever yet appeared: A
System, free from all manner of Trum-
pery, and that very probably, will stand
the Test of all succeeding Ages: This is
the Service that great Man has done us,
and by it, has given us a much greater
Advantage over all the Ancients, than

Introduction.

either the Discoveries in Anatomy or Philosophy were able to give us before.

*whence he has
given Offence
to many; and
to whom.*

§ 4. This generous Undertaking of his has given great Offence to those, who, not having their Heads turn'd that Way, delight in their occult Qualities, radical Moistures, Malignities, and such like Jargon, Emperic-like *, and cannot bear to see their great Mysteries of Physic laid open; and that excellent Frame, which is its Subject, mark'd out like a Spot of Ground or Piece of Timber, with Rule and Compass: Yet, notwithstanding all the Care and Industry of these People, who decry and run down all Attempts of this Nature, I am fully perswaded it must be owing, either to their Want of Attention to this Sort of Reasoning, or their Want of Capacity to deduce Consequences from Antecedents (by which alone, they can be able to

* The Author does not mean that Sect of Physicians among the Ancients so called, which took its Rise in the 38th Century, in the Reign of the Second or Third Ptolemy; but he means the modern Empirics.

to pursue these Enquiries) that they so obstinately persist in their own Notions.

§ 5. It is for this Reason I shall endeavour to convince them, the Fault is not in the Science, by its not affording sufficient Principles to reason from with Certainty, but in themselves, and in their Ignorance of the Means, by which that Certainty is to be obtain'd : For when a Person has got a true Notion of the Structure of the human Body, the Nature of the Solids and Fluids, the Manner how vital, natural, and animal Functions are perform'd ; the Nature of the Secretions ; the Effects either of increasing or diminishing any Evacuation ; and has a competent Knowledge of Natural Philosophy ; he is then properly qualified to reason scientifically upon the Nature of Diseases, and the Operations of Medicines, so as to deduce a just Method of Practice therefrom ; which he, who is utterly ignorant of these Things is incapable of, whatever Character he may bear among the general, tho' less understanding Part of Mankind.

*The Faults is
those who ca-
vil, and not
in the Science.*

*The Error of
those who fol-
low Experi-
ence only.*

§ 6. These are the Men, who reject-
ing all Reasoning in Physic, mock at
any Rationale on Drugs or Diseases, and
patronize Experience only. It is certain-
ly right, in some Measure, to rely upon
Experience; but if we build entirely
upon it, we shall find nothing is more
fallacious. Men of Experience only,
are the most frequently deceiv'd of all
Mankind; they depend entirely upon
Analogy and Similitude for their sole
Guide: This Case, say they, seems like
the Case of such a Patient, who was
cured by such a Method of treating; in
the same Manner therefore will we pro-
ceed in this Case also: Thus the Pro-
cedure proves of as dangerous Conse-
quence, as the Mistake proves greater or
less; for they are not able to discern be-
tween differing Similitudes, and like
Differences.

This Method is easily discovered to
be fallacious and dangerous, by any,
who are the least conversant in the
Science of Physic: By this Method it is,
that

that the old Practitioners pretend a Superiority over those, who may often have more real Knowledge than themselves.

Experience without Theory will never make a safe, and skilful Physician, any more than any other Science can be obtain'd, without being acquainted with the Rules upon which it is founded ; and he that is conducted only by Appearances, without being able to reason about their minutest Differences, will never see an Error 'till past Recovery. Thus Sydenham *, though he was one who stood up as much for Experience as any

A 4 whatsoever,

* *Epidem.* Cap. 2. Pag. 5. Hoc saltem pro comperto habeo ex multiplici accuratissimarum observationum fide, prædictas Morborum species, præsertim Febres continuas ita toto, quod aiunt, Cælo differre, ut qua methodo currente anno ægrotos liberaveris, eadem ipsa anno jam vertente forsitan e medio tolles: Quodque, ubi semel in genuinam medendi rationem, quam hæc vel illa Febris species sibi vendicat, auspicio inciderim, ad eundem scopum collimans (favente, ut fit, optimo Numine) metam quasi semper attingam, respectu ad temperamentum, ætatem & reliqua ejusmodi usquequaque habito, donec extincta illa specie novoque gliscente malo, anceps rursus hæreo, qua mihi via insistendum ut ægris subveniam, ac proinde nisi ingenti adhibita cautela intentisque omnibus animi nervis, vix ac ne vix quidem possum efficere ne unus aut alter eorum, qui se primi meæ curæ commiserint, vita periclitetur, donec investigato jugiter intrepidus de-novo procedam.

whatsoever, still owns the Necessity of Reasoning about the Differences of Diseases.

*The Error of
those who fol-
low Theory
only,*

§ 7. On the other Hand, they who rely wholly upon Reasoning, are as much or more in the Wrong; for the greatest Masters of Reasoning have often prov'd the most unsuccessful Interpreters of Nature, by neglecting to consult Nature it self, and over-looking the most obvious Phænomena. *Aristotle*, with all the Advantages of a great Genius, and most uncommon Opportunities of improving Philosophy and Physic, made no better Use of them, than from some abstract Notions of Matter, and certain fictitious Elements and Qualities, to imagine himself able to account for all the Appearances of Nature; and fancying some Chimerical Analogy betwixt the Macrocosm and Microcosm, the Natural and Animal OEconomy, endeavour'd to make all Things chime in with his whimsical Hypothesis.

Physicians

Physicians soon adopted *Aristotle's* Notions, and reason'd from the same Principles, and for many Ages nothing was heard in the Schools but Wrangling and Disputes about Words, uselefs Divisions and Distinctions of Qualities and Forms, and various Interpretations and Glosses of *Aristotle's* and *Galen's* Writings. No one, in all this Time, thought of searching out the Truth of Things, of confirming or disproving any doubtful Opinion by Experiments, and careful Observations of Facts, but relied entirely upon their Master, and squar'd their Practice by his Hypothesis.

§ 8. The Chemists indeed threw off ^{*Why Physic is so little improv'd by Chemistry;*} the Yoke of School Philosophy, and pretended to establish a new Theory upon Experiments; but these Experiments were few, and very much wrested and misapplied: Their Fondness for some Experiments made by Fire, led 'em to neglect all other useful Enquiries into the Structure of the human Body, the Nature and Properties of the Fluids contain'd

tain'd in its Vessels, and the Laws by which they mov'd within them; vainly imagining such violent Motions in a human Body, as were altogether inconsistent with the Life of an Animal.

Why by Anatomy, and why the Mathematics are an Injury to Physic.

§ 9. When Anatomy was brought to so great a Perfection as it has of late Years attain'd to, we then might have hop'd to have seen a thorough Reformation of Physic, and to have been able to proceed with a greater Degree of Certainty than heretofore; but they depended so much upon their Mathematical Reasoning from the Structure of the Body, that they also fail'd of the desir'd Success; the very Data upon which they built their Reasoning, being either absolutely false, or impossible to be made appear.

For my Part, I can't agree with a very great Man, who says, that a thorough Knowledge of the Mathematics, ought to be made the distinguishing Characteristic of a Physician from a Quack; for the Mathematics can give us no more
Help

Help in the Cure of Diseases, than they can in explaining the Mysteries of reveal'd Religion.

I rather agree with *Baglivi*, that Mathematics, Rhetoric, Astronomy, &c. are as conducive to an exact History and Cure of Diseases, as the Art of Painting is to Music. Dr. *Beal* observes, it is impossible to discover certainly the natural Dimensions of the Canals in a human Body, even in a healthy State, much less is it possible to determine accurately their various Degrees of Contraction and Dilatation, which may, and actually do produce Diseases; hence every Thing built upon such Hypotheses must fall of course. Who can refrain from laughing, when he reads a Table that is publish'd in the *Philosophical Transactions*, N^o 302, and 314? In which the Names of all the Purgatives and Emetics are set down, and by Mathematical Rules adjusted to every Constitution in all Ages; the Author says, the Doses of the Medicines are as the Squares of the Constitutions; which are as easy to find out as the Squares

Squares of Goodness or Generosity, or else of Wickedness and Avarice in any Man. Hence we see it is doing a great Injury to young Students, to put them upon endeavouring to reduce these Things to a Mathematical Certainty, or even to spend much of their Time in studying Mathematics; for when a Man sets out wrong, the more he goes on strait, the farther he is out of his Way.

Some of these Sort of People have argued themselves into a Belief of Facts being real, which had no other Existence than in their own Imagination; so that how absurd soever we may think *Aristotle's* monarchial, despotic Government of the Heart; *Des Cartes's* Flashes of Fire contained in the Parenchyma of the Muscle, or *Van Helmont's* Archæus to be, there are not wanting of their Successors, much more modern, who have been no less confident in assuming their Postulata.

*The Necessity
of a Theory.*

§ 10. Whosoever therefore tries the Powers of his own Mind in attending to these

these Things, will find no true Satisfaction, but from the same Assistances and Means of Conviction, by which he obtains the Knowledge of any ordinary Machines.

Therefore, if there be any such Thing as Medicinal Science, it must proceed upon demonstrable Principles ; because it is conversant with Objects discernable only by the Evidence of Sense, without which, it is mere Chance and Confusion, and the Emperic and Enthusiast are upon as good a Foot as the Scholar and Physician : Not that here I would be understood to speak of absolute Certainty in all Instances of Theory and Practice ; but I say, the Theorist will attain to a greater Degree of Certainty, than any other ; and, in every Step he takes, will run much less Hazard of failing of Success than they, who proceed in the contrary Method ; for the Emperic and Experimenter are altogether in Uncertainty, having no Rules whereby to make even Observation it self of real Use. Every one must allow, how conducive soever
towards

towards the Improvement of Medicine Observations may be, yet they are only so, when made the Foundation of solid Reasoning; which, though it be the Measure and Standard of all our Actions, and the Basis of Arts and Sciences, has nevertheless been least regarded in this. 'Tis for this Reason, that formerly such small Advances have been made in Physic, which would probably have been brought to a greater Degree of Perfection than it now is, had it been treated as it ought to have been, and consider'd rather as a Science, than an Art; seeing its Object, namely, a human Body, as it is one of the most surprizing Pieces of Mechanism, so are its Distempers owing to an Irregularity in the Motion, Quantity, or Quality of its Fluids; or to a bad Texture and Disposition of the Solids: Now all these being only different Modifications of Matter, must undoubtedly be examined, and explain'd, by the known Laws of Mechanics.

The true Physician therefore is he, who has modell'd his Experience into a
Rationale;

Rationale; such a Man can never fail of Success, but when the Parts are absolutely destroy'd, or Nature is so weak, as to be unable to perform her Office.

§ II. We see therefore, notwithstanding the excellent Contexture, and wonderful Variety and Fineness of the Parts whereof a human Body is compos'd; yet when even this most finish'd Piece of the Creation comes to be consider'd with Regard to its Structure, and the Mechanism, by which the Functions of its several Parts are carried on (in order to find out the best Methods, either of continuing those Functions perfect, or of regulating them when disorder'd) we shall find ourselves under a Necessity of using it no better, than any other Part of the Material World; because herein, we can't come to any Knowledge of its Mechanism, without taking it in Pieces like any other Machine, and considering all the Parts as so many Springs, Wheels, and the like Mechanical Powers, which, by Virtue of their particular Figures,
Magni-

*A human Body
to be consider'd
as a Machine.*

Magnitudes, and Contextures, are enabled to perform their several Functions : And to this Purpose, notwithstanding the wonderful Variety, both in the Number and Structure of its several Parts, they are, throughout the Whole, to be consider'd as so many Mechanical Instruments, or Powers, all adapted to, and acting in Subordination to each other, in such a Manner, as to concur to the Support of the Whole ; and in this due carrying on all the Purposes of the OEcconomy, seeing their Dependences on each other is so order'd, that any one Part cannot suffer without bringing Disorder upon the Whole ; the Structure therefore and Powers of the most minute Parts are, as in any other curious Movement to be known, in order to find out the properest Method of regulating the Disorders.

The first Step necessary to be taken, ought to be from the most simple and easy Notices we have of it, and from thence, by Degrees, to enter into its most minute Parts, in order to explicate
its

it's remote Disorders and unheeded Properties ; and to this End it very naturally comes to be consider'd as it is compounded of Solids and Fluids.

§ 12. The Solids, of which the Organical Parts of the Body are compos'd, are entirely vascular ; through these, several Fluids are continually propell'd with various Degrees of Velocity : These Fluids are of different Kinds, according to the various Exigencies of the Animal OEconomy. From hence we see their necessary Relation to, and Dependence upon each other ; for the Solids are nourished from the Blood, and are thereby enabled to perform their Functions, which depend upon their Elasticity ; by means whereof, the Blood is prepar'd to supply such Nourishment to the Solids as is necessary for their Support.

The mutual Dependence of the Solids and Fluids upon each other.

§ 13. First then, let us consider what will be the Consequence of a relax'd State of the Fibres and Viscera ; if they are too weak and lax, we shall then soon be fill'd with sharp or viscid Humours,

The Effects of a relax'd State of Fibres.

or both, according to what Sort of Food we eat; hence the Circulations, Perspiration, Digestion, and Secretions, will be weaker and more languishingly perform'd than ought to be; by which, neither the Food, nor Viscidity of the Blood will be sufficiently broken, nor divided small enough by the Force of Circulation, nor it's Excrements thrown off; for while the Blood circulates too slowly, neither Perspiration nor any other of the Secretions or Excretions can be rightly perform'd, neither can the Fibres assimilate our Food for Nourishment, but it becomes viscid, whence Obstructions in the Viscera; for we know that the different Fluidities of the Blood in several Parts of the Body, are as their Velocities in each Part, and their Velocities are as the contracting Force and it's Resistances; where then there is the greatest Resistance and the weakest Contraction, there the Blood will be thickest; in those Parts therefore, where there is the greatest Quantity of Fluids in Proportion to the Force of the containing Vessels, there must needs be the greatest Resistances; there-

fore the Fluids in those Parts will sooner stagnate than in any other, and such Parts are the Liver, Spleen, Mesenteric Glands, &c. whence Jaundices, Hypochondriac and Hysterical Affections.

When these Fibres are weak, the Heart meets with too great a Resistance; for we know that it is the Elasticity of the Arteries that propels the Blood forward, after it comes from the Heart; if these be weak, then the Blood moves slower through the Arteries than from the Heart; hence Anxieties in the Breast, and slower Circulations; hence, on either a sudden or quick Motion, proceed Palpitations, Syncope's, &c. because the Blood comes faster to, and through the Heart, than the Heart can propel it through the Arteries: From this Weakness arises Len-cophlegmatia's, Tumors, and Inflations of the Veins; for we know that the Blood is an Elastic Fluid, which in a Vacuum will expand it self very much *; so that the weaker the Vessels are, the more will

B 2

they

* *Philosoph. Transact. Abridg. Vol. II. Pag. 228.*

they be inflated and puffed up ; this is yet more evident in Consumptive People, who, seven or eight Days before their Death, have all their Vessels very turgid, and their Blood is less ponderous.

If People, whose Vessels are very weak and lax, stir too much (nay, sometimes even the very Air changing so as to contract the external Vessels) the inward Vessels will sometimes easily burst ; hence various Kinds of Extravasations of Blood, Serum, or the like, Spots in the Skin, Stagnations, &c. hence Diarrhæa's, Dysenteries, Spitting of Blood, making Bloody Urine, and many such like Evils ; in short, all the Functions, both vital, natural and animal, will be impaired ; and whatever we eat and drink will follow its own proper Indoles.

People of this Sort of Constitution generally have a small, weak, languid, and, sometimes, intermitting Pulse ; are commonly complaining of Coldness, especially in the extreme Parts ; are very apt to catch Cold, and are quite spent in
excessive

excessive hot Weather. These Sort of People have mostly a white, fair, wax, or ashen-colour'd Complexion; loose and flabby Flesh and Muscles, and soft, thin, bright colour'd Hair; they are chiefly subject to chronical Disorders, such as Atrophies, Dropsies, &c.

§ 14. Fibres and Vessels, when too rigid, are less flexible, straiter, shorter, and resist the Impulse of the Liquids; hence a great Nixus and Renixus betwixt the Heart, Blood, and Vessels, the Vessels propel the Blood with great Violence, and then the Circulation is quicken'd; then there is a greater Attrition betwixt the Vessels and Fluids, and betwixt the Parts of the Fluids also; hence a greater Heat; and where the Attrition is greatest, there will be also the greatest Heat, and that is in the Lungs: All the Excretions are as the *Vis Applicationis liquidorum ad Oscula Vasorum*, so that by how much more the Blood is mov'd, by so much more are the Excretions increas'd, and by that Means the Blood is deprived of it's most liquid Parts; hence it contracts an

*The Effects of
a too rigid
State of Fibres.*

inflammatory Viscidity; hence Obstructions, either from the Violence of the Circulation forcing Globules into Vessels, which they should not enter, or from the Viscidity; hence Inflammations, Suppurations, Gangrenes, Pleurifies, Peripneumonies, Polypose Concretions, &c.

By the violent Attrition and Heat, the Blood is resolv'd into its volatile, acrid, and alcalescent Salts and Oils, as the Colour and Smell of the Urine shows *.

*The Effect of
a too viscid
State of Hu-
mours.*

§ 15. Now we will suppose the Solids to be perfectly right, and the Fluids to blame; if they be too viscid, the Circulation would be retarded, because of the greater Pressure upon the Sides of the Canals, and the Obstructions in the Capillary Vessels; all the Secretions wou'd be hinder'd; and then the Solids wou'd be

* Dr. Langrish analys'd the Blood both of an healthy Person, and one in an acute Fever, and found that the Lymph in the latter, was more charg'd with volatile Salt and Oil, than the other, and fermented more violently with Acids. *Modern Theor. and Pract. of Physic*, Pag. 85. He also analys'd the Urine of Persons well, and of others in an acute Fever, and found a great Difference in this also. *From Page 93, to 103.*

be weaken'd for Want of due Nourishment; if the Humours abound in too great Quantities, then the Vessels are too much distended and dilated, which being kept too long upon the Stretch, are at last, like a Bow-string, weaken'd and lose their elastic Tone; if this viscid Blood happens to obstruct in the Lungs, it there causes Dyspnæas, Asthmas, and Coughs; if in the Head, Apoplexies, Vertigo's, Lethargies, Dimness of Sight, Deafness, &c. if in the Liver, a Jaundice; if in the Spleen and Glands of the Viscera, the Hypochondriac and Hysterical Affections; if in the Kidnies, nephretic Pains; if in the Skin, Spots, Tumors, &c. and, if the Person moves suddenly (the Blood in the larger Vessels circulating quicker than in the smaller) Palpitations of the Heart, Syncope's, &c. all the Secretions are hinder'd; for Want of animal Spirits, Faintings, and a Lowness of Spirits; this glutinous and viscid Humour obstructing in the Vessels, presses upon the Sides of the Vessels more strongly than a thinner, and thereby pressing upon the Nerves, interrupts their natural Actions, or In-

flux; hence various Contractions and Tremors.

*The Effects of
a too sharp
State of Hu-
mours.*

§ 16. If the Humours are too sharp and acrimonious, they will destroy the Vessels; and, by twitching and vellicating the Nerves, will produce Spasms, Convulsions, and launching Pains; and often cause scorbutic and cancerous Sores and Ulcers.

§ 17. Thus we see, that a bad State either of the Solids or Fluids, soon affects and changes the other; and as all chronical, and some acute Distempers, take their Rise from Humours, either being too viscid, or too thin, or too acrimonious; or from the Solids being too lax, or too rigid; we are under a Necessity of studying those Things, which make such Changes in our Constitution, and these are, what we call the Non-naturals, and therefore ought to be our chief and principle Study; because if they are once well understood, we may often be able, not only to foretel some chronic and epidemic Distempers, but also

also to know how, either to prevent or cure them. It is for Want of a due Care in the Management of the Non-naturals, that we do not oftner succeed in the Cure of chronic Distempers; for, can any Thing be more irrational, than for one in a hectic, or scorbutic Habit, to indulge his Palate with eating aromatic, pungent, saline Pickles, or Sauces, to his Meat? Or for one in a Cachexy, Obstructions in the Glands, or the like, to eat all Kinds of Fish, Flesh, Fowls, salt Meats, or leguminous Foods, and to eat plentifully of 'em at a late Supper, still laying heavy Loads upon the Stomach, wearing out the Tone of it; and filling the Vessels with thick, crude, and undigested Fluids, daily laying up and rivetting greater Obstructions in the small Vessels, and hoarding up, as it were, certain Causes of Diseases, and even Death itself? I say, what Success can such expect from Medicines? Old *Hippocrates* * bids us be careful of such, for he says, *The more you nourish impure Bodies, the worse they are.*
So

* Sect. 2. Aph. 9.

So that, if either the Patient be obstinate, or the Physician not attentive to the regular Use of the Non-naturals, what can Physic do?

Having shewn the Consequences of a preternatural State of both the Solids and Fluids, either as to Laxity or Tenseness of one, or the Viscidity, Tenuity, or Sharpness of the other; I shall now proceed to enquire how the Body is affected by the various Alterations of the Non-naturals, in order to induce the Effects above-mention'd; whence we may be able to deduce a Rationale of the Causes of those Distempers of the human Body, with proper Means of removing them.





A
TREATISE
ON
NON-NATURALS.

C A P. I.
A I R.

§ 1.



HE Non-naturals are *Non-naturals*
fix in Number, *what, and* 1.
how many, Air; 2. Meat and
Drink; 3. Exercise
and Rest; 4. Sleep
and Waking; 5. Things retain'd, that
should be excreted; and too great an
Excretion of what shou'd be retain'd;
6. Affections of the Mind,

§ 2. By

Air what.

§ 2. By Air is meant that elastic, compressible Fluid, which furrounds our Terrestrial Globe, call'd the Atmosphere: The lower Parts whereof, in which we live, and are continually breathing, are charged with an infinite Variety of aqueous, terrestrial, metaline, animal, and vegetable Particles; which, by the various Mixtures and Proportions, produce considerable Alterations in its State, whereby our Bodies are variously affected, as will be made appear in the ensuing Enquiry.

Necessity and Use of an Enquiry into its Nature.

§ 3. As it is plain from many Experiments, that an Animal Body absorbs, or imbibes, the Vapours floating in the Air, so it is evident, that as the Air is more or less impregnated with Corpuscles, or Principles of this or that Sort; or as they happen to coalesce or unite with other Principles of a different Nature, they may be exalted into dangerous Weapons, and become the Instruments of fundry Diseases; hence we see the Necessity and Use of an Enquiry into its Nature, which

was

was also known to Hippocrates ; for, says he *, *Whoever would understand Physic, it is first necessary that he understand the Seasons of the Year, and then their Effects on our Bodies.* In another Place he says †, *We ought to know the Constitutions of the Air, what they are, and in what Times and Regions they mostly appear.* In another Place he says ||, *That Distempers seldom arise from any other Cause than the Air ; for either it is too much or too little, or abounds with infectious Filth.* In another Place he says §, *The Air is to be consider'd as to its Heat or Cold, Thickness or Thinness, Dryness or Moisture, and their several Changes.* From his Observations of these Things, he wrote the Third Section of his Aphorisms, in which, he not only gives us an Account of the Diseases which come at particular Seasons ; but also has given us the Symptoms, which are constant Attendants on the various Temperaments of the

* Hippocrates, lib. de aere locis & aquis, pag. 280.

† Hippocrates, de morb. epidem. lib. 4. pag. 1138.

|| Hippocrates, lib. de flatibus, pag. 297. lin. 6.

§ Lib. 6. de morb. popular. sect. 8. pag. 1199.

the Air, and could often foretel the Coming of Diseases: If the same Method, with the same Perspicuity and Integrity, had been pursued by his Followers to this present Time, we then should more clearly have understood the Nature of Epidemics, which now often puzzles even the best, and most skilful Physicians, as Sydenham says *.

Hippoc. Observations upon Air useful to us, and why; namely, that the Effluvia and Vapours will have a proportionable Effect.

§ 4. I know there are several Writers say, that there is such a Difference betwixt the Temperature of the Air in Greece, and this of our own Island, that Hippocrates's Observations are to us entirely useless; but how specious soever this Assertion seems, Experience as well shews it to be false, as that it exposes their Ignorance: Thus far indeed must be allowed, that particular Winds are not equally noxious or innocent, with Respect to different Places and Situations; for some Winds blowing over long Tracts of Land, not only bring aqueous Vapours, but also all Kinds of Exhalations and

* Vid. Introduction to this Book, Sect. 6. Pag. 7. in the Notes.

and Effluvia, both from Vegetables, Minerals, and Animals; and is therefore either noxious, or innocent, according to the Place from whence, and over which they blow: Such a noxious Wind was that, which was so destructive, that in one Night flew 185000 *Assyrians* in *Sennacherib's* Army *, when he was going to destroy *Jerusalem*, and which often blows there. All other Winds which blow over, or from the Sea, bring only aqueous Vapours; and yet, even in this Case, *Hippocrates's* Aphorisms, and Books of Epidemics, may be of great Assistance to us: I do not mean, that the same Wind, from the same Quarter of the Globe, will have the same Effect here, as there; but the same Winds which brings watery Vapours simply hither, will have the same Effect on our Bodies here, as that Wind which carried watery Vapours simply thither, notwithstanding they should blow from different Quarters.

On

* *Thevenot's* Travels, Part 2. Lib. 1. Cap. 20. and Part 2. Lib. 2. Cap. 16. Part 1. Lib. 2. Cap. 20. *Pri-deux* Connection, Vol. 1. Part 1. Lib. 1. Pag. 24.

On the other Hand, Wind blowing from one particular Quarter, is at the same time wholesome to one Country or Climate, and destructive to another, as many Authors prove; I need only to mention *Hollerius* *, who says, the South Winds are unwholesome to *Italy*, and to all the Northern Parts; but most wholesome to the Coasts of *Africa*; for the Benefit which the *Italians*, &c. receive from the *Etesiaë* †, that, the *Africans* receive from the South Winds, and *vice versa*.

Before we read that excellent Book of *Hippocrates*, it will be necessary to consider the Situations of the chief Places where he made his Observations, and compare them with that of ours.

Le

* *Libel. de Peste*, Pag. 577. N. B. There is about five Climates Difference betwixt the North of *England*, and the Islands where *Hippocrates* made his Observations.

† The *Etesiaë* are North Winds, which blow about the Rising of the Dog-Star, and continue about forty Days, cooling the Heat of the Sun; if they are wanting, the Season becomes unwholesome. *Hipp.* in 1 *Epid.* T. 7. and Cap. 3. *Epid.* T. 6. & *Lib.* 2. Sect. 3. 5. *Aph.* *Plin.* *Lib.* 2. Cap. 47.

Le Clerc says (a), *Hippocrates* made his Observations at *Athens* (b), *Cranon* (c), *Ænus* (d), *Æniades* (e), *Elis* (f), *Pheræ* (g), *Perinthus* (h), *Thasus* (i), *Abdera* (k), *Olynthus* (l), and *Larissa* (m), where he died, being Towns of *Thrace*

C and

(a) *Histoir. de la Medic. part 1. lib. 3. cap. 32.*

(b) *Athens*; the most famous City of all *Greece*, in *Attica*, *Hip. lib. 5. cap. 2. epid.*

(c) *Cranon*; a City upon the *Phthiotis*, *Magnesia*, and *Pelasgiotis*, not far from *Phera*, mention'd in *Cap. 2. Lib. 2, and 4, and 6 Epid.*

(d) *Ænus*; a City of *Thrace*, at the Mouth of the River *Hebrus*, next the Bay of *Melas*: It was formerly call'd *Abfinthus*, mention'd in *Cap. 2. Lib. 2, 4. 6. Epid.*

(e) *Æniades*; a City in *Ætolia*, at the Mouth of the River *Achelous*, right against *Ithaca*, the Kingdom of *Ulysses*, mention'd in *Cap. 2. Lib. 5. Epid.*

(f) *Elis*; a City in the Kingdom of *Elis*, in *Peloponnesus*, famous for the Celebration of the Olympic Games, mention'd in *Cap. 2. Lib. 5. Epid.*

(g) *Pheræ*; a City of *Thessaly*, in that Part of it call'd *Phthiotis*, by *Cranon*, mention'd *Cap. 2. Lib. 5. Epid.*

(h) *Perinthus*; a City of *Thrace* in *Propontis*, call'd afterwards *Heraclea*, mention'd in *Cap. 1 and 2. Lib. 2. and Cap. 3. Lib. 6. Epidem.*

(i) *Thasus*; an Island between *Neapolis* and *Abdera*, upon the Coast of *Thrace*, mention'd *Cap. 2. Lib. 1, 3, 6. Epid.*

(k) *Abdera*; a City upon the *Thracian* Coast, at the Mouth of the River *Nestus*, mention'd in *Cap. 2. Lib. 1. Lib. 3, 4, 5, 6, 7. Epid.*

(l) *Olynthus*; a City in *Chalcis*, between *Potidæa* and *Acanthus*, mention'd in *Cap. 2. Lib. 5, 7. Epid.*

(m) *Larissa*; a City of *Thessaly*, in that Part of it call'd *Pelasgiotis*, upon the River *Peneus*, mention'd in *Cap. 2. Lib. 1, 3, 5.*

and *Theffaly*, where he also wrote his Aphorisms (n); yet he was often at *Smyrna* (o), and sometimes in *Libya* (p) and *Scythia* (q).

Now by *Hollerius* (r) it appears, that their Southerly Winds, which came from the Sea, brought moist, cloudy, warm Weather, and are to them the most un-wholesome*: Do not our South Winds do the same?

* That Country being so very hot withal, makes that Wind more unwholesome than ours.

Their Northerly Winds are mostly cold, and dry, blowing along the Continent, and purifying the Air from these Vapours, and are therefore to them much whole-

(n) Jacob. Hollerius, Præfat. ad Comment. in Aph. Hippoc. pag. 2.

(o) Galen, Comment. 1. in Lib. de Articul. *Smyrna* is a City of *Ionía*, built by the *Amazons*, forty Miles from *Ephesus*, the Country of *Homer*.

(p) *Libya*; all the Country between the Kingdoms of *Tripoly* and *Ægypt* was formerly call'd *Libya*, or *Libya Exterior*; the rest between this and the Westernmost Parts, *Libya Interior*, mention'd Cap. 1. Epid. Cap. 3. Prognost.

(q) *Hieronymus Mercurialis*, Section in Medicin. Scriptorib. Lib. 2. Cap. 18. *Scythia* is now call'd *Tartary*, is divided into the *Asiatic* and *European*. That in *Asia* comprises a vast Quantity of Land about Mount *Imaus*; that in *Europe* lies about the *Euxine* Sea, and the *Palus Mæotis*.

(r) Comment. in Aph. Hippoc. Aph. Sect. 3. Aph. 8. Sect. 3. and Libell. de Peste, pag. 577.

wholesomer than any other: Do not our Northerly Winds the same? Hence we see that there is not so great a Difference as some would insinuate; therefore what *Hippocrates* says of their Winds, may be applicable, in a great Measure, to ours; as any one may be soon convinc'd of, if he will give himself the Trouble to examine impartially. I wou'd not have any one suppose, that I am arguing there is no Difference betwixt the two Climates; I only mean, they are much alike with Respect to the Winds.

It must certainly be allow'd by every one, that there are some particular Distempers more frequent in some Countries, than in others: Yet, on the other Hand, it is also evident, that Observations made in one Country, do agree, for the most part, with those made in another; altho', perhaps, not in every particular Point: And it is also evident, that the Change of the Air, either to hot or cold, wet or dry, or the like, will affect two different Climates in the same manner, in Proportion; *ex. gr.* suppose two Climates;

in the first, the Thermometer to stand at 20 Degrees, in the other, at 40; the Consequence will be, that upon either an Increase of Heat or Cold, the Thermometer in each Climate, will rise or fall in Proportion to the increas'd Heat or Cold; and for the same Reason, our Fibres will be relax'd or contracted; our Fluids rarify'd or condens'd; our Perspiration promoted or obstructed in the same Proportion: Hence we find Pleurifies, Peripneumonies, &c. are common to all Climates or Countries whatsoever; but yet we find they vary sometimes in some particular Symptoms, as well when we compare those in one Country with those in another, as when we compare those in one and the same Climate; hence it is very plain, that either on a sudden Ascent or Descent of the Spirit and Mercury in the Thermometer and Barometer, whether in Winter or Summer, our Bodies will be affected in different Climates alike in Proportion.

Moreover, if we accurately compare the Temperature of the Air, with the
Epi-

Epidemics that accompany it, describ'd by *Hippocrates*, and compare them with those Epidemics, in the same Temperature of Air, in our own Climate, we shall find them very much alike.

Hippocrates had neither Thermometer, Barometer, nor Hygroscope, to measure either the Heat, Weight, or Moisture, of the Air; yet none of his Successors have made such just and accurate Observations upon the Air, and its Effects, as he did: He judg'd only according to his Senses, which, with Respect to the Effects of Heat and Cold upon our Bodies, is a more certain Guide than the Thermometer; *ex. gr.* stagnant Water is, by the Thermometer, of the same Degree of Heat as the ambient Air; but, being apply'd to our Bodies, feels colder; so that the Air, abounding more or less with aqueous Particles, is *cæteris paribus*, colder or hotter to our Senses, the Thermometer still remaining at the same Height; for the greater Quantity of Matter is contained in the same Space, the Heat or Cold will be, in such Proporti-

on, greater to our Senses: Hence Water seems colder than Air; and, as Lord *Verulam* (s) observes, the Froth of any Liquor seems warmer than the Liquor it self; and the Powder of any solid Body, seems warmer than the solid Body it self, tho' the Thermometer still proves the Heat in each to be alike: The same may be said of Winds; for the greater the Impulse is, the greater, *cæteris paribus*, will be the Sensation of Cold *. However, these Helps, join'd to those of our Sensation, greatly assist us in making our Observations the more accurate (t).

* And Wind drives away the hot Steam that surrounds our Bodies, and thereby cool 'em.

§ 5. Ve-

(s) Hist. Nat. & Experiment. de Ventis, Cap. de Forma Callidi, pag. 143.

(t) Diseases caus'd by one particular Constitution of the Air, do not shew themselves very often 'till that Constitution is chang'd, which shews the Necessity of comparing their Successions, as Lord *Bacon* observes, in *Sylva Sylv.* Centur. 4. p. 213; and yet the same Cause does not affect all Constitutions alike:

*Limus ut hic durefcit, & hæc ut cæra liquefcit
Uno eodemq; igne* ———— Virg. Eclog. 8. Line 80.

But the Symptoms are various, according to their various Constitutions; nevertheless, as *Sydenham* informs us, one and the same Method in such Epidemics will, in a general Way, succeed; and where they first begin, there they first end, as *Sennerius* observes, *De Natur. Pestilent.* Cap. 1. pag. 372.

§ 5. Vegetables contribute very much towards the Salubrity, or Insalubrity, of the Air; as well when cut down and decaying, as when growing and in an healthful State; for we know that the most volatile Parts of all Vegetables will rise and evaporate, by a Degree of Heat, much less than that of the Sun in Summer; as we can prove, both by Chemistry (*u*), and also by our own Sense of Smelling: Hence we are convinc'd by these Means, as well as by Mr. *Hale's* Experiments (*w*), that Vegetables of all Kinds, while growing, emit Particles, which float in the Air, and which are either healthful, or noxious to human Bodies, according to their different Virtues. Mr. *Boyle* says (*x*), that the *Dutch* having agreed with the King (to whom the Island of *Ternate* belong'd) to fell almost all the Clove Trees that grew there, in order to raise the Value of that Spice: Such a Change of the Temperature

C 4

ture

(*u*) Chem. *Boerhaave*, Vol. 2. Process 1.

(*w*) *Hale's* Veg. Stat. pag. 49, 50. Expen. 17.

(*x*) Histor. of Air,

ture of the Air ensued thereupon, as shew'd the Exhalations of the Clove Trees preserv'd the Health of the Inhabitants; for soon after these Trees were cut down, the whole Island became exceeding sickly, which may be imputed to the corrosive and noxious Steams of a Vulcano there, the ill Effects of which, were formerly prevented by the aromatic Effluvia of those Spicy Trees.

Bonetus says (*y*), that sitting, or lying, under a Walnut, or Elder Tree, will cause a Pain in the Head, Vertigo's, Epilepsies, and Apoplexies; and that (*z*) the Effluvia of the Taxus and Oleander Tree are often fatal in the same Way; And also (*a*) the Flavour of the Flowers of Beans in the common Fields, is apt to bring a Relapse in those Persons who are subject to Madness. *Etmuller* tells us of a Person trading in Saffron, who, for the sake of saving some Duty, conceal'd a
Bag

(*y*) *Thesaur.* Vol. 3. pag. 568, 572.

(*z*) *Ibid.* pag. 581.

(*a*) *Ibid.* pag. 582.

Eag of Saffron so long under his Cloths, that it's Effluvia kill'd him. *Petrus Boellus*, in his Observations (*b*), mentions a Person, who being us'd to live and sleep near a great Quantity of Saffron, was at last so afflicted with a violent Pain in the Head, that he died. He says, he has heard, that Horses carrying Loads of Saffron, were so affected with it, as to piss Blood.

Some Kind of Vegetables are acescent, others are alcalescent; the first Sort, when cut down from the Roots, will, by fermenting, soon set loose their most vinous Spirits, Salts, and Oils (*c*); the latter, by putrefying, set at Liberty their most acrid, volatile Parts; as we see daily near great Gardens, where there are many Cabbages, Cauliflowers, Mustard Stalks, &c. thrown out on Heaps, which stink as ill as any putrify'd Carcase. Hence the Atmosphere is fill'd with the Spirits, Salts, and Oils of all Kinds of Vegetables.

All

(*b*) Observat. 35. Cent. 4. pag. 305.

(*c*) Chem. *Boerhaav*. Vol. 1. pag. 484, 485.

All Kinds of Vegetable Fewel in burning, sends all it's component Parts into, and mixes with the Air, except the Ashes and the fix'd Salt: Lord Bacon (d) gives us an odd Account of the Effects of such Things burnt in the Air, tho' at a great Distance; for he says, *Traditur, apud nos in Anglia temporibus, cum Gasconia esset hujus ditionis, exhibitum fuisse regi libellum supplicem, per subditos suos Burdigalia, & confinium; petendo ut prohiberetur incensio Ericæ in agris Suffexiæ, & Hamptoniæ, quia gigneret ventum circa finem Aprilis vineis suis exitiabilem.* Sailors can often tell they are not far from Land (when they are not able to see the Shoar) by the Flavours they smell.

*How the Air
is affected by
the Effluvia
from Animals.*

§ 6. Animals, whether living or dead, contribute very much towards clogging the Air with the most noxious Particles; for all their Parts, by Putrification, soon become volatile and acrimonious; this Sort of Air is the most unwholesome and
dange-

(d) Histor. Ventor. pag. 57.

dangerous, as we find by Experience: For the Inhabitants of those Countries, where several hundred Men have been slain in Battle, and left unburied, have soon after been violently afflicted with putrid Fevers, almost as pernicious as the Plague, and sometimes the Plague itself; an Instance of which *Augustinus* gives us (e), which happened at *Massanissa*, wherein 80000 Persons died; and at *Utica*, wherein 30000 Persons died of that Plague. *Livy* (f) mentions another Plague, which over-ran a great Part of *Italy*, and ow'd it's Rise to the dead Bodies of the *Romans* and *Fidenates* left unburied in the Field. That Plague in *Germany* in 1630 sprung from the same Cause; as also that mentioned by *Ambrosius Paræus*, 1562 (g); and another was occasioned by great Quantities of Locusts, driven by the Winds into the Sea, and thence, by the Waves, cast up in Heaps on the Shoar, where they putrefy'd, as *Diodorus Siculus* informs us; hence we see

(e) Lib. 3. de Civit. Dei, cap. 31. Sennert. de Peste, lib. 4. cap. 2. pag. 386.

(f) Histor. Roman.

(g) Opera. Lib. 21. de Peste.

see a very substantial Reason for obliging all Persons to bury their dead Cattle, &c.

The Atmosphere abounds with the Perspirations of all Animals, as well as with the Effluvia of all their other Excrements; all which, are no less pernicious than the Effluvia from the above-mention'd Things. Human Perspiration, by Mr. *Hales*, (*b*) is computed at $\frac{1}{50}$ Part of an Inch in 24 Hours; and the Quantity of Moisture, by Respiration from the Lungs, he computes at 9792 Grains, or 1. 39. in 24 Hours (*i*); the Surface of the Body he computes at 2160 square Inches, or 15 square Feet; And Dr. *Langrish* says (*k*), the Effluvia of human Bodies are extremely corruptible; and less than 3000 Creatures, living within the Compass of an Acre of Ground, would make an Atmosphere of their own Steams, about 71 Feet high, in 34 Days; which, if not dispersed by Winds, would turn pestiferous in a Moment; from whence

we

(*b*) *Veget. Stat.* pag. 11. cap. 1. exp. 1.

(*i*) *Hæmast.* pag. 326. sect. 5. pag. 328. sect. 7.

(*k*) *Mod. Theor. and Pract. of Physic*, pag. 354.

we may infer, that living in great and populous Cities, or in Camps, or near a Number of dead Carcasses, may dispose the Air and human Bodies to putrid and malignant Fevers; which is prov'd by Experience; for the Plague, which broke out at *Athens* (l), *Anno Mundi* 3574, was greatly increas'd, if not caused, by the crowding and keeping so many Country People in a Town; in that they were forc'd, now in the Heat of Summer, to dwell many of them together idle, in little Tenements and sultry Hovels (the Country at that Time being ravag'd by *Archidamus*) when, as before, they liv'd in a pure, open, and free Air. And that Plague at *Rome*, *Anno Urbis Condit.* 291, mention'd by *Livy*, was increas'd by the same Means (m).

Great

(l) Plutarch. Vit. Peric. pag. 565. *Rollin's* Ancient Hist. Vol. 3. pag. 351. *Thucyd.* Lib. 2. pag. 130, 147. *Diod. Sicul.* pag. 101, 102. *Hippoc.* Epid. Lib. 3. Sect. 3.

(m) Hist. Roman. Decad. 1. Lib. 3. pag. 158. *Grave tempus, & forte annus pestilens erat urbi agrisque, nec hominibus magis quam pecori; & auxere vim morbi terrores populationis, pecoribus agrestibusque in urbe acceptis, ea colluvio mistorum, omnis generis animantium, & odore insolito urbanos, & agrestem consortium in arcta tecta aestu ac vigiliis augebat.*

Great Care ought to be taken, to prevent the opening of old Burying Places, especially those, wherein they who died of the Plague were interr'd ; for we find a fatal Instance of it in *Ammianus Marcellinus* (n): *Milites fanum senitantes invenere foramen angustum : quo reſerato ut pretioſum aliquid invenirent, ex adyto quodam concluſo a Chaldeorum arcanis labes primordialis exiit, quæ inſanabilium vi concepta morborum, ejuſdem Veri Marci- que Antonini temporibus ab ipsis Perſarum finibus, aduſque Rhenum & Gallias cuncta contagiis polluebat & mortibus.* In this Temple of *Apollo*, at *Seleucia*, it was ſuppoſed they had buried their Soldiers.

How the Air
is affected by
the Ova of
Inſects floating
in it, and in
Water.

§ 7. The Ova of Inſects, nay, and ſometimes Inſects themſelves, which are continually floating in the Air, and are ſo ſmall, as to be inviſible, even by the Aſſiſtance of the beſt Microſcopes, render the Air unwholeſome ; this is an Inconvenience, which almoſt conſtantly attends

(n) Hiſt. Lib. 23. pag. 251. Riolanus Method. Medend. Cap. 19. Lib. 2. Schenk. Obſerv. Lib. 7. Obſerv. 1.

tends marshy Grounds, where we always find great Quantities of Flies and Insects, which, as *Varro* says (o), are sucked in with our Breath, and swallow'd with our Food; whence proceed bad and obstinate Diseases. Whether this be really so, I shall not dispute; but the frequent cutaneous Eruptions in these Places, many of which contain Worms exceeding small, render it not altogether improbable: For the numerous Ova of these, and other Insects, are latent in their Food, and Drinks; which, in weak Digestions, not being destroy'd, will pass farther into the Body than the *Primæ Viæ*; where, meeting with a proper *Nidus*, various Animals will be produc'd; which, by getting into the small Vessels, will there cause Obstructions, Inflammations, Fevers, &c. Worms and Maggots in Tumors and Ulcers, as in that Girl at *York*, mentioned by *Dr. Lister* (p); the Long Worm of the *East Indians*, occasioned by the Water betwixt *Gomron* and *Schiraz*, especially about *Laur*, six or seven

(o) Terent. *Varro de Rustic. Lib. 1. Cap. 12.*

(p) *Philos. Trans. Numb. 95. pag. 60, 64.*

seven Yards long (*q*); as also at *Bander-Congo*, and *Bander-Abassi* (*r*). In *Persia* the Worms are like Fiddle-strings, 20 or 30 Spans long, which are bred in the Muscles of the Body: They are imputed to the bad Water, which is kept in Cisterns; for, during the Winter, it only rains three or four times, and not above an Hour or two at a time; and even then the Air is foul, because of the many Exhalations, which are constantly arising. At *Jalofes* and *Foules* (*s*), in *North Guinea*, the Worms in the Flesh are four or five Feet long; and on the Coast of *South Guinea* (*t*), the Worms are called *Ikkon*, of about an Ell and Half long, and as thick as a Raven's Quill, as Mr. *Barbot* was an Eye-witness of, in one of the Slaves on board their Ship. The Inhabitants are forced to drink Pit Water, especially those of *Ormus*, *Monree*, and *Cormintin*,

(*q*) *Philos. Transf. Numb. 225. pag. 417.*

(*r*) *Dr. John Francis Gemelli Careri's Voyage round the World, Part 2. pag. 171. Lib. 3. Cap. 2.*

(*s*) *John Barbot's Description of Nigritia, or North Guinea, pag. 32. Lib. 1. Cap. 2.*

(*t*) *Barbot's Description of South Guinea, Lib. 3. Cap. 22. pag. 278, 279.*

Cormentin, who are afflicted with this Worm-distemper more than in any other Parts of this Coast: But yet, what more contributes to their Increase, besides the ill Food and bad Water, are the excessive and malignant Rains and Mil-dews of the cool Evenings; for they are more afflicted with this Distemper in the rainy Month of *August*, than in any other, the Rain being then so corrosive, as to rot woollen Cloth in three Days, if not prevented by drying at the Fire immediately, which the above-mentioned Author himself observ'd: Such a Sort of Rain as this, was that mention'd in *Act. Lip. (u)*, for the Drops were very large, and, if they fell upon the Skin, they corroded it; if upon the Cloths, there soon appear'd little creeping Worms. At *Sierra Leona (w)* in *Guinea*, the Inhabitants are forc'd to keep within their Huts, during the Rain in *June* and *July*, which in an Instant breeds Maggots; it being also at that Time excessive hot.

D

Mr.

(u) *Act. Lips. Suppl. Tom. 1. pag. 425.*

(w) *Barbot's Description of Sierra Leona, Lib. 2. Cap. 2. pag. 102. and Act. Lips. Tom. 1. pag. 425.*

Mr. Thomas Henshaw (x) observ'd, that several Kinds of Insects bred in *May-Dew*, some are like *Millepedes*, some like small *Flies*, with large *Wings*, such as are usually seen in *Swarms* in a *Summer's Evening*; and others were at first like *Tad poles*, but much less, with great *Heads*, and small tapering *Bodies*, and which soon chang'd into *Gnats*, leaving their empty *Skins* floating on the *Surface* of the *Dew*. All these *Ova* existed in the *May-Dew*, and yet were invisible: We often see, when the *Leaves* of *Trees* are clammy, great *Numbers* of very minute *Animals*, every *Day* increasing in *Bulk*, which must be from the *Ova* floating in the *Air*, and which, adhering to these clammy *Leaves*, find there a proper *Nidus*.

*How the Air is
affected by Mi-
neral Exhala-
tions.*

§ 8. Now let us proceed to the *Fossil* and *Mineral Exhalations*. The *Generality* of these are much more pernicious to *Mankind*, than either of the *Sorts* above-

(x) *Philos. Trans. Abrdg. Vol. 2. pag. 142.*

above-mention'd: For both *Mezeray* (y) and *Boyle* (z) say, that the Plague, which was so very fatal in the Year 1346, begun two Years before in the Kingdom of *Cathay*, by a Vapour most horribly foetid, which broke out of the Earth, like a subterranean Fire, and consum'd the whole Country for above 200 Leagues, and infected the Air in a wonderful manner: From *Cathay* it passed into *Asia*, *Greece*, *Africa*, and afterwards through all *Europe*. *Petrus Borellus* (a) says, that before the Plague broke out in 1629, they observ'd darkish Clouds in the Mornings and Evenings; which, after Sunrise, disappear'd 'till after Sun-set, and then appear'd again. *Daubigne* says (b), the same was observ'd at *Beavais*, in *France*, before that Plague broke out. And *Riverius* says (c), that a Comet appear'd in the East about November 27,

D 2

1681,

(y) *Histoire de France*.

(z) *Treatise of the Salubrity and Insalubrity of the Air*, Prop. 8. pag. 69.

(a) *Observ.* 21. Cent. 1. pag. 27.

(b) *Hist. Franc.* Cap. 2. Tom. 3. *Pet. Borell.* *Observ.* 21. Cent. 1. pag. 27.

(c) *Lib. de Feb. Pest.* Cap. 1. pag. 448.

1681, and was the Fore-runner of pestilential Diseases.

These Fumes, or Vapours, come out of the Ventiducts, Passages, or Clefs, in particular Grounds; one of which Dr. *Tancred Robinson* (d) mentions in *Peroul*, near *Montpelier*, at the boiling Fountain; where he saw those little Passages, out of which the Steams issued.

Some of these Fumes are hot, and some will flame upon applying a Candle to 'em; as that near *Wigan* in *Lancashire*; one near *Grenoble* in *Dauphine*; another near *Hemanstadt* in *Franconia*; another at *Chermay* in *Switzerland*; another not far from *Cracovia* in *Poland*.

Dr. *St. Clair* says (e), that on a Side of one of the *Appennine* Mountains, half way betwixt *Bologne* and *Florence*, near a Place call'd *Petra Mala*, about five Miles from *Fierenzola*, there is a Spot of Ground three or four Miles in Diameter, which

(d) *Philos. Transf.* Vol. 2. pag. 349.

(e) *Ibid.* Vol. 2. pag. 385.

which incessantly sends up a Flame, rising very high, without Noise, Smoak, or Smell, yet is very hot; and is always so, except in great Rains, which put it out for a small Time; but as soon as the Rains are over, it burns with greater Vigour and Heat than before. Mr. *Maurice Jones* (f) mentions just such another at *Harleck* in *Merionethshire*, that spoil'd all their Grass, and burnt their Hay; and that in the Neighbourhood there are three small Tenements, call'd *Tydbin*, *Sion*, *Wynn*, where the Grass is so infected, that it absolutely kills all manner of Cattle that feed on it.

Damps, Fumes, or Vapours, are very rife in Countries where there are many Mines of any Kind whatsoever, thereby occasioning Thunder, Lightening, Storms, and nocturnal, fiery Meteors, more frequently than in other Places, as Mr. *Joseph Glanvil* says (g), in his Account of the Lead Mines in *Somersetshire*. He also observ'd, that where the Veins of

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the

(f) *Philos. Trans.* Vol. 2. pag. 101.

(g) *Ibid.* Vol. 2. pag. 385.

the Mines came near the Surface of the Ground, there the Grass was yellow and discolour'd. At *Facklun* in *Sweden*, noted for one of the best Copper-Mines in that Kingdom, the mineral Exhalations affect the Air so much, that their Silver Coin is frequently discolour'd; nay, sometime turn'd black, tho' close tied up in Bags. *Boyle* says (*b*), he observ'd that the Trees and Herbs grow and thrive much better in the Western Parts of *England*, where the Tin-Mines are, than in any other Soil in the Neighbourhood; and it is also a common Observation, that the Tin-Miners live long, and are healthy. He also observ'd (*i*), that in riding over Soils, wherein there are Beds of Minerals and Fossils of various Kinds, as they cross'd their Veins, or Beds, they found in some offensive, in others pleasant and agreeable Smells. I believe there are few, who have not frequently observ'd thick Fogs arising in Veins, or Lines, in one Part of a Field, while the other is serene

(*b*) Treatise on the Causes of the Salubrity and Insalubrity of the Air, Prop. 1. pag. 6.

(*i*) *Ibid.* pag. 11.

ferene and clear; and also that these Fogs have various Kinds of Odours, according to the Place whence they arose: Those (as we observ'd above) from Tin-Mines, are wholesome; and the Steams from a Mine in *Hungary*, where they get an Oar call'd *Rot Gulden erts*, are so refreshing, that People choose to enjoy 'em in taking the Air; but those from most other Places are unwholesome, and are thereby the Causes of many Diseases; which is sufficiently prov'd, by what happens to the Miners, and Workers of what comes out of the Mines; *ex. gr.* Mercurial Vapours induce Tremors, Gripings, Vertigo's, Asthma's, Palsies, and Hectics (*k*): The Miners, Dr. *Walter Pope* tells us (*l*), can't well stay under Ground above six Hours at one time: And *Fallopius* observ'd (*m*), they scarce ever outliv'd three Years, mostly dying paralytic and hectic. The above-mention'd Dr.

D. 4

Pope

(*k*) *Wainwright*. Non-nat. pag. 82. *Schenkii*. Observ. Med. Lib. 7. pag. 891. De Venenis ex Fossilibus & Metallicis. Observ. 2, 3, 4, 5, 6. *Hornung*. Cist. Med. Epist. 125. Fol. 280. *Fernelius*, Cap. 7. de Lue Venerea. *Ramazani* de Morb. Artif. Cap. 1. pag. 277. Cap. 2. pag. 282. Cap. 3. pag. 285.

(*l*) *Philos. Transf.* Vol. 2. pag. 579.

(*m*) *Tract.* de Metall. & Fossil.

Pope says, he saw a Man, who had not been in the Mines for above half a Year before, yet was so full of Mercury, that holding a Piece of Brass in his Mouth, or rubbing it betwixt his Fingers, it immediately became as white, as if it was rubb'd with Mercury it self.

Lead Miners, and Workers of the Oar, are subject to Pains in the Stomach, with exceeding Contortions of the Guts, and Costiveness, that yields not to Cathartics, hardly to often repeated Glysters, but best to Lenitives: They are also subject to acute Fevers, Asthma's, Vertigo's, great Pains in the Brows, Blindness, Want of Appetite, and frequent Vomitings; most Miners of the metalline Oar are subject to Dyspnæas, Phthises, Apoplexies, Obstructions, Incubus, hypochondriac and melancholic Diseases, Ulcers (*n*) in the Gums and Skin, and falling out of the Teeth, &c. Fumes of Coal, Sulphur, and bitumi-

(*n*) Ramaz. de Morb. Artif. Cap. 1. pag. 277. Baglivi. Prax. Med. Lib. 1. Cap. 15. Sect. 3. pag. 142.

bituminous Bodies (*o*), cause Suffocations, Asthma's, Hypochondriacs, &c. The Vapours of Coal-pits (especially upon opening an old one) are very fatal, scarce giving Warning, excepting that sometimes the Miners can perceive the Flame of their Candles to change to a blue Colour, a few Seconds before the Fumes burst into open Flames, which is only one Flash, and kills instantly (*p*): I have seen two or three of these unfortunate Miners a few Hours after they were kill'd, some of which seem'd to have no external Injury; others sensibly burnt, both in their Cloths and Bodies. Hence we see, from what has been said, that a manifold Variety of Exhalations are prepar'd in, and constantly flying out, from the several Reconditories below, causing various Kinds of Epidemics, and the Plague itself; which is still farther confirm'd, in that they generally succeed Earthquakes, as *J. a' Felde* and many others

(*o*) Joan. Caius, Lib. de Ephem. Brittan. Plin. Nat. Hist. Lib. 31. Cap. 3. Philos. Transf. Numb. 3. pag. 41. Numb. 48. Numb. 117. pag. 392. Numb. 136. pag. 893.

(*p*) Anton. Guaineras de Pelle, Cap. 1.

others observ'd (q); and a sort of Plague was caused by a subterraneous Fire, reaching from Port (r) *Santorini* to *Chio* and *Smyrna*; *Santorini* was by this means so infected, that abundance of People were kill'd, and many lost their Sight there, though they recover'd it in a few Days afterwards: And at *Chio* and *Smyrna* all the Coin was changed red, as well that lock'd up in Chests, as that in their Pockets. Some of those Vapours are cold, as those near *Peroul*, and in the Caverns of Mountains; especially those of *Æolus*, and other Hills in *Italy*: And Lord Bacon says (s), *Notavit Acosta, Op-pida Platæ & Potosæ in Peruvia, non longe esse distantia, & utrumque situm esse, in terra elevata aut montana, ut in hoc differant; & nihilominus habere Potosam temperaturam aeris frigidam & hyemalem, Platam clementem & vernam: id quod videtur argenti fodinis juxta Potosam attribui posse; quod demonstrat esse spiracula terræ, quatenus ad calidum & frigidum:*

(q) Tract. de Peste, pag. 103.

(r) Voyage to the *Levant*.

(s) Hist. Ventor. pag. 40.

frigidum: Other Vapours are inflammable, and actually warm, as those near *Wigan*; others are sulphureous, as those from the Vulcano's near *Naples*, *Baja*, and *Puzzuola*, &c. others are arsenical, as in the Grotto *Del Cani*, in some Mines in *Carniola*, *Campania*, &c. and at the *Cape of Good Hope*.

I know there are some Persons, who will not believe, that fossil and mineral Particles can be made so volatile, as to ascend into Air, by any Heat no greater than that of the Sun on our Globe; but Chemistry proves they do by many Instances (*t*); for we find that Sulphur will not only rise it self, but also take along with it other Particles; as will also Mercury; we know also that there are, and we daily meet with suffocating Fumes in Ditches, which will burn with a Candle; nay, we have an Instance of a sulphureous Rain with Thunder, which burnt, and could not be extinguished, either by Water, or Motion (*u*): And
Boerhaave

(*t*) Boerhaav. Chem. Vol. 1. pag. 492.

(*u*) Nov. Literar. Annq., 1684. pag. 63.

Boerhaave says (w), *Ros sane in certa telluris plaga collectus, destillando liquorem dedit, qui vitro colorem penetrabilem iridis impressit, nec aqua stygia, nec lixivio alcalino, nec frictione debilem; ipseque hic liquor inflammabatur instar spiritus vini, ut in experimentis chemicis recitatis (x). Ros iterum destillatus, octiduo leni tepore digestus, iterata destillatione sexies subtilior redditus, tria dicitur vasa vitrea fregisse, insipidus permansisse prorsus, licet quam maxime tenuis meros spiritus referret (y).*

And Mr. Robert Vans tells us (z), that at *Tipperary, Limerick, and Kilkenny, November 16, 1695*, they had Showers of a sort of Matter like Butter, or Grease, which, if rubb'd upon the Hand, would melt, but, if laid by the Fire, would dry and grow hard, having a very stinking Smell; it was soft, clammy, and of a dark yellow Colour; always fell in the Night, and chiefly in moorish, low Lands;

(w) Chem. Vol. 1. pag. 471.

(x) Literar. Tom. 1. pag. 590.

(y) Ibid. Anna 1708, pag. 152.

(z) Philos. Transf. Vol. 2. pag. 143.

Lands; 'twas seldom observ'd in the same Place twice; most of that Season they had stinking Fogs. These Fumes are not rais'd, as some imagine, by the Heat of the Sun alone, but also by subteraneous Fires, Frictions, Mixtures, &c. which is confirm'd by Labourers in deep Mines, who say, that when they descend only a few Fathoms, they find themselves much colder; afterwards, as they descend lower, the Heat increaseth, inso-much that they are forc'd to work without their Cloths. Mounseur *Le Givre*, says (a), in digging he has often found the mineral Fluid drilling through small Conduits, and about the Consistence of Oil; he also tells us the various Degrees of Consistence and Solidity, according to it's being more or less expos'd to the Air: I doubt not, but as this Fluid grows of a thicker Consistence, all the most volatile Parts evaporate with the Water.

There

(a) Memoir. de L' Acad. des Scienc. 1704, 1705; 1706. Boerhaav. Chem. Vol. 1. pag. 617.

There are also saline Particles in the Air, and which help to dissolve Metals, as we see in old Window-Bars, which waste and decay in Time; and at *Bermuda* the Tops, or Coverings, of the Houses are decay'd, as well as Metals, by the corroding Quality in the Air (*b*).

At what Season of the Year the Air is fill'd with most salubrious, or insalubrious Particles.

§ 9. The Air thus abounding with such a Diversity of Effluvia and Exhalations, affects our Bodies, according to the various Natures and Qualities of such as are most predominant; which are somewhat different, according to the different Seasons of the Year: Thus, *ex. gr.* in the Spring, the Air being impregnated with the salubrious, aromatic Effluvia of the opening Flowers and Spring Plants, will be more vivifying and refreshing, than the Autumnal Air, which is loaded with noxious Steams of putrefying Vegetables; which, unless quickly dispers'd by Winds, most frequent at that Season, would soon produce very mischievous Effects.

§ 10. There

(b) Boerh. Chem. pag. 494. Vol. 1.

§ 10. There is something in the Air, ^{The vivifying Spirit of Air.} which is necessary to preserve Life and Health; for Air not only cools and dilates the Lungs, whereby it intimately mixes the Blood, but also supplies the Blood with something, without which, Life can no longer exist, and without which Fire goes out; hence it is by some call'd, a vivifying Spirit, by others, Nitro-Aerial Particles: But, be it what it will, every time the Air passes out of the Lungs of an Animal, part of this vivifying Spirit is either destroy'd, or left behind; for an Animal will die, as well for want of fresh Air, as for want of Air it self (c); for Mr. Hales says (d), two Gallons of Air will, in two Minutes and a Half, become unfit for Respiration; and in another Place he says (e), that 74 cubic Inches of Air would scarce last him a Minute, for the Elasticity of the Air is thereby in a great measure weaken'd,

(c) Philof. Trans. Abridg. Vol. 2. pag. 230, 234. and Hauxbee's Experiments.

(d) Hæmaft. Vol. 2. pag. 324. Exper. 6. Sect. 3.

(e) Hale's Static. Effays, Vol. 1. Exper. 108. pag. 238.

weaken'd, as well as the vivifying Spirit (*f*); hence we see one Reason of fainting often in very hot Weather, and Briskness in frosty Weather.

All Vapours whatsoever incommode Respiration proportionably; some of which not only contract the Lungs, but also weaken the Air's Elasticity; which it will in a great measure regain, by having those Vapours dispell'd by the ventilating Motion of the free, open Air, which is render'd wholesome by the Agitation of the Winds; thus what we call a close, warm Air, such as has been long confin'd in a Room, without having the Vapours carried off by communicating with the open Air, is apt to give us more or less Uneasiness, in Proportion to the Quantity of Vapours, which are floating in it; thus many of those who have weak Lungs, but can breath well enough in fresh Country Air, are greatly incommoded in their Breathing, when they come into large Cities, where the Air is full

(*f*) Verulam. Hist. Vitæ & Mortis Connex. ad Articulu. 15. pag. 389.

full of fuliginous Vapours, arising from innumerable Coal-fires, and Stenches from filthy Lay-stalls and Sewers; and even the most robust and healthy, in changing from a City to a Country Air, find an exhilarating Pleasure, arising from a more free and kindly Inspiration, whereby the Lungs being less loaded with a clogg'd Air, and Vapours; and also the Vesicles being more dilated with a clearer and more elastic Air, a freer Course is thereby given to the Blood; and this is one Reason why in the Country a serene, dry Constitution of Air is more exhilarating, than a moist thick Air.

When we reflect on the great Quantity of elastic Air, which is weaken'd by sulphureous Fumes, it seems not in the least improbable, that when an Animal is kill'd by Lightning, without any visible Wound, that it may be done by the Air's Elasticity being instantly destroy'd by sulphureous Lightning near the Animal, whereby the Lungs will fall flat, and cause sudden Death; which is far-

ther confirm'd by the Flatness of the Lungs of such Animals, their Vesicles being found, upon Dissection, to be fallen flat, and to have no Air in them; the bursting also of Glass Windows outwards, seems to be from the same Effect; the certain Death, which comes on the Explosion of the Vapours in Mines, seems to be effected in the same Manner; for tho' at first there is a great Expansion of the Air, which must dilate the Lungs, yet that Air is no sooner fill'd with fuliginous Vapours, but a great Part of its Elasticity is immediately weaken'd; which Steams have, doubtless, the same Effect on the Air in the Lungs of Animals, as those in the *Grotto del Cani*, or when a close Room is fill'd with them, where they certainly suffocate: Hence we see the Folly of some, who are for almost stoving up their Patients in close Beds, the Curtains being drawn close, as well as the Doors and Windows shut; nay, and perhaps a great Fire in the Room at the same time, more especially in the Small Pox, a Practice too frequent with many.

We know also by Experience, that even fragrant Smells will so affect some hysterical Women, as to throw them into a Syncope: And there is no Constitution which some Smell or other will not disorder; and what a strong Smell will do suddenly, a faint one may do in Time: And, though Custom may abate the Sense of it, as in Tallow-Chandlers, Leather-Sellers, and Tanners; yet, by Degrees, it will operate effectually, to produce a Change in the Constitution, either for the better, or the worse, according to the different Subjects it hath to work on; hence Distempers are more frequent and dangerous in Cities, than in the Country; and the great Mortality, that is so often in Camps, as has been before observ'd in § 6. is commonly owing to the same Cause: Hence we see the Reason of this Caution given to the Jews (g); *Thou shalt have a Place also without the Camp, whither thou shalt go forth abroad, and thou shalt have a Paddle upon thy Weapon,*

E 2 pon,

(g) Deuteronomy, Cap. 23. Ver. 12, 13.

pon, and it shall be, when thou wilt ease thy self abroad, thou shalt dig therewith, and shalt turn thee back, and cover that which cometh from thee.

*The Effects of
the various
Temperatures
of the Air.
1st. of Hot.*

§ II. Let us now proceed to consider the Effects of the various Changes of the State or Temperature of the Air, whose Rarety makes it more liable to the Changes of Heat and Cold, than any other Fluid.

The Air, or Atmosphere, affects us, either as it is too hot, or too cold, too wet, or too dry, too heavy, or too light.

The Heat of Air near the Earth, in some Measure, depends on the Surface of the Earth, which in some Places retains Heat, more than in others: Black Earth imbibes the Sun's Rays; white, reflects 'em; hence black Earth is warmer, but the Air above it colder; and the white Earth is colder, but the Air above it warmer, by the Reflection of the Sun's Rays. Boyle (b) tells us, that in riding
over

(b) Account of Teneriff.

over a Bed of Sand on the Side of Mount *Teneriff*, he found it so heated by the Reflection of the Sun's Beams from the Rocks above, that it burnt the Feet of a Dog as he passed over it, tho' in every other Part of the Mountain, they and their Horses were almost starv'd with Cold. The Heat of the Island *Ormus*, which lies beyond the Tropick of *Cancer*, is so intolerable at some Time of the Day, by the Reflection of the Sun's Beams from the white Mountains of Salt, that the Inhabitants are forc'd to immerge themselves in Water. The Air is also heated by the Fermentation of the various Kinds of Exhalations that arise out of the Earth, as may be plainly demonstrated, by only mixing sulphureous, aqueous, and chalybeate Particles: May we not then, and with good Reason, conclude, that the irksome Heat which we feel, in a close, sultry Temperature of Air, is occasion'd by the intestine Motion of such like Vapours, when there is no Wind to disperse them? I think the common Observation, that Lightening cools the Air, confirms it, that being the

utmost and last Effort of the Effervescence. What yet confirms me the more in that Opinion, is the Warmth of the Earth at some Depth under Ground (which is occasioned by some such Vapours fermenting there) has so great an Influence in promoting a Thaw, as well as the Change of the Weather from a freezing, to a thawing State; as is manifest from this Observation of Mr. *Hale's* (i), viz. “ November 29, 1731, a little Snow having fallen in the Night, it was by 11 o’Clock next Morning mostly melted away on the Surface of the Ground, except in several Places in *Bushy Park*, where there were Drains dug and cover’d with Earth, where the Snow continu’d to lay, whether these Drains were full of Water, or dry, as also where Elm Pipes lay under Ground; a plain Proof that these Drains intercepted the Warmth of the Earth, from ascending from greater Depths below them; for the Snow lay where Drains had more than four Feet Depth of Earth over ’em: It continu’d also to lay on Thatch, Tiles, and

(i) *Hæmastat.* pag. 360. *Appen. Observat.* 13.

and on the Tops of Walls.” And the same I observ’d the last Winter, in some Grounds in our Neighbourhood, wherein there are several Drains and Soughs from Coal Mines. And we observed before, that Miners were often forc’d to work without Cloths.

Heat, but yet not so great as to destroy Animal Solids, rarifies the Humours and weakens the Fibres; whence proceeds the Sensation of Faintness and Debility; and whence languid and hysteric People suffer many Inconveniences in a hot Day; the Fluids are expanded, as is evident to the Sight and Touch, for the external Vessels are plumper in hot than in cold Weather; the Quantity of Perspiration, both sensible and insensible, is, *ceteris paribus*, greater or less, according to the different Degrees of Heat, as *Sanctorius* shews us (*k*): Hence the thinner Parts of the Blood are wasted; whence Obstructions in the small Glands and Capillary Vessels, Inflammations, Thirsts,

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Stran-

(*k*) *Sanct. Med. Stat. Aph. 2, & 41. Sect. 2.*

Stranguries, hot and red Urine, divers acute Distempers, biliose Fevers, and Cholera Morbus, continual and ardent Fevers (*l*), attended with Hæmorrhages, biliose Vomitings, and Loofenesses, and also Plagues (*m*): Hence Inhabitants of hot Countries should use most commonly cooling, subastringent, diluting Diet, and frequently use cold Bathing. Dr. *Boerhaave* (*n*) relates the remarkable ill Effects of breathing in a very hot Air; for he put a Sparrow into a Sugar-Baker's drying Stove (the Heat of which was so great, as to raise the Mercury in *Farenheit's* Thermometer to 146 Degrees; that is 48 more than the natural healthy Heat of the Blood in a Child) he put, I say, a Sparrow into it, which, in about a Minute and half, express'd a great Uneasiness, and died in seven Minutes. A Cat also being put in, express'd a great Uneasiness in a Minute, and died in about sixteen Minutes: It was as wet with
Sweat,

(*l*) *Wintringham. Nosolog. Com. pag. 32.*

(*m*) *Livy. An. Urb. cond. 363. pag. 348. — Pestilentiamque ex Agro Romano ex siccitate caloribusque nimis ortam.*

(*n*) *Element. Chem. Vol. 1. pag. 175.*

Sweat, as if it had been dipt in Water. A Dog being put in, begun to pant much for Breath in seven Minutes, and in a Quarter of an Hour exprefs'd very great Uneasiness; soon after which he grew faint, and died in twenty-eight Minutes; he drivell'd all the Time, a great Quantity of red Foam (o), which stunk so intolerably, that a strong, labouring Man, who went near it, was almost struck down in an Instant with the Stench. *Boerhaave* observes in this Experiment, the dire Effects of this Degree of Heat; how soon it brought a most acute Disease, with very violent and mortal Symptoms; how suddenly the Humours were changed, the Oils, Salts, and Spirits in the Dog, being thoroughly putrefy'd in twenty-eight Minutes; and his Saliva so putrid, as to stink worse than the rottenest Carcase: He also justly observes, that these were not the mere Effects of the Heat of the Stove; for if the Flesh of a dead Animal had been hung up there, it

(o) Does not this shew to what a Degree the Humours are rarefied and the Vessels relax'd, when the very Foam is red?

it wou'd have dried, and not turn'd into a pestilential Corruption; which must therefore arise from the Friction caus'd from the Motion of the Blood in the Lungs, and being in this Case not at all refrigerated.

*2dly. of cold
Air.*

§ 12. Cold Air, by contracting the Fibres, increases the Elasticity of the Vessels; hence their Actions upon the contain'd Fluids are increas'd, and that in Proportion, as those Vessels are more or less contiguous to the Air: The external Vessels therefore, being more contracted by it than the internal, the Fluids must necessarily be forc'd in greatest Quantity into those internal Vessels; the Secretions therefore, from the internal Vessels, will be proportionably increas'd; a larger Quantity of Matter will be thrown upon all the Glands, which will cause Pains and Tumors, wherever there happens an Obstruction, or Defect in the excretory Duct.

A Change to a cold Air likewise, by contracting the cutaneous Pores, diminishes

nishes Perspiration; the more gross Parts whereof, being too long detain'd near the Skin, causes cutaneous Eruptions; or else, being determin'd upon the Intestinal Glands, causes Cholics, Gripings, Diarrhæas, or the like; by contracting the excretory Ducts of the Glands in the Fances and Lungs, causes Hoarsness, tickling Coughs, Defluations upon the Lungs, Ulcerations, and Pulmonic Consumptions, Pleurifies, Peripneumonies, and Rheumatic Pains. But in such a Climate, whose Temperature of Air is cold and dry, the Inhabitants are strong, sanguine People, their Fibres, by their greater Elasticity, promote a free Discharge of the insensible Perspiration; and their Blood is more dense, and of an inflammatory Disposition; for that accurate Observer of Nature, *Leewenboek*, has shewn us, that the largest red Globules of the Blood are made up of six smaller Spheres, cluster'd together in a very regular manner; and that so nicely, that in a perfect Globule the Composition comes to be imperceptible. He assures us also, that he saw Globules in the Blood
much

much less than those which compos'd the red Globules; so that the stronger and more elastic the Vessels are, the denser and more inflammable the Blood is; and this is what we call an inflammatory Viscidity, or a pleuritic State of the Blood. On the other Hand, if the Vessels be weak and lax, and the Circulation flow and languid, then the Blood, being an elastic Fluid, will expand it self, and be less compact, more rare, and abound more with Serum, will be viscid and indigested: In the first State, People are subject to all Kinds of Febrile Disorders; in the last, to all Kinds of chronic Diseases, as Lencophlegmatias, Anasarcas, Consumptions, or the like. Hence we see that the Inhabitants of such a cold Climate, whose State of Air is such as now describ'd, ought to use such Food as will attenuate; they should also use warm Baths, warm Frictions, and moderate Exercise.

*The Effects of
moist Air; and
of dry Air.*

§ 13. Moisture weakens the Elasticity of the Air, as has been mention'd before; moist, foggy Air, by hanging too much

much upon the Skin and Vessels, will weaken their Tone, and will hinder a proper Discharge of the perspirable Matter, as *Sanctorius* shows (*p*); and more particularly weakens those of the Lungs; hence the Viscidity of the Blood will not be sufficiently broken; whence Coughs, Catarrhs, Pulmonic Consumptions, Asthmas, Peripneumonies, Pleurifies, Headaches, Dulness and Stupidity, Epilepsies, Apoplexies (*q*), Hoarseness, cutaneous Eruptions, pale and languid Complexions (of such are the *Phasians* mention'd by *Hippocrates* (*r*), for their Country is low and marshy, the Air thick and moist) they have weak Appetites, are subject to scorbutic Habits, Fevers of diverse Kinds, especially Quartans and eruptive Fevers, Dropsies, Diarrhæas, Dysenteries, &c. (*s*)
and

(*p*) Med. Stat. Sect. 2. Aph. 8. pag. 136.

(*q*) Hippoc. Aph. 16. Lib. 3. pag. 1247. Lib. de aere, aqua & locis. *Phasis* was in the ancient Kingdom of *Cholcis*, upon the Eastermost Side of the Black Sea, between *Georgia* and *Circassia*, not far from the *Sauromatæ*.

(*r*) Sydenham. de Febr. Intermitt. *Wainwright's* Non-natural. pag. 69. *Floyer* on Cold Baths, pag. 108. Hippoc. Epidem. 1. pag. 2. & Lib. de aer, aq. & loc. pag. 281. lin. 36. &c. Galen. Comment. in hunc locum. *Wainwright's* Com. Nosolog. pag. 60.

(*s*) Hippoc. Lib. de aer, loc. & aq.

and are subject to ædematous Swellings: The Children are ricketty, and subject to Ruptures of the Veins, call'd Varices, and Ulcers on their Shins: The Women do not cleanse well in their Lyings-in (*t*). Hence we see that to prevent these bad Effects above-mention'd, they shou'd use attenuating Foods, and also such as will contract the Vessels at the same Time; moderate Exercise, Friction, and such like means, to promote Perspiration. If the Air be cold withal, it subducts so much of its relaxing Quality.

Thick, foggy Weather, in some Countries may be prevented by proper Care; for we find that in some Places in *America* it was thick, foggy and rainy Weather, and also very sickly, 'till the Woods were cut down, and then it became serene, clear and healthy.

I believe none will wonder at such an Alteration in the Air, when they consider

(*t*) Philof. Transf. Abridg. Vol. 2. pag. 42.ⁱ and pag. 719. Boerhaav. Chem. Vol. 1. pag. 621. Ludoric Testi, de salubrit. aeris Venet. Aët. Lips. Suppl. 111. pag. 167.

sider what a great Quantity of Vapours perspire from Vegetables. A Vine (*w*), says Mr. Hales, perspires $\frac{1}{150}$ Part of an Inch in twelve Hours Day. A Sun-Flower, in a Day and Night, perspires $\frac{1}{180}$ Part of an Inch. A Cabbage, in twelve Hours Day, perspires $\frac{1}{80}$ Part of an Inch. An Apple-Tree, in twelve Hours Day, perspires $\frac{1}{100}$ Part of an Inch. A Lemon Tree, in twelve Hours Day, perspires $\frac{1}{240}$ Part of an Inch: And a Hop-Yard (*x*) perspir'd as much in twelve Hours Day, from off the Hops (besides what exhal'd from the Surface of the Ground) as would cover the Ground $\frac{1}{150}$ Part of an Inch deep, *i. e.* 220 Gallons an Acre: Now all this Moisture, added to what daily exhales from the Surface of Water, which, as *Nic. Cruquius* observes (*y*) at a mean Rate the Year through, is $\frac{1}{12}$ Part of an Inch; and the Quantity of Vapours exhal'd from the Surface of the Earth is $\frac{1}{40}$ Part of an Inch in a Summer's Day;

(*w*) Stat. Essays, Vol. 1. Exper. 3. pag. 21. Exper. 5.

(*x*) *Ibid.* pag. 32. Exper. 9.

(*y*) *Philos. Transf.* Numb. 381.

Day; now, I say, all this Moisture in the Air must needs render it unwholsome on that Account, as well as on Account of the Virtues of the vegetable Perspiration.

Hippocrates (z) says, Women in this sort of Weather, are subject to miscarry; and that Men are subject to Diarrhæas and Hæmorrhoids; and likewise to the *Pustulæ Nocturnæ*, *Epiniëtides dictæ*, but by *Pliny* call'd, *Pustulæ liventes*, & *noctibus inquietantes*; they are also subject to sore Eyes. In another Place he says (a), they are subject to long Fevers, Diarrhæas, Epilepsies, Apoplexies and Quinsies. Hence we see the Inhabitants of such Places ought to use a warm, stimulant, aromatic Diet; and also warm Frictions, and brisk Exercise.

Dry Air.

Too dry Air has much the same Effect as too hot: *Hippocrates* says (b), *Per magnas siccitates morbi tabifici, ophthalmiæ, articu-*

(z) Lib. de aer. loc. & aq. pag. 281. lin. 44, 45.

(a) Aph. 16. Sect. 3. pag. 1247. & lib. de aer. aq. & loc. pag. 281. lin. 47.

(b) Loc. Citat.

articulorum dolores, stillicidia urinæ, dysenteria. And again he says (c), *Per squalores febres acutæ fiunt, & si quidem annus magna ex parte talis extiterit qualem temporis conditionem effecerit, tales fere quoque morbos expectare oportet.*

§ 14. As the Air is a Fluid, it presses ^{Heavy and dense Air,} equally upon the Surface of a human Body, with a Weight equal to a Column of Mercury, whose Basis is equal to the Surface of a human Body, and Altitude, that of the Barometer; perhaps in a middle siz'd Man, with a Weight of 32000 Pounds; and as it is possible for the Air to vary $\frac{1}{10}$ in its Weight, such an human Body must be press'd with 3200 Pounds Weight more at one Time, than at another; and if the Height of the Mercury only varies one Inch, there will be the Difference of about 1000 Pounds Weight; such Alterations must therefore very much affect both Solids and Fluids: For the Fall of Mercury in the Barometer, is the same with the Exsuction of so
F much

(c) *Ibid.* Aph. 7.

much Air out of the Air-Pump; and the Rise of the Mercury, the contrary: Hence, one would think, that when so many of the Vessels of our Bodies are straiten'd from the increased Pressure of the Atmosphere, that the Blood would stagnate up to the very Heart; but such is the Contrivance of Wisdom, that when the Resistance to the circulating Fluid is increas'd (if not too much) so should the Impetus of the Heart and Arteries be increas'd also; for the Weight of the Air being a little increas'd, the Lungs will be more forcibly expanded (*d*), and thereby the Viscidity of the Blood more broken and attenuated; so that it is more fit for the Secretion of Animal Spirits, by which the Heart will be more strongly contracted. Whatever be the Force of Air upon the Lungs, it varies with its Gravity and Elasticity; consequently, the Variation of those, must have proportional Effects upon the Motion of the Blood through the whole Body, as well as through the Lungs: The Expansion

(*d*) *Hale's Stat. Essays*, Vol. 1. pag. 238. Exper. 108. pag. 248. Exper. 111. pag. 255. Exper. 114.

sion of the Lungs by Respiration, being necessary for the Circulation through the Lungs, the Circulation is therefore more easy in Proportion to such Expansion; on the contrary, whatever stops the Circulation through the Lungs, must hinder their Dilatation; whence it is very plain, Respiration must have an Influence upon the Pulse, as to Frequency, Strength, Hardness, and Softness.

Heavy or dense Air, compresses all the outward small Vessels, and also those of the Lungs; whence the Blood will be more dense and compact; the Vessels of the other Viscera and inward Parts remaining the same; which, if weak and relax'd, must often, either burst, whence Hæmorrhages, or be obstructed, whence Jaundices, hypochondriac, and hysteric Disorders, Apoplexies, Coughs, Asthma's, or the like.

§ 15. Light, or rare Air, relaxes our *Light or rare* Fibres, the Pressure being diminished; *Air.* for supposing the Quantity of the Fluids the same, and their Impetus against the

Sides of the Vessels to remain with equal Strength; whenever the Pressure of the Atmosphere decreases, the Vessels will be more stretched, by the Spring of the included Air, to bring the inward and outward Air to an *Æquilibrium*; and this is one Reason of that uneasy Sensation, which many perceive upon a Change in the State of the Air; whence the Restitutions and Contractions of the Vessels will be weaken'd; then those Misfortunes will soon follow, which are mention'd under the weak and lax Fibres and Vessels, Page 17. § 13. of the Introduction: The Fall of the Mercury in the Barometer being the same as the Exsuction of so much Air out of the Air-Pump; in which Case, the Fluids and Solids are expanded, for want of a sufficient Weight or Force to compress the Vessels; hence Hæmorrhages and Spitting of Blood, as well from Vessels burst, as from the Pores or Passages through which the Serum passes out of the Arteries into the Bronchiæ (e): It is the same with those, who go to the
Tops

(e) *Hale's Hæmast.* pag. 76. Exper. 11. Sect. 6, 7. and Exper. 12. pag. 88. Sect. 16.

Tops of the highest Hills and Mountains ; for the higher they go, and the thinner and lighter the Air is, the shorter and quicker is their Respiration ; because, as we observ'd in the last mention'd Section, that the Expansion of the Lungs is necessary for the free Circulation of the Blood through 'em : So that, the thinner and lighter the Air is, the less will the Lungs be expanded ; whence the Blood will be less broken and divided, and will be dispos'd to all those Distempers, which proceed from too great Viscidity therein, as mention'd in § 15. Page 22. in the Introduction ; and they often spit Blood. Lord *Verulam* says (*f*), when they mounted to the Top of *Olympus*, the Air was so thin, that they were obliged to hold Sponges dip'd in Vinegar and Water to their Noses and Mouths ; and also, that the Air on the Top of *Teneriff* is so sharp, as to cause violent Pains in the Eyes, and so thin and light, that it causes many to vomit. Animals gradually changing the Density or Rarety of the Air, can

F 3

live

(f) Nov. Organ. Scient. Lib. 2. Aph. 12. pag. 163.

live in Air, differing one half in Density; but in a Receiver, sinking the mercurial Gage 16 Inches, would throw a Man into Convulsions by the sudden Change: A Mouse used to an exhausted Receiver, can indure it longer than a fresh one, as appears by Experience (*g*). We have also frequent Instances of the sensible Effects of the sudden Fall of Mercury in the Barometer, in tender People, and in others who have Pains in Parts that have been dislocated, cicatriz'd, and in Corns; for in such a Change of Air, all the Vessels that are in a natural State yield to the Expansion of the inward Air, and relax, so as to permit the Blood and Humours to pass easily through them; but in a Cicatrix, or Corn, the Vessels being more rigid, are over-stretch'd and distracted, whence that violent Pain: Moreover, too light Air can't carry off the grosser Parts of the Excretions in the Lungs (*b*), for the Pores and Excretory Ducts therein being relaxed, excrete a more gross Humour than

(*g*) *Philos. Trans. Abridg. by Lowth.* pag. 229, 230.

(*b*) *Ibid.* Vol. 2. pag. 231.

than naturally, which being specifically heavier than Air, lodges there, causing Coughs, &c.

§ 16. The State or Temperament of ^{Warm and moist, and} Air in our Climate is mostly compound- ^{hot and moist.} ed, *ex. gr.* warm and moist, or cold and dry; they who live in a warm moist Air, are generally of a lax Habit, corpulent, inactive, have pale and languid Complexions, weak Appetites, and the like; and are subject to Rickets, Ruptures, Epilepsies, Convulsions, Asthma's, white Swellings, Worms, Green-sickness, Obstructions, Consumptions, frequent Abortions, Barrenness, Fluor Albus, Diarrhæas, long Fevers, Piles; and to elderly People, Defluxions from the Head, Palfies, and many Diseases, which, though common to all Situations, are yet most frequent in these, as many of the Authors already mention'd observ'd, especially *Hippocrates* (i).

The most likely Method to prevent these Inconveniences, are Foods, which

F 4

will

(i) Lib. de aere, aqua & locis,

will moderately attenuate, and dissolve the viscid Humours, and contract, and strengthen the Solids; moderate Exercise, Frictions, cold Bathing, a cool and dry Air.

Hot and moist. If the Air be hot and moist, then the Inhabitants are subject to the Plague and pestilential Diseases, as *Sydenham* (*k*), Lord *Bacon* (*l*), and many others observ'd; the Plague call'd *Sudor Anglicanus* begun
 * 1529. * after as moist a State of Air, as was ever known in the Memory of Man (*m*); and the *Morbus Ungaricus*, which also was so very rife among the *Germans*,
 † 1525. 1566. *Dutch*, and *French* †, begun after a very wet Spring, insomuch that the *Danube*, and other Rivers over-flow'd the whole Country (*n*): It is yet more unwholsome, when

(*k*) In several Places.

(*l*) Sylv. Sylvarum, Cent. 4. Numb. 383. pag. 213. Chem. Boerhaav. Vol. 1. pag. 620, 621.

(*m*) Sckenkii Observ. pag. 765. *Verulam. Hist. Henric.* 7. pag. 18. *Rapin. Hist. of Engl.* pag. 756.

(*n*) Sckenkii Observ. pag. 766. Sennert. de Febr. Lib. 4. Cap. 14. pag. 543. says, The State of Air in Hungary is always in Extremes, either very thick, cloudy, and foggy at Nights; or else very thin, and in Summer excessive hot. To this may be added, the stinking, stagnant

when the Vapours arise from stinking Fens, Marshes, or stagnating Pools, &c. This is yet more confirm'd by these two Examples, *viz.* at *Grand-Cairo*, the Vapours arising from a stagnating Pool bring the Plague, 'till, upon the over-flowing of the River, by which the Sluices are cleans'd and scour'd, and then the Plague ceases (*o*). And *Diogenes Laertius* (*p*) tells us, that *Empedocles* perceiving the Plague at *Selinis* to be caus'd by Exhalations from filthy, stinking Water in their Ditches, which he cleans'd by digging two Canals, to let in fresh Water from two Rivers in the neighbouring Country, and thereby freed them from the Plague.

Wintringham (*q*) observ'd, that in a *Cold and moist*, wet, cold Season, People had their
Healths

stagnant Fens, which, by the violent Showers from the Mountains, over-flow, and leave a stinking Mud on the Surface of the Ground. If you wet a Cloth in these stagnant Waters, and hang it in the Sun to dry, it will become lousy. The Inhabitants are often forc'd to drink these Waters.

(*o*) *Sandy's Travels*, Book 2. pag. 97.

(*p*) *Vit. Empedoc. Lib. 8. Segm. 70.*

(*q*) *Nosolog. Comment. pag. 80.*

Healths better in general, than in other Seasons, except a little at first.

Cold and dry.

§ 17. Cold, dry Air, is generally esteem'd wholesome; the Inhabitants of such Places are for the most Part healthy, of a florid Complexion, but are subject to inflammatory and acute Diseases, especially to Pleurisies, and are mostly of a rough, choleric Temper, strong and active, and have a voracious Appetite; are subject to internal Hæmorrhages, Bleedings at the Nose in People about thirty Years of Age, and to Epilepsies; the Women are subject to difficult Births, but rarely miscarry; they give but little Suck, and have but little of the Menfes; and the young Boys are subject to Tumors of the Testes (*r*) and Ophthalmies; But if these People escape acute Distempers, they are very often long-liv'd, as Lord *Bacon* (*s*) observ'd. Hence we see the Food of these

(*r*) Hip. de aere aq. & loc. pag. 282.

(*s*) Histor. vit. & mort. pag. 163, 164. Regionibus frigidioribus & hyperboreis diutius homines vivunt plerumque quam Calidioribus. *Phil's Hist. of Oxfordshire*, Cap. 2. pag. 1, 2. 3. of *Staffordshire*, Cap. 8. from Sect. 91, to 107. Hip. loc. citat.

these People ought to be relaxant, attenuating, and cooling; they should use warm Bathings, &c.

§ 18. There are few, I believe, who are not fully perswaded, that the Air contributes to cure, as well as to cause Distempers; for the Lungs being the chief Organ of Sanguification, good Air must needs help the third Digestion; and most People find the Effect of good Air in stomachic, as well as pectoral Cases; and it is Matter of Experience, that some People find themselves much disorder'd in one sort of Air and Weather, and perfectly well in another: The Cause therefore of such Disorder is easily discover'd by any, who well understands the Physiology of Air, and the Constitution of the Patient. For this very Reason, the Nature and Effects of Air are a very proper Subject of Study, because the Choice of it is very often a necessary Part of Advice.

The Advantage of adapting the Air to the Exigences of the Case.

The Methodists, a Sect of Physicians in the Time of the Romans, thought the
Air

Air that we breath in continually, of more, or at least, of as much Importance as our Food ; and for this Reason they were always careful to accommodate the Air, to the Circumstances of their Patients ; for they not only made use of large or small Apartments (as Occasion requir'd) turn'd to the North, or where the Sun came but seldom, but even Grotto's and Places under Ground, not omitting the Leaves of Flowers and Branches of Trees, or sprinkling cold Water upon the Floor, or the like, whenever they wanted to cool the Air, as in Fevers, Peripneumonies, &c. and Fires, Steams of Aromatics, a South Sun, and the like, whenever they wanted to warm the Air, as in Catarrhs, Dropsies, &c. nor is this Practice of theirs (uncommon or improper as it may seem) at all to be despis'd, since the Reasonableness of it is very obvious, and a very great Physician among the Moderns (a Man of unquestionable Understanding) has approv'd of it himself (*t*) in some of the like Cases. We read
that

(*t*) Boerhaav. Aph. de Morb. inter. variis locis.

that *Empedocles* (*u*) of *Agrigentum* (a Town in *Sicily*) who flourish'd about the 84th Olympiad, perceiving the Plague often attended a South Wind, which was infected by pernicious Fumes issuing out of the Mouths or Caverns of some of the neighbouring Mountains, which he order'd to be stopp'd, and then the Plague ceas'd. We read also that *Hippocrates* (*w*) cur'd the Plague at *Athens*, by large Fires in the open Air; and in the Years 426 and 431 before Christ, when the Plague rag'd through *Ethiopia* to *Greece*, he, to prevent *Athens* from being infected, bid the Inhabitants burn a Wood near there (*x*); and also that *Varro* (*y*), in a pestilential Season near *Corcyra*, sav'd many by changing the Windows and Doors from a South, to a Northern Position; so easy it is to remedy

(*u*) Diog. Laertius de vit. Emped. Lib. 8. Segm. 70. Bonet. Thesaur. Vol. 1. pag. 443. Plutarc. in Lib. *περὶ πολυπραγμοσύνης*, & in illo cont. Colot.

(*w*) Auët. Lib. de Theriac. ad Pison. Cap. 16. Aetii Amadei Tetrab. 2. Serm. 1. Cap. 94.

(*x*) Bonet. Thesaur. Vol. 1. pag. 440. Jacob. Hollerius, Lib. de Peste, pag. 578. Thucidyd. Lib. 2. Lib. 3. Diod. Sicul. Lib. 12. pag. 310.

(*y*) Lemn. de Nat. Mirac. Lib. 3. Cap. 3. Diemerbroeck, Lib. 2. Cap. 5. Varro de re rus. 4.

medy many such Things, when their Causes are known, as the learned *Celsus* says (z)——*Inveniuntur in quibus aliter atque in cæteris idem eveniat, causæ quoque estimatio sæpe morbum solvit.*

(z) In Præfat. pag. 18. lin. 17. and 20.





C A P. II.

On EPIDEMICS.

§ 1. **A**S I have now given a true Physiology of Air, and also shown how human Bodies are affected by the various Changes of its Temperature and its Qualities, it may not be an improper Enquiry now to examine how far what I have said thereupon, has been confirm'd by Observations made in our own Island by those two learn'd Physicians, Dr. Sydenham and Dr. Wintringham; wherein they have not only given us an Account of the State or Temperature of the Air, but also the Epidemics, and the Symptoms that accompanied each State. This will give us a better Insight into the Nature of Epidemics, which belong to each Temperature of Air; for we shall hereby

by find, that we need not always call in the occult Qualities of the Air to our Assistance in accounting for the Changes made in an human Body, because, as far as hath hitherto been observ'd, when any one preceeding and concomitant State of Air, in one particular Season of the Year, happens to be the same as in another, that then the Epidemics have been pretty much alike; the same was observ'd by *Hippocrates* in his excellent Books of Epidemics, and in other Parts of his Works, which, if compar'd with those made in our Climate in the same State of Air, we shall find very much alike, both as to the Distempers, and, in general, the Symptoms also; some of these Observations I shall add in the Notes. This will give us an Insight into the Advantage of studying that learn'd Man's Works, which have of late been almost laid aside, out of a mistaken Notion, that because they were made in another Climate, they would be of no manner of Advantage to us in this; but I believe by what follows, the Reader will be convinc'd to the contrary, not only

only with Respect to *Hippocrates's* Works, but also all such as have wrote in that exact Method. It is not enough to read such Histories, though ever so true and critical, since the Memory is not able to retain a tenth Part of 'em, even though they were contracted; but we must carefully consider each Part separately, and so compare one Part of the History with another, as to be able to draw general and just Conclusions from them; which being but few in Number, are easily remember'd, and so will become useful in Practice. And if every one that is capable would contribute his Share to so beneficial an Undertaking, we might, in a little Time, be furnish'd with Maxims to direct us in a more successful Practice, than what is known at present.

§ 2. *Sydenham* says (a), in the Year 1675, a warm and pleasant Season like Summer held to the End of October, contrary to Custom; a cold and moist Season came presently after it, and there were

G Coughs

In 1675 a cold and moist Season, after a warm and pleasant one in October.

(a) Cap. 5. Sect. 5. de Morb. Acut.

Coughs more than ever he knew at any other Time, sparing scarce any Body, of whatever Age or Temperament, seizing whole Families together, and were very dangerous; for they fell upon the Pleura and Lungs with a Fever; the Epidemic Fever, which a Week before the Coming of the Coughs seiz'd the Head, now fell upon the Pleura and Lungs.

*In October
1679 cold and
moist.*

He also says (*b*), that in 1679, *October* was almost continually rainy; in the Beginning of *November* Coughs were very epidemical, and more so than in other Years, for they almost seiz'd all in every Family. On the first Days most commonly the Cough was dry, and brought up nothing; but when it continued a while, a little Matter was expectorated: In a Word, upon Account of the little Matter that was expectorated, and the Violence of the Cough, and the Duration of the Fit, it seem'd like the convulsive Coughs of Children, only it did not rage so violently; but in this it exceeded
the

(*b*) Epist. ad Doct. Brady, pag. 234.

the Chin-cough, *viz.* it invaded the Sick with a Fever, accompany'd with the usual Symptoms of it, which he never yet observ'd in Childrens Coughs. He says (c) also, that if the Coughs were ill manag'd, they occasion'd a Fever like that which rag'd so epidemically in the Winter 1675; and this Fever was cur'd the same Way as the Coughs above describ'd (d).

He says also (e), that the Winter 1683 *A very severe Frost in Winter, 1683.* was so vehemently cold, that no Man living ever saw the like, as to the intense Degree of the Cold, and the long Time it held; the River *Thames* was froze over that it sustain'd Coaches, &c. and though the Winter in 1684 did not equal the preceeding, either as to Extremity of Cold, or the obstinate Duration of it, yet it did not come much behind it as to

G 2

either

(c) Pag. 238.

(d) We must observe, that here were two cold, moist Seasons, which had the same violent Coughs very epidemical: Are not these Coughs produc'd by the visible Qualities of the Air? And do they not confirm what I said in § 13. in the Chap. of Air.

(e) Monitor. Schedule, pag. 409.

either (*f*); but as soon as it thaw'd in *February* 1685, a new sort of Fever began, which was wholly different from that which prevail'd for these eight Years past, and lasted all Summer.

The Sick was cold and hot by Turns; complain'd of Pains in the Head and Limbs; the Pulse like the Pulse of those that are well (*g*); the Blood like the Blood of Pleuritics; the Patient for the most part is troubled with a Cough; a Pain seizes the Neck and Jaws, sometimes at the Beginning of the Disease, but it is less than in a Quinsey; though the Fever be continual, yet it has violent Exacerbations, often towards Night, as if it were a double Tertian or Quotidian. The Sick was indanger'd by keeping his Bed constantly, though he had but very little Clothes on, for he soon fell into a Coma
or

(*f*) This severe and obstinate Cold, by § 12. of Air, will render the Blood very dense, as we find by Experience, of which we shall see more as we proceed.

(*g*) May not this be owing to the great Relaxation of the Fibres, after they had been so long and so intensely brac'd up? For we know that the Strength and Hardness of the Pulse is as the Elasticity of the Vessels, and the State of the Humours,

or Phrensy (*b*), which also often comes of it self on a sudden, but not to a great Degree; the Sick only doats, muttering now and then some odd Words: Petechiæ very often broke out, by Reason of the unseasonable Use of Cordials, and too hot a Regimen; and in young People of a hot Constitution, purple Spots, and sometimes Eruptions, which they call Miliars, sprinkle themselves all over the Body. The Patient's Tongue is either moist or dry, according to the Method made use of; when it was dry, it was of a duskyish Colour in the Middle, which was hemm'd round with a whitish Fringe; but when it was moist, it was all white, cover'd also with a white and filthy Skin: If the Person was too much heated, the Sweat was in a manner viscous (*i*), especi-

G 3

ally

(*b*) May not this be owing to the dense State of the Blood, which circulates but slowly in the Brain? And may not the Laxity of the Vessels be the Reason, why the Phrenitic were not outrageous, but rather comatose?

(*i*) Does not this prove a great Relaxation of the Vessels? And does not the Clamminess demonstrate it to be owing to that? For Perspiration is secreted by the cutaneous Arteries, and the stronger and more elastic they are, the finer the perspirable Matter is: But if these Arteries

are

ally about the Head ; and though it flow freely, and from all Parts, yet the Sick has little Ease by it ; so that it was only symptomatical, not critical.

1715, cold,
frosty Weather
for six Weeks,
with South
Winds.

Wintringham says (*k*), that Mid-winter, in 1715, was cold, frosty and snowy Weather for six Weeks, with a Southerly Wind for the most part. The Spirit in the Thermometer was the lowest, and the Mercury in the Barometer the highest he ever saw (*l*).

The Distempers are inflammatory, especially Pleurifies, Quincies, Rheumatisms, with acute Pain and hard Pulse : The Blood was inflam'd, and had a thick Film. Phthifical and consumptive People were much worse ; their Breathing was
more

are either too much relax'd, or if the Blood circulate too freely and quick, then there is a greater Quantity evacuated, of a thicker Consistence, and supplied more immediately from the Blood, being some of its nutritious Parts, and being sensible, is call'd Sweat.

(*k*) Comment. Nosologic. pag. 29.

(*l*) Does not these show to what a Degree the Solids were brac'd up ? And as the Strength of the Pulse, as I observ'd before, depends upon the Elasticity of the Fibres, the stronger they are, the harder is the Pulse, and the Blood is more condens'd, as is confirm'd by the thick Film.

more difficult, and with pleuritic Pains (*m*) and incurable Loofenesses (*n*). In *February*, at the Thaw, the Symptoms were worse, and more were sick of inflammatory Diseases. Consumptive People died fast, for their Diarrhæas increas'd in many (*o*).

Other weakly People were afflicted with Gripings, Diarrhæas, Stranguries, with asthmatic, hysteric and hypochondriac Symptoms above others. They who had Strength enough, were well in

G 4

a few

(*m*) Now let us see how far *Hippocrates's* Observations agrees with ours: He says, Lib. 3. Aph. 17. pag. 1247. "Northerly Winds increase the Pains in the Breast, if there were any before." And in Lib. de Humorib. pag. 50. that "The Northerly Winds bring Pains in the Sides and Breasts." N. B. He by Northerly or Southerly, means cold or warm, as is evident from several Parts of his Works.

(*n*) Does not this confirm part of § 12. of Air?

(*o*) The Author observes, that the Mercury in the Barometer, about the Thaw, fell about two Inches; and the Spirits in the Thermometer rose twenty Degrees; this remarkable Change in the State of the Air, he observ'd, made a great Disturbance in the Humours; in some it brought on a Drowiness, Loofeness, arthritic and rheumatic Pains, as well wandering as fix'd; and in some, Palsies and Apoplexies, as well as the above-mention'd Diseases. Who can doubt that these proceeded from the Rarefaction of the Humours, caus'd by the Weight of the Atmosphere being lessen'd, and the Warmth of the Air increas'd? Do not these confirm, what I said in § 14 and 15. of Air?

a few Days; but others either died, or had very bad Symptoms. Small-Pox was very rife, of the confluent and bad sort, and were the worst in the greatest Cold.

These inflammatory Distempers were fewer as the Summer approach'd. The Small-Pox continu'd, and were chiefly of the confluent sort, but yet in a less Degree than in the Winter (*p*).

1716, Summer
hot, with
Westerly
Winds.

§ 4. Summer was hot (but not so hot as some of the following Summers) with westerly Winds. Distempers in this Season were some continual, remitting Fevers, call'd *συνεχης*; and some slow Fevers. The Skin in the former was drier and rougher, the Pulse hard, the Blood pleuritic; they sweat but little, and were oft delirious (*q*), especially in the Paroxysms of remitting Fevers.

Some

(*p*) May not this Difference proceed from the intense Cold in Winter; which, by bracing up the Solids, makes the Fever more violent, and the Blood more inflamable? And may it not, by contracting the Pores, hinder the free Exit of the morbid Matter? And is not this agreeable to what I said in § 12. of Air?

(*q*) This seems to be a Symptom which almost constantly attends a hot and dry Season; as a Drowsiness and Weight of the Head, and Coma, do a wet and moist Season; which seems to be owing to the Blood in the first State being thick and more inflamable.

Some in the Beginning were afflicted with Diarrhæas, Vomitings, and with pleuritic and rheumatic Pains. About the 14th Day they either went off by Sweat, or quite ceas'd, or chang'd into Tertians.

In the nervous Fevers they were longer sick, the Pulse quick and weak, the Skin dry and rough. The Small-Pox lasted all the Summer, and quite vanish'd in Winter, but were more mild. The other Fevers still remain'd.

The Winter was cold and frosty in 1716, towards the End, but not so severe as the preceeding Winter, the same Distempers appear'd as in the last Winter, but were more mild, and fewer in Number (r). *Cold and frosty Winter.*

§ 5. The Summer in 1717 was hot and dry, about its Middle, with Southerly and Westerly Winds. The Distempers were *1717, hot and dry Summer.*

(r) Is not this owing to a less Degree of Cold? And does not this still confirm § 12. of Air?

were Remittents and Intermittents, especially the former, and in greater Number than in the last Year.

In the Beginning, the Diseases scarce ever remitted; for they were mostly *εὐνοχες*; yet in a few Days an imperfect Crisis appear'd, sometimes by the Anus, and sometimes by the Pores, and shew'd they belong'd either to Intermittents, or Remittents.

The Urine before the Crisis was mostly high colour'd, and without Sediment, sometimes was turbid; but after the Crisis, the Sediment was like Brick-dust, but something more pale and yellow.

*Autumn cold
and moist.*

The Autumn was cold and moist, frequently with Northerly Winds. The fore-mention'd Diseases continu'd; then Diarrhæas and Dysenteries appear'd, join'd with a slow Fever; which, if they happen'd to those who were ill before, made 'em low-spirited, and prolong'd the Disease (s).

The

(s) Do we not find these to be confirm'd by Sydenham in several Places? And do they not confirm Part of what I said in § 13. of Air, and § 3. in the Chap. of Excreta and Retenta?

The Winter, about the Middle, was ^{Winter cold,} very frosty and snowy, with North and ^{frosty and} Easterly Winds. During the Frost, the same Distempers appear'd as in last Winter; and the Fever call'd *συνεχὴς* remain'd, but not very frequent.

§ 6. The Summer was hot and dry, ^{1718, Summer and Autumn hot and} especially July and August, which continu'd all Autumn, except a few necessary ^{dry.} Variations of the Season, with Southerly and Westerly Winds.

In this Summer appear'd the Febris putrida, call'd *σύννοσος*, accompanied with bad Symptoms; but as it increas'd more the Year following, I will let the particular Description of it alone 'till then.

Remitting Fevers still continu'd; but with very uncertain Paroxysms, and worse Symptoms: These lasted all Winter, and were more frequent than in the last Winter, though some were chang'd into Intermittents in the Cold of Winter. Tertiaries with regular Paroxysms appear'd through

through the whole Year; but in the Beginning of the Spring, the Paroxysms return'd in less certain Intervals; and towards Summer the Remittents increas'd in Number 'till the Heat of Summer.

1719, Summer exceeding hot and dry, changed suddenly to cold for a Fort-night; and then the Heat return'd, and for the Season was warmer 'till Novem.

§ 7. This Summer was not only the hottest he ever saw, but the Change from one State to the other was the most sudden (*t*). The Heat lasted from the Beginning of *May* to the Middle of *July*, and the Air was very dry; there was but little Wind, and that from the South; the Spirits in the Thermometer was then at 17 Degrees; about this Time the Wind chang'd to the North, and blew very hard, and some cold Rain fell: The Spirits in the Thermometer, in 48 Hours, fell from 17 to 45 Degrees (*u*), which was the greatest Variation in so short a Time he ever knew. This cold State lasted

(*t*) Hippoc. Lib. de Humorib. pag. 50. the Changes of the Seasons are most productive of Diseases, the greatest Changes especially.

(*u*) We observ'd in § 4. of Air, that Animals are sensible of a Change of Air to a colder State, when the Spirits in the Thermometer do not vary in the least; what an Alteration then must this sudden and great Change make in our Constitutions? *Vid.* pag. 103. in the Notes, Let. (*a*).

lasted a Fortnight, and then the Heat return'd; which lasted to the Beginning of Autumn; and considering the Season, the warm Weather lasted to the Beginning of *November*; and the Winter was drier and warmer than usual.

Distempers during the hot Weather were putrid, continual, remitting and intermitting Fevers, large spontaneous Hæmorrhages, Spittings and Vomitings of Blood, and such like (*w*); but upon the sudden Change to Cold, immediately appear'd Diarrhæas, which soon vanish'd at the Return of the warm Weather. They who had the above-nam'd Fevers at this Time, were troubl'd with Gripings and Loosenesses; for the Humours which during the Heat went off by Sweat about the Crisis, now went off by Stool, very much weakening the Sick (*x*).

At

(*w*) Do not these proceed from the great Heat and Drought, weakening the Vessels, relaxing the Pores, and expanding the Fluids? And do they not confirm part of § 11. of Air?

(*x*) Do not these, together with what happen'd in the cold State in 1715, 1716, 1717, prove, that the Perspiration and Humours are turn'd inward, as I said in § 12. of Air?

At the Return of the Heat, the putrid and continual, remitting Fevers were worse. We must observe that the Sick about the Crisis were more subject to Diarrhæas since the Cold, than before, tho' the Disease seldom went off this Way. The putrid Fever this Year, first appear'd in *May*, and in *July* came *ad animum*, which lasted all *August*, and kill'd many. It begun with Shiverings, Nausea's, and Vomittings of biliose Matter, and alternate Heats and Cold; to these were join'd a Weariness of the whole Body, and a Sensation as if a great Weight lay upon the Shoulders and Back; to these succeeded Heat and Thirst; the Tongue was dry and brown, and sometimes black. They slept little, did not sweat, and almost always were delirious; toss'd about the Bed with great Anxiety and Uneasiness. About the 12th Day, many were troubl'd with Diarrhæas, which weaken'd 'em, and seldom eas'd 'em; and that too, notwithstanding they had taken a Vomit in the Beginning, as *Sydenham* advises; some were a little loose all the Sickness;

Sickness; for altho' the Fever did not go off this Way, yet the Heat, Uneasiness, and Delirium were not so violent (*y*); neither did such an Evacuation hinder a Crisis, but rather, by easing the Symptoms, brought it on, which for the most part happen'd the 16th Day from the Beginning of the Fever, by Sweat.

The Pulse for the most part was frequent, seldom strong; the Skin rough; Urine red, without Sediment: But after the Crisis by Sweat, the Sediment was brown. The Blood taken in the Beginning of the Disease was very florid and dissolv'd (*z*), and the red and ferous Part was so mix'd, that it look'd like arterious Blood. Some had a Ptyalism during the whole Disease, and they all recover'd; they also had the other Symptoms

(*y*) Does not this shew us a Method of managing People in such a State?

(*z*) Does not this Thinness of Blood proceed from the sudden Weakness of the Vessels occasion'd by the Heat? For as the Blood is an elastic Fluid, a sudden Laxation of the Vessels must needs give it Room to expand and be dissolv'd. And the Blood in hot Weather is more subject to putrefy than in cooler, as appears by § 11. and § 15. of Air. Boerhaav. Chem. Vol. 1. pag. 175.

toms more mild than other Sick had : This Fever chiefly seiz'd the Strong and Active ; but they of a weak, lax, hysterical and cachectic Habit were affected with Tremors, Spasms, and Deliriums ; whilst others, through Want of Spirits and Weakness (*a*), lay stupified, letting their Urine and Fæces go from them involuntarily.

Besides this Fever, there were continual, remitting Fevers, especially about the Beginning of *August* ; a little after which Time, either the *σύννοχος* vanish'd, or chang'd into Remittents, which last is likely ; because these Fevers begun with the same Symptoms, which by irregular Turns remitted. The Paroxysms were attended with more violent Symptoms than Remittents commonly have, and often with a Delirium (*b*). The Rigor and Coldness seldom preceeded the Paroxysms, even

(*a*) May not this Weakness proceed from a too great Excretion of perspirable Matter and Sweat, depriving the Blood of it's most nutritious Parts ? And does not this confirm part of what I say in § 6. of Excret. & Retent. and also of § 11. of Air ?

(*b*) Does not this confirm what I said in the Notes to § 4. pag. 104. Let. (*q*) ?

even in those, whose Fits return'd regularly; but they who had some Coldness accompanying it, soon recover'd. About the Beginning of Winter, they chang'd into Intermittents, attended with a gentle Coldness; the Paroxysms returning daily, as well in Winter, as in Summer.

This Year there were a greater Number of Maniacs than common (c): And this Year abounded with a greater Number of Sick, and with feverer Symptoms than any that I remember.

§ 8. This Year was attended with a greater Drought than is common to this Island, but nothing near so hot as the last.

1720, the whole Year droughty, but not so hot as the former.

Distempers were Remittents and Intermittents, pretty much of the same Kind as those in the Decline of the last Year. They did not remit for some Days, and the Sick were delirious in the Paroxysms;

H

but

(c) May not this hot Season, by depriving the Blood of its thinner Parts, and by rendering the Remainder more acrimonious and viscid, cause Obstructions in the Head, &c. P And does not this confirm part of § 11. of Air?

but the Paroxysms were more regular, and the Fevers were mostly Tertians, or rather Hemitritæans; for the Paroxysms were long, and soon return'd, and the Fever never quite ceas'd; during the Paroxysm, they complain'd of Pain in the Stomach, Sicknefs and Nausea, and sometimes they vomited, especially in the Beginning of the Paroxysms; which Symptoms lasted 'till the Sweating came and put an End to the Paroxysm; after which, for a few Hours, the Fever abated, and the Sick was eas'd; but yet they had not a perfect Apyrexia. The Heat and Thirst were more mild than in the last Year (*d*); the Tongue was first whitish, and then became brown. The Paroxysms sometimes lasted 40 Hours.

The Urine was more turbid and more yellow in the Remittents, than in the last Year; and depos'd a whitish, yellowish Sediment in plenty: In the Intermittents, the Sediment was lateritious.

Besides

(*d*) May not this be owing to this Season being cooler than the last?

Besides these, a few putrid Fevers, more mild (*e*) than those of the last Year appear'd; but the weak and nervous Fevers, which were attended with a Vertigo, Stupor and Tremors of the Nerves seiz'd the weak, lax, and hyfteric People; in these the Pulse was weak and quick; the Urine thin, pale and crude; and they had sometimes a Diarrhæa with it.

The Tongue was whitish, rarely dry; neither were the Sick dry; were subject to partial Sweatings, especially about the Head, Neck and Breast. In these, the Fever lasted to the 20th Day, sometimes longer, and went off mostly with a total Sweating; but in some they chang'd into Intermittents.

§ 9. This Year was moist, cold and rainy, especially in the Summer, attended with Northerly Winds; which State last-

H 2

ed

1721, & moist,
cold, rainy
Summer to
September,
thence to No-
vember,
warm and
pleasant; the
Winter was
mild.

(*e*) May not this be owing to the Dryness and Coolness of this Season? For nothing will putrefy so soon in a dry, cool Season, as in a hot, moist Air.

ed to the Beginning of *September*; from whence, to the Beginning of *November*, was warm and pleasant; and the Winter was mild, with very little Frost.

The Fevers, tho' of the intermittent Kind, yet differ'd from those of the last Year; in that they were attended with greater and longer Cold, and with shorter and milder Heat; and they, in the Intervals, enjoy'd a perfect Apyrexia; were not delirious in the Paroxysms, and were more subject to Loosenesses (*f*). The Urine was redder, and depos'd a lateritious Sediment.

Besides these, there appear'd some slow, nervous Fevers (*g*), with a Weakness and Dejection of Spirits, with a Stupor and Deafness (*h*), not unlike them in the last Year;

(*f*) Does not this the more confirm § 12 and 13. of Air? And does not this greater Degree of Moisture and Cold, in this, than in the last Year, make the Humours more viscid, as mention'd in § 13. of Air, but less acrimonious; and thence these Changes in these Fevers?

(*g*) This agrees with what *Hippocrates* says in Lib. 3. Aph. 16. viz. "In wet Seasons are long Fevers."

(*h*) These are what seldom fail attending such a Season as this, as we observ'd before; vid. § 13. of Air. Hippo-

Year ; except in that they sweat but little (*i*), and the Fevers seldom ended in a Crisis, but went off gradually ; and few died. In *April* the Measles appear'd, and lasted all Summer : They were of a bad Sort, with a constant Cough, Difficulty of Breathing, and a Peripneumonia (*k*).

§ 10. The Spring, and half Summer, ^{1722, Spring and half Summer cold, wet and rainy, with Northerly Winds.} was more cold, wet, rainy and windy than usual, especially with North and East Winds. Diseases were some Pleurifies and Quinsies, but not very frequent ; above all the rest Tertians appear'd (*l*), with a few Quartans, especially in those Persons who are subject to Tertians. Some had Diarrhæas, but they were easily
H 3 cur'd.

Hippocrates says, “ The South Wind (which we observ'd before, in § 13. of Air, pag. 34. brought watery Vapours) “ brings on Thickness of Hearing, Heaviness of “ the Head, and Dizziness, Lib. 3. Aph. 17. pag. 1247.” And in Lib. de Humorib. pag. 50. he says, “ It brings on “ Thickness of Hearing, and Heaviness of the Head ; “ when this State prevails, the Sick complains of these “ Symptoms.”

(*i*) May not this be owing to the cool Season ?

(*k*) People in almost any Distemper, are subject to these Symptoms in such a Season as this.

(*l*) We must observe, that Intermittents which accompany such a State of Air as this, require some warm Aromatics to be join'd with the Bark.

cur'd. Many of these Tertians, about Autumn, chang'd into Quartans, which disappear'd in the Spring.

The Winter was sharp and dry, with North and East Winds, especially about the End, which State lasted all Spring.

About this Time, many of the common People had Jaundices (*m*), Phthises and Dropsies, especially that Sort call'd Ascitis; of which Distempers (though they are not epidemic yet) more were ill, than in any of the former Temperaments of Air.

1723, Summer
dry, but not in
Proportion;
hot, with
Northerly and
Easterly
Winds, to the
Beginning of
Winter.

§ 11. This Summer was very dry, but not hot in Proportion; for it was cloudy with North and East Winds: This State lasted to the Beginning of Winter, considering

(*m*) Hippocrates says "About, and after the Winter Solstice, the Wind was Northerly, with rough Winter Weather; in a short Time, Southerly for fourteen Days, and then abundance of Snow fell for fourteen Days more. About this Season, deep colour'd Jaundices appear'd, that terminated not in a clear and evident manner, but return'd again. After the Snow came Southerly Winds, and gentle Showers; Runnings at the Nose soon ensued, with and without a Fever, Lib. 4. Epid. pag. 1121."

dering the Season; so that all this Season may justly be said to be drier, but cooler than usual.

In the Spring the Small-Pox appear'd, which lasted all Summer, mostly of the confluent and bad Sort, sometimes with purple Spots; they who had a moderate Looseness during the whole Sickness, had milder Symptoms: Many of 'em, before the Eruption of the Pustles, were afflicted with pleuritic and violent nephritic Pains (*n*); and the Blood from the Beginning was not a little inflam'd.

The other Distempers were Pleurifies, Quinsies, Rheumatisms, and other Distempers, with Inflammations of particular Parts. Many had Stranguries (*o*), others perpetual Coughs (*p*), from a thin and sharp

H 4

Serum;

(*n*) These Symptoms often attend upon a cold State of Air, more especially when Pleurifies, and such like, are stirring. *Hippocrates* observ'd the same, Lib. 3. Aph. 17. pag. 1247. Lib. de Humorib. pag. 50.

(*o*) Do not these confirm part of what I said in § 11 and 13. of Air, under too dry Air? *Hippocrates* observ'd the same, Lib. de Humorib. pag. 50.

(*p*) *Hippocrates* says, "The Ornithiæ (they are Spring Winds of the Northerly Kind, that set in about the

Serum; phthifical and asthmatic Persons were great Sufferers this Year, and many died; for their Cough was very much increas'd with an hectic Fever, and the Symptoms thence arising; the Cough tormented 'em much.

The Pulse in the inflammatory Distempers was quick and hard, the Skin tense and rigid; and the Blood was more inflam'd than usual in other Years: Nor did any labour under any Distemper, especially where there was the least Pain, but there was an inflammatory Crust upon the Blood (*q*). They were mostly costive (*r*).

In

“ Coming of the Swallow, as *Pliny* tells us, Lib. 2. Cap. 47.) blew much and cold: Snows fell sometimes after clear Weather; and after the *Æquinox* came Southerly Winds, mix'd with Northerly, and frequent Showers. Many Coughs were epidemical, especially among Children. Before this, Part of the Winter was rough and turbulent, Epid. Lib. 7. pag. 1236.”

(*q*) Is not this owing to the cold State of Air which has contracted the Fibres and condens'd the Blood? *Vid.* § 12 and § 17. of Air.

(*r*) *Hippocrates* says, “ This Sort of Air dries the Belly, Lib. 3. Aph. 17. pag. 1247.” We must here take Notice, that when the Weather is cold and dry for a considerable Time, then it, by strengthening the Fibres, promotes a free Perspiration, and a strong and thorough

In Autumn the Weather chang'd to be *Sudden Cold*
cold suddenly, but yet dry, and then the *in Autumn.*
Number of the Sick increas'd; and Di-
arrhæas, Dyfenteries, and Inflammations
of the Bowels were more frequent (s);
this State lasted to the Middle of No-
vember, when much Rain fell; and the
Quicksilver, which stood the highest du-
ring the Drought, now fell about two
Inches (t); though this State did not
last long, yet it greatly increas'd the
Number of Sick of the above-nam'd Dif-
eases, but above all the rest, Pleurifies,
Rheumatisms, and arthritic Pains.

The Pulse was quick and hard, and
the Blood was so inflam'd, that the Film
or Crust was almost half the Thickness
of

thorough Digestion; hence they become costive, as the
Inhabitants of such a Temperature of Air in general
are; but upon a sudden Change of the Air to a cold
State, then a Looseness, &c. as mention'd in § 12. of
Air.

(s) Do not these arise from the Perspiration being
turn'd inward? And do they not confirm part of § 12.
of Air?

(t) This sudden and great Change could not fail of
disturbing the Humours, § 14. and 15. of Air.

of the Blood (*u*); inflammatory Distempers, of what Kind soever, were more frequent and more severe, than in the former Years.

In about three Weeks, the dry Weather return'd, and continu'd to the Vernal Æquinox, and the inflammatory Distempers still remain'd, especially Rheumatisms, but yet fewer in Number.

About the Æquinox, the Air was inconstant; there were some Quinsies and Pleurisies appear'd, but much milder than those of the last Year.

1724, Summer
cold and wet;
Wind North to
the Beginning
of Winter;
then a sharp
Frost for a
Week; then
very wet and
rainy, with
North Winds.

§ 12. Summer was cold and wet, with mostly a North Wind; the Spirit in the Thermometer was lower than usual, considering the Season; for the Spirit stood about 45 Degrees, and seldom rose above 40. About the Middle of Autumn it was

(*u*) From § 12 and § 17. of Air we find, that the Vessels are contracted and more elastic, and then the Velocity of the Blood is increas'd; the thinnest Parts of the Blood are dissipated; hence the inflammatory Viscidity; whence the Small-Pox became so violent.

was pleasant, serene Weather, with South and Westerly Winds; which lasted to the Beginning of Winter, when a sharp Frost came and lasted a Week: To this succeeded a wet, rainy Season, which lasted to the Beginning of *January*, with North Winds; and therefore this Year may be call'd a cold, wet one.

During the Spring and Summer the Season was exceeding healthy (*w*), few Distempers appearing, and them of a good Sort; which healthy State lasted to the End of Autumn. About this Time many had Gripes and Loosenesses, and in many, great Hæmorrhages per Alvim. When the Frost came, Rheumatisms return'd and seiz'd many (*x*): The Blood of the Rheumatics was not so much inflam'd in this Year as in the former, neither was the Crust so thick (*y*). Other febrile Distempers,

(*w*) *Hippocrates* says, "If Summer be like Spring, Fevers will be of a good Sort, neither very acute, nor attended with dry Tongues. Lib. de Humorib. pag. 50. Lib. 3. Aph. 6.

(*x*) Is not this occasion'd by immediately contracting the Fibres?

(*y*) Does not this prove the Fibres were more relax'd in this, than in the last Year?

Distempers, above what are already mention'd, were few, but mostly accompany'd with Diarrhæas, and went off sometimes that way (z). This Year the Small-Pox appear'd, but for the most part distinct, few, and of a good Sort (a).

From January to the Middle of April, warm and pleasant, with Southerly and Westerly Winds.

In *January* 1724, the State of Air was warm, pleasant and serene (considering the Time of the Year) with Southerly and Westerly Winds, which continu'd to the Middle of *April*, except a few Days.

At this Time appear'd Pleurifics, Rheumatisms, and but few other inflammable Distempers. The Blood in all these was like that of Pleuritics.

About the Middle of *February* appear'd some remitting and intermitting Fevers, with a greater Degree of Inflammation in the Blood than common in those Distempers; the Sick parted with a great Quantity

(z) Is not this owing to the Perspiration being turn'd inwards?

(a) Is not this owing to a less inflammable State of Blood, and a more relax'd State of Fibres?

tity of bilioſe Matter, both by Stool and Vomiting, with great Sickneſs. Theſe at firſt ſeem'd like the *σύννοχος* in the Beginning, but in a few Days, eſpecially after Bleeding, ſoon turn'd into *συνεχης*, or into Intermittents. Although theſe Diſtempers deſervedly belong'd to the Intermittent Claſs, they were very liable to be turn'd into *συνόχης*, in that, every Paroxyſm, though in thoſe which intermitted, return'd ſooner, and with worſe Symptoms than the former.

Whilſt theſe Fevers were continual, the Urine was red, and without Sediment; but when they chang'd into Intermittents, depos'd a Sediment in plenty, and of a deeper Redneſs than common.

In the Beginning of *March*, and about Snow in March. the End of it, a little Snow fell, and the Spirit in the Thermometer fell about 10 Degrees, the Wind being Northerly and Easterly. About this Time the Chin-Cough was very riſe (*b*), and laſted all Summer.

§ 13. About

(*b*) May not this be owing firſt to the Seafon relaxing the Veſſels, and thickening the Humours for a conſiderable

1725, from
the Middle of
April to De-
cember, cold
and wet.

§ 13. About the Middle of *April* 1725, the Weather was very cold and wet for the Season, and lasted 'till the Middle of *December*, except a few Days; and in a greater Degree than in any of the foregoing Years.

This Summer was more wholesome than the former; and, in general, I found the wet Seasons more healthy than the dry and hot, except for a few Weeks at the Beginning of the Moisture, which immediately follows the dry Season.

In Autumn a little Fever appear'd, with Sickness, Nausea and Vomiting; to which succeeded a troublesome Itching, and cutaneous Eruptions (c); yet they
went

derable Time; and secondly to the changing to a cold State, contracting the Vessels, Glands, &c. of the Lungs?

(c) Because of the grosser Parts of the perspirable Matter lodging in the Skin; hence it confirms part of § 13. of Air. And *Hippocrates*, lib. de aer. loc. & aq. pag. 281. & de Morb. Epid. lib. 2. says, "It rain'd much during the excessive Heats, and continually, but more with Southerly Winds. Under the Skin were thin, sharp Humours, which, being confin'd, grew hot, and caus'd an Itching; after which, Pustles
" broke

went away in about a Week, and a Jaundice follow'd, and œdematous Swellings in the Feet.

About this Time also appear'd some Peripneumonies, with a slow Fever, a great Difficulty in Breathing, a seeming Weight of the Lungs, a Looseness (*d*), difficult Expectations, a weak and languid Pulse; the Blood was but little inflam'd, the Urine yellow, with little Sediment (*e*). We must take Notice, that in whatsoever Distemper any labour'd, they complain'd of a Vertigo, Torpor, Drowsiness, a Heaviness in the Head, and Dulness of Hearing (*f*).

About

“ broke out, like what comes upon a burnt Part, and
 “ occasion'd a Sense of Burning underneath.” After these two moist Years, which have almost continually relax'd and weaken'd the Tone of the Fibres, we might expect such Diseases would show themselves as are mention'd in § 13. pag. 17. of the Introduction.

(*d*) *Hippocrates*, de Epid. Lib. 3. says, “ In near such
 “ a State of Air as this, it brings on Disorders of the
 “ Belly.”

(*e*) Do not these Symptoms show a diminish'd Perspiration, and a Laxness of the Vessels? And do they not confirm part of § 13. of Air? As also part of the 16th Aph. Lib. 3. of *Hippocrates*?

(*f*) The same Symptoms happen'd in 1721; and do they not confirm what I said in § 13. of Air? *Hippocrates* observ'd

About the End of *September* appear'd the Measles, but of a kind Sort, which lasted all Winter (*g*).

*January sharp
and frosty.*

The Beginning of *January* was very sharp and frosty, with much Snow; the Spirits in the Thermometer standing at 85; which continu'd to the End of the Month. During the Frost, the same Distempers appear'd as in the Winter 1715, and as about it's Dissolution (*b*). The Winter, as well as the Summer, was healthy, except a few feverish Disorders in the Frost. We must observe, that they who labour'd under any hypochondriac and melancholic Disorder, not only were sensible of the daily Moisture, but the Symptoms were much increas'd the following Spring.

The inflammatory Distempers which appear'd in the Frost, vanish'd with the Frost;

observ'd the same, Lib. 3. Aph. 17. pag. 1247. and de Epid. Lib. 1. Sect. 2. Year 2. was like this, and the Sick were comatose: Also in Lib. 3. de Epid.

(*g*) May not this be owing to a less inflammable State of Blood?

(*b*) *Vid.* § 12. of Air.

Frost; but yet, some that were before the Frost remain'd, and continu'd to the Spring, which seem'd to take their Rise, as well from the Moistness of the Summer, as from the Coldness of the Winter; such as Peripneumonia Notha, with a slow Fever; a soft Pulse, with a great Difficulty of Breathing: This chiefly seiz'd old, cachectic, indolent, pituitous People; more especially those, who indulg'd themselves in plentiful Eating, and drinking generous Liquors, or strong Malt-Liquors: And they who had not this Distemper, had a pituitous Cough, and an Uneasiness in the Head (*i*); and even the younger Sort who had it, were either of a leucophlegmatic, hydropic, or asthmatic Constitution (*k*).

When the Frost disappear'd at the End of *January*, there fell cold Rains, Snow, *In February cold Rains, Snow, and Frost alternately.*
I and

(*i*) Do not these confirm § 13. of Air?

(*k*) Are not the relax'd State of the Vessels of the Lungs, their lessen'd Perspiration, and their Inflation, the Cause why the Blood circulates more difficultly thro' the Vessels; and why they are troubled with so much Phlegm? For upon the coming of the Cold, which contracted the Vessels, the Lungs suffer'd so much more than other Parts.

and Frost alternately, with Southerly Winds; which continu'd to the End of *February*.

The Measles appear'd through the whole cold Season; and about this Time, *viz.* the End of *February*, the Air was warmer, they were afflicted with a greater Difficulty of Breathing, and a worse Cough; and sometimes with pleuritic Pains (1) and a Looseness; but proper Care not being taken, many Children fell into incurable Phthifis. About the End of *February*, the Weather was clear and pleasant, and the Heat increas'd as Summer approach'd.

1726, May
hot and dry,
with South
and West
Winds.

§ 14. In *May* 1726, the Air was hot and dry, with Southerly and Westerly Winds. About this Time, some Remittents and Intermittents appear'd, especially the former; in many with Itchings and cutaneous Eruptions; which also happen'd

(1) May not this uncommon Stubbornness of the Cough, and the Pains in the Sides, be owing to the Sharpness of the preceeding Season? For, during the Cold, the Vessels of the Trachea and Lungs were contracted, but now were suddenly relax'd; and then the Humors were turgid.

happen'd to others, who had no Fevers. They who had Fevers at this Time, complain'd of an acute Pain and Dulness in the Head, and were liable, upon the least Error, to become phrenitic.

Some inflammatory Distempers also appear'd, as Pleurifies, Peripneumonies, Quinsies, Spittings of Blood, and such like (*m*); but more especially Head-aches more than the rest, and Inflammations of the Eyes (*n*).

It may not be improper to mention the Effect of this Season in the hypochondriac and melancholic Persons; some were eas'd, others had the Symptoms increas'd, and others were mad. These different Effects of this hot and dry Season, as it seems to me, arose either from the different Degrees or Stages of the Disease, or from the different Temperaments of the Sick, *viz.* the hot and dry, or the cold and pituitary: For while the Distemper is fresh, without fix'd Ob-

I 2 structions,

(*m*) Does not this confirm Part of § 11. of Air?

(*n*) Hippocrates says the same, Lib. 3. Aph. 7.

structions, and the Sick not very pituitary, the Humours then were by the warm Season dissolv'd, the Body was enabl'd to perform its Functions, and the Sick recover'd: But others, whose Obstructions were rivetted, were worse by the Rarefaction of the Humours and their Circulation.

In this Summer the Small-Pox appear'd again, which lasted 'till Winter; they were mostly of the confluent Sort, but not so bad as in 1723; these, as well as other Fevers, affected the Head very much.

*June and July
wet and moist,
with chiefly
North Winds.*

This warm and dry Season lasted to *June*, then chang'd to a wet, moist Season 'till the Beginning of *August*, mostly with North Winds. Remittents and Intermittents yet remain'd, but fewer in Number.

About the Beginning of *July* Diarrhæas, Dyfenteries, Cholera Morbus, and other Diseases afflicting the Stomach and Bowels,

Bowels, appear'd (o), and lasted to the Middle of *August*; the Beginning of *August* pleasant and warm, which, was again pleasant and warm, *September, October, November,* which lasted to the Beginning of *September*, changeable, rather inclinable to cold and moist. from that Time to the End of *November* the Weather was changeable, rather inclin'd to Cold and Moist.

Few Distempers show'd themselves, except what are common at this Time of the Year, such as pituitous Coughs, asthmatic Uneasinesses, and some chronic Distempers.

In the Beginning of *December* fell some *Most of December was a* Snow, with a sharp Frost, and a Westerly *sharp Frost.* Wind, which lasted to *Christmas*; the Mercury in the Barometer was high, the Spirits in the Thermometer fell to 80. During this Season, Pleurifies, Peripneumonies, and other inflammatory Distempers, arose, as was mention'd in the like Seasons before; it was also fatal to phthical and weak, hectic People, by increasing the Pains in the Side and Diarrhæas.

I 3

The

(o) Do not these confirm Part of what I said in § 13. of Air?

*The rest of
Winter cold,
but inconstant
in other Re-
spects.*

The rest of the Winter was very cold, but in other Respects very inconstant; sometimes Snow fell, at others, Rain or Frost alternately (*p*).

At this Time the Small-Pox disappear'd in Town, though not so soon in the Neighbourhood; but the Symptoms were more severe, as the Winter approach'd, and during the Frost, than in the Summer (*q*). About the End of *February* the North Wind blew constantly, and then rag'd Pleurifies, Peripneumonies, Anginas, Rheumatifms, Podagric and arthritic Pains, convulsive Coughs (*r*), from a sharp Serum vellicating the
Larynx,

(*p*) *Hippocrates* de Epidem. Lib. 6. § 7. says, in much such an unsettled Season, viz. “ About the Winter Solstice, from the frequent changing of the Southerly and
“ Northerly Winds, and Snowy Weather, Coughs, some
“ of which lasted but a little Time, others longer; and
“ were succeeded by Peripneumonies, Inflammations of the
“ Throat, Quinsies, Palsies, Nyctalopia, especially among Children, Swellings of the Glands, and Ophthalmies.”

(*q*) Is not the cold Season the Cause of those severer Symptoms, by contracting the Pores, and rendering the Blood more inflammable?

(*r*) *Hippocrates*, Aph. 12. § 3. pa. 1247.

Larynx, and other such like inflammatory Disorders, with a hard Pulse.

§ 15. About the End of *March* 1727, ^{1727, The} the Wind was South, and abundance of ^{End of March} Rain fell; the Air was warmer, and the ^{was warmer,} fore-mention'd Distempers were more ^{with Abun-} frequent; the Small-Pox appear'd again, ^{dance of Rain.} and with worse Symptoms as the Weather ^{This State} grew warmer (*s*). ^{lasted to the} ^{Middle of A-} ^{pril, which} ^{was warm} ^{and pleasant,}

This State of the Air lasted to the Middle of *April*, except the South Winds, which now were uncertain, changing from South to West, and thence to North, in 24 Hours; in which Time the Air was colder and moister, the same Distempers remaining.

About the End of this Month, the Weather was pleasant and warm, with some few Showers, but the Winds were uncertain; which State lasted to the Beginning of *May*; during this Season, some

I 4 Remittents

(*s*) Is not this owing to the sudden Change of the Air from a cold and dry, to a hot State? For during the Cold, the Blood would be brought into an inflammatory Disposition, and be actually inflamm'd by the sudden Heat.

Remittents and Intermittents appear'd; the Paroxysms of the first, were uncertain, and altogether irregular; the Urine turbid, and without Sediment, as well in the Remittents as in the Paroxysms; the Pulse was quick and weak; the Tongue white and moist, and the Sick complain'd of a Lowness of Spirits.

But in those Sick, where there were regular Paroxysms, and a perfect Apyrexia follow'd, the Sediment was seldom lateritious, but mostly whitish, inclining to yellow. Pains in the Side attended the Sick, and the irregular Paroxysms; and as they increas'd, so did the Pains; but upon the Decline of the Paroxysms, they were more mild, but seldom quite abated.

True Pleurifies and Peripneumonies were very rife, as well as the fore-mention'd Symptomatic, but differ'd in the Degree of Inflammation, from those of the preceeding Winter, and Beginning of Spring; for the Blood was less inflam'd

flam'd (*t*); and the inflam'd Pellicle was either very thin, or was wanting; nor were they so much eas'd by Bleeding as before. The Pulse commonly was soft and quick, yet very uncertain and variable: But the Pains in the Sides were mostly fix'd and immoveable; the Spirits faint, and the Sick were weak and languid (*u*). The intercostal Muscles were first seiz'd, and frequently, when the Distemper grew worse, it affected the Lungs, and rather seem'd to be a slow Peripneumony, than an inflammatory one, into which it often chang'd.

Before the Middle of *May*, the Air From the Middle to the End of May colder, with much Rain. was colder, and abundance of Rain fell, and it was colder than usual at this Time of the Year; the Winds were uncertain, but mostly from the North; this continu'd through the Month, except a few Days.

Distempers

(*t*) Is not this owing to the more relax'd State of Fibres, in this warm, pleasant Season?

(*u*) Do not these confirm Part of § 16. of Air? And do they not proceed from a great Relaxation of the Fibres?

Distempers remain'd the same, but with this Difference, that the Sick, whether in Intermittents or Remittents, were more afflicted with pleuritic Pains in the cold, than in the hot Weather (*w*).

*Unsettled to
the Middle
of July.*

The Temperature of Air from the Spring and Beginning of Summer, to *July*, was very unsettl'd and changeable; as well with Respect to Heat and Cold, as to the Winds, which were perpetually changing, insomuch that they were seldom two Days alike, and were sometimes very cold and strong.

*Then was
much hotter to
September.*

About the Middle of *July*, the Air was much hotter; the Spirits in the Thermometer rising from 45 to 25 Degrees.

In this Month, some few putrid Fevers appear'd, but the Remittents and Intermittents rag'd most, and cutaneous Eruptions often accompany'd those Distempers,

(*w*) Does not this depend upon a greater Density of Blood in a cold, than in the hot Season?

stempers (*x*), sometimes of a brown Colour, which were always dry; others were full of a pellucid, scorbutic Serum, which itch'd very much. These different Species of Eruptions seem to be owing to the different Tenacity, and Volatility of the perspirable Matter; or from the Difference in the Orifices of the Vessels, and Thickness of the Cuticle.

At this Time, the above-mention'd Remittents were not only more frequent, but accompany'd with worse Symptoms than in the preceeding Spring; for in the few first Days, they seem'd like putrid Fevers; but afterwards remitted and chang'd into Tertians, or rather Hemitritæans. The Sick at this Time, were sleepy and stupid, especially in the Paroxysms; and complain'd of a Weariness, Weakness, and Lowness of Spirits; which Symptoms accompanied the putrid Fever, but in a greater Degree.

The

(*x*) Is not the cold, moist Temperature of Air, the Cause of this, by retaining the perspirable Matter, which, upon the coming of the warm Weather, gush'd out? And does not this confirm Part of what I said in § 12. and § 13. of Air?

The Tongue was mostly dry and brown, the Pulse quick and weak; Urine red, and without Sediment; but in Remittents after the Sweat, whether it came on it's own Accord, or by taking a large Quantity of Diluents; they often had a little Looseness, and the Urine depos'd a reddish, yellow Sediment.

Languid and hysteric People who had this Distemper, had their Nerves very much affected, and a great Fluttering of Spirits; the Fever lasted longer, and went off without any sensible Crisis (y).

This State of Air and Diseases continu'd to *September*, except a few Days in *July*, when the Winds were Northerly, with Rain, and for some Days, the Air was colder; but soon chang'd as above-mention'd. At this Time, Loosenesses, Gripings, and Cholera Morbus appear'd, which kill'd some, but vanish'd in two or three Weeks Time (z). The Autumnal Season

(y) Does not this confirm Part of § 11. of Air?

(z) Do not these confirm Part of § 12. and § 13. of Air?

Season in *September* and *October* was ^{September and October} cold and moist, and Intermittens were ^{cold and moist.} very rife, especially Quartans.

About the End of *October*, the Wind ^{Frost, with North Wind,} was North, the Weather cold and frosty; ^{for a Fort-} the Spirits in the Thermometer descended ^{night.} to 75: This State of Air, though it did not last above 14 Days, yet was bad for those, who were weaken'd by frequent Intermittents; for many of 'em had severe Pleurifies, Peripneumonies, and Quin-
fies, but more especially the former.

Remittents, after the Coming of the Frost, disappear'd; but not the Intermittents, for Quartans were more frequent, and seiz'd almost all the common People: But when the Frost went, and the Weather was cold and moist, then ^{Cold and moist.} Intermittents of all Kinds rag'd much; so that it was hard to say, which Species was most stirring.

About the Middle of *December*, it ^{Middle of December a hard} froze hard for three Weeks, and *January* ^{Frost for three Weeks; Janu-} was very cold and snowy, with North ^{ary cold and} Winds, ^{snowy, with North Winds.}

Winds. This cold Season, as well as the former, chang'd many Tertians into Quartans, and brought some true Peripneumonies, but of the slow Sort; and also a Difficulty of Breathing in pituitous and aged People; but to the younger Sort, Pleurifies, as well symptomatic as true; especially afflicting those more than others, who had Intermittents before. In many of these, the Pains of the Sides depended upon the Intermittents, and like them, begun and ended with the Paroxysms; and that more regularly, than the Spring before.

*Most of February
warm for
the Season.*

The greatest Part of *February* was warm for the Season, in which Time, pleuritic Pains, and Cephalalgias attended the Paroxysms of the Intermittents more than before, and the Fever was very prone to bring on a Delirium. About this Time, many Quinsies, accompany'd with Suffocations, appear'd; which, if not immediately resolv'd, were fatal (a).

§ 16. The

(a) May not this proceed from the Blood being rarefy'd, by the increas'd warm Weather?

§ 16. The same Diseases continu'd in ^{1728, March} *March*, at which Time, the Weather was ^{warm, but in other Respects} *inconstant*; but yet as warm as in other Years. About the End of this Month, Quartans, which had continu'd through Winter, chang'd into Tertians and Quotidians; amongst which, some Remittents appear'd; especially in the next Month; the Beginning of which, was warmer ^{Beginning of April warmer than usual,} than usual: In a little Time warm continu'd Rains fell, and lasted 'till *May*, ^{with warm continued Rains.} after which, the Weather was hot.

A little after this, putrid Fevers appear'd again (*b*); the Symptoms were in the

(*b*) Does not the Succession of these Fevers amongst themselves shew their Nature and Disposition to be the same, according to the increas'd or decreas'd Heat, as well in different Years as in different Seasons of the same Year? For their Differences mostly depend upon a less Fluidity of the Febrile Lensor, and a slower, languid Circulation in a cold Season; and upon a fluxile State, a quicker Circulation, and perhaps a greater Quantity, Acrimony, and Putrefaction in a hotter Season; for during a hot Season, a putrid Fever reign'd, as in the Years 1718 and 1719; but that decreasing, it was chang'd into an Intermittent; and by the Winter's Cold into a Quartan. By Parity of Reason, as the Spring approach'd, Intermittents begun again; and as the Heat increas'd, became more like continu'd Fevers, which by the Acrimony, Volatility, and Putrefaction of the Matter, produc'd putrid Fevers. This

the Beginning mild, kindly, and did not seem in the least dangerous, but often with bad Events; nor did the Pulse differ much from the natural State. The Urine was not so red as in the former Year;

is still more confirm'd, in that the nearer to perfect Intermittents the Fevers are, and the longer the Intervals betwixt the Paroxysms are, the stronger Dissolvents, *cæteris paribus*, they require; & *vice versa*, as well in Remittents, as Intermittents, Quotidians, Tertians, and Quartans. Hippocrates's Observations made in his Epidem. § 2. Year the 2d, seems to be of a Piece with this; for he says, "That in that wet, cool Season, there were few ardent Fevers, and them not bad; for they were neither seiz'd with a Delirium nor Bleedings; Tertians were more frequent than Ardents, and were more troublesome; Quartans, Quotidians and Erratics were likewise frequent." And in Lib. de Humoribus, pa. 50. lin. 27. he says, "If the Summer be like Spring, Fevers will be of a kind, good Sort; neither very acute, nor attended with dry Tongues. But in dry Summers ardent Fevers are very rife;" as we see in Lib. 2. § 3. de Epidem. And does not the Observation, that the Inhabitants of hot Countries are more subject to ardent and putrid Fevers, than those of a colder? And that the Inhabitants of a colder Climate are more subject to Remittents and Intermittents, also confirm this Opinion? Does not Boerhaave's Experiment upon the Dog, mentioned in § 11. of Air, confirm it also? Is it not apparent why the first Kind, infest a hot, dry Season; the latter, a colder? And also why, upon the Heat decreasing, so do putrid Fevers; and then the others increase? Is it not also apparent, why putrid, ardent, and continued Remittents, sometimes on their own Accord, change into Intermittents? And hence does it not appear, why Spring Intermittents often end of their own Accord, as the Heat increases? But the Autumnal, by the Winter's Cold, become worse? Because by the first, the Lensor is dissolv'd; by the last it is increas'd.

Year; in some it was turbid, but in others with a whitish, yellowish Sediment; it grew pale, as the Distemper grew worse. The Sick sweat for the most Part about the Face and Breast, whilst the rest of the Body was hot and dry; and in the End, the Aphthæ affected the Palate and Mouth. These Symptoms increas'd daily, with a Delirium about the 12th Day; with thin Urine, a weak, frequent, and unequal Pulse; to which succeeded Tremblings, *Collectio floccorum*, and other Fore-tellers of Death. It is worthy of Observation, that some, at the Beginning of the Fever, had a Vomiting and a plentiful Looseness; these all soon recover'd; for by these Means the Fever was either abated, or chang'd into an Intermittent. At the same Time appear'd a Fever like this, except that red Spots, not unlike Flea-bites, and variegated like Marble, appear'd on the Breast; and before the Eruption of the Spots, was a purisy Difficulty of Breathing; but when they appear'd, it was easier: In many of these People, the Head ached, in which, there often was some Blood came from

the Nose, which sometimes was thrown out by Stool, but that was seldom.

*June hot and
dry, and West
Winds.*

In *June*, the Weather was hot and dry, with a little Wind, and that from the South and West. The putrid Fever still remain'd, and Remittents were very much stirring; and many of those, who had Intermittents in the preceeding Winter and Spring, labour'd under hectic Fevers, with nocturnal Sweatings, Watchings, wandering Pains, and a Languor of the whole Body.

*Middle of July
was cooler,
Wind North,
with some
Rain.*

About the Middle of *July*, the Air was cooler, the Spirits in the Thermometer descended to 45 Degrees; the Wind chang'd from South to North, and some Rain fell. At this Time, Pleurifies and Quinsies above describ'd return'd again, and Intermittents more frequently return'd, afflicting those chiefly, who had had 'em the Autumn and Spring before.

*August dry,
but cooler than
usual.*

The dry Season return'd again about the End of the Month, and lasted all *August*, but was cooler than usual at this
Time

Time of the Year. The putrid Fever remain'd yet, but with somewhat different Symptoms, as well from them, which appear'd in the Beginning of Summer, as from those of the preceeding Year. For the Sick was seldom stupid and drowfy (c), as in the former Year; though the Urine was not so turbid, as in the latter Fever; the Pulse for the most Part was stronger, they were more delirious, and the Sick were more outrageous. At the same Time, Remittents were very rife, with the same Changes of Symptoms as are mention'd in the putrid Fever: They, at last, were chang'd into Intermittents; and according to the Strength of the Sick, and the various Degrees of Inflammation, were chang'd into Quotidians, Tertians, or Quartans.

K 2

The

(c) Does not this shew the Effects of the Difference of the Seasons; how that in a moist Season, People are subject to Dulness, Stupidity, Pleuritic Pains, &c. but in a dry Season, to a Delirium in a more outrageous Manner? And are not These owing to a greater Strength, or Elasticity of the Vessels, in a dry, than in a moist Season, according to § 13. of Air? Does not these agree with what old Hippocrates says in several Places?

September
cold North
Winds.

The Cold increasing in *September*, with Northerly Winds, the Season was more healthy (*d*): The putrid Fever vanish'd, and the Remittents were fewer; but the Intermittents remain'd as frequent as before, accompanied with greater Coldness, with rheumatic and pleuritic Pains in the Paroxysms; but they went off with the Fever. This State of the Air and Diseases, lasted almost through *October*, to which succeeded Plenty of Rain, with a warm South Wind; which State continu'd to the End of *November*.

*The End of
October and
November
warm, with
a South Wind
and Rain.*

*At the End of
November a
hard Frost two
Weeks, with
some Snow.*

This Season was very healthy, few Diseases appearing, except Intermittents. But about the End of the Month, the Wind chang'd to North; and it froze very hard for two Weeks, in which Time, some Snow fell. The Spirits in the Thermometer first fell from 56 to 76, and soon after to 80. This Change brought on Gripes, Loosenesses (*e*), and pleuritic Pains

(*d*) Does not this confirm what we said before about the Change from one Fever to another?

(*e*) Is not this owing to a cold, succeeding a warm Season?

Pains in the Paroxysms of Intermittents (which were only few) and also some Apoplexies, and Palsies, especially about the Thaw.

About *Christmas* the Frost return'd, About Christmas a cold Frost, with Snow, for a Month. with much Snow, and continu'd about a Month, with great Cold; producing the same Distempers as mention'd in 1715, in that frosty Winter. No Remittents appear'd, and but few Intermittents; but as soon as the Frost went, Intermittents begun again, frequently accompanied with pleuritic Pains in the Paroxysms. Many Pleurifies, Quinsies, and Peripneumonies, as well Nothæ as the true; seizing as well those in Health, as those, who in the Summer or Autumn had had Intermittents, and kill'd many of the common People.

February was very cold, with much Snow, and a hard Frost; but not so cold February very cold, with Snow and a hard Frost, as the last Month. The same Distempers continu'd; but we must observe through the whole Winter, that the warmer and

pleasanter the Air was (*f*), the more frequent were Intermittents, and approach'd nearer to the Species of continu'd Remittents, and *vice versa*. And also, that the sharper and colder the Season was, the more rife were inflammatory Distempers; and the Intermittents in the Paroxysms very much resembl'd these.

§ 17. March

(*f*) Does not this yet further confirm what was said, before about the Change from one Species of Fevers to another, *viz.* that it is owing to the various Degrees of Heat and Cold in this Season, as well as in the preceeding Autumn and Summer? And does not this solve that difficult Problem, Why Epidemics, alike in their Nature, should be often found in Temperatures of Air very unlike? For that Temperature of Air, which appear'd cold in Summer, which then strengthen'd the Fibres and condens'd the Blood; in Winter, feels warm, relaxes the Tone of the Fibres, and rarefies the Blood. It was this Phænomenon that induc'd Physicians to suspect and conclude, that Epidemics ow'd their Rise to some hidden Quality of Air: We here mean only common, not pestilential and contagious Epidemics. *Hippocrates*, de Epidem, Lib. 2. pag. 997. and in Aph. 8. Lib. 3. says, "In constant and settled Seasons, if the Things that are seasonable appear seasonably, the Diseases will be of a good sort, and easily determin'd; but in irregular Seasons, they will be also irregular, and determin'd with Difficulty." And again, in Lib. de Humorib. pag. 50. lin. 13. he says, "What the Diseases of any Season will be, and the Nature of the Constitution of them, may be thus known; If the Seasons are natural, and well regulated, Diseases will come to a Crisis with Ease: And if the Diseases are proper to the Seasons, the Manner of 'em is evident: If the Season changes, the Diseases will change also."

§ 17. *March* was dry and cold, with ^{1729, March} *Northerly Winds*; which lasted to the ^{dry and cold,} *End of April* 1729, insomuch that the ^{with Northerly Winds,} Spring was more like Winter, than the Spring. In this Season Chin-Coughs were almost innumerable, Quinsies, Peripneumonies, Pleurisies, Rheumatisms, Cephalalgias, Ophthalmies, Erisypelatodes, Itchings, and cutaneous Eruptions were all very rife (g). Some few Intermittents appear'd, as well regular as anomalous, and these mostly of the Quartan Sort: As the Warmth increas'd in the Spring, Tertians and Quotidians were more frequent than these; but yet in nothing near the Number of the above-mention'd Diseases.

In the Beginning of *May*, the North ^{First Half of} Winds brought abundance of cold Rains, ^{May North} which lasted to the Middle of the Month; ^{Winds, with} from which Time, the Weather was ^{much cold} warmer, but yet in a less Degree than ^{Rain; the} usual, with Easterly Winds for the most ^{latter Half} ^{warmer, but} ^{in a less De-} ^{gree than} ^{usual,}

K 4

Part.

(g) Are not all these owing to a cold State of Air, as mentioned in § 12. of Air?

Part. Inflammatory Distempers continu'd almost all *May*, though less frequent; yet as the Heat increas'd, they decreas'd, and at length, in the Beginning of *June*, they almost quite vanish'd (b).

*June and July
hot and dry,
and also August,
to the Middle of
September.*

June was hot and dry, except a few Days, about the Middle of the Month, in which some cold Rains fell: This hot State lasted to the Middle of *September*, except about the End of *July* it rain'd some Days.

This Season was healthful to the End of *August*; about which Time, Remittents and Intermittents begun to rage again, and seiz'd many; which latter, because of the long and double Paroxysms, seem'd a Species of continu'd Fevers, but at length were turn'd into regular Intermittents. We must observe, that these Fevers show'd themselves later this Year than usual; very likely, because
the

(b) Is not this owing to the Warmth, which relaxes the Vessels, as mentioned in § 11. of Air, whence the inflammatory Disposition of the Blood would decrease also?

the cold Season lasted to *June*. Whence it also happen'd, that notwithstanding the Season was sickly, yet scarce any putrid Fevers appear'd (*i*). About this Time, Chin-Coughs seiz'd many Children, with great Suffocations, and a great Quantity of Phlegm; especially about the Coming of the succeeding Season. The Approach of Winter produc'd the same Effect in Remittents, as was mention'd before; yet Intermittents remain'd, though fewer in Number.

The moist Season began about the Middle of *September*, with Southerly Winds; which State, except a few Days, lasted to the Middle of *December*, and was more wet and cloudy than all the other, as appear'd by the Barometer and Hygroscope. In this Season a little Fever appear'd, almost seizing all with a little Shivering, Lassitude, almost a perpetual (*k*) Cough, Hoarseness, Pains in the

(*i*) Does not this confirm what I said in Note (*b*) § 1 of this Chapter?

(*k*) *Hippocrates* says, in § 3. Aph. 13, 14. pa. 1247. "If the Summer be dry and northerly, and the Autumn showery"

the Head, and Difficulty in Breathing; all which Symptoms, in the Robust and Healthy, soon vanish'd, without any great Inconvenience: But it afflicted the sickly People very much, especially the consumptive, cachectic, old, pituitous, bulky People, and they who had Intermittents; for in these People, it brought on Pleurifies and Peripneumonies, which soon suffocated, and such like Distempers, which kill'd many.

Hysterick and hypochondriac People were at this Time very bad, and many of 'em labour'd under Vomitings, flatulent and distending Pains in the Stomach and Bowels (*l*).

The

“ showery and southerly; Head-aches and Paralytic Diseases are like to happen in Winter; and with these, “ Hoarsenesses, Stuffings in the Head, Coughs, and in “ some Persons Consumptions: And if it be northerly “ and dry, it agrees very well with moist, phlegmatic “ Constitutions, and with Women.” These Symptoms, as we observ'd before, generally attend Fevers and other Distempers in a cold, moist Season; and we find it confirms Part of § 13. of Air. May they not be owing to those Parts being more expos'd to the external Air, than the others? And may they not be more severe, because the Air chang'd from a dry to a moist State?

(*l*) May not these Pains arise from an obstructed Perspiration?

The languid and aged People were seiz'd with rheumatic and arthritic Pains, rather a Colluvie Serofa, than from any Acrimony of the inflammatory Matter, as appears by the œdematous Swellings, and slow Pain.

Some at this Time had a slow Fever, with a soft Pulse, Pain and Heaviness of the Head, wandering Sweats, a Languor of the Spirits, and turbid Urine; it sometimes went off in Sweats, sometimes with a Diarrhæa; but most frequently turn'd into an Intermittent. This Disease seem'd to belong to the Class of Remittents, although it underwent some certain Variations, occasion'd by the Difference of the Season of the Year, and the State of the Weather; by which means, the weak Pulse and Weight of the Head seem'd to be brought about, because they, who were in other Respects in Health, were thus affected (*m*),
as

(*m*) Does not this confirm Part of what I said in § 132 of Air?

as well as they, who were in Fevers. The Sick, in whatsoever Distemper, had always a perpetual Cough, a Pain and Heaviness in the Head, Stupor and Drowsiness. The Small-Pox appear'd here and there, but of the kindest, and most distinct Sort I ever saw (*n*).

The moistest Season I ever saw, except this, was in 1715. But that was attended from the latter End of Spring almost thro' all Summer, with Northerly Winds; the Air was cooler than usual; and as to the Coldness, not unlike the Spring; yet it was not unhealthy, few Distempers then appearing; perhaps, because this State differ'd but little from the foregoing, and because the Moisture help'd a little to relax the Vessels, which the North Wind contracted. But this Constitution of Air begun in, and continu'd through all Autumn and Beginning of Winter; the foregoing Season being hot and dry, and the Winds were Southerly; all which would
relax

(*n*) May not this be owing to the Moisture relaxing the Vessels and the Pores, thereby letting the Matter out with more Ease and less Danger?

relax the Vessels the more. We must observe the Effect of the daily Moisture in both Constitutions, although in a different Degree, by Reason of the past Season and the increas'd Cold; for in both Seasons there was a slow Fever, with a Cough, a Heaviness in the Head, a Stupor, Drowsiness and Deafness; the Lungs were oppress'd with Phlegm; hysseric and hypochondriac Passions raged much; and the inflammatory Diseases that appear'd, were milder, and of a kinder Sort.

About the Middle of *December*, the *Christmas* Rains decreas'd gradually 'till *Christmas*, was clear and pleasant, with South Winds. when it begun to be pleasant and clear, with gentle South Winds; so that it was more like Spring, than Winter, little Frost having yet appear'd, and no Snow. About the Middle of January cold, with North Winds, and some Snow. A little before the Middle of *January*, From that Time to the End of February, warm again. Beginning of March North Winds, Snow, and cold Rains in Abundance to the Middle of March. the North Winds blew, the Air was cooler, and a little Snow fell; but the other State soon return'd, and, for the most Part, continu'd so to the End of *February*. About this Time, the North Winds return'd again, and a large Quantity

tity of Snow fell; to which succeeded cold Rains in Abundance, which lasted to the Middle of *March*.

The latter Part of Winter was not very unhealthy, but kill'd some consumptive and asthmatic People, as it were, unawares; both the Swelling of Legs (o) and Difficulty of Breathing coming upon 'em at once. There appear'd also in the cold Season some Pleurifies, and some other inflammatory Diseases: The Small-Pox was stirring, but of a good Sort; also some miliary Fevers, petechial Fevers, and Intermitments appear'd, but were not very rife; these Intermitments were mostly irregular, yet chiefly affected the Head with a periodical Pain, or the Breast, like a Pleurify: The Small-Pox above-mention'd were here and there stirring, but vanish'd as the Spring advanc'd.

1730, The
End of April
grew warmer,
with a
West Wind.

§ 16. The Weather grew gradually warmer almost to the End of *April*, with a West-

(o) Is not this from too great a Relaxation of the Fibres?

a Westerly Wind. The fore-mention'd Intermittents, and some inflammatory Distempers, remain'd yet, which latter were fewer than usual (*p*) at this Time of the Year.

About the End of *April*, and Beginning of *May*, cold, dry North Winds blew, which brought Loosenesses, Gripings, and some Iliac Passions (*q*).

The End of April and Beginning of May, cold and dry, with North Winds.

About the Middle of *May*, the Air was hotter, and some Spring-like Showers fell. At this Time, Intermittents were a little more common, which often ended in a Jaundice (*r*); which Disease was more frequent than usual, and seiz'd others no ways affected with Fevers. This Weather soon chang'd, for the Season became

Middle of May hotter, with Showers; thence to August was colder and wetter than usual; then some Weeks of serene, pleasant Weather.

(*p*) Was not the warm, moist Winter and Spring relaxing the Vessels, the Reason why so few inflammatory Diseases appear'd, they being fewer than in any of the former Years.

(*q*) Do not these confirm Part of § 12. of Air, by the Perspiration being turn'd inwards?

(*r*) Did not the State of Air in the foregoing Winter, by weakening the Vessels, make a slower Circulation, and a more viscid State of the Blood? By § 13. of the Introduction, we see it is easily accounted for.

became colder and wetter than usual, except a few Days, with North Winds; which State lasted to the Beginning of *August*; to this succeeded pleasant and serene Weather, which lasted some Weeks, with West Winds for the most Part. All this Summer was healthy, as I observ'd before in the wet Summer in 1715; a few Distempers only appearing, and those of a good Sort; except in the Beginning of *August*, some had the Cholera Morbus: The Small-Pox and Measles were stirring in some Places in the Neighbourhood; but they scarce appear'd in this Town 'till Autumn.

*Latter End of
Autumn, and
Beginning of
Winter wet,
to the End of
November,
then a sharp
Frost.*

The latter Part of Autumn and Beginning of Winter were wet and rainy, and then the Small-Pox and Measles were more common; but few other Kinds of Fevers show'd themselves, except a slow Peripneumony, which appear'd about the Beginning of Winter. The wet State lasted almost to the End of *November*, and then was succeeded by a sharp Frost, accompany'd with Snow and North Winds. About this Time the Mercury
in

in the Barometer rose suddenly (*s*), almost to the greatest Height; and the Spirits in the Thermometer sunk about 20 Degrees, which State of Air lasted about a Week. This cold Season increas'd the Peripneumonies; and also produc'd some Pleurifies, and Diarrhæas, with Gripes; but the Pleurifies were not so common by far, as the Peripneumonies. The Frost soon again return'd, with a little Snow; and again went off gradually, in about the same Space of Time. The Small-Pox and Measles remain'd, and also other Fevers with cutaneous Eruptions (*t*) of no bad Sort, but not so good as those in the last more mild Season.

Frost.

In the Beginning of *January* a great Quantity of Snow fell, and the Frost return'd again, and continu'd to the Beginning of the following Month, except

In January and Beginning of February much Snow and Frost.

L a few

(*s*) This sudden and considerable Change could not fail making considerable Alterations in our Constitutions; as we may see in § 14. of Air; as we observ'd before.

(*t*) Does not this confirm Part of § 12. of Air? as we have taken Notice in several Places before.

a few Intervals. At this Time inflammatory Distempers begun to stir, and were more virulent; and they who had the Small-Pox, had a worse Sort (*u*). The Frost and Thaw were accompany'd with the same Distempers, as usual in such a Constitution of Air (*w*).

*After the Frost,
a Drought,
with sharp
North Winds,
which conti-
nued to the
Middle of
April.*

After the Frost was gone, the Drought came with sharp North Winds; at which Time, Pleurifies began to be rife, with this Difference from those, which in the Beginning of Winter seiz'd the Sick; for these seiz'd the weak and aged chiefly, and Peripneumonies were more rife than they; but now true Pleurifies rag'd, which chiefly seiz'd the younger, stronger and

(*u*) Is not this owing to the Cold, which contracts the Fibres and Pores, making the Blood more inflammable? *Vid.* § 12. of Air.

(*w*) Does not this Temperature of Air and that in 1723, compar'd with their Contraries, and the different Distempers appearing in each, prove many of the foregoing Questions? And does it not appear from the foregoing Series of Distempers, why inflammatory Distempers, such as Pleurifies, or the like, seldom afflict Women, and other weak and lax Constitutions, whose Blood is mostly thin, dissolv'd and florid; but that they only happen to young, strong, active People, whose Blood is more dense and thick: *Et vice versa*, why slow, nervous Fevers mostly happen to the former?

and more active Sort. The Disease was accompanied with a hard Pulse, and acute Pain, with a thick inflammatory Pellicle on the Blood, and other inflammable Signs. This State of Air was not unlike that in the Winter 1715, except that it was often mild, and the Frost return'd again, whence the Cold affected the Body less, and the Number of Sick were fewer.

§ 19. The Drought, with the Cold, ^{1731, Some cold Rain,} remain'd to the Middle of April 1731, ^{with East and North Winds,} at which Time, some cold Rain fell, ^{to the Beginning of May;} with Easterly and Northerly Winds; ^{to this succeeded a warm State, with gentle South and South-West Winds.} and the cold Air lasted almost to the Beginning of May: To this succeeded a warm State of Air, with gentle South and West Winds.

Inflammatory Distempers lasted the cold Season; yet they were more frequent for some Days at the Beginning of the Heat (x); and some relaps'd, who had recover'd. Many had Cephalalgias,

L 2

Palsies,

(x) We observ'd before, that inflammatory Diseases were worse, just upon the Change from a Frost to a Thaw; for the same Reason, they are worse in this Change, from a cold to a warm State.

Palfies, and Apoplexies: Some few languid Fevers appear'd, with large Sweats, Sickness, Lowness of Spirits, and sometimes were attended with Diarrhæas; which Symptoms tormented the Sick alternately, and seiz'd the weak and lax Women above the rest. Some of these, in the Beginning of the Disease, had a great Looseness, with Gripes; which happen'd chiefly to them, whose Bowels had been weaken'd by frequent Diarrhæas, and Pains in the Stomach and Bowels; but the Disease went off, as in this Month in 1728; at which Time the hot State succeeded the cold on a sudden: But at this Time the Fever was of a kinder Sort, and fewer in Number; perhaps because of a less Degree of Heat (y).

The Heat abated, but the Drought lasted to near the End of August, when some sudden Rains fell.

The hot State soon ceas'd, but the Drought lasted beyond the Middle of August, except a few Days, in which some sudden heavy Rains fell. The Summer, both as to Heat and Winds, was more

(y) Does not this Effect proceed from the foregoing Rigidity of the Fibres, and the increas'd Motion by the Heat?

more changeable than the foregoing, though in a less Degree, as appear'd by the Thermometer; which, though it underwent frequent Changes, yet was kept within less Bounds. Few Distempers appear'd this Summer, but these were of the inflammatory Sort for the most Part; and gradually decreas'd, as well in Strength, as Number. To these were join'd some Remittents and Intermittents, sometimes resembling inflammatory Diseases, and sometimes slow Fevers; yet these were not epidemical, but seem'd rather to arise from the Weakness of Strength of the former; insomuch that they rarely appear'd, except where the former had preceeded, and even that in their Decline.

To this State of Air succeeded large *Much Rain,*
 Rains, with chiefly South Winds, which *with South*
 continu'd to *September:* This brought *Winds to Sep-*
 on Cholera Morbus, and Dysenteries; *tember.*
 but these neither were frequent, nor appear'd long. This Summer was very dry; but in Respect to the Winds, very unlike the Year 1723: But in both we

must consider the Effects of the daily Drought in producing inflammatory Diseases, though in a different Degree; for this was not unlike that, as to the Species of Diseases, which were almost all of the inflammatory Class; yet they seem'd to differ much in Degree; insomuch that they were more mild and more frequent in this, and the Blood was less inflam'd; which, perhaps, may be owing to the mild and equable Heat, and the gentle South and Westerly Winds: For through all the Year 1723, the North and Easterly Winds blew, which contracts the Fibres, condenses the Fluids, and disposes the Humours to an inflammatory Disposition. But in this Summer, neither the Humours were burnt up by Heat, nor the Vessels were scorched up by the drying Winds; from whence we may conclude this Year was like 1723; for a wet Season preceeded both, to which succeeded a sharp Winter, and Spring not unlike; all which Seasons were accompany'd with Distempers of the same Kind; whilst the pleasant and mild Season of this Year, brought a Variety, as well in
the

the Air, as in the Diseases which were stirring. A little before the Middle of *September*, the Weather was warm and pleasant, with South Winds, which lasted almost to the End of *November*, and was an healthy Season.

§ 20. We see what a Number of Diseases proceed from the manifest Qualities of the Air, over and above what arise from its occult Qualities; we also find that many are caus'd by Effluvia, which dispose to this, or that Disease; but of them we cannot easily, either know the Species they will belong to, nor yet always, whence they proceed. But as to the different Kinds of Fevers, that have been mention'd by the two learned Physicians last nam'd, they seem to be altogether owing to the apparent Qualities of the Air, as we before observed in § 16. of this Chapter, in Note (*b*): And is not this still farther confirmed in § 17. at Letter (*i*) pag. 153? For let us only look back, and make a short Recapitulation, and then we shall be convinced of what I have asserted.

In 1716, the Summer was hot, but not so hot as some of the following, with West Winds; the Fevers were Remittents, and also slow nervous Fevers appear'd.

In 1717, the Summer was hot and dry, with South and West Winds. Distempers were Remittents, and Intermittents; in the Beginning of the Disease they resembl'd the putrid Fevers; but in a few Days an imperfect Crisis appear'd, and then they chang'd into Remittents or Intermittents.

In 1718, the Summer was hot and dry. The putrid Fever call'd *συνολος* appear'd.

In 1719, was a dry Season; then appear'd a putrid Fever; the venal Blood was florid and dissolv'd.

In 1720, was a dry Season, but not so hot as in the last Year. *Wintringham* observ'd, that the Fever accompanied the Heat of the Air, for as the Heat increas'd and decreas'd, so did the Fever; and
we

we also know, that any Thing will putrefy sooner in a hot, than in a cold Season.

In 1721, was a cold, moist, and rainy Season. Then no putrid Fever appear'd; but the Fevers were rather of the Intermittent Class, tho' very different from those of the last Year: For the Sick were not delirious in the Paroxysms, and in the Intervals they had a perfect Apyrexia; they were very subject to a Looseness; the cold Fit was greater and longer; the hot Fit more mild and shorter. Is it not evident, that the cooler and moister State of Air in this, than in the last Year, made the Humours more viscous, and less acrimonious?

In 1722, Spring and half Summer was cold, wet and rainy, with chiefly Easterly and Northerly Winds. Distempers were chiefly Intermittents of the Tertian Class, tho' some Quartans appear'd, especially among those, who had had frequent Returns of Tertians. These Intermittents would not easily yield to the
Bark

Bark alone, because of the Patient's Proclivity to a Looseness; but when join'd with Alexipharmics and Diaphoretics, it seldom fail'd of Success. Did not the greater Cold and Moisture in this, than in the last Year, make the Humours still more viscous, and clog up the perspiratory Vessels? Hence we see the Reason of the Want of warmer Medicines to be join'd with the Bark.

In 1723, Summer was dry, but not hot in Proportion; was cloudy, with North and West Winds; which State lasted to the Beginning of Winter. No putrid Fever appear'd this Year: Was not this for want of the usual Heat? The chief Diseases were of the inflammatory Class, as Pleurifies, &c. Are they not owing to the cooler State contracting the Vessels, and condensing the Blood?

In 1724, this Summer was wet and cold, with North Winds. The Spring and Summer were exceeding healthy: No putrid or any other bad Fevers appear'd.

In 1725, from the Middle of *April* to *December*, the Weather was very cold and wet for the Season; and in a greater Degree than in any of the former Years. This Summer was more healthy than the last. In Autumn a little Fever appear'd with Sicknefs, Nausea, and Vomiting, to which succeeded a troublesome Itching, and cutaneous Eruptions; and also Peripneumonies with a slow Fever: Is not this owing to the cold and moist Season? Neither a putrid, ardent, nor any other bad Fever appear'd.

In 1726, the first Part of Summer was hot and dry, with Southerly and Westerly Winds. Some Remittents and Intermittents appear'd with Itchings and cutaneous Eruptions: The latter Part was wet and moist with North Winds. The Distempers chiefly were such as afflicted the Stomach and Bowels, such as Cholera Morbus, Diarrhæas, &c. But yet no putrid or ardent Fevers appear'd.

In 1727, we find that in the cold and wet Part of the Summer, Remittents and Intermittents appear'd : But in *July*, when the Air was hotter ; then putrid Fevers appear'd ; but the Remittents and Intermittents yet remain'd. The Remittents now, at the Beginning resembl'd putrid Fevers ; but afterwards remitted and chang'd into Tertians, or rather Hemitritæans.

In 1728, the Summer was hot, and then putrid Fevers appear'd again, with Remittents : But in *July*, when it was cooler, with a North Wind and some Rain ; then Pleurifies and Quinsies return'd ; and also Intermittents. In Autumn the dry Season return'd again, but yet cooler than usual : Putrid Fevers remain'd, but with different Symptoms.

1729, An Account of this we have already given.

In 1730, this wet, cool Summer was healthy, no putrid or other bad Fevers appearing.

In

In 1731, few Distempers appear'd, but those were mostly of the inflammatory Sort; Part of the Summer being much cooler than usual.

Now, from all these Observations, we find that Nature has almost kept on in a regular Method; which does not only appear from these, but also from other Observations made by the learned Society at *Edinburgh*, and by many others in several Parts of the World ($\approx$); all which, (if carefully and impartially examin'd) I believe, will be found rather to confirm, than disprove this Conjecture. But this I shall now leave to be compleated by a better Pen than mine; and I shall proceed to make some necessary Remarks relating to Epidemics.

Epid-

($\approx$) *Viz.* *Bernardini Ramazini*, a Physician of *Modena*, published a History of the Constitutions of the Years 1690, 1691, 1692, 1693, 1694, and Epidemical Diseases about *Modena*, and the adjacent Countries. Also an Epidemical History of *Germany*, by several eminent Physicians. The learned Sir *Hans Sloan* has also given us a Journal of the Weather of *Jamaica*, and the popular Diseases of that Country.

Epidemical Distempers oft seize Cattle some Time before it affects human Bodies, as that remarkable Epidemic in 1732 did ; I saw some Horses that fell down and panted for Breath, others died upon the Spot. The same was observ'd in *Scotland*. *Vid.* *Med. Essays*, Vol. 2. Pag. 32.

Sydenham says (*a*), we must take Notice, that some Diseases in this or that Year are regular, and have the like Phænomena and Symptoms in almost all, who are infected with 'em ; and go off in the same Way and Manner ; therefore a true History of Epidemics is to be learnt from these, as being most perfect of the Kind.

Again he says (*b*), there is a Variety in Nature, that is of a more nice Speculation, *viz.* that the same Diseases should vary often under one and the same Constitution, as to its Beginning, State, and Decl-

(*a*) *De morb. acut.* pag. 5.

(*b*) *Ib.* pag. 6.

Declination; which is of so great Consequence, that the curative Indications are to be omitted or us'd, according as the Disease is dispos'd.

Wintringham says (c), we are (when any Fever begins to be epidemical) diligently to compare the Symptoms of other Fevers with the reigning Epidemics, and duly to weigh, how much of the Epidemic Indoles they have in 'em. For as they, for the most Part, depend upon the foregoing, or present State of the Air, which is common to both, they can't fail of being alike in the very Essence of the Disease, although they appear to be of a different Species.

He also says (d), that when any epidemic Fever begins, it frequently happens, that they, who are well and about their Business, begin to find themselves a little out of Order for a few Days; which Disorder either goes off by Stool, Vomiting,

(c) Comment. Notolog. pag. 59.

(d) *Ib.* pag. 125.

(e) *Ib.* pag. 156.

Vomiting, or by Sweat, which happen on their own Accord. These critical Evacuations, though they be different, in different People, yet they often show the Indoles of the Epidemics, which are about to come; and also show which Way, above others, Nature endeavours to throw out the febrile Matter, and to ease the Sick: This he observ'd to be so constantly true, that he scarce could recollect any Synochus being epidemical, in which Nature did not show itself after this Manner. *Vid.* 1729. Again he says (*e*), that the more sudden the Change is from one Extreme to another, with the greater Force it affects our Bodies, and brings worse and more Diseases, and *vice versa*. This is much the same with *Hippocrates's* Observation, for he says (*f*), "The Changes of the Seasons
" are the most productive of Diseases,
" the greatest Changes especially."

We must observe, that when any Epidemic is rise, whatsoever Illness we labour

(*e*) Comment. Notolog. pag. 156.

(*f*) Lib. de Humorib. pag. 50. lin. 55.

bour under, for the most Part, is attended with the same Symptoms as the Epidemics are; as we may see in several Parts of this Chapter, *viz.* 1725, 1729, from *September to December.*

I wish Sydenham and Wintringham had given an Account of the Full and Change of the Moon in each Month, which would show us what Influence she has in increasing and decreasing our Diseases. I hope Observators for the future will do it.

We must observe, that the Small-Pox are mild, and of a more distinct Sort, in moderate, warm, moist Seasons, and *vice versa.* For in *January* and *February* 1715, the Weather was cold, frosty and snowy, with South Winds; the Small-Pox were very ripe, of the confluent and bad Sort, and were worst in the greatest Cold: But in Summer, though they were of the confluent Sort, yet they were more mild than in Winter.

M

In

In 1716, Summer was hot, with West-erly Winds: The Small-Pox lasted all Summer, and quite vanish'd in Winter, but were more mild.

In 1723, the Summer was dry and cool, with North and East Winds: The Small-Pox were of the confluent Sort, and bad; sometimes having the purple Spots; the Sick had nephretic and pleu-ritic Pains, before the Eruption of the Pustles.

In 1724, Summer was cold and wet. The Small Pox were of the distinct Kind, few and of a good Sort.

In 1726, *May* was hot and dry; *June*, *July*, and Part of *August* wet, with North Winds. The Small-Pox was mostly of the confluent Sort, tho' not so bad as in 1723.

In 1727, the Winter was very cold, but in *March* the Weather was warmer; and then the Small-Pox appear'd again;
and

and the Symptoms were worse as the Weather grew warmer.

In 1729, *September* was moist and wet, with a South Wind ; which State lasted to *December* in this Season ; here and there the Small-Pox appear'd, but were the most kind Sort he ever saw.

The latter End of Winter was pleasant, serene Weather ; the Small-Pox was rife, but as yet of a good Sort ; which vanish'd gradually at the Approach of Spring.

In 1730, the latter Part of Autumn and Beginning of Winter were wet and rainy : The Small-Pox was then more frequent. In *November* the Frost came, with Snow and North Winds. The Small-Pox continu'd, which, tho' of a good Sort, yet were not so good as in the last more mild Season. All *January* was frosty, with a great Quantity of Snow : They who had the Small-Pox had a worse Sort, and with severer Symptoms.

We must observe pretty much the same in the Measles : For we find that in 1721, the Weather was moist, cold and rainy, with North Winds : The Measles begun in *April*, and lasted all Summer, were of a bad Sort, with continual Coughs, a Difficulty in Breathing, join'd with an Inflammation of the Lungs.

In 1725, the Season was cold and rainy from *April* to the Middle of *December* : About the End of *September* the Measles appear'd, but of a good Sort ; they continu'd all Winter. *January* was cold and frosty, with some Snow ; in *February* fell cold Rains, and Snow, with Frost alternately ; the Winds were southerly. About the End of *February*, when the Air grew warmer ; they who had the Measles, complain'd of a greater Difficulty of Breathing, and had a more obstinate Cough, sometimes with pleuritic Pains and a Looseness.

In 1730, in the Beginning of Winter the Weather was wet and moist, which
State

State continu'd almost to the End of *November* ; to this succeeded a sharp Frost, with Snow and North Winds. The Measles continu'd, tho' of no bad Sort, yet were not so mild as in the last more mild Season.

May we not hence conclude, that all these epidemical Distempers chiefly proceeded from, and were influenc'd by the manifest Qualities of the Air, contrary to *Sydenham's* (*g*), but agreeable to *Hippocrates's* Opinion (*b*) ? I could bring many more Proofs, but I believe the Reader will think these sufficient ; therefore I will not spend any more of his Time, but shall proceed to draw a few Aphorisms from this Chapter.

(*g*) De morb. acut. § 1. cap. 2. pag. 4. and 5. Schedul. monit. pag. 486.

(*b*) Epid. Lib. 1. § 3. & ubique de Humorib, pag. 50. de Natur. Homin. 227,



APHORISMS

Deduc'd from the

Observations made in this Chapter.

APH. I.

FROSTY Weather is bad for phthi-
sical and consumptive People, bring-
ing pleuritic Pains : It causes inflamma-
tory Distempers, such as Pleurisies, Perip-
neumonies, Quinsies, Rheumatisms, with
acute Pains, and a strong Pulse : It in-
creases pleuritic Pains in the Paroxysms
of Agues ; brings a Difficulty of Breath-
ing in old pituitous People ; and weakly
People have Diarrhæas, Stranguries, asth-
matic, hysteric, and hypochondriac
Symptoms. The Small-Pox in this Wea-
ther is commonly of the confluent Sort,
with some bad Symptoms, as appears
from § 3, 4, 5, 13, 14, 15, 16 and 18.

APH.

A P H. II.

In cold and moist Autumns, Diarrhæas, and Dysenteries, with a slow Fever ; as appears from § 5.

A P H. III.

A Change to a cold and moist State in Summer, brings Diarrhæas, Dysenteries, Gripings, &c. and People in Fevers are subject to have Diarrhæas, and then the Crisis often goes off this Way ; as appears from § 7. They are also subject to Cholera Morbus, and other Diseases which afflict the Stomach and Bowels, as is evident from § 14.

A P H. IV.

In moist, cold, rainy Summers, People are subject to Intermittents, as appears from § 10. Such a Season is commonly very healthy, except a few Days at first ; as appears from § 12. § 13. and § 18. And in whatever Distempers any labour'd, they complain'd of a Vertigo,

M 4

a Coma,

a Coma, Torpor, Drowsiness (*i*), Stupor, a Heaviness in the Head, and Dulness of Hearing; and they who labour'd under any hypochondriac and melancholic Disorder, not only were sensible of the daily Moisture, but the Symptoms were much increased the following Spring, as appears from § 9, 13, and 15.

APH. V.

In a cold and wet *May*, the Sick in Intermittents and Remittents were more frequently afflicted with pleuritic Pains in this, than in the hot Weather; as appears from § 15.

APH. VI.

From *September* to *December* was wet and rainy Weather; Intermittents were stirring, as appears from § 15. With this Weather were South Winds; then hysteric and hypochondriac People were very bad; many of 'em labour'd under Vomitings, and flatulent and distending Pains in the
Stomach

(*i*) *Hippocrates*, Aph. 16. § 3. "In wet Seasons are generally long Fevers, Loosenesses, Corruptions, Epilepsies, Apoplexies and Quinsies."

Stomach and Bowels ; the Sick of whatever Disease, had always a perpetual Cough, a Pain and Weight in the Head, Stupor and Drowsiness ; and even some, who seem'd otherwise well, were affected in the Head ; as appears from § 18.

A P H. VII.

In *September* fell large Rains with South Winds ; then came Cholera Morbus, Dysenteries, Diarrhæas, &c. as is evident from § 19.

A P H. VIII.

Small Pox are commonly distinct, and of a good, kind Sort, in moderate, warm, and moist Seasons ; and *vice versa*, as appears from § 3, 4, 10, 11, 13, 14, 16, and 17.

A P H. IX.

In a hot and dry Summer Remittents and some Intermittents were stirring ; especially the former, which at the Beginning resembl'd the *σύννοχος*, as appears from § 5. Putrid Fevers, call'd *σύννοχος*, appear'd :
Remittents

Remittents remain'd, but with worſe Symptoms, and more irregular Paroxyſms, than in the Year before, as is evident from § 6. and in ſome People large ſpontaneous Hæmorrhages (*k*), Spitings and Vomitings of Blood, as appears from § 7.

A P H. X.

In this dry, though not hot Season, Remittents and Intermittents were riſe; they who labour'd in Fevers and Intermittents, were delirious in the Paroxyſms, as appears from § 8, 14, 16. This Symptom ſeems to attend a warm, dry Season, as a Dulneſs of Hearing, Stupor, &c. do a moiſt Season.

A P H. XI.

In cool, dry Summers, inflammatory Diſtempers are moſt frequent, and more ſevere than in any other, as appears from § 11.

A P H.

(*k*) Is it not apparent hence, why *Hippocrates* ſo often mentions People bleeding at the Noſe in Fevers more frequent than here with us?

A P H. XII.

A cool Air in *July*, with North Winds and some Rain, brought Pleurifies and Quinsies, as appears from § 16.

A P H. XIII.

In a cold *September*, with North Winds, the Paroxysms of Intermittents were attended with greater Coldness, with pleuritic and rheumatic Pains, but they went off with the Fever, as appears from § 16.

A P H. XIV.

In a cold and dry *February* and *March*, were Pleurifies, Peripneumonies, Quinsies, rheumatic, podagric and arthritic Pains, convulsive Coughs, from a sharp Serum vellicating the Larynx, and other such like inflammatory Indispositions, with a hard Pulse, as appears from § 14.

A P H. XV.

Chin-Coughs were innumerable, Quinsies, Peripneumonies, Pleurifies, Rheumatisms, Cephalalgias, Ophthalmies, Erysipelatodes,

pelatodes, Itchings, and cutaneous Eruptions were very rife, as appears from § 17.

APH. XVI.

In a warm *April*, with a West Wind, inflammatory Distempers were less frequent, as appears from § 18.

APH. XVII.

A Change to a cold State in *May*, brought Gripings, Diarrhæas, and some Iliac Passions, &c. as appears from § 18.

APH. XVIII.

In a warm latter End of *May*, Intermittents often ended in a Jaundice, as appears from § 18.

APH. XIX.

Inflammatory Distempers are often worse at the Beginning of a Thaw, as appears from § 2, 3, 16.

APH. XX.

Cutaneous Eruptions often attend a moist, wet Season, as appears from § 15.



CHAP. III.

On DIET.

§ 1. **D**IET has been esteem'd by the *Diet necessary to be consider'd in a Medicinal Way.* most eminent among the ancient Physicians, ever since the Time of *Hippocrates* (who was the first that us'd it in a medicinal Way) (*a*) as one of the principal Points to be observ'd in the Cure of Chronic Distempers. It is from Errors committed in this Part of Non-naturals, that the chief of Chronic Diseases spring: It wou'd be endless to produce Authorities to shew this, it being what makes so great a Part of the Works of all the standard Writers in Physic: How so useful and necessary a Part of Cure

(a) Le Clerc *Histoire de la Médecine*.

Cure came to be so much neglected, is not my Business to show in this Place.

*Simplicity of
Diet among
the Ancients.*

The present luxurious Way of Living daily produces Distempers unknown to the Ancients; for they not only prolong'd their Lives, but enjoy'd 'em; whereas too many, now-a-days, choose to load their Constitutions with such various Causes of Cachexies, and divers Distempers, as even render Life it self an insupportable Burden, rather than deny themselves the Gratification of indulging their Appetites. It will not, I hope, be thought an useless Speculation, to look back into the Manner of Living amongst the Ancients, which will convince Mankind, that People may be strong and healthy, without feeding as luxuriously as we do in this Age.

§ 2. In the most early Times, Men liv'd upon such Fruits as sprung out of the Earth, without Art or Cultivation; and desir'd no Sort of Drink, besides that which the Rivers and Fountains afforded:

Thus

Thus *Lucretius* (*b*) has describ'd the Food
then us'd——

*Quæ Sol atque imbres dederant, quod
terra crearet
Sponte sua, satis id placabat pectoræ
donum.*

We have an Instance of Persons living even upon Grass and Hay (*c*): *Ælian* (*d*) describing the most ancient Food of several Nations, reports, that at *Argos*, they chiefly liv'd upon Pears; at *Athens* upon Figs; in *Arcadia* upon Acorns; hence the *Arcadians* in *Lycophron*, are call'd *καλανυράγοι*, *Acorn-Eaters*; and at *Rome* (*e*) also the *Corona civica*, by *Virgil* call'd (*f*) *Quercus Civilis*, was compos'd, “*Fronde Querna, quoniam cibus, victusque antiquissimus, Quernus capi solitus.*” Upon these Things they liv'd,

(*b*) Lib. 5. *Potter's Antiq.* Vol. 2. pag. 357. and *Herod.* 1. 17. 1. 20. 4. 177. 185.

(*c*) *Tulp. Observ.* Lib. 4. Cap. 10. and *Nebuchadnezzar* liv'd upon Grass seven Years; *Daniel*, Chap. 4. Verse 32, 33.

(*d*) *Var. Histor.* Lib. 3. Cap. 39.

(*e*) *A. Gellius*, Lib. 5. Cap. 6. *Kennet's Antiq.* Lib. 4. Cap. 16. pag. 221.

(*f*) *Æn.* 6. Ver. 772.

liv'd, 'till they begun to till the Ground, and grow Corn : That Sort which was first in Use was Barley, as *Artemidorus* tells us (*g*); hence *Pliny* (*b*) says, Some Gladiators were call'd *Hordearii*, from the *Latin* Name of Barley. But as better Grains came in Use, this was neglected, and only us'd as a Punishment amongst the Soldiers, as we find in the *Roman* Camp, who were to eat this, instead of Bread Corn (*i*); an Example of which we find in the second *Punic* War, wherein the Cohorts which lost their Standards, had an Allowance of Barley assign'd them by *Marcellus* (*k*); and *Augustus Cæsar* did the same, as *Suetonius* reports (*l*).

The first Ages of Men, *Plato* says (*m*), wholly abstain'd from Flesh, out of an Opinion that it was unlawful to eat or pollute

(*g*) Lib. 1. Cap. 71.

(*b*) Nat. Hist. Lib. 18. Cap. 7.

(*i*) Vegetius de re militari, Lib. 1. Cap. 13.

(*k*) Plutarch. vit. Marcell. pag. 408. Livy, Lib. 27.

(*l*) Vita August. Cæsar. Cap. 24. pag. 66. viz. Si quæ cessissent loco decimatas hordeo pavit, Centuriones, statione deserta itidem, ut manipulares, capitali animadversione puniit. *Kennet's Rom. Antiq.* Part 2. Chap. 15. p. 220.

(*m*) Lib. 6 de Legibus.

pollute the Altars of the Gods with the Blood of living Creatures : However, after some Time, they began to eat Flesh ; and that of Swine was the first of all Animals, they being wholly unserviceable to all other Purposes ; but Oxen for several Ages were not eaten, it being thought unlawful, because they were serviceable to Mankind in cultivating the Ground.

The Ancients then did not seek for Rarities or Dainties ; but were content with Sheep, Goats, Swine, and Oxen, when it was become lawful to kill them ; with what they caught in Hunting, with what was most easily provided, and afforded the most healthful Nourishment. Thus all the *Grecians* mention'd by *Homer* liv'd upon a simple Diet, young and old, Kings and private Men were content with the same Provisions ; neither boil'd, nor with Sauce ; but only roasted (n). They did eat no other than gross
N Food

(n) Athenæus, Lib. 1. pag. 9.

Food (*o*) ; *Servius* (*p*) observes out of *Varro*, that among the *Romans* the primitive Diet was roast Meat, then boil'd ; and last of all Broths came into Use.

This was the Way of living among the ancient *Greeks* ; neither were the *Lacedæmonians* of later Ages, less temperate than their Ancestors, so long as they observ'd the Laws of *Lycurgus* ; who (to prevent Luxury) appointed publick Meals (*q*) : Much the same was observ'd formerly in *Persia*, and also in *Cyrus's* Reign (*r*) ; for, by Authority, the Children were not left to the Management of their Parents, but were regulated upon Principles, for public Good.

The *Indian* Brachmans (*s*) had a Strain beyond all the Wit of *Greece*, beginning their

(*o*) Rollin. Belles Lettr. pag. 379. Vol. 1.

(*p*) In *Ænead.* 1.

(*q*) Rollin. Ancient Hist. Vol. 2. pag. 322, 325, Bell. Lettr. Vol. 3. pag. 297. Plutarch. vit. Lycurg. Vol. 1. pag. 136.

(*r*) Rollin. Ant. Hist. Vol. 2. pag. 280. Bell. Lettr. Vol. 3. pag. 299.

(*s*) Kenner's Antiq. pag. 15. Essay 2. Sir William Temple's Miscell. pag. 2. Essay 1.

their Care of Mankind, even before their Birth ; and employing much Thought and Diligence, about the Diet and Entertainment of their Breeding Women ; so far as to furnish 'em with pleasant Imaginations, to compose their Minds and their Sleep with the best Temper, during the Time that they carried their Burthen.

We read also in *Zenophon's Cyropædia*, Lib. 1. pag. 3, — 8, that the only Food allow'd either the Children or the young Men in *Persia*, was Bread, Cresses, and Water. And in the Dialogue betwixt *Cyrus* and his Grand-father *Astyages*, the first told the latter, who was entertaining him very sumptuously, That the *Persians* eat nothing but Bread and Cresses, which would answer the same Purpose. *Rollin's Anc. Hist.* Vol. 2. pag. 82.

The Cooks of *Lacedæmon* were only Dressers of Flesh, and they who undertook any Thing farther in the Art of Cookery, were cast out of *Sparta*, as the Filth of Men infected with the Plague (t):

N 2

Where-

(t) *Ælian*, Lib. 14. Cap. 7.

Wherefore *Mithæcus* a *Sicilian* (*u*), a very eminent Cook, designing to follow his Profession in that City, was immediately order'd by the Magistrates to depart: But in other Cities in *Greece*, and in latter Ages, the Art of Cookery was in greater Esteem; tho' *Heraclides* and *Glaucus* the *Locreusian*, who wrote Books concerning it, affirm, That it was unworthy of the meanest Person, who was free-born, as we are inform'd by *Athenæus* (*w*); and that the *Sicilian* Cooks were priz'd above any others, as the same Author has prov'd out of *Cratinus* and *Antiphanes*. The *Sicilians* were so remarkable for their way of Living, that a *Sicilian* Table, was a proverbial Phrase for one furnish'd very profusely and luxuriously; as was *Daphnicis moribus vivere*, to express the most dissolute and luxurious Way of living (*x*). Next to the *Lacedæmonian* Tables, those of *Athens* were furnish'd most frugally; hence to live like an *Athenian*, was to live penuriously.

In

(*u*) Maxim. Tyrius principio Dissert. 7.

(*w*) Lib. 14. Cap. 23.

(*x*) Strabo, Lib. 16. pag. 750. Procopius Persicorum, Lib. 2.

In *Egypt* the Quantity, as well as Quality, of both Eatables and Liquids, were formerly prescrib'd by the Laws to the King (y), whose Table was cover'd with nothing but the most common Meat; because Eating was design'd, not to tickle the Palate, but to satisfy the Cravings of Nature. The same Simplicity was seen in all other Things; they had such an Aversion to Luxury, that *Plutarch* (z) tells us of a Temple in *Thebes*, which had one of its Pillars inscrib'd with Imprecations against that King, who first introduc'd Luxury and Profusion in *Egypt*.

Cassius (a) the Roman General (*Anno* 299 before *Christ*) on his coming to *Antioch*, by public Proclamation prohibited all his Soldiers from going to the Temple of *Daphne*, that they might not be corrupted by the Luxury and Debauchery of that Place. And when *Publius Scipio*

N 3

Africanus,

(y) *Rollin's Ant. Hist.* Vol. 1. pag. 33.

(z) *De Isid. & Osir.* pag. 354.

(a) *Prideaux. Connect.* Vol. 1. Part 1. Lib. 2. pa. 563.

Africanus jun' Spurius Mummius, and *L. Metellus (b)* went from *Rome*, upon a Commission to *Alexandria* in *Egypt*, they were there entertain'd with Rarities of the most sumptuous Fare; yet they wou'd touch nothing more of it, than what was useful in the most temperate Manner, for the necessary Support of Nature, despising all the rest, as that which corrupted the Mind, as well as the Body, and bred vitious Humours in both.

Such was the Moderation and Temperance of the *Romans* at this Time (*c*); and hereby it was that they at length advanc'd their State to so great a Height; but when their Prosperity and great Wealth became the Occasion that they degenerated into Luxury and Corruption of Manners, which brought many Diseases, or ill Habits of the Body, unknown to former and simpler Ages; they then drew Decay and Ruin as fast upon 'em, as they had before Victory and Prosperity, 'till

(b) Diodor. Sicul. Legat. 32. *Prideaux*. Connect. Vol. 2. Lib. 4. Part 2. pag. 295.

(c) One hundred and thirty six Years before Christ.

'till at length they were undone by it,
so that *Juvenal* (*d*) very justly says of
'em,

————— *Sævior armis*
Luxuria incubuit victumque ulciscitur
orbem.

Luxury, though pleasant, is attended with very fatal Consequences, and may be emblematically represented, by that ingenious Fable of *Homer's* (*Odys. Lib. 12. Lin. 39. & deinceps*) where he speaks of the *Syrens*, whose sweet Voices and harmonious Songs, drew all such as had the Curiosity to hear 'em into a Precipice; for which Reason *Martial* calls 'em very elegantly, the pleasing Pain, the cruel Joy, and the agreeable Destruction of Mariners:

Sirenas, bilarem navigantium pœnam,
Blandasque mortes, gaudiumque cru-
dele (*e*).

§ 3. Our Food consists, not only of such Particles as are proper for the
N 4 Nourish-
In what Man-
ner Diet af-
fects our Con-
stitutions.
1st, By its
Quality.

(*d*) *Sat. 6. Vers. 29.*

(*e*) *Rollin. Bell. Lettr. Vol. 1. pag. 327.*

Nourishment and Support of the Body, but also contains in it certain active Principles, as Salts, Oils, Spirits, &c. whose Properties are, both by vellicating and stimulating the Solids to quicken the Circulation, and by attenuating the Fluids, to render 'em more fit to undergo the necessary Secretions. The Art of Life then, is to ascertain the Mediocrity of such a Diet, as neither makes the Salts and Oils too many to cause any Distemper; nor too few to let the Solids become too much relax'd: Suppose, *ex. gr.* a Dram of Salts, Oils, or Spirits in 24 Hours was necessary; then certainly that Diet which conveys this Dram in the whole Substance of the Food, will be best: But if by an Over-charge of Salts and Oils, Diseases are brought on, and are to be remedied by a Diet, wherein one Half of this Quantity is found, then such Food is to be chosen, or such a Quantity of it taken, as will convey into the Body only half a Dram of such. And if that End can be obtain'd, by following the common, ordinary Diet of the healthiest People in any Country or Climate;

Climate; then that is, beyond Dispute, the best Regimen in general to preserve Health. For certainly the infinitely wise Creator has provided Food proper and peculiar to each Climate and Country; which is the best for the Support of the Creatures he has plac'd there, as we see by the Health and Chearfulness of the middling Sort of People of almost all Nations; who only use simple Diet, without lusting after foreign Delicacies. Under Diseases indeed the Case is different, for then the Sick often require Substances of more active Principles, than what are found in common Diet, in order to produce sudden Alterations; but where such Alterations are not necessary, the same Effect may be obtain'd by the repeated Force of Diet, with more Safety to the Body, where less sudden Changes are less dangerous (*f*). The smaller Activity of Aliment is compensated by it's Quantity; for, according to the Laws of Motion, if the Bulk and Activity of Aliment and Medicine, are in reciprocal

Propor-

(*f*) Celsus. Præfat. ad Lib. 5. pag. 241.

Proportion, the Effect will be the same; for they both only bring about the Effect, by acting either upon the Solids or Fluids; upon the first, by stimulating, contracting, or relaxing; upon the last, by attenuating, coagulating, or rendering them acrimonious, or more mild. That all these can be perform'd by Diet, as well as Medicine, is evident from Reason, Experience, and, in some Cases, from ocular Demonstration, as in Chirurgery, in Wounds and Sores, where we may see the Influence upon them by Diet; for a too relaxing Diet begets what they call proud Flesh; and when too astringent, a Cicatrice; hence we see the Quality of Diet (though much neglected) yet comes under the Notice of a Physician, as well as that of Medicine: The only Difficulty then will be, in choosing which Kind, and what Quantity of Food, best suits the Patient.

By its Quantity.

§ 4. Too great a Quantity of Food in the Stomach, stretches the Fibres, and compresses the Vessels; whence, as there is less Blood in the Vessels of a full, than empty

empty Stomach (*g*); it must not only be cooler, by Reason of a more retarded Motion of the Blood, (which we find in some Degree after ordinary Meals) but must also have much less Moisture separated from its Glands, at a Time, when the too great Mass of Food requires an extraordinary Supply of Moisture; the Consequence of which, must be a more difficult and unkindly Digestion. Moreover the Action of the Stomach is totally stop'd by too great Repletion; in which Case both the Orifices of the Stomach by a necessary Mechanism close, and neither will admit nor expel any Thing; consequently relaxing, as by warm Water, is the only proper Expedient. Hence Cru- dities, Ructus, Nauseas, &c. Whence Obstructions in the Glands of the Me- sentery, Lungs, Liver, Spleen, &c. The Stomach, by pressing the Diaphragm too much upwards, lessens the Cavity of the Thorax: Hence Dispnoæas, and a viscid State of the Blood; by compressing the Aorta (especially if in Bed, lying on the Back,

Back, and forcing the Blood more upwards) it causes Apoplexies, &c.

If we eat too little, the Fibres will grow weak for want of Nourishment, whence those Evils mention'd under a weak and lax Fibre will ensue; and the Blood, by a constant Attrition, will become sharp, acrid, and of an Alcaline Nature; from whence we may very justly conclude, that feeding too sparingly, is of worse Consequence than living too generously, as *Sanctorius* and *Hippocrates* observe (*b*); for the last Author says, “ the Damage of a more full Diet, is soon
“ remedied by Exercise or gentle Evacuants; but the Decay of Strength,
“ (the natural Consequence of too spare
“ Diet) is not so easily repair'd.” When the Stomach is too full or too empty, the Excretion of Perspiration is stop'd, as *Sanctorius* tells us (*i*).

We observ'd above, that the Vessels of the Stomach when full, contain'd a less
Quantity

(*b*) *Hippoc.* Aph. 5. § 1. pag. 1243. *Sanctor.* Aph. 15, 16, 32, 33, and 40. § 3.

(*i*) Aph. 11. § 3. pag. 172.

Quantity of Blood ; so when empty, there being a greater Flow of Blood, must occasion a greater Heat (*k*); which, I doubt not, contributes to encrease Appetite and Digestion ; which is still more confirm'd ; for that, in Winter, when the external Vessels are contracted by the cold Air, and the Blood thereby flowing more in the inner Vessels, the Digestion and Appetite are strongest, there then being a more plentiful Secretion from the Glands of the Stomach.

Long Abstinence from Food may be the Parent of many Diseases, especially in hot, bilious Constitutions ; and also very painful to acid Constitutions, from the uneasy Sensation it makes in the Stomach. A Lady, who had been very much afflicted with some of these Pains ; after taking great Quantities of Absorbents, and Stomachics, which had been prescrib'd her by several Physicians ; and after she had try'd the *Bath Waters*, return'd Home without any Signs of Recovery,

(*k*) *Hale's Hæmorrh.* pag. 182. Exp. 23. § 8.

covery, and sent for me ; I desir'd her to continue taking the same Electuary, which was order'd before I was consulted (it was compos'd of the aromatic, warm Stomachics) and to divide her Meals, so as to take some every third Hour ; which Method she continu'd for some Time together, and was thereby restor'd to her perfect Health.

There can be no certain Quantity laid down, for all Constitutions, nay not even for one and the same Person, at different Times ; for, as *Hippocrates* says, *Ut Labor, sic Cibus* : The best and general Rule is, not to eat longer, than the Distention of the Stomach is easy and free ; nay, even to rise from Table with an Appetite ; our Appetite is therefore, the best (tho' not infallible) Guide, both in Sicknefs and Health (1). Hence may be seen the Folly of By-standers and Nurses, who are continually cramming the Sick, when Nature craves not ; and daily Experience con-

(1) Keil. Med. Stat. Brit. Aph. 47. pag. 338.

confirms that Observation of *Hippocrates* (m): “ That the more we nourish
 “ impure Bodies, the more Damage they
 “ receive ;” for nothing is more certain,
 than by how much the more is taken in,
 than is sufficient for the Exigencies of
 Nature ; by so much the sooner will the
 Body be wore out ; because by such
 Means, all the secretory Organs are more
 and faster wore away, than is needful ;
 and the Elasticity of all the Solids sooner
 decays. Is it not absurd, says Dr. *Keil*
 (n), for one who has half his Perspiration
 stop’d in a Day, to eat as much as if all
 had been evacuated ?

Many People eat of a great Variety of
 Food at the same Meal, which is very
 unwholesome : *Celsus*’s Rule is the best,
 for he says, *Plurima in dando cibo discrimina reperiuntur : ex quibus contentus uno*
ero. Præfat. pag. 19. lin. 19.

From what has been said may be deduc’d the Reason, why *Hippocrates* (o)
 says,

(m) Aph. 10. § 2. pag. 1244.

(n) Med. Stat. Brit. Aph. 47.

(o) Aph. 13. § 1. pag. 1243.

says, " Old Men require less Meat than
 " young:" Why, " When (*p*) Distem-
 " pers are at the Height, the Diet ought
 " to be the most slender;" as also (*q*)
 " Why it ought to be so in the Pa-
 " roxysms of Diseases."

People whose Digestion is impair'd,
 ought to eat but little at a Time, and
 often; for 'tis certain, the Force of the
 Stomach upon a little, is greater than it
 is upon a larger Quantity of Food;
 therefore a great Quantity is more dif-
 ficultly digested.

*The Import-
 tante of a
 proper Diet.*

§ 5. The Choice of Diet is of the ut-
 most Importance to such as have weak
 Lungs; for the Chyle in the Thoracic
 Duct, retains something of the original
 Taste and Flavour of the Aliment (*r*),
 which not being yet converted to Blood,
 must operate, and have some Effect upon
 the Lungs, into which it enters in this
 Condition, according to its original Qua-
 lities.

In

(*p*) *Ibid.* Aph. 11. Sect. 1. pag. 1242.

(*q*) *Ibid.* Aph. 11. § 1.

(*r*) Boerhaav. Chem. Vol. 1. pag. 65.

In an alkaline Disposition of the Blood and Juices, when the Urine appears red, smells ill, and tastes alcalious; Vegetable Acids are the proper Diet, and animal Food prejudicial.

On the contrary, if the Humours are acefcent or acid (as frequently happens in Infants, convuls'd from a Coagulation of the Milk in their Stomachs) Broth made of the Flesh of Animals, Eggs, or the like, are proper; whilst vegetable Acids wou'd prove hurtful: Hence appears more particularly, the Inconveniencies arising from an Excess in any one Sort of Diet; for if it be ever so innocent, a long Continuance of it without any Alteration, may dispose the Humours to tend towards an acid or alkaline Disposition; so that our modern Dishes, which are so well and so constantly fraught with Salt and Spices, must be very prejudicial, especially to those of an indolent, lazy, and sedentary Life.

Nature has provided a great Variety of Nourishment for Human Creatures, and furnish'd us with Appetites to desire, and Organs to digest them. As Aliments have different Qualities; a constant Adherence to one Sort, may make the Constitution verge to some one Extreme or other; therefore *Celsus's* Rule 1. Chap. 1. is a good one, *Sanus homo qui bene valet & suæ spontis est, nullis obligare se legibus debet, nullum cibi genus fugere quo populus utitur, interdum in convivio esse, interdum ab eo se abstinere, modo plus, modo amplius assumere, &c.* An unerring Regularity is almost impracticable, and the Swerving from it, when it is grown habitual, dangerous; for every Thing in a human Body becomes a Stimulus, as Wine or Flesh Meat to one not us'd to 'em: In diseas'd Persons, as in too strict, or too lax a State of the Fibres; in too acid or bilious State of Humours; a constant Adherence to one Sort of Diet may carry the Case beyond a Cure to the contrary Extreme.

The Strength of the Aliment, (by which I understand its Resistance to the solid Parts) ought to be proportion'd to the Strength of the solid Parts; and as Persons who use a great deal of Labour or Exercise, have their solid Parts more elastic and strong, they can bear, and ought to have stronger Food, too thin Nourishment being quickly dissipated, by the vigorous Action of their Solids: For it is equally absurd, for a strong, hale Man to feed upon too spare and thin Diet, as for one whose Digestion is impair'd to the very lowest State, to feed upon nothing but Beef and Bacon. Hence we see, that what is wholesome for one, is unwholesome for another, they being only relative Terms, and are so, according to the Diversity of the Constitutions; either as to their different Degrees of Strength and Tention of the Fibres, in some being too weak and lax, in others too strong and elastic; or according to the different State of their Fluids, which, as they consist of Spirit, Water, Oil, Salts, and terrestrial Parts,

so they differ according to the Redundance of the whole, or any Part of these Ingredients. Health consists in the *Æquilibrium* between the Solids and Fluids ; for when the Fluids don't press upon the Solids with a greater Force than they can bear, and no more in one Part than another ; and on the other Hand, when the Solids resist and act upon the Fluids so equally, that there is no uneasy Sensation, the Person is then in perfect Health ; whatever therefore is in our Food, that destroys this *Æquilibrium*, either by too much relaxing or contracting the Solids ; or by either attenuating or rendering the Fluids too viscid or acrimonious, must have the Effects mention'd under each of those Heads.

Our Food, as to it's Quality, is either from the animal or vegetable Kingdom ; 'tis either more or less nourishing ; either solid or fluid ; simple or more compounded. That taken from animal Bodies, seems best qualify'd for the recruiting of diminish'd Strength, and repairing the Loss our Fibres sustain in daily Motion ;

tion; consisting of Parts, which have heretofore been digested by the proper Organs of the Animal, and applied to the same Use. Whereas vegetable Food must be converted into Nourishment, by the proper Action of our own Viscera or Lungs; And whatsoever Food is nearest allied to the Animal Juices nourishes most; now nothing does this more than Flesh-Meat, Jellies, Broths, &c. And we find all Animals that live on Flesh-Meat, eat less, and are stronger than others. On the other Hand, vegetable Food requires more Labour of the Stomach and other Viscera to reduce it to be fit for Nourishment.

§ 6. Things of our Food that relax the Fibres, are warm Water, Tea, Whey, watery Decoctions of farinaceous Vegetables or Grains, as Peas, Beans, &c. all sweet and mild Garden Fruits, as Cherries, Strawberries and Melons, Cucumbers, and such as may be boil'd into a Jelly, Spinage, Cole, Beets, Cabbage, Coleworts, and all that Tribe; Lactescent Plants, such as Lettuce, Succory and Dandelion if unfermented; Carrots, Pars-

*Proper Diet
for a rigid,
and too lax
State of the
Fibres,*

nips, Skirrets, Scorzonera, and Goat's-beard; Oils from mild Plants, or Nuts, Cream, Butter, Marrow, and Whey for Drink; all these Things help to weaken the Fibres, and are therefore Remedies for a too rigid, strong, or elastic State. The Signs of a rigid State of Fibres are a hard, dry, scraggy, hairy, warm Body, with firm and rigid Muscles, a strong Pulse, Activity and Promptness in animal Actions. They whose Fibres are weak, ought to use that Sort of Food, which requires but a small Force to convert it into animal Substances; such as Milk, Broths, Jellies made of the muscular Parts of Animals clear'd from Fat, and warm Eggs from the Hen; for *Boerhaave* observ'd*, that they by keeping and boiling were both harder to digest, and lost the most spirituous Parts; they are the most nourishing of all animal Food; light Bread Puddings, &c. taken in small Quantities, and often; a little red Wine and Water, &c. all Kinds of Sorrel, Quinces, some Sorts of Pears, Plumbs, Medlars, Capers, Barberries, Pomegranates, Purslain, and such like gentle
Astrin-

* *Chem. Vol.*
2. *Process*
100. pag. 340.

Astringents; as also the hot Salads and Roots. The Signs of a lax State of Fibres are Paleness, a weak Pulse, Palpitations of the Heart, slack and flabby Muscles, Laziness, being soon tir'd, Bloatedness, and scorbutic Spots, being subject to œdematous Swellings, Crudities, &c. Hence we see, what causes one of these States of the Fibres, is a Remedy for the other, and so *vice versa*.

§ 7. *First*, They who abound with the acid Acrimony, can't be cur'd with anti-acid Medicines, unless their Diet be of the same Kind; all animal Substances, are Food of the anti-acid Kind, which are all alcalescent; especially such as feed upon Animals; more particularly Shell-Fish, and those of the idle Sort, as Eels, which, for want of Exercise, are fat and slimy; hence Fish without Fins and Scales were forbid the *Israelites*, *Levit. Chap. 11. Ver. 10.* because they were more subject to putrefy in that hot Country than the other more firm Sort of Fish. For the same Reason all carnivorous Fowls were forbid. *Ibid.* from Verse 13. to 20, in

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the same Chapter. The Vegetables of this Tribe are all warm Anti-scorbutics, the hot Salads, and Roots, Celery, Parsley, Asparagus, Cresses, Cabbage, Cole, Turnips, Potatoes, Carrots, Rockambole, Onions, Leeks, Garlick, Shalots, Radishes, Mustard, Horse-Raddish, Asparagus, Eringo Roots, Nettles, and all the warm Spices, Parsnips are more mild, Truffles, Morelles, Mushrooms, and most Kind of Nuts, are all of this Sort. This Distemper is most incident to Children, because their general Diet, together with their weak Fibres, contribute towards it; and yet it is possible to cure 'em, if the Nurse would live altogether upon Animals, and an alcalescent Diet.

The Signs of an acid State, are four Belchings, a craving Appetite sometimes of unusual Things, as in the Case of the Green-Sickness, cholical Pains, dry Gripes, a Change in the Colour of the Bile from Yellow towards Green, and a sour Smell in the Excrements. The chief State of Acidity is in the Primæ Viæ, from whence it sometimes gets into the Blood, then
Pale-

Paleness of the Skin, Lowness of the Pulse, four Saliva, some Sort of Eruptions of the Skin, and Itchings are the Signs.

Secondly, They who abound with an For an alkaline Acrimony. alkaline Acrimony, ought to live upon the farinaceous Vegetables; Vinegar, acid Fruits, as Oranges, which is a certain Cure of that Scurvy Sailors are most afflicted withal; Lemons, and all mild Anti-scorbutics, such as Sorrel, Succory, Lettuce, Apples, most of the common Pickles with Vinegar, and Rhenish Wine and Water, Whey and Butter-Milk. Those Things of the mealy Kind are acescent. Whatever cures one of these Acrimonies, will cause the other.

The Signs of an alkaline State in the first Stage of Digestion are, Thirst, a Want of Appetite, hot, nidorous Belchings, Foulness of the Tongue and Palate, with a putrid, bitter Taste, Nausea, bilious Vomiting, a Loathing, bilious Loosenesses, Stools with a cadaverous Smell, Iliac Pains, and a Sensation of Heat; when

when in the Blood, the Urine and Sweat has a putrid, cadaverous Smell; Eruptions of the Skin of a dark, livid, lead-colour and gangrenous, this is commonly call'd the hot Scurvy.

There are Things proper for both Sorts of Acrimony, and these are of the demulcent Kind, such as Decoctions of the farinaceous Legumes, native Oils, such as Cream, Butter, and Marrow, especially in that Scurvy where the Bones crackle; as also all insipid, inodorous Vegetables.

From what has been said, we see that these Acrimonies may be cur'd by Diet; but a viscid State of the Body requires some more active Principles to dissolve it, but is assisted as to Diet by diluting Substances, as watery Liquors, Robs, and Jellies of Garden Fruits dissolv'd in Water; and by saponaceous Things, as Honey, &c. by Stimulants, as are all Kinds of Salts, both acid and alkaline; all Substances that abound with acrimonious Oils, such as Onions, Garlick, hot mine-
ral

ral Waters, the aromatic Spices, as Mace, Cinnamon, &c. Thyme, Marjoram, Savory, &c. are proper. The Signs of such a State, are Sicknefs of the Stomach, a Sense of Fulnefs without Eating, a Want of Appetite, Vomiting up indigested Meat a long Time after eating, fwell'd Abdomen, Wind coming upwards, a pale Urine, almost without Smell, Palenefs, &c. This State is caus'd by living upon unripe Fruits, farinaceous Substances unfermented, and taken in great Quantities; all Vegetables that make a black or purple Tincture with the Vitriol of Steel, and have a rough, styptic Taste, have this Quality; hence Green Tea, and all inflamable Spirits are Coagulaters, as are the Juices of all austere Vegetables, which coagulate the Spittle, as some Sorts of Plumbs, and some Pears, Quinces, Pomegranates, Barberries, Medlars, Cornelian Cherries, Purslain, Burnet, Tamarinds, Capers, Samphire, and almost all Pickles, some acidulated and chalybeat Waters.

Thirdly, As for the Muriatic Scurvy, *For the Muriatic Acrimony,* that is almost peculiar to Sailors, and is
best

best cur'd by an acid Food, and acid Fruits, especially Oranges, four Butter-Milk, and in other Respects to be treated the same as in the alkaline State.

*Proper Diet
when the Hu-
mours are too
thin.*

Fourthly, If the Fluids are too thin; farinaceous, unfermented Substances, unripe Fruits, and unfermented Jellies of acid, austere Vegetables, hot Sallads and Roots, will soon alter that State, and thicken the Fluids.

This is occasion'd by too watery Things and Acids, such as Vinegar (s), which is the most penetrating Acid that thins the Blood yet known; and also by saponaceous Things, such as Honey, Robs, and Sapas.

*Diet for an
Oily Fatness
in the Stomach.*

§ 8. Some People are subject to an oily Fatness in the Stomach, and in their Blood and Spittle, which for want of Digestion will swim some Hours after eating, on the Top of the Blood, as appears by Venæsection; and if they spit into the
Fire,

(s) Boerhaav. Chem. Vol. 2. pag. 212, 380.

Fire, it will burn like Oil : This may be cur'd by acid, and by stimulating Substances, such as Salt-Petre, Cinnamon, Mace, Nutmegs, Cloves, Ginger, Pepper, Thyme, Savory, Marjoram, Rosemary, Mint, Orange and Lemon Peel, Fennel, Chervil, and Sage ; Garlick, Onions, Vinegar, &c. Saponaceous Things, such as Sugar and Honey, the Juices of pungent and aromatic Plants ; as also by a Milk Diet.

§ 9. As Tea, Coffee, and Chocolate, *Of Tea, Coffee, and Chocolate.* make so considerable a Part of Diet, especially among the Female Sex, it may not be improper to say something of them in particular.

The most active Principles of Tea, extracted by Infusion, are the most separable Parts of its Oil or Gum, and it's Salt : It's Salt and Gum are astringent, as appears by mixing it with Chalybeats ; it is acescent, as appears by it's Effects upon Stomachs troubled with Acidity ; by it's Astringency it helps in a very small Degree, to moderate the relaxing Quality of

of warm Water; by it's aftringent and ftimulating Quality, it affects the Nerves, as well as the warm Water does the Tone of the Stomach, when us'd fo constantly, as is now become the common Practice; Milk helps to foften it, and Sugar, as an Alcalefcant, adds to it's Stimulus; hence we fee that Tea is only proper for fome few particular People.

What is extracted from Coffee by Water, is the moft feparable Parts of it's Oil, which often fwims at the Top of the Decoction; this Oil is volatile, and confequently affords little Nutriment, producing all the Effects of an Oil and aromatic Acrimony, fuch as Drynefs, Heat, Stimulation, Tremors of the Nerves, and Watchfulnefs; hence it is hurtful to all hot, dry, bilious Conftitutions, and only beneficial to the Phlegmatic, if to any Body.

Chocolate is much the beft of the three; it's Oil feems to be both rich, alimentary and anodyne; this Oil, with it's own Salt and Sugar, makes it faponaceous

céous and detergent, by which Quality it often helps Digestion, and excites Appetite; and is only proper for some Constitutions, *viz.* the leaner and stronger Sort of phlegmatic People.

Many Persons argue, that such innocent Liquors (as they are pleas'd to call 'em) as Tea, Coffee and Chocolate, are so small in Quantity in Respect to our whole Mass of Blood, that they can't do any Harm, because they themselves are not immediately sensible of their bad Effects; but *gutta cavat lapidem*; are we to assert, that the Hand of a Clock does not move? Or, are we to deny that the Budding of Trees increases, because we can't discern their Motion and Increase? But Experience may confirm 'em of their Error, as well as the following Experiments of Mr. *Hales* in his *Hæmast.* from pag. 126, to pag. 139. *Exp.* 15, 16, 17, 18. " He took a young Spaniel Dog, " which weigh'd 21 Pounds, and as soon " as he had bled him to Death, by cutting " his Jugular Veins, he immediately open'd " his Thorax and Abdomen; and having " fix'd a Glass Tube, which was $4 \times \frac{1}{2}$ " Feet

“ Feet high, to the descending Aorta, he
 “ slip’d open his Guts from End to End.
 “ He first pour’d in seven Pots full of
 “ warm Water, the first of which pass’d
 “ off in fifty-two Seconds, and the re-
 “ maining Six, gradually in less Time,
 “ to the last, which pass’d in forty-six
 “ Seconds.” Here we must observe how
 gradually the warm Water relax’d the Vef-
 fels. “ He then pour’d in five Pots of
 “ common Brandy, or unrectify’d Spirit
 “ of Malt, the first of which was sixty-
 “ eight Seconds in passing, the last seven-
 “ ty-two Seconds. He then pour’d in
 “ one Pot of warm Water, which was
 “ fifty-four Seconds in passing. Hence
 “ we see that Brandy contracts the fine
 “ capillary Arteries, and that warm Wa-
 “ ter soon relaxes them again, by dilu-
 “ ting and carrying off the spirituous
 “ Part of the Brandy, which, as it is
 “ well known, not only contracts the
 “ Coats of the Blood-Vessels, but also
 “ thickens the Blood and Humours; both
 “ which Effects contribute to the sudden
 “ Heating of the Blood, by much in-
 “ creasing thereby its Friction in the con-
 “ tracted

tracted Capillary Vessels; which sudden Heat is also farther increas'd by the mere Mixture of Brandy with the Blood, as Dr. *Boerhaave* observ'd in *Chem.* Vol. 1. pag. 366. that on mixing of cold Water and Spirit of Wine, they immediately acquir'd eight Degrees of Heat, so as to make the Mercury in *Farenheit's* Thermometer rise from 44 to 52 Degrees; which Heat soon ceas'd, as does that sudden glowing Heat which it gives the Blood.

When cold Pump-water, which was 14 Degrees above the freezing Point, was pour'd on the Guts, and some of it at the same Time pour'd through the Tube, those fine Capillary Vessels would on a sudden be so contracted, as that the fourth Pot of Water was eighty Seconds longer in passing thro' than the like Quantity of warm Water was just before: And the fifth Pot being warm Water, and the Guts at the same Time being warm'd by Water pour'd on 'em, it pass'd in seventy-seven Seconds sooner than the former Pot of cold Water

P “ did.

“ did.” Hence we plainly see how greatly Heat and Cold dilate and contract the Vessels.

“ He made a strong Decoction of *Peruvian* Bark, well filtrated, and having
 “ prepar’d a Dog as before, he pour’d
 “ four Pots of warm Water, containing
 “ 18 Cubic Inches each, the last of
 “ which pass’d off in sixty-two Seconds
 “ of Time. Then he pour’d in 16 Pots
 “ of equally warm Decoction of Bark,
 “ the first of which pass’d off in seventy-
 “ two Seconds, and the following slower
 “ and slower, in Proportion as the Vessels
 “ grew more and more contracted by
 “ the Styptic Quality of the Decoction,
 “ so that the 16th Pot was 224 Seconds
 “ in passing. He then pour’d in success-
 “ sively 11 Pots of Water, of the
 “ same Degree of Heat with the Decoction;
 “ the first of which Pots was
 “ 198 Seconds in passing, and the succeeding
 “ ones pass’d sooner and sooner,
 “ in Proportion as they wash’d away the
 “ Decoction, and thereby relax’d the
 “ Coats of the Capillary Vessels, ’till
 “ the

“ the eight Pot, which pass’d off in 96
“ Seconds, after which the three follow-
“ ing Pots of Water pass’d off in the
“ same Time. He then pour’d in suc-
“ cessively five Pots of cold Pump-wa-
“ ter, which was 14 Degrees above the
“ freezing Point, and whereas the pre-
“ ceeding Pot of warm Water pass’d in
“ 96 Seconds, the 5th Pot of this cold
“ Water was 136 Seconds in passing. He
“ tried also in like Manner a strong De-
“ coction of Oak Bark on another Dog,
“ in which the preceeding Pot of warm
“ Water was 38 Seconds in passing, but
“ the following six Pots of Decoction
“ so contracted the Vessels, that the last
“ of ’em was 136 Seconds in passing.

“ Having prepar’d a Decoction of 12
“ Ounces of Chamomel Flowers, boil’d
“ in three Gallons of Water to two, he
“ pour’d in eleven Pots of it Blood-
“ warm through the Arteries, as above,
“ the first of which pass’d off in ninety-
“ six Seconds of Time, the last in 138
“ Seconds, which proves some Degree
“ of Stypticity in this Decoction. Then

“ the last of four Pots of scalding hot
 “ Water pass’d in 116 Seconds: After
 “ these, six Pots of a Decoction of two
 “ Ounces of Cinnamon, in a Gallon of
 “ Water, being pour’d in hot, the Vessels
 “ gradually contracting, the last Pot was
 “ 216 Seconds in passing. Hence we see
 “ how effectual Cinnamon, by it’s great
 “ Stypticity, is in stopping too large Dis-
 “ charges into the Cavity of the Guts.
 “ Then he pour’d a Pot of Milk-warm
 “ Water, which pass’d in 15 Seconds:
 “ Next a Pot of scalding hot Decoction
 “ of Chamomel-Flowers was 194 Se-
 “ conds in passing; which further shows
 “ its Stypticity.

“ Having prepar’d a Dog, as above, he
 “ pour’d 12 Pots of warm Water thro’
 “ the Vessels, the first of which was 68
 “ Seconds in passing, the following Pots
 “ pass’d successively faster and faster to
 “ the four last, which all pass’d off in
 “ 38 Seconds. Then he pour’d in 17
 “ Pots of equally warm *Piermont* Water,
 “ the first of which was 40 Seconds in
 “ passing, and the following Pots were in
 Succession

“ Succession longer and longer in passing
“ to the 17th Pot, which was 76 Seconds
“ in passing. He then pour'd in ten Pots
“ of equally warm Pump-Water, which
“ gradually relaxing the Capillary Arte-
“ ries again, each Pot pass'd off a little
“ sooner and sooner, to the last, which
“ was 64 Seconds in passing off.

We see in all these Experiments, how the Vessels of the Body are manifestly contracted or relax'd, by different Degrees of Warmth, Heat or Cold; or from the different Qualities of the Fluids which pass through 'em, as to Restrictingency or relaxing: And such Qualities of the Fluids must have very considerable Effects on the finer Capillary Vessels, whose Coats bear a much greater Proportion to the contain'd small Fluids, than in larger Vessels. Tho' it is not to be imagin'd, that the Effects are so sudden and great in a live Animal, as in these Experiments; because in a live Animal, the several Fluids which are taken in, are more gradually and in smaller Proportion blended with the Blood: But I think, that tho'

in a live Animal what we take in is gradually mix'd with the Humours, yet the Contents of the Liquors acting upon the Nerves as a Stimulus (which it can't do in a dead Body) must help to contract 'em almost near as much as in these Experiments.

Thus we see that whatever is taken in, either as Food or Physic, will have different Effects on our Solids as well as Fluids, according to their different Natures; and as a healthy State consists in a due Equilibrium between the Solids and Fluids, it greatly imports, that it be rightly adapted to the different Constitutions, so as either to invigorate, contract or relax the Fibres of the Solids; or to change the Qualities or Quantities of the Fluids, as Occasion shall require.

The most proper Times of Eating.

§ 10. The Times of eating ought to be such, that the former Food may be digested before more be eaten; and it should be also at such a Distance from Bed-time, that Digestion be nearly finish'd before we sleep; for the Preparation of
our

our Food by the Viscera, and the Application of it to nourish the Body, are Actions so very different, that they are inconsistent one with another: For Digestion is perform'd by Contraction, but Nutrition, by Relaxation; so that the Food should be digested, before the Fibres be relax'd, in order to nourish: Besides, sleeping immediately after Eating, as it makes a more viscid Chyle, so does it derive more of it than ordinary into the Mass of Blood, thro' the enlarg'd Orifices of the Lacteals, and consequently produces all the ill Effects, that we may expect from a viscid State of the Humours. Some People will eat only once a Day, but it is wrong, for by that Means they load the digestive Powers too much; and, upon all Accounts, a more viscid Chyle will be carry'd into the Blood, which generally requires more Labour to make it fluid, and fit for Nourishment, than the Solids are able to bear: Moreover, a great Quantity of Chyle being pour'd into the Mass of Blood at once, must needs make a great Alteration in the Blood, and put the Instruments of San-

guification too much upon the Stretch ; which is yet worse when the Lungs are any way tainted.

The most seasonable Time of Eating, in general, is from betwixt an Hour or two after Rising, and at least four before going to Bed ; because the Body, upon Waking, being in a more contracted State, if there be any Remains of the last Meal, either undigested in the Stomach, or not sufficiently attenuated in the Vessels, will (if not prevented by Eating and Drinking) digest the remaining Food, attenuate that which is too viscid, and expel that which is fit. Different Constitutions make some Alterations in this Respect.

Diet preferable to Medicine.

§ II. Medicines act immediately and invigorate the Blood, but it must be Diet that strengthens the Solids ; the first, as they act quickly, so their Effect is soon over ; but a constant, regular Diet, is perpetually adding new Vigour to the Nerves, which are not immediately acted upon by the Sanguineous Fluids ; for
tho^o

tho' you invigorate the Blood by ever so generous Medicines, by a Dram or Glafs of Wine, and so raise Nature to a great Pitch for a Time, yet the Nerves remain effete and languid notwithstanding: But if the Nerves and Solids are strengthen'd, as they may be, by a proper Diet, then the Blood and Fluids soon reap the Benefit, and as soon discover it by their Heat and Motion. These are Notices which don't lye so far out of the Reach of any Man, who will give himself Leave to reflect; for there are Distempers, (and these not a few or rare) in the Cure of which, no Physic alone can take much Effect; nothing but a continual Subtraction of the Cause being necessary, which we find Medicine alone can't bring about; as we may be convinc'd of, by the foregoing Experiments of Mr. *Hales*.

Some Physicians will only judge of this, or that Kind of Food, from what they find by analysing it, but that Method is very fallacious; which is the Reason, why I have not enter'd into a long Detail of the different component
Parts

Parts of all Kinds of Food, whether Animal or Vegetable ; but only mention this general Rule, That whatsoever is alcalescent, is heating ; whatsoever is acefcent, is cooling : And as the Qualities of Plants are more various than those of Animal Substances, a Diet of some Sorts of Vegetables may be more effectual in the Cure of some Chronical Distempers, than an Animal Diet ; Vegetables indeed abound more with Aerial Particles, than Animal Substances, and therefore are more flatulent.

From what has been said, it manifestly appears, that if the Vessels are relax'd by any Person's living too long upon one particular Kind of Diet, that he, by living upon a proper Diet, may have 'em brac'd up again to their proper Tone, and *vice versa* ; and hence also it is easy to determine the Rules of Diet in the different natural States as well as in the different morbid States of a Human Body. Hence also it appears, that what is one Man's Meat, is another Man's Poison ; as *Lucretius* says, *Lib. 4. v. 640. &c.*

Tantague

*Tantaque in his rebus distantia differenti-
tasque est,*

*Ut quod aliis cibus est, fiat acre ve-
nenum.*

§ 12. The Intentions of Drink are *The Intentions of Drink, how many, what they are, and what answers them best.*
First, as a Vehicle (*t*) to convey our Nutrient to the respective Parts. *2dly*, To dilute the Blood, that it may circulate thro' the minutest Vessels. *3dly*, To dissolve and carry out the superfluous Salts by Urine, they being durable and unalterable Bodies.

All these Intentions are best answer'd by pure Water, for no Liquid that we drink, will circulate so well, nor mix so intimately with the Animal Fluids as Water; for all other Potables are impregnated with Particles that act, either upon the Solids, or Fluids, or both; but Water being altogether inactive, is the most proper, innocent Diluter; which, tho' it is only a Vehicle, yet bears a great

(*t*) Boerhaav. Chem. Vol. 1. pag. 615.

great Share in the Composition, even of the most solid Parts; for Bones that have been dried and kept, 'till they were almost as hard as Iron, afforded by Distillation, half their Weight of Water; and from the Tendons of an Ox Dr. *Langrish* (u) procur'd, very near $\frac{13}{16}$ Parts of Water.

Nothing will answer the 3d Intention so well as Water, that being the proper Menstruum for all Kinds of Salts (w), and saponaceous Things (x). All the Animal Juices, except Fat, dissolve in Water, and that also, when sufficiently mix'd with Salts. The Lenity of Water shows it was design'd for our common Drink, for if it be drop'd upon the Cornea of the Eye, (which is as sensible as any Part) it will not cause the least Pain; and if snuffed up the Nose, where the Nerves are almost bare, it will not give the least uneasy Sensation; nor even in Ulcers

(u) Theor. & Prac. pag. 19. Boerhaav. Chem. Vol. 1. pag. 618.

(w) Boerhaav. Chem. Vol. 1. pag. 568, 572, 728, and 729.

(x) *Ib.* pag. 583, 731, 732, and 733.

cers where the Nerves are quite naked, provided it be of the same Degree of Heat as the Blood, but will rather ease than increase the Pain : Hence it may be call'd an Anoydne (*y*). Pure Water will never putrefy, or alter in any Respect, as will appear by Experiments (*z*).

§ 13. The sooner Water boils and ^{Purity, &c. of Water.} cools again, the clearer, more insipid, lighter (*a*) and freer from any Mixture of any Kind of Matter whatsoever, the better and more wholesome it is : Hence the best and most pure Water, is from Hail melted, that being the very lightest Parts of Water, which ascend to the highest Regions, and is there congeal'd (without

(*y*) Boerhaav. Chem. pag. 566, and 567.

(*z*) *Ib.* pag. 624. Boyle, Tom. 1. pag. 62. Hame-
lius, Hist. Acad. Reg. Scientiar. Tom. 4. pag. 109.

(*a*) Hippocrates, Lib. de Aere, Locis, & Aqua, pag. 284, and 285. Herodot. Lib. 3. Cap. 125. Ἰθὺς μὲν ἔκαστος καὶ ἑκατὸν βιᾶ τίνας δὲ καὶ ὑπερβάλλουσι καὶ ταῦτα : σίτισι δὲ ἐστὶ κρέατα ἐρῆα καὶ πόμα γάλα. ἐστὶ ἐκεῖ ὕδωρ ἀφ' ὃ ὕδρ' ἐπιπλεῖ, μήτε ξύλον, μήτε ξύλω ἐλαφρότερον, ἀλλὰ πάντα χορεύει εἰς βύσσον καὶ διὰ τῆς τοῦ ὕδωρ μακροῦς εἰσι. *Æthiops annos quidem viginti & centum vivit, quidam vero & superant hos. Alimentum ipsis est Caro cocta & potus Lac. Est ibi Aqua supra quam nihil innatat, nec Lignum, neque Ligno leviora, sed omnia descendunt in Fundum, & per hanc Aquam longævi sunt.*

(without any Kind of Mixture with other Particles) into one homogeneous Substance. Next to this in Purity (if in calm Weather) is Snow melted (*b*) which then may be kept good several Years; it dissolves Soap best of any, and will soonest boil and cool again, but is never softer for boiling, which most other Kinds of Water are. *Bartholine* (*c*) says, “ That if the Ice of Sea Water be thaw’d; “ it loses its Saltness, as has been lately “ try’d by a Professor of our University” *viz. Copenhagen*; and thaw’d Ice of Sea-Water is often us’d in *Amsterdam* to brew withal. When Water freezes, (which seems to be its natural State) whatever heterogeneous Particles are dispers’d in it, before it begins to freeze, seem now to attract their respective Particles (which were before diffus’d in the Water) into one homogeneous Body. Thus we see the Air, which was equally diffus’d in the Water before it froze, now unites and forms little

(*b*) Boerhaav. Chem. Vol. 1. pag. 598, 599, 601, 603, 604, 740, 741. Boyl. Med. Hydrost. 104. I have never made the Experiment, whether what is here said be Fact or not; but I can depend very safely upon the Veracity of the accurate and learned Author.

(*c*) Lib. de Nivis Ufu.

the Bullulæ; and if a Bottle of Wine be set out of Doors 'till it be froze, the Water will closely unite into one solid Body, while the most vinous, spirituous Parts unite into another.

Rain Water is impregnated with almost all Kinds of Exhalations and Effluvia, which vary according to the different Seasons of the Year, more especially in stormy Weather; which, if let stand in a Vessel, will soon putrefy, and produce various Kinds of Animalcules. There is scarce any Kind of Spring-Water, but what is impregnated with some Kind of mineral Particles. River Water is a Coluvies, having in it, not only what it's Springs contain, but also all the Filth of the Streets, Channels and common Sewers of several Places wash'd into it, besides the Fæces of several Kinds of Creatures that live therein.

Fen Water is much heavier than any;
(d) *Boerhaave* says, twelve Ounces of
this

(d) Chem. Vol. 1, pag. 612.

this being put into a clean Glass Vessel, and by a gentle Heat being evaporated, left many Worms, Insects, and Animalcules at the Bottom of the Vessel, besides a great Quantity of Earth, Slime, &c. From what has been said we see, that all Waters which have either Taste or Smell, are impregnated with Salt, Sulphur, or some such Thing, and consequently not proper for healthy People to drink, as their common Diluent.

*Too little
Quantity of
Drink.*

§ 14. Too little Quantity of watery, cooling, diluting Drink, in Proportion to the solid Aliment, will make the Chyle, and whole Mass of Blood too thick, and viscid : The several Excretions, and Secretions, will be diminish'd : The saline, and oleaginous Particles not being sufficiently diluted for Excretion by the same Ducts, will necessarily be accumulated in the Blood, whereby they will irritate, corrode, and pass with Difficulty thro' the minutest, Capillary Vessels.

§ 15. Too

§ 15. Too great a Quantity of watery Too great a Quantity. Drinks, will render the Blood too serous, and relax the Fibres ; hence Dropsies, Leucophlegmatia's, &c.

§ 16. From what has been said, we Where Spirituous Liquors are necessary. see that Water is the best and most wholesome Drink for an healthy, robust Person ; but in such Constitutions, where something is necessary to warm and act as a Stimulus, then Spirituous Liquors, &c. are proper, such as Ale, Beer, Wine, Cyder, &c. the Quantity, and Choice of which, depends upon the Constitution, and Age of the Drinker ; in Youth, Water, or Milk mix'd therewith, or Whey ; in the middle Age, sometimes a little more generous Liquors may be proper ; but most of all so, in old Age ; for then they should lessen the Quantity of their Food, as they advance in Years, as the famous *Italian Cornaro* did, and make Use of more generous Liquors.

§ 17. It wou'd be endless to enter in- A short Account of different Liquors. to a long Account of the different Kinds
Q and

and Sorts of such Spirituous Liquors ; I need only in general say, That Malt Liquor is mostly relaxant, and thickening ; and the nearer it comes to the Nature of Wine, the better it is ; therefore it should be made up of Water that will bear Soap, be well hop'd, that it may keep 'till all the gross viscid Parts are fallen to the Bottom of the Vessel. Red Port Wine is astringent. White *Portugal* and *Spanish* Wine is attenuant and stimulant. *French* Wines, especially *Burgundy* and *Champaign*, are not so strong as the *Portugal* and *Spanish* Wines ; they contain more Spirit, but less Oil than these last mention'd ; hence they are worse for thin, dry Constitutions. Punch is thickening, cooling (if small), and diuretic. Cyder is cooling, and attenuant : And all Made Wines are windy.

*The Effects of
too free an Use
of Spirituous
Liquors.*

§. 18. Too free an Use of strong Spirituous Liquors will inevitably destroy both the Tone of the Solids, and the Crasis of the Fluids, by the stimulating and strongly contracting Power of acrid, fiery, caustic, saline, and sulphureous Particles, wherewith they abound.

We

We are assur'd, by many obvious and undoubted Experiments, that strong Spirituous Liquors will coagulate the Blood and Lymph ; and tho' for a Time, they may seem to contract, and shorten the Fibres, and also to give fresh Force and Vigour to them ; yet in the End, they will certainly corrode, abrade, and wear away some of their constituent Particles, and render them thinner and weaker. Hence the Chearfulness, and sudden glowing Heat, which distill'd Spirituous Liquors give to the poor, unhappy, habitual Drinkers thereof, soon cease, and end in a cold, relax'd and languid State, whereby the Sufferings of these People become very grievous ; because nothing will give them immediate Relief, but the same baneful Liquors, which were the Foundation of all their Miseries. It would be very happy for Mankind, if they would follow the Custom of the Ancient *Persians*, viz. only to drink when thirsty, and then give over (e).

Q 2

The

(e) Zenoph. Cyropædia, Lib. 1.

The first Organ that generally is affected by habitual Drinking, is the Stomach; whose inner, villous Membrane is almost abraded and worn off, thereby exposing its nervous Coat to the Insults of the most sharp, acrid, fiery Particles; by which means, the Springyness or Elasticity of the Fibres is enfeebled, and the whole Stomach becomes soft, flabby and relax'd. Hence a Want of Appetite, and an Inability to digest the little that is taken in; whence Crudities, Nausea's, Vomiting, &c.

The Signs of the Functions of the Stomach being deprav'd, are Pains in it many Hours after Repast, Eructations either with the Taste of the Aliment, acid, nidorous, or fecid, resembling the Taste of rotten Eggs; Inflations, or a Sensation of Fulness, Sickness, Hiccup, Vomiting, a Flushing in the Countenance, Foulness of the Tongue: In general, whatever be the State of the Tongue, the same is that of the inward Coat of the Stomach.



CHAP. IV.

On EXERCISE.

Herodicus (*a*), Hippocrates's Teacher, The Medicinal Use of Exercise, how first found out, and how esteemed by the Ancients. being Master of one of the *Græcian Palæstræ*, or *Gymnasia*, observ'd, that the Youths under his Care, who took their proper Exercises, were in general very healthy and strong; he thence began to impute it to their constant exercising; he indulg'd this Thought, and begun to establish it as an Art to preserve, or recover Health by, under certain Rules and Precepts, which have been lost for many Ages; but however were once in great Esteem. Hence he may be call'd the Inventor; but *Galen* (*b*) expressly assures

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us,

(*a*) Le Clerc, *Histoir. de la Medicin*, Part I. Lib. 2. Cap. 8. pag. 98. *Barcheusen de Medicinæ Origine Dissertat.* 8.

(*b*) *De sanitatæ tuenda*, Cap. 8.

us, that *Æsculapius* (who, as *Diodorus* informs us (c), liv'd in the Time of the *Trojan War*) actually prescrib'd Exercise of various Kinds to his Patients; and therefore, he says, may very well be counted the Inventor: Be that as it will, *Herodicus* was the chief Improver; for on the one Hand, his Rules regarded the Exercises that were proper for each Constitution, Age, Sicknefs, &c. And on the other Hand, the Diet proper for each Kind of Exercise.

These were no sooner known, than he had many Followers, as *Diocles*, *Carystus*, (a Cotemporary with *Aristotle*) *Praxagoras*, *Erasistratus*, *Herophilus*, and *Philotimus*, among the *Greeks*; *Æsclepiades*, and almost all the Methodists, a Sect amongst the *Roman Physicians*, one of the most famous of whom, was *Aretæus Cappadox* (d), the first Inventor of Blistering by *Cantharides* (he liv'd in the
Reign

(c) Lib. 5. pag. 341.

(d) *Rome*, at this Time, had most of her Physicians from other Countries, especially from *Greece*; hence we call a *Greek*, if he practic'd at *Rome*, a *Roman Physician*.

Reign of *Augustus*) and also *Celsus*, and *Augustus's* Physician *Antonius Musa* (who was as great a Promoter of cold Bathing, as *Medea* was of warm, in the 28th Century of the World). Bathing and Friction were held in great Esteem by *Galen* (who liv'd in *Adrian's* Reign, *Anno Dom.* 131) which he us'd as they deserv'd, as may be seen in his Book *De Sanitate Tuenda*; they both were much in use for many Centuries. Had not Mankind, by Luxury, Intemperance, and an idle, sedentary Life, brought various Kinds of Diseases upon themselves, these Sort of Remedies wou'd never have been thought of; but as the Physicians observ'd the Health and Vigour of the Active and Laborious, they then thought of substituting various Kinds of Exercises, appropriated to each Distemper. The *Græcians* in general, the *Athenians* and *Lacedæmonians* in particular, erected Academies, Gymnasia, or publick Places for all Kinds of Exercises, both to train up the People for War, and to preserve 'em from, and cure their Diseases; thither Physicians sent all those, who labour'd

under Chronical Distempers. Tho' Experience, which confirms the Benefit of this Remedy, is a very solid Foundation to go upon, yet the Reason of the Thing speaks so loudly, that it can't but be hearken'd unto by every reasonable Person.

From what has been said, we see the Esteem the *Greeks* and *Romans* had for this Part of Non-naturals; and if we look yet farther back, we shall find the *Egyptians* entertain'd but a mean Opinion of that Sort of Exercise, which did not contribute to invigorate the Body, or give a vigorous Health; nor of Musick, which they consider'd as an useless and dangerous Diversion, and only fit to enervate the Mind. Τὴν δὲ μουσικὴν νομιζοῦσιν ὡς μόνον ἄχρηστον ὑπάρχειν, ἀλλὰ καὶ βλαβεράν ὡς ἂν ἐκθηνύνοισιν τὰς πᾶν ἀνδρῶν ψυχὰς. (e). We see also that the *Persians* look'd upon Exercise as necessary and useful; for we read in *Xenophon's Cyropædia*, that *Cambyzes*, King of *Persia*, ask'd his Son *Cyrus* (who had been saying,

(e) *Diod. Lib. 1. pag. 73. Rostin. Anc. Hist. Vol. 4. pag. 55.*

saying, he had learnt whatever was necessary for the Command of an Army)

“ If his Master had taught him to prevent the Distempers incident to his Army, to cure ’em when sick, and to strengthen their Bodies by frequent Exercises (*f*).

Hence we see the *Ægyptians* and *Persians*, as well as the *Greeks* and *Romans*, founded a great Part of the Cure of Distempers, no less than the preservative Means of Health, upon Exercise in it's various Degrees and Kinds; and *Sydenham*, our own Countryman, has launch'd out in it's Praises, as one of the most sovereign Remedies, as it prov'd to several by taking long and frequent Journies on Horseback; and the learned *Boerhaave* is not behind him in it's Commendations, he (to my Knowledge) having wrought great Cures by that, and a right Management of some others of the Non-naturals, when all Attempts by other Means have fail'd of Success.

§ 2. It

(*f*) *Roll. Anc. Hist.* Vol. 2. pag. 88.

*A Mechanical
Account how
it is beneficial,
and why pre-
ferable to Me-
dicines.*

§ 2. It was proved in the *Introduction*, that the quickest Way of altering the State of the Fluids, was by affecting the Contractions of the Solids ; and we also know that all Bodies whatsoever attract and are attracted by each other ; by Virtue of which Power, in any heterogeneous, quiescent Fluid, there always will be an intestine Motion of its constituent Parts, 'till the Cohesions of such Parts as were before separate are perfected : Now, this intestine Motion and Cohesion is in a great Measure prevented by the continual Agitation of the containing Vessels ; or 2^{dly}, By the Blood's Propulsion thro' our Vessels, which are conical and distractile : For in the first Case, the Motion of all containing Vessels will communicate and impress such Motions upon the several Parts of the Fluid, as are contrary to the Direction of their several attractive Powers, and therefore are so destructive of their natural Cohesions, as to cause those Parts frequently to recede from one another, which otherwise, when left to obey their own proper Attractions, would

run

run into close Contacts with each other, as we see in Blood stagnating in a Vessel after Venæsection. In the latter Case, altho' the Fluid be propell'd, at its first setting out in a Direction parallel to the Axis of the Canals, yet their Conical Figure will all the Way give such Resistances to some of its Parts, as to deflect 'em from their first Directions, and thereby make such a continual Shifting and Changing of the Positions of the several Particles, with Relation to one another, (being sometimes at the Centre, and sometimes at the Sides) as is inconsistent with these Cohesions, as in Obedience to their mutual Attractions, they otherwise wou'd be drawn into. This being premis'd, it will easily appear, that whatsoever Force prevents these Cohesions, will attenuate; and the different Degrees of Fluidity of the Blood, are as their Velocities, (if no greater than natural) and their Velocities are as the contracting Force and its Resistances: We know also, that all the Excretions are, as the *Vis applicationis liquidorum ad oscula vasorum*; so that by how much more the Blood is mov'd, by

fo

so much more are (*cæteris paribus*) the Excretions increas'd. We know also by Anatomy, that all the Parts of the Muscles receive Blood by the Arteries and return the same by the Veins : as also, that long Branches of the Arteries run betwixt the Muscles, which carry Blood to the more remote Parts : Hence by Muscular Motion, *i. e.* Contraction and Dilatation, they (the Muscles) must interchangeably press forward the Blood ; (this is evident, for when the Vein is open'd in the Arm, if the Fingers and other Muscles be stirr'd, the Blood is immediately drove out with a considerable Force) and as the Arteries are elastic, the greater the *vis impellens* is, the greater will be the *vis propellens* of the Vessels, quite thro' the whole Circulation ; so that all the Parts by this Means are nourish'd, and the Viscidity of the Humours are broken.

The very Mechanism of the Vessels alone, is sufficient to satisfy us of the Necessity of Exercise ; for, as they all terminate in a Cone, they resist the Passage

stage of the Blood, and therefore require frequent Pressure and Motion of the Muscles to forward the Circulation, which we always find much augmented by such Means: Hence we see, it has the Preference of all Medicines, that as these are generally given to promote and increase some of the Secretions, (and by that Means may lessen some or all the rest, as *Sanctorius* observes); this (*viz.* Exercise) promotes and increases all the natural and necessary Evacuations, as well as diminishes the superfluous and hurtful. This Necessity of proper Exercise is still more confirmed by an Observation of *St. Chrysostom* (g), *viz.* “ That
 “ a rich Man stretch’d upon a Bed of
 “ Down shall seek for Rest, but in vain;
 “ Sleep flies from him, and refuses to
 “ close his Eye-Lids in the stillest Night:
 “ Whereas the Poor, who has labour’d
 “ all Day, only throws his wearied
 “ Limbs upon the Bed, and straight he
 “ sinks into a sweet and gentle Sleep; a
 “ Sleep that is sound and uninterrupted,
 “ the just Recompence of all his Toil.”

§ 3. From

(g) Homil. 2. and popul. Antioch.

*The Effects of
too much, or
too little Mus-
cular Motion.*

§ 3. From what has been said we may easily gather, that by too much muscular Motion, the Circulation will be too violent and quick ; whence all the Evils will arise, which are mention'd under a too rigid State of the Fibres ; and also by too much such Motion, all the medullary or oily Matter, that lies between the Muscles will be consum'd, as well as the Mucus that lubricates the Joints : This Waste is the Reason of that uneasy Stiffness or Weariness which we feel after immoderate Exercise. On the other Hand, too much Rest, or an idle, sedentary Life, relaxes and weakens the Fibres, thickens the Blood, and hinders the Secretions and Excretions of the whole Body ; whence all these Disorders will follow, which are mentioned under the too weak State of the Fibres, and too viscid State of the Fluids.

*How to make
Exercise the
most beneficial.*

§ 4. There are three Conditions of Exercise to make it the most beneficial that may be.

First,

First, That it be upon an empty, at least not a full Stomach ; for thereby the now concocted Matter will be readiest discharged : *Cocta non cruda sunt evacuanda*, says *Hippocrates* ; for upon a full Stomach Exercise would hurry on the Humours faster, than they are digested : Hence the Reason of that old Proverb,

*After Dinner sit a while,
After Supper walk a Mile (b).*

Secondly, That it be not continu'd to downright Lassitude, Depression of the Spirits, or a melting Sweat ; as *Celsus* says (i), the first will wear out the Organs ; the second spend their Strength ; and the third will only do Violence to the Natural Functions.

Thirdly, Due Care must be taken not to catch Cold after Exercise.

To

(b) This implies we should always eat light Suppers ;
Ut sit somnus levis, sit tibi cæna brevis.

(i) Pag. 13. Cap. 2. Exercitationis autem plerumque finis esse debet sudor, aut certe lassitudo, quæ citra fatigationem sit idque ipsum, modo minus, modo magis faciendum est.

To These should be join'd Temperance; for since Exercise will create an Appetite, if it be indulg'd to the full, the concoc-tive Powers will be as unequal to the Load as they were before.

§ 5. Exercises of the Body may be di-vided into Three Kinds.

I. That of being carried, as on Horse-back, Chair, &c.

II. That of simple Muscular Motion.

III. That from outward Application, as cold or warm Bathing, Friction, &c.

*Exercise by
Carriage.*

First, Of all Exercise by Carriage, that on Horseback is by much the best, especially on a Trotting Horse, notwithstanding *Sanctorius* (k) says, to the contrary, viz. "That amongst the Riding Paces, the Am-ble is the most wholesome, as the Trot is least so." There is certainly a great Dif-

(k) Aph. 27. § 5.

Difference as to the Paces, one being more agreeable and advantageous in some Cases and Constitutions, than the other; which a judicious Person will seldom fail to foresee: But that he should say, the Amble is best, and Trotting the worst, is not easily conceiv'd; for they can only be relative, according to the Constitution, the former not giving such strong Concussions to the Fibres, as the latter; and therefore may be more proper for weak People, who cannot bear a greater Motion; but the latter, for the same Reason, is to be preferr'd, where the Body wants to be shook more forcibly, and is able to bear it: It is also certainly the most advantageous of all, in Obstructions of the Viscera and Head, as it shakes those Parts in particular more than others.

Next to Riding on Horseback, an open Chair or Chaise is best, for the closer the Vehicle the worse.

One Advantage by the Exercise of Riding, is the continual changing, and breathing fresh Air; the Good of which the
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Reader

Reader already knows. Some cannot bear the Shaking of either Horse or Chaise, and such may venture, in a well chosen Hour, to take the Benefit of the Change of Air in a Boat (*l*).

Secondly, The 2d Kind mention'd before, is *Muscular Motion*, properly so called; of which, Walking is one Sort; which, tho' it do answer the End as well in some Cases, yet it is more laborious and tiresome to the inferior Limbs, so that the Persons cannot use it so much as Riding.

When the Weather will not permit Exercising in the open Air, which is ever to be prefer'd when it can be safely had, home Employments that have Labour in them are to be diligently follow'd, of which there is vast Variety, and the meanest of which, is to be preferr'd to Idleness, or sitting from Morning 'till Night, staring at the Fire. Those who have a Genius for Mechanics have a great Advantage

(*l*) Celsus, Lib. 2. Cap. 15. pag. 91.

tage above others in this Particular, not only as their Labour may be made of some little Use to 'em, but because Exercise of this Kind is a perpetual Entertainment to their Understanding, and engages kindly their whole Man; those Exercises being justly observ'd to be most beneficial to the Body wherein the Mind has its Share. But those who (for want of Taste in these Matters, or which is worse, out of a false Sense of the Disgrace of thus acting the Mechanic, chose rather to throw away their Labour) may procure a dumb Bell, and haul at that for Hours every Day; or, what answers pretty near the same End, may swing Leads, made fit for the Grasp, in their Hands; a Thing much us'd by the Students in our Universities. Ringing has many peculiar Excellencies in it, for it not not only exercises the Muscles of the upper Parts of the Body, but also opens the Chest, thereby giving more Room to the Lungs to play: But the Value of this Exercise is much let down when perform'd in Belfries, by the ill Air that is usually breath'd in those Places.

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Thirdly,

Thirdly, The 3d Kind of Exercise is from outward Application, as cold or warm Bathing, and Frictions.

Bathing of both Kinds shar'd the same Fate with some other of the Non-naturals, in being neglected in a medicinal Way, and being almost quite laid aside for many Ages, notwithstanding it was in so great Esteem among the Ancients, as many Authors inform us, which there is no Necessity to mention here : They who want to be satisfied as to that, may read *Hoyer's*, *Barnard's* and *King's* Treatises on Cold-Bathing ; wherein they will find many Instances of the surprising Cures it has perform'd in Scurvies, Cachexies, Rheumatisms, Loosenesses, Swellings, &c.

As Bathing, either hot or cold, has very different Effects in different Cases and Constitutions, being in some Cases beneficial, in others prejudicial ; it will therefore be necessary to enquire what Alterations are made by it in an human Body, that so we may know in what Cases

to order it. I shall begin with Cold Bathing, which acts in a double Capacity, both as a cold and a heavy Body. It has been already observ'd in treating of Air (*m*), that Cold contracts the Fibres, and the more suddenly it is apply'd to our Bodies, the more violently it operates; but to what Degree it contracts, we are not able to determine, having no Rule by which we can measure it. It was observ'd also in the same Chapter (*n*), that our Bodies underwent various Changes by the Alterations in the Weight of the Atmosphere; Water is about Eight hundred Times heavier than Air, what Alterations then must we be sensible of upon Immersion into cold Water? The Cold and Weight acting conjointly will contract and straiten the Fibres and Vessels throughout the whole Body, more especially the external Parts; and as these Ends which are compass'd by a greater Pressure, are more effectually obtain'd by whatever increaseth the Weight of the Water, or contracts the Fibres of our Body, so Salt Water

R 3 is

(*m*) Sect. 12. pag. 74.

(*n*) Sect. 14. pag. 81. of Air.

is preferable; upon both which Accounts, all the Humours must be propell'd with greater Force thro' the Vessels, in which they circulate, and will also be more broken, better digested, and be made fitter to pass the Glands and small Vessels; besides, as the Blood will be drove more into the inward Vessels, the Secretions of all Kinds will be the more increas'd (o); hence a greater Quantity of Animal Spirits, of Urine, of Gall, of the Pancreatic Juice, Perspiration, Semen, &c. And as the Humours are push'd forwards with greater, sudden Force, they will remove any Obstruction that is not too obstinate and fix'd; so that, if we would have the Blood dissolv'd, any viscid Matter adhering to the Sides of the Vessels remov'd, the Glands scour'd, a greater Quantity of Animal Spirits secreted, and drove with greater Celerity thro' the Nerves, or would force Urine, or remove Obstructions of the Liver, Spleen,

(o) The Quantity of fluid Matter separated in any Gland, is in a compound Proportion of the Quantity of Blood, its Celerity at the Orifices of the excretory Vessels, the Wideness of Orifices of these Vessels directly, and the Viscidity of the Blood reciprocally.

Spleen, Pancreas, and mesenteric Glands, we ought to order Cold Bathing: In short, whatsoever is to be effected by bracing up the Solids, invigorating and quickening their Vibrations and the Circulation, is with Certainty to be had from Cold Bathing; all Diseases therefore from a viscid State of the Blood (if the Elasticity of the Vessels is not too weak with Age, Diseases, or Debauchery) will find Relief from this Practice. Whatsoever Inconveniencies proceed from the Humours obstructing near the Surface, which can't get thro' the Skin, this will relieve; for upon Immersion, the whole nervous System is so shook, that the very Capillaries and minutest Passages are forc'd open, by such a suddenly increas'd Velocity of the circulating Fluids, whereby the Skin will be clear'd, and instead of retaining gross, acrimonious Humours in the cuticular Glands and Vessels, will promote insensible Perspiration: This is the Reason, why People an Hour or two after Bathing seem to be so brisk and lightsome. Hence we see Cold Bathing is proper in most Sorts of cutaneous Eruptions, Le-

profy, and Elephantiasis ; some Palsies, Melancholies, Madness ; most Kinds of Cachexies, some Icteric, and Hydropic Cases, Fluor Albus, Rheumatisms, Lameness, and most Scurvies, Chlorosis, and nervous Atrophies.

*Rules to be
observ'd in
Bathing.*

§ 6. Notwithstanding all the fine Encomiums that have been bestow'd on cold Bathing, it has done Mischief, which is entirely owing to Errors in the Person himself; for either he has bath'd at improper Times, in an improper Manner, or perhaps in improper Cases, or has not taken Things proper for the Case; wherefore it will be necessary to show what Cautions are to be taken, and what Method is to be follow'd in each Case.

As the Design of the cold Bath is to strengthen the Solids, and break the Viscidity of the Fluids by a sudden Shock, it would be ridiculous for any Person, who wants such a sudden Contraction, to stay in the Water so long, as 'till it exerts it's relaxing Quality, which would frustrate the very Design of cold Bathing ;
so

so that instead of strengthening, would really weaken, as we find it does, by Swimming too long, or being too long in the Water; for though cold Water, by it's sudden Application to our Fibres, does contract, yet if it has Time, it will exert it's moistening Faculty. The properest Method, where such an Intention is necessary, is to leap into the cold Bath, but that must be within proper Restrictions; for if the Person have any of the Vessels of the Viscera or Head in the least weaken'd more than the others, this precipitant Jumping into the cold Bath will endanger their bursting; the safest Way therefore would be to walk in Step by Step; tho' this latter Method is apt to bring a Pain in the Head in those of tender Nerves, by driving the Blood into it, in which Case I would advise 'em to throw Water upon their Heads and Shoulders before they go in, which will prevent the Head-ach.

People ought not to bath when they are hot or sweating; with proper Precaution

caution they may bath all Summer, and, in many Cafes, all Winter too; but before they begin to bath, they ought to use some Evacuations, as Bleeding, Purg-
ing, or Vomiting, or any other, as the Nature of the Cafe and Constitution require, which none but the Physician, who examines the Person, can tell. It were well if every one, who intends to bath for the Recovery of his Health, would advise with his Physician, what he is to do, both before, at the Time, and after Bathing, least he make his Disorder incurable, as several have done.

People ought never to bath upon a full Stomach, because as there is less Blood in the lower Viscera in a full, than in an empty Stomach (*p*), so by increasing the external Pressure, they may endanger an Apoplexy, or Extravasation of Blood in the Head or Lungs; moreover a more gross Chyle will, by these two contrary Pressures, be forc'd into the Blood, the Consequence of which I need not mention

(*p*) *Hales's Hæmast.* pag. 182, Exp. 23. § 7 and 8. and in this Treatise, Chap. 3. § 4.

tion here, having already treated upon it (q). Neither should any use cold Bathing after hard Drinking, because their Blood is at that Time somewhat inflam'd. The Diet ought to be thin, and of easy Digestion, least the Chyle enter into the Blood in a too viscid State; it should also be compos'd of such Things as are proper for the particular Case, which may be found in the Chapter on Diet in this Book.

The best Time for Bathing is in a Morning before we eat any Thing; because at that Time all the Digestions being near, or quite compleated, the Vessels will be more at Liberty to exert all their Force to break that Viscidity of the Blood, for which the cold Bath is us'd, and will also then promote a freer Discharge of the perspirable Matter: Besides, the Vessels not being employ'd upon Digestion, or not being upon the full Stretch, are more easily brac'd up and brought to their proper Tone.

§ 7. From

(q) In the Introduct. § 15. pag. 22.

Wherein Bath-
ing is impro-
per.

§ 7. From what has been said we see, that many Persons labouring under Chronical Distempers may reap great Benefit from cold Bathing; if Corpulence, a too weak State of Fibres, unsound Viscera, a Plethora, or inveterate Obstructions do not prohibit: For first, in fat People the Vessels are so stuff'd, that they have no Room to vibrate and contract, and are most lax withal, so that by inforcing their Springs, they are only strain'd to no Purpose, and consequently weaken'd thereby: Secondly, in a too weak State of Fibres it is bad, because wherever an Effort is made to remove any Thing by an elastic Body, if the first Exertion fails, every Impetus afterwards languishes, and the Spring is spoil'd: Thirdly, where the Viscera are unsound it is improper, because the Vessels are either weaken'd or destroy'd; in either Case, there will be less Resistance in those, than in other Parts, whence the Humours, upon Immersion into cold Water, will be drove more thither, than to any other Part; for *qua data Porta ruunt*, and so will
either

either burst the Vessels, or promote the Discharge of some ill Humours there: Fourthly, in a Plethora it is bad, because by pressing all the outward Vessels of the Body, it may burst, or obstruct some of those in the Head or Viscera, where there is less Resistance; hence Apoplexies, Vertigo's, &c. Fifthly, in inveterate Obstructions it is bad, because the more forceably the Humours are propell'd, the more they are rivetted and wedged in.

§ 8. Different Methods in the fore-
 mention'd Diseases are to be follow'd ac-
 cording to the Exigences of the Case.
 Thus in cutaneous Diseases, which are
 not of too long a standing, and where
 there is sufficient Strength in the Solids,
 the cold Bath is proper; they should on-
 ly immerse over Head to give a strong
 Vibration to the Solids, and get out of
 the Water again immediately; as soon as
 they are out of the Water, they should use
 Frictions, either with a Flesh-Brush, or
 with a very coarse woollen Cloth, 'till
 the Skin looks red; for by the Cold, the
 Fibres will contract, by which Contra-
 ction

*The Method in
 Bathing to be
 alter'd ac-
 cording to the
 Exigence of
 the Case.*

tion the viscid Humours will be broken, and by the brisker Circulation they will be sent to the Circumference, and thence, by the dry Friction, their Exit will be promoted. The Sick (as I said before) should bath in the Morning, first drinking very plentifully of the Decoction of the Woods, or warm Whey; and as soon as the Bathing and Friction is over, they (if they can conveniently) should go into a warm Bed again for about an Hour; because the Warmth of that would promote a gentle Diaphoresis; if they can't conveniently go into Bed immediately, they should use brisk Exercise. The Diet should be diluting, and of easy Digestion, and also should be directed contrary to the suppos'd Cause and Acrimony. This Method should also be follow'd in most Kinds of Scurvies, Leprosies, and Elephantiasis. In Palsies the Diet should be more stimulant and warming; the Frictions should be warm with hot Cloths held in the Fumes of some of the warm Aromatics, such as those of Myrrh, Benjamin, &c. But if the Palsies be of a long standing, or the Fibres too weak, they

they ought not to make use of the cold Bath; in all these Cases the Air should be warm and drying, to promote Perspiration. In most Kinds of Cachexies and Scurvies this Method will do, always taking Care that the Diet be contrary to the Acrimony of the Humours; for if the Humours are alcallescent, the Diet ought to be acescent, and so of the rest. In a Chlorosis, nervous Atrophies, Sciatics, and Rheumatisms, the same Method will do, allowing some few Variations, according to the Cases, which none can pretend to give Directions about, but those who see the Patient; in a Chlorosis, the Diet ought to be detergent and saponaceous; in Jaundices, that spring from a too viscid Bile, the same Method should be follow'd, only the Diet should be saponaceous, attenuant and diluting; the Patient should drink plentifully of diluting Liquors. In dropical Cases it seems odd to prescribe cold Bathing, but there are several Instances where it has done Service; for if they be recent, and proceed only from Want of an Exertion of the Vessels, they may be eas'd by this;
in

in such a Case, warm Frictions and a warm stimulating Diet would be proper ; as well as in the Rickets, to which I know nothing preferable ; in all these Cases, Exercise on Horse-back in particular is necessary in a warm, dry Air. This Method should be follow'd by all, who have weak Fibres, whether partial or total ; only with this Difference, that the Diet should be astringent, warming and stimulant ; hence it is proper in the Fluor Albus, œdematous Swellings, and many such like Cases. When we would have the cold Bath assist the Urinary Discharges, we should omit the Friction ; and before Bathing with this Intention, it will be necessary to drink plentifully of *Piermont*, Spaw-Water, or some such like ; and as soon as the Patient has done bathing, he should ride a trotting Horse a little ; this Method will soon cleanse the Urinary Passages ; hence it is proper for those, who are subject to the Gravel and slimy Matter in these Passages : The Diet must be diluting, stimulant and saponaceous ; they should use but little other Exercise than as mention'd above ; be-
cause

cause the more they perspire the less Water they will make, for the greater one Discharge is, the less will be the other. The same Method is proper for Hypochondriacs, with this Difference, that these should use more Exercise; for by the Cold Bath, the Humours will make an Effort to remove the obstructed Matter, and the plentiful Drinking of the Waters, will help to dilute the viscid Matter in the Glands, and at the same Time will stimulate them.

§ 9. As the Pressure of Water is made *The Use of warm Baths.* more contractile by its Coldness, so is it's relaxing Power increas'd by a moderate Warmth; for a gentle Heat always relaxes our Fibres, such as *Buxton* and several other Bath Waters: Hence People weary with Travelling, commonly go into the Bath for a little Time, and are eas'd; for Weariness being nothing but an over-stretching or too great a Tensity of Fibres, must, upon their being relax'd, go off again. Warm Bathings are like a Fomentation, which supples and relaxes the external Fibres of the whole Body at
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once,

once, and the longer the Sick stays in, the more will the Vessels be relax'd, thus it opens the Pores, and promotes a free Discharge of the perspirable Matter. Hence it is good in most cutaneous Eruptions, especially where the Obstruction is so obstinate, that it will not yield to the Cold Bath, for it not only relaxes the Pores, but at the same Time dilutes the obstructed Matter, by being absorb'd, as appears by Mr. *Martin's* Experiments at *Buxton* Well (which he related to me at his Return to *Cambridge*;) it is also mentioned in *Skort's* History of Mineral Waters, pag. 59 (r). This is also confirm'd from what *Keil* says, (s) viz. that

“ Perspiration will arise in one Hour to
 “ half a Pound from bathing in warm
 “ Water, nor will it afterwards be diminish'd by any such Increase.”

From Mr. *Martin's* Experiments it appear'd, *First*, That warm Bathing encreases the Weight of the Body at present, tho' it causes a plentiful Perspiration afterwards. *Secondly*, That the Perspiration after this, is

(r) Phil. Transf. No. 407. pag. 26 and 27.

(s) Med. Stat. Brit. Aph. 25.

is nothing near so large as *Keil* has said just above ; for by his Account, it amounts, we see, to half a Pound in one Hour's Time : But by *Mr. Martin's*, it is but five Ounces in one Hour ; and from eight Ounces and an half to a Pound in an Hour and Half, tho' assisted by Motion ; this Difference might easily happen and yet be both true ; however, they both shew that much Water was absorb'd by the Pores, tho' it cannot certainly be told how much, because they could not know how much was perspir'd, while they were in the Bath ; however, more Water was absorb'd than any one would imagine. Hence it dilutes and abates the Acrimony of the Humours, and is therefore proper in most scorbutic Habits, wandering Rheumatic and Sciatic Pains, Contractions of the Tendons, and in almost all Cases proceeding from an obstructed Perspiration ; hence it is good in some Gripings, Looseness and Colics (*t*), Cramps, Convulsions, Contractions of the Muscles, Stiffness of the Joints, some

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Lame-

(*t*) Chap. of Air, § 12. pag. 79.

Lamenesses, &c. In short, all the Advantages of a free Perspiration may be gain'd this Way. Some People have denied, that there are absorbing Vessels, but this may be prov'd many Ways, especially by raising a Salivation, by rubbing the Skin with Mercury.

In the Use of the warm Bath, the Diet ought in general to be thin and diluting, and of easy Digestion; for if the Humours are crude and not sufficiently digested, this easy and general Relaxation will only occasion a greater Derivation of them towards the Circumference. For the same Reason the best Time of Bathing is in the Morning, either in Winter or Summer.

Some few Immersions in the warm Bath after previous Evacuations, are proper Preparatives for the cold Bath, in many Cases.

In some Diseases from Obstructions, Sweating after warm Bathing is necessary; in such Cases they should go into Bed again

gain after Bathing, and follow the Rules given for cold Bathing. It is impossible for any one to lay down Rules for the Management of every Person, in all Cases wherein Bathing is proper, for that would take up whole Volumes, and to little Purpose.

There is no ascertaining the precise Time for Peoples staying in the Water, for that must be determin'd according to the Degree of Heat requir'd, and the different Cases to which it is adapted; and for which they must consult their Physician.

The naturally warm Mineral Baths are much more proper in any Kind of Obstruction than the Artificial; the first contain many volatile, stimulating Particles, which the last can never have; these Kind of Waters must circulate with Ease, because they are able to enter the Body by some of the most minute Vessels. There are many other Cases wherein medicated Baths are proper, as in Scurvies, &c. But warm Bathing should never be

us'd in a Fit of the Gout, inward Inflammations, Dyfenteries, large inward Tumors, Vomiting or Purging of Blood, neither is it proper for sanguine and plethoric People, nor yet for People of weak and lax Fibres.

Partial, warm Bathings are often of very great Benefit in some Distempers, especially in Apoplexies and Small Pox; for by relaxing the inferior Parts, a greater Quantity of Blood will be deriv'd thither from the Head and superior Limbs; whence a less Obstruction, and less Degree of Inflammation. Moreover, some of the Water will be absorb'd by the Vessels, whence the Blood will be diluted, and be less inflam'd; for which Reason the Sick in the Small-Pox, instead of bathing their Feet only in warm Water, had better sit in the Water quite up to the Waste, at least their Thighs should be bath'd.

The Benefit of Friction.

§ 10. By Friction is meant, a reciprocal Pressure and Laxation of the Part; From what has been already said, we know

know the Circulation is perform'd, and the Viscidity of the Blood broken, by the mutual Contraction and Dilatation of the Vessels ; and that by Rubbing, whether with the Flesh-Brush, coarse Flannel, or the naked Hand, we mutually compress and relax the external Vessels, (which is the same Thing, as adding so much contractile Strength to them) is what, I believe, none will deny ; and if we rub from the Extremities towards the Body, we very much accelerate the Circulation, by which many Advantages will accrue.

This was frequently put in Practice by all the Ancients in general, as well *Arabs* and *Egyptians* as *Greeks* and *Romans* ; *Galen* has wrote a whole Book *De Frictionibus*, as well as *Celsus* (u). This Practice among the Moderns was also quite laid aside, and is now begun to be us'd again, and with no less Success than formerly. I once saw a Child, that was born with one of its Legs much emaciated, the other being very lusty and strong,

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as

(u) Cap. 14. Lib. 2. pag. 87.

was the Child in all other Respects; this small Limb by frequent Frictions with Flannels held in the Fumes of Myrrh and Benjamin did quite recover, and its Leg became as lusty and strong as the other. I saw another Child about Five Years of Age, which could not stand, and its Back was so weak, that it was almost double-fold, yet by using Frictions all over it, especially on the Spina Dorsi, and by cold Bathing it quite recover'd: This Method seldom fails in the Rickets.

The best Time for Friction, for the Promotion of Perspiration, &c. is in a Morning, when we rise; for then all that Matter, which is digested enough for Perspiration waits to be drawn out, and the Solids have no manner of Weight left upon them, except the necessary Fluids, by which they would be enabled to perform their Offices with more Ease and cur, and, as a Clock or Watch new
 ed, the several Motions of the whole
 would go on with greater Re-

§ II. All those Sorts of Exercises, ^{*What Exercise is best.*} which give a Briskness of Mind to that of the Body, are most beneficial, such as Hunting, Fowling, Setting, Playing at Bowls, &c. but all such Exercises as require too intense Thoughtfulness or Anxiety of Mind, in a great Measure take away the Benefit of the Bodily Exercise, as I shall show more fully when I come to treat of the Affections of the Mind.

I am not insensible, how difficult a Task it is to frame Arguments forcible enough to prevail against the Apprehensions most sickly People have conceiv'd of the Pain and Trouble that attend the first Attempt of Exercise, but such People may begin with more or less, as they find their Strength will permit; the best general Rule is to desist as soon as they find they begin to be fatigu'd, which at first will be very soon, but every Day they will bear it longer and longer, the more they follow it, for thereby they become daily stronger. This common
Obser-

Observation shou'd convince us, that what Limb is most us'd, is stronger and larger than the other, as we often see in Respect to our Hands ; and also how the several different Organs of labouring Men are strengthen'd, as they happen to be most employ'd in their several Occupations, let them be otherwise ever so small or weakly ; thus the Legs, Thighs, and Feet of a Chairman ; the Arms and Hands of Watermen and Sailors ; the Backs and Shoulders of Porters grow thick, strong and brawny in Time. 'Tis also certain, that loud Speaking, without over-straining the Voice, will both strengthen it and the Lungs. Our Nails and Hair, the more they are cut, the more they grow ; and we may also promote any Evacuation so far as to starve all the rest.

CHAP.



CHAP. V.

On Sleeping and Waking.

§ 1. **A**S all Animal Bodies, from the *The Benefit of*
Action within them, as well as *Sleeping and*
Waking.
from the Rubs of Bodies without them,
are constantly throwing off some of their
superfluous and decay'd Parts; so to re-
store this Decay and Wasting of Animal
Bodies, Nature has wisely made alternate
Periods of Labour and Rest, Sleeping and
Waking, necessary to our Being; the one
for the active Employments of Life, to
provide for, and take in the Materials of
our Nourishment; the other, to apply
those Materials to the proper Parts, and
to supply their Expences.

In Sleep, all the Muscles that are in-
tended for voluntary Motion are, as it
were, in a paralytic State; hence their
Effect

Effect ceases, as well as the Affections of the Mind. In this State, one wou'd be apt to think, that for Want of muscular Motion, the Blood wou'd become viscid and acrimonious; but Providence, to answer that Inconvenience, has appointed a stronger, deeper, and more regular Motion of the Lungs, Heart, Arteries, and Bowels; whence proceeds a stronger and more regular Circulation and Mixture of all the vital Humours; Nutrition and Secretions towards the Skin are increas'd, as are also those of the Brain; whence a fresh Supply of Spirits for the next Day's Expence, as also for a Restitution of what was before borrow'd; hence a perfect Digestion and Excretion of the insensible Perspiration, that which goes off in Sleep being most beneficial; because during that Time, the Solids are in a State of Relaxation, and the Motions of the Fluids more regular; by which Means, nothing is thrown off by any of the Excretions by the Pores, but what is thoroughly digested and fitted to pass off that way; and likewise, because in this relax'd State of the Fibres in Sleep, that Secretion, which

which is made in the Brain, and by which the Nerves are supplied with what is necessary for their Invigorations, is perform'd. Whereas in Waking, the Vibrations of the Solids, upon which the Motions of the Fluids depend, are more irregular and disturb'd, being subject to Alterations from abundance of Causes, even the Affections of the Mind, as we shall show in it's proper Place; hence the Juices are more confus'd, and the Secretions not so perfect, because, with what is digested and suited to pass the Strainers, there will also often-times go off some Parts, which can't be spar'd without great Prejudice: Moreover the Solids being constantly stretch'd and employ'd, that Juice, which is absolutely necessary for invigorating the Solids, is not divided to them in such Proportion, as it is wasted; whence a continual Decay of Strength. Hence also we see the Reason, why *Sanctorius* (a) says, "Unequal Watchings render the Body heavier and weaker."

§ 2. Who

(a) Aph. 53. § 4.

*The Effects of
too much
Watching.*

§ 2. Whoever considers the Necessities and Advantages above recited, will soon perceive, how too much Watching will defraud the Solids of that due Supply of the Spirits, which is absolutely necessary to enable them, rightly to perform their several Functions ; and therefore of Consequence, for Want of a good Digestion, the Perspiration being in Part obstructed, the Body must grow heavier ; hence *Sanctorius* (*b*) says, “ Interrupted and un-
“ quiet Sleep lessens the Quantity usually
“ thrown off by Perspiration about $\frac{1}{3}$
“ Part.” And also (*c*), “ Whatsoever
“ hinders Sleep, hinders also the Perspi-
“ ration of that digested Matter, which
“ ought to exhale.” We must always observe, that whatsoever hinders that easy Relaxation necessary for sound Sleep, must hinder Perspiration ; hence a full Stomach must hinder it ; because during that additional Load, the Fibres are on the Stretch, therefore, until that be remov’d out of the Stomach, the Sleep will be
inter-

(*b*) Aph. 5. § 4.

(*c*) Aph. 8. § 4.

interrupted and disturb'd. If any one, not labouring under any Disease, is disturb'd in his Sleep, it must arise from some Sort of Crudities, which are undigested, and not carry'd off by proper Exercise; and the restless Nights, and the Difficulty of going to Sleep, which are generally ascrib'd to the Vapours, are entirely owing to these Causes, tho' they be not so strong, as to become sensible. These Sort of People in particular, and indeed all in general, shou'd attend to that Aphorism of the *Schola Salernitana*, viz. *Somnus ut sit levis, sit tibi Cæna brevis*. *Sanctorius* also says (*d*), "They who sleep and do not dream, perspire well; and on the contrary, they who dream much, perspire less:" For Dreaming is a State between Waking and Sleeping, wherein, although the Mind does not exercise such a Power over the Body, as to direct it's Motions in the same Degree as when awake; yet by it's Attention to those confus'd Ideas which pass thro' it, the Solids are kept in some Degree of Con-

(*d*) Aph. 27. § 4.

Contraction, greater than is agreeable with sound Sleep; and therefore Perspiration, which depends upon a settled Relaxation, cannot so well be perform'd at such Times, as when in quiet and sound Sleep, neither are they so refresh'd in the Morning. It is a certain Sign of Indigestion when they whose Sleep is disturb'd have their Mouths and Fauces lin'd with a thick, viscid Substance in the Morning, after Sleeping or Dosing.

*The Effects of
too much Sleep.*

§ 3. On the other Hand, *Sanctorius* says (e), “By too much Sleep both the
“inward and outward Parts grow cold,
“the Humours are obstructed and render'd unperspirable, and the whole
“Body heavier.” By those very Means by which moderate Sleep does Service, too much of it proves injurious, because too much Relaxation overcharges the Capillary Vessels with too thick and too large a Quantity of Juice, which, instead of making them fitter for Motion, clogs them, and renders them less capable of
reco-

(e) Aph. 50. § 4.

recovering their Springs afterwards ; and when once the Solids fail, the Fluids of course slacken in their Motions ; hence they grow cool, and their Fluids become fizy ; they also then perspire less, whence they become heavier : It is a true and common Observation, that after too much Sleep, the Head seems heavy, dull and drowsy.

§ 4. The properest Time for Sleeping ^{The properest Time for sleep-} is about four Hours after Eating, as *San-* ^{ing.} *florius* observes (*f*), because then the Stomach is almost empty ; and when the Chyle has got into the Blood, such a quiet and relax'd State, as Sleep procures, is most conducive to Nutrition and Perspiration : And the best Time is in the Night, because the Damps, Vapours and Exhalations in the Day-time, which are so rarefy'd by the Heat and Action of the Sun, as to become innocent or very weak, are condens'd, and fall down to the Surface of the Earth in the Night-Season, and consequently must obstruct
T the

the Perspiration: And I have also shewn before, that our Bodies suck in Particles floating in the Air, to avoid which Evils Nature seems to have appointed the Day for Labour and the Night for Rest. People should rise early in the Morning, according to the old Proverb, *Diluculo surgere saluberrimum est*, (the Reason of which is plain from § 3. of this Chapter) but this is within proper Restriction, for no Person ought to go into the open Air before the Damps and Fogs are dispers'd: Hence we may with David say, *Vanum est vobis ante lucem surgere*, Psal. 127. Ver. 2.

§ 5. It often happens, that if a Person has not slept very well, he feels a Weariness in the Morning, which is best remov'd by Exercise; for that Weariness must have been occasion'd by an Obstruction of some indigested perspirable Matter, which by Exercise may be broke small enough to pass the Pores.

§ 6. People of weak Constitutions ought to sleep after Meals but a short
Time,

Time, if at all, because the Food will pass the Lacteals, and get into the Blood, before it be broke fine enough to be afterwards digested by the weaker Attritions of the Vessels, whereas a little moderate Exercise might perform a thorough Digestion of it, before it gets too far. But yet a little Sleep at such Times may be proper, because in it, the Perspiration which goes off may compensate for the Deficiencies of the last Night's, yet if it be too long continu'd, the fore-mention'd Evils will follow.



CHAP. VI.

On the Excreta & Retenta.

§ 1. **I** Am to show in this Chapter the Consequences of a Retention of what should be excreted, and of a too great Excretion of what should be retain'd ; in treating of which I propose to show the various Changes our Food undergoes by the many Actions of our Bodies upon it in all the three Stages of Digestion, and with what Humours it mixes in its Passage, quite from its first Entrance into our Bodies, to the Excretion of its various Parts out of the Body.

Digestion is divided into three Parts ; the 1st Stage may be reckon'd from the Entrance

trance of our Food into the Mouth, to the Entrance of the Chyle into the Lacteals. The 2d, from the Entrance of the Chyle into the Lacteals, to its Mixture with the Blood in the right Ventricle of the Heart. The 3d and last Part, is from its Expulsion with the Blood from the Heart thro' the Lungs, and thence quite thro' the whole Circulation of the Blood to the excretory Vessels.

Our solid Food, when taken into the Mouth, is there, by the Force of the Jaws, comminuted and mix'd with the Saliva and Mucus of the Fauces into a Sort of thick Emulsion or Pulp. This *The Use of the Saliva,* Saliva of an healthy Person is thin, and has little or no Taste or Smell. It is saponaceous, as appears by its Frothing, and likewise by Distillation, and consequently it is attenuating, resolving, penetrating and detergent; it consists of a Water, a Spirit in Plenty, but of little Oil or Salt; by long Fasting, it becomes extremely acrid. It's Use is to render our Food misceable into a seeming Homogeneous Fluid; for as it is saponaceous,

*Too great Ex-
cretion of the
Saliva,*

it is compos'd of oily and saline Particles, which are the very Things necessary to make Oil and Water in our Food miscible; by this Means also it helps to dissolve the viscid Parts of our Food; it dissolves the saline Parts of our Food by its aqueous Parts, which is the proper Menstruum for Salts of all Kinds, it increases Fermentation in all acedent Vegetables by its Spirits. Hence we may know the Consequence of too great Excretion of the Saliva, *viz.* a Decay of Appetite, a bad Digestion, a Thirst, Atrabilis, and an Atrophy; these have been confirm'd by Experience in several, who have made it their constant Business to chew Mastic, to chew or smoak Tobacco, or the like: Hence also we see wherein Smoaking is proper, *viz.* in Phlegmatic Constitutions. Phlegm is not secreted from the salivary Glands, but from other Glands and Vessels of the Trachea and Lungs, which by the Suction in Smoaking, is brought up, and thereby the Glands and Vessels are clear'd from their Burthen, whereby the Lungs can play with more Ease, the Necessity
of

of which the Reader already knows, and will see farther made appear, when I come to treat of the last Part of Digestion.

A Gentleman of this County, about Forty Years ago, was in a Consumption, his Strength and Body daily wasted ; he consulted several Physicians at different Times, who gave him Stomachic and other Medicines proper for such a Case, but all to no Purpose. At last he consulted one, who advis'd him to smoak a Pipe every Morning fasting, and at going to Bed, but to swallow his Saliva and Phlegm, from which Time he recover'd, and is now alive ; this Account I had from himself. This Physician must have had these two Intentions in View, *viz.* First, As the Patient was troubl'd with a great Load of Phlegm, which clog'd up his Lungs ; That was to be brought up, and by nothing better than the Suction in Smoaking. And, 2dly, As his Digestion was bad, it was not proper to spit out the Saliva, which would unavoidably be mix'd with the Phlegm, therefore he ad-

vis'd his Patient to swallow both together. If other Smoakers did the same, the Practice would not be altogether so bad for many of them as it is. Chewing Tobacco can answer no good End, since it only clears the Fauces, which any Thing else might better do, because it might be swallow'd, and then they would reap the Benefit of the Saliva and Chewing too.

People of weak Nerves and Paralytics have frequently a very great Discharge of Rheum from the Glands of the Throat, and Stomach, which is by some call'd a Nervous or Scorbutic Spitting. Hypochondriacs are often more or less troubl'd with it, especially after Eating ; and the Difficulty of the Cure of all the Diseases of weak Nerves, depends much on the Quantity and Constitution of this Flux. For much and long Spitting or Running out of this Rheum, implies a great Relaxation of the whole nervous System, and shows none of the Concoctions have been duly perform'd.

If

If the Saliva be not secreted in a sufficient Quantity, the Deglutition and Digestion will in such Proportion be impar'd, and bring on Thirst, Crudities, Cachexies, &c. It is a laudable Juice secreted immediately from the Arterious Blood; it is suppos'd that one, who eats a Pound of Bread, swallows as much Spittle: Hence we may gather the Consequence of a vitiated State of Blood, for the Saliva must be the same, and will infect the Chyle, and offend the Stomach: I don't dispute but that the Pain which some Persons have in the Stomach when empty, proceeds from this Cause. The Secretion of the Saliva is promoted by the Motion of the Jaws, by Suction and by Diluents; hence a Depravation of the Instruments of Mastication by a Paralytical Disorder, indicates a thin Diet, as of Milk or Broth; hence also, as People in old Age have weaker Digestions, and chew less, they should live upon the same Diet, they should also move their Jaws pretty much, to promote a Discharge

Too little Secretion of Saliva.

Quantity of Saliva.

Its Secretion how promoted.

of

of the Saliva, though they should live upon a liquid Diet.

Mucus.

The Mucus which mixes with the Saliva and Food in Mastication, is soft and lubricating, it is secreted from the Glands, and abounds with a great Quantity of Air, which, when intimately mix'd with our Food, helps to dissolve the Aliment.

The Food being thus comminuted and intimately mix'd with our Saliva, is swallow'd down; in its Passage thro' the Oesophagus it takes along with it some of the Mucus which is secreted by the Glands and Vessels of the Oesophagus; this Mucus is of the same Nature as that of the Fauces. The Use of this Mucus is to soften and lubricate the Fibres, and to preserve 'em; hence a Hoarseness is caus'd, only by the Cold shutting up the Mouths of the Glands and Vessels. Our Food is no sooner got into the Stomach, but it begins either to ferment or putrefy, according to the Nature of the Aliment (but never would arrive either at a perfect Fermentation or Putrefaction)

faction) and is there, partly by the Heat, Force and Action of the Stomach and Liquors contain'd in it, chang'd into either an acescent, alcalescent, rancid, or glutinous Mass; which is yet farther diluted by a constant Secretion of a thin Humour from the Arteries of the Tunica Villosa (*a*), and Glands of the Vascular Coat of the Stomach (*b*), all which, with the Liquor that is drank down, are macerated, attenuated, dissolv'd, and mix'd into a Kind of whitish, grey-colour'd Substance, like to an Emulsion. This Liquor, which is secreted in the Stomach coming immediately from the Arterious Blood, must partake of whatever Disorders are there; hence very often Nauseas and Vomitings when there is no Load in the Stomach; hence also Pains, Heart-burnings, &c.

This Liquor of the Stomach may (by Reason of the Acrimony) acquire some determin'd Quality, and affect human
Creatures

(*a*) *Willis's Pharm. Ration.* § 1. Cap. 2. *Hales's Hæ-*
maft. pag. 121. § 13. Exper. 14.

(*b*) *Moagag. Adversar.* 3, 6.

Creatures with Appetites for unusual Things, which can't be taken without Hurt; or it may occasion an exorbitant Appetite of usual Things, which they will take in such Quantities, 'till they vomit them up like a Dog, from whence it is call'd Canine; in the first Case, the Organs of Taste are vitiated; both Diseases are cur'd by Diet, opposite to the Acrimony.

Such as have, by the Use of Spirituous Liquors, or any other Means weaken'd and destroy'd some of the solid Parts of the Stomach, can neither recover a good Appetite, nor right Digestion, for the inward, villous Coat, when destroy'd, can't be restor'd again.

The Contents of the Stomach are protruded thence into the Intestines, here it immediately mixes with the Cystic Bile, which comes out of the Gall-Bladder (c), and with the Hepatic Bile, or that
which

(c) Glisson de Hepat. Cap. 27.

which comes immediately from the Liver, and also with the Pancreatic Juice.

The Cystic Bile is of a deep, yellow *Cystic Bile.* Colour, is the bitterest Humour in the Body, of the Consistence of a thin Syrup, only flows into the Intestines when the Gall-Bladder is compress'd by the full Stomach, it is neither alcali nor acid, but is very alcalescent, and in a few Hours becomes a perfect Alkali; there is no other bitter Humour in the Body, except the Wax in the Ear. The Bile is a saponaceous Body, being compos'd of an Oil (*d*) and alkaline Salt, and Spirit diluted with Water, is not combustible, unless first dried by the Fire; it is a Sort of Liquid Soap, its Use is to render oleous, gummous and resinous Substances miscible with Water; hence some use it to take Spots out of Woollen or Silks, and Painters use it to mix their Colours withal; it is the most powerful Dissolvent yet known. The Milk in the Stomach of Calves, which is coagulated by

(*d*) Homberg. Act. Reg. scient. 1708.

*Too great Ex-
cretion of the
Bile.*

by the Runnet, is again dissolv'd and render'd fluid by the Gall in the Duodenum. Voracious Animals which don't chew, have a great Quantity of Gall, and some of 'em have the Biliary Duct inserted into the Pylorus. The Gall of an Eel is most intensely bitter, and one of the most powerful Dissolvents. The Gall absterges whatever glutinous Matter may clog and stuff up the Mouths of the Lacteals, so much as to hinder the Entrance of the Chyle into 'em. Hence we see that too great Excretion of the Bile will hinder the Chylopoiesis, will hinder the Concoction of our Food, the Secretions and Excretions, and bring on an acid State. By absterging that Mucus which guards the Vessels and Nerves of the Intestines, it causes bilious Cholics, Diarrhæas, Vomitings, Weakness, Paleness, and Leucophlegmatias, but if it can't be secreted in a sufficient Quantity, it causes a Jaundice, Indigestion, a Loss of Appetite, white, hard Fæces, a lixivial Urine, and the Chyle will be unequally mix'd, the Oils, Salts and Spirits will not unite into a seeming homogeneous Body;

Body, and the Mouths of the Lacteals will be obstructed with a viscid Chyle; whence an Atrophy will ensue.

The Hepatic Bile is more diluted, *Hepatic Bile* more pellucid, whiter, and not so bitter as the Cystic Bile; and almost constantly flows into the Intestines, but is weaker than the Cystic Bile, tho' it abounds with the same Virtues.

The Bile is so acrid, that alone it could *Pancreatic Juice* not be admitted into the Lacteal Vessels; therefore Nature has appointed another Humour, *viz.* the Pancreatic Juice to temper its Bitterness and Acrimony, after it has done its Office. It is secreted from a large, conglomerate Gland (*e*), it tastes a little saltish, is liquid, and is continually flowing in about the Quantity of a Pound in 12 Hours. It is neither acid nor alkaline; but comes the nearest to the Nature of the Saliva of any Humour in the Body. By its diluting the Bile, it mixes it the more intimately with the Chyle:

(*e*) Wharton. Adenograph. Cap. 13. De Graaf de Succ. Pancreatic.

*Its too great
Excretion.*

*Its too great
Suppression.*

Chyle: Hence we see that too great an Excretion of it has much the same Effect, as too great an Excretion of the Saliva. Hence also proceed Diarrhææ Serosæ, Weakness, Faintness, Thirsts and Hæctics: But if it is either totally or in Part suppress'd, then the Chyle will be too viscid, &c. causing Gripings, Tumors of the Abdomen, &c. We see all these Fluids dilute, resolve and make the Chyle one seeming homogeneous Substance, which is, by the Action and peristaltic Motion of the Intestines, squeez'd into the Mouths of the Lacteals; the more vigorous this Action of the Intestines is, the greater Quantity is sent into the Lacteals, for the Excrements of such People are always thick and hard; but on the other Hand, they who have weak and lax Intestines, have thin Fæces. Hence we see, that an astringent Diet, and all Causes of a preternatural Retention in the Guts, will forward the Protrusion of a grosser Chyle into the Lacteals, and *vice versa*. Hence also we see that they, who have their Viscera strong and robust, ought also to have their second and third digestive
Organs

Organs found and good, else the Blood would be soon fill'd with indigested Humours. Hence also we see, if the Mouths of the Lacteals are either in Part or totally obstructed by any Mucus, too viscid Chyle, or the like, an Atrophy must ensue: This is one Cause of Consumption, which every one does not think on, and which is often the Case with young Children, some of whom have very tumid, hard Bellies. In a natural State we should go to Stool once a Day, and the Fæces should be of a due Consistence between the two Extremes: *Oportet sanorum sedes esse figuratas.*

The most subtle Parts of the Chyle pass immediately into the Blood, merely by the absorbing Vessels of the Stomach and Intestines, which discharge their Contents into the meseraic Veins, whose Largeness and Number seem to demonstrate as much; but Mr. Hales's Experiment has put this past Dispute; and there are several Things, which quickly give a Flavour and Taste to the Urine, which they could not do so soon, if they went the

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Circulation both of the Chyle and Blood (*f*): Besides, wherever there are Emisfaries, there are absorbent Vessels, as far as we yet know. If one considers the Straitness of the Thoracic Duct, and the Slowness of the Passage of the Aliment thro' the Lacteals to it, and at the same Time the great Quantity of some Liquors, which pass by Urine in a very small Time, by an easy Calculation he will be able to demonstrate, that such a Quantity could not pass into the Blood by the Thoracic Duct in so short a Time. Hence when immediate Refreshment is requir'd, thin and liquid Aliments are most proper; and for the same Reason, Chalybeat Waters seem to be a proper Remedy in Hypochondriac Cases, and in almost all Kinds of Obstructions in the Mesenteric Glands, Liver and Spleen, because their most subtle Parts are taken up by the Meseraic Veins. Hence also we see a Reason, why People in Pulmonic Consumptions should always be fed with Spoon Meat, by which the Lungs may

(*f*) Hæmast. pag. 123. § 16. Exp. 14.

may be eas'd without over-straining the Vessels.

§ 2. The Second Part of Digestion is *The 2d Part of Digestion.* from the Entrance of the Chyle into the Lacteals, to its Mixture with the Blood in the right Ventricle of the Heart.

The Lacteals have semilunar Valves (*g*) to prevent the Return of the Chyle into the Intestines. The Lacteals at their first Beginning at the Intestines are many and small (*b*); in their Progress in the Mesentery they unite, and become fewer in Number, tho' of a larger Capacity; they are again divided into a greater Number, but of a less Capacity. In this Mechanism, Providence seems to have been particularly careful to break the Viscidity of the Chyle, for by uniting the Vessels, and dividing or separating 'em again, the viscous Part of the Chyle will be more broken and attenuated, than if it circulated in one, and the same con-

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tinu'd

(*g*) Vid. Ruysch de Valv. Lact. pag. 11. Fig. 3. litur. B. B. b. b. Fig. 4. lit. a. a. Nuck. Adenogr. Fig. 22, 23, 24, 25.

(*b*) Nuck. Adenog. Fig. 9. lit. d, e, c, c.

tinu'd Tube. These Lacteals, after they have again been divided, are variously dispers'd, and as variously surround and enter the Mesenteric Glands (i); here the Chyle is again farther diluted by a thin Lympha secreted immediately from the Blood. Hence we see the Consequences either of an Obstruction in these Glands, or of their being skirrous so as to hinder the sufficient Supply of the thin Lymph to dilute the Chyle, which is the Case in Hypochondriac and Hysterick Disorders, and of hard Drinkers, especially of austere Wines, &c. as appears from Dissections of such, as Bonetus shows us (k). From the Mesenteric Glands, the Lacteals are fewer in Number, but much larger, they at last end in one common Receptacle, call'd the *Receptaculum Chyli*, into which all the Lymphatics discharge their Contents, and by which the Chyle is still more diluted: This Lymph is compos'd of a Water, Spirit, and a very subtle Salt.

(i) Nuck. Adenog. Fig. 9. lit. E. Ruysch. Th. 10. No. 61. and in his Tables, annex'd to his Epist. to Boerhaave de Glandulis.

(k) Sepulcr. Anatom. Tom. 2. Lib. 3. § 16. a pag. 279 ad 315.

Salt. Hence we see the Consequence of an Obstruction in the Lymphatics, *viz.* a thick viscid Chyle, which might be in Danger of obstructing, and an Anasarca, for want of a Separation of the Lymph. From the *Receptaculum Chyli*, this Liquor ascends thro' the thoracic Duct, (which is prevented from returning back, by Valves in the (1) Duct;) and is thence discharg'd into the Blood in the subclavian Vein, and therewith descends into the right Ventricle of the Heart, where it is but imperfectly mix'd; in it's Passage it receives the Lympha from all the upper Parts of the Body.

The Chyle in the Thoracic Duct is mostly saltish, and partakes of that Taste and Flavour which was most predominant in the Aliment.

The Mechanism of Nature, in converting our Aliment into Animal Substances, consists chiefly in two Things: First, In mixing constantly with it Animal Juices

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already

(1) Ruysch de Valv. pag. 11. Fig. 5. lit. a, a.

already prepar'd. Secondly, In the Action of the solid Parts, as it were churning them together. This is evident if we consider the Quantity of Saliva that is mix'd with the Aliment in the Mouth, the Liquor of the Stomach, the Bile, and Pancreatic Juice, the Quantity of the Lymph from the Mesenteric Glands, and the Quantity of the Lymph from the Lymphatic Vessels of the whole Body : So that the Juices of an Animal Body are as it were cohobated, being excreted out of their respective Glands and Vessels, and being again admitted into the Blood with the fresh Chyle : All this Time the Solids act upon the Mixture of Chyle and Animal Juices, so as to make the Mixture more intimate and compleat ; so that, I think, we may safely say, that our Aliment before it gets into the Lungs, is mix'd with four times the Quantity of Animal Juices. Hence it follows, that an Animal, whose Juices are unsound, or the solid Parts weak, can never be duly nourish'd, for unsound Juices can never duly repair the Fluids and Solids of an Animal Body, and without a due Action

of

of the solid Parts, they can never be well mix'd. Besides, as the Chyle is not suck'd, but squeez'd into the Mouths of the Lacteals by the Action of the Fibres of the Guts, it is plain that it must be peccant in Quantity or Quality, when these Actions and Organs are too weak, and whatever strengthens the Solids, must help the Digestion. Hence also it appears, that Diarrhæas and strong Purgations must spoil the first Digestion, because of the great Quantities of Animal Liquids which are thereby expell'd the Body, *viz.* the Saliva, Mucus of all the Viscera, all the Liquors that are separated in the Glands of the Alimentary Duct, both Sorts of the Bile, the Pancreatic Juice, Lymph, and sometimes Blood: Computing the Quantity of these Secretions, makes it plain that almost the whole Juices may be carried off by Purging; and when these Liquors are expell'd out of the Body, which by their Mixture convert the Aliment into an Animal Liquid, the Digestion cannot so well be perform'd. Hence also we see in tabid Per-

fons, Milk is the best Restorative, that being Chyle already prepar'd.

*The last Part
of Digestion.*

§ 3. The Chyle, we observ'd, mix'd with the Blood at the Subclavian Vein, and with it, enter'd the right Ventricle of the Heart, where they are mix'd a little; from hence they are propell'd into the Lungs, which are the first and chief Instrument of Sanguification. The Wind-Pipe is divided into a great Number of Branches, call'd Bronchia; these end in small Air-Bladders dilatible and contractile, which are capable to be inflated by the Admission of Air, and which subside at the Expulsion of it. The Pulmonary Arteries and Veins pass along the Surfaces of these Air-Bladders in an infinite Number of Ramifications (*m*) like a Net-work (*n*). A great Number of these Air-Bladders form what we call Lobuli, and these Lobuli constitute the Lobes of the Lungs: These Air-Bladders, or Lobes, always sink in Water before they have been inflated, but after once Air has enter'd them, they will
always

(*m*) Ruysch. Thesaur. 3. No. 24.

(*n*) Malphig. de Pulm. Epist. 1. 2. Tab. 1. Fig. 1, 2, 3.

always swim: Hence we see how to know whether Children be born alive or dead.

The crude Mixture of the Blood and Chyle, being propell'd from the right Ventricle of the Heart, passes through all the Ramifications of the Pulmonary Artery, and the more Ramifications there are, the more perfect the Mixture will be; but this is not all, for as this Mixture of Blood and Chyle passeth through the Branches of the Artery, it is press'd by two contrary Forces, *viz.* that of the Heart driving it forward against the Sides of the Tubes, and the elastic Force of the Air pressing it on the opposite Side of those Air-Bladders, along the Surface of which these Vessels creep. By these two opposite Forces, the Liquor is more intimately mix'd and compress'd, and by the alternate Ingress and Egress of the Air, the Vessels are alternately compress'd and relax'd, which is still better than if it was one continu'd compressing Force. By this most surprising Mechanism, the Liquor is still more attenuated, dissolv'd
and

and mix'd, and is almost assimilated with the Blood; I say almost, because it is well known from Experiments by Venæsection, that sometimes eight Hours after Eating, some of the Chyle has been discover'd swimming at the Top of the Blood, like an oily Substance.

This Faculty of attenuating, and breaking the Viscidity of this Mixture, which we will now call Blood, is, *ceteris paribus*, most vigorous in strong Constitutions, and *vice versa*. Hence we see that the Action of the Lungs is of greater Consequence than any of the other Viscera, for no Part of the Body receives any Arterious Blood 'till it has first circulated thro' the Lungs. Hence also we see, that as much Blood goes thro' the Lungs in the same Space of Time, as thro' all the rest of the Body; and from whence here is the greatest Heat, and thence arises the Necessity of the Air to cool 'em. Their Texture is so very delicate, that they are extremely sensible of any Force, either from a too violent Motion, or Acrimony of the Blood. We see also that they are
the

the first, and chief Organ of Sanguification; the Person therefore who has that Organ faulty, can never be duly nourished, especially if the Lungs are any way ulcerated or corrupted: Hence such People ought to eat but little at a Time, because the great Increase of the Quantity of fresh Chyle, must make that Circulation still more uneasy, which is the very Case with consumptive and asthmatic Persons, and also accounts for the Symptoms they are afflicted withal after Eating. It happens often very unlucky for asthmatic People, that they have voracious Appetites, and consequently, for Want of a perfect Sanguification, are often leucophlegmatic. It is to be observ'd, that the Defects of the first Concoction, are not to be mended by the second, for if the Chyle passeth into the Blood in so bad a State, that the Force of the Fibres, which contribute to the second Concoction, can't sufficiently comminute it, then there must of course follow various Kinds of Obstructions.

From

From the Pulmonary Arteries, the Blood is drove into the left Ventricle of the Heart, and is thence, by the Force of the Heart, drove into the Aorta quite through the whole Body.

The Arteries are endued with a contractile Force, by which they squeeze and drive the Blood still forward, it being hinder'd from going backward by the Valves of the Heart. The Arteries are Conical Tubes, with their Bases towards the Heart, and as they pass on, their Diameters grow still less and less, the Benefit of which I have already mention'd in § 2. Chap. 1. of Exercise. This Fluid being compress'd by the Sides of the Tube, especially in the small Vessels, where the Points of Contact are more, is still more intimately mix'd: Hence appears the Necessity of Exercise to promote a good Digestion.

The Blood in live Animals in its natural State, is neither acid nor alkaline, is a little saltish, and consists of a Water,
Salt,

Salt, Oil and Earth, and is compos'd of red Globules, swimming in a Serum or watery Liquor. The smallest Vessels, which carry the Blood by lateral Branches, separate the next thinner Fluid or Serum, the Diameters of which lateral Branches are less than the Diameters of the Blood Vessels, and will not in an healthy State admit the red Fluid. These may be call'd Serous Arteries, they also emit lateral Branches, which carry a Lymph, still more limpid than Serum, and from that Liquor are call'd Lymphatic Arteries; and these will not admit Serum. How far this Progression goes is not certain, ten Capillary Arteries in some Parts of the Body, as in the Brain, are not equal to one Hair, and the smallest Lymphatic Vessels are many times smaller, than the smallest Capillary Artery. Hence one may easily perceive the Inconvenience of Viscidity, which obstructs, and Acrimony, which destroys the Capillary Vessels.

Lewenboeck says, he discover'd, that the red Globules of the Blood were compos'd of six Globes of the Serum. Hence the
Redness,

Redness and Solidity of the Blood is caus'd by the Strength and Elasticity of the Heart and Vessels: The Proportion betwixt the red and ferous Parts of the Blood are different, according to the Time of Venæsection, and the Diseases of People. It is call'd good Blood, when the Globular Part is of a moderate Cohæsion and Firmness of Parts, in a pretty near equal Proportion to it's Serum, and of a red, scarlet Colour: The Serum should be about the Consistence of Water, pretty clear, and almost insipid, at least not biting saltish: But it is call'd rich Blood (which nevertheless is none of the best) when the Globular Parts are in a far greater Proportion than the Serum, more thick and dense, and when the Serum is of a yellowish, tawny Cast.

§ 4. What cannot be broke fine enough by the Force of the Arteries for further Secretions, either obstructs in some of the Glands and small Capillary Vessels, or is strain'd off by the Kidnies, and ejected by the Urinary Vessels. Hence we see the stronger the Heart and Arteries are,
the

the more is sent forward into the minuter Passages; and the weaker they are, the greater Quantities are let fall thro' the Urinary Out-lets; whence strong People make less Urine than weak: Preternatural Causes will occasion a Deviation from this general Rule. We must observe, that the Faults of a too great Restriction of the proper Evacuation *per Anum*, are very naturally and providentially amended by this; because the too gross Particles, which by that Means were drove into the Blood, make their Exit by the Kidnies. A Restriction of the Urinary ^{Urine suppressed.} Passages send forward a great Quantity of gross Parts, which obstruct in the Glands and Viscera, as their particular Properties, and the Textures of the Vessels dispose 'em. If the Urine be suppress'd, by putrefying, distending, and corroding, it destroys the Bladder, Ureters, Pelvis, and Kidnies; by being kept in the Blood it destroys the small Vessels of the Brain, whence Pains in the Head, Vertigo's, Apoplexies, and Death, several Instances of

*Too great
Excretion.*

of which we find in *Bonetus* (o). If there be too great an Excretion of Urine, from what Cause soever, by taking away the watery Parts of the Blood, it will cause an Immisceability of the Humours, a Heat, an inquenchable Thirst, Crudities, and many such Evils; and by carrying out the most nutritious Parts, brings an Atrophy and Death. The Urine is compos'd of a Water, a very subtile, volatile, acrid Salt, a fine, acrid, thin, volatile Oil, that soon putrefies, and of a very fine Earth, and a Spirit. The Salt is saponaceous, and is somewhat of a peculiar Nature, is neither Acid, Alcaline, Muriatic, nor yet like Sal Ammoniac, but will make Phosphorus. The Oil seems to be compos'd of the very finest Parts of the Fat. The Urine differs both in Smell, Taste, Colour and Quantity, according to the various Ages, Temperaments, Sexes, Seasons of the Year, Alterations in the Non-naturals, and Difference of Medicines. But that of an healthy Person, which is no ways discolour'd

(o) Sepulcret. Anatom. Vol. 2. a pag. 605 ad 641.

colour'd either by the Quantity or Quality of the Food, and is of a bright Amber Colour, of about three Quarters of the Liquor that is drank, and has a light Cloud hanging in it, is good Urine : for it is a certain Sign of a due Concoction, and of a just Proportion of Food.

§ 6. Thus we see, all that is taken in to our Bodies does pass thro' these three different Stages before it be discharg'd out, unless it be what runs off by the first and second Emunctories : And because what gets into the third Stage is of much the greater Quantity of what is taken in, as both *Sanctorius* (*p*) and *Keil* (*q*) have demonstrated ; as, I say, what gets into the third Stage is of much the greater Quantity, so it is of the utmost Importance to know how the Affairs of the OEconomy are conducted therein. The Disorders of the first go not beyond the Stomach and Intestines, and lies so near the immediate Reach of Medicine, as to admit of some Certainty in Cure. Those

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(*p*) Medicin. Static. Aph. 6. § 1.

(*q*) Medic. Stat. Brit. Aph. 4, 5, 6, 7.

of the Second, because they are somewhat more remote, require more Art and Application to be come at ; and besides the Assistances of Medicine, admit of great Influences, from Motion, Concussion, and such like Means. But in the third and last Stage, it requires the utmost Skill to send a Medicine with any tolerable Certainty of good Effect, it being liable to be alter'd by many Causes, before it gets so far. Here external Applications are to take Place, and great Things have been done by 'em ; such as various Kinds of Exercises, Frictions, Baths, and the like : For all these Things help to promote the greatest of Secretions and Excretions, *viz.* that of Perspiration. This, both as to its Matter and Quantity, is so absolutely necessary to the Well-being of an Human Body, that a Disease can neither be remov'd, or Health preserv'd, unless it be rightly digested and discharg'd. It ought therefore to be the utmost Concern to a Physician, not only perfectly to acquaint himself with the Nature of this Evacuation, but likewise thoroughly to know, by what Means it may

*The Necessity
of understand-
ing the Nature
and Use of
the perspirable
Matter.*

may be promoted, according to the several Exigencies of the Patient; either for the Preservation, or the Recovery of his Health. We ought to have Regard to this sort of Discharge above others, because this can supply the Defect of other Evacuations better than any other can supply the Defect of this; and also because it is promoted by Vessels, which are by all allowed to be the grand Emunctories of the Body, as well those of the Lungs and Bowels from the Mouth quite to the Anus, as those of the Skin; as both *Sanctorius* and *Keil* have above demonstrated.

§ 7. Perspirable Matter is that thin, volatile, saltish Vapour, which after a long Course of Circulations in all the Shapes of the Animal Fluids, is divested of all that can be of farther Use to any Part of the Body. This is secreted by the cutaneous Arteries, and passes off insensibly and almost invisibly thro' the Pores of the Skin. The stronger and more elastic the Arteries are, the finer the perspirable Matter is: But if these Arteries

Perspirable Matter what, and how secreted; and also Sweat, what, and how secreted or excreted.

are either too much relax'd, or if the Blood circulate too freely and quick, then there will be a greater Quantity evacuated, of a thicker Consistence, and supply'd more immediately from the Blood, and comes from its most nutritious Parts, which being sensible is commonly call'd *Sweat*. There is another Kind of Sweat, which is secreted from the miliary Glands and Follicles of the Skin, mention'd by that excellent Anatomist *Ruyfch (r)*, and this is what is properly call'd *Sweat*. It is to be observ'd that the more a Man perspires, the less he sweats ; because the former depends upon a hardy, elastic State, the latter upon a relax'd State of the Fibres. The real Quantity carried off by Perspiration can never be known by Ponderation ; for as it is plain, that the outward Air, or at least some of its Contents does enter the absorbing Vessels, the Quantity of perspirable Matter found by weighing, is only the Difference of the Excess of that, beyond the Quantity of what was imbib'd.

That

(r) *Adversar. Anatom.* 1. pag. 10, 11, 12.

That which goes off in Sleep is best, because, during that Time, the Solids are in a State of Relaxation, and the Motion of the Fluids more regular, by which means, nothing is thrown off by the Pores, but what is thoroughly digested and fitted to pass that Way.

§ 8. Nature has so provided, that if by any external Cause, this necessary Evacuation is hinder'd in any one Part, it is always increas'd in another, or else a Distemper will ensue. For which Reason, when the Coldness of the external Air, or any Thing else lessens the insensible Perspiration of the Skin, either the sensible Evacuations are increas'd, as commonly the Urine, or greater Quantities are carried off by the Pores of the Lungs and Fauces, as we see in Frosty Weather, like Smoak out of the Mouth; or else it is perspir'd into the Cavities of the Stomach and Guts, which is discharg'd by breaking Wind upwards or downwards, or by a Looseness, or by the Salivary Glands: Some of these commonly happen to Hypochondriac and Hysteric People, especi-

If stop'd in one Part, either is promoted in another, or a Disease ensues.

ally when the Stomach is empty. Hence Cholics, Gripings, Pains in the Stomach, &c. All which are best cur'd by Exercise, for *sublata causa tollitur effectus*. They who are subject to these Sort of Gripings, Cholics, &c. are, when free from 'em, very apt to have cutaneous Pustles and Eruptions, especially in the Face. If Perspiration happen to stop in the Limbs. it there causes Rheumatic and Scorbutic Pains.

*An Obstruction
of this can't be
compensated by
increasing any
of the sensible
Evacuations.*

§ 9. It ceases to be a Wonder, that the Body becomes so much disorder'd by a total or partial Obstruction or Suppression of the Perspiration, more than by any Obstruction of the sensible Evacuations: For there is so great a Difference between the Matter of this, and that of the sensible Discharges, that the lessening one, will not be compensated for, by increasing the other, unless in very fresh Indispositions: For it will be very difficult to prevent Injuries, which may arise from what ought to pass thro' the cutaneous Pores, if it be stop'd in the cutaneous Ducts, or be prevented from getting into 'em, by enlarging

enlarging the other Evacuations : Because, by its staying in the Blood, there will be made such Alterations, as can't easily be remedied by simple Evacuation : Hence we see moderate Exercise, and a temperate Use of the Non-naturals, may much more easily obtain the End wish'd for, than the Virtues of the most celebrated Medicines.

§ 10. The Diminution of Perspiration *The Effects of a diminish'd Perspiration.* can't but add to the Weight of the Body, in Proportion to the Quantity detain'd, unless some other Evacuation be increas'd beyond what is natural. Wheresoever there is an increas'd Quantity of Fluids, the Resistances to the contractile Force of the Arteries must be greater ; and therefore if they are not supplied with a proportional Encrease of Spirits to enforce their Vibrations, they can't beat so frequently, nor so vigorously, whereby the Blood will flow slower. And as their Fluidities or Degrees of Consistence are in Proportion to the Celerities (if not to too great a Degree) the slower they circulate, the thicker and more viscid they grow,

grow, and consequently obstruct in the Capillaries, in the Viscera, and bring on all such Disorders as belong to a Cachexy, such as a Jaundice, Scurvy, Rheumatism, &c.

But if the Arteries are strong enough to have their Vibrations or Contractions increas'd, then there will succeed a Fever, for an Obstruction of Perspiration increases the Quantity of the Blood; this Increase will also increase its Pressure against the Sides of the Arteries; hence a stronger Pulse, and also an Increase of the fluid Secretions, in Proportion greater than the thicker, as *Cheyne* and *Wainwright* have demonstrated (s); hence a greater Secretion of Animal Spirits, whence a stronger Vibration of the Solids and a Fever.

*The Effects of
too great an
Evacuation.*

§ 11. Too great a Waste of perspirable Matter in a certain Time, can't but leave the Fibres too small a Share of Moisture and weaken them. Moreover the fresh, indigested

(s) Propos. 18. of Animal Secretion.

indigested Humours will then prefs forward into the small cutaneous Vessels, and will there be apt to obstruct; hence cutaneous Eruptions, &c. whence we may conclude, that after long Distempers, which have wasted much of the Substance of the Body, 'till that Loss is repair'd, we ought to live with Temperance, to feed sparingly, and of what is easy to digest. We should also observe the same after long Fasting, or after any violent Exercise, or in travelling from a hot to a cold Climate.

§ 12. It is certainly true, that the Increase of the sensible Evacuations, especially by Stool and Urine, cuts off the Supply of the Materia Perspirabilis, in Proportion to such an Increase; because, in the first Case, it is carried off *per Anum* before it can get into the Blood; and in the latter Case, before it has gone such Circuits as are necessary to convert it, either into nutritious Juices, or break it into Parts small enough to pass through the Pores. Indigestion does much the same; so that the Quantity which perspires,

It's Supply cut off by an Increase of the sensible Evacuations.

spires, both increases and decreases in Proportion to that which is prepar'd by a previous Digestion: Hence *Sanctorius* says (t), "In the Morning Sleep, after
 " the first Digestion is perfected, about a
 " Pound of the perspirable Matter goes
 " off in an Hour; but if it is not perfected, not above a Quarter as much."
 We ought therefore to take the greatest Care at that Time, that it be promoted.

*The Effects of
 too frequent
 Coition.*

§ 13. It has been sufficiently prov'd, that a right Discharge of all the Animal Functions depends upon a due Tension or Springiness of the Solids; whatever Disorders weaken this Disposition of the Solids, can't but very much prejudice the whole Constitution; and that any violent Actions (as that of Coition is) are destructive of the Textures of the Solids, can't be doubted; the Body therefore will thereby be weaken'd, and the several Parts will not be able to discharge their respective Offices; whereby Digestion, Concoction, and all the natural Evacuations

(t) Aph. 7. § 4. pag. 221.

tions will be disorder'd, and by draining from the Blood the richest and most balsamic Parts, will bring particular Weaknesses, which often-times lay the Foundation of a Consumption. As the Fibres of the whole Body are hereby over-strain'd, those Parts which are most nervous, can't but be most injur'd; hence a Weakness and Dimness of Sight, impair'd Memory, a deprav'd Appetite, Pains in the Head, &c.

As too frequent Use of Coition is prejudicial, so a moderate Use of it is beneficial, as may be deduc'd from what has been said in several Parts of this Book. Those who are experienc'd in these Affairs can well tell us, how active, lively and agile they are upon refraining some Time from venereal Exercise, or using it only in a moderate Way, and how dull they seem to be after excessive Debaucheries.

§ 14. Old accusom'd Evacuations of-
 ten-times become at last very useful and
 advantageous to the Animal OEconomy,
 by *The Effects of
 stopping an ac-
 quir'd as well
 as customary
 and natural
 Evacuation,*

by draining from the Blood some superfluous, uselefs, excrementitious Matter, which otherwise might incumber the fine small Capillary Vessels, and lay too great a Load upon 'em; or else they excrete some putrid, acrid and corrosive Particles, which, if return'd into the Blood, might corrupt the Fluids and debilitate the Solids. Hence it appears how dangerous it is to heal up Issues, Ulcers, Fistula's, or to stop periodical Hæmorrhages, Sweating in the Hands and Feet, &c. without proper Advice, many having thrown themselves into Consumptions thereby. An eminent Instance of this we meet with in the *Philosophical Transactions*, Numb. 272. in one who stop'd a periodical Hæmorrhage in one of his Thumbs; and we daily meet with Instances in several Persons, who have render'd themselves incurable, others have been weak and sickly 'till the Humours have took their own usual Course again. For when Nature has chosen, and for some Time exercis'd new and extraordinary Methods of OEconomy, she seems to be as fond of their Continuance, as at other Times,

in

in her most regular State she is of that, which is her most usual and ordinary Course.

§ 15. Too great Hæmorrhages weakens Too great Ex-
cretion of
Blood, and a
Suppression of
the natural
Evacuations. the Fibres, renders the Blood crude, watery and pale, produces Leucophlegmatias, Dropfies, &c. But the Suppression of the natural Evacuations, such as the Hæmorrhoids and Menfes, causes Inflammations, Fevers, and, in short, most Kinds of Diseases, both acute and chronical.

CHAP.



CHAP. VII.

On Affections of the Mind.

*The Manner
how the Mind
affects our
Bodies.*

§ 1. **T**HE Manner how the Mind or Thoughts operate upon our Bodies, is a Mystery, and no way to be brought under a Mechanical Rationale, because it is impossible to represent and delineate, as we do Corporeal Substances, that which never comes under the Notices of our Senses, but in its Effects; therefore we can't have any Notion of the Procedure, by which they are brought about, as we can have of all those affected by Physical Agents: As it is certain that Affections of the Mind, especially when sudden and intense, do inflame very much, and alter the Constitution, so far as necessarily to bring it under the Physician's Care, the wisest must therein be

be contented to establish his Rules upon Observation only.

Nothing is more observable, than that violent Affections of the Mind waste the Spirits, and bring great Disorders upon the Constitutions, this they seem to do, as Stimuli universally irritating and twitching the Nerves, in such a Manner as disturbs their irregular Contractions; for though we can't tell, either how Thought can produce such a Change in the Humours of the Body, or how such a Constitution of the Humours can affect the Passions of the Mind, yet if by constant Observation and Experience it can be found, that such a Passion or Temper of Mind is always attended with such or such Consequences in the Constitution; and on the other Hand, that such a particular Temperature of the Constitution, always affects the Mind with such or such particular Passions and Dispositions, it will then afford very sufficient Ground of Certainty to a wary and considerate Person in his Reasoning upon their Consequences, and in the Measures which
ought

ought to be taken in rectifying the Disorders of either; *ex. gr.* If Anger or Chearfulness are always found to render the Body lighter, altho' we cannot tell how these particular Passions do first modify any particular Parts of the Body, so as to produce that Effect, yet it being plain how Physical Agents do the same, it is highly reasonable to conclude, that these do it also by the same Means; *i. e.* thus far we know, that an Invigoration, or an Increase of the contractile Force of the Solids will promote Digestion, increase the Evacuations, and render the Body lighter; so that we have the greatest Reason to believe, when we see the same to be the Consequences also of a Man's being passionately angry, or very merry, that these Dispositions of the Mind do give that particular Modification, and Degree of Tension to the Fibres, as cold Bathing, a cold, clear Air, or moderate Exercise, when we see them attended with the Consequences; and as we know these Physical Causes have this Effect by drawing up, contracting and vibrating the Solids, thereby breaking the Juices
finer,

finer, so ought it to be concluded, that these Passions of the Mind do give the same Modifications to the Fibres, by which the same Effects are produc'd; what seems still farther to convince me in this Opinion is, that in any Passions of Joy or Anger the Pulse is stronger and quicker than before; in like manner, if Fear or Sorrow are found to be attended with an Increase of Weight, it is reasonable to think that they do it by the same Means, by which all those Physical Agents produce the same Effect, *i. e.* by slackening the Fibres too much, abating Digestion, and consequently lessening the Evacuations; when therefore any Passion of the Mind is said to have this or that Effect upon the Body, we ought to consider that Passion only as a Physical Agent, as it contracts or relaxes the Fibres, and as it increases or lessens the Evacuations; but in this we are guided only by Observation and Experience, which is sufficient in this Case to a Person of any tolerable Discerning.

*The Effects of
Anger and Joy.*

§ 2. Anger and Joy keep the Fibres in their natural Tensions, assist the Secretion and Derivation of Spirits to all Parts of the Body, and consequently promote the Circulation and Digestion, thereby promoting a plentiful Perspiration, which renders the Body lighter; on the other Hand we also see, that whatever promotes a free, easy Digestion and Circulation, will also raise the Mind with more agreeable Impressions, and dispose it either to Joy or Anger.

*The Effects of
Fear and Sorrow.*

§ 3. Fear and Sorrow, as they give a quite contrary Modification to the Solids, they are always attended with quite contrary Consequences; on the other Hand, whatever checks the Motion of the Spirits, and hinders a free Circulation, and also impairs Digestion, will give a Slackness and Sluggishness to the Juices, thereby occasioning Obstructions; so whatever obstructs Perspiration, and causes a Lentor in the Blood, will dispose the Mind to those uneasy Passions which we call Fear and Sorrow, as we see in hypochondriac

chondriac and hysteric Affections: As Grief or Fear are found to weaken the Contractions of the Vessels, so those Parts where there are the greatest Collections of Juices, will the soonest suffer by Stagnations or Obstructions; hence we find by Dissection, that the Glands of some of the Viscera of such People are scirrhus, and the other Vessels are turgid and black (*a*).

They who sicken upon the Disorder of the Mind, especially with Grief, are commonly seiz'd with the Diseases of the Stomach, first complaining of a Faintness, and soon after of Inappetency, a bitter Taste in the Mouth, and Thirst in the Morning, acid and nidorous Crudities, Wind, Detention of the Hypochondria, and the other Symptoms of a dis-

Y 2

order'd

(*a*) Bonet. Sepulc. Anatom. Lib. 1. § 9. Observ. 16. pag. 226. Tom. 1. & pag. 227. Observ. 19, 20. pag. 229. Observ. 23, 24. pag. 234. Observ. 33. pag. 239. Observ. 39. pag. 240. Observ. 40. pag. 242. Observ. 46. Wharton adenogr. Cap. 12. G. Blasius, in Observ. Anatom. pag. 127. & Observ. Med. 22. J. D. Horst. Observ. Anatom. 8. Hæchstetteri, Observ. 3. Decad. 5. Lazar. River. prax. Lib. 13. Cap. 5. Observ. Joh. Huldarici Streitter apud Greg. Horstium. Tom. 1. p. m. 141. Anton. Pozzis, Observ. 29. Miscell. Curios. Ann. 4.

order'd Chylification. The Chyle being indigested, and pall'd, for the foregoing Reasons, gradually infects the Mass of Blood; hence spring diverse Diseases, both acute and chronical, particularly Obstructions of the Viscera, the Scurvy, Rheumatism, Hypochondriac Illness, &c. hence we ought in Diseases arising from this Cause, chiefly to have Regard to the Stomach and digestive Faculties.

THE



T H E
C O N C L U S I O N.

THAT these Methods herein laid down should prove curative in some particular Distempers, and that too, when scarce any Thing else will prevail, seems to obtain little Credit with most People, who, when a Physician recommends 'em, look upon 'em as forlorn Methods, and the Effect rather of his Inability to relieve 'em, than of his real Belief that there is any Thing material in what he advises. This, together with most People's Inconstancy and Impatience in being confin'd in their Appetites, makes 'em either throw off all Remedies and Restraints of these Kinds in Dispair, and give themselves up to an habitual Indulgence in all those Things that brought on or exasperated the Distemper, or run

about changing from Doctor to Doctor, 'till they end with Quack, or die under the Hands of a Mountebank, and so are fool'd out of their Lives and Money at once.

It is surprizing, that reasonable Men can imagine, that in any small Time, any possible Methods or Medicines should cure, or even sensibly relieve a Distemper, that, perhaps, was brought with 'em into the World, or at least, may have been ten or twenty Years a breeding by Excesses, or an indiscreet Regimen; I shew'd in the last Chapter, that if the Humours were bad, they would infect the Chyle, and 'till those bad Humours are either evacuated or chang'd, we must expect no Cure, and that is a Work of Time, which must be proportion'd to the Greatness of the Excesses, and to the bad State of the Blood.

But this requiring long Time, much Care, and great Caution, unwearied Patience and Perseverance, and so long a Course of Self-denial, that few People are willing

willing to undergo the Course, the Failing is therefore mostly in the Patient himself, who will not, or cannot deny himself the Gratification of indulging his Palate for a Time sufficient to bring about the Cure. Some Chronical Distempers, indeed, are such, either by having gone too far, or by being *Hereditary*, and interwoven with the Principles of Life, as never to be totally overcome. But however, if the Rules and Cautions laid down in this Treatise be carefully, steadily, and constantly observ'd, few Chronical Distempers but will receive such Relief and Alleviation by 'em, as to make Life tolerably easy; and in some Cases, that is all that Art can do. But in other Chronical Distempers taken in *due Time*, where the Viscera are not quite spoil'd, a proper Regimen of Diet, due Exercise, and proper Air, with a few other Helps, would infallibly bring about a final Period, and a perfect Cure; especially if the Diet be chiefly compos'd of unfermented Liquors and of young Vegetables, which have scarce any gross, fix'd, or essential Salts at all in 'em. This is evident upon

Trial (b) and Examination, for these yield none, being too light and thin to calcine and incinerate, and the Salts too volatile (and consequently, small and fit to pass by Perspiration, and thereby can be no way injurious to Human Constitutions) to endure the Fire, which full-grown Plants, their Stalks and Wood readily do; hence their Juice is very proper for Scorbutic Habits. And in unfermented Liquors, the Salts are so envelop'd, that they can't unite to form a Spirit, and are so sheath'd, that they can scarce do any Harm (except when they exceedingly abound) to Animal Bodies. Hence it comes to pass, that a vegetable Diet for a few Weeks or Months together, with drinking unfermented Liquors, will fasten the Teeth when almost dropping out, from a Consumption of the Gums by Scorbutic Salts, and will cure most cutaneous Eruptions, and also most Ulcers, if they be not scrophulous, when no Medicine on the Face of the Earth will touch it.

A N

(b) *Lowthorp's Abridg. of the Philos. Trans. Vol. 2. pag. 661.*



A N
E S S A Y
O N T H E
C H I N - C O U G H .

I HAVE been often surpriz'd that our Authors in Physic have taken so little Notice of the Chin-Cough, since it requires their Study and Attention as much as any other Distemper, and the present Method of treating it is so long and tedious, that, as *Willis* (a) says, *Propter annu-
mutationem cessat potius quam a remediis
superatur*, it may indeed ease 'em a lit-
tle, but seldom, if ever, cures: This
Disease

(a) De Medicam. Operation. § 1. Cap. 6. pag. 169.

Disease rarely afflicts Adults, nor yet Infants, but when it becomes epidemical.

Children, from the Weakness of their digestive Faculties, as well as from their common Food, which is of all others the most subject to be converted into Phlegm, are for this very Reason more liable to this Distemper than Adults; I say, their Viscera being lax and weak, the Milk, by following it's own proper Indoles, will either become viscid, or acrimonious, or both; hence Nausea's, Gripings, Tumors of the Abdomen, and the like, for then the Primæ Viæ are almost lin'd with Phlegm from the Throat to the Anus; hence they are frequently puking, as well from the Phlegm tickling the Nerves, as from it's Acrimony: We know also, that the Chyle made by such weak Viscera must be thick and crude, and therefore if the Vessels of the Lungs are weak, the Blood will be thick and viscid, especially the ferous Part; and at the same Time the Glands about the Fauces, Trachea and Bronchia, and the Pores, or Excretory

tory Ducts in the Lungs, mention'd by *Hales (b)*, being relax'd, their Secretions and Excretions must be more thick and viscid, which lodging in the Bronchia and Lungs, irritates the Nerves to promote their Expulsion by Coughing; and if it sticks so close, that it can't be easily expectorated, it strains the Infants to such a Degree, as to throw them into Convulsions; hence we see this Distemper is caus'd by a great Quantity of thick Phlegm obstructing in, and adhering to the Lungs and Parts adjacent, and that the Phlegm is caus'd by a Laxity of the Fibres and the Diet.

Therefore, from what has been said, we see the curative Indications are first, to attenuate and dissolve the Phlegm; secondly, to corroborate or strengthen the Fibres, to prevent any other Viscidity.

The first is done by such Things as insinuate and stimulate, to cut, as it were, the Phlegm, and to give the Vessels a forcible

(b) Stat. Essay, Vol. 2. pag. 73. Exper. 11. § 3.

forcible Vibration, whence it will be broke and reduc'd finall enough to be discharg'd out of the Body.

Secondly, The Solids must be strengthen'd, for although the viscid Humour be attenuated, yet if one of the Causes remain, *viz.* the Laxity of the Vessels, there will be soon a fresh Supply of Phlegm, and this is best done by gentle sub-astringent, aromatic Medicines.

Thirdly, This viscid Humour is not only to be attenuated, but also evacuated, and if it can't be attenuated so fine as to pass off thro' the Pores, it can't be evacuated by Stool, for then it must be attenuated so fine as to come through the Capillary Vessels into the Intestines; moreover, at that Time Purging wou'd destroy one of the curative Indications, nay, if the Patient was purg'd when almost recover'd, he wou'd be in great Danger of a Relapse, as I observ'd in two Children: It is, in many Things, like to an Intermitting Fever, as we shall also see, it has also been cur'd by Frights, as well as the Ague, as

Willis

Willis tells (c) us, *Alterum pro tussi puerorum convulsiva remedium esse solet ut subito quodam timore afficiantur.* As this Humour, I say, can't so safely be carried off by Stool, and by Vomiting it can't, we then have no other Way but by Urine, which may safely be done, and how beneficial Diuretics are in many Disorders of the Lungs no Physician is ignorant.

When therefore I am first call'd upon, if the Child be in Danger of being convuls'd, I then am forc'd, in order to gain Time, to take some Blood from it, otherwise I wou'd never do it, because it is contrary to the second Indication; and those Children who were bled, or much purg'd, were always longer in recovering than those who had never been bled, but I have not had so many of 'em under my Care as to be certain, because other Circumstances might contribute towards prolonging the Time, I only mention it that the Reader might be more accurate, it being what I observ'd, and
cou'd

(c) De Medic. Operat. § 1. Cap. 6. pag. 170.

cou'd impute it to nothing else; if (as it mostly happens) the Primæ Viæ abound with Phlegm, then I gave a little Oxymel Scillit, or the like, and deterfive Purges, as I thought proper, but if I thought those Passages clear, that the Medicine cou'd get freely into the Lacteals, I never wou'd use either Vomiting or Purging, the first, because it commonly shook them, and made 'em cough the more, and the last, because it was contrary to the Indication of Cure, notwithstanding it being the greatest Part of the common Method of treating them at this Time.

I come therefore now to the first Indication of Cure, *viz.* to attenuate or dissolve the Phlegm. It seems plain, that the Viscidity of the Phlegm ought first to be broken, and what is obstructed in the Capillaries to be dislodg'd, because to draw up the Solids whilst such Obstructions remain, is the most likely Way to fix that viscid Matter the faster, thereby aggravating the Distemper; moreover, it wou'd be a Task of Difficulty to bring
up

up their Fibres to their due Force with such a Load upon them, and for these Reasons 'tis we frequently see so much Mischief done by giving the Jesuits Bark, or any such sub-astringent Remedies as answer that Intention of contracting the Fibres, before the Lentor of the Humours is sufficiently remov'd, thereby rivetting Obstructions, which, according to the Place they are fix'd in, cause various Disorders; hence Apoplexies, Epilepsies, Vertigo's, Asthma's, Jaundice, &c. it does indeed often happen that a Removal of the Lentor is brought about upon bracing the Solids only, as we see People sometimes cur'd by sudden Frights, and the like, but yet, as it may be attended with such ill Consequences as above-mention'd, we had better act safely.

It follows then to know by what Means these Intentions are brought about; the first is brought about, as was said before, by mixing such Particles with the Food, as will incide or insinuate themselves into the viscid Matter, and at the same Time gently stimulate the Vessels; for this In-
tention

tention I always us'd Millepedes, these with the testaceous Powders, as I saw Occasion, being administer'd two or three Days, not only help to cut and dislodge the Phlegm, but also help to carry a great deal of it out by Urine, and how far Diuretics have gone in curing Disorders of the Lungs Experience shews us daily, and the Reason is so obvious, that I need not waste any of the Reader's Time about it, but proceed to the second Indication, *viz.* to brace up the Fibres, and at the same Time gently to stimulate 'em; and this is done by sub-astringent, spicy Medicines, because by such both the Intentions are often answer'd at once, and the very best Medicine for this Purpose is the Cortex Peruvian. which in the few Cases I have try'd it, with the Method above-mention'd, has been as certain a Cure in this as in the Ague, and no Wonder, for if we examine it's component Parts, we shall find it endued with the very Virtues we desire; in order therefore to know how it displays it's Virtues, we must take it to Pieces, and subject it to the same Ways of Examination as other Bodies, which is

to

to enquire into it's constituent Particles ; and herein when we come to consider it's Contexture, as it appears to the naked Eye, it's Roughness upon the Palate, and the Difficulty of reducing it into a fine Powder by pounding, or destroying the natural Disposition of it's constituent Parts by Infusion or Digestion, and drawing from it by such Means, any Tincture endow'd with the same healing Virtues, as it is known to have when it is given in Substance ; when all these, I say, come to be consider'd, it will readily appear, that it is made up of Parts very irregular, pointed and solid.

By the Texture of the Bark, and the Dispositions of it's component Parts, which are discernable to the naked Eye upon breaking, it is plain that they are like little Cylinders or Needles, shooting one over another, not much unlike several Salts upon their CrySTALLIZATION, and when it is broke transversely, any one may see their Points, which Shape also they may be seen to continue upon pound-
Z ing,

ing, as far as the naked Eye can follow them.

It's Solidity is also manifest from the Difficulty of reducing it into an impalpable Powder, but most of all by the little Alterations it undergoes even by long Infusion; for if it be then examin'd, and after the Liquor is strain'd from it, if it be again dried, it will not be found to have lost much of it's Weight, and but very little changed either in Colour or Taste, it loses indeed most of it's Bitterness, that being in it's more volatile Parts, but it's Roughness remains, and upon Trial it hath been generally found, that if it be then powder'd and given in Substance, it will make a Cure as effectually (though perhaps not so soon) as when given before such Infusion: The Solidity likewise, as also the angular Figures of the component Parts of the Bark, are further manifest from their Astringency and Roughness in the Mouth.

But besides these grosser Parts, which the Bark is compounded of, and which
are

not without great Difficulty broke very small, it hath also in it's Composition some Parts very small, and easily dissolvable, as appears by that which so easily rises and flies off upon breaking it, as likewise by that penetrating Bitterness which is in it upon the Palate.

In this View then it will not be at all difficult to conceive how this Drug is of Service in answering both the Intentions of Cure, for both by the Smallness, Solidity and Irregularities of it's Parts, as soon as it mixes with the Blood, it can't but give it a greater Momentum, and increase the Impulses of it's Parts one against another, upon which Account a great many Cohesions will be broke, and other Parts prevented from running into such close Contacts, as occasion those Cohesions, and so the whole Mass of Blood will be thereby preserv'd fluid. The other Intention will be answer'd by it's corrugating the Fibres, and rendering the Contractions of the Vessels more brisk, by which Digestion will afterwards be better perform'd, and consequently the Per-

son will thereby be invigorated ; for since the more the extream Capillary Vessels of the Arteries are contracted, so much the greater will be the Force requisite to impel equal Quantities of Blood through in equal times, the Blood must needs therefore be the more accumulated in the Arteries, and as they are elastic, it will be thus impell'd with greater Force through the smaller Capillary Vessels, and it will thereby, both acquire a greater Degree of Heat, and be also more attenuated and digested ; hence the Cortex is, in a double Capacity, an Attenuator, as Mr. *Hales* calls it (*d*). That the Bark is very efficacious this Way, in drawing up the Fibres, is further confirm'd by it's Effects upon such who are subject to sweat, as in the *Sudor Anglicanus*, and the like, which is brought about by it's astringent Quality : If then it has so great an Efficacy as an Astringent (as it certainly has) in the Stomach and Intestines, where the Fibres are so much guarded by their natural Mucus, which

(*d*) *Hæmast.* pag. 136, 137. *Exper.* 18. § 5.

which is always in great Plenty lodged in them, with how much more Force must it needs act in the same manner upon the Solids, when it is brought into much smaller Vessels, both as it passes into the Blood, and when it comes there? For where a Particle in the Stomach chances to strike against a Fibre once, when it comes into the small Capillary Vessels, it's more likely to do it a thousand times, for their, *viz.* (the Capillaries) Coats bear a much greater Proportion to the contain'd Cylindrical Fluid, than those of the larger Vessels, therefore as the Blood comes to be pretty well charged with these Particles, the Fibres in all Parts are corrugated, whereby the whole Body acquires such a Strength and Firmness, as will occasion the Attenuation of the viscid Matter, and expel it out of the Body. Thus I have endeavour'd to account for what I found by Experience to be true in Fact, and which I communicated to the late Dr. Woodhouse of Nottingham, who made Trial of it, and found it to answer his Expectation.

I shall now proceed to show the preceeding and the then State of the Air wherein the Chin-Cough was so epidemical, and in which the Bark succeeded.

The Quicksilver in the Gage of the Barometer, during the Course of the Year 1730, generally stood about 28, seldom rose to 29, but very rarely to $29 \frac{1}{2}$; and this was occasion'd by the moist Vapours and dampy Rains that affected both the Spring, Summer and Autumnal Season of the Year, whereupon the Spring of the Air was extremely relax'd. *Vid.* § 13. of Air.

But in the Year 1731, rarely did it fall beneath $29 \frac{1}{2}$, and often rose to 30, and $30 \frac{1}{2}$; this was occasion'd from the extreme Dryness of the Season, a Drought so universal, as scarce to be parallel'd in the Memory of Man, and which in the Nature of Things must produce very fatal Effects in the Motions of human Fluids, where the vital Organs were languid and unable to support the Shocks of these
two

two opposite Extreams. *Vid.* § 11, 14 and 15. of Air.

About the 24th of *December* 1731, it suddenly became a hard Frost, and so continu'd 'till the 29th, and then as suddenly broke into a warm Thaw; these sudden Changes had very fatal Effects upon Persons whose vital Organs were weakly dispos'd.

The Barometer was almost at the highest, and the Thermometer very low about the Beginning of *January*, when the Frost return'd with Snow, but soon thaw'd again, and by Intervals froze and thaw'd during this Month, and in the Beginning of *February* the Frost quite ended, but the cold dry Weather, with Northerly Winds, lasted 'till about the Middle of *April*, then some Rain fell, the Winds then were Easterly and Southerly 'till the Beginning of *May*, when the Season was warm and pleasant.

About the Middle of *January* 1731-2, the Chin-Cough began to be very epidemic,

demical and was more or less fatal as the Weather alter'd.

The Method above-mention'd being follow'd in that Season by nineteen Children (they being all I had under my Care at that Time) seventeen of 'em recover'd in so small a Time as to shew they were cur'd by the Medicine, and not by any Change in the Temperature of the Air. One of those who died, did not live two Days after I was consulted, and the other had several Convulsive Fits before I was sent for. It is worthy of Observation, that two of the Children who had recover'd, upon a Looseness coming, relaps'd, but were soon recover'd again; the same is observ'd in an Ague. We must also observe, that during this epidemic Season, Agues were stirring in the Country, and that the Sick had a troublesome Cough.

In *October* and *November* 1735, I tried the foregoing Method again in five other Children, all which recover'd very soon.

Not-

Notwithstanding my Success thus far, I was desirous to try if I could make the Medicine yet more efficacious, by mixing with it some of the strongest *Inciders* our *Materia Medica* affords; and after having examin'd several Authors, with Regard both to the Virtues and Safety of Medicines, I found none so likely to succeed as *Cantharides corrected with Camphire*, which is by that Means made as *safe* and *innocent* a Medicine as any in the whole *Pharmacopœia*, when in the Hands of a skilful Physician, but like Opium or Mercury, is a dangerous Medicine in the Hands of the Ignorant. Least my Reader should think the internal Use of *Cantharides* is either new or unsafe, I will look back into the Practice of some of the most eminent Physicians in several Ages, and show that they in many Cases us'd 'em internally, and then I will proceed to make appear how they are beneficial in the Chin-Cough, and at the same Time I will show the Virtues of the Camphire which corrects the *Cantharides*.

Hippocrates (e) says, *Potionem aquæ subter cutem laboranti concinnabis, si cantharidum trium, ablato cujusque capite, pedibus & alis, corpora ex tribus aquæ cyathis contrita exhibueris.* Again he says (f), *Cantharides etiam sine alis & capite tritas quatuor, & ex vini albi hemina dimidia dilutas exhibeto.* Jam vero etiam pauco melle affuso, mox ita propinato, idque bis aut ter in die bibat. And again he says (g), — *Aut cantharidum ventres exhibe.* Galen (h) says, *Vanam illam cautelam esse, nonnullos, citra bibentium læsionem diuretico medicamento ex cantharidibus confecto usos fuisse.* Again (i), *Non tantum externum earum usum laudat ad lepras & psoras, sed præceptorum suorum quendam illas medicamento diuretico miscuisse, affirmat.* Dioscorides says (k), *Nonnulli cantharides antidotis admistas Hydropicis in auxilium tradi-*

(e) Lib. de Diet. in morb. acut. § 4. pag. 406.

(f) Pa. 552. Lib. de morb. inter.

(g) Lib. 2. de morb. mulier. § 5. pag. 673.

(h) Comment. in Hipp.

(i) De simplic. medicament. facultat. Lib. 11. Tom. 5. Text. 44.

(k) Lib. 2. Cap. 66.

tradiderunt. Capavaccius (l) says, *Ego ab omnibus desertos in Hydope & Stranguria plane Cantharidum usu restitutos vidi.* Otfwafduſ Gabelchoverus preſcrib'd as follows ; *Rec. Cantharid. præpar. Scrup. 1. Spec. Diatrag. Frig. Drach. 1. aq. ceras. nig. Unc. 1. miſ.* Hieronimus Fabritius *ab Aquapendente* (m) gave 1, 2, 3, or at moſt four whole Cantharides. The famous *Bartholin* (n) commends 'em, *Nonnulli, ait, forma pulveris, alii Trochifcorum admixtis aliis corrigentibus Cantharides propinant, tutiſſimum per infuſionem modum aperiam :* *Scrupulus unus Cantharidum in pulverem redactus infundatur unciiſ tribus vel quatuor vini Rhenani vel ſpiritus vini, ſtetque in infuſione per aliquot dies, & ex contento liquore cochlear. unum aliis ſeu vini, ſeu cereviſiæ admiſceatur, & ex hoc mixto, primo die unum, altero die duo cochlearia, & ſic deinceps propinentur in Gonorrhœa virulenta, lotii ſuppreſſione, & calculo ; felicem huius potionis eventum expertuſ ſum.*

(l) Pag. 736, 737.

(m) Part 1. pag. 258.

(n) Hiſt. Anatom. Centur. 5. Hiſt. 82.

sum. And again he says (o), *De Cantbaridibus, quarum felicem successum non semel sum expertus.*

We read, (p) that in Hungary they gave *Pro una dosi Cantbarides pulverfatas numero decem, pulvis epotus ipsis interdum largum sudorem, interdum copiosum urinæ fluxum excitat, citra ullum tamen dolorem.* Trincavellus (q) says, *Cantbarides utiles sunt ad atterendos & comminuendos calculos & ad cienda lotia, & sepas cum magna utentis utilitate, & citra ullam noxiam, cum quis utitur recte paratis.* And *Fiscerus* (r) commends his most noble Extract of *Cantbarides*. The learn'd Dr. *Charleton*, formerly Fellow and President of the College of Physicians (s) *Cantbarides tanquam optimum medicamentorum commendat.* And Dr. *Lister*, formerly Fellow of the College of Physicians, and of the Royal Society, in

(o) *Ib.* Centur. 5. Epist. 53.

(p) *Miscel. Curios. Germ.* Tom. 1. pag. m. 256.

(q) Pag. 906.

(r) *Corp. Med. Centur.* 3. Cap. 32. de Hydropa.

(s) *Lib. de Lithiasi.*

in a Consultation with Dr. Barwick (t) prescrib'd as follows, *Rec. Cantharid. probe tostar. Scrup. ss. aq. sperm. Ranar. Lib. 1. m. f. Haust.* And Platerus (u) prescribes 'em as follows, *Rec. Cantharid. sicc. No. 4. Lap. Spongiæ Scrup. 2. sem. Melon. Medull. Drach. 1. ss. Sacch. Cand. Drach. 1. pulverisata dentur cum decocto sem. Lini vel sero lactis.* To all these may be added the present Practice of Physicians in most Places. The Authorities of all these great Men, as well Ancients as Moderns, are sufficient to prove the Innocence and Safety of the Medicine (w).

Cantha-

(t) Exercit. de Calcul. Renum. pag. 243.

(u) Opera Med. Cap. de Ascite.

(w) If the Reader wants to be farther convinc'd, let him consult Confil. Med. Cratonis, pag. 380. Bernard. Vezzachæ, Observ. 51. pag. 107. Nicol. Fontanum de morb. Mulierum, pag. 100. Amat. Lusitan. Centur. 4. Curation. 19. pag. 338. Zacut. Lusitan. Lib. 2. Hist. 67. Observ. 32. Aeginet. Lib. 7. Cap. 10. Actium, Lib. 3. Cap. 174. Plin. Nat. Hist. Lib. 29. Cap. 4. Ibid. Lib. 11. Cap. 25. Joan. Heurnii Method. ad Praxin. pag. 247. Job a Mekerem, Observ. 34. pag. 146. Etmuller. not. in Schroder. pag. 247. Fallop. de Med. simpl. purg. Cap. 6. pag. m. 37. Rendelet ap Renod. Inst. Pharmac. Lib. 4. Cap. 9. pag. m. 106. Geyer. Traët. Physic. Med. § 3. Cap. 4. Joann. Lang. Epist. Med. 47. Wedelium. de antidotis special. Lib. 11. § 11. Cap. 5. Hoffman Parac-leipom. officin. Cap. 17. pag. 647.

Cantharides abound with a subtile, caustic Salt, by Virtue of which they cut the Phlegm, and at the same Time stimulate the Vessels, and promote a Discharge by Urine. The Cantharides are corrected by Camphire, which is extremely volatile, and is very diaphoretic, it very much attenuates the Viscidities, which obstructs the Capillaries, hence it often cures Agues. Camphire is known to ease Pain, and often to promote Sleep in Fevers, when Opium will not.

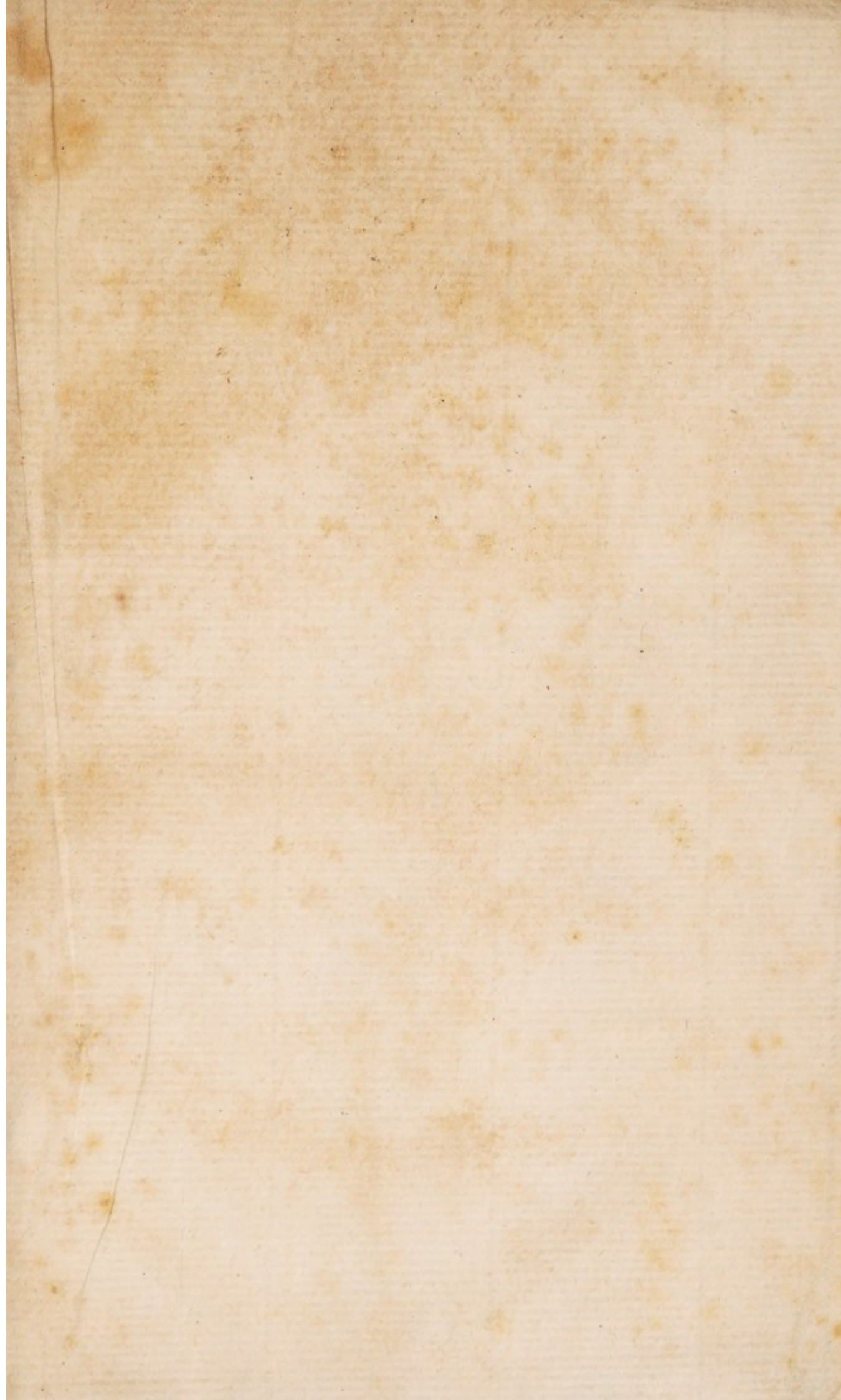
I order'd a Scruple of Cantharides, and as much Camphire, which, when well mix'd, I order'd to be mix'd with three Drachms of the Extract of the Bark, of which Mixture I gave the Children 8 or 9 Grains every third or fourth Hour, according to the Circumstance of the Cases, in a Spoonful of some simple Water or Julap, in which I had dissolv'd a little Balsam Copaiv. the Childrens Drink was Emuss. com. or the like. By following this Method, I perform'd the Cures very soon, some in five or six Days, as I can
produce

Produce many Vouchers to witness, particularly Mr. *Dent*, Apothecary, in *Selby*, who has us'd it in the present epidemic Chin-Cough according to my Prescription. This Method is not proper in such Chin-Coughs as proceed from a thin, sharp Rheum, but I believe in that from a tough, viscid Phlegm, it will scarce ever fail, at least it has not fail'd yet.

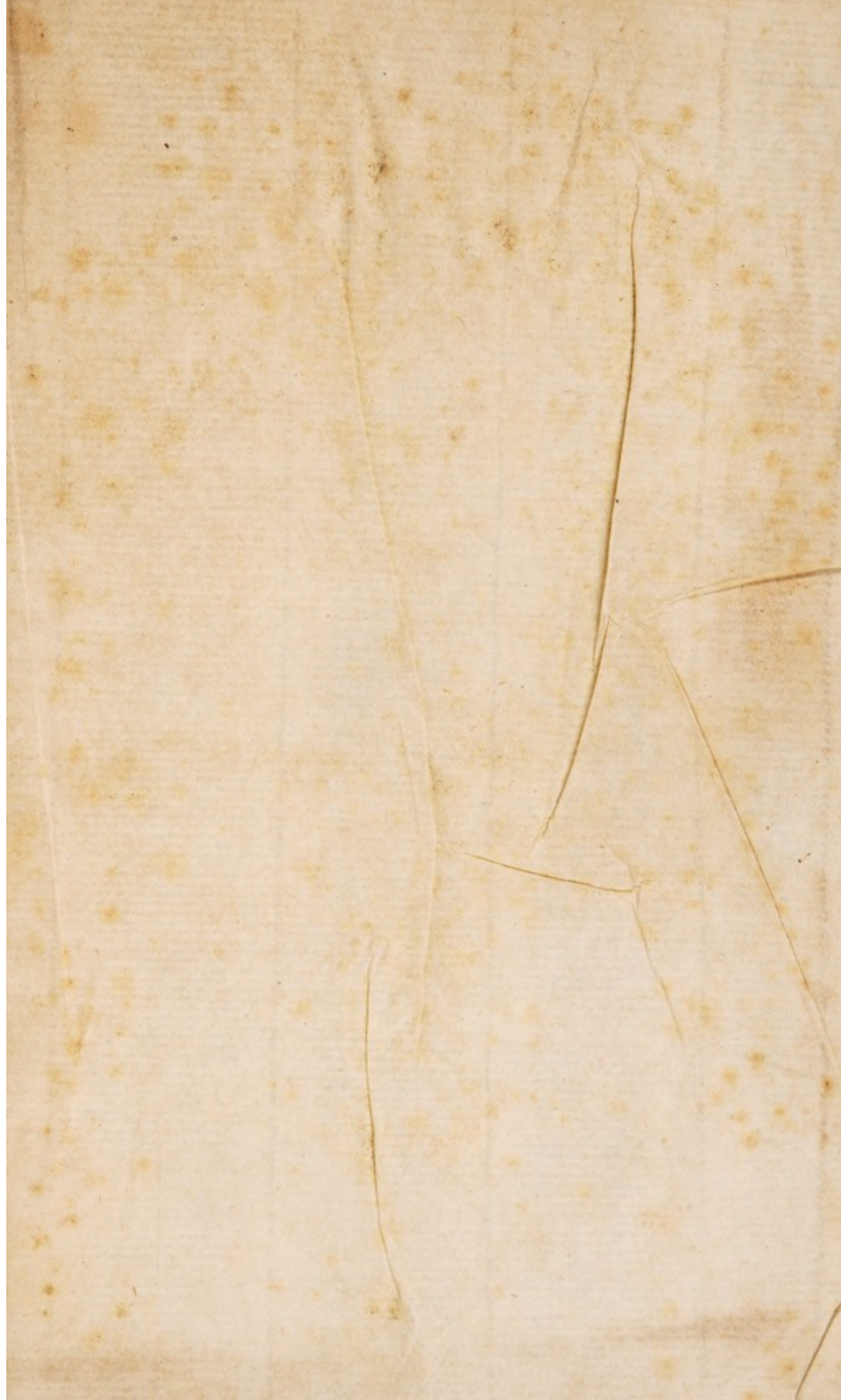
Thus, Reader, I have faithfully deliver'd to you, what I have found out and observ'd to answer in all the Constitutions of the Air for the seven Years last past, in which the Chin-Cough was epidemical four Seasons.

F I N I S.









2
p. 12. 13. 14.
Hygiène
Physique.



