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Cantabrigia Ornamentum,
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Virorum Invidia et Desiderium
Puellarum Votum et Cupido
Amicorum Suavium dulce Deus
Omnibus quicquid Laudabile omne.

Julij 3°. 1719

EDICAL SOCIETY OF LONDON

SEA DISEASES:

OR, A

TREATISE

Of their

Nature, Cauſes, and Cure.

ALSO,

An ESSAY on

Bleeding in Fevers;

SHEWING,

The Quantities of Blood to be Let, in any of their Periods.

The **Second Edition** Corrected and much improved.

By *W. Cockburn*, M. D. Late Phyſician of His Majeſty's Fleet, Fellow of R. S. and of the College of Phyſicians, *London*.

London, Printed for *Geo. Strahan* at the *Golden-Ball* in *Cornhill*. 1706.

TO THE

Right Honourable

The E. of ORFORD,

Sir G. ROOK, *Vice-Admiral of* England,

Henry Prieſtman, *Eſq*;

James Kendall, *Eſq*;

Lords Commiſſioners

For Executing,

The Office of Lord High Admiral of *England*, *Ireland*, &c.

My Lords,

YOUR Lordſhips having been pleaſed to appoint me One of the Phyſicians of the Fleet, I

thought my ſelf obliged, to uſe my utmoſt endeavours for diſcharging the Truſt you committed to me: and therefore I, not only, kept a Journal of the Mens Names, and a Hiſtory of their Sickneſs; but of the Medicins I gave them, with the Succeſs they had. And when I had conſidered the *way* of their living, and other Circumſtances, there appeared to me a very reaſonable View of the Diſeaſes at Sea, which I firſt committed to Paper, for my own Aſſiſtance in the Service; but am now perſwaded to ſubmit thoſe Thoughts to the Cenſure of the

the World. Yet, in This I ſhall run no great Riſque, under your Lordſhips Protection, which, I hope, you will not deny me; ſince 'tis your Lordſhips gave Them, firſt, Life, and They have grown up, under your Favour, to what They are: So that if They obtain the End, I deſign'd Them for, the publick Good; the Publick muſt thank you for Them. I am, with great Reſpect,

My Lords,

Your Lordſhips Moſt Humble and Faithfull Servant,

W. Cockburn.

THE

PREFACE.

THE favourable Reception this Treatiſe has every where found, encourages this Second Edition, but obliges me likewiſe, to make it as Correct, Plain, and Uſeful as I am able. Nay, the manner of its Reception, has inſtructed me in the proper Methods of my Amendments; for

I find that it was as acceptable to Strangers, far removed from the Sea, as it was to the Sea-faring People: So that I have now endeavoured to make it agreeable to the Theoretical Reader aſhoar, and I hope very uſeful to thoſe who practiſe Phyſick at Sea.

It was indeed, Originally contrived for the laſt, and the Station I then held, put me upon this Work, for a more eaſy diſcharge of my Duty; becauſe, without this, I muſt have either altogether neglected my Buſineſs, or have done it with inſufferable trouble, ſince there was never any Method of Phyſick particularly

ly

ly adapted to the Circumſtances of Diſeaſes at Sea, and this was not the State of our Navy only, but all other Naval Powers ſeem to labour under the ſame Defect: For no ſooner did the Learned Profeſſor Bidloo *Tranſlate my Engliſh Edition into low Dutch, but his Book was commanded to be forthwith provided by every Surgeon belonging to the Ships of the States, and that by their High Mightineſſes expreſs Order, thus ſenſible they ſeem to be of the good Service of their Profeſſor. But his Elegant Tranſlation obtained him, and this Work, the Honour of ſome Thouſands of Readers in* Germany,

many, *as well as about the Sea-Ports of* Sweden *and* Denmark, *for which I very willingly make him theſe Acknowledgements at preſent, they being due to his Excellent Performance, more than to my Book.*

Perhaps this misfortune may be leſs felt by us than by other Nations; becauſe we have a better ſupply of Seamen: But I found it wanting, that I might be more accountable to theſe Patriots, who put this Truſt into my Hands. The Worthy Joſiah Burchet *Eſq. preſent Secretary to his Highneſs the Prince Lord High Admiral of* England, *&c. Seems to be very*

ſenſible

ſenſible of this Defect in the Royal Navy. He tells us of conſiderable Expeditions that have miſcarried for want of Sea-Men, who periſh'd in great Numbers by Diſeaſes: That the great Security of England *is placed in the Numbers and Health of the Seamen; and therefore, that no charge can be too great for preſerving ſo neceſſary a ſort of Men. This his account is not given from hear ſay, or from Reports made, to their Board, by Admirals of Fleets, or Captains of Ships; Beſides theſe advantages he has been a diſcerning Spectator of all theſe Misfortunes, and does repreſent*

ſent them very ſenſibly, with the moſt proper Remedies againſt theſe Evils. It will be ſufficient to tranſcribe ſome of them, that relate to the Health of Sea-faring People, from his excellent Preface to his Sea Memoirs.

The looking well after them, when Wounded, or Sick, at Sea and when they are put on ſhore under theſe Circumſtances. To this end there are Phyſicians in the Fleet, and with ſuitable Salaries, but whether the preſent allowance of one to each Squadron may be ſufficient, eſpecially in the *Weſt-Indies*, is not unworthy Conſideration; for certain it is, that

that there cannot be too much Care taken to preſerve a Race of Men ſo abſolutely Neceſſary for the Good of our Country.

This I think I may venture to ſay, that many of the Surgeons, but more eſpecially their Mates, which are employed in the Fleet, are not altogether ſo well Qualified as they ought to be; and yet the poor Men are forc'd to depend on their Skill, not only in Surgery, but Phyſick alſo in the Abſcence of a Phyſician.

Whether the preſent Allowance is ſufficient to invite knowing Men to undertake this Employment con-

(conſidering they are in pay no longer than the Ship they ſerve in) I ſubmit to Judgment, and ſhall only add, that if it is not, I do heartily wiſh it was made ſo; ſince thoſe Men in the Ships that are Promiſcuouſly employed both at Home, and Abroad, do, when they happen to be Sick or Wounded, ſtand or Fall, in a great meaſure, by their Adminiſtration to them ; and as I have ſome Reaſon to Doubt, whether there are many of the Ableſt of our Sea-Surgeons, Qualified to Judge Nicely of many Diſtempers incident to a Sailer, ſo muſt they, if not ſo Qualified, be con-

conſequently greatly to ſeek for proper Remedies.

Tho' this matter be truly ſtated by ſo able a Judge, and who has told the circumſtances of thoſe Miſerable, tho' Neceſſary, People, as well as offer'd many things that, if obſerved, might really remedy this Evil: Yet I muſt begg leave to repreſent, to Him, ſome fundamental miſtakes in this Article of the Navy, deſiring Him to uſe his utmoſt endeavours for a Remedy.

Firſt, *as to what he ſays, Modeſtly, of the Surgeons is too true; but in the preſent conſtitution of the Navy, it is not to be hop'd that they ſhould ever be ſufficiently qualify'd*

for

for their Buſineſs: What is more in every Man's Mouth, than a Phyſician, a Surgeon of Experience, and yet if he pleaſes to look narrowly into this part of the Navy, he will find at leaſt one half of the Surgeons, employed every Year, new Men, and conſequently Unexperienc'd. It is worth inquiry, whether theſe Surgeons leave the Navy voluntarily, or meet with ſuch difficulties, when their ſhip is paid off, as diſcourage them from entring again into the Service. If this is ſo, I am confident Mr. Secretary Burchet *muſt think this a mighty defect, and of the worſt conſequence. On the other hand, if this and*

ſome

ſome few miſtakes were mended, the Surgeons of the Navy might be as good as are any where elſe to be found.

Next, as to the Medicins, They are moſt unjudiciouſly choſen, provided in a wrong Method, much to the Diſcouragement of the Sea-Surgeon, and ſome Sea-Diſeaſes altogether neglected in their Inventary: Whereas, if there were a better choiſe, they might come cheaper to the Government, and Sea-Surgeon, and the Men too would be more properly taken care of. Now in this defect of Knowledge, and tools, is it any wonder that this great Charge is to ſo very little purpoſe. The

Dutch have been at more Charge, and are ſupplyed with greater variety, but almoſt as improperly as our ſelves.

As to the Phyſicians, One for every Squadron is certainly ſufficient, after Sea-Diſeaſes are Generally accounted for, and their Practice plainly delineated: By theſe means the Surgeons are more able to diſcover the Diſtemper, and to form a general Practice; ſo that the Phyſician is only to be recur'd to in Caſes of great difficulty, or in Diſeaſes that could not properly be deſcrib'd, eſpecially as to their management at Sea. This is ſo true, that I am told every day of particular cuſtoms, and methods

thods among the long Standers in the Navy, introduced by my ſelf. The Learned Dr. Freind *Phyſician to the Land Forces, Commanded by the E. of* Peterborough, *has informed me, how aſſiſting my Sea-Book has been to Him this Summer, and, to pay him no great Complement, he wants aſſiſtance as little as any Body, and is the moſt likely perſon to amend the Defects of my Sea performances.*

Indeed, what Mr. Secretary Burchet *ſays of the* W. Indies *deſerves Conſideration: For theſe Fleets are fitted out on great Exegencies, at great Charge, and a Diſappointment there is very ſenſible. Yet, there*

is

is no Cauſe to which theſe miſcarriages may be ſo generally imputed as to the mortality of the Seamen, which renders thoſe Squadrons unfit for Action. But in this likewiſe my endeavours were not wanting, and I will be bold to ſay, were my directions follow'd, theſe misfortunes would in ſome degree be leſſened, nor do I now think it Impoſſible to prevent, in a great meaſure, thoſe Diſeaſes that are ſo Fatal. To this purpoſe, I contrived a ſhort Scheme whereby Surgeons might obſerve the different ſucceſſes of their various methods, and conſequently they might perſiſt in that

which

which their own experience approved. I did it in this manner, that I might not ſeem to impoſe any particular practiſe, upon them, in a Country where I was not to keep them company; and next, that, by their having a good number of Orderly Obſervations, it might be eaſy for any one to find the right method of theſe Fevers in the W. Indies; *and for this end, I contrived a way how they might Regiſter their Caſes daily, yet every man's might be read, without any interruption, and by it ſelf.*

This Scheme, thus prepared, was laid before the Right Honourable the Earl of Bridg-

water, *and other Lords Commiſſioners of the Admiralty then being; which they were mightily pleaſed with, and declared their ſatisfaction about the propoſal: But they were of Opinion, that the College of Phyſicians ought to be conſulted in an affair of this kind. I did not oppoſe their Lordſhips caution, though I repreſented how unneceſſary that was; becauſe I did not direct any particular Method to be followed, but only foretold the different ſucceſs of each method in general uſe; which predictions therefore if falſe could be of no prejudice to the Fleet; but if true, of the utmoſt importance: beſides, I doubted*

but

but that different Opinions, Deſigns, and Intereſts of the Examiners might ruine this propoſal, They did approve. Howſoever, the propoſal was ſent to the Navy-Board, to be tranſmitted by Them to the College, for their Approbation; which They ſent accordingly.

So ſoon as Sir Thomas Millington, *our late Learned and Worthy preſident, had the propoſal from the Commiſſioners of the Navy, he called his Counſel, the Cenſors, and communicated this Scheme to Them; but They not being able to give a particular anſwer concerning It, this matter was left to a meeting of the College; who, likewiſe fell into the ſame*

Difficulties, and becauſe they did not Approve, nor Diſapprove, the propoſal was laid aſide. I cannot eaſily come at the Anſwer ſent by the College; but Sir Thomas *ſent me the following Letter, when this matter was carried to the College from the Cenſors.*

8 *April* 1700.

SIR,

I did Communicate your Papers to the Cenſors on *Friday* laſt. But the Letter from the Navy Office being directed to Preſident, Cenſors, and Fellows of the College of Phyſicians (which I was not aware of) they thought it not fit for them, without

without the Opinion of the College, to return any Anſwer to it. I perceive they were at a loſs what Judgment to make of thoſe Particularities which differ from our practice in theſe Parts of the World: As being perfect Strangers to what does, or does not ſucceed in the *Weſt Indies*. And that therefore thoſe particulars (which are the moſt material part) muſt wholly depend on your own Authority, and Experience. *I am,*

Sir,

Your very Affectionate Friend and Humble Servant.

Tho. Millington.

I have been the more particular in relating this affair, with the College; becauſe this Examination, and the Report made upon it, was ſo far miſtaken, that it was paſt upon the World as the Trial of a Medicin, *I contrived for Curing of Fluxes; which, it has been ſaid, was rejected by the College, whereas it was never offered to their Conſideration, and the only concern I have had, with them, was about the* Method *above mentioned, which has no manner of Relation to that* Medicin. *But of this a further account may be ſhortly expected.*

As

As theſe Schmes were invented for my own Satisfaction, ſo many Occaſions offer every Day for trying their uſefulneſs; and therefore I had ſeveral Copies of them ſent into the West Indies *by Merchant-Ships, Men of War, and ſome were examined aſhore, which anſwered my Expectation ſo fully, that I have improved this matter to a greater Perfection. Inſomuch, that my Couſin* Mr. Cockburn, *who is not better known by his moſt ſucceſsful practice in thoſe parts, than by his ſingular Integrity, and Candour in the ways of Traffick, ſent me an account of their extraordinary Sickneſs in* 1703. *As alſo the*

Hiſtory

Hiſtory of the Opening of One who died of that Diſeaſe, and for whom the moſt Eminent for their Practiſe in Phyſick, in thoſe parts were concern'd. He owns that I ſent him an exact account of the Nature of the Diſeaſe, their way of Recovering, and Dying, by different Adminiſtrations, as well as when they took no Medicins at all; and that, in all this difficult Relation, I did not miſtake in any Particular: Nay the Directions I ſent him were ſo plain that he found no Difficulty in apprehending the Diſtemper, or in taking the directeſt Method of Cure.

Thus did this Scheme ſucceed in the Indies, and as much might

might have been done for the Navy without any Charge. All I wanted was to ſatisfy my ſelf about theſe particulars; yet if this Method were taken, one Phyſician, and Surgeons bred in the Navy, might be ſufficient to cure thoſe Diſeaſes as effectually, as they are Cured here, and Expeditions to theſe Parts ſhould not ſo often miſcarry through the Loſs and Sickneſs of Seamen.

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CONTENTS.

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Their

The CONTENTS of the Second Part.

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The CONTENTS of the Eſſay on Bleeding.

Part I.

An ACCOUNT

Of thoſe

SICKNESSES

that are Incident to

Sea-faring People.

§ I. THERE are none who have been at Sea for any conſiderable time, Eſpecially in the Royal Navy, but muſt be very ſenſible how uſefull an undertaking of this Nature is, and how great a help it muſt be to Surgeons, whoſe buſineſs is with Seamen, and more eſpecially for

The Uſefulneſs of this Undertaking

thoſe that are employ'd in Her Majeſty's Ships of War, for whom this Treatiſe is chiefly deſign'd. Yet I never could learn that any ſuch thing was ever attempted in any other Nation before. Officers, no doubt, as well as Sailors muſt have their unparallel'd Courage as much confirm'd by the Suitable Proviſion that is made for their Health, as they are by Applauſe, and other returns of Honour, that are the preſent Rewards of their great Actions; and the Surgeon muſt go better Provided againſt thoſe Diſeaſes he is taught to encounter on that Element, than when his knowledge is only in Generals, and not at all directed to particular Diſtempers.

§ II. The uſefulneſs of ſuch a Book does appear by thoſe few hints beyond a contradiction; I wiſh only, I might have had ſuch aſſiſtance for my Practice at Sea, as the occaſion ſeems to require. But ſince I could have any, I hope

hope an ingenious Reader will readily pardon a Treatiſe of this Nature, and almoſt any miſtake I may be liable to: Since the Methods of former Sea-Phyſicians in the curing of Diſtempers are no more to be diſcover'd than the Furrows a Ship makes in the Sea; neither of them leaving the leaſt footſteps for the direction of them who come after. For my own Part, I ſhould no more have ventur'd upon this firſt account, than I would have been the firſt that put to Sea, were it not that the Station I was then placed in did ſeem to require thus much of me, or a Teſtimony at leaſt of my diligence in the ſame. My application was conſiderable enough, but the newneſs of the Attempt, and the great Errors that are in this part of the Navy muſt prove ſufficient Excuſes for the many Defects that ſtill remain. But to paſs over in ſilence what is not propoſed to be mended, I did deſign to perform this my under-

taking by way of a Journal of thoſe Diſeaſes that happen'd in the time I was concern'd in the Fleet; yet now I think I ſhall do the Buſineſs more compleatly, by conſidering in General the Sickneſſes their way of Living does moſt expoſe them to, and by adding ſome Hiſtories of theſe Diſeaſes that happened in the Fleet for ſome following Years. for theſe Obſervations confirming, as well as illuſtrating, the truth of our Speculations, it may be eaſy by both to remedy thoſe groſs miſtakes, that are in preſcribing Phyſick for the Sick in the Fleet, the People that firſt Delineated thoſe Methods having known little or nothing of that affair. Firſt then, I ſhall enquire *How the way of Living at Sea, but eſpecially the Narrow Seas where theſe obſervations were made, may diſpoſe Sea-faring People to Diſeaſes, and what Diſeaſes they are moſt Subject to on that accouut. Next I ſhall give ſome hints of the Difference that is between them, and thoſe that*

are

are in hotter Countries. And Thirdly, I ſhall relate the Hiſtory of ſome Years, and lay down proper Indications for Cure, taken from the foregoing account.

§ III. That all thoſe may be purſued with the greateſt exactneſs, it will be neceſſary to deſcribe the particular way of their Living; that from thence we may be able to find how their Infirmities proceed. This conſiſts either in the Victuals that are provided for their Suſtenance; their Labour; or Laſtly, in their Temperance and Debauches. I am not Ignorant how uſeful it would have been, to have had ſome reſpect to, and conſideration of the Temper and Conſtitution of the Air they live in, and how Satisfying it would have proved to ſuch as are Curious and Ingenious, to have made ſome remarks upon the differences of that at Sea and Land; but all I am able to ſay on that Head being general and confuſed, I have rather choſen to

paſs it by in perfect Silence, than to offer ſuch imperfect Experiences to the view of the World. Wherefore I proceed to the conſiderations I have already propoſed.

Their Victuals.

§ IV. The Victuals allow'd them for their daily Food, are Pork and Peaſe, on *Sundays* and *Thurſdays*; on *Mondays* Oatmeal (Burgoo) Butter and Cheeſe: On *Tueſdays* and *Saturdays* Beef and Pudding, or, all Beef: On *Wenſdays* and *Fridays* Butter and Cheeſe, or Oatmeal and Peaſe, and with theſe a large proportion of Bread. As for the Victuals themſelves, they are commonly ſo ſound, and the Meat ſo well Salted, that they are as good in their kind, as are found any where, eſpecially the Sea Pork, which is reputed the beſt in *England*. The allowance of all theſe in their proper turn, is greater than may ſatisfie any ordinary Eater. So that whatever a Sailor may complain of, in the Royal Navy, his Victuals are a great deal better, and his Allowance

lowance larger, than in any Navy or Merchant-Ships in the World. Their Drink is a very good Table Beer, and the quantity what they pleaſe. And therefore in general when we conſider the number of Men, the length of Voyages in Convoys and Cruiſers, and the nature of their Work, it muſt be confeſſed, that this kind of Victualing is very well adapted for the preſervation of Health. Only it were to be wiſh'd, that care might be taken for ſome other Victualing, more proper for Seamen in the time of their recovery from Sickneſs, when this kind of Food is altogether hurtful, and is the real cauſe of two thirds of thoſe Scurvies we find at Sea. I mention this in paſſing, becauſe I find it related with concern by Mr. Secretary *Burchet*, in the Preface to his Sea Memoirs, where the ill Conſequences are plainly laid out, and certainly, they deſerve the Conſideration of the Nation.

§ V. 'Tis true; Salt Victuals are known, by experience, to be the hardeſt to Digeſt, and conſequently the moſt unfit for a quick, or a plentiful ſupply of thoſe parts, that are to repair the decays of the Body; Beſides, an Indigeſtion of Pork, which is an Aliment of great Nouriſhment, produces worſe Effects than Meats that nouriſh leſs, as is manifeſt by Statical Phyſick; and therefore Groſs Aliment made upon the firſt account, and the quantity of indigeſted Food that happens in the ſecond Caſe, do powerfully diſpoſe them to Diſtempers, which are compleated in ſome Form or Appearances of our ordinary Diſeaſes, according as various Circumſtances concur in their Production. This is very manifeſt, neither is it proper to make it out at greater length in this place, it being apparent by what I have already ſaid, when I treated about Digeſtion and Nutrition in my Oeconomy of the Human body, and ſhall be more fully

fully ſhewn by what is further to be ſaid on that Subject, in another Edition of that Book. Yet, after all, the Bodies of ſuch working People, not only make the beſt of this ſolid Food, and continue long in perfect Health, but it alſo ſeems neceſſary for thoſe who are obliged to undergo ſo great Labour; for tho' the Stomacks of ſedentary People, and of thoſe who uſe little or no exerciſe, are ſcarcely able to reduce ſuch ſolid and parched Food into Chyle after Twelve or Fifteen hours, and when that is done, this Chyle being groſs, and with great difficulty performing its firſt Voyage thro' the Lacteal Veſſels, affords but a groſs ſupply to the Blood, and therefore muſt diſpoſe ſuch People to Dropſies, Jaundice, and other Cachectical Diſeaſes: Yet things being quite otherwiſe with our Sailors, and in one part of their buſineſs or another, ſcarce one Muſcle of the whole Body being left unemploy'd, their Digeſtion and

Nouriſhing

Nouriſhing not only go on as well with them in this ſort of Diet, as it does with the former People with more delicate Food, but this way of Victualing is even neceſſary for their Toil and Labour, that which is finer and more eaſily digeſted, being not ſufficient, nor any way proportion'd to their Work.

The Conſequences of this Victualing.

§ VI. 'Tis manifeſt from what has been ſaid, that the greater the Work and Labour is in this way of Living, the Digeſtion and Nutrition will be the better perform'd, the Motion of the Blood will be the more natural, and the Health of the Sailors will be the more firm; on the other ſide, the leſs their work is, the hardneſs of the Food and its ſaltneſs, will proportionably have their Effects, and the Indigeſtion that follows upon the one, and the Fiery Heat that attends the other, will be more Senſible and Conſpicuous. So that all this falls more readily upon the Seamen in the Royal Navy, than upon thoſe in the

the Merchant Service, whoſe Labour and Work is far greater than that in the Men of War tho' there is ſome ſmall remedy againſt that in their other Victualing, while they remain in Health; and to confirm this Obſervation, the People that ſuffer moſt by Diſeaſes on account of their Idleneſs Aboard the Men of War themſelves, are the Boatſwains Favorits: For they are overrun with the Scurvy, while thoſe whom he with full Power and Authority turns out to their Watch, enjoy a ſufficient Stock of Health, as do likewiſe the better ſort of them that put themſelves forward by being diligent in their buſineſs. This lazy Temper among ſome Seamen, and moſt of the Preſt Land-Men, is the true original of the genuin Scurvies that are commonly to be met with at Sea, and which as commonly appear in the following way.

§. VII.

The Scurvy.

§ VII. The *Scurvy* appears with *red Spots* in the *Arms* and *Legs* especially, which *afterwards* turn *Black* and then *Blew*, there is an extraordinary *Weakneſs*, a *Redneſs*, *Itching* and *Rottenneſs* of the *Gums*, and a *Looſneſs* of the *Teeth*, their *Pulſe* is very *unequal i. e.* ſomtimes *weak*, and ſomtimes very *great*, all theſe Symptoms are attended with a great many more not ſo conſtant, which are deſcribed at large by thoſe that write particularly on this Subject; but cannot be properly ſpoke to here, ſince it is not ſo much my buſineſs to make a thorow enquiry into the Nature and Cure of that Diſeaſe, as it is to find the Cauſes, why it is ſo eaſily produced among Seamen, that they being ſufficiently known, the hints here given may prove uſeful in the Curing and preventing that Diſtemper.

§ VIII. And therefore a very little conſideration will ſoon convince us, that it is from this part of their Diet that the *Scurvy* is produced,

as

as was hinted, and tho' two thirds of the number, we meet with, fall not into it immediatly from a ſtate of perfect Health, but are rather occaſioned while they recover of other Diſeaſes; yet this kind of Victualing affects Men in the ordinary way, when they are not able to move, and their digeſtion is but weak, for this indigeſtion in the firſt Concoction muſt yield a very groſs Chyle, which is not eaſily converted into Blood, after many Circulations, and upon this account Tranſpiration and moſt other Secretions muſt be diminiſhed, by which the quantity of the Blood muſt be augmented, and that Increaſe muſt be in a proportion to this impediment of Tranſpiration and Inequaliy of the other Secretions. Now a quantity of Blood more than what is Natural, endued with a proportionable quantity of Motion, muſt ſtrike harder upon the Reſiſting ſides of Arteries, and the more, that they are inflected,

and

and this force, by which it falls on theſe ſides, may be greater than their power of Coheſion, and therefore Blood breaking through its Canals, will run out in a quantity that bears a proportion to its impelling force, the greatneſs of the Wound that is made, and the Reſiſtance of the place into which it falls: ſo that if the place be Superficial, if any ſufficient quantity is diſcharged, and the quality of the Blood ſo groſs, that the Perſpired Matter is not ſufficient to keep it Fluxil, by its quantity and force; in that Caſe, the Extravaſated Blood will corrupt after the ſame manner, and in that very order we find it does, when out of the Body regard always being had to the quantity diſcharged, and the place where it is lodged, *h. e.* the Blood thus excluded, being in a State of Reſt, do's corrupt; and in the different Tranſitions in the time of this corruption, is Black, Blew, *&c.* as we ſee in the Preſent Caſe,

and

and others of the like nature. Only it is longer in corrupting, becauſe of its little quantity, the Fluxility of the Perſpiring Steams, and the Warmth of the Place, as might be demonſtrated at great length. By the by, theſe Mechanical hints do fairly deliver us from the neceſſity ſome Men are brought under of acknowledging an abſorbing Power when they account for the vaniſhing of thoſe ſpots, at a time they are not converted into Matter or Pus; but they alleage a ſtrange ſort of experience, upon which they build this Immechanical Notion.

§ IX. It will not prove a very unpleaſing digreſſion to ſhow on how Sandy a Foundation this abſorbing notion is laid, eſpecially ſince it may be told in few words. Say they, it has been obſerved, that Glands have ſometimes been found obſtructed and filled with a Liquor, the like whereof has been lying in a great abundance in the Neighbouring parts, and from this

they

they conclude, that this liquor has been ſuck'd up out of theſe adjacent parts into the Glands. I wiſh they could have diſcovered by what Machine, Pump, or ſuch like Inſtrument lodged in theſe Glands, this Liquor has been drawn up. Certainly it had been more agreable to the Secreting Power, with which we know the Glands are endued, to have concluded that this Liquor collected in that abundance, was to be diſcharged out of thoſe Glands; ſince this their power is manifeſt, and the other unknown. But to proceed.

An Extraordinary Weakneſs

§ X. It is known that our Standing; Walking, and every Change of Poſture, is by the Contraction of Muſcles, and as theſe are more quickly and vigorouſly performed, we meaſure our Strength: And as theſe are done with leſs vigour, we ſay we are weak, Now the power and force of theſe Muſcles, are in a Triplicate proportion to the quantity of Blood in its natu-

ral

ral condition : But the Blood in this Caſe being Viſcid, we are only to Eſtimate our Strength by the quantity of Spirits that can be Secreted from it, and therefore the Animal indued with ſuch Blood in a greater quantity, is but in the condition as if he had perhaps one half leſs, and by this ſmaller quantity, the quantity of Strength will be proportionably leſs.

§ XI. Moreover, ſince the Heart is a Muſcle, and under the ſame Laws as other Muſcles are, and they being more weakly contracted, becauſe of a leſs quantity of Spirits derived into them, ſo is the Heart likewiſe : But by the Conſent of Phyſicians, and the evidence of Reaſon, the motion of the Blood is as the force by which the Heart is Contracted, and the Contraction of the Heart being weaker, ſo is the motion of the Blood, and this motion being leſs and leſs, the further the Blood proceeds in Arteries from the Heart,

Theſe ſpots are eſpecially in the Extremities.

in its greateſt diſtance from the Heart, it is the eaſier ſtopt and obſtructed in its motion, and becauſe of this obſtructing Power, and the Power by which it is propelled, the reſiſting Arteries are broke thro'. It is therefore in theſe Extream parts, where likewiſe are great numbers of the weakeſt Arteries, that theſe Eruptions of Blood are, and theſe Black and Blew ſpots are found.

The pulſe unequal.

§ XII. After the ſame manner is that inequality of quickneſs and greatneſs we find the Pulſe has: For the Pulſe being altogether made by a greater quantity of Blood, that is propell'd out of a wider part of an Artery into a ſmaller or narrower, at every time the Heart is contracted as has been ſaid; therefore as are the quantities of Blood and the times of Contraction, ſo is the quickneſs and greatneſs of the Pulſe; and they being various and unequal, ſo muſt the Pulſes alſo be. Here it might be

ſhewn

ſhewn at great length, how this quantity of Blood is variable, and by it and other Cauſes, the quantity of Spirits alſo variable ; all which will alſo vary, according as Men work hard or are idle. But this is not proper to this Place ; ſo far may be ſaid, that as by all theſe the Blood will be more or leſs fluid, and therefore it will more eaſily be propell'd, and will ſecret a greater quantity of Spirits when it is more fluid, *Et e contra*: So that this Contraction of the Heart will be ſtronger and weaker, the quanrity of Blood more and leſs, and from this different impulſion of the Blood, as to quantity and time, ariſes the inequality of Pulſes ; and thus it is that the Pulſe is quicker and ſlower, greater and weaker, as we find by experience.

§ XIII. Likewiſe, this ill State of the Blood, which occaſioned Spots and Eruptions in extream parts, does in a lower degree of the ſame operation, produce humours of Dif-

Their Gums inflam'd.

ferent ſorts, as the Nature of the obſtructed parts will bear: for this thicker Blood driven thorow larger Capilaries in places not ſo far from the Heart, the Origin of its motion, its force in them will be greater than in the Capillary Veſſels at the Extremities, and Conſequently thoſe Veſſels will not be ſo eaſily obſtructed as in the Extremities; yet ſince this thick Blood does not all of it paſs the Veſſels in the ſame time it is impell'd into them, as commonly it does, when the Blood is in an ordinary State, the quantity of Blood contained in theſe Canals is greater than ordinary, and this greater quantity of Blood ſtretches its Veſſels by lengthening their diamiter, which alſo does inlarge the Dimenſions of the Part to whoſe compoſition theſe Blood Veſſels go, and this ſwelling is more or leſs Conſpicuous as are other Circumſtances joyned with it. Moreover, as this univer-

ſal

ſal Indiſpoſition of the Blood does affect univerſally, while it moves thorow Canals equally diſpoſed, ſo theſe Tumours only differ as to the Condition of the Part that are obſtructed; and therefore as the Gums do's conſiſt of a Number of none of the ſmalleſt Veſſels, and they inveſt Bones, ſo their Obſtruction muſt more eſpecially produce Tumours that have the ſame Colour the Blood has, or Tumours with Inflamation, or the Gums are Swell'd and Red.

§ XIV. And as theſe obſtructed Parts are pure Blood, ſo the common conſequences of ſuch an Obſtruction will follow a Gangrene *viz.* in a Total one, and Ulcers more or leſs Maligant, with better and worſer Pus according to the goodneſs of the Blood and Warmth of the parts where it is generated, as is well known to thoſe that underſtand how Pus or Quitter is generated: So that the Ulcers here being Foul and

Rotten and ſtinking.

and Stinking, the Pus is likewiſe naught, *&c.*

And do itch.

§ XV. Yet before this Total or great Obſtruction, the parts of the Blood being Tranſpired tho' not perhaps in their natural quantity, nor in the ordinary time, but theſe Tranſpired parts coming from groſs Blood are not well Comminuted, nor ſo fine as Naturally they ought to be; nay perhaps they conſiſt of very Solid and Salt parts, now becauſe of this Groſſneſs and Solidity of particles they rub more upon the ſides of Veſſels and the ſmall Canals thorow which they are perſpired, and by this their Friction excite that Sence of Itching, as when a ſoft body is drawn lightly over a Senſible part. The deſire of Eaſing us of this kind is ſometimes of good uſe and contributes very much to prevent this Obſtruction, by which Pus or matter is to be generated: For by the rubing of theſe Itching parts ſome of the tender Veſſels of the

Gums

Gums are broken, and the Blood that guſhes out, not only leaves more room for the reſt of the Blood in the ſame Canals, but may contribute very much to the better Circulation of other Blood impell'd into theſe Veſſels long after.

The Teeth are looſe.

§ XVI. By viſcid *Blood*, tho' in a greater quantity, the Teeth are not ſo firmly retained in their Sockets, as when the Blood is in a State of due Fluidity ; and far leſs is it ſo in diſcharges of Blood from inflamed Gums, and ſtill leſs when the Gums are waſted by ſharp Pus diſcharged in a great quantity; but being by this compreſſing of the Teeth on every ſide that they have their Stability, and they being leſs forcibly compreſt as is ſaid, they muſt become leſs firm and be looſe.

§ XVII. Thus might thoſe Symptoms be more particularly ſhown, and others proceeding from the ſame Cauſes related at a great Length

by Authors that Treat purpoſely on this Diſeaſe, be ſufficiently accounted for, but this not being my preſent deſign, I hope it is now made appear how this Sickneſs is produced at Sea, and upon what ſort of Men, and in what Circumſtances of Life it is moſt readily generated ; and by the by, it is Evident, that this Diſtemper is not eaſily confounded with the Melancholy Hypocondriaca, as it moſt commonly is by the beſt Authors, and that becauſe many Symptoms obſerved in this Diſtemper are likewiſe found in the former. But this is a Liberty that muſt bring all Diſeaſes under one denomination, and is by no means to be ſuffered in Authors, eſpecially that ſet up for pure obſervation : for in this neceſſary part of Phyſick the Excellency of obſervation conſiſts in a genuin Relation, and in truly deſcribing the things Hurtfull or Beneficial ; now if it is poſſible that all the Variety of

the Sickneſs could be thus Reduced, there would not be any uſe for Obſervation it ſelf. For Inſtance, We frequently ſee Vomiting in Fevers, Scurvies, Iliack Paſſion, the Stone in the Kidneys, or Ureters, a fall, *&c.* Yet, it would be very Ridiculous to ſay that a Fever is an Iliack Paſſion, the Stone a fall, *&c.* Or that any of them might be cured by theſe means that cure a vomiting, or that this vomiting by any of thoſe ways they obſerve the other diſeaſes are cured. This again ſhows how accurate we ought to be in deſcribing Diſeaſes, and of bringing them into diſtinct Caſſes, before we undertake either to Cure, or to reaſon about them. It is very material what that excellent Obſerver Dr. *Sydenham* has ſaid in the preſent Caſe, concerning this Diſtemper. *Hic enim* (ſays he) *Obiter ſed et libere tamen dicam, quod licet nullus dubitem quin Scorbutus in his plagis Borealibus*

Borealibus reverà inveniatur, tamen eum morbum non tam frequentem, quam vulgi fert opinio, occurrere perſuaſum mihi habeo: multos autem ex eis affectibus (neplurimos dicam) quorum nomine ſcorbutum incuſamus, vel Morborum Fientium nondum vero Factorum quique nullum adhuc certum induerunt Typum, Effecta eſſe, vel etiam infelices reliquias Morbi alicujus non-dum penitus deviti, acquibus ſanguis cæteriq humores contaminantur, &c. By the way, I muſt obſerve, that tho' I doubt not but the Scurvey is really to be found in theſe Northern Countries; yet I am perſwaded it is not ſo very frequent as it is commonly imagined; but that many of thoſe Symptoms (if not the moſt) we imagin to ariſe from the Scurvey, are either the product of approaching Ills not yet formed into a Diſeaſe, or the unhappy relicts of ſome unconquer'd Sickneſs, which ſtill pollutes the Blood and other humours, *&c.*

Dr:

Dr. *Willis* has endeavoured to ſpeak diſtinctly to the different kinds of Scurveys and calls one of them a Cold, and another of them a hot *Scurvey*: But in this contrary to Cuſtome, he has follow'd the Opinion of the Antients; and in this he embraces their Opinion when not ſo right, when in other caſes he erroneouſly forſakes them, and the truth at the ſame time: For it is the laſt only of his Diviſion that deſerves the name, and the other does not really differ from the Melancholia Hypocondriaca. I may ſeem a little too Nice, and the diſpute appear as if it lay only in a name, but what I have ſaid before makes it evident, how uſeful it is to have proper deſcriptions of and names for things, and it is likewiſe manifeſt into what miſtakes ambiguous expreſſionslead people; which are fatal in the Cure of Diſeaſes: But leaving this Digreſſion, I ſhall purſue our main deſign,

deſign, in the order it offers it ſelf to our Conſideration.

Their Bread. The next thing I ſhall conſider is their *Bread*, of which every Man is allow'd one Pound a day. Moderate eating of Bread has in all Ages been eſteemed to contribute very much to the preſervation of our Health, tho' none have approv'd of *Quantities*. *Omnis Repletio mala, panis peſſima*; a ſurfeit of any thing is bad, but one of Bread is the worſt: Its ſubſtance is tough and tenacious; and therefore is not ſo eaſily broken and divided by the Stomach, and if Eaten at any time in a greater quantity, than is ſufficient to give a Body to the Chyle, is very apt to make way for Obſtructions, and to breed very thick and groſs humours. But an entire abſtinence from Bread deprives the Chyle of that due and neceſſary Body, that is requiſite to make its paſſage ſlow enough thro' the Guts, that it may be the better thruſt into the *indiſcernible* doors of the *lacteal Veſſels*:

Veſſels: And therefore, in ſuch a Famine and Scarcity of Bread, the Body is depriv'd of thoſe Juices that are made of our Victuals, beſides *Gripings*, moſt troubleſome *Looſneſſes*, and ſuch other Sickneſſes as attend them. Having ſpoken thus much of Bread, in the general, I ſhall neither pretend to determine the ſufficient quantities of Bread that are to be eaten, nor enquire whether the Crumb or Cruſt of Bread are the moſt wholeſome. Theſe queſtions are not proper for this place; ſince all that concerns us, is the Conſideration of the effects our *Sea Bisket* may have upon their Bodies, who are oblig'd to make it a part of their daily Food.

Firſt then, a Pound of *Bread* ſo *dry* and *ſolid* as that muſt be, that it may be the fitter for keeping, if it were brought to the *Conſiſtence* of *common Bread*, would be near twice as big as it is, while in Bisket; which I'm apt to believe, is a little too much for men generally

to

to eat. Beſides, after it is ground by the Teeth, and ſent into the Stomach, 'tis extremely hard to be digeſted, if it be not very fine; and if fine, it ſo imbibes the ſmall quantity of Chyle, that is made of the other Victuals, that the Maſs of Blood receives a very ſmall quantity of it; and that Maſh which paſſeth the Guts, where the Lacteal Veſſels are inſerted, is ſo hardned and compact, that people upon that Diet but ſeldom trouble the Stool; which every one knows to be of very ill conſequence, and eſpecially at Sea. From what has been ſaid 'tis not only evident that the above mentioned Victuals are not fine enough to produce thoſe ſubtile animal Spirits, that make people ſo eaſily advert to, and apprehend at ſight, whatever is propoſed; and ſo, not fit to make Wits: But by the groſneſs of their humours, the Seamen are diſpos'd to moſt Chronical Diſeaſes, ſo ſoon as they are in the leaſt overcome with Idleneſs and Lazineſs: Tho' otherwiſe,

otherwiſe, all the inconveniencies that happen, are exceſſive *Coſtiveneſs* that troubleſome attendant of our ſickneſſes. So that we may ſay, that a little too much eating of ſuch Bread, not only thickens the Humours too much, and ſo diſpoſes our Men to other Sickneſſes; but immediately produces that dangerous *Coſtiveneſs*, which is apt to produce ſo many other Malidies, and always obſtructs the cure of Fevers. For when our Inteſtins are ſtuff'd with a great many days Victuals, they are ſo diſtended and the Blood Veſſels in them ſo preſt or ſtraitned, that the Circulation through them is very much interrupted, and not only the Blood that us'd to flow that way, but even that of the Neighbouring Parts, is forced from its Channels, and equally filling the Channels of the reſt of the parts of the Body, that have leſs reſiſtance, in ſome degree preſs the Origin of the Nerves in the Brain, and Blood Veſſels of the Eyes; and

ſo produee that *Stupor* and *Thickneſs* of *Sight*, people frequently feel in that Caſe. Beſides the Chyle muſt needs be very much interrupted, and kept from being convey'd in a ſufficient quantity for recruiting the Maſs of Blood, by the preſſure of the Lacteal Veſſels, which are interwoven with the Guts: For the Chyle is forced along the whole length of the Guts, with the groſſer Maſh; and ſo, the Body is not only depriv'd of its neceſſary Nouriſhment, but there's an eminent hazard of obſtructions in the lacteal Veſſels, which very often produce thoſe dangerous Aſcites's that are ſeldom cur'd.

Their Burgoo.

Touching their *Oatmeal Victuals* (or Burgoo) which of it ſelf is very fit to correct that thickneſs of the Humours and Coſtiveneſs, that are the unavoidable conſequences of the abovementino'd diet join'd with the leaſt Idleneſs: For Oats being of a thin ſubſtance, and of all the Grains we uſe for Victuals, that out

of

of which the greateſt quantity of Oyl may be drawn, they not only preſerve that motion that's requiſite to make a due perſpiration by adding Spirits to the Blood, but preſerve it in a convenient degree of liquidity; and by their cleanſing power and vertue to keep the Belly open: This Burgoo Victualing is highly neceſſary for our Sea-faring people. Yet, 'tis the leaſt lik'd of all their Victuals becauſe of the ſmall quantity of Butter, they pretend is allowed them to ſawce it: and therefore perhaps it were worthy the conſideration of thoſe to whom it belongs to order this ſupply, and who are every way ſo careful of the Seamen, to ſee whether an addition in their Butter might be allowed; for I am ſure, that if that part of the victualling were made more grateful and agreeable to the Sailors, it would very much contribute to the preſervation of their *Health*. What I have ſaid on

this ſubject is in a great meaſure applicable to their Peaſe, which in their own Nature are more temperate than Oatmeal, ſince they are eſteem'd by Phyſicians, and the learned *Galen*, 1 *De Aliment. Facultat. Cap.* 21. A ſort of medium between things of good and bad nouriſhment. And therefore I ſhall porceed to the next conſideration I propoſed, which was concerning their *Lodging*.

Their Peaſe.

§ XXII. This is as convenient, warm and eaſy as may be at Sea, and for ſuch a number of men; yet what by the pilfering of Hammocks one from another, their lying on Deck, or betwixt Decks when they are pretty warm after a Can of Flip; and the Preſt Mens real want of Cloaths, they ſenſibly contract a cold, which is the beginning of moſt of their miſeries. 'Tis not neceſſary I ſhould demonſtrate here the *way* how that is catcht; ſince 'tis evidently ſo by that *heavineſs* they complain

Their Lodging.

plain of in their *Breaſt*, *Soreneſs* in their *Bones*, and ſuch other ſymptoms, Phyſicians have determined to be conſtant attendants of a Cold. But ſince I ſhall have occaſion afterwards to treat more particularly of this ſubject, I ſhall at preſent content my ſelf with putting you in mind, that I have already Demonſtrated in another place, and have put it beyond exception, in the judgment of very many, that *there is no power in the Air*, different from its *weight* or *gravity*, able to produce thoſe ſymptoms that are ſaid to follow upon obſtructing, or ſhutting up the Pores, when we *catch Cold*, and ſo may diſturb and interrupt Perſpiration, and breed ſo many fatal Diſtempers, which are needleſs to be inſiſted upon in this place, ſince the thing is generally agreed upon; yet I cannot forbear obſerving, that an untimely uſe of

Sweating Medicines in ſome, and thickning *Lozenges* in others, is more frequently the productive cauſe of Fevers, Tiſſicks, *&c.* and of more fatal conſequence than a Cold could have been, if left to the *ſtrength* of the Blood and *Abſtinence*, without employing any other Auxiliaries; but more for the Confirmation of this may be eaſily collected from what follows in this Diſcourſe. I ſay then, ſince ſo far is already clear; and becauſe too the force of the Perſpiration is only kept up by a certain Impetus and degree of the Velocity of the Blood, and *that* is only interrupted by the falling or Diminution of *this* it would be an eaſy task to give a more genuine and Conceivable account of catching Cold, than is generally aſſign'd to be done by (I don't know what) Nitroſity or Nitrous power in the Air; which upon various occaſions Authors make uſe of for making the Blood both Fluxile and Tenacious, two very

ry different effects; tho' it is not fit for either, as I have already prov'd in its proper place. But I ſhall content my ſelf at preſent with Enumerating thoſe Symptoms that conſtitute the Eſſence of a Cold, and then proceed to conſider the effects of this, by the different Symptoms that naturally attend it.

§ XXIII. Since then, I find 'tis agreed on by all Phyſicians that Perſpiration when we catch Cold is not free as in a natural State but is ſo interrupted; and a great deal of that Subſtance that is uſually ſeparated that way, is detain'd in the maſs of Blood. That which is ſo detain'd will proportionably encreaſe its Bulk, and fill the Veſſels, which becomes the ſource of all thoſe Symptoms that are obſerved to attend a catch'd Cold, and that neceſſarily as I ſhall afterwards have occaſion to Demonſtrate. The Symptoms that appear uſually in this Caſe are the following, which ſhow themſelves in this

order. First a weight or heavineſs, a great Feebleneſs over all the Body, ſudden Weakneſs, a Coldneſs in all the Extremities, except the Brain, a pain in the Bones, and as when one is Bruiſed, a Weak Rare and depreſſed Pulſe, ſometimes theſe Symptoms are attended with Sleepineſs. In a day or two, the Pulſe is great and ſtrong, they become very Warm, Reſtleſs and Thirſty, their Tongue is Dry, Black and Rough, their Breathing dificult, and their Breath is Hot like Fire. They are Delirous and cannot Sleep, and their Sickneſs ends by Sweating, an Hemorrhage, Looſneſs, *&c.* or in Death.

§ XXIV. The recited Symptoms being thoſe that appear moſt conſtantly in Fevers, in our narrow Seas, and in this very order they ſtand now related; I ſhall Endeavour to ſhew how they may proceed from an Interuption in Tranſpiration, as I lately hinted: Though afterwards

afterwards it will be put out of diſpute that there is realy ſuch an Interruption, and ſuch a quantity of retained Steams and ſometimes of other Liquors, as ſeem here to be required to explain the Mentioned Symptoms. When this is done, the aſſumed Hypotheſis of an Interuption of Tranſpiration, when a Man gets Cold for producing the Symptoms of a Feaver will be no longer beg'd and Precarious, but a real Truth and a true principle from which theſe Concluſions are rightly deduced, and the Mechanical accounts of theſe Fevers we raiſe upon that Foundation, will be inconteſtably true. But to begin this Difficult Undertaking.

§ XXV. It is Evident that a greater quantity of Blood does make a weight proportionably great to the Augmented quantity. But then, naturally, as the quantity of Blood is, ſo is the Strength of our Body, or its power to Reſiſt this greater

A Weight or Heavineſs.

'ter weight, and in that Caſe the added weight is inſenſible, otherways than in the preſent Suppoſition. But *2dly*, we become ſenſible of an Extraordinary weight, when beſides our own Body we carry ſome other along with us; and after the ſame manner we begin to find our own Body heavy, when it either becomes heavier, or retaining the ſame weight, there happens a defect either in Preparing, Secreting, or Deriving Animal Spirits: for then ex hypotheſi, there is the ſame or a greater weight to be ſupported by a leſs force, and becauſe of this inequality of the weight and force of our Body it feels heavier, or we are ſenſible of a more than ordinary weight. That this may happen ſo by a quantity of Blood that is more than Natural is very Manifeſt. For let it be ſuppoſed that the Blood has no other defect, beſides its greater quantity, yet becauſe

of

of this its quantity the Canals of the Blood are more Deſtended than ordinary, and by the like Deſtention of the Arteries in the Brain its whole Compoſition is proportionably compreſt, and by conſequence, the Cavities of the Tender Nerves much ſtraitned; by which the Spirits are hardly deriv'd into theſe Canals. Now the ſtrength of Muſcles being *cæteris paribus*, as the quantity of Spirits and their motion, and the quantity of Spirits and Motion being leſs by the Difficulty of their being derived into the Nerves, ſo is the force of Muſcles likewiſe, and they too being Weaker and the weight of our Body greater or the ſame, we become ſenſible of its weight: Moreover it is known the quantity of Blood cannot be encreaſed, above a Limited quantity, except its coheſion is likewiſe greater, or that ſome Degree of Lentor is induced into the Blood: Now becauſe of this Lentor the motion of the Blood

and

and other Liquors is much impeded, and a ſmaller quantity of Spirits ſecreted; and therefore the weight of the Body is greater and its Strength leſs, and we more ſenſible of its weight. Beſides it is known that our daily heavineſs is on ſome ſuch account as I have here Sugeſted: For by the natural Lentor of all Blood and Secretions, the Velocity of our Blood does leſſen to a certain Degree, and without any great regard had to the Secretions, the Velocity of our Spirits leſſens $\frac{1}{2000000}$ part in a Second, and therefore an Equal reſpect being had to the Lentor ſuppoſed in the preſent Caſe, this Lentor and quantity may be increaſed to any aſſignable quantity, and this Extraordinary weight likewiſe.

Great Feebleneſs.

§ XXVI. It is from this very quantity of Blood thus augmented, and Tainted with a Lentor, as well as from the Spirits being ſeparated in a leſs quantity and derived

ed by leſs Force that this Feebleneſs does ariſe; for this weakneſs being oppoſed to the ordinary vigour with which we move, and our Bodies are carried from one place to another, which being only performed by the more powerful Actions of our Muſcles, and proceeding too from the quantity of Liquid Blood, and that of the Spirits, theſe quantities being leſs than Natural, as well as leſs Powerfully impelled, the Force of the Muſcles and the Vigour and Agility that attend it muſt be proportionably leſs; and we muſt become Feble.

§ XXVII. This Feebleneſs or Weakneſs muſt be ſudden, otherwiſe than is that which proceeds from a want of Blood, and this commonly proceeds Leiſurely, and is the work of time, whereas the other is really Sudden, and tho' perhaps the Cauſe does not operate ſuddenly, yet the Feebleneſs it ſelf is perceived to be very great and that felt

And that Sudden.

felt only ſuddenly. For if Six, Eight or Ten pound were neceſſary to compleat that fulneſs which is required to produce this and the mentioned Symptoms, it is certain ſuch a quantity may be readily obtained in a little time, and conſequently its effects will likewiſe appear in a little time, or this Weakneſs will be ſudden. This is Evident from what *Sanctorius* has obſerved, for let the quantity of what we Eat and Drink in one Day not only be Eight pound, but ſomewhat leſs, *viz.* 7. 6. or 5. the quantity of Stools in the largeſt Eſtimate does not Exceed ½ a Pound, and the quantity of our Water two Pound, the remainder is waſted inſenſibly, that an equality of weight may be preſerved in an Animal, which Equality is kept up unequally. But in this interuption of Secretions if we are ſuppoſed to retain the half of ſix pound in one Day, then it is Evident that this Augmented quantity is had

had in little more time than three days, and Conſequently ſuch a weakneſs will be produced in ſo ſmall a time. Moreover if the requiſite quantity was ſuppos'd to be made by two or three Ounces at a time, and that quantity was equally retained and not waſted, then it is certain the Production ſhould not be ſo quick and ſudden, tho' this effect of Weakneſs may ſtill be ſo, becauſe we do not become ſenſible of the effect till it is in that quantity ſufficient to produce the Weakneſs this way, and therefore we become ſenſible of the Weakneſs only after the whole quantity is Accumulated, and that being by the laſt added quantity, the three Ounces or ſome part of it, 'tis by the quantity added in ſome part of the laſt Day of Health we are ſenſible of its Effect, and we feel our ſelves weak: So that this Weakneſs ſeems to be the Production of one Day or very ſudden. It is eaſy in both the mentioned Caſes to make a Computation of the detained ſteems in different ſuppoſitions

ons, and it is not impoſſible to determine actually, or to a ſmall and inconſiderable Error the real performances of Secretions in Animals reſpectively, or of the ſame Animal at different times: But I am ſenſible that the preſent Subject does not require it; howſoever uſeful it might prove if I were Treating particularly of Fevers, and it is not uſeleſs in accounting for the Nature or Cure of any Diſeaſe.

A Coldneſs over the Body.

§ XXVIII. The heat of the Body is proportionable to the quantity of hot parts in the Blood, or to its Velocity *cæteris Paribus*, and the quantity of theſe parts are Commonly as the quantity of Blood, now the quantity of Blood being greater and the hot parts affect the Senſible parts leſs with their heat, Even as if they were in a ſmaller quantity, It is Certain, that this Leſs affection of heat does proceed only from theſe hot parts being confined, ſo that they cannot act, and there being a Lentor in the Blood at this time

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it is this Lentor that thus confines them, or it is the Lentor that occaſions this Univerſal Coldneſs, by locking up the hot parts of the Blood.

§ XXIX. But in any ſtate or condition of the Blood whatſoever the fluidity of the Blood is greateſt as it goes out of the Heart into the Aorta, and is likewiſe the groſſeſt as it returns by the Cava into the Heart, and this its fluidity decreaſing orderly as it Removes from the Heart in the remoter Arteries: Wherfore the Lentor increaſing in the Remoter Arteries and the Velocity in the ſame being likewiſe leſs, as is the ſum of the diameters of the Ramifications of Arteries to their Trunks. Now the heat of the Body being as the Velocity of the Blood and its Lentor in ſimilar quantities and in parts more remote from the Heart or in extream parts the Lentor is greater, and the Velocity leſs; therefore in theſe extream parts is the heat likewiſe

Eſpecially in the remote parts.

wiſe leſs. Beſides, the Blood becauſe of the mention'd Lentor does not flow in a Natural quantity thorow Capaillary Veſſells in theſe Extream parts, even when the quantity of Blood in the Body is greater: So the quantity of Blood in theſe parts being leſs as well as more groſs, and of a ſlower motion; the heat too in theſe remote parts is leſs.

Except the Brain.

§ XXX. On the other hand, the Blood conveyed into the Brain being Carried in Veſſels that have fewer ramifications than like Veſſels of the ſame length, and theſe ramifications running out to no great length in the Brain before they diſcharge their liquor into wide and Numerous Sinuſes, it is for theſe reaſons that the Velocity of the Blood with Lentor is more preſerved in its circulation thorow the Brain, than in other places of the ſame Diſtance from the Heart; and the heat of the Blood being proportionable to its Velocity, it

is

is the greateſt in the Brain than in any other remote part, becauſe the Velocity of the Blood is greateſt there.

§ XXXI. Since the Blood is thus augmented in quantity and Viſcidity, both by its greater quantity and ineptitude to motion it muſt fill, in a Suitable manner, theſe Arteries thorow which it flows, and the coats of thoſe Arteries being ſtretched with this fulneſs have their compounding parts more disjoyned from one another, which disjoyning is a ſolution of Unity, or Pain, tho' from this hinted cauſe of Pain, it is manifeſt that the Bones can never occaſion a feeling of pain, yet it is as evident that the Perioſtium that ſo cloſely inveſts them is capable of producing any ſort of pain, and becauſe of this their Contiguity, and the thinneſs of this Membrane, the Affections of the one cannot be diſtinguiſh'd from the other, if both could be affected in the ſame manner: becauſe of theſe Confuſi-

Pain, eſpecially of the Bones, as when one is Bruſed.

ons in expreſſing the ſame feeling when the Perioſtium is ſo moved, as to give a Senſe of Pain, we have no difficulty to aſcribe this feeling to the Bones themſelves, ſo that when the Perioſtium is affected with any ſort of pain, we complain of a pain in the Bones that are better and more Univerſally known to thoſe that feel pain, than the Perioſtium it ſelf, now in bruiſing there are great Contuſions, and the Veſſels have their ſides ſo preſt by the weight and motion of the Inſtrument by which theſe Contuſions are made, that the Blood circulates but very ſlowly in the Veſſels ſo compreſt; nay the Perioſtium is frequently preſt too by the contuſed Muſcles, and this feeling is produced in it; for by the bruſing it may be hurt as well as the incombent Muſcles, and its Veſſels being diſtended by the Liquors flowing thorow them, will produce this Feeling originally, as in the former Caſe. Since then by a full-

neſs

neſs of the Veſſels of the Perioſtium pain may ariſe as in more common Bruiſes, it is eaſy to conceive from whence comes the Pain we feel in Fevers which are like thoſe we have after a Bruiſe.

§ XXXII. 'Tis on account of this Lentor, that the Blood is leſs capable to ſeparate its fine and ſubtile parts, as has been ſaid, and there being a leſs quantity of them the Contraction of the Muſcles is ſo much the weaker; and conſequently ſince the Heart is a Muſcle which gives the greateſt motion to the Blood, its Contraction being weaker, the Blood will be ſqueezed out of the left Ventricl into the Aorta, and thro' the whole Series of Arteries, with leſs Velocity; now by this quantity of motion the ſides of the Arteries are diſtended, and therefore in a leſs quantity they are more ſlowly diſtended, or they do not ſtrike our finger with that force that is natural; ſo that the pulſa- The Pulſe Weak.

tion is found weak, or weaker than it ought naturally to be.

Rare. § XXXIII. For the ſame reaſon and that the Spirits are produced in leſs quantity and not ſo quickly determined into their Canals in Muſcles, and by Conſequence the Contraction of Muſcles is not ſo frequent. Now ſince the motion of the Heart and Arteries are Synchronical *h. e.* The Contraction of the one and Diſtention of the other are performed at the ſame time, and the Contraction of the Heart is not ſo frequent, the ſides of Arteries are not ſo freqently forced outwards, and ſeldomer affect our Touch, or the Pulſe is that we call Rare.

And Depreſs'd. § XXXIIII. The Pulſe is made, as is hinted, by a greater quantity of Blood being impelled from the wider part of an Artery into its next narrower Section, and that every time the Heart is contracted; and in time of its Dilatation, the Blood thus impell'd by the preceding Syſtole, has

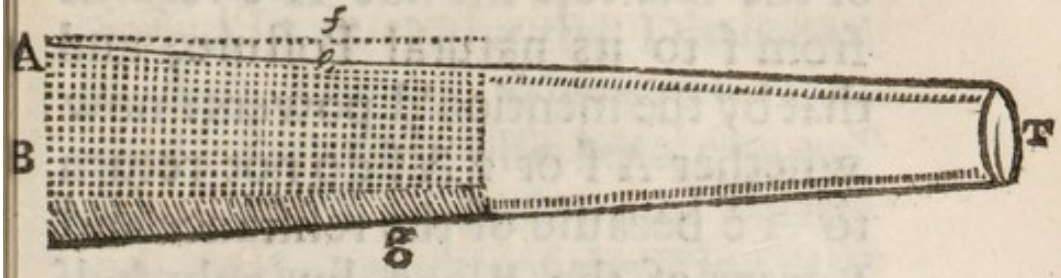
has its motion contuined by the Reſtitutive Power of the Artery, *viz.* The elaſtical force of its membranous Coats, and the Contraction of its Muſcular one. Theſe Powers are ſo great, that they are able to bring the inner Surfaces of theſe Veſſels to be contiguous, when Blood is not impell'd for ſome time, and would always do it but for the Circulating Blood; and therefore when at any time there is a greater quantity of Blood, and that more hardly propell'd becauſe of its Lentor, the Arteries being fuller, are more hardly reſtored. Now it being by the Reſtitution of the immediate preceding Pulſe that the greatneſs of the next does depend, and the Reſtitution being leſs, the next Pulſation is likewiſe leſs. Yet their being a greater quantity of Blood than natural, it makes the very Feeling as if a Natural quantity did Flow thorow a Contracted Canal, or as if the Artery were compreſt by ſome Incumbent

weight, and this is what they call a *Depreſt* or *Compreſt* Pulſe.

§ XXXV. I muſt be a little fuller in explaining this, becauſe a Phyſician who attacked the Doctrine of *Harvey*'s Circulation pretended likewiſe to find an impoſſibility in the way I Explain'd Pulſes. But his miſtake proceeded from his underſtanding neither of theſe Doctrines, and I might well Excuſe my taking no manner of notice of him then, nor now, but that I am to explain however this material point of depreſs'd Pulſes and better than I had done before, or that I know of as yet is done. This does not altogether belong to this place, and therefore I ſhall only treat it in that manner, as what I have ſaid may be Illuſtrated in a way that is true in general, but not Sufficiently cleared till I have an opportunity to diſcuſs it in its own place; and therefore Suppoſing A. T. to be an Artery in its Natural poſition, filled with

Blood

Blood flowing from B, A e one ſide of it, and A g the other, and



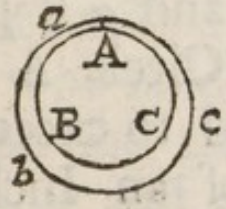
the pricked line A f the ſide A e when filled at every contraction and diſtended to f where the Finger is ſuppoſed to be: after the ſame manner, A g tending outwards as freely as A e, then A g oppoſit to A e will make an Excurſus equal to A e. But when A g runs over a Bone, as in places where the Pulſe is eaſieſt felt, or near it, ſo that it cannot ſo freely be diſtended by the impelled Blood, in that Caſe the diſtention of A g will be added to the Diſtention of A e or thereabouts, and the diſtention of A e will be double of what it otherwiſe would be. This is manifeſt and is evidently the cauſe

of Pulſes and their being ſo ſenſible. But it has been ſaid that in time of the Diaſtole the ſide A e returns from f to its natural Poſture, and that by the mention'd powers: now whether A f or 2 A f do not return to A e becauſe of the reſiſtance and Lentor of the Blood, but only half way, *viz.* from 2 A f to A f; in that Caſe A f coming out againſt our finger cannot ſtrike our finger ſo ſtrong, the Tranſcurſus in the ſame time being but half the length, and therefore the Pulſe is Depreſt as we have ſaid; but if the return is very little *viz.* $\frac{1}{4}$ or $\frac{1}{6}$ of A f, then the diſtention at next Contraction of the Heart is very Inconſiderable.

XXXVI. But this laſt Conſideration will more particularly appear, if we ſuppoſe A B C the tranſverſe Section of an Artery when it is in its natural poſition, but by a plethora become larger, the Artery being diſtended the Section fills the ſpace a b c. If the breadth of the Ring be but $\frac{1}{10}$ of the Diameter of

the

the Artery, there will be very near as much Blood contained within the Ring as there can be in the whole circle A B C. Now the Diameters of theſe Arteries, where we commonly feel the Pulſe beat, are not above $\frac{1}{10}$ of an inch; and conſequently the breadth of the Ring will not be above the two hundred part of an Inch, which is ſo ſmall a quantity as cannot be eaſily perceived by ſight or touch.



§ XXXVII. Suppoſe now the Circle a b c d to be the Section of the Artery thus diſtended, and becauſe the Heart conſiſts of very ſtrong

ſtrong Muſcles, the capacity of the Heart cannot be much encreaſed, and therefore at every Pulſation, there will not be a much greater quantity of Blood diſcharged into the Arteries than before the Plethora, it is known that the Coat a b c d will be further extended at every Pulſation about an Hundred part of an Inch, *viz.* to α β γ δ ſo as to receive a quantity of Blood equal to what the Artery receives when it is in its natural ſtate, or which is the ſame thing, the Breadth of that ring between the two Circles a b c d and α β γ δ which is equal to the Circle A B C D will not be found to exceed the Hundredth part of an Inch. Suppoſing then, that in an ordinary ſtate of Health, all the Blood at every Pulſation were forced out of the Artery and that the Coats came together; yet in this ſtate of a Plethora, the Artery will not riſe againſt your Finger above the hundredth part of an Inch, which is indiſcernable. XXXVIII.

§ XXXVIII. This Squeezing of Blood thorow the Canal is imagined to proceed from the ſtraitning of its Cavity, and by ſomething that compreſſes it, and therefore this Pulſe is ſaid to be compreſt; but this is impoſſible tho' the feeling is Juſt, and the quantity of Blood is too great for the Cavity of the Veſſel, eſpecially to produce a natural Pulſe; nay there may be no Pulſe or no Senſible one according to the fulneſs: But this ſhall be made more plain in treating of Pulſes. The words which miſled this unwary Phyſician, who boldly oppoſes the Circulation and this Doctrine, are the *tending* and *going* outwards of the ſides of an Artery every time it is dilated; for I uſed this manner of expreſſing my ſelf when I wou'd ſhow how its Cavity is enlarged; but he not knowing what it was for the ſide to tend outwards to a Body without it ſelf, fell into this groſs miſtake of their inſide or

inner

inner Surfaces turning outward; which is as impoſſible as to find the Circulation in a Dead Body.

With theſe ſleepineſs.

§ XXXIX. The Arteries are thus diſtended by a quantity of Blood and Lentor, and the Pulſe depreſt; but their Diſtention being proportionably greater, as is the Reſiſtance the ſides of theſe Arteries meet with in their tending outwards is leſs; it is manifeſt that their greateſt freedom to be diſtended is in the Brain becauſe of its ſoftneſs, which is compreſt in that manner, and to that degree almoſt that the Blood Veſſels are diſtended; and becauſe of its thus being compreſt, the Secretion and Derivation of animal Spirits is impeded by the Compreſſion, which is ſtill not ſo laſting becauſe of the Reſtitution. Yet becauſe of this Affection we are ſleepy, and therefore in time of this quantity and Lentor, there is a ſleepineſs as is manifeſt from the cauſe and effects of Sleep.

§ XL.

§ XL. Thus having ſeen how the mentioned Symptoms are produced by a quantity of Blood endued with a Lentor; it does likewiſe appear how long theſe Symptoms are likely to continue: in general, they may be continued as long as this Lentor it ſelf, and that according to its quantity and degrees of Coheſion, it being in Conſideration of them that it is more eaſily or hardly diſſolved; more particularly, the times of its diſſolution are not altogether impoſſible to be determined, and we ſhall endeavour to do it in a Treatiſe of Fevers. Howſoever ſeeing we find by Experience that theſe Symptoms begin to go off in a Day or two, in theſe Years I was at Sea, or that in a Day or two the heat did ſenſibly return, we may conclude that the Nature of this Lentor, was that it might be diſolv'd in ſome meaſure in that time. In a Day or two.

§ XLI.

They become very warm.

§ XLI. Now the Lentor is not otherwiſe diſſolved and the heat delivered of its confining viſcid parts; but by the Blood being preſt when forced into the Arteries, and in their Reſtitution ſo compreſt, that the hot parts by this Compreſſion together with the natural power by which hot parts endeavour to extricate themſelves, can overcome that entangling power of the viſcid parts of the Blood, by which they were detained; and theſe hot parts being thus delivered, will again exert their power and produce heat in ſenſible parts, and both by the Activity of their parts, and that ſenſible parts are warmed which contribute to the diſſolving this Lentor in other parts where it Coheres more firmly, as has been ſaid before; ſince the hot and warm parts of the Blood are delivered from their confining viſcid parts, and that becauſe the power of Compreſſion is greater than the Power of Coheſion which proceeds from that Viſcidity: Now

ſince

ſince the power of Compreſſion is proportionable to the Velocity of the Blood, and its Velocity is greateſt in theſe Arteries that are next the Heart; wherefore the power of Compreſſion of theſe Arteries that are next the Heart, will be greater than in thoſe that are more remote, *h. e.* The heat will be felt in the parts that are more remote from the Heart or Extremities, a great while after it is felt in the parts that are nearer the Heart, and the Coldneſs in the remote Limbs may laſt after the reſt of the Body has been warm, till the power of Compreſſion in their Arteries be augmented by the continual afflux of Blood to ſubdue the Force of this viſcid and entangling Blood.

§ XLII. The heat thus proceeding, the Blood becomes more fluid and is more eaſily propelled round the Body: Now there being a greater quantity of flowing Blood the Arteries are more quickly diſtend-

The Pulſe is great andſtrong.

ed,

ed, and their Reſtitution likewiſe greater: Now according to the degree of theſe two conditions, is the greatneſs and ſtrength of the Pulſe, and both being great, in the preſent caſe the Pulſe muſt be great and ſtrong. Moreover, by this greater quantity of more fluid Blood, there is a more plentifull Secretion of animal Spirits, and their movement is likewiſe greater: But the power of contraction in Muſcles, and the elaſtical power in Fibres and Membrans that are compounded of them being proportionable to the quantity and momentum of Spirits, *cæteris paribus*, the reſtitution of the Coats of the Arteries, after their violent divulſion is greater; as alſo the impetus of Blood flowing in theſe Arteries greater, and therefore the Pulſe great and ſtrong as before.

Reſtleſs. § XLIII. The warmth at this time being proportionable to the quantity of Blood, and the diſſolution of Lentor, and the quanti-

ty

ty greater as well as the Lentor being more diſſolved, the heat does likewiſe encreaſe, and by a conſtant deſire Men have to be relieved from the uneaſy Senſe of heat, they will conſtantly move their Limbs from thoſe places of the Bed, which are moſt heated; into others that are Cooler, and the quantity of heat being very great, and the part of the Bed laſt removed into being ſoon heated, induces another remove: And theſe frequent removes becauſe of heat, and the deſire they have to be cooled is this very reſtleſſneſs they thus complain of.

§ LXIV. In the preſent State of the Blood, as it has been often mentioned, and may be particularly found, the quantity of Secretions being leſs and the heat greater, the Secreted Liquor is ſoon Evaporated: Now the leſs the quantity of Spittle is which Moiſtens the Tongue, the greater is the Deſire of Drinking, and the quantity of Spittle being leſs and ſooner Eva- And very Dry.

porated, the Tongue muſt be dryer and we have a greater deſire to Drink; and this continual deſire of Drinking, is what we mean when we ſay we are Dry; therefore at this time, and in this Period eſpecially we are very Dry.

Their tongue Rough.

§ XLV. For this very reaſon, that the Tongue is deprived of its Moiſture, and that it has its Fibres more eaſily ſeperated as well as the *Senſoriæ papillæ* perpendicularly inſerted into it, it has not that ſmooth Surface as when they are more compact and the Spittle does Smooth over that part, ſo that only by the want of Spittle, the Tongue becomes Fibrous and Rough.

And Black.

§ XLVI. Moreover becauſe of this Dryneſs and Heat, the Coats of the moſt Superficial Capillaries are contracted, and their Diameters are ſhortned, but becauſe of this narrowing of their Cavities, and the Lentor of the Blood, the Blood does not Flow ſo freely thorow them, but ſome of its thicker parts do Subſiſt, while its more Fluid are protru-

Srotruded, and Subſiſting in thoſe puperficial parts ſo heated are of a Rediſh Black as we ſee.

§ XLVII. The preſent quantity of the Blood does now take up a greater ſpace, it being rarified in proportion as the Lentor is diſſolved, the hot parts are Diſintangled, and all theſe perſiſt in quantity, as Evacuations do not happen to be produced; ſo that by this poſſeſſing of greater ſpace, the veſſels of the Lungs are diſtended: But becauſe of this Extraordinary diſtention the Air Bladders are neither ſuficiently expanded nor freely emptied: Now the freedom of Breathing being as the quantity of Air received and expreſſed; but a ſmaller quantity being impelled and theſe Veſiculæ compreſſed by the quantity of Blood, the Reſpiration muſt needs be difficult. There Breathing difficult.

§ XLVIII. Seeing there is a ſmaller quantity of Air impelled into the Air Bladders, and conſequently a little quantity expired, and therefore an ordinary quantity of hot parts Tranſpired thorow And their Breath hot like Fire.

row the Lungs and discharged among this air, is Considerably more sensible than when the same quantity of hot parts used to be discharged among a greater quantity of the mentioned fluid. Moreover the quantity of air being less than is ordinary, and the quantity of hot parts discharged being greater, as it is in the present Case; the heat of the expired Air is likewise greater, and Swims in this Air as the hot parts of the Sun, or of our fires, by which our hot feelings are produced. This Sense of heat is the more perceptible that it is thrown out upon the face and hands of by standers, with an impetus conceived from the descending power of the Thorax, by which the Lungs are compress and this Air Expelled thorow the narrow *Aspera Arteria*.

They are Delirous.

§ XLIX. 'Tis known by experience how our Capacities of thinking and our thoughts themselves are determined to particular Subjects, by the disposition of our Body,

Body, in Youth and in Age, in the Morning and at Night; and therefore in the various alterations that our Blood has in one Day, our imaginations and expreſſions are Various: But this ſudden falling from one Subject into another or pertinaciouſly inſiſting on very Triffling ones is ſaid to be a Delirium; and ſince by the great Change that is in our Blood, that is by the Comminution of this Lentor this affection is produced; 'tis no wonder how in ſuch a time one is Delirous.

§ L. Not only by the force of our fancy we are kept awake, but alſo by the fluidity the Blood acquires, the Spirits being more freely ſeperated and thruſt into the Nerves, and more ſtrongly impelled thorow their Canals; but becauſe of this greater quantity of Spirits and their freer derivation is the leſſer neceſſity of a Recruit by ſleep; nay the cauſe of Sleep ceaſes, and therefore ſince this

And cannot Sleep.

this is the Caſe in the preſent condition of a Fever, the ſick perſon *cannot Sleep.*

Their Sickneſs ends by Sweating, an Hemorrhage looſneſs. &c.

§ LI. This Sickneſs Evidently proceeding from a greater quantity of Blood, goes only off by the Diſcharge of that quantity; and therefore it is no wonder that ſenſible Evacuations are produced in the end of this Diſeaſe, or that theſe Diſcharges do put an end to it; and every one of theſe and others not Mentioned, according to the diſpoſition the Blood has by an aſſignable Power.

Or in Death.

§ LII. But if the Lentor in the firſt Caſe is not Diſſolved, and remains the ſame, the quantity of Blood may be and has been encreas'd till all the Veſſels of the whole Body are filled, with as much Liquor as if they had been forcibly injected with a Springe, in which Caſe the Blood cannot move: But 2*dly*. this Lentor will increaſe, ſo that it hinders Animal Spirits to be ſeparated and derived, and by theſe

theſe the Contraction of the Heart and motion of the Blood deſtroyed, and the Patient dies. 3*dly*. If ſome Secretions continue the ſame, or are increaſed, and the Lentor not diſſolved; the quantity of Fluid Blood will be leſſened ſo much, that from the remaining thick Blood, their cannot be a ſufficient Separation of Spirits to propel the Blood, the Conſequence of which muſt be Death. On the other hand, the quantity of Blood thus Augmented may be encreaſed by the diſſolution in that manner that the Arteries of the Brain being too long kept in a Stretch, the beginnings of the Nerves are ſo compreſt by them, that no Spirits can be impelled, neither any derived, or not in a ſufficient quantity for the Contraction of the Heart which will be followed by Death.

§ LIII. Thus having Demonſtrated the neceſſity of theſe Symptoms from a ſuppoſed Interuption

in Tranſpiration, I would proceed to Conſiderations of the like Nature, if I were not in the firſt place obliged to Vindicate this Theory from being merely an Hypotheſis, as I but lately promiſed. If therefore, we take one or more of the mentioned Symptoms, and read them backward according to the known and familiar Rules of Nature, without having any regard to any Hypotheſis, we ſhall find them proceeding from ſuch a fulneſs as has been inſiſted on; and if that is true, the Suppoſition ſo far was properly made, and every thing true we have deduced from it. In confirmation of this: let us take the firſt Symptom that offers it ſelf to our Explication (and every one of them will afford a proportionable Evidence) we ſhall find it intirely owing to this fullneſs or greater quantity of Blood: For we being *Suddenly Weak*, it is manifeſt that this does proceed from the Mentioned fullneſs, Excluſive of

every

every thing elſe; how it may be made by that is Evident from what is already ſaid; and beſides this way there is not another but by a Real want of Blood and Spirits, by ſome natural Evacuation Augmented or a Preternatural one made; but neither of theſe happen while we have a Fever formed, and therefore the aſſigned one is the Cauſe, as was to be proved. The Admirable *Sanctorius* has taught us how this may be, by ſettling the proportions of Secretions in the V. VI. XXI, LIX, and LX Aph. of the firſt Sect. of his Statical Medicin: from theſe it does appear that the diſcharge by Tranſpiration, is not only greater than any one of the reſt, but that it is the Double of all of them; nay that in ſome People it is Fifteen times greater than their Evacuation made by Stool: And therefore when it is interrupted, it can produce that fullneſs in half the time, all the Secretions together can. But ſince they or moſt

of

of them continue to be orderly while the mentioned Symptoms have grown into great ſtrength; it is therefore from an Interuption of Tranſpiration, that the Fulneſs ariſes, which is their Productive Cauſe; This might be confirmed by many other ways of Reaſoning as well as by Various experiences, but this is more proper to be done in an Enquiry that is more particular concerning Fevers; and all theſe are Confirmations of our Reaſoning, and the Excellency of this plain and true Hypotheſis.

This interupted Tranſpiration makes a Diarrhæa.

§ LIV, This Foundation being firm, I proceed to ſhow ſome other more common Conſequences of Men catching Cold. And firſt it is known, that the quantity of the Blood is not always Augmented equally in proportion to the Suppreſſion or Interuption of Perſpiration, and therefore the matter thus detained, in an interupted Tranſpiration, is diſcharged by other parts of Evacution, and is the Cauſe as well

well as the matter of theſe extraordinary diſcharges. But ſuppoſing that any part of it is Secreted in a greater quantity by the Glands of the Inteſtins, Stomack, or Pancreas; the Liquor thus Secreted will make every thing more Liquid in the Stomack and Inteſtins: Beſides, if it is endued with ſharp parts, it may ſtimulate the Guts alſo, and both by the Liquidneſs of the excrements, and by augmenting the periſtaltical motion of the Inteſtins, thoſe Excrements are protruded out by the Anus with great force, *h. e.* the matter of inſenſible perſpiration being thus thrown upon the Guts, will occaſion a Diarrheræa: For that is nothing elſe than a more frequent going to ſtool with Slime, Gall, or other humours, becauſe of an extraordinry Contraction of the Guts, an encreaſe of excrements, their greater Liquidity, of moſt if not all of them together.

Vid. alv. profluv. p. 39.

§ LV But

§ LV. But ſince it is a matter of fact that this diſtemper is not ſo frequent in the Channel and other parts where theſe Obſervations were made, and ſince it likewiſe appears, by the mentioned Book, what the productive Cauſes of all Looſneſſes are; now few of theſe Cauſes there deſcribed being to be found here, we cannot reaſonably expect Looſneſſes ſo frequent as in other places. Upon both theſe accounts of their unfrequency taken from reaſon and experience, it manifeſtly follows, that a more minute enquiry into the nature of a Diſeaſe, that affects ſo ſeldom, is beſides the purpoſe of this work; and I paſs it by with leſs regret, that ſufficient Proviſion is made againſt that Diſtemper, by the account given of it in the Book lately ſpoke of. Wherefore not to give the Reader further trouble in this matter, I ſhall relate the Looſneſſes among the caſual Diſtempers of the Channel,

and

and cure them as ſuch in the practical part of this work; referring thoſe to the Book it ſelf, that would know more, and have more Aſſiſtance for their better managing this Diſeaſe. However, it is manifeſt that there are two very different Affections of the Blood ariſing from an interruption in Perſpiration, or from the catching of Cold.

There is a third which happens in aſſignable Circumſtances, though it is not eſſentially diffrent from the firſt caſe we mentioned. The Blood and other Humours contract ſuch a Lentor or Thickneſs as we have ſpoke of all along; yet after it has paſt thorow the various Periods already related, it does not acquire a due Temperament and Compoſition, or Health does not enſue, as in the former Caſe; but the Diſeaſe returns and deſcribes more ſuch Periods to an indefinit time, and that either by a freſh ſupply of new matter that is able to produce this affection intirely,

ly, or by the means only of the former Lentor not being thorowly diſſolved. Yet, in the Intervals of the forming theſe new Periods, Men ſeem to be in perfect Health, till of a ſuddain, they are attack'd by this new Paroxyſm. This by the by, is no ſmall Confirmation of the account already given of the ſudden Weakneſs.

An account of an Ague.

§. LVI. The method I will take for Diſcovering the Nature of this Diſtemper, is the ſame I uſed in the former, *h. e.* I ſhall Endeavour to relate, diſtinctly, thoſe Symptoms and Appearances in that very order they affect. Next I ſhall explain them in a natural and Familar way, and theſe when juſtly performed, the Practice and Method of Cure may be much Improved and clearly Managed. Firſt then, they feel a Coldneſs after Dinner, their Lips are Pale, they

Its Deſcription.

Tremble, their Pulſe is weak, they lie inſenſible while ſometimes their external Senſes are ſound, and ſometimes their external ſenſes are Faulty,

ty, while their mind is clear, their Body is ſtiff like a Corps, and they have a great Drougth, yet inſtead of Death, which one would expect by thoſe Appearances, come Warmth and Heat, theſe continue ſome time, and end in Sweating. At this time the Pulſe is ſtrong and more frequent, they have a beating in their Head, a great Drought, and after Sweating they are well to appearance. It returns every day, every Third, Fourth, *&c.* day incluſive. They recover thorowly; but ſometimes it ends in Death, and that in the Return.

A Coldneſs after Dinner.

§ LVII. It is Evident by the foregoing part of this Book, that the thickneſs of the Blood, confining the hot and ſmall Parts of it, is the true and genuine Cauſe of that Coldneſs we obſerve. But the Blood tending only to this thickneſs, and not having Arrived to the very Degree of Lentor by which it ſubſiſts in remoteſt Capillaries, may yet be brought quickly,

ly into this Condition, and that only by adding a Liquid to the Blood of the ſame or like groſſneſs; for by the quantity of this thick Liquor the Velocity of the Blood is Impeded, It becomes apter to ſubſiſt, and more readily produces this Coldneſs: Now the Chyle is ſuch a Subſtance, and therefore the Viſcidity of the Chyle joyn'd to the Viſcid Blood is able of it ſelf to diſpoſe the Blood to ſubſiſt at the time any quantity of it may be added to the Maſs of Blood. Since too, in an hour and a half after Eating, the Lacteals are found full of this Chyle, which is begun to be diſcharged into the Blood: Therefore in an hour and a half, or in two hours after dinner this Coldneſs begins to be felt.

Their Lips are pale.

§ LVIII. In this Viſcid ſtate of the Blood, it becomes more Cloſe, Condenſed, and takes up leſs ſpace, ſo that its Veſſels are not ſo much diſtended: Now it is by this diſtention and fulneſs of the Veſſels of

of the Lips, as alſo by reaſon of their being covered with a very fine Skin, that the redneſs of the Lips is cauſed; but when by the cloſeneſs of the Blood the Veſſels ſeem likewiſe to withdraw and nothing is to be ſeen but the genuine Colour of the Membrans and Fibres that compoſe theſe Muſcles which are pale. Therefore in the time of this Lentor the Lips are pale. Moreover, while the Blood is endued with this degree of thickneſs, it does not flow in any quantity thorow capillary Veſſels; and therefore by the ſmall quantity that does flow, which is alſo unduly rarified, the Blood Veſſels are not diſtended to their natural Size, and ſhow more their own pale Colour, upon which account the Lips appear pale.

§ LIX. This thick and weak Blood being unfit to ſupply a natural quantity of Spirits; nay according to the degree of the Lentor, the quantity of Spirits may be ve- They tremble.

ry little, and not continually but unequally protruded into the Nerves: Now the motion of the Spirits being alternate, and their continual efflux proceeding only from their abundance in the Nerves: But at preſent the quantity of Spirits generated being very little, this their efflux and Derivation is not ſo conſtant, or not perfectly continual; and conſequently, the Muſcles into which they are derived are not ſo Conſtantly Contracted, their æquilibrium is unequally preſerved, ſometimes one Muſcle ſometimes another being interchangeably contracted, and this interchangable Contraction of Antagoniſtical Muſcles being that which Phyſitians call trembling, and therefore it is plain that in this defect of animal Spirirts trembling muſt enſue.

Their pulſe is weak.

§ LX. After the ſame manner, the Muſcle of the Heart being more weakly Contracted by this leſs quantity of Animal Spirits the Blood is leſs

Vividly

Vividly expelled out of the Heart, and driven with leſs force thorow all the Canals; and becauſe of its leſs Vivid propulſion, the ſides of the Arteries are not ſo ſtrongly diſtended, and the Pulſe is weak. Moreover, by this very defect of animal Spirits, the Arteries are more weakly reſtored after every Diaſtole, and becauſe of this their weaker reſtitution, their next excurſion is not ſo great and conſequently the Pulſe is weak likewiſe on this account. Beſides, all this may happen by the Lentor of the Blood it ſelf: For by it, the Arteries of the Brain are kept more upon the ſtretch, and Conſequently in their alternate reſtitution the Spirits are not forcibly propelled, which encreaſes this weaker Contraction of the Heart and produces a weak Pulſe, as is ſhown,

§ LXI. It is becauſe of this difficulty the Arteries are under to be reſtored, after their dilatation, that

They Lye inſenſible while their &c.

that the Nerves are Compreſſed, and by this their Compreſſion animal Spirits are derived in a ſmall quantity and we are in a kind of ſleep or ſtupor, which may be while ſuch diſtentions of Arteries affect little in other parts: Therefore the ſick Perſon may Lye inſenſible while their external Senſes are ſound. On the other hand, any one, or all the external Senſes may be defective while the mind is clear: This will happen if we ſuppoſe a quantity of this thick Blood ſubſiſting about any Artery or Plexus of Arteries which involve, or are contiguous to any Nerve, that ſerves for Hearing, Seeing, Taſting, *&c.* For when theſe Arteries are Stuffed up and Filled by the continual Afflux of new Blood, their ſides tend outwards and are more diſtended, and theſe Contiguous Nerves more compreſſed, till at length by this continual ſtuffing the Nerve is ſo much compreſſed that it hinders the motion of animal

Spirits

Spirits in thoſe Canals, tho' their ſides may not be quite ſqueezed together, and thereby will happen that a man may be thick of Hearing, or perfectly Deaf, he may be blind, loſe his Taſte, *&c.* Yet he may recover them ſuddenly, the Coldneſs being over after the Lentor is protruded into the Veins.

§ LXII. In this ſtate of a Lentor, Spirits are not only generated in a ſmall quantity, and the ſides of Arteries more diſtended than ordinarily, as has been ſaid, whereby there can be but a ſmall quantity of Spirits derived into the Nerves; but likewiſe this thick Blood is next to ſtagnating in all its Veſſels: Yet in time of this defective quantity of Spirits, they are equally protruded into the Nerves, and conſequently the Muſcles are equally contracted; but by this equal Contraction, the Muſcles and their Antagoniſts remain in Equilibrio, and by conſequence without motion, or not eaſily brought into it. Beſides,

Their Body like Corps.

this ineptitude to motion is encreaſed by this thickneſs of the Blood that flows thorow the Muſcles, and therefore the Body lies ſtiff, cold, extended like a Corps.

They have a Drought.

§ LXIII. While this thickneſs is ſo Univerſal, it cannot be otherwiſe in the Blood Veſſels about the Face and Throat; but becauſe of this its thickneſs, Secretions of all ſorts are diminiſhed, and among others that of Spittle: Now by this leſs Secretion, there cannot be that neceſſary afflux of moiſture to thoſe parts, and the defect of it occaſioning a Dryneſs and Drought, which is therefore the neceſſary effect of a Lentor in the Blood.

In place of Death comes Warmth and Heat.

§ LXIV. Notwithſtanding of this fatal expectation from the Body lying extended with Cold and Trembling, Paleneſs, and a low Pulſe, yet the Heart having no Antagoniſtical Muſcle is contracted while all others are at reſt, or kept in Equilibrio, by their equal Contractions; but becauſe the motion

of

of the Heart is Continued, and the endeavour of the hot parts, to extricate themſelves from this Viſcidity, Heat and Fluidity will at laſt be obtained, according to the different Powers of the Viſcidity and hot parts, as was ſhown before: Now if this motion thus continued is able to diſſolve and Comminute this groſs and Stagnating Blood, the Body that appeared Dead and a Corps will become warm and hotter for ſome time than before. § 50.

§ LXV. By this diſſolution of the lentor of the Blood, eſpecially if rarified and that the diſſolution is quicker than the encreaſe of Secretions, it is more Liquid and takes up greater ſpace. But becauſe of its Liquidneſs, Spirits are Separated in a greater quantity and derived into the Heart with a greater Impetus: now becauſe of this greater abundance of Spirits derived into the Heart, its Contraction is ſtronger and the Blood is Impelled into the Arteries very

The Pulſe ſtronger and more frequent.

very quickly: but by this quick Impulſe of Liquid Blood of a ſufficient quantity, the Pulſe grows great and frequent, as has been already ſhown.

§ 42.

They have a beating in their head.

§ LXVI. Blood being thus Liquid and in a great quantity, is more frequently Impelled into the Arteries, and diſtends them to a greater wideneſs: Now in this frequent and great diſtention of the Arteries that run on the hairy Scalp, and in that part of it about the Ear, upon which we chance to lye, the tending out of their ſides, and their beating on the Pillow, on which we lye, produce this noiſe of beating, we are ſenſible of.

A great Drought.

§ LXVII. But while the Blood is more Liquid and propelled with greater Velocity, yet not to ſuch a degree as to produce a ſufficient quantity of Secretions, it is Evident that by want of the Secretion of Spittle the Tongue is dry. Beſides, the motion of the Blood being quicker and its heat greater, the Spittle which is Separated in

a greater quantity is ſoon Evaporated from off the Tongue. And from this dryneſs of the Tongue ariſes a Thirſt, which is greater and more Intolerable becauſe of the Heat.

§ LXVIII. Yet the Blood being once more free, and its Lentor much diſſolved after the manner already Demonſtrated, the Atrition and Comminution that produce this heat being greater as the Velocity of the Blood, and the greater the Solution of heat is, the greater the Velocity of the Blood likewiſe, and theſe will mutually encreaſe till the Viſcidity is deſtroyed, and Secretions are produced: but the ſecretion that is greateſt, moſt ſenſible, and what Evacuats moſt, is what is made by the Pores: Now this Secretion being cauſed after the Diſſolution of thick Blood, and as ſoon as it can be made, it muſt be groſſer than the Secretion commonly made that way, and this groſſer Secretion by the Pores being

It ends in Sweating.

Sweat,

Sweat; it is Evident, that upon the Diſſolution of this groſs quantity of Blood; Sweating will enſue: but by the diſcharge made from the Blood, by this great Secretion, the quantity of Blood is Leſſened and its Velocity is likewiſe leſs: Now the Velocity being Leſſen'd, the heat and other adjuncts of a Fever diſappear, and this being by Sweating, the fit is likewiſe ended in Sweating, as we ſee.

They are well in appearance.

§. LXIX. The heat and other Symptoms of Sickneſs and Pain being removed by Sweating as is ſaid, the ſick Perſon is thought to be in perfect Health; the Blood being more liquid and a quantity of its hot parts being evacuated, the Velocity of the Blood not ſo great, and Secretions going on Univerſally, we find our ſelves cooler, and our Pulſe not ſo quick, neither have we any of theſe beatings or other Symptoms we formerly complained of, but really the Blood to common obſervation, flowing in a natural way,

way, they think themſelves in Health, which tho' they have only obtained ſo far as the Lentor is diſſolved, or is not diſpoſed to be generated a freſh to make more returns.

It returns every day, every third fourth, &c

§ LXX. Tho' the Paroxyſm is determin'd by the mention'd way, yet if that Viſcidity that produced the firſt, is not Conſumed, but returns in a certain time; or if that is conſumed and purged off by ſome of the known ways of excretion, or ſo comminuted that it is changed into the nature of pure Blood; yet the cauſe which produced the firſt Lentor will in a given time produce the like again, that can laſt out the ſame time, affect with the like ſymptoms, and be reduced to pure Blood like it: So there are two ways by which the Returns of a fit may be made. Let us ſuppoſe then, that there are two returns every day, and at the ſame Hour (the ſame reaſoning will hold good for others that return in the ſame

or

or any aſſigned difference of time) and the firſt is produced by a Lentor that laſts for one day and there after is either purged out of the body, or changed into pure Blood, and the ſecond by a ſort of Lentor of the ſame quantity and quality with that which made the firſt; then any of theſe Lentors, or any other that can invade at the ſame hour, and take up a whole day before it is Conſumed, may ſucceſſively and by degrees be collected in the Blood Veſſels, ſo that it either flows thither inſenſibly but conſtantly in the ſmalleſt particles, or it may be bred within the ſame till it can produce a ſenſe of Cold, and other Symptoms that attend it. Now, before this cold and its attendants can ſeize us, it is neceſſary that this Lentor ſubſiſts in the Capillary Arteries; which cannot be, unleſs its quantity is ſuch that it does not mix with the Blood, and flow with it freely thorow the Arteries. Therefore, either this great

great quantity of Lentor is bred at once in the Blood Veſſels, which is poſſible; or elſe it is derived into them at once from other parts, which is not unconceivable: but it is very evident how this very quantity may flow into theſe Veſſels by degrees, or be bred gradually in the ſame: Wherefore it is manifeſt that in the ſpace of one day, either ſome Lentor, or ſomething that may breed this Lentor, may get into the Veſſels; and in ſo ſmall a quantity, that it takes up a whole day before a ſufficient quantity is Collected to produce the Coldneſs and its attendants: ſo that at the end of a day the coldneſs will begin again, and will make a new return, by this Lentor that was collected in the ſpace of a day. The ſame thing is true of other returns not made by the ſame Lentor coming again but made by a new one, the former being quite conſumed. This Conſumption may be ſooner or later in the ſame day, accor-

according to the different nature of the Lentor, the Bodies that are mixed with it, and their diſſolution in the encreaſe and declination of the Diſeaſe.

§ LXXI. It is no Contradiction, nor Impoſſibility for this Lentor to be collected by degrees, and to lye in the Blood till it is ſufficient to make a Paroxyſm, tho' it muſt circulate thorow the Body ſeveral Hundred of times before a Paroxyſm can be produced; and therefore it is more apt to be waſted in the great quantity of Tranſpiration and other Secretions than to lye ſo long as to make any Diſeaſe.

§ LXXII. It is true that it is hard to apprehend how ſo ſmall a quantity of matter, as we ſuppoſe this to be, ſhou'd be mixed in with twenty pound of Blood and either not aſſimilated to its nature, or caſt out with its parts that are plentifully diſcharged at that time in ſundry places: but ſo long as we know

know that it is matter of fact which happens in many other caſes, it is ſtill poſſible in this, which is all that is alleadged; yet if all the Phænomena can eaſily be ſolved by this ſuppoſition, the thing may be true. Some of theſe inſtances are Aſparagus, Onions, Caſſia, Rhubarb, Turpentine, *&c.* whoſe Smell, Colour, and other of their ſenſible qualities we know are preſerved in the Blood for more days than one, by their being diſcharged in that time in Urine, Milk, *&c.* for this is a certain argument that there is ſomething of theſe Bodies carried into the Breaſts and Kidneys without loſing of its Nature, though it has been often carried thorow the Lungs, and all the Body, and it may be very probable that this Viſcid ſtuff may be very often carried round the Body without any conſiderable alteration. The biting of a Mad Dog is a moſt extraordinary example, which ſhows how the whole maſs

of

of Blood may be tainted and corrupted, by an inſenſible quantity of liquors which produce no manifeſt effect, till after many thouſand Circulations, for the ſpace of thirty or forty days. So that before its appearing in theſe days it has circulated ſome Thouſand of times thorow the Lungs, without ſuffering any diminution of its ſtrength; nay in that time it has altered the whole maſs of Blood, and changed it into its nature: Therefore if ſome ſuch thing is ſuppoſed of this Viſcidity which is mixed with the Blood, there can be no room left for doubting.

§ LXXIV. Tho' the different ways hinted of making this Lentor might be fully made out, as the laſt; yet at preſent we take its original from the way the Blood is affected by an interruption of Tranſpiration, tho' it may poſſibly be ſupplied from every thing that yeilds us nouriſhment, Paſſions, *&c.* But let it be generated

ted in the Blood without any forreign ſubſtance added to it, as it may be by Paſſions, *&c.* Or let it be ſuppoſed that ſome ſtrange matter was brought into It by the Chyle, from the Viſcera, *&c.* All or any of them able to form this Lentor: 'tis certain, its condition being ſuch, theſe Paroxyſms with their orderly or diſorderly returns will follow, For if the Chyle ſhould be added, or any other Liquid turned into the Blood in this its unnatural ſtate; It is manifeſt by §. 57. That theſe natural humours mixing with the Blood will be more or leſs converted into its nature according to their reſpective ſtrength: Tho' as it is leſs apt to be trans-formed, the Paroxyſms will be longer a comeing; for if the Blood has ſtill that unnatural power, and the humour brought into it retains its natural power, there will be always the ſame time required to change that natural humour into that which is not natural; and this may be one,

two or three days; but if any one or all of them are of a different nature, the proportion of time will be changed, and the returns diſorderly: But if this natural humour is derived, at different times, from the ſame or defferent parts, and Immediatly or in the ſame diſtance or interval of time, it acquires an unnatural power from this Unnatural Blood, there may be many returns orderly and diſorderly as the derivations are Orderly or confuſed; and if theſe humours are of Different natures Conſiſting of parts of Different ſorts, every one of them requiring a Different interval of time before they can degenerate into this kind of Lentor, the Variety of returns will be altogether uncertain and keep no manner of order. Next let us ſuppoſe that in the Viſcera which are ſaid to have Conſiderable ſecretions made in them, the viſcid liquors are returned by their Veins into the Cava, and in the order of the former

mer Viſcid parts, circulate with the Blood over the Body, till they acquire ſuch thickneſs or quantity of Viſcidity that may make them ſtagnate in the ſmall Capillary Arteries, and produce the Coldneſs and other Symptoms, it is evedent, that their returns will happen in certain intervals of time, orderly and diſorderly according to the ſupply that is made from theſe Viſcera, or as that is mixed in a greater or leſs quantity orderly or confuſedly.

It ends ſometimes in death and that in the return

§ XXXV: But if there is ſo great a quantity of this Lentor mixed with the Blood that it cannot be driven out of the ſmall Arteries into the Veins: Or tho' the quantity be leſs, yet if its Adheſion to the Veſſels be ſtronger than can be broken off from the ſides of theſe Veſſels, ſo as it cannot be driven along in them. In that caſe, the Blood muſt ſtop, and in a little time the Body will be cold, there will be no Blood derived into the

Muſcles, it either arrives not to the Brain, or totally Stagnats in it, which is Death; But all this happening at the invaſion of the Coldneſs, and that becauſe the Lentor, that cauſes it, cannot be diſſolved; it is evident that at this time or in the return they always die.

A thorow Recovery.

§ LXXVI. It is likewiſe evident from what is ſaid, that a thorow recovery either naturally happening, or brought about by Medicines, is by a thorow diſſolution of this Lentor, the correcting the Viſcera that ſupply it, and a total excluſion of it, out of the Blood, and by this no returns happen as formerly.

§ LXXVII. Thus having finiſhed the Diſeaſes that eſpecially happen by the inconvenience of their Lodging, producing a defect in Tranſpiration and the Diſeaſes that commonly come from that: We proceed to other Conſiderations laid down in the Beginning of this Book. By the by, it

muſt be obſerved that the different Appearances of thoſe Diſeaſes will be various upon the account of their Moderate, or Immoderate, uſe of ſtrong Liquors. For if we paſs a little Reflection upon what was ſaid concerning their Salt Victuals, Cheeſe, and Bisket, it will not be difficult to defend their Innocent *Saturday* Evening Cabals, where they remember their Wives, while they keep within bounds. The Temperate uſe of Liquors, more Spiritous than ſmall Beer, ſeems ſometimes neceſſary to give the requiſite Force to protrude their groſs Chyle, and to convert it into Blood, proper for Circulation in every part of the Body: So that while this Clubing of Meſs-Mates keeps tolerably moderate, it may lawfully be Encouraged; for not only the general Advantage here hinted is obtained, but it is the ready way to keep them from falling into the *Dropſie*, *Jandice*, and *Melancholia Hypochondriaca*. But

to ſpeak truth for the honeſt Sailors, they ſeldom fail in this point ſo long as they can Exchange baſe Metal for generous Spirit of Wine: But are oftner very ill Husbands, exchanging all at once, and deſtroying the whole purchaſe at a Down-ſitting; ſo that being got Drunk, and not being able to crawl into their Hammocks, they ſpend the Night faſt aſleep upon the cold Deck, and contract thoſe Sickneſſes that attend an Interuption of Perſpiration, Only their Blood being full of the Spirits of this Liquor, they do not lye ſo long under the Coldneſs that begins all Fevers, as in Fevers otherwiſe gotten; for the ſmall parts of the Liquor ſooner break and divide the Viſcid parts of Blood than when it is without them; and becauſe of the Comminution of this Lentor, the ſmall parts of the Blood are ſet at Liberty, and the heat felt over all the Body: Therefore when the Perſpiration is Interupted, and the Blood full

of

of theſe Spirits, the Attrition and Comminution will be ſooner perform'd, *i. e.* the Coldneſs will be ſooner at an end, and ſo the Feveriſh heat begin a great deal the ſooner, which, according to the conſtitution and age of the Patient, the time of the Year, and way of Cure, will make the Diſeaſe of greater difficulty.

§ LXXVIII. The next thing propoſed, is the conſideration about the difference that is between theſe Diſeaſes thus related, and theſe, or others that happen in hotter Countries. It is evident by what is ſaid, in the Preface, how much this compariſon is wanted, and how ſerviceable a diſcovery it would prove: Nay the relation inſerted there, may convince any one that I am fully maſter of that affair. But I ſhall content my ſelf with giving this account of what was under my Obſervation, and leave the other part, obtained only by Speculation, to thoſe Phyſicians

that have been in theſe Countries, or thoſe from whom the preſent Counſel of the Admiralty will more graciouſly accept it, Judging it altogether improper to ſerve any people againſt their Inclination, and therefore I ſhall reſerve this account to a more favourable Opportunity. In the mean time, it is certain that the Lodging, Victualling and way of Living being the very ſame in both places, theſe different Effects are altogether owing to the Air in which they Live, as it may concur with other cauſes in producing theſe Diſeaſes. We know very ſufficiently the difference of Air there and at home, in their heat and weight, and only by Diſcovering how Air of ſuch qualities does concur with the other Cauſes, I found the progreſs of their Diſeaſes with, and without, Medicins as is ſaid. But I am convinced that this matter does admit of ſuch certainty, as Surgeons of an indifferent Education might be capable to Practiſe

in

in thoſe Fevers, in the E. and W. Indies with as great Succeſs, as Phyſicians have commonly in *England*, and other temperate Countries. Nay further, I am ſure it is not altogether impoſſible to find out ſuch means, whereby Seamen might not be ſo liable to thoſe Diſtempers, or a Method of preventing might be contrived, which muſt be of the laſt Conſequence to any Nation that is not overſtock'd with Seamen.

§ LXXIX. But as for thoſe ſickneſſes that are not peculiar to the Sea, but are alſo common to the Land, I ſhall conſider them as interloping Diſeaſes in the ſecond part of this Treatiſe; where I am to lay down the Indications for, and Method of Cure: but before I leave this part, I ſhall give a ſhort account why, in this explication, I have not us'd the accuſtomed ſtory of *Poyſon*, the *Chymical Principles*, and of *Acid* and *Alcali*; and then proceed to the obſervations

Why I have neglected the common ſtories of Poyſon, &c.

tions themſelves, which make the *ſecond* Part.

Why Poyſon.

§ LXXX. And firſt, as to that poyſon which ſome aſſert to be in the Spirits fit to produce theſe Fevers, 'tis altogether unexplain'd by its Patrons, and is very unintelligible as yet; neither is it allowable for us to run ſtraight to the animal Spirits for the ſolution of every Phenomenon, and to neglect the Blood it ſelf, of which they are made, and which muſt be always ſuppoſed in demonſtrating their nature; and truly there can be nothing found in the moſt malignant Fevers, that does *really* diſtinguiſh them from any other continued Fever; for the whole difference that can be alledged, is *ad magis & minus*, and I doubt not but that they may be naturally accounted for, by a greater or leſſer quantity of this Lentor, its greater or leſſer coheſion, and its different ſolution. 'Tis better, then, to give laws to that boundleſs and unaccountable

poyſon

poyſon, ſo much ſpoken of by ſome Authors, tho' ſeldom more than by the name, without ſo much as its counter-poyſon for a Cure, which would have been very neceſſary, conſidering how a great difference there is betwixt poyſons themſelves. But what ſeems the ſtrangeſt and moſt ſurprizing to me is, that if in a Family of ten or a dozen people, there is one whom we ſhould determine to have the beſt Blood, to be of the moſt Athletick and Robuſt habit of Body, before the invaſion of this Malignant Fever; yet this one ſhall catch it the ſooneſt, and run the greateſt Riſque in his Life; or ſhall have it in the moſt Malignant manner, while the more ſickly, aged, *&c.* ſhall never feel it, or if he does, he recovers without any great care or pains. But in ſhort thoſe Fevers that are commonly accounted *malignant*, are not really different from the continued Fevers; and that they have their beginning

from

from the ſame Lentor that cauſes other Fevers may be evident from this; that the moſt of thoſe malignant Fevers ſucceed theſe very Fevers, both Quotidian and Tertian, in which there are greater quantities of heat and humidity, that diſſolve this Lentor; tho' they come not ſo frequently after quartans, in which the viſcidity is greater, and the warm parts more confin'd: So a ſingle intermitting Fever eaſily degenerates into two intermitting Fevers, coming in the ſame time that the former did; they into two continual Fevers *per ſubintrantiam*, and they into one which is quickly call'd malignant. And ſince all theſe changes are only certain degrees of this Lentor, as 'tis more or leſs tenacious, and ſticks to the Veſſels; 'tis evident, that no more can be ſaid, but that the laſt of all theſe Fevers ſucceeding in that order, or the *formidable* malignant Fever, is of the very ſame ſtock with the reſt: And

ſince

ſince they proceed gradually, from the ſmaller to the gerater degrees of this Lentor, this can only be ſaid to have its time in a greater degree of the Lentor, as I intimated before.

§ LXXXI. As for the Chymical principles, they are ſo far from being ſimple, and having the requiſite properties of Principles, as one of the moſt learned Chymiſts has demonſtrated, that 'tis ſtrange any Man ſhould adviſe us to aſſume propoſitions ſo unknown, in order to the explaining of Sciences, that have ſo uſeful and neceſſary a practice; they think indeed, if they can tell us a Story of the diſſolution of ſome Bodies, and give but a groſs gueſs at the ſtrength of their different *menſtrua*, they may very well undertake the explication of all the Phenomena in nature, by their different Solutions and Coagulations, before they have found out their univerſal diſſolvent, which might prove of very great uſe; but they

Why the Chymical Principles

they muſt commit infinite miſtakes even in this, ſince they are intirely Ignorant of thoſe Powers, that give *Fluidity*, *Solidity*, *Motion* and *Reſt* to any Body, becauſe their *Fermentations*, *Solutions* and *Coagulations* depend upon them, as their frequent diſappointments in their repeated Practices muſt convince them; if the Impudence, as well as Ignorance, of the common Chymiſts were not Incorrigible: And we ſhall find as little truth or Solidity in their way of Arguing concerning the ſtrength of their *Menſtrua*, If we purſue their ordinary way of reaſoning; ſo little do they know of their own fam'd and belov'd *Menſtrua*. For when they aſſert that ſuch a *Menſtruum* is corroſive, and produces ſuch effects by this Power, 'tis evident that *Corroſiveneſs* being the productive Cauſe of thoſe effects, then by adding ſomewhat elſe that is Corroſive, it ſhould produce them better; whereas the contrary is ſo well known, that I ſhou'd not allege any Proof or Inſtance, if I were

were not convinc'd they will deny what they daily ſee. Let us then take *Aqua fortis*, which they ſay, is able to corrode Silver, and diſſolve it into the moſt minute Atoms by the corrording power it has from the Vitriol and Allom, of which it is made; then, by adding another thing to the compoſition, that is equally ſharp and corroſive, if not more, the *Menſtruum* ſhould in all reaſon act the more powerfully; and therefore by adding *Sal-Armoniac*, which is a great deal more Corroſive than Allom or Vitriol, it ſhould ſtill corrode the Silver more, which is ſo far from being true, that it is not able to make the leaſt impreſſion upon it, unleſs the plate be extremely thin, and red hot, and not much then. And that Nitre and Sulphur, which is ſo much inflam'd in the Blood, when we have a Fever; mixt together and burnt, make up the *Sal prunella*, ſo much us'd in curing Inflamations and Fevers; but of this

this more hereafter: And I ſhall only add, that if the Chymical principles were allowed to have half the certainty their Authors pretend to, yet they never made them of uſe enough to us, ſince they were never able to give ſuch Laws, by which we may have any certainty of the degrees and Application of Motion in their fermentation and *Menſtrua*: and ſince it is motion in its different Velocities, Contacts and Occurrences, with other Bodies in a different ſtate, and in their ſeveral parts, that Conſtitutes all the variety in the known World; our work ſhould be to enquire into that, and ſo we ſhould be better able to judge firmly of things, tho' we muſt not debar our ſelves of any help, that may aſſiſt us in this diſquiſition, And truly, when a Chymiſt ſtumbles upon two or more Liquors that make a curious Colour when mixt, he can ſay juſt as much of it, as of a White, Red, or Yellow

Riband

Riband and no more ; he can, perhaps, tell you how he made his Liquors, but how by their combination they came to give this colour, he can give no better account than the Dyer of his Ribands; ſo that while we advance no further, we are like to make no wonderful progreſs in the knowledge of things. But becauſe the Chymiſts tell us, that a Fever is nothing but too great a quantity of Sulphur in the Blood, or that too much exalted; let us enquire into its power of doing this and producing that effect. And that we may proceed with more order and exactneſs, let us ſuppoſe this Rule, which is admitted by all the Philoſophers as moſt agreeable to obſervations about nature; *viz.* If any thing be ſuppos'd as a cauſe, and the effect always follows without the help of any thing elſe: we may, without doubting, aſſert and believe that to be the productive cauſe of this effect: And on

the contrary, if the pretended cauſe be there, and the effect follows not upon it; or if that which is ſaid to be the effect, be preſent without the cauſe, then that cauſe never produces that effect. And therefore ſince adding of Sulphurous Medicins to the Blood will not only heighten the power of the ſulphur in the Blood, but produce more; 'tis plain that upon that addition we muſt always have a Fever; yet after the drinking ſalt and ſulphurous Bath-waters, which are intimately mixt with the Blood, and diſperſed over all the Body, we ſee no ſuch feveriſh fits produc'd. Yea, in a Suppreſſion of Urine in the Stone, the ſharp and pungent Ammonical ſalts of the Urine, ſhould infect the maſs of the Blood, and produce thoſe feveriſh effects, which nevertheleſs are ſeldom obſerv'd to hapen, and may then be more properly produced by other Cauſes. Beſides, we know that we can pour a drachm or two of

Oyl

Oyl of Sulphur immediately into the Blood of a live Dog by his Blood Veſſels; and after the Veſſel, into which it is injected, is bound up with a moan or two, and the Dog ſet at liberty; he is ſo free and ſafe from any Fever, that he skips about full of health, and eats up whatever comes in his way for his purpoſe: And therefore if the Blood, when altered with ſo great a quantity of Salt and Oyl of Sulphur; is not in the leaſt Feveriſh; we muſt acknowledge that an alteration made in the Blood, by Saline and Sulphurous Juices and Spirits, is not the productive cauſe of a Fever,

§ LXXXII. And laſtly, to diſcredit the principle of Acid and Alkali, it would be ſufficient to obſerve, that they who ſet up for it have not let us know what it is, when they tell us, that an Acid is that which can ferment with an Alkali; and we know, that ſome Medicins both Simple and

Why Acid and Alkali.

Compounded, ferment with ſuch as are declar'd Acids, and then with others that are determined to be Alkalies; and it might ſeem very needleſs to alledge their ridiculous Evaſion but that they'll mumble it over, at the reading of the objection; and 'tis this, that that Medicine contains ſome Acid and ſome Alkali in its parts, by which, in theſe two reſpects, it may ferment with both; and ſo by this Settlement they make neither Acid nor Alkali, becauſe the bodies are mixt, and all mixt Bodies partake and ſhare of all the Principles, whatever they be, according to the Philoſophers, and are ſaid to be of this or that nature, Acid or Alkali, which ever predominates, and bears the greateſt ſhare in the Compoſition; and if they be ſuppos'd equal, our noble principles muſt Scuffle for the Maſtery. This being ſaid in General, we may find them extreamly puzzled in accounting for the Actions of their Acids in ſolving

ving the moſt ordinary Phæno-mena; and I doubt very much if the Patrons of this Hypotheſis are ſo certain as they ſuppoſe, that at leaſt, when they can manifeſtly Diſcover an Acid, *viz.* in a Body, the operation of that Body upon another (which they Judge to abound with an Alkali) muſt be the effect of a Conflict between theſe two Jarring Principles: For an Acid Body may do many things not ſimply as an Acid, but on the ſcore of ſome other Powers that Body may have. Thus when ſome Chymiſts ſee an Acid *Menſtruum*, as aqua fort. Spirit of Salt, Oyl of Vitriol *&c.* diſſolve Iron they preſently aſcribe the effect to an Acidity of the Liquors, whereas well dephlegm'd Urinous Spirits (which they hold to have a great Antipathy to Acids) will readily enough diſſolve crude Iron, and ſtore of them ev'n in the Cold. And even tho' this were partly allow'd, we might ſufficiently diſprove this Hypotheſis, by

conſidering any one Diſeaſe; where we may find a vaſt number of not only Antecedent cauſes, but other ſymptoms Enumerated by Medicinal Writers, that can never be accounted for, either by an Acid or Alkali. Yea, ſo much are its Patrons in the dark about their principle, that we find them daily betray'd into the greateſt abſurdities, for inſtance its great ſtickler Dr. *Blankard*, who is follow'd by all the reſt, has expreſly declar'd, in a whole ſyſtem of practice he compos'd according to thoſe Principles, that all Diſeaſes proceed from the faultineſs of the Acid only, which is the moſt ridiculous thing can be ſaid in a few words: For ſuppoſing, that Acids and Alkalies are the true Ingredients or Components of Bodies, and that they concurr as Principles in their Action, and bear contre-parts in this Action; then, becauſe the Influence of either upon the other, may be Augmented, diminiſhed or loſt, and

this

this is to be faulty or vitious; therefore 'tis Evident, that either of 'em may have its defects, and conſequently that the blame ſhould not be entirely laid upon one. But in diverſe Caſes, this Hypotheſis is either needleſs or uſeleſs to explain the Phænomena of qualities, becauſe there are ſeveral of theſe produc'd, deſtroy'd or alter'd, where there does not appear any Acceſſion, Receſs, or change of either of thoſe two Principles, as when Fluid water by beating is turn'd into more conſiſtent Froth, and when tranſparent Red Coral is, barely by being beaten and finely ſifted, changed into a white and opacous Powder, and laſtly, when a thin enough leaf of Gold appears green being held between the light and the Eye.

§ LXXXIII. And if the maintainers of this Hypotheſis pretend to conſtitute but two ſimple Principles, yet they are fain to make I know not how many differing ſorts of Acids, beſides ſome varie-

ty of Alkalies, becauſe as there are ſomethings wherein Acids, and Alkalies agree, ſo there are ſeveral things wherein Salts of the ſame Denomination do widely differ. As ſome Alkalies, according to thoſe I reaſon with, are fixt like Salt of Tartar, that will endure the Violence of the Fire, others like Salt of Urine or Harts-horn, are exceeding Fugitive, and will be driven up with a ſcarce ſenſible degree of Heat: Some, as Salt of Tartar, will precipitate the Solution of Sublimate into an Orange-Tawny; others as Spirit of Blood and Harts-horn, precipitate ſuch ſolution into a milky ſubſtance. Oyl of Tartar will very ſlowly operate upon filings of Copper, which Spirit of Urine and Harts horn will readily diſſolve in the Fire. And among Acids themſelves the difference is no leſs if not much greater. Some of them will diſſolve Bodies that others will not, as Aq. fort. will diſſolve Silver and Mercury, but leave Gold untouch'd; or as Aq. Reg. tho'

made

made without Sal Armoniack, that diſſolves Gold readily, will diſſolve Mercury but Scurvily, and Silver not at all : And this may happen, when the *Menſtruum* that will not diſſolve the Body is reputed much ſtronger than that which does, as dephlegm'd Spirit of Vinegar will diſſolve Lead, reduc'd to minute parts, in the Cold ; which is an effect that Chymiſts are not wont to expect from Spirit of Salt. Nay, which is more, one Acid will precipitate what another has diſſolved, and *e contra* ; as Spirit of Salt will precipitate better out of Spirit of Nitre. And I found Oil of Vitriol to precipitate Bodies of divers kinds, Minerals and others out of ſome Acid *Menſtrua*, particularly Spirit of Vinegar. By all which I am induc'd to queſtion whether the Acidum and Alkali, we are ſpeaking of, have the ſimplicity that Philoſophy requires in principles : and ſhall be kept from wondering, if others ſhall think it as free for them to conſtitute other

Prin-

Principles, as 'tis for the learned Men I reaſon with, to pitch upon Acid and Alkali.

§ LXXXIV. I hope by this time, no reaſonable Perſon will cenſure me, for not ſpeaking a Language, which neither I nor its Admirers can underſtand, when I declare my thoughts about our Seaſickneſſes; which I have endeavour'd to diſpatch with all the Shortneſs, Plainneſs, and Accuracy, I am capable of.

The End of the Firſt Part.

PART II.

Hiſtorical Obſervations of the Sickneſſes of the Fleet.

IF, in relating our Obſervations, I ſhould oblige my ſelf to give but the names of thoſe I have viſited, ſince my concern in the Fleet, they would make up a Book as large as theſe obſervations ought to be: And truly, conſidering the uncertainty of the Event, either thro' the negligence of ſome Surgeons in purſuing directions, or ſometimes the ſame Medicins not being given according to order; it would prove of no uſe to any Body to be inform'd of ſuch a practice; and therefore I ſhall confine my

my ſelf to ſuch Obſervations, I made on Board the ſame Ships I was in my ſelf, or in the Hoſpital, by the help of Mr. *Mackie*, Mr. *Chapman*, Mr. *Campbell*, Mr. *Connel*, carefull and Ingenious Surgeons.

Obſervations I.

Obſerv. I. *Iſaac Pett* was taken ill, on board his Majeſties Ship the *Elizabeth*, with a heavineſs in his Head, pain in his Bones and Thorax, want of appetite, and a ſudden weakneſs; his Pulſe was depreſs'd, and ſlower by 8 or 10 ſtrokes in a minute; about 30 hours after, his Pulſe was more free and quick, he had a great drought, and his tongue was very rough

Hints for Curing Fevers. In the Cure of Fevers, we know by Experience that thoſe people, that are left to themſelves, and take no Medicins, ſhake off their Fever by *Sweating*, a *Looſeneſs*, a *Hemorrhage*, *Diabetes*, *&c.* Which gave

gave the firſt intimation to Practitioners to provoke *Sweat* (ſome with internal Medicins, others in Baths, and the *Iriſh* of old by lapping themſelves up in Blankets, thoroughly wet in cold water) to give *Glyſters* (for farther their Hellebor, Aloes and Scammony would not allow them to go) to *open* a *Vein* or an *Artery* with Lancets, or by Cupping with Glaſſes or Horns (which ſome uſe to this day) to give Medicins that *provoke Urine, &c.* But even all theſe have been diſprov'd in part, in ſome one place of the World or another; by obſerving, *viz.* In *Bleeding*, that becauſe it is more frequently us'd in *France* and *Spain* than in *Italy*, they conclude, that if Bleeding contributed notably to promote the Cure of Fevers; then, where that is practiſed, more would recover, than where it is neglected; and conſequently, that if they did recover their Patients in *Italy* with as great ſucceſs as in

France

France or *Spain*, Bleeding may be reckon'd indifferent: And in *Turkey*, where they cure their violent continual Fevers (as Phyſicians call them) with *Abſtinence* and *Sherbett*, they condemn us for our frequent uſe of Diaphoretick and Sudorifick medicins and we return the charge upon them, without any further conſideration. But which is yet worſe, Men are apt to give up their reaſon, to ſuch a degree, that they obſtinately retain that ſort of practice; in which they were bred, wherever they come, and will ſtifly and poſitively maintain that to be the only ſafe method, and all others fatal and pernicious. But thoſe Countries too, that are ſettled to one ſort of practice, ſo ſoon as by ſome alteration in the Seaſon, (perhaps to the better) and other Circumſtances of Curing, they find their way not to anſwer, and to be more uncertain (if any thing can be more ſo than a ſet practice;) then the Diſeaſe is *malig-*

The reaſon of an unſucceſsful practice.

malignant, quite new, Mankind chang'd, &c. Which would make people believe, that whatever certainty there may be in Medicine, yet there is little or none in the Cure of Fevers. This indeed is candidly acknowledged by the moſt Skliful and Learned Phyſicians in every Age; and tho' the ſucceſs ſeems to favour the uſe of ſome principle Medicins, yet at beſt, this is a caſual and fallacious proof: For ſome Fevers are ſometimes ſo ſafe, that the ſick Perſon recovers without any help of the Phyſician, or whether he has practiſed well and according to the Rules of Art, or wrong and knaviſhly: but beſides all theſe miſtakes, there is ſtill another more conſiderable one of which very many are guilty; and that is, becauſe we ſee, that all theſe different ways of practice, are and have been ſucceſsful in different Ages and Countries; therefore we may uſe them promiſcuouſly, and all at once: Whereas, the

Conſe-

Conſequence were more juſt, that ſince Medicins of different Operations and of different Powers are employed with equal Succeſs, obſervations founded on ſo great uncertainties are of little uſe; and that our Induſtry were better beſtowed in diſcovering thoſe proper circumſtances in Fevers, when Methods and Medicins of one ſort are like to produce better effects than any other that are commonly uſed, tho' they have their excellency too, on other occaſions. Then our Succeſſes ſhould be conform to our expectations, then were there a place for prognoſticks, neither ſhould we think it ſufficient, nor that we had done our Duty, when we employ any one, or number, of thoſe Medicins experience ſeems to have put into our hands, for curing Fevers. By this it appears that an indifferent uſe of thoſe medicins, given in Fevers, is unreaſonable, and cannot have any good effects.

But

But to return to our Subject; if we reflect upon the Theory demonstrated in the first part of this, 'twill be Evident, that because this Disease proceeds always, with us at least, from an *Interuption* of *Perspiration*, and because the mass of Blood is corrupted and vitiated, by the quantity of the steams thus detain'd, that the genuine and natural way of curing this, is by Evacuation; either according to the quantity of the detain'd Humours, or at least in such a proportion, as may set the parts of the Blood at greater Liberty; and so, because the different Secretions depend upon the different degrees of the Bloods velocity, when the Blood acquires a velocity like that which is natural, it will also have natural Secretions, and in this manner be reduc'd to its natural Contact and Cohesion, *i. e.* it will be propell'd in its ordinary and natural way, and the Patient will recover his health; because health

What our thoughts are about the former intimations.

is nothing elſe but the moſt natural circulation of the Blood. Now ſince Evacuation thus perform'd anſwers our Deſigns in Curing Fevers, both by leſſening the quantity and altering the maſs, 'tis certain, that all the conſequences drawn from the former intimations are juſt, and may be put in practice upon *reaſonable* occaſions. The next queſtion may be, which of all the mentioned ways may be moſt natural and convenient for a general Practice: And ſince *Bleeding*, *Sweating*, and *Purging*, are moſt commonly received among us, I ſhall enquire which of theſe we may moſt generally depend upon.

What of Bleeding, Sweating and Purging.

And firſt, ſince both they that allow of Sweating, and they who recommend Purging for the moſt general Practice, affirm that Bleeding is agreeable for both their deſigns, there is no occaſion left for diſputing about the Neceſſity or Uſefulneſs of that Operation, if the neceſſary cautions be obſerv'd with

regard

regard to the quantity of Blood that ought to be taken away, ſo that the controverſy lyes intirely betwixt Sweating and Purging, which I ſhall endeavour to determine with all the impartiality imaginable, and that by enumerating the advantages and inconveniences of both. And firſt, becauſe the Secretions, by the Pores, is double of all the other Secretions in the reſt of the Body; 'tis plain, where this ſecretion can be perform'd, that there may be a greater quantity ſeparated from the Blood, in a certain time, than may be by all the other ways together in the ſame ſpace of time; ſo that for that reaſon it may ſeem the moſt convenient and agreeable; yet ſince it muſt be excited by Medicins, that ſupply the Blood with Spirits, and conſequently unlock the Spirits of the Blood, that are confin'd by its viſcidity; if thoſe Medicins be given to ſick people, that are young, have an abundance of Blood, and that

very rich, it is plain, their operation muſt be ſuch in this Blood, that its Velocity will be much increaſed and Secretions will not be made; ſo the Fever will be driven on to great exceſſes, as we ſee but too often in our daily practice; and therefore this practice can only agree with thoſe that can have the coheſion of their Blood altered, as well as ſome of its quantity evacuated; which is very neceſſary to be known, before this practiſe is ſo generally recommended. It is not neceſſary for me to give my opinion about the other two ways of provoking Sweat, ſince they are not in uſe with us; yet I think it will nor be far from the purpoſe, to remember you of an account Dr. *Willis* gives us, in his Book of Fevers, of a young Woman that lay ill, and was his Patient, and for whom he had preſcrib'd a great many Medicins, that might put an end to her Fever by Sweating, but all to no purpoſe;

and

and at laſt, I think, he gave her two Drachms of the Spirit of Hartshorn, but nothing like Sweating appear'd: On the contrary, her *Pulſe* was *higher*, ſhe was very *hot* and *delirous*; and among the reſt of her idle talk, being doubtleſs incited by an extraordinary drought, ſhe deſir'd to go a ſwimming, and up ſhe got for her Journey; but was kept in, till her friends reſolving to humour her, reſolved to carry her to the water; and accordingly, they not living far from theRiver, carry'd her down (whether with the Doctors conſent I remember not) and when they had ſecured her from ſinking, or going too far out of their reach, at length threw her into the water; and after ſhe was brought out again, was put to bed, where ſhe Sweat off her Fever. Some ſuch like caſes happen very often to our Sailors, who, in the time they are delirous or have Calentures (this word our Surgeons uſe for violent

Fevers, yet 'tis only a general word in *Spain* for a Fever) when lying in their Hammocks in a calm Summers day, they ſee the Sea thro' the Gun-Ports very plain and ſmooth, and imagining it to be a Green Meadow, get up a walking, and fall into the Sea, if they are not ſtopt in their way; but if they get at laſt into their Hammocks, they ſweat very Plentifully, and ſhake off their Fever. I do take notice of theſe Inſtances, with this purpoſe, that we may be ſet a thinking what caſe of a Continual Fever it may be, when this way of provoking Sweat proves ſo Beneficial, and this being known, we may procure Sweating this way, or imitate this operationof Nature by other like means that are then more Convenient; for beſides improving our ſelves by great numbers of ſuch examples, we at laſt raiſe the Theory and practiſe of Fevers to great certainty, and to the beſt advantage.

Upon

Upon the other hand, if purging Medicins can Evacuate as much out of the Blood, as the moles that's detain'd amounts to without heightening or not conſiderably the motion of the Blood; then that will be a more certain Practice, and no leſs reaſonable than the other. Now, it has been ſuppoſed that, in Fevers, the quantity of Blood, more than what is natural, may be Six, Eight, or Ten Pound. And ſince it is agreeable with our daily obſervation, that we can give Medicins that Evacuate, by Stool, a greater quantity without heating the Body, or that, in a little time, any Aſſignable quantity may be diſcharged that way, therefore 'tis very Evident that the Adminiſtring of Medicins that Evacuate by Stool, will be a more certain and ſafe way of curing Fevers. But whatever may be ſaid on this Subject, I admire how that Practice can be thought agreeable at Sea, where there is

ſo piercing and ſharp an Air for, at leaſt, eight Months of the year, that their operation muſt generally be eluded by this very coldneſs. But, before we proceed to the mentioned Caſe of the ſick perſon, it is neceſſary to conſider another adminiſtration for the cure of a Fever, and that ſo much depended on in the moſt deſperate caſes, that Phyſicians have commonly their laſt recourſe to it. This is nothing elſe than applying Bliſtering Plaiſters, which very often produce notable good effects, when the only viſible one of this application is a collected quantity of watry humour between the Skin and Scarf-skin, whereby the Fever is much moderated, or has a finiſhing criſis in a day or two, and often ſooner.

Phil. Tranſ. N° 252. p. 161.

I have already enquired particularly into the operation of a bliſter, when it cures a Fever; by conſidering the conſequence of having a quantity of watry humour thus

thus diſcharged out of the Blood, as alſo what may happen by the Pain, and particles of Cantharides that get into the Blood while this Water is ooſing out of the Veſſels. From all which it did appear, that none of theſe contribute much in producing this ſtupendous good effect, we commonly find is brought about by applying a Bliſter, and that this advantage is only obtained by the Wounds the particles of Cantharides make in Branches of the eight pair of Nerves that run into the Heart. Then theſe Corollaries were deduced. 1. That the Operation of a Bliſter is great and ſuddain. 2. That the Wounding of this Nerve, or a Branch of it, is ſo abſolutely neceſſary for curing a Delirium and a Fever, that whatſoever miſchief the applying of vaſt numbers of Bliſters over all the Body may do, yet the main end is neglected, if you forget a large one high on the Nap of the Neck. 3. That if there is no Veſication

after

after the laying on a ſtrong plaiſter, it neceſſarily ſignifies a new and prodigious hardneſs in the Skin and Veſſels, and a thickning of the Blood for a further total ſtop.

This one diſcourſe do's ſufficiently anſwer all the experiences about Bliſtering in this part of the World; and if theſe uſefull Diſcourſes (firſt begun by the advice of the Learned and Virtuous Mr. *Bridgman*, and diſcontinued by his lamented Death) had been kept up for that Year, I did intend to have my ſecond Lecture concerning the uſes and abuſes of Bliſters, by which it would have appeared that Bliſters have their proper times for being uſed to the greateſt advantage, and that no hurt may be produced by them. From this diſcourſe the experiences of Bliſters in different Countries, and on ſome Men, among our ſelves, would have been fully accounted for. It might have been made appear, why this ſucceſs is not always equally ſudden; why the

the Learned *Baglivi* found them prejudicial in *Rome*, and ſome other people, in other Countries, have found the ſame; and yet, how rarely they produce ſuch effects here, howſoever impertinently they are often uſed; and ſo much out of purpoſe, that their good ſucceſs is often in danger of being call'd in queſtion.

The preſent account anſwering ſufficiently the deſign of this Book, it is not needful that I ſhould proceed in this diſcourſe, howſoever important: It is enough that the times of Bliſtering are known, and that a proper opportunity is only wanting for their being made publick; and therefore to make the beſt uſe of what is already known, we go directly to the practical part.

Our mentioned Patient was bled, becauſe bleeding, not only reduces this extraordinary quantity to a quantity that is natural, or very near it; but alſo it may diſmiſs theſe

Spirits

Spirits that are confined by the Lentor. Wherefore he was let twelve Ounces of Blood, then I ordered him ſix grains of *Tartarus Emeticus* to be taken next Morning; with this purpoſe that there might be no conveyance of any thing from the ſtomach, that might confirm the coheſion of the ſtagnating parts, but might even break and divide thoſe that were already in a ſtagnating condition; for which, the reaſons will appear hereafter. Having thus been let blood in one day about ten a Clock in the Morning, and next day his Vomit working very well; about four a Clock in the Afternoon of that next day, his Pulſe was at leaſt ten or twelve ſtrokes higher than naturall, and therefore he took a doſe of the following Powder, to reſtrain that growing motion about the Evening.

℞ *ocul. canc.* ppt. ℥iij. *ſal. prunel.* ℥ ß. *crem. Tart.* ℥j *M.ac Divid. in* IX. *part. æq. Capiat unam ter in die.*

All

All the while he drunk as much Barley water, ſharpned with Vinegar, as he pleas'd; in purſuance of this deſign and after three days when his Powders were done, I preſcrib'd him the following powder to be taken next morning.

℞ *Pulver Cornach.* ʒ ſs *Tart. vitriolat. gr. v. M. ac Capiat cum debito regimine.* It purg'd him ſome eight or ten times very gently; he ſlept very well that night, and got rid of his Fever: But that he might recover his ſtrength the better, he eat nothing for three days but Burgoo, Water-gruel, and the like, and drunk ſix ounces of the *Decoctum amarum alterans* every morning for that time; all which he did with the deſired ſucceſs.

Obſervation II.

Shelborow Royden, in the ſame Ship, a Man of about thirty years of age, and of ſuch a conſtitution that has a Pulſe of ſixty ſtrokes,

or

or thereabouts, in a minute, was taken Ill with a pain in his head, a want of appetite, a ſudden weakneſs, a coſtiveneſs, a depreſs'd Pulſe, which grew more frequent the ſecond day, and then he was very hot, reſtleſs, and his tongue dry. I ordered him to be let Blood, for the reaſons I intimated before; and becauſe he had not gone to Stool for two or three days, I deſir'd he might have a Glyſter in the evening, that might purge him once or twice, and next morning ſix grains of *Tartarus Emeticus*, with which he vomited five times and purged twice; he was very eaſy after his vomiting his pains began to go off, and his Pulſe to beat a great deal quicker; on the third morning he took the firſt doſe of the following Powder.

℞ *ocul. cancr. ppt. vel pulver. teſtar. ovor non calcinat.* ℥ij *Sal prunel.* ℥jſs. *Sal Tart.* ℥ſs *aut* ℈ij. *M. ac divid. in* IX *part. æqua. ut capiat.*

capiat unam ter in die. Next morning after the taking all the doſes of this Powder, he was purged with that which follows.

℞ *Pulver. radic Jalapp.* ʒſs *Reſin. Jalap. gr.* iij. *Crem. Tart.* ʒj *M. ac capiat hora ſeptima matutina.*

During the whole progreſs of his ſickneſs I allow'd him the Barley Decoction acidulated, as before: And while he took the Powders, he had one or two Stools a day; and after his Purging Powder the Fever was perfectly vanquiſhed: But, that he might recover his ſtrength the ſooner, I order'd him twenty drops of *Elixir Proprietatis* in Barley-water for three or four days; and to begin to take them a day or two after his Fever was perfectly over.

Obſervation III.

Walter Griffin, a Man of five and twenty or ſix and twenty years, and of a bilious Conſtitution, was taken Obſerv. 3.

taken on the fifteenth of *June* laſt with a Shivering and Coldneſs, that laſted ten hours, his pulſe was depreſs'd, and he was troubl'd with pains over all his Body: The ſame evening he began to be hot; his Pulſe beat 90 times in a minute, and he had an inſatiable drought; about the time his Pulſe began to riſe, and his heat to encreaſe, he had a very large ſweating, but without any benefit.

He was let xii ounces of Blood that morning; on the 16th he took iv grains of the vomiting Tartar, by which he vomited ſix or ſeven times, and went thrice to *Stool*; and was a great deal eaſier the greateſt part of that day; on the 17th he begun to take a doſe of the Teſtaceous Powders I preſcrib'd, and continued till he had taken nine doſes: But on the 18th his Pulſe was very high, and beat more than a hundred in one minute, and he inclined to be delirous. And therefore I order'd him to be let ſixteen ounces

of

of Blood more, and to continue the uſe of the Powders: Only he took in the evening two grains of Camphire in that Doſe, and had a very good night; on the 19th he took his Powder without any addition, and the following Purgative on the 20th.

℞ *Decoct. Tamarind. amar. purgant. an* ℥iij. *Syr. de Rhamno* ℥j. *M.*

This purg'd him twelve times very eaſily, and ſo he got rid of his Fever: I order'd him all the time of his ſickneſs to drink as much of the following decoction as he pleas'd; and he drank at leaſt three quarts in ſome days,

℞ *radic. gramin.* ℥ij *hord. mund. M. j. Coq. l. a. in S. q. aq. font. ad* ℔ij *circa finem addendo paſſul. Maj. integr.* ℥iij. *Colatur. claræ affund. acet. acerrimi q. ſ. ad gratam aciditatem pro potu communi.*

Now, tho' by this method our Patients are ſpeedily recovered, and are never, or very little Dilirous; yet all the Winter, and in the be-

ginning of the Spring, (as I obſerv'd in viſiting the Fleet at *Black ſtakes*) the coldneſs laſts four or five days, tho' not ſuch a coldneſs as we feel in Agues; and therefore there muſt be a great deal more circumſpection us'd in Bleeding, ſometimes in a leſs, and ſometimes, tho' not ſo frequently, in a greater quantity; but this muſt be done with reſpect to the Patient's conſtitution and circumſtances, provided always, that the powers of the faculties be not leſſen'd; at this time too, 'tis ſometimes neceſſary to repeat the Powders and Purgatives a ſecond time, and ſometimes to take the following Powder, when the pains are more obſtinate and hard to be removed.

℞ *Ocul. cancr.* ℥ ß. *Antimon. diaphoret. ſal. Abſynth. an* ℈j. *M. ac Divid. in* 3 *part. æq. quas conſumat partitis vicibus eodem die.*

Obſervation

Obſervation IV.

William Richards, on Board the *Elizabeth*, being about 30 years of age, whoſe natural Pulſe beats 60 in a minute, was taken on the fifth of *July* laſt with a ſhivering, ſudden weakneſs, a want of Appetite, and pain in his Bones; then he grew hot, reſtleſs, had a great drought, and could not ſleep. He was let 12 ounces of blood on the 6th, by which his Pulſe was ſenſibly rais'd while he was a bleeding: he took vii grains of Emetick Tartar, and being well ply'd with thin Water-gruel, after his Vomit began to work, he Vomited five or ſix times, and went thrice to Stool, and was very quiet all that day: I gave him no Paregorick in the Evening, as I do in ſome other caſes, becauſe I conſtantly obſerve, that all Opiat Medicins heighten the Fever extreamly, and make the Patient ſooner Dilirous; Obſerv. 4.

and therefore he took nothing elſe that day: but on the 8th in the morning he began the teſtaceous Powders, of which I ordered nine doſes to be prepar'd and taken as before. In the latter part of the tenth day he had a great bleeding at the Noſe, and loſt about twenty ounces that way, tho' we had let him blood and vomited him before; and he had a Stool or two every day while he took his Powders; yet with this bleeding his Fever went off. He continu'd the Barley-decoction ſharpned with Vinegar for his ordinary Drink, and took the following Purge on the 14th in the Morning.

℞ *Decoct. amar. purgant.* ℥iv. *Syr. de Rhamn.* ℥ij. *aq. Theriacal.* ℥ſs. *M.*

This purg'd him five or ſix times very gently, and he recovered daily. *Note*, that his Pulſe was very high, and his face of a red and fiery colour before the Hemorrhage; which we did not very

very much endeavour to ſtop, tho' he bled a Pint.

Obſervation. V.

About the ſame time, when we had ſome very ſultry days, *John Wheeler*, in the ſame ſhip, about 38 years of age, was taken with a coldneſs, loſs of ſtrength, a want of appetite, and a nauſeating of his victuals; his Pulſe was depreſs'd and he had a pain in his breaſt: about 12 or 14 hours after came a violent heat, which made him very reſtleſs and dry. Obſerv. 5

I order'd him to be let nine ounces of blood on the 9th of *July*, and that evening he took a Bolus of the Conſerve of Wood-ſorrel and *Sal prunella*; next morning ſix grains of *Tartarus Emeticus*, which began to work half an hour after he had taken it, and he drank a large draught of thin Water-gruel after every fit of vomiting: He vomited ſix times had two Stools,

ſlept four hours after, and was much eaſier. On the 11th he begun the teſtaceous Powder, of which he had nine doſes for three days, three to be taken every day, all that time he went to ſtool once a day, and piſt a great deal; on the 14th he took nothing but the Decoction, I had ordered him for his ordinary Drink, and on the 15th he took the following Purge

℞ *Pulv. radic. Jalapp.* ℥ß *reſin. Jalapp. gr.* iij. *Crem. Tartar.* ℈i. *M.*

This Purgative gave him eight Stools, and had done working by 12 a clock, after which he found himſelf a great deal better, his drought abating, and his Pulſe more natural, he call'd for victuals, and eat a little Water-gruel; and that evening he loſt ſix or ſeven ounces of blood at his Noſe, and recovered daily.

Obſer-

Obſervation. VI.

I ſaw one *John Wallin* on board the Hoſpital Ship, who was put on Board her that day; he ſeem'd to have been a man of a very good habit of body; but his Blood running about like Lightning; his Pulſe beat 132 in a minute, he was very dry and delirous: he took that night Conſerve *Lujul.* ℥ß. *Sal. prunell.* ℈i. in a Bolus with v. grains of Camphire. I ordered a large bliſtering Plaiſter to be laid on the Nape of his Neck, and one behind each Ear; they roſe very well, and were removed next morning and the parts dreſt with the *Empl. de Melil. ſimpl.* and ſo he was freed from his Delirium, he reſted Indifferently well that night, and next day took this Powder. Obſerv. 6.

℞ *Qcul cancr. pptor. Sal. prunel. Pulver. rad. ſerpentar. virgnian. ā* ℥ß *M. ac divid. in* vi *p. æq. Capiat unam in die.*

Next day in the afternoon, a Glyſter was injected, which purg'd him thrice, and made him very eaſy and ſenſible; he drunk what he would of the following Decoction, and recover'd on Board.

℞ *Radic. acetoſ. Scorzoner,* ā ℥j *Hord. mundat. M.* j. *Coq. in ſ. q. aq font. ad Hordei crepituram, circa finem addendo Paſſul. Maj. integr.* ℥iij. *Colaturæ, per ſubſidentiam, clariſicatæ adde aceti acerrimi q. ſ. ad gratam aciditatem.*

Theſe, by the bye, are the fatal, but almoſt perpetual, conſequences of a Diaphoretical practice in Fevers; eſpecially on young people, in a hot ſeaſon of the year, or a warm climate: for when they are put into a Sweat, they catch cold in the end, relapſe, take new doſes of *Diaſcordium*, and *Venice* Treacle, which (eſpecially when they are not allowed to drink liberally) diſſipate and deſtroy the Spirits and ſerum of of the Blood, that it cannot be kept fluid but by the hot

hot parts of thoſe Medicins, which break down the almoſt ſolid Blood, and ſupply animal Spirits to the laſt drop of Blood, and ſo dye unexpectedly as in Hectick Fevers; only their Fate is harder, and their Exit not ſo deliberate, for they are kept Mad and Delirous all the time of their Life; whereas the other dye in their ſenſes.

Obſervation VII.

At the ſame time I ſaw another who was put on Board there, on the 16th day of his Fever; his Pulſe did not beat above 37 ſtrokes in a Minute, he could not ſpeak, but Stared and made ſigns for Drink. That Night he had three ſuch Plaiſters, as I mentioned in the former Caſe, applied to his Neck, and behind his Ears. He took now and then two or three Spoonsfull of a Julep made of ℥vj of Barley Decoction, ℥ ſß of a Cordial Tinctur and ℥j of Syrup of Clove Obſerv 7.

Clove-Gilliflowers. I choſe to make uſe of this Tinctur, becauſe Mr. *Mackie* had it ready made, and he told me that its Compoſition was only Rad Sarpentar with ſome Cochineel, and a due quantity of Spirit of Wine. By theſe means, he recovered his Senſes a little, and then proceeded to take this Powder.

℞ *Ocul Cancr. pptor. Sal. prunel. ā* ℥j *pulv. rad. Serpentar. virginian.* ℥ß *M. ac Divid. in vi p. æq. Cap. unam bis in die*, he was better, while in the Ship: But ſhe being ordered for *England*, our Patient in a few days was put aſhore into the Sick-quarters at *Portſmouth* to the care of Dr. *Smith*, and the moſt Experienced Surgeon Mr. *Heart*, whoſe Learning and Knife have ſav'd the Lives of Thouſands of Seamen in that part, and who cannot be too much eſteemed for his great Services.

More

More Hiſtories of Cures, by this Method, might eaſily be adduced; but theſe having been faithfully related, without Confuſion, are ſufficient to convince us how far more preferable this Method is, than that which is managed by Sweating Medicins.

This Practice Succeeded for ſeveral years, and indeed generally, in all years; but in 1697 there happened a Fever, in many Ships, the Symptoms whereof were very Violent, and which proved Fatal in a few days. At that time, I happened to be a board the Dutcheſs on a Viſit to Captain *Leigh*, but was detained there for Ten days by very blowing Weather. This Ship was the moſt Sickly in all the Fleet, and had in all the time of my Abode, above an hundred of thoſe Sick Perſons, which I viſited once every day, and Mr. *Birkby* twice a day, beſides that his Mates were always Employed among this Crowd of Sick People.

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The firſt period of this Fever was off in the ſpace of Twelve hours commonly, then they were Furious and Delirous, they had a great Pulſe, and died in three days in that unmber, that we commonly Buried four or five in a Morning for the firſt three or four days. It affected me extreamly to ſee all our Endeavors ſo Baffled, that tho' many did recover yet this vaſt number of Dying perſons was very Melancholly. It is needleſs to ſhow how differently we attempted to ſtop this Mortality, by various applications and Doſes in the Mentioned method; eſpecially that I contrived a certain and ſpeedy Evacuation, by which the other ſick People in this and other Ships, were cured in as ſhort a time, as they commonly Died in before, notwithſtanding that in all the time I was a board the Dutcheſs, we had never fewer down than an hundred. I ſhall relate three or four Caſes of People Cured this way,

and

and then tell you the Medicin it ſelf.

Obſervation VIII.

Joſhua Manning, was taken ill the latter end of *July* on board the *Dutcheſs*, of a pain in his Head and Bones, and was very weak of a ſudden; his Pulſe was depreſs'd, he was Coſtive and had no Appetite. Obſerv. 8.

On *Friday* 24th, Mr. *Birkby*, who is a very expert and knowing Surgeon, let him twelve Ounces of Blood; next Morning he took 5 gr. of *Tartarus Emeticus*, which vomited him four times, and made him go twice to ſtool. That Evening he took ℥ ſß of Syrup of white Poppies; and on *Sunday* the 26th the Medicin, which made him ſweat from eight in the Morning till ſix in the Evening, with ſo good ſucceſs, that next day about Noon he ſat up in his Cabin, and in a day

or two, he was able to walk the Deck.

Obſervation IX.

Obſerv. 9. Mr. *Noble*, firſt Lieutenant of the ſame Ship, now Capt. *Noble*, was taken ill after the ſame manner, and Mr. *Birkby*, after he had let him Blood, and given him a vomit, and the Syrup. *de mecon* in the above-mentioned order, he gave him next morning the Medicin, which had ſo great ſucceſs, that in the After-noon he found himſelf ſo well that he thought he might put on his Cloaths, and go upon Deck; which he did, but catching Cold, he re-laps'd; I happen'd to be there the day after his relapſe, and finding him incline to be Delirous, I caus'd a Bliſter to be apply'd on the Nape of his Neck that evening, and next day ordered him to take the Medi-cin a ſecond time, which he did much to his Advantage, and being more

more careful for a day or two, he recovered very well.

Obſervation X.

Thomas Munden, a Kinſman of Sr. *John Munden*'s, who then Commanded the *London*, was taken ill, on *Tueſday July* 28th at Night, of a ſickneſs in his Stomach, an exquiſit pain in his Head, his Bones, and all his Joints; his Pulſe was a great deal lower than his natural Pulſe, and he had no deſire to Eat. Obſ. 10.

On *Wedneſday* he was let Blood; next day, had a Vomit, and the third, the Medicine; which produc'd a very good effect, to the ſatisfaction of us all. On *Saturday* he was very hungry, but I would allow him nothing but Water-gruel; and on *Sunday* he took Phyſick, and recover'd very faſt every day.

At the ſame time one of Mr. *Chapman*'s Mates was ill, was treated after the ſame way, and recover'd

ver'd as ſoon, tho' not quite ſo well, being a little warmer by the heat of the Cock-pit where he lay; ſo miſchievous is the leaſt extraordinary warmth in Fevers, tho' it has not hitherto been ſo well look'd into, but rather encourag'd.

Theſe are a few inſtances of ſeveral hundreds cured by this Method, and that ſo ſucceſsfully, that I do not think we had any who died. Howſoever, this ſucceſs was ſo conſpicuous, that moſt of the Ships in the Fleet had ſweating Cabins built in them. A number of Men was ſweated in thoſe Cabins every day, and turned out to their Births in the Evening, after the ſweating was over: that Evening the Cabin was waſhed and aired, and they that were to ſweat next day, had their Hammocks hung by the Cabin door the preceding Night.

The Medicin it ſelf was the moſt convenient I could find at that time; it was made of 3ſs *c-*

cul

ocul cancror Pptor. and three ſpoonsful of the beſt Vinegar: They were mixt, and this mixture was drank off before the fermentation, that happens in mixing, was over. The reaſon of all this is manifeſt, and the daily ſucceſs it has in the Fleet, is a conſtant Confirmation of the uſefulneſs of the Medicin.

It has its times when it may be uſed to the beſt Advantage; but I always found it produced its effects the beſt, with people that were delirous.

We proceed next to the diſeaſes that are moſt conſtant, and then to thoſe that interlope, or that are not ſo common.

Obſervation. XI.

Mr. *Nobs*, Purſer to the *Elizabeth*, was taken after Dinner with a coldneſs and trembling, which laſted ſix hours; his Pulſe was all the while extremely depreſs'd, and beat not above 40 ſtrokes in a minute; then came the warmth, which firſt begun about the trunk of his Body, and was afterwards Obſ. 11.

diffus'd over all. As it increaſed, he grew very reſtleſs, and his Pulſe became very quick and ſtrong; till at laſt he began to ſweat, and his heat abated proportionably as the ſweating increaſed. He was well for the reſt of that day, and all the next; but was troubled with a looſeneſs: the third day he was taken ill again, and ſuffered over all the former Symptoms.

The general cure.

'Tis very plain from what I ſaid in the firſt part of this Book, that That viſcid and ſlimy *Lentor*, which firſt ſtagnates in capillary Arteries, and then in theſe larger Veſſels, muſt be broken and divided, that it may be made a ſubſtance capable of being caried round the Body without ſtopping, or ſtagnating. And becauſe this Lentor has its ſupply from the *primæ viæ*, the Liver, or other *viſceræ* that are ſaid to ſeparate liquors, by ſome or all of theſe liquors being viſcid; we muſt endeavour to cut off and intercept that ſupply, and to break

and

and render fluid the liquors that are thus tough and viſcid. Now from which of all theſe this Lentor proceeds and is ſupply'd, is not always very evident, tho' ſometimes it may happen to be ſo. Let us firſt ſuppoſe then, that this ſupply comes wholly from the *primæ viæ*; and upon this ſuppoſition we may conclude, that thoſe things which empty the Stomach and Inteſtines of thoſe Impurities will do the buſineſs effectually. And becauſe a *Vomit* performs that work with the greateſt certainty, then a Vomit would be all that's Requiſit to compleat that Cure, and the more gentle it is, 'twould be more for the eaſe of the Patient and Satisfaction of the Phyſician. But I have proved before, that the other *viſcera* may diſcharge ſome of their Vitiated Liquors into the Blood, which not being chang'd into the perfect nature of the Blood, they Stagnate in the Capillary Arteries in that quantity and way, that are fit to produce the foregoing Phænomena.

And they being in ſuch Circumſtances, as make them fit to affect the Blood, 'tis Evident that thoſe faulty and vitious Humours muſt be broken and divided, that they may be fitted to Circulate with the Blood without ſtagnating; and that the Blood, which is thus affected, muſt be reduced to a ſtate of greater fluidity. If they had their Viſcidity from the *primæ viæ* that work could be done very eaſily; but 'tis certain that the Blood may be infinitly chang'd, without any fault in theſe firſt paſſages; and the *viſcera*, that are now affected, muſt have their Juices altered, or elſe they will ſtill be in a Condition to give a continual ſupply, ſuppoſing the Blood to be otherwiſe in a good Conditon. Now the only way that Liquors, which Stagnate in their Channels, can be propell'd and made fluid, is by ſome Power that may compreſs, break and divide the Liquors thus Stagnating; and becauſe this breaking

ing and dividing muſt be perform'd by ſomewhat, that contracts or violently compreſſes the obſtructed parts, and breaks the Stagnating Juices; and this can only be perform'd by the Contraction of the Muſcles, and their compreſſing the *viſcera*, that are near them; therefore the Moderate exerciſe of thoſe Muſcles will be very agreeable: But in our natural or voluntary Contractions, they have not that violence, that is neceſſary to make a ſufficient compreſſion fit to break and divide this Extraordinary Lentor. And ſince there are a great many Muſcles, that are obſtructed, and could have ſufficiently broken the Stagnating Liquors in the neighbouring *viſcera*, that cannot be moved and contracted by the Power of our *Will*; ſome way muſt be contriv'd to make ſuch a violent Contraction of thoſe Muſcles, eſpecially, that are able to compreſs the Neighbouring *viſcera*; and if we examine all the Conſequences that

attend the giving of any Medicin, we ſhall find none that Exerciſes more Muſcles, and that with greater violence than *Vomiting*; for not only the Muſcles of the *Thorax* and *Abdomen* are Contracted with a Prodigious force, and are able by their Contraction to compreſs the *Lungs*, *Stomach*, *Liver*, *Spleen*, or any thing that may be contained in them, and in all their Capacity, but even the whole Muſcles of the Body are affected; and therefore 'tis *Vomiting* only that can produce the required effect. Thus we have demonſtrated the way of cutting off the ſupply of this Lentor, that is made by the *primæ viæ* and the *viſcera*, that are ſaid to contain Liquors; ſo that if there were not ſuch a Seaſon of the year, in which the Viſcidity of the Blood is much promoted and Augmented, the Blood extreamly weakned and diſpirited with repeated paroxyſms or otherwiſe, this Diſeaſe might be Conquer'd by theſe very means. But when the Air is foggy, Moiſt, Cold, and the

Blood

Blood weak, we muſt have reſpect to that, if we will Cure our Patient; and ſuch things muſt be given, that may make the Blood richer, and maintain its Fluidity.

We have an infinite number of Medicins, that are ſaid to produce ſuch effects; but the long, tedious, and unſucceſsful practice of former Ages convinces us of the contrary. We heard indeed a great deal of ſpecifick Medicins of oppoſit Powers; but never ſaw any thing, that deſerv'd that name before the *Indian Bark*. We had Diaphoretical and Warming Medicins, that broke and divided the Blood, and made it more fluid for ſome time, but were ſo far from being able to keep it ſo, that on the contrary having deſtroyed the native Spirits and Serum of the Blood, they rendred it more apt to ſtagnate and to be obſtructed. The *Indian Bark* then, or *Jeſuits Powder*, being by daily experience that Specifick we deſir'd, we ought not to neglect it, tho' it was

not found in a *Matras*. But not to inſiſt upon experience in a thing, where we have ſo many reaſonable proofs, tho' *that*, of it ſelf, is a ſufficient proof: For we ſee how the ſinking and languiſhing Pulſe is rais'd by the taking of it, and that without any burning and extraordinary warmth; *i. e.* we find it has ſuch a power as is able to introduce a freer motion, which cannot be done but by freeing the confin'd Spirits, that they may be ſeparated in due time and proper place. And ſince this ſetting the Spirits at Liberty can only be performed by breaking the viſcid Blood, and this *Attrition* is the thing required; therefore the Jeſuits Powder, *Quinquina*, *&c.* anſwers our deſire, and gives us what we require. Now, tho' 'tis plain that the Jeſuits Powder produces this effect, it is not the Jeſuits Powder, as ſuch, or its name alone, that is able to charm and lull aſleep this intermitting Fever; but ſince we ſee plainly that

it

it can do ſo, we ſhould give it in a ſufficient quantity to produce that effect; and when we give it, to be ſure it may be carried into the Blood. For if this be not done, 'tis quite as good, if not better, to keep it in the Paper and look upon it, and from that to expect your Cure, then to take it into a foul Stomach, full of thick impurities, there to be clogg'd up in impure matter, and perhaps to be carried out of the Body with the Excrements, or elſe to be carried in this condition into the maſs of Blood to the misfortune of the Patient: Or, if neither of theſe happen, given in the time of a *Looſeneſs*, to be immediately carried off by Stool, and never reaching the Blood, it does not communicate its *Efficacy* and *Vertue*.

'Tis not eaſy to aſſign the nature of thoſe parts of Jeſuits Powder, which produce thoſe effects, neither is their ſize, ſolidity, quantity of their motion eaſily determined; this is never to be done, and yet by conſidering

ſidering the nature of an intermiting Fever, we may very well know its Operation by this its effect: Nay, this knowledge of its way of working, by its effects, may ſufficiently anſwer our whole deſign of Curing, as much as if we had diſcovered the mentioned ſize and poſition of parts, that ſeem to be requiſite for our more perfect knowledge. If we inquire then, into the nature of the Bark by its effects in Curing an intermitting Fever, we muſt conclude that its particles have that ſolidity and quantity of motion, which is neceſſary to diſſolve the Lentor we know produces that diſeaſe. Beſides, by looking more narrowly into the means of this diſſolution, we may be capable to find the propereſt methods of diſſolving the Lentor of Blood.

Tho' this diſcovery about the Operation of the Bark may appear to be very general and of little uſe: Yet from it we may be taught, why the Bark ſhould fail of ſucceſs either in time

time of a Looſneſs, or when we ſweat very much, or perhaps by any conſiderable Evacuation that happens while we take It. From this account it likewiſe follows, that if the Bark has this power of diſſolving Lentor, and making the Blood more fluid, then in caſes where the Blood happens to be ſo, or is ſoon brought into it, the Bark is not to be us'd. It follows likewiſe, what power of diſſolving the Bark may have, in reſpect of other Medicins employed for the like purpoſes: For, by their effects of diſſolving their ſtrength does appear. Let it be ſuppoſed that the force of other Medicins uſed upon ſuch accounts was able to put off the fit of an Ague for three hours, and we know no Medicin that can do it for ſo long a time; yet we know that the Jeſuits Powder keeps off a fit for ſix weeks commonly; and therefore the force of the one ſort muſt be to the force of Jeſuits Powder, in producing the like effect, as three hours and ſix

Weeks,

Weeks; or, as one, and three hundred thirty ſix.

There is no need of any defence of this way of reaſoning, among People who know that the moſt certain knowledge we arrive at is ſomewhat this way, and with ſo good ſucceſs that Machins are made, Ships of Burthen are contrived, and all other Mechanical things that appear ſtupendous are raiſed up on ſuch like compariſons, howſoever ſimple their principles ſeem to be: But if great and uſefull Conſequences do follow out of ſuch eaſy and obvious Principles, it ought rather to confirm their likeneſs to Nature, which is their great Perfection, and can never be any juſt Ground of Diſparagement and Reflection.

The other means, employed in this diſcovery, are indeed more pompous but nothing ſo true: For we get no great length in the inquiry, when manifeſt experience deſtroys the Allegation of ſuch Principles. The Chymiſts firſt produce

their

their Fire and Menſtrua to our Aſſiſtance, and pretend to ſhow us that uſeful Principle in the Bark, by which its great effects are produced, nay and to concenter too the Sanative Particles for our greater ſervice: But after all their inquiry, they tell us that they are the Reſinous parts of this Medicin that are thus healing; which if true, is no more than the firſt queſtion: for we underſtand juſt as much, when they tell us of its vertue being in its Roſin, as if they had told us, that it is in the Bark. We know indeed that its tincture, made with any Spirituous Liquor, is the ſtrongeſt, and that becauſe 'tis the property of Roſins to be beſt diſſolv'd in Spirits; 'tis plain that this Bark contains a great deal of Roſin, which is all that can be concluded from this experiment. But to proceed, let us ſuppoſe, that all the Vertue is extracted in this Roſin, which cannot be pretended (becauſe of a like experiment of its yielding

yielding its Sanative power in common water) yet we ſhall ſtill be as much puzzled about the way of this Roſins working, as the Working of the Bark in Powder, before it was a Roſin: And if they think they have anſwered the queſtion, by telling us that it produces theſe effects, as it is a Roſin; then all other Roſins will do the ſame; and therefore, they may truſt to the Roſin of Jalap, or any other they are oblig'd to by their principles, and we ſhall have an opportunity to obſerve the concluſion.

The other way, that has been taken to account for the vertue of the Bark, is by imagining it to be *aſtringent*; a power quite deſtructive of the requiſits, we have clearly laid down for curing an Ague; and no leſs repugnant to common obſervation, as I ſhall demonſtrate. What has been the foundation of this aſſertion, I could no where find out ſo clearly, as in a Diſcourſe written by one of the Members of

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the Royal Society, I think in the year 1678 ; where confuting the power of the Bark in curing Agues, he ſays, that if the Patient be troubled with a *looſneſs* while he is taking the Jeſuits Powder, it can have no ſucceſs ; therefore, ſays he, the Bark has its power in a contrary way, and is *aſtringent* ; then he ſubſumes for his own purpoſe, that, becauſe it is aſtringent, it muſt be very hurtful in a diſeaſe that muſt be cur'd by evacuation. To paſs by at this time, our Author's neglecting to prove that this Diſeaſe muſt be cur'd by evacuation, which I very much doubt for the reaſons intimated before ; I have ſaid enough already to evince the weakneſs of his Obſervation. 'Tis ſtrange, that one ſhould expect, that any kind of Medicin, which produce not their effect in a minute, but require ſome hours, at leaſt, to affect the Blood ; ſhould exert their vertue, when they never come thither ; and this being the caſe of

the

the Jeſuits Powder in a Looſneſs, we may eaſily conclude, that the Quinquina will not cure an Ague in that caſe, whether it be Aſtringent or not, By the bye ſince I have had occaſion to examine this argument againſt the Barks power of curing Agues, I cannot forbear taking notice of another very good argument this Author brings for the poyſonous qualities of the Bark, and that is an experiment from its hindering the fermentation of Yeaſt and Wort; that, becauſe if a due quantity of the Jeſuits Powder be caſt into Wort, before the Yeaſt is added, the Wort never ferments, and therefore this Powder is poyſonous. I confeſs, I know not how to anſwer an argument which I do not comprehend; but if every thing that hinders the fermentation of Yeaſt and Wort be poyſonous; what muſt become of us poor Mortals in the poyſonous times either of a froſty, or of a very hot ſeaſon, for the Brewers find their Ale

and

and Beer ferment but very ill in ſuch Seaſons: And beſides, Sugar, Spirit of Harts horn, *&c.* pour'd into Wort in a due quantity hinder its Fermentation; yet they were never reckon'd among the number of Poyſons: But, on the contrary, if I thought the Hypotheſis of Acid and Alkali tolerable, I ſhould like the Bark the better for the experiment this Author has helpt me to: For in that way, the Blood in an Ague is viſcid, by the power of the coagulating Acid, which can only be deſtroy'd by a powerful Alkali, ſuch as this experiment proves the Bark to be.

At other times, the Peruvian Bark is charged as an Aſtringent Medicin, and is ſaid to produce this its effect on that account. An Obſervation of Sick-People being Coſtive, while they take it, is made the Foundation of this opinion, but ſince Vomits, Diaphoretical, Diuretical, and many other Medicins

as certainly make Men Coſtive as Aſtringents, there is no better reaſon for calling it an Adſtringent Medicin than a vomiting one. On the other hand, if it Cures Agues as an Aſtringent Medicin, then as ſtrong, or more powerful Aſtringents would have the ſame effect; which is contrary to any experience or obſervation that can be adduc'd to the contrary, we know 'tis uſed every day with the beſt Succeſs in Hyſterical Fits, and the Suppreſſion of Womens Monthly Courſes, where no body ever adviſed ſo Powerful an Aſtringing Medicin, as they would have the Bark to be.

'Tis true, we have ſeen ſome ill Symptoms appearing after the giving the Powder; but the Queſtion is, whether theſe Symptoms are the Diſeaſe's, the Bark's, or the Phyſician's; and this I ſhall Endeavour to reſolve, by following out *Helvetius* a Phyſician in *France*, who has lately writ a Book, he Dedicates

to

to the *French* King, and allows a great many of them to be owing to the Powder being given by the Mouth, and contrives a new way of giving it, and that by Clyſters. I ſhall firſt then enquire, how far his Allowance is good, and to be follow'd, and what's to be thought of his new Practice; which, I think will be very obliging. But before I do this, 'twill be neceſſary to ſhew, that I have not forgot my Obſervation; and therefore when I have related one or two more I ſhall come to thoſe Reflections.

And firſt, becauſe Mr. *Nobs* was troubled with a Looſeneſs; and that it might not hinder the Operation of the Vomit, I intended to give him for the preceding reaſons, the Night before I preſcrib'd him the following Bolus to be taken going to Bed.

℞ *Conſerv. Roſ. rub.* ℥ ß. *Sanguin. Dracon.* ℈i. *Laudan. Opiat. gr.* jß. *Syr. de Mecon. Parum ut f. Bolus.*

Next day, he being to have the Fit about two a clock in the afternoon, I ordered him, upon the former deſign, vi. grains of *Tartarus Emeticus* to be taken about Noon; he Vomited five times, and drunk not ſo much after every fit of Vomiting, as I allowed my Patients in Fevers; that the compreſſion by the contraction of the Muſcles might be the greater, he went once to Stool, and about the end of the working, his coldneſs began, and laſted only two hours; then Succeeded a very ſharp heat, which went off ſooner than before by ſweating, which was very Pleantifull; For I had deſired him to bear with the hot Fit, and lye very cloſe, that he might ſweat, elſe I would give him no Medicin till the next Fit; which he did; then being temperate, the Blood being now comminuted, and ſufficiently fluid, I ordered him to begin the Powder I had caus'd to be made up into an Electuary,

that

that it might be convey'd into the Blood in its healthy ſtate; as alſo it might comminute more eaſily any viſcid matter that would be convey'd to the Blood by any of its ways of ſupply; and in that quantity I thought reaſonably could deſtroy the Viſcidity of one Paroxiſm, and this he took in as great quantities, as he could eaſily digeſt before he took more.

℞. *Pulv. Chin. Chin. ſubtiliſs. pulverat* ℥j. *Conſerv. Roſ. rub.* ℥ ſs. *Syr: e Chalyb. q. ſ. ut f. Electuar. Cujus capiat quantitatem Nucis Myriſticæ majoris, tertia quaq; hora, ſuperbibendo Vin. Hiſp. Cochl.* ij.

In the Doſe he took before Bedtime, I ordered him j. grain of *London Laudanum*. He miſs'd his Fit, and Din'd at five a Clock in the Afternoon upon a Chicken, and drunk a Glaſs or two of red Wine at Dinner. Next morning he began an Infuſion I had ready for him to take of, till his Blood was

reviv'd and ſhould recover its ſtrength, and 'twas this.

℞ *Rad. Gentian.* ℥ ß. *Scorzoner.* ℥iij. *Serpentar. Virginian.* ℥ij. *Summitat. Centaur. Min. M.* ß. *Fl. Chamom. M.* ß. *Cortic. Aurant.* ℥ ß. *Winteran* ℥ij *M. ac infundant. per Biduum in Vini Xereſenſ. generoſis.* ℔ iv. *Dein capiat Cochl.* v. *bis in die.*

By the uſe of theſe Medicins he recovered his Health, without the leaſt ſuſpicion of a Relapſe.

Obſervatiion XII.

Obſ. 12. Mr.—— *Lient*, of the —— was taken ill after Dinner with a Coldneſs, which laſted an hour and a quarter; his Pulſe was depreſſed, and beat about 50 in a minute; for he being of a thin habit of body, his Blood very warm, it beats about 80 in that time: He had a pain in his Head, then came the heat, which began about the Trunk of the Body, and was ſenſibly diffus'd

fus'd over the reſt; it laſted three hours, after which he began to Sweat and ended his Fit; it recurr'd the third day Incluſive, and had his cold Fit not above half an hour but the hot Fit laſted ſome Seven or Eight hours before he began to Sweat; next day I was ſent for, and ordered him iij grains of *Tartarus Emeticus* to be taken an hour and a half at leaſt, before we expected the Fit: He Vomited ſome Six or Seven times, and went twice to Stool; I ordered him to drink largely between his endeavors to Vomit: when the Medicin had almoſt done working, the Fit began to ſeize him and the cold Fit laſted little more than a quarter of an hour, and as it was a going off, I order'd him to take the following Powder.

℞. *Pulver. Gaſconic.* ℈i *Laudan. opiat. gr.* ſ℈. *M.*

After he had taken it about twelve Minutes he fell aſleep and ſlept almoſt two hours; but before he was

awake he was in an excellent Sweat, ſo he lay ſtill till the end of the Sweating, and thereafter begun this Electuary.

℞. *Pulver. Quinquin. ſubtiliſs.* ℥j. *Conſerv. Acetoſel.* ℥vi. *Syr. e Succ. Citr. q. ſ. ut f. Electuar. Molle. Quod capiat ad magnitudinem Avellanæ tertia quaque hora, ſuperbibendo Vini rubri Gallici Cochl.* ij. *vel tria*

By the uſe of this Electuary he miſs'd his Fit; and began next morning to take this Infuſion, which I ordered for the ſtrengthning his Blood.

℞. *Rad. Gentian.* ℥ ß. *Scorzoner. Helen. an* ℥ij. *fl. Chamom. M.* ß. *Summitat. Cent. min. M.* j. *Baccar. Juniper.* ℥ij. *Cort. Aurant.* ℥ ß. *Tart. alb. crud.* ℥ij, *præp. ſ. a. affund. Vin. rubelli* ℔ iv. *Stent per biduum in Infuſion. dein capiat colatur. claræ Cochl.* iv. *bis in die. Repetatur Infuſio ſuper eadem Medicamenta ad alteram vicem.*

He continued the uſe of theſe Medicins, and drank both the Infuſions

fuſions without any thing of a Relapſe. All the time I allowed him to eat any kind of meat that was eaſily digeſted, and to drink a glaſs of Wine, or two in a day.

Obſervation XIII.

Mr. *Humble* in the St. Michael to whom I was call'd *May*, 1694, at *Spithead*, by Mr. *Campbell* who was then Surgeon to that Ship. He was firſt taken with a Tertian Ague, for which he was put aſhore; and after he had ſtaid out his time, he came back with it upon him, for he was one of the Maſter's Mates. And ſo would not leave the Service; expecting his Cure Aboard, he was taking ſomething all that time. When I was call'd he had a Quartan, and his cold Fit uſed to laſt him ſome four or five hours, his hot or Fever Fit one hour, or an hour and a half, and then Sweat: He was brought very low. I ask'd him when Obſ. 13.

when he expected the next Fit, and he told me about eight in the morning; for it ſhifted forward and backward, from Tertian to Quotidian, from Quotidian to Tertian, from a Quartan to a Hemitritæa, and from that to a Quartan again. I ordered him to take iv grains of Emetick Tartar that morning, about 6 a clock; which had juſt done working as his Fit begun to come upon him; his cold Fit after his Vomit laſted two hours, his hot Fit two hours, and ſo went off by Sweating. I had been ſpeaking to the Surgeon about giving him the Jeſuits Powder; but he told me he had been ſo often let Blood, purg'd, and taken ſo much of the Powder aſhore and aboard, that he could not take more; and therefore I was reſolved to try the Powder, my learned Collegue Dr. *Morton* recommends in his Book of Fevers.

℞. *Pulver. fl. Chamom.* ℥j. *Sal. Abſynth. Antimon. Diaphoret. an* ℥ſs

℥ ß. *Capiat* ℥ ß. *tertia quaque hora, ſuperbibendo Vini cujuſvis generoſi Cochl.* iij.

He took his Powders very orderly, till he had ſpent that vaſt quantity, but without the departing of his eighteen Months Companion. He did no more till the next return, but drank of the following Infuſion.

℞. *Rad. Gentian. Raphan. Armorac. an* ℥ ß *Zedoar. Serpentar. Virginian. an* ℥ij *Summitat. Centaur. min. Card. Benedict. an M.* ß. *fl. Chamom. M.* ß. *Cortic. aurant. Winteran. an.* ℥ij. *Limatur. Mart.* ℥j. *Tart. alb. crud* ℥ ß. *M. ſ. a. ac infund. in Vin. Hiſpan. generoſiſ.* ℔ iij. *Stent per horas* vi. *in Baln aren. ac bibat Cochl.* v. *ter in die.*

That morning he expected his Fit, he took the preceding Vomit, which wrought very well, and his cold Fit laſted not above an hour, and his hot an hour and a half, and judg'd the Fit by Sweating. Things ſucceeded ſo well, I

deſired

desired he would try the Jesuits Powder once more, and if it had no success, he should be at his choice; he was perswaded, and had it made up in this form.

℞. *Pulver. Patrum* ℥iſs. *Conserv. Ros. rub,* ℥j. *Theriac. Andromach.* ℥ij. *Extract. Gentian,* ℥j. *Sal Absynth.* ℈ij. *Syr. e Chal. q. s. ut f. Elect molle: de quo Capiat quantitatem Nucis Moschatæ maj. tertia quaque hora, superbib. Vin. Canarin. Cochiy.*

And if he scap'd his Fit, to continue with the former Tincture till he recovered his strength; but the next day, after I left that Ship, I was taken with a violent continual Fever, which lasted five days with the practice before; and e're I was fit to go abroad, our Fleet was divided, and that Ship went to the *Streights* in company of the rest, that have made *England* the Admiration of all *Europe*, under the command of the Right Honourable the E. of *Orford*. Some years after

after this Mr. *Humble* was the firſt of the Maſter's Mates in the *London*, where I then did reſide, and happening to have an Ague about the end of the Summer, he told me how he was cured by Me before, and that without a Relapſe, or any other ſickneſs till this time, but this was got over without any difficulty or trouble.

Obſervation XVI.

Captain *Hicks* Commander of his Majeſty's Fireſhip—— was taken ill for a great while of a pain in his Heel, in the Evening, ſo that ſometimes he was ſo lame in the Morning, that he could hardly walk till nine or ten of the Clock.

In my firſt Viſit, I found he had a great many Symptoms that happen to people in Agues, and for that reaſon, I was the apter to think it one ſince I have ſeen twice before ſuch ſtrange perſonating of Agues, particularly in a Lady of Quality, for whom Sir *Thomas Milington* and I were concern'd: She had an Ague per-

perſonated by the moſt violent hyſterical fits, that ever were deſcrib'd by any Author, but I forbear relating that caſe, becauſe it happened not at Sea. Yet whoever underſtands perfectly the Theory of *Agues*, and eſpecially about their *Return* will eaſily be perſwaded, that there may be ſuch obſtructions in the ſmaller and leſt compreſt Veſſels that may produce ſuch effects, and theſe ſo ſupplied and diſcuſſed that very way we know is neceſſary to end one Paroxiſm and begin another: tho' I muſt confeſs, that the diligent Doctor *Sydenham* was the firſt, who firſt obſerved, and gave an account of any ſuch fact; tho' he thought the reaſon was never to be aſſigned. This he does in his Letter to the Learned Dr. *Brady*, at preſent King's profeſſor in *Cambridge*. ' *Hic autem*, ſays he, *commemorare libet, quod ſub primos hujus conſtitutionis annos ſymptoma quoddam inſigne Febribus intermittentibus quandoque ſupervenerit. nempe earum paroxyſmi non cum rigore & horrore, quas poſtea Febris excipit, invadebant*

debant; ſed æger ijſdem plane ſymptomatis tentabatur ac ſi Apoplexia vera laboraſſet, quæ tamen nihil aliud eſt, utcunque hunc affectum æmularetur, quam ipſa Febris caput impetens; ut ex alijs ſignis, ita ex colore urinæ ſatis liquebat; quæ intermittentibus ut plurimum rubore ſaturato extat, qualis cernitur in urina eorum quì Ictero laborant, etſi non adeo intenſe rubet, & pariter ſedimentum deponit pulverem laterum fere referens. Hoc autem in caſu, &c.

'But I muſt now take notice 'that a very conſiderable ſymp-'tom attended theſe intermitting 'Fevers, about the beginning of 'this conſtitution. Their pa-'roxyſms made not their approach 'with a ſhaking and ſhivering, and 'then had the Fever following, but 'the ſick perſon was affected in that 'very way, as if he had been ill 'of a true *Apoplexy*; which, never-'theleſs was nothing elſe but the 'Fever it ſelf attacking his head, 'howſoever it imitated that diſ-

'eaſe

'eaſe, as was moſt evident by a 'great many ſigns, but more par-'ticularly by the colour of the 'Urine, which, in Agues, is com-'monly of a deep red, ſuch as that 'is in thoſe that are ill of the 'Jaundice, tho' it be not quite ſo 'red, and likewiſe breaks into a 'ſediment almoſt like Brickduſt. 'But in this caſe, *&c.*

The great Doctor *Sydenham* is imitated in this by Doctor *Morton*, who endeavours to follow ſo exact a guide in writing obſervations of ſome diſeaſes; but whatever people may think of that way of writing, I think it is the hardeſt thing to perform well in the World, which makes the obſervations of *Platerus*, *Horſtius*, and a great many more Authors, who have been mightily commended, of ſo little real uſe. I ſay that Doctor *Morton* does here purſue the hint from Doctor *Sydenham* at greater length about the 82 and 83 page of his *Pyrætologia* and gives us the pathognomical

gnomonical ſign, the *Urinambene tinctam, ſedimento lateritio ſaturtam* an Urine of a deep colour, ſtuffed with a ſediment like Brickduſt.

And therefore, by the conduct of Doctor *Sydenham*, for I had not read the other Author when this Symptom firſt appeared to me, believed that my mentioned Patient and this had an Ague perſonated by their ſeveral Diſtempers, and This by the Gout. During the Paroxſym, I endeavour'd to allay the pain, but deſign'd to prevent a relapſe by the Jeſuits Powder, which ſucceeded very well given this way.

On the 8th of *May* he had a fit in the evening; next day, he dined by eleven in the forenoon, and at five took this vomit.

℞. *Vin. emetic.* ℥i. *Oxym. ſcyllit.* ℥ ſs. *aq. theriacal* ℥ij. *M. ac. exhibeatur cum regimine.*

This made him Vomit ſix times, and gave him one ſtool, and having his Fit in the evening, he be-

gan the Powder in the night; it was made up into an Electuary this way.

℞. *conſ. roſ. rub.* ℥j. *pulv. chin. chin.* ℥vi. *ſyr. de ſucc. limon. q ſ. f. electuar. molle, quod conſumat ante reditum ſequentis paroxyſmi.*

He took it accordingly, and prevented the Fit; he had the Tincture too, for the deſign I uſe to give it, and ſuffer'd no relapſe.

Having obſerved ſome variety, that I was obliged to practiſe in Curing Agues; I proceed to make thoſe remarks, I promiſed, on a Book, writ by Dr. *Helvetius*, inſtructing us how to Cure Fevers without taking any Medicin by the mouth.

Places marked from this Author's Book, p. 4.

The Reaſons, he ſaith, in the 4th page, made him look out for another way of giving the Bark than by the Mouth, are the complaints ſome Make, of an unſupportable weight and a violent pain in their Stomach: Others finding their Thorax chang'd very much, from what

it

it uſes to be in a natural ſtate, and ſuch an extraordinary heat in their Breaſt as it were dried up: and laſtly, becauſe there's an abundance of people, that make reſolutions every day never to take it more, tho' they have been cured in this way. Paſſing the known inconveniencies of the Quinquina, and the general complaint ſick people make that way; beſides the particular grievances of its diſagreeable and ill taſte, becauſe of its bitterneſs, which we can never remove from this Medicin, in whatever way we give it, provided we take in at our Mouth; and 'tis ſtill the more incommodious, that, notwithſtanding the averſion ſick people declare againſt it at firſt taking, yet we muſt needs renew this troubleſome and nauſeous impreſſion, by taking it a great many times a day, for ſix weeks at leaſt: Not reckoning our neceſſity to begin its uſe a ſecond time upon the occaſion of a Relapſe. And therefore 'twas,

5.

6.

that thinking upon the train of diſagreeable circumſtances, which attend this Remedy, I have diſcovered this more convenient way of giving it, whereby we may enjoy all its good effects, and avoid all that's troubleſome in it. And this way is no other than by giving it in Clyſters,

Therefore he ſays, we muſt take an ounce of the beſt Quinquina in Powder, and mix it well, without any addition, with a Quart of milk-warm Water.

In Intermitting Fevers this Clyſter muſt be given in the end of the paroxyſm, and muſt be repeated thrice every day, till the Patient is perfectly cur'd, which is not long e're 'tis done; for 'tis very extraordinary to ſee another Fit, very rarely two, and I, almoſt, never ſaw a third. After he is cur'd, we muſt be ſure to take the like Clyſters for twelve days more, one in the morning and another in the evening for the firſt ſix days;

and

and one in the evening only for the laſt ſix. And becauſe 'tis very neceſſary, in this practice, to keep the Clyſters as long as is poſſible; and there be ſome people that can keep them but a very little time, we muſt add, for thoſe, half an ounce of the Syrup of White Poppies to the Powder of Quinquina, which will mightily conduce to the keeping the Remedy without any trouble.

We muſt obſerve, that thoſe that 13.
can keep it but a little time, muſt continue its uſe the longer, to do that by a greater number that cannot be done by one, and ſo to finiſh the Cure. This muſt not only be underſtood of thoſe, that take the whole Doſe, but of thoſe too, that take but a part.

There's not any thing among 15.
all the ſymptoms attending Fevers, 16.
that can forbid the uſe of this Remedy, but the ſwelling of the Belly. So there's no more to be obſerv'd, but that as there are ſome people that cannot keep this Clyſter; ſo

there are others that give no further account of it, and they find themſelves ſwoln and puff'd up; and therefore 'twill be their beſt way to take a purging Clyſter once in two days, whi h will help them to diſburden it: And 'tis not beſide the purpoſe to take notice at this time, that thoſe Clyſters not having a purgative faculty, and not being given for that end, the ſick people need not be diſquited or concerned, if they ſee not an Evacuation of Bile, and other Humours; as in our ordinary Clyſters.

31. 'Tis evident then, ſays he, that the ſick Perſon ſhall be no more offended with its bitterneſs, ſince he's to take it no more by the Mouth; beſides he can find that weight in his Stomach no longer, becauſe the thing that produc'd that effect is no more there.

32. But to get over the inconvenience of warming the Patient he takes a wonderful way; ' *A l' egard*, ' ſays he, *de la Chaleur, il eſt certain*, ' *que*

'que les parties groſſieres du Quinqui-
'na, qui en ſont la ſeule Cauſe, ne ſe-
'journant plus dans le corps qu' au-
'tant de temps qu' il en faut a la
'Chaleur naturelle pour le digerer &
'en tirer ce qu' il a de volatil & de
'ſalutaire, le marc qui en reſte etant
'rejetté auſſi tot, ſans etre obligé paſſer
'par toutes les voies qu' il parcourt
'quand il eſt pris par la bouche, le corps
'ne peut que profiter de tout ce qu' il y a
'laiſſé d' util, ns jamais etre incommo-
'dé de tout ce qu' il pourroit avoir de
'pèſant, d'embaraſſant & de nuiſible,
'qui eſt ce qui cauſe le Chaleur dont on
'ſe plaint tant.

Touching this heat ſays he, 'tis certain that the groſs parts of the Powder, which are its cauſe, ſtaying no longer in the Body than is neceſſary for the natural heat to digeſt it, and to extract its parts that are volatile and wholſome; and the Maſh that remains, being caſt out of the Body, without being obliged to paſs all thoſe ways it goes along, when taken in by the Mouth:

The Body cannot but reap a vaſt advantage from all the uſeful parts that are left, without being, in the leaſt, hurt by any thing of it that's heavy, embarraſſing and injurious, which are the things, that make all thoſe heats they complain of. He adds in the next Paragraph, that the people that have the Piles, are the only to whom he gives not theſe Powder-Clyſters, or not in ſo great a quantity, becauſe the rough Powder, rubbing up the Veſſels in the paſſing, is apt to provoke the Piles, or elſe he gives a ſtrong Decoction of it, which does almoſt as well, and entirely prevents this inconvenience.

39. Then he rallies all his ſcattered proofs he had brought for the Cure being more certain by taking the Powder-Clyſters, than in any way it can be taken by the Mouth: For firſt, it is given in a greater quantity than it can be by the Mouth; ſecondly, 'tis always given in ſubſtance, and ſo has the greater force:

And

And thirdly, the ſubtil parts, which only act upon the ferment of the Fever, and deſtroy its ebullition, can inſinuate themſelves eaſier into the maſs of Blood by the Orifices of theſe Veſſels, that open into the Inteſtins: And laſtly, experience puts this more ready and ſure way of curing beyond diſpute.

Thus having pickt out almoſt all this Author ſays, either to the diſadvantage of the Quinquina being taken in at the Mouth; the benefit of his own way of giving it, and the confequences of that; I muſt confeſs the World is oblig'd to any one that endeavours to better any Science by uſeful and well eſtabliſh'd Theories, or Intimations to perfect its Practice, by diſcovering ſuch inſtruments and helps, that can make it more ſure: Yet I think a Man that communicates any thing, may claim and arrogate a little too much to himſelf; except the Practice or Opinion he advances, be without Controverſy, better than

thoſe that were eſtabliſh'd and thought of before: And therefore to ſpeak my mind freely, I think that this Trial may ſtand us in very good ſtead, upon the pinch of ſaving the Life of one, who rather chuſes to die than taſte this Medicin; and of theſe there are very few: But I ſhould judge that Man very raſh, that would recede from the known way of giving the Jeſuits Powder he has found ſo ſafe; that nothing can be more; and would go to a practice ſo very doubtful, and hardly preſs'd with the ſame difficulties brought againſt the taking it by the Mouth, upon any leſs conſideration; as we ſhall ſee immediately by the anſwering his Arguments, which I ſhall do with as great Brevity and clearneſs as I can.

As to the weight and pain ſome feel in in their Stomachs, after haing taken the Jeſuits Powder, 'tis certainly a very great inconvenience; but I ſhall be judg'd by all the

the World, if that ſwelling they feel in their Bellies be not quite as ill, and can ſooner breed a Dropſy, Jaundice, *&c.* Than any diſeaſe can be formed by the other Method: beſides, if we will be at the trouble to look back to what I have ſaid, in the firſt part of this Book, about that Symptom of an Ague, *the weight in the Stomach*; he ſhall ſee it clearly made out, that this weight is nothing but a heap of undigeſted and ſlimy ſtuff that's lodged there, and therefore of it ſelf is apt to make the neceſſary ſupply, to keep up the force of the Ague; and intercept, too, any Medicins that are given in by the Mouth for its Cure, And if he would perſuade us to uſe his Clyſters in theſe circumſtances, we ſhall never be able to cure this Ague, tho' they were ſuppoſed to have a hundred times the force he pretends to: Whereas if we give a Vomit to make a clear paſſage, we ſhall feel no ſuch inconvenience, but eſpecially

ally if the Fit were well ended before we began our Medicin; and ſo this complaint comes more from the neglect of ſomething that ſhould have been done, than from any defect in the Bark; unleſs, perhaps, it may add its own quantity to this naſty maſs, and rarify that too by its ſubtile parts. And ſo the Argument will go no further than this. Opium, Steel, Antimony, *&c.* have been given in very ill times, and in too great quantities, and no doubt there, have been abundance kill'd ſo; but for all that, ought we to leave off the uſe of theſe Medicins? No ſurely; and they will prove uſeful and noble Medicins in good hands. But why may not our Author try, what a decoction of the Powder, he uſes for Clyſters upon certain occaſions, can do towards avoiding this inconvenience of the Powder; eſpecially ſince our learned Collegue Dr. *Morton* had publiſhed, ſome two years before this Author wrote his Book, ſuch a decoction

coction for this very end; which would have prevented moſt misfortunes from that hand, when we know not this fit time to give a Vomit.

Then for the ſecond Inconvenience. 'tis much of the ſame kind; and if any one will conſider the proof I brought for the way how the Bark had its effect, and the Corollaries I deduced from it, ſhall not be very much puzzl'd to find out, that 'tis only thoſe that are of thin habits of Body, and whoſe Blood is thin, eaſily rarify'd, and incline to be Hectical, that find this *burning Heat* our Author aſſigns, and after they have taken the pure Powder. I dare appeal to himſelf, or any Man of Practice, if ever they found this Accident but in theſe Circumſtances; and a wiſe Phyſician can eaſily provide againſt that, as I have endeavoured in part, by giving the *Cortex* as in my 9th Obſervation: but to ſee what a miſerable ſhift he takes

to weather this difficulty is wonderful, from what he ſays in the 32 page; and if he had done any thing, he ſhould have firſt told us, what the ferment of the Fever is he talks of in the 39 page; how the parts, and what parts are fitteſt to bring it under; And laſtly, what Veſſels theſe are that have their Mouths open into the Inteſtins; none of theſe things he has told us any thing of, yet they were neceſſary to be known? Of all things in the World I doubt moſt of his certainty in the Citation from the 32 page; and would have thought the groſs prats of any body the leaſt capable to produce heat; and to guide all this right, he tells us, that *Nature* keeps it juſt ſo long and not one half ſecond longer, than was neceſſary to ſeparate thoſe Sanative parts from its groſſer hot parts; this is indeed wonderful, but ſhe that can do all this, why did ſhe put him to the trouble of contriving Syrup of White Poppies

pies, to cauſe ſome to keep their Cliſters longer, and purging Clyſters to help others off with theirs; The reſt of his Citations are about the way of giving it, which I have nothing to do with here; tho' I thought fit to ſhew them, if any one be for them; and all the reſt may be comprehended in this, that thisMedicin is better given his way, becauſe, as he ſays, theBark is given in ſubſtance, and in a greater quantity. And firſt, I believe all the Phyſitians in *France*, at leaſt all or moſt here, give it in ſubſtance, and have done ſo theſe thirty years as well as *Helvetius*; and in a way too, that our ſix Drachms muſt turn to a greater account than his three ounces, and allow him ten more; and this we ſhall make very plain, by conſidering that betwixt the lower end of the *Duodenum* to the end of the *Ileon*, there are infinite numbers of Lacteal Veſſels to be ſeen, whereby this Powder, its Tincture made in the Stomach, and

other

other parts, may be very eaſily carry'd into the Blood, and by which is carry'd of one ſubſtance or other, at leaſt, 7 or 8 pounds in a day, and ſo may be a very good way for 3 Drachms, ℥ ſs, ℥vi, or ℥j, of this Powder, however digeſted and prepared in a clean Stomach; whereas in his way, all the Lacteals that are ſaid to be there, are ſuppoſed upon ill made experiments, and not one to be ſeen; and ſo, I think, our ſix Drachms can produce more powerful effects than his thirteen ounces, we have allow'd him; but ſuppoſe all the Colon were as full of Milky-Veſſels, as the Milky-way is full of Stars (which we ſee he muſt not pretend to) yet I'm in the opinion he could not much better himſelf; for his Clyſters could get no great length; which will be very evident to any one, that will bring into his thoughts, or lay before his eyes the Guts in their natural poſture, and any one with a Clyſter Syringe impelling

impelling the Liquor; I ſay, if he conſiders this, he ſhall have no great difficulty to agree to my aſſertion: for firſt, if they were ſuppoed full, then 'tis evident the reſiſtance of the Excrements were to be acounted for; and perhaps this would do the buſineſs: but now, we'll ſuppoſe them perfectly empty, and their ſides flaccid, as we ſee them at that time; then, upon the one hand let us remember, that the motion they have is from the Stomach downward, and that they are tenſile; then next, that the Colon, where it joins the Straight Gut, lyes not directly with the cavity of the Straight Gut, but cuts it at oblique angles; and upon the other hand all the force this impell'd Liquor has, is only by the compreſſing the ſides of a Bladder, or a more valid propulſion by the Syringe; and therefore paſſing the ſmaller reſiſtance from the motion of the Guts, there's firſt ſo much motion loſt by raiſing the ſides of the

Straight Gut, whereinto it may be impell'd without any other; but ſo ſoon as it comes to the joining of the Colon, it muſt reflect at every Section of this Gut, and the reflection too, is to be made upon a ſoft, tenſil Body, which is more than enough to overcome a ten times greater force, than can be conceiv'd to be given to this Liquor, by this impelling of the Syringe. And therefore, ſince the Straight Gut has no Lacteals, and the Colon were ſuppoſed to have; yet his Clyſters not going any length there, could turn to no great account; at leaſt, not the twentieth part, very modeſtly ſpeaking as in the former Caſe.

But next, for the convenience of this Practice, I think 'tis the moſt inconvenient could have been contriv'd; for who can bear fifteen Clyſtering days, and to take about twenty four Cliſters in that time; and then as many in caſe of a Relapſe: this is not only one of the moſt

troubleſom

troubleſom Practices, but the moſt expenſive that can be by the Jeſuits Powder; for ſuppoſing an Apothecary ſhould let us have them at a Crown a piece, this is no leſs than 12 *l.* for theſe 48 Clyſters, beſides other Medicins, which is a great deal too much for the moſt that grudge 4 ſ. and a Crown for an ounce of the Powder, which always Cures them with the help of ſuch a Tincture as I have ſpoke of, in my Obſervations: And therefore by this time 'tis plain, that *Helvetius*'s Practice is neither ſo reaſonable, nor ſo convenient, as the giving the Powder by the Mouth; and the misfortunes complain'd of are truly the Phyſician's, and not from the Bark: But we muſt allow him that the taſte will not be ſo ungrateful, as when taken our way; tho' in ſo many Clyſters it will be felt, as I have found in curing of ſome very tender People of *Claps* by *Glyſters*, which in three or four days became almoſt as nau-

ſeous, as if they had taken Medicines by their Mouth; yet at beſt this is but an inconvenience to a few, which is nothing in reſpect of this expenſive, and unreaſonable Practice.

Obſervation XV.

Obſ. 15. *George Manning*, aged 27 years, of a bilious Conſtitution, and a thin habit of Body, was taken, one board the *Elizabeth*, with an out breaking of abundance of red ſpots upon his Legs and Arms; a great many of thoſe upon his Legs became of an olive colour, yellow, blew, and black.

It is evident, by what I have already ſaid concerning the Scurvy, that the great deſign for curing it, muſt be to render the Blood ſo fluid that it may Circulate without thoſe interruptions, by which it breaks ſome moſt tender and Capillarie Arteries, and runs out in a quantity the reſiſtance of the place does allow. By thoſe means, the extravaſated Blood will be ſooner tranſpired, and further extravaſations be ſufficiently prevented.

The

The feveriſh Heats, Ulcers, and inequality of the Pulſe are no Contra-indecations to this deſign: On the contrary, as they are Symptoms of this Diſeaſe, ſo they vaniſh likewiſe by this courſe; tho' proper Medicins may be given, at the ſame time, or mixt in with the other, whereby theſe Symptoms are made very tolerable while the main deſign is carrying on.

This Diſeaſe is particularly more Difficult to be cured at Sea; becauſe their way of living, and their food rather encourage, than contribute, in the leaſt, to its Cure. Nay, notwithſtanding that the Scurvy is reputed the moſt common Diſtemper of the Sea, I do not find any proviſion made againſt it in the great Inventary of Sea-Medicins. And therefore where the hands of a Phyſician are tyed up for want of Tools, I cannot ſee what ſucceſs can be expected in that Diſeaſe. I can only inform you of what I hinted before, that of all the number we

meet with, Ill of the Scurvy, a fourth part of theſe do not contract it directly from a ſtate of Health; but by beginning too ſoon upon their Sea Proviſions after they recover of Fevers, or other Diſtempers: So that if ſufficient care were taken about their coming upon their former Diet, they ſhould not be ſo liable to have this Diſeaſe. At the ſame time, it is worthy our Obſervation how ſuddenly, and how perfectly they recover of this Diſtemper aſhoar, when they are free of this Diet, and only live upon Green Trade (as they call it) *viz.* Colewarts, Carrots, Cabbages, Turnips, *&c.* People put aſhoar, in the moſt pitiful ſtate that can be imagined, are able in three or four Days, by this food only, to walk ſeveral Miles into the Country. If ever any Care is taken for the ſick in the Navy, this muſt be chiefly conſidered. But to return to our preſent ſick Perſon, and that I may give you no further trouble of a ſickneſs

left

left without a remedy at Sea; which is almoſt as Melancholly as to conſider theſe poor people at Sea, without a Rudder, I ſhall relate the Courſe I took with him in this ſtraight, and difficulty.

I was willing to make the beſt I could of our Patients in Scurvies; and therefore, that the Medicins we have might produce the better effect, and the Chyle, that's very often the beſt Alterative, might be convey'd in its full force; I order'd him a Vomit of ℥ ß *Sal vitriol* in ℥iij of *Oxymel* of *Squils*, to be encouraged with large draughts of thin Water-gruel; he Vomited three times, and an abudance of naſty ſtuff: then I ordered him to take as little of his Beef or Pork, for his Meal as poſſible; and rather to live upon Burgoo, or Water-gruel; his ordinary Drink was Barly Decoction, to every quart whereof I ordered ℥ij of *Syr. de Alth.* to be added; and for Medicins, I preſcrib'd him the following Ele-

ſtuary to be taken of thrice a day.

℞ *Pulp. Paſſul. maj.* ℥iij. *Conſ. fruct. Cynosbat* ℥iij *fl. Lujul.* ℥iſs *oc. 69 ppt.* ℥iij. *Syr. e Suc. Limon. q. ſ. ut f. Elect.*

After theſe Medicins were taken for three weeks, which time he was very exact in following directions, he recovered apace, and came to his perfect health.

Obſervation XVI.

Obſer. 16. *T*—— *B*—— was troubled with a Looſeneſs, that he went to ſtool ſome 15 times a day, for two days. On the third I ſaw him, and ordered him next morning the following Medicins.

℞. *Rhab el. ſubtil. pulv.* ℈j. *cinam.* ℈ſs. *M. ac capiat mane cum. regimine.*

By this Powder he did not go more frequently to ſtool than he had formerly, and rather not ſo often, for he had only eight Stools by it; yet in the evening, I preſcrib'd him the following Julep.

℞. *Aq.*

℞. *Aq. Plantag. lact. alexiter. an* ℥ii. *cinam. hordeat,* ℥i. *Syr. Myrtil.* ℥ß. *Diaſc. Fracaſtor* ℥iſß. *M. ac capiat. Cochl.* 3 *vel* 4 *ſingulis horis.*

He ſleept very well that night, and had but two Stools all the next 24 hours, and thereafter continued in a natural way, without any further help.

'Tis true thoſe kinds of Medicins ſerve our purpoſe pretty well, when the cauſes of a Diarrhea is confin'd to the firſt paſſages; yet when they are produc'd in hot Countries, in people of a thin habit of Body, and that very hot, *&c.* they are not quite ſo certain, but we muſt depend upon Medicins of greater force, and Bleeding to the ſtrength of the Patient. 'Twere a work of Supererogation to unfold the nature, and different ſtates of this ſickneſs, after the way of the former, ſince it is not ſo much our conſtant Companion; yet, in ſhort, I muſt advertiſe my Brethren (contrary to the moſt of practice) that

that the moſt powerful Medicins given in a Liquid form, and in a great quantity, cannot prove half ſo ſucceſsful, as Medicins of half the force in the contrary circumſtances.

Obſervation XVII.

Obſ. 17. *George Gardner*, was taken Ill with a Looſeneſs, for ten days, by which he went above thirty times a day, for all that time. When I ſaw him his Pulſe was weak and frequent, his Tongue full of deep chinks, he had a great drought, and was a very Skeleton.

I ordered him a Doſe of a Powder, I give in ſuch caſes, made into Pills with a little old Conſerve of Red Roſes; which he took about Bed-time, and drank not of any thing for two hours after; tho' I allowed him as much of the *Decoctum album* as he pleaſed to drink, when that time was over; he ſlept indifferently that night, and had not a Stool all next day, but recovered

vered daily ; tho' 'twas at leaſt ten days before he got his fleſh or colour.

I conceal this Medicin, becauſe I think it better than the *Fr. Ipicochoana* it ſelf, by which *Helvetius* has made ſo plentiful a fortune ; for I dare affirm with all modeſty, that I have tried it with above 200, when I thought a Diarrhea was to be ſtopt, without ever miſſing of the Succeſs, and that without any vomitting or violent conſequences that attend the other, and a great deal more certainly. Yea, I have given it with *Balſ. capoiv. Opobalſ. Balſ. Peruvian.* and the like, with wonderful ſucceſs, in Dyſenteries themſelves, and ſeldom was oblig'd to give a ſecond doſe. But its further Confirmation, I leave to experience, and the trial of others. I tried it for ſtopping a Gonorrhea, in its proper time, but it did not anſwer expectation ; nay, it rather promoted the running.

Obſ-

Obſervation XVIII.

Obſ. 18. *Peter Pierce*, having returned from the *Streights*, was troubled with a violent Flux: he was put aſhore at *Deal*, and *Goſport*, but returning without any Cure, I ſaw him on the 9th of *June*, on Board the Queen, where Mr. *French*, a very careful Man, is Surgeon; he went to Stool ſome 14 times a day, and was very uneaſy in the night, he had no Appetite for his Victuals, and was in a very weak condition: next day he took the following Purge.

℞ *Pulv. rad. Rhabarb.* ℈i. *cinam. pulverat.* ℈ſs. *M. ac capiat cum regimine.*

He did not go much oftner to ſtool than uſually, and in the evening he took the powder I preſcribe for this Diſeaſe; made into a Bolus, with conſerve of Red Roſes, by which he recovered without taking any more remedies.

Obſ.

Obſervation. XIX.

John Hall at the ſame time came from the *Streights* with the Sickneſs upon him, and had the fate of the former; he had tryed every thing that is preſcribed by Phyſitians in this Caſe, but to no purpoſe; at laſt taking the Purgative as before, and then the Bolus, he did not go to ſtool for two days, and once every day after; and recovered his health. Obſ. 19.

Obſervation XX.

At the ſame time I ſaw *Edward Mackaffrey*, who had return'd from the *Streights* in that Ship, and was put aſhore for his Illneſs, but to no Purpoſe; he took this purge on the 10th of *June*. Obſ. 20.

℞ *Pulver. radic, jalap. cortic. cinnam ſubtil. pulverat. an* ℈i. *M. ac capiat cum regimine.*

He had ten ſtools that day, and in the evening took the Powder made

made up with a little of the Conſerve of pale Roſes, and Syrup of White Poppies into a Bolus; it kept him from going to Stool that night, but he having three or four Stools next day, and being a little grip'd, he had a Clyſter that day, and in the evening the Powder made up with Conſerve of Red Roſes, and recover'd perfectly.

Obſervation XXI.

Obſ. 21. *Alexander Ferguſon*, one about ſixteen or eighteen years of Age, returned from the *Streights* with the reſt, but went to Stool ſome twenty times a day; he voided little but Blood, and a Skinny ſort of ſubſtance, which one would be apt to take for the Coats of the Guts.

He was let 5 ounces of Blood in the arm, that evening for revulſion, and next day the following purging Powder.

℞. *Rad.*

℞. *Rad. Rhab. elect. ſubtiliſſ. pulverat.* ℈j. *cinam. gr. xv. balſam. Capyv gut.* iv. *M. ac capiat cum regimine.*

This purg'd him eaſily, and that evening he took the Medicin in this form.

℞ *Pulver. contra Diarrhæas* ℈ß. *Opobalſ. gut.* viij. *conſ. roſ. rub. q. ſ. ut f. bolus quem capiat hora ſomni.*

He ſlept eaſily, and was not diſturb'd that night, he had no Stool next day; and but one the day after, and was reſtored to his health.

Obſervation XXI.

Hearing that there were ſome perſons troubled with Looſeneſſes, on Board the *Sandwich*, Commanded by Captain *Meeſe*; I went on Board for that purpoſe on the 23d of *July*, and ſaw *Robert Alvin*, *Edward Huggin*, *Charles Child*, *Thomas Starre*, and *Robert Craig*, &c. who were very much weaken'd by Obſ. 22.

by moſt troubleſome Looſeneſſes that had kept them for many Months, in ſpight of all that the Phyſicians, or any Body elſe could give them.

On the 24th they were all purg'd with the Powder of Rhubarb and Cinnamon, which had all the ſucceſs imaginable; and in the Evening at Bed-time they took the Bolus, which put an end to their troubleſome Diſeaſe, without any inconvenience whatſoever.

Obſervation XXIII.

Obſ. 23. *Henry Lloyd*, having been troubled with this Diſtemper ſo long, that for a Fortnight he came not out of his Hammock, but as Men carried him in their Arms, and was ſo weak that he could not turn himſelf, had this Clyſter in the afternoon.

℞ *Decoct. commun. pro Clyſter. (in quo coct. ſint fl. chamomil. Melilot. an. M. ß. ſemin. anniſ. contuſ. ℈ii. bacar. juniper. ʒjj) ʒviij terebinth. vitel*

tel. ovi ſolut. ℥ ſs. *M. f. enema injici-endum hora quinta pomeridiana.*

He could not keep it above half an hour, and when he voided it, there came along with it a great deal of ſlimy ſtuff; and in the Even-ing he took the Medicin, as I uſed to preſcribe it; he drank, for three or four Days after, the *Decoctum Al-bum*, and recovered without any Re-lapſe. After he had been ten days free from his Flux, and began to crawl about again, he was ſent aſhoar to recover ſtrength, which he did in a very ſhort time.

Obſervation XXIV.

James Graham, of a thin habit of Body, and very hot Blooded, fell into a moſt violent Looſeneſs, ſuch as Phyſicians commonly call a *Colli-quative Diarrhæa*, he went ſome eight or ten times to ſtool every day. Obſ. 24.

Having no ſymptom, that could ſignify to me any thing of an indigeſtion, or of thoſe impurities in the Guts, that are ſaid to, and may maintain, and produce a Looſeneſs, and his Blood being of that nature, and Velocity, to make conſiderable Secretions that way; my deſign was to alter that Coheſion and velocity by letting him Blood: and therefore I ordered him to be let eight Ounces of Blood, which was all I judg'd he could ſpare for that end, and that the powers of the faculties might not be leſſened; accordingly, all that day he had no Stool, and went very regularly thereafter; but the *Rectum* and *Anus* being very much excoriated by the ſharpneſs of the humour, which he complained of for three days aftar as if he felt a violent heat in that part; therefore to prevent any Inflamations and their Attendants, as a Sphacelus and Gangrene, I thought it moſt reaſonable to preſcribe him the following Clyſter.

℞ *Aq.*

℞ *Aq. font. moderat. tepidæ* ℥x. *Syr. de Alth. Fernel.* ℥iij. *M. f. enema.*

He kept this Clyſter two hours, and then rendered it, and was very eaſy and well. Now, that I relate this, it brings into my Memory a pretty ſingular ſort of a caſe that happen'd laſt year, when I was on Board the *Vanguard*; and becauſe 'twill not want its uſe, I ſhall preſume to go back ſo far to relate it.

Obſervation XXV.

Mr. *Moxum*, a very brave and good Officer, then a Lieutenant in the *Vanguard*, had a Looſeneſs for a day or two, about the time the Fleet was at *Diep*; it went off, but he was troubled with a moſt violent Teneſmus, or a deſire to go to ſtool. At that time I had been aboard the *Royal William*, attending the Marquis of *Carmarthen*, who was ſick of a Fever, and with whom I went into *England* to per- Obſ. 25.

fect that Cure; ſo I knew nothing of that Gentleman's Illneſs at home, till about eight Days after the Fleet came to *Spithead*; then I admir'd the change was upon him, in ten days or a fortnight ſince I had ſeen him: He was a perfect Skeleton, he could not reſt a Nights, and his Teneſmus continued; I adviſ'd him to go aſhore for his Recovery, which he did; but the Fleet Sailing ſix days after to the *Downs*, he followed the Fleet in the Ships Pinnace, which happen'd to be aſhore when the Fleet Sailed, and came to us ſix or ſeven hours after we came to an Anchor in the *Downs*; he was then worſe, and complained of an inflammatory ſort of pain in his Inteſtines, which was very troubleſome, eſpecially as he grew warm in Bed. He told me he could but die, and that he would do aboard, under my care, if I would not order him Medicins aſhore, ſo he went aſhore with Capt. *Fairborn*'s leave, and before he was four days in *Deal*, he

he was a great way on his Recovery, by the uſe of the following Medicins.

℞. *Decoct. fortior. braſſic. & fl. Melilot. in aq. commun.* ℥x. *Syr. de Alth.* ℥ij. *Terebinth. Venet. Vitel. ovi. ſolut.* ℥ſs. *Sal prunel.* ℥j. *M. f. enema, quod injiciatur quoque mane hora nona, ac hora quinta pomeridiana.*

At Bed time he took this Bolus.

℞: *Balſ. Lucatel.* ℥ſs. *nitr. corallat.* ℈j. *Laudan. opiat. gr. j. Syr. de roſ. ſicc. q. ſ. ut f. Bolus.*

His ordinary Drink was a ſmall Decoction of Sarſa and new Milk, and his Diet, Bread and Milk, or Bread and Whey; but after 4 or 5 days I allowed him Chicken, and ſuch Victuals as are eaſily digeſted; about eight days after, he came aboard in perfect Health, and only took thoſe Medicins for ſix or ſeven days.

Obſervation XXVI.

Obſ. 26. *B——D.* Surgeon of his Majeſties Ship the ——was taken ill of a want of Appetite, He could not ſleep, he had a great Drought, he Sweat abundantly in the night, He was very lean, and Dried up, and he had great reachingsto Vomit, eſpecially in a morning, brought up a froathy ſubſtance only, and ſometimes, It was watry.

Theſe Symptoms eſpecially the laſt, are commonly produced by Drinking Brandy, and Spirituous Liquors. When I firſt ſaw him, he was aſhoar in *Torbay*, and was under a Courſe of *Decoct. Amar.* But at my deſire, he left off the Decoction, he betook himſelf to a Diet of Milk, and Water-gruel. Two or three times a day he took the following Electuary.

℞ *pulp. paſſul major. conſ. cynosbat. cochlear. an* ℥j. *cortic. citr. condit* ℥ ſß *ocul. caner. ppt.* ℥ij. *ſal. prunel* ℥jſß *ſyr.*

ſyr. alth. Fernel. q. ſ. ut f. electuar. Cujus capiat magnitud. nuc. myriſtic. his vel ter in die, ſuperbibendo ſeri lact. recent. ac non ſalſi poculum.

He continu'd faithfully in the uſe of theſe Medicins for a Month, and recover'd ſenſibly every day.

Obſervation XXVII.

Mr. *Ankers*, Captain *Greenway*'s Clark in the *Edgar*, was troubled with a want of Appetite for his Victuals, a prodigious Spitting, an apprehenſion of dying ſuddenly, Belching, a weak and rare Pulſe, and a ſinking at his Heart, with a difficulty in fetching his Breath. Obſ. 27.

'Tis evedent that this Sickneſs which held him for a long time, and for which he had advis'd with a great many, to no purpoſe, is no other than the *Melancholia Hypochondriaca*, or that which People commonly call the *Spleen*, tho' That has not often the leaſt concern in the Diſeaſe; and almoſt none of

theſe Symptoms I have juſt now nam'd, can be the conſequences of that Part being any way affected, as might be eaſily demonſtrated by a more particular reſolution of the Symptoms of this Diſtemper: But ſince it is no other ways under my conſideration, at preſent, than as 'tis an *Interloping* Sickneſs, I may ſuppoſe its Cauſes, in laying down the Indications for its Cure. And therefore, becauſe theſe *Belchings*, *Indigeſtion*, and *Windineſs* in the firſt Paſſages, the *Slowneſs* of the *Pulſe*, *Unactiveneſs*, and *Whiteneſs* of the Urine, argue a defect in the attrition of the Chyle, and an unfitneſs for its being mix'd with the Blood, I order'd him a Vomit both to cleanſe the firſt Paſſages, that the Chyle and Medicins might be tranſmitted into the Blood in their full force, and that without weakning Him; as alſo that the thick and languiſhing Blood might receive a new tour and determination, by the violent Contraction of almoſt all the

the Muſcles, in the *time* of *Vomiting*. The Vomit was five grains of *Tartarus Emeticus*, diſſolv'd in two or three ſpoonsful of White-wine; he drank now and then large draughts of thin Water-gruel in the intervals of the Vomiting. It wrought very eaſily for three quarters of an Hour, in which time he had four Vomits and two ſtools; about an hour after it had done working, he drank a glaſs of warm Sherry, and laid himſelf to ſleep; and next Morning took the following Potion.

℞. *fol. ſenn. ſine. ſtip.* ℥iij. *rad rhab. elect. inciſ.* ℥ ß. *infund. tepid. per noct. in decoct. fortior. paſſul. major.* ℥viij. *Mane, colaturæ per expreſſ. factæ, adde ſyr. de rhamn.* ℥ ß *aq. epidemic,* ℥ij. *fl. til.* ℥ ß *M. ac bibat cum regimine.*

This purg'd him five times without any griping, and much to his ſatisfaction. The day after, he began an infuſion that was preparing

for

for him, from the beginning of this courſe, whereof this is the form.

℞. *rad. gentian.* ʒ ß. *Ariſtol. rotund.* ʒij. *ſummit. cent. min. abſynth. Card. Benedict. an M.* ß. *fol. cochlear. hortenſ. M.* ß. *Cortic. aurant. baccar. juniper. an.* ʒiij. *præparatis ſ. a. affund. vin. Xereſenſ.* ℔iv. *ac macerent. per dies quatuor vel quinque; dein bibat cochl.* iv. *bis terve quotidie, Infuſio, vero, tantum coletur tempore uſus; ac perſiſtat in hujus infuſionis uſu ad menſem integrum.*

He drank this Tincture the whole Time, as ordered, which diſſipated his fears of Dying ſuddenly, and brought him eaſy Nights.

Obſervation XXVIII.

Obſ. 28. *K*——*B*——of the—— was troubled with a pain in his Yard, after an impure Copulation; which very ſoon appear'd in a running, and that but very ſmall at firſt; but encreas'd daily, and was of a Green colour, he had a *Chaude Piſſe, une chorde*

chorde, and the Erection was very painful.

He complain'd of it to me when at Sea, and I cured him of the Gonorrhæa, and its Appendages, in a fortnight, without taking one grain of Mercury, Mercurial Preparations, Turpentine, Decoctions of Woods, Injections, and other Medicins, that are generally preſcribed with all the uncertainty imaginable. I could very willingly communicate this way of curing for publick uſe, if I might in Honour; being no longer at my own Liberty to diſpoſe of it, ſince I have communicated this Method to a learned Member of our College, in exchange of a practice he values very much. Yet without any breach of Faith, I aſſert, that the tedious, uncertain, and dangerous practices in this Diſeaſe, have proceeded from the defect of underſtanding, Phyſicians are under at preſent, concerning the Nature of this Diſeaſe: whereas if its *Place*, *Force*, and *way* of *Communication*

were

were more known and obvious we might ſoon diſcover more certain, genuine, and more natural ways of curing, and thoſe be even improv'd, beyond what any Man has hitherto thought of. But it being improper upon this occaſion, to evince thoſe miſtakes too particularly, for this place; I will content my ſelf to prove, that the cauſe of this Diſeaſe is not entertained in the *Proſtatæ*, *veſiculæ ſeminales*, or any other part further than the *Yard* it ſelf; without going too deep into the Argument, or anſwering the Objections may be reaſonably made againſt its being there, thinking it the firſt part of Knowledge not to be impoſed upon; and the ſecond to ſay things right; and tho' we ſhould not be able to do *this*, and are ſure of the firſt, yet ought we fairly to confeſs our Ignorance, that very ſubſtantial piece of Humanity, rather than to ſpeak things of which we have no knowledge, and far leſs to build our other reaſonings, and practice upon

ſo

ſo ſandy Foundations: Now that we may do the firſt, and diſcharge our Thoughts of ſuch a miſtake, let us call into our Memory the Hyperſarcoſes we daily ſee, and let us but compare this ſpungy fleſh, that thus fills up the paſſage of the Urine, with things of a like Nature we find upon other occaſions; and I'm ſure a Man that ſees like another, and has the ſenſe to compare, cannot find it differ (but eſpecially in its growing) from ſuch Excreſcences that happen, in curing Wounds, Ulcers, *&c.* A certain Argument that there is a ſolution of Unity in the part, where thoſe Muſhrooms ſprout, which cannot be kept down and checkt like other fungous fleſh, and is ſeldom to be prevented in the healthieſt people under a long diſorderly practice. I know it may be ſaid, that there may be little Ulcers bred in the *Urethra*, by the ſharpneſs of the matter that flows that way, from the affected parts, and whereſoever they may be, and that this

ſharp

ſharp matter may occaſion this falſe fleſh, tho' theſe Ulcers can never ſupply this running: But not to carry this Argument any great length, nor to out ſhoot a common ſight, I ſhall demonſtrate very plainly, that theſe Ulcers are begun *only* in the *Yard*, and afford this *running* from *it*; and at ſome other time make it plain, that this running comes not from above *three inches* within the Yard, as alſo *how* that is done. For the preſent purpoſe let us remember, that our Anatomy teaches us, that there is a *valve* placed at that end of the *Penis* that's next the Belly, which hinders the *Regurgitation* of the Urine; and in the ſecond Place, that Runnings can be ſtopt by *Injections*, tho' very often to the misfortune of the Patient. Now theſe *Injections* at beſt, are not more *ſolid*, if I may ſo ſay, than our *Urine*, and this valve hindring the repaſſing of the Urine, we may conclude, that it hinders the paſſage of a Body not more fluid than the Urine:

but

But ſince theſe Injections ſtop a plentiful running, and yet they do not go out of the Yard; we may conclude, that it is in the *Penis* they have their effects; and if ſo, then it is from the *Penis* this ſupply is made, which was to be demonſtrated, againſt the common Hypotheſis; and therefore it is no wonder, that Men are not able to better the Practice, from ſo falſe Theories.

I foreſee diſtinctly, the inconveniences can be alledged againſt what I hint; yet I ſhould think it an unpardonable digreſſion to Obviate them in this place, and do promiſe to demonſtrate, even to a certainty, the ſeat and nature of this Diſeaſe, about which Phyſitians are as much in the dark, if not more, as about the time it was firſt known in the World.

This my promiſe has been required, in a publick manner, by One who lately Writ a Pamphlet on that Subject, and in terms very civil, that might juſtly challenge my

my beſt performances, tho' no promiſe had been ever given on my part. But all I can ſay for my ſelf, is I that did begin a Book of this kind, wherein I had demonſtrated the Nature of a Gonorhæa, its ſeat, the way it is communicated, what the conſequences are of it going on without a Cure, and by what method it is that improper Cures corrupt the Maſs of Blood ſo, as to form the true Lues, or the Pox. I proceeded a conſiderable length, in this part of the Enquiry; when a friend borrowed theſe papers, but having loſt half a ſheet, about the middle, has to this time diſcouraged me from the performance, neither can I ſay when I ſhall reſume that work.

I did believe, that ſince this ſmall Sketch was ſo well received, by people of experience in the Cure of that Diſeaſe, a Diſcourſe clearing off all difficulties might be very acceptable: eſpecially that I deſigned to communicate ſome uſefull Medi-

cins,

cins I contrived for curing Chankers, Ulcers in the noſe, better than thoſe already known.

Obſervation XXIX.

D——J——a Boatſwain's Mate in his Majeſtie's Ship the Royal *William*, was ſeiz'd with the above-mentioned Diſeaſe in an *Eaſt India* Voyage and had a Cure, that ſtopt his Running; about three Months after, he was troubled with great, thick, cruſty Scabs on his Arms, and Fore-head: For theſe he had a great many Liniments and other Medicins, by which the Scabs fell off, but ſtill ſprung up again. He had grievous, and tormenting pain a Nights, which held him till Morning. I met him this Summer, and perfectly cur'd Him; by the following Method: He took a Bolus of *Turbith Mineral* twice a Week, and his conſtant Drink was a decoction of Guaiac. For one Obſ. 29.

Month. The Medicins were theſe.

℞. *Turpeth. mineral gr.* vij. *conſ. roſar. rub. q. ſ. ut f. Bolus, quem Capiat cum regimine. Repetatur ad alteram vicem hac ſeptimana, ac his hebdomadib. ſeq. ad menſem integrum.*

℞. *Raſur. lign. guaiac.* ℥ij. *cortic. ejuſd.* ʒij. *Coq. ſ. a. in aq. fontan. ſ. q. ad* ℔ij. *Circa finem addendo paſſul. major. integr.* ℥i. *aut liquirit. raſ.* ℥ ſs. *f. Colatura in lagena vitrea reponenda ad uſum.*

In the little time he us'd theſe things, his Scabs fell off, and he became very fat; neither had he any return of his loathſom Diſeaſe.

Obſervation XXX.

Gbſ. 30. Captain *Poulten*, then commanding the *Charles-Galley*, was taken with a violent Quinſey, on our Voyage to St. *Malo*; for which his Surgeon gave him ſome things; but

but that day being in very hot ſervice, and being oblig'd to ſpeak very much, in giving his neceſſary orders, the pain and inflamation were very great, and he could not ſleep all that night: next day being *Saturday*, he ſent for me in the Morning; and finding that he was ſick three days before, my buſineſs was to diſcover the ſtate of the following Diſeaſe, and to what height it was come, that accordingly as the ſymptoms of ſuppuration appeared, or not, I might proceed in the Cure. Finding then no ſymptoms of the ſuppuration, and a ſufficient revulſion being made by the Blood his Surgeon let him but two days before, and conſidering the violence of the other ſymptoms, I ordered him to be let ten ounces of Blood out of the Jugular Vein of the moſt inflam'd ſide; this being done, I troubled him not with Gargariſms, which are not always ſo ſafe, ev'n when they can reach the part Affected. I order'd him

to keep the part warm, to eat only Water-gruel, and to uſe the following decoction for his ordinary Drink.

℞. *Rad. Bardan.* ℥i. *acetoſ.* ℥i: *hord. mundat. M. j Coq. ſ. a. in aq. font. q. ſ. ad crepituram hordei. Colatur. per ſubſidentiam depurat.* ℔ij. *add. mel. opt. q. ſ. ad gratiam..*

And next day he took this purging Potion.

℞. *Fol. Sen. ſine ſtipitib.* ℥ ß *Rad. Rhabarb. el. & inciſ.* ℥ ß *cinamom. acerrim.* ℈i. *Infund. per noctem in decocti paſſularum majorum* ℥vi. *Colaturæ, per expreſſionem factæ, add. Syr. de Spin. Cerv.* ℥iij. *M. ac bibat hora ſeptima cum regimine.*

It purg'd him ten times very eaſily, and he was mightily relieved; he could ſwallow any thing down, and talk with any Body, if convenient. The Inflamation being thus vanquiſhed, I begun the uſe of ſuch Powders that promote the fluidity of the Blood, but wrapt them up in a convenient Syrup, leſt they

they ſhould offend the parts, in the paſſing, with their roughneſs.

℞. *Ocul cancr. ppt. corall. rub. ppti, an* ℥ ß *antimon. Diaphoretic. gr.* xv. *ſyr. alth. q. ſ. M. ac Capiat tribus vicibus, ſuperbibendo cochlear julapij ſequentis, quod.*

℞. *Aq. Spermat. ranar. ſl chamom. il. (ſeu eorundem decoct.) an* ℥ ij. *aq. cinamom. hordeat* ℥ ß *ſal. prunell.* ℥ ß *ſyr. capil. vener.* ℥ i. *M, f julap.*

He continu'd the uſe of the ptiſan preſcrib'd for his ordinary drink, and on the *Tueſday* took his purging Potion as before, and was perfectly well thereafter.

There are two things I would have obſerved in this Diſeaſe; firſt that the Medicins upon the paſt deſign be never given till we be convinc'd that the obſtruction in the capillary Arteries, of the part thus affected, is not ſo powerfull; for when they are given before that time, as a great many Authors perſwade us, they only ſqueeze out the thinner part of the Blood, and leave

the reſt deſpoiled of a vehicle fit to maintain its fluidity and ſo more apt to heighten the obſtruction, which cauſes this Inflamation, and its conſequences: And therefore we muſt be ſure to Bleed plentifully, and the right way, before we think of giving internal Medicines.

The other is, that we buſie not, nor amuſe our ſelves with the idle, and not only idle, but uſeleſs, and impracticable diſtinction the Authors make in this Diſeaſe; when they tell us, that ſince 'tis an Inflamation about the Throat, if that be of the internal Muſcles of the *Larynx* it muſt be call'd a *Cynanche*; but if of the external Muſcles, a *Paracynanche*: And if on the internal Muſcles of the *Pharynx*, a *Cynanche*; if on the external Muſcles of that part a *Paracynanche*. And that this diſtinction is impracticable, is evident to any one that knows the Anatomy of theſe parts; how ſmall the proper Muſcles of the *Larynx* are, and how near the internal and external

external Muſcles are one to another; and they only divided and parted by a thin Membrance, which cannot only not hinder the Inflam'd Muſcles of the one ſort to preſs hard upon the other, but is even it ſelf affected with this Inflamation. But they ſhould have told us too, the Symptoms of this part being affected, and ſuch ſigns whereby we may diſtinguiſh the Inflamation of the one ſort of theſe Muſcles from *that* of the other: But of this I have ſaid enough.

Thus I have run over, with indifferent exactneſs, my Diſquiſition into the Marine Diſeaſes, and the Hiſtory of thoſe in the Fleet which I doubt not, will correct many errors and miſtakes in that affair, and contribute very much to the amendment of others that abound, in this Branch of the Navy.

The End of the Second Part.

AN

ESSAY

ON

Bleeding,

And the Quantities of Blood to be Let in Fevers, in any of their Periods.

SInce my obſervations in 1696, were introduced with an Eſſay, concerning the quantity of Blood neceſſary to be let in Fevers, I will continue the ſame, and give it here more compleatly, that nothing material in the former Edition may ſeem to be wanting in this

this. I am very ſenſible how difficult a Task I have put upon my ſelf, and how intricate the times of Bleeding are, as alſo the quantities of Blood to be Let in thoſe times. In this, the defects of ſingle Obſervation are very notorious, when its utmoſt Improvement in this obvious Caſe, can give us ſo little aſſiſtance in Practiſe; ſince, after all our experience, we are left at large to Judge Bleeding in Fevers *Uſeleſs*, or *Indifferent*. This is plain by what was ſaid p. 125 in Part 2. at leaſt by all our Obſervations we cannot determine when it will prove uſefull and when fatal, it being very evident that it ſometimes does great Good, and at other times great Miſchief: In ſome Epidimical Diſeaſes all Dye that are Bleeded, in other Seaſons Bleeding has been very uſefull. There being, therefore, Caſes when Bleeding is uſeful, and when fatal, but no manner of Obſervation that ſuggeſts when it will prove either. It is manifeſt

The Defects of unaſſiſted Obſervation.

nifeſt how little a way ſingle Obſervation can conduct us, ſince in this plain Caſe it is ſo defective.

Wherefore I ſhall endeavour, in this Eſſay, to explain the times of Bleeding, and the quantities to be let in all Fevers as far as our preſent Subject will permit. To do this with greater exactneſs, It would be neceſſary to trace this affair of Bleeding from its foundation, and to apply thoſe abſtracted notions as particularly to Fevers, as their Circumſtances can require: But the firſt being almoſt compleated by the Learned *Bellini*, and the nature of Fevers being not ſufficiently inquired into in this Treatiſe (becauſe it requires no ſuch Exactneſs) neither is it proper to determine this affair ſo particularly at this time; yet, this Subject ſhall be conſidered as Minutely as theſe General accounts do allow.

What Methods there are to aſcertain its Practiſe.

To keep up to the model of my former Eſſay, we muſt conſider

der the various Methods that are gone upon to help our practiſe of Bleeding, by which it will appear, that Phyſick ſtands more obliged to the great *Bellini* in this, as well as many more particulars, than to all other Phyſicians Ancient or Modern, and that a little more had compleated thisSubject in every reſpect. But conſidering that many people, at preſent, as well as in former times, have been inclined to diſcontinue this excellent adminiſtration, becauſe of the mentioned difficulties and inconveniences they found ſometimes did attend it; I ſhall firſt put them in mind that Bleeding claims a chief Conſideration among other evacuations, that are neceſſary for the Cure of Fevers: For they being neceſſary this is the moſt compleat,andthe moſtſimple evacuation, *h.e.* it is the evacuation by which we have the quantity we demand with the greateſt certainty, without inducing parts of unaccountable operations to be mixed with the Blood.

Bleeding a principal Conſideration in Fevers.

Now

Now that to evacuate is the firſt, and conſtant deſign for the cure of a Fever cannot be denied after this general account of Fevers I have given; eſpecially after what is ſaid §53. Part. 1 and therefore the Evacuation by Bleeding beſt deſerves our ſerious conſideration, notwithſtanding of the mentioned difficulties. But were theſe good Reaſons for the pretended deſuetude, as if it were too dangerous; then all other Evacuations and Methods of practiſe ſhould likewiſe be diſcontinued, ſince they are preſſed with the ſame, and greater difficulties. The uncertainty and danger of Sweating medicins, of provoking Urine, the doubtful Adminiſtration of Purgatives or even of Lenient Purges, and the precarious uſe of Acid and Alcali Medicins are enough to throw us into ſuch deſpair, as rather to leave our Patients to the ſtrength of Nature, than that they ſhould periſh by raſh attempts intended for their ſafety.

This

This being premiſed concerning the benefit of Bleeding, and that the time and uſe of it may be made more clear, and the reaſons of the Cure more evident than by any other ſort of Medicins, I may juſtly proceed to enquire into theſe rules that are to be found on the records of Phyſick, for our Direction in practiſing Bleeding with the greateſt Safety. Theſe are, 1ſt. That Blood may be let in any quantity, till the ſick Perſon Faints away, 2dly. Till the Colour of Blood is changed from worſe to better, from being black till it is red, 3dly. Till we take away enough, 4thly. To take ſuch a quantity that the ſtrength of the ſick Perſon is not impaired. Laſtly, till the fulneſs of the Veſſels is depleted.

Rules for Bleeding.

As to the firſt of them it is manifeſt that by this Rule, there is little regard had to Diſeaſes: For, the deſign of Bleeding is very often to encreaſe the Velocity of the Blood, and that in Fevers; which

The firſt examined.

cannot

cannot be performed by following this Rule. *2dly* by Revulſion and Derivation the Velocity of the Blood is more encreaſed in one part than in any other, eſpecially in time of Bleeding; but theſe partial Velocities of the Blood may be cauſed without this Rule; Nay, they could not be, if this Rule was obſerved; and therefore it is evident that this Rule is ſo far from directing our practice of Bleeding, that many good effects commonly obtained by Bleeding, would be impeded by obſerving It: Laſtly, This Rule is very uſeleſs for Bleeding, ſince ſome people faint away at firſt ſight of their Blood, or of the very Lancet, while ſome others can bear the greateſt part of it to be let out before we arrive at the mark of having enough according to the Rule.

It is ſuppoſed that this fear which hinders the Bleeding, produces as good effects upon the Blood by altering its motion, inducing divers Fermentations and the variety of

Changes

Changes that may happen that way; and conſequently the effects of fear may be as great, as thoſe that would have happened by Bleeding, *ad animæ deliquium.* No doubt in ſome Caſes it may: But this does not make our Rule compleat, except it will anſwer all: Yet it is very certain, that we are ſhort of our deſign, if it is to leſſen the quantity of the Blood, or to encreaſe its Velocity, and as theſe are the moſt conſiderable effects of Bleeding, but not obtained by reaſon of this fainting away, it is evident, that this Rule for Fainting is imperfect, whether that is occaſioned by fear or a loſs of Blood.

And the ſecond.

The Directions of the ſecond Rule are much more diſtinct, and have a better appearance of a Rule than the other. Yet, if we are only to Bleed, when the colour of the Blood is degenerated from its Redneſs, this comes often to be omitted in many Caſes wherein experience has ſhown it uſeful. For inſtance

inſtance, we find how ſudden, and what great relief is brought by Bleeding in Apoplexies, in a Mania, Melancholia, and often in continual Fevers; tho' the Blood, in theſe Diſeaſes, ſeldom loſes its red Colour, but oftner has a Reder, and therefore by this Rule, we ought never to Bleed in ſuch Caſes, otherwiſe than we are taught by experience. Moreover, when a Man of the beſt habit of Body whoſe Blood may be in the juſteſt proportions of Quantity and Quality, has had a Fall, Bleeding ought not to be perform'd, or at leaſt not till ſome change has happened to the Blood; by which neglect, we forfeit all the advantages daily experience ſhows us do attend Bleeding, and fall into ſome of the inconveniences of Rheumatical and Pleuritical Pains, Fevers, Impoſthums, Apoplexies *&c.* which follow upon its neglect: So that both for preventing and Curing, Bleeding is neceſſary in many caſes, without ever conſidering the Colour of the Blood. 'Tis true,

good Blood becomes bad thorow the neglect of Bleeding, but then this Rule does not direct it, becauſe it is red long after it has begun to degenerate by the Ommiſſion; whereas, if the Perſon who has fallen is let Blood, all this may be prevented: For by Bleeding, the quantity of Blood is leſs, and its Velocity encreaſed; and therefore this leſs quantity, Circulating faſter, does not ſo readily ſtop in the Veſſels, compreſt by the fall, as when there is a greater quantity of Blood endued with leſs motion and ſtopt by Veſſels that are contuſed; and therefore Bleeding, when the Blood is red and in the beſt condition, is neceſſary; tho' we are not directed to perform it by this Rule.

By the by, it is only from theſe Circumſtances in a fall, and as parts of different Operations are affected, that the great variety of Symptoms, ever obſerved, are produced; and tho' they are the moſt grievous both as to Pain, and Danger of Life; yet it is manifeſt, to a conſidering

Perſon

Perſon how Inciſions, Amputations, and Operations of the like Nature; are the poſſible Cure of ſuch Affections in their greateſt Extremity.

But if we are only to Bleed, when the Blood is diſcoloured, and till ſuch time as it acquires the Colour that is natural: It is certain, that in moſt Caſes, we might drain the Body of all its quantity ſooner than compaſs this our deſign; for beſides what we may obſerve in the experience of Bleeding, it is not unreaſonable to believe that the Blood does not much differ in degrees of illneſs, in every part of the Body, and then our Rule becomes dangerous. We know that Blood may be wonderfully chang'd in its Qualities by Bleeding, and ſome conſiderable change may appear, in different parcells of Blood of the ſame Letting: Yet ſince the cauſes of theſe are ſufficiently known, we are not to draw any advantage, to this Rule, from ſo rare experiences; eſpecially ſince the true reaſons can

be aſſigned; beſides, it were inconſiſtent with what I have already ſhewn from more undeniable principles. All that can be concluded is, that as all diſcoloured Blood is defective in ſome of its Qualities, and ſince that its Colour may be mended by Bleeding; we ought to enquire diligently into the Nature of Bleeding, that we may know thoſe uſeful Circumſtances. But ſince Blood of a good Colour is ſometimes to be Let, theſe two conſiderations together may ſufficiently convince us, that the Foundation of this Rule, is Weak and Precarious.

What our Opinion is of the Third.

The next Rule is ſo palpably indetermin'd, that it is a wonder how it ever came to be ſet up as a ſtandard for Bleeding; for if we are to take Enough, and this is the mean of two extream quantities of much and little; it is very manifeſt that there is another Rule neceſſary to direct this in its uſeful and practical part, and there muſt be as many opinions about this Enough

as

as there are other Rules, and Phyſicians maintaining them ſingly, or in part, and that in all the emerging caſes in every Diſeaſe. 'Tis not improbable but that *Galen* thinking on the Confuſion that ariſes on ſuch Conſiderations fell into this Expreſſion; Happy is the ſick Perſon who lights on a Skilful Phyſician, or whom Fortune, or Almighty God, rather, thus favours, as to make the moſt uſeful opinion to prevail.

Of the Fourth.

The Rule for Bleeding, till the ſtrength of the ſick Perſon is not impaired, is indeed more particular than any of the former, but as difficult to be diſcovered as any of them. For, though, in General, it be certain that the ſtrength of the ſick Perſon is not to be leſſen'd, it is as certain, that Bleeding is often neceſſary when we are under no manner of ſuſpicion of weakening our Patient by it: But if this were not ſo, the difficulty how to Bleed, and not impair our Patients ſtrength ſtill remains. What I formerly ſaid,

concerning Revulſion and Derivation, is a very good inſtance, in the preſent Caſe: For it is evident, at one View, that the little quantity to be let will not endanger the Patients Strength; yet this Rule does not inſtruct us, when, and in what manner, either Revulſions or Derivations are to be performed. Next, if we did ſuppoſe that Bleeding were uſeful in all, or moſt Caſes; and no Caution elſe was to be regarded, but the Strength of the Patient; it is certain that this difficulty occurring on all occaſions of Bleeding, cannot be of ſufficient uſe till ſuch time as a Method can be found, whereby we may avoid this impending Danger, and that before Bleeding is performed. For if we will preſerve our Patients by Bleeding, and not run them into any Danger of Life; we ought to find a way, how this Rule of not impairing their Strength may be put in practice, and that on every individual Perſon, in every Diſeaſe, in every Condition of that Diſeaſe, and

according

according as they are affected with other Circumſtances; which is impoſſible to perform by this general Order, and more than this was never attempted, but by the Great Phyſician *Laurent. Bellini.*

The laſt Rule is taken from the largeneſs of ſome Mens Veſſels more than of thoſe of another, or of this largeneſs in a Man, at one time more than at another. This extraordinary largeneſs they ſuppoſe to be the difference of Blood in one Man and in another, or in the ſame Man at different times; and therefore that this extraordinary quantity may be diſcharged, which is known to be done, when the Veſſels have acquired their former ſize. But this Rule labours under all the difficulties we met with in the former; beſides others that are peculiar to it ſelf. For, by what I have ſaid in the firſt part of this Book; It is evident, that they who have the largeſt Blood Veſſels, have the leaſt Blood, and are the leaſt able to bear its Evacuations.

And of the Fifth.

The quantity of Blood may be augmented by Bleeding.

Moreover, it is very poſſible to augment the quantity of Blood by Bleeding, and therefore inſtead of leſſening its quantity till the Veſſels become Lanker, we may enlarge thoſe Veſſels by augmenting the quantity of Blood, and that by Bleeding, and in 24 hours time. The reaſon of this, which may be gathered from what I ſaid in the firſt part, does ſufficiently account for Bloody Sweats, eſpecially in Children and delicate young People. An inſtance of thoſe we read, in *p.* 193. *Phil. Tranſ. No.* 109; another of thoſe is that ſent to the Learned *Valiſneri* Profeſſor of practice in the Univerſity of *Padua*, and by him tranſmitted to me this laſt *September*.

An account of an Extraordinary Plethora.

But the moſt notable Confirmation of both theſe inſtances is the Plethora, I communicated to the R. Society laſt Summer. In this Caſe, the Arteries, as well as the Veins were found ſo muchſtuffed and filled with Blood, that there was no room left for continuing its motion: Yet very ſeldom was Bleeding found to be

be ſafe in this Diſtemper, and a great many dropt off in time of the Bleeding, but if they eſcaped that time, they grew Weaker and Weaker till they died, and then were found full of Blood. This Diſeaſe has been very frequent, theſe laſt two Years, in *Europe* and out of *Europe*, and very fatal, but the Caſes of ſuch Misfortunes that hapen'd by Bleeding, cannot fairly be related at preſent. Yet the Caſe of the laſt Perſon, of any Faſhion, who died of this Diſeaſe being pretty well known, and a great Confirmation of what I alleadge, it will not be improper to relate the ſubſtance of that matter. It is known that the time from his firſt complaint till he died, was not above three Days, in which time he was Bled largely, and had other Evacuations; beſides that, he took little or no Aliment, yet he was ſenſibly worſe and worſe. When he was opened, the Blood Veſſels of the Brain were full as in Caſes of Apoplexies tho' he had no Symptom of that Diſeaſe, and the Veſſels in other

parts

parts of the Body were in the like Condition, but they were not ſo narrowly examined. And therefore if there could be a fulneſs that occaſioned Death, notwithſtanding of great Evacutions, it is manifeſt to how little purpoſe they were made, and that an extraordinary quantity of Blood was generated in time of theſe Evacutions, if not upon their account.

To know the times of Bleeding, a matter of importance.

Of how great moment, then, is this matter of Bleeding, but with what inextricated difficulties does it ſtand incumbred: How uſeful and neceſſary is it believed to be by ſome, who think it ſo ſafe in all Caſes, that it can never do any hurt! How unjuſt are the Calumnies of others who declare it to be always hurtful, and in no Caſe proper? But howſoever uſeful and ſimple an Operation it is known to be; how defective are the Rules for adminiſtring it, ſince our Lives can be brought to a Period by it, even when we have the greateſt quantities of Blood in our Bodies.

The

The great *Bellini* is the ſecond Perſon who inquired into this affair, in that manner we find it done by him; and if the Excellence of his Performance is conſidered, we may ſay, that he is the only Perſon who has treated on this Subject reaſonably: In ſo much that any one will be perſwaded that he wanted only more time, or more Tranquillity in in his Studies to perfect the reſt, he having been often Crucified with the Malice of impudent Tongues. His performances in this matter are ſo conſiderable, that they want only to be known, in order to their being admired. He has ſhown all the advantages that can accrue to us by Bleeding, as alſo the great miſchief that may ariſe by it: He has evidently demonſtrated, that the Velocity of the Blood may be encreaſed, as alſo that it may be leſſened by Bleeding, and the Cauſes of both; that in different parts of the Body, the Velocity of the Blood is different in time of Bleeding, and for ſome time thereafter: He has ſhown how the

Bellini the only Perſon who has done any thing tolerable on this Subject.

Body

Body is Warmed, and Cooled, by Bleeding; beſides a great many more particulars that were not thought of by any one before himſelf. All theſe are perform'd withſuch evidence, as no Body can reſiſt their truth who does not deny common Senſe, and the Circulation of the Blood. His ownIntroductory words are, *Doctrina mittendi Sanguinem pendet ex toto a Naturali ejus Fluxu, ſeu Circuitu, intra Corpus: Adeoque ſupponendum id omne, quod oſtenditur de Circuitu Naturali Sanguinis.* The Doctrine of Bleeding wholly depends on the natural motion of the Blood within the Body, or its Circulation; and therefore we muſt ſuppoſe every thing that is ſhown about the Circulation of the Blood, *&c.* Is not this an eaſy Poſtulatum for this his admirable Doctrine to turn upon? Who dares deny the juſt Conſequences, from this principle, and maintain *Harvey*'s Circulation at the ſame time; or who can be thought to underſtand the Circulation of the Blood, who throws off the

p. 89. *De Urinis pulſ. Miſſione Sanguinis, &c.*

Doctrine

Doctrine of Bleeding by *Bellini*. For the future let any Physician take heed how he reflects upon this Doctrine, unless he has a Mind to declare himself a Disciple of Dr. *Brown*.

His Doctrine thus demonstrated, upon supposition that the Powers of the Heart and Arteries are not weakened, is absolutely true: But when this abstracted Doctrine comes to be put in practice for Curing individual Men of Diseases, or preventing their falling into them; in that Case, the powers of the Faculties are already strangely impaired, and are capable of being more by Bleeding; and therefore there is something still wanting for the proper executing this abstracted Doctrine. In order to this, he is of opinion that we may compass it, by discovering the quantity a Man may lose while he fasts, and has not these powers likewise weakned, or the quantity lost, by transpiration, while no aliment is taken, and the Powers of the faculties not impaired, nor he does not fall sick; and by other such like means. But

How far he has carried it.

prop. 11. But it is plain by what is ſaid § 25. and 26, of the firſt part of this Book that what is thus judiciouſly offered will not anſwer our end; neither are the errours of this untimely adminiſtration to be remedied, by Broath, Cordials, or the like helps. Moreover, this Learned Author obſerves moſt judiciouſly, that when the Blood is ſo corrupted that our ſtrength is impaired, it is the ſame thing as if the qualities of the Blood remained the ſame, but its quantity were leſſen'd to that degree, as is fit toproduce the like defect of ſtrength; and therefore it is evident, that the Bleeding muſt always be managed with reſpect to the preſent degree of ſtrength, whether that is reduced by the quantity of Blood being leſs than it ought to be, or that its qualities are ſo changed, and the Blood ſo much corrupted, as to produce the preſent degree of weakneſs. So that till ſuch time as we can diſcover the way how this weakneſs is occaſioned or at leaſt the degrees of this weakneſs, there is ſomething wanting

ing to render this practice compleat.

This is the only difficulty left unsolv'd by this great Man, and is candidly acknowledged by himself. *prop. 42. Opuscul.* *Cæterum ut habeatur certa quædam cognitio ad quem usque terminum virium redigi possit animal*, h. e. *ad Quam usque imminutam quantitatem Sanguinis absque necessitate alimenti, et absque eo quod veniat in imbecillitatem virium, quæ ab operationibus illum cohibeat, est ulterioris operæ, et unde res tota Missionis Sanguinis multo vælidius evincitur.* But to know certainly to what degree of strength an animal may be reduced, *h. e.* what quantity of Blood may be let, without the necessity of taking any aliment, or that he becomes so weak that he is not able to perform his common actions is a matter of a further enquiry, and from whence this whole affair of Bleeding may more clearly be known.

'Tis true, he promises to hint something by and by, which may help us in this particular, but I no where find it, so that this matter is left with this defect.

We

We cannot ſufficiently Lament the loſs of this great Man, who had certainly clear'd this difficulty, and rendred this Subject compleat: For my part, I hope this may be ſufficiently removed by what I have ſaid *Cor. Prop. 2. probl. de do ſibus emeticorum*, &c. And may be further ſhown in due time; but never with that elegance of expreſſion that was natural to the great *Bellini*.

How this Doctrine may be demonſtrated.

The next thing to be done, is to apply this Doctrine of Bleeding to the preſent Subject of Fevers; which is an inſuperable difficulty, while the Doctrine of Bleeding, and practice of Fevers were obſcure, as the firſt was plainly before *Bellini*; and the ſecond is, by what is ſaid p. 127 part 2. But I hope is now more clear, by what is ſhown in the theoritical part of this Book, joyn'd to what is now ſaid on this Subject. For, by them, we may know when our deſign to *Quicken*, and *Leſſen* the *Velocity* of the *Blood* ſhall ſucceed in *every* Perſon *Sick* of a *Fever*, in every *Country*, &c. As alſo, how the quantity of Blood is *Augmented*, and *Leſſened* by Bleeding; what Perſon is *Warmed*, or *Cooled* by Bleeding: Which is all we want to know.

FINIS.