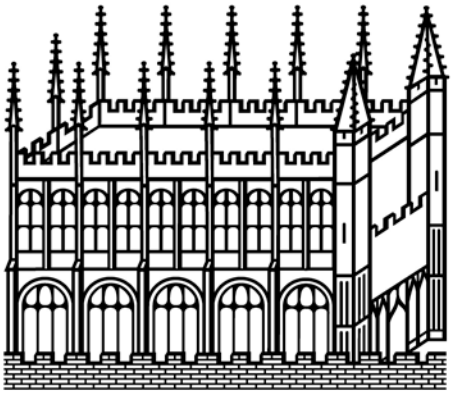

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From the College of Phyſicians, Oct. 5. 1700.

Mr. *Smith*,

I Have Read the Book you ſent me, which, for the great Diſcoveries contain'd therein, is juſtly Entitled, *The Myſteries of* Opium *Reveal'd*: It has no need of Mine, nor of any other Approbation: For ſuch Extraordinary Performances, as this is, are more ſecure of a Kind Reception in the World by their own great Worth, and Uſefulneſs to the Publick, than by any other Recommendation whatſoever.

Yours,

THOMAS BURWELL.

THE MYSTERIES OF OPIUM Reveal'd,

BY

Dr. JOHN JONES,

Chancellor of Landaff, *a Member of the College of Phyſicians in* LONDON: And formerly *Fellow of* Jeſus-College *in* OXFORD.

WHO,

I. Gives an Account of the *Name, Make, Choice, Effects, &c.* of *Opium.*

II. Proves all former *Opinions of its Operation* to be meer *Chimera's.*

III. Demonſtrates what its *true Cauſe* is; by which he eaſily, and Mechanically explains *all* (even its moſt *myſterious*) *Effects.*

IV. Shews its *noxious Principle,* and how to ſeparate it; thereby rendering it a ſafe, and noble *Panacea*; whereof,

V. He ſhews the *palliative,* and *curative Uſe.*

A DEO LUX.

LONDON:
Printed for *Richard Smith* at the *Angel and Bible* without *Temple-Bar.* MDCCI.

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TO THE
KING'S
Moſt Excellent Majeſty,
William III. &c.

May it pleaſe Your Majeſty,

HAving no *Means* to attone for my *bold Eſſay* to expreſs Your MAJESTY's *glorious Acts, and Virtues* upon a *ſmall Pillar*, (as much *too narrow* to contain, as my *Pen* was *too ſhort* to reach *them*) but by this *Poor Sacrifice*, making *one Preſumption* the *Advocate* of the *other*, (as if *Offences* bore no *Proportion* to Your ROYAL *Notice*, and *Clemency* without accumulating them) I humbly implore

DEDICATION.

GOD's *Repreſentative* in *Mercy*, as well as *Power*, to be a Saviour in *pardoning*, as well as *preſerving*. I confeſs my *Attempt* as *daring* and *aſſuming*, as that of the Arrogant, and Sturdy *Giants* to ſcale *Heaven*, being too great a *Task* for a general *Conſult* of the moſt *exalted Wits* on *Earth*, if not of *Angels*, and *refin'd ſeparate Souls*, of whoſe *Number mine*, by frequent *Ecſtaſies* of *Thanks*, and *Praiſes*, for the *Wonders* Your MAJESTY has wrought for us, ſeems as it were ambitious to be *one*; as well knowing, that ſuch *miraculous Exploits* far tranſcend the *Conceptions*, and *higheſt Flights* of thoſe that are clog'd with *Bodies*; which had quite balk'd my *Endeavours* to deſcribe them, but that thoſe *uncontrollable Raptures* uſed *Violence* upon my *Modeſty*, and *a long defeated Expectation* of *better Pens* render'd my *Impatience outragious*, *to find Men ſilent*, *where they*

they cannot be loud enough; as if the *Impracticableneſs* of *adequate Thanks* had pall'd their *Spirits*; Or the vaſt *Cataracts* of *Bleſſings* Your MAJESTY pour'd upon us had overwhelm'd; Or the conſequent *Eaſe*, and *Security* lull'd them aſleep; Or our *exuberant Proſperity* overgrown the *Memory* of its *brave, and generous* Author: The *Thoughts* of which *Ingratitude*, what *Loyal*, or *Moral Heart* can bear without the *higheſt Indignation*? The *Fret*, and *Ferment* whereof would have even burſted its *Veſſel* without the *Vent* I gave it in expreſſing my *Thoughts* upon that *Pillar*; to *mind* the *forgetful*, *excite* the *Lethargick*, and give all a *Model* by my *Paper-building* to erect more *ſumptuous* and *permanent Monuments* of what GOD, and Your MAJESTY's unparallel'd *Magnanimity*, *Courage*, and *Conduct*, have done for us.

Since that was my *Deſign*, *Gratitude* my *Motive*, Deeds and Quali-

fica-

fications, that have no *commenſurate Words*, my *Theme*; I hope *Defects* in *Expreſſion* will not intercept a *gracious Aſpect*.

If the *Book* affords any *Thing new*, or *uſeful*, *Your* MAJESTY is the *Author*, as *Preſerver* of our *Lives*, and *Eſtabliſher* of the neceſſary *Tranquillity* for Thoughtful *Studies*, and *Inventions*; therefore I humbly preſent it to Your moſt *Sacred* MAJESTY, as *Men* do *Oblations* to the DEITY from whom they receiv'd them; making it (as far as in me lies) doubly Yours, as is,

ROYAL SIR,

Your MAJESTY's

Moſt { *Humble*, *Obedient*, *Thankful*, } { Subject, *And* Servant,

JOHN JONES.

Becauſe I could not Attend the Correction *of one* Word *in the* whole Book, *ſome* Errours *have eſcaped the* Preſs, *you have a Liſt of the main, and may correct, or paſs by the* Reſt.

ERRATA.

Note, *That* d *ſignifies* dele *(or blot out) and* al. *ſignifies* always, *the* firſt Figure *ſignifies the* Page, *the* ſecond *the Line.*

PAge 2, 7, d. *and*; 6, 33, Βιργίλιϴ; 7, ult. *Smyrna* al. 11, 11, *Sort*; 13, 16, *leſs bitter*; 20, 27, *Helmontians*; 21, 6, *Bauhin* al. 23, 11, *ſenſile*; 23, 14, *Dilatation*; 24, 35, *Monardes*; 26, 15, *palliative* al. 27, 1, *Leipothymies* al. 27, 33, *Conſtriction*; 31, 6, *except*; 37, 33, *hindering*; 41, 21, *wholely* al. 57, 20, ἀναδυμιάσεις; 61, 14, *vaporous*; 68, 30, *conteſt*; 72, 25, *nutritius*; 74, 11, *or*; 76, 13, *Emeticks*; 76, 18, *Vomitive*; 84, 31, *Helmontians*; 88, ult. *Sopor.* 91, 2, *Laxity*; 91, 5, *genus*; 91, 16, *Narcotick*; 92, 10, *deſtitute*; 95, 29, *reſinous* al. 98, 16, d. *as*; 109, 3, *that*; 109, 20, *Contractions*; 112, 6, *Vigilative*; 120, 30, *eſpecially*; 123, 27, πλειονι τροφῆ χρέεται; 124, 27, *refracts*; 127, 6, *Dyſenteries*; 129, 21, *rude*; 129, 36, d. *that*; 148, 28, *gaudet*; 152, 13, *Aphrodiſiacks* al. 154, 16, *defending*; 158, 5, *Objects*; 164, 22, *ineptitude*; 170, 9, *voluntary*; 176, 15, *Grew*; 177, 12, *Maſtach*; 178, 35, *Aſarabacca*; 187, 26, φαρμάκ, ἐνδίδοται; 191, 9, *ſalacious*; 198, 26, *tartareus*; 201, 12, *teazing*; 208, 6, *mollifying*; 208, 12, *Maſtach*; 216, 14, *content*; 228, 1, *Palſies*; 253, 11, *which is*; 268, 21, *Platerus*; 273, 23, *Torrefaction*; 274, 34, *parenchymate*; 278, 2, ὕδωρ; 286, 30 & 36, *dilute*; 289, 19, *Cap.* 5. 291, 6 & 7, *Philonium*; 293, d. *the firſt* 7 *Lines*; 294, 2, *gt*; 297, 13, *tedious*; 297, 30, *Preparations*; 305, 23, *Centaury*; 312, 21, d. *or*; 316, 30, *Luxations*; 328, 22, *gradually*; 329, 19, *Jealouſies.*

Note, That *a* and *u*, *f* and *t*, *i* and *s* (in Words Ends) *l* and *t*, *n* and *x*, are ſometimes Printed one for the other.

THE MYSTERIES OF OPIUM Reveal'd.

CHAP. I.

Shews how Opium *had its Name, how 'tis made, whence it comes*, &c.

THE *Opium*, that was in *Uſe* in *Ancient Times*, was made thus:

When the *Poppy* (which was generally the *White*, and ſow'd then only in Gardens, and ſmall Incloſures) was come to its full growth, and moſt turgid of *Milky Juice*, which was in the hot Countries in *May* and *June*; they did, as ſoon as the *Dew* was up in the mornings, make ſeveral Inciſions tranſverſly or *athwart* the Heads of the *Poppies*, yet not directly *horizontal*, but ſomewhat *obliquely*, taking

 care

care not to make them quite through into the *cavity* thereof; holding the *Knife*, or *Inſtrument*, with which the *Inciſions* were made, with its Edge ſloaping upward, while it wounded the Heads, and conveniently placing certain *Shells* to receive the *Milky Drops*, that iſſued out of the *Inciſions*; and went backward among the *Poppies*, as they proceeded in this *Work*.

1. *They choſe the Time when the Poppy Heads were moſt turgid of Milk*, to take it in the beſt *Condition* for their Purpoſe; for if they gathered it ſooner, it was not ſo Mature, and if afterward, ſome of its *Vertue* expired; and the *quantity* of the Juice was leſs, becauſe dry'd up in ſome meaſure, if not taken timely.

2. *They made ſeveral Inciſions in every Poppy's Head*, to have the greater Plenty of Juice.

3. *They made them immediately after the Dew was up*, to prevent its being tainted with any of the *Dew*; and becauſe the great *Heat* of the *Day*, in thoſe *Countreys*, would much diminiſh the Quantity of the *Milky Juice*, and ſo thicken it, that it would not run out as freely as in the *Mornings*.

4. *They made the Inciſions tranſverſly*, thereby to cut and lay open more of the Milky Veſſels.

5. *They made them ſomewhat obliquely*, that the Drops might the better follow, and overtake one the other, and thereby coaleſce, and grow more conſiderable in *Bulk*, and that the oblique *Wound* might the better conduct them into the ſame part of the *Shells*; that they might find all together in a *maſs*, when it was ſufficiently dried or inſpiſſated by the *Heat* of the Sun.

6. *They did not make the Inciſions quite through*, (if they could avoid it) leſt any of the *Juice* ſhould run into the *Cavity* of the *Head*, and ſo be loſt among the *Seeds* contain'd therein.

7. *They*

7. *They ſloaped the Edge of the Knife, or Inſtrument, upwards, as they made the Inciſions,* that the *Juice* might the eaſier ſlide outwardly; eſpecially in caſe they happened to make the *Inciſions* quite through, which they could not always avoid, notwithſtanding all the *Care* they uſed.

8. *They went backward as they did it,* to avoid going by the *Shells,* and inciſed *Heads*; leſt they ſhould diſorder, or diſcompoſe, or throw them down, or wipe off any of the *Juice* with their Cloaths.

This being done, they left the *Milky Juice* in the *Shells,* to inſpiſſate by the Heat of the Sun into a *Pilular Conſiſtence.* I have been the more particular, to ſhew Men how to make *Opium* of *Engliſh Poppies,* which you'll find of good uſe.

The *Milky Juice,* as it dry'd or thickened, did gradually change its *colour* from *white* to a kind of a *reddiſh yellow* (or tawny) *colour,* not unlike, that of a *Lyon's Hair,* which *colour* you may ſtill obſerve on the inſide of our common *Opium,* when rudely torn by *force,* if taken *notice* of upon the tearing; for the *Air* does ſoon blacken it.

This *ſort* of *Opium* gathered in Shells, *&c.* (as is aforeſaid) the *Grecians* (our *Maſters* in *Phyſick,* from whom we derive the Names of many of our *Medicaments, Diſeaſes, &c.*) called ὀπός, which ſignifies *the Juice,* by way of *Eminence*; as we call the *Jeſuits Bark* (*the Bark*) becauſe moſt uſeful, and excellent.

The *Latines,* who had alſo their *Learning,* and *Words* of *Art,* from the *Grecians,* called it *Opium* from ὀπός; it being uſual with them in very many Caſes, particularly in things made out of other Matter (as *Opium* is made out of ὀπός *the Juice*) to change *os* to *um* or *ium,* ſo that ὀπός (or *Opos*) was by them call'd *Opium.*

The *Latines* becoming *Maſters* of the World, and of every Thing that was good and excellent; and all People obſerving their *Manners*, *Faſhions*, *Uſages*, *&c.* ſome of the *Eaſtern People* got the *Uſe* and Name of *Opium* from the *Latines*, which they in Proceſs of Time called *Ofium*, by changing *π* (or *pi*) into *fi*; which is very common in all *Nations*, becauſe the *natural Purſuit* of *Eaſe*, and *Pleaſure*, in the Run of *Diſcourſe*, changes the *harder*, and *harſher ſounds*, into ſuch as are *eaſier*, and *ſweeter*, when they are *like* in ſound, as *pi* and *fi* are. The Sound of *π* (or *pi*) is harder than that of *fi*; 1. Becauſe it quite ſtops the Breath, which the ſound of *fi* does not. 2. Becauſe the *ſound* of *π* (or *p*) requires the motion of the *Lower Lip* upward, againſt its natural *gravity*, and the motion of the whole *Lower Jaw* upward, by conſent, to help that of the *Lip*; whereas in forming the ſound of *f*, the *Lower Lip* moves only *horizontally*; which is the eaſieſt of Motions, except the Natural motion of *weighty* Things *downward*, or *light* Things upwards; yet are both thoſe Sounds *like* in their *formation* in ſeveral other *reſpects*; as 1. Becauſe both are *non-vocalized Sounds*. 2. Both are *labial*. 3. The *Tongue* lies ſtill in its *Natural Poſition* in forming both. 4. The *Uvula Valve*, which ſhuts up the *Paſſage* of the Breath through the Noſe, is ſhut in forming both; all which ſhews, that the ſound of *π* (or *p*) *m* (or *pi*) is much *harder* to be form'd than that of *f* (or *fi*) and yet conſiderably *like*; which is the true Cauſe why all Nations are apt to change the harder ſound of *pi* into the *eaſier* and *like Sound* of *fi* (or of *p* into that of *f*): I put *pi* and *fi* for *Inſtance*, becauſe the *Likeneſs* appears better in them by having the ſame *Vowel* after both; whereas when you ſay *p* (or *pee*) *f* (or *ef*) the *Difference* of the *Vowels* added, and the *ſound*

of

of *ee* put after *p*, and of *e* before *f*, (to help the Conſonants to ſound) makes them ſeem unlike, by reaſon of the different *Vowels*, ſo differently placed; whereas *pi* and *fi*, having the ſame *Vowel* alike placed after them, do truly ſhew their *likeneſs* without *confuſion*. It is by Reaſon of this *Likeneſs*,

That { *Sapphick*, / *Sapphire*, } Are ſounded { *Saf-fick*. / *Saf-fire*, or *Safire*.
&c.

That Τρόπαιον is Tranſlated *Trophæum* (or *Trofæum*) a *Trophy*.

Beſides, that the *Arabians* did and do very commonly change *p* to *f*,

Saying { *Faunia*, / *Ofium*, / *&c.* } For { *Poeonia*. / *Opium*. / *&c.* }

And this *likeneſs* of the Sound of *p* and *f*, is the *Reaſon* why *ph* is written for *f*, becauſe *h* ſignifies the *ſound* of *Breath* expired, which if you uſe upon ſounding *p*, it will be the ſound of *f*; ſo that *f* is a kind of a breathing *p*, that is *ph*.

Of which Matter, the Curious in ſuch Things may find more to their ſatisfaction in my *Phonography*, when publiſhed, which, I hope, will be ſuddenly, if not before this Book.

They call it, in ſome of the *Eaſtern* Countries, *Affium*, or *Affion*, inſtead of *Ofium*, it being uſual in all *Countries* to change the *harder*, and *harſher ſound* of *o*, to that of *a*, which is like it, but *eaſier* and *ſweeter*. It is hence,

That we are apt to ſay { *Carat*, *Fagat*, *Flagan*, *Wagan*, *&c.* } For { *Carot*, *Fagot*, *Flagon*, *Wagon*, *&c.* }

Changing the Sound of *o* to that of *a*; becauſe the Sound of *a* is eaſier, and not unlike that of *o* (as was ſaid.)

Some in thoſe Parts call it *Amphion*, (or *Ampion*) for like *Reaſons*, all (doubtleſs) deriving the *Names*, that I have mentioned, from the *Greek Word* Ὀπῶ, the *Latines* ſaying *Opium*, (whence we have it) the *Arabians Oſium*, and ſome other *Eaſtern* People *Aſium*, or *Affium*, and others *Amphion*, *&c.*

The beſt *Opium*, that was in *Uſe* in thoſe *ancient Times*, was had from *Thebes*, the Chief *Town* (or *City*) of the Country of *Thebais* in *Egypt*, (not *Thebes* in *Bœotia*, or *Cicilia*) which is now called *Theves*; Becauſe, as *p* is apt to take the *ſound* of *f*, ſo *p* and *b* are much more apt to take the *ſound* of *v*, which is (as it were) a ſweeter ſort of *f*, with which it exactly agrees in its *formation*, but that the *ſound* of *v* is *vocalized*, (which ſweetens it) and that of *f* is not. It is from the *aptitude* of the ſound of *b* and *p*, to change into the moſt ſweet *ſound* of *v*,

1. That Children ſay, *Marvel* for *Marble*, *&c.*

2. That *b* or *β* in { *Ebur*, *Guberno*, Δαβὶδ, Βάδω, Βιργίλιος, Κάρρων, Βίος } Is tranſlated to *v* in { *Ivory*. *Govern*. *David*. *Vado*. *Virgilius*. *Varro*. *Vita*. }

3. That

3. That *p* in { *Sapor*, *Papilio*, *Præpoſitus*, } Is tranſlated to *v* in { *Savour*. *Pavilion*. *Provoſt*. }

Which changing of *b* and *p* to *v*, muſt doubtleſs happen in other *Languages*, as well as thoſe I mentioned, becauſe the *ſound* of *v* is ſo much *eaſier*, and *ſweeter*, than either; yet like them in *ſound*.

But the *ſound* of *b* is more like that of *v*, becauſe the ſound of both are *vocalized*, which that of *p* (as has been ſaid) is not; ſo that *b* and *v* agree exactly as *p* and *f*; This makes the *Egyptians* ſay *Theves* for *Thebes*, as the *Arabians* ſay *Ofium* for *Opium*.

Who knows, but this may be the cauſe why *P* is a kind of ſhut *F*, and *F* a kind of an open *P*; for ſuppoſe *P* opened at the round part, to ſignifie that the Lips are not cloſed in ſounding *F*, and that the lower ſtroak or part be left ſhorter, to ſignifie that the lower Lip is drawn inward in ſounding *F*, the *P* becomes a perfect *F*.

The *Reaſons* why the *Opium*, that came from *Thebes*, (now called *Theves*) was, and is the beſt, are, 1. That *Thebes* (or *Theves*) being in *Egypt*, lies in a hotter Country, that is, nearer the *Line* (or *Equator*) than any of the Countries on the North-ſide of the *Mediterranean*; for it is obſerved, that the *Heat* of *Climates* contributes very much to the *Strength* of *Opium*, which is weaker if you make it in *England* or *Germany*, than in *France*; in the Northern Parts of *France*, than in *Languedoc*, which borders upon the *Mediterranean*; and weaker there than in *Smirna*, *Natolia*, *Aleppo*,

and *Apulia*, which are more Southern; and weaker in thoſe Places than in *Thebais* in *Egypt*: For which cauſe we may Judge, that the *Opium* which comes to *England* from the *Eaſt-Indies*, that is yet hotter than *Egypt*, being much worſe than that of *Thebes*, (or *Theves*) muſt in all probability be adulterated, or made of the *Leaves* and *Stems* of the *Poppy*, (as ſome ſay) otherwiſe it would be rather better, as coming from the hotter Country. 2. That of *Thebes* may be better, becauſe the Heat of *Egypt* is more conſtant, and uniform, than in *Natolia*, *Aleppo*, *Smirna*, *&c.*

The Quantity of *Opium* which was gathered by the *Milky Juice* of the *Poppy's Heads*, dropping into *Shells* out of the *Inciſions* aforeſaid, being but ſmall; and the *Uſe* of this moſt noble, pleaſing, and generous of *Cordials*, and *Medicaments*, daily increaſing, by the *conſtant* and infallible *Benefit* they found thereby; Men, partly to avoid the *tedioufneſs* of gathering it by *Drops*, and partly out of *neceſſity*, but mainly ('tis to be doubted) out of *covetouſneſs*, began to bruiſe and pound the *Poppy's Heads*, and to ſqueeze out the *Juice*, for *Expedition* and *Quantitie's* ſake; which bruiſing, and ſqueeſing, cauſed it to look blackiſh.

This the *Greeks*, for Diſtinction's ſake, called Μηκώνιον, from the Word Μήκων, which ſignifies *Poppy*; ſtill calling the better *ſort*, which was gathered in Shells out of the Inciſions of the *Poppy's Heads*, Ὄπος.

Thus have you the true Original of Ὄπος, and Μηκώνιον, which the *Latines* (and we from them) call *Opium*, and *Meconium*: Tho' (as it happens in moſt Things in Merchandiſe, to recommend the *Goods*) we now call the *Meconium*, *Opium*, by the *better Name*, as they do in another caſe (out of abundance of abſurd Civility) call every *Quack* a *Doctor*.

After-

Afterward (its *Uſe* growing more and more) they added the *Leaves* to the *Poppy*'s *Heads* in the pounding, bruizing, and expreſſing the *Juice*, boiling it for ſpeed's ſake to the conſiſtence of a *Confection*; which cooling, comes to the conſiſtence that we have it in (I mean the freſher and ſofter ſort that we have) which by the forcible pounding, ſqueezing, and boiling, contracts a blackiſh *Colour* like that of *Horſe-Aloes* on the out-ſide, to which *Colour* the *Air* does very much contribute, and preſſing the Superficies cloſe together; for if you rudely tear a piece of that we have (which is all of this laſt kind) it looks at firſt (as was ſaid) of a *reddiſh Yellow*; but the *Air*, eſpecially if moiſt, or any *Moiſture*, and handling of it, and cloſing the Superficies together, ſoon makes it look blackiſh again. This (as was intimated) is that we now call *Opium*, and have in common *Uſe*.

Which being alſo in common *Uſe* among the *Grecians* when the *Turks* Conquer'd them, was by the *Grecians* themſelves called *Pous* (or *Pos* with the *o* mouthed widely) which came doubtleſly from Ὀπός; the *Meconium* at laſt gaining the better Name of Ὀπός (or *Pous* or *Pos*) after the manner aforeſaid to recommend it (as all *Opium* is now call'd *Theban*) and the O in the beginning of Ὀπός, paſſed over in the Run of Diſcourſe, which is not uncommon with *Vowels*, becauſe of their *flat Sound*, which is ſo by reaſon of the wide Paſſage that the *Breath* has between the *Tongue* and the *Palate* in the Formation thereof; for *Wideneſs* of Paſſage is the cauſe of *Flatneſs*; as *Narrowneſs* (in *Birds*, *Children*, &c.) is the cauſe of *Sharpneſs* of *Sound*; therefore the *Sound* of *Vowels* being *flat*, *fading*, and conſequently not as much miſſed as *ſharper Sounds*, we often omit *Vowels*, particularly in the beginning of *Words*, for Eaſe and Shortneſs ſake. Thus it comes to paſs,

That

That Men ſay { *Pothecary*, *Prentice*, *Buttals*, *Larum*, *Light*, Poς (or Pυς } For { Apothecary. Apprentice. Abuttals. Alarum. Alight. ᾽Οπ⊖

And as ᾽Οπ⊖ came to be ſounded Poς, ſo Poς (as naturally) to be ſounded Pυς (or *Pous*) becauſe it is eaſier to ſound *u* after *o* in this and ſome other caſes, than to omit it, as it is eaſier to ſound *p* between *m* and *t* &c. than not; as in *tempt*, *crumpt*, *limpt*, &c. which are more eaſily ſo ſounded, than if the ſound of *p* were left out, which I call *Eaſineſs* of *Conſequence*. Hence it is

That { *Bold*, *Sold*, *Hold*, *Bolt*, *Foll*, *Toll* &c. } Are ſounded { Bould. Sould. Hould. Boult. Joul. Toul. &c.

Changing the *o* into *ou*, as the *Grecians* did *Pos* to *Pous*. For this and ſuch reaſons it is, that the *National Greek* can hardly be underſtood by *Scholars*, when ſpoken by the *Natives*.

It is for the ſame Reaſon, that the *Greeks* write *Greek*, (as we do *Engliſh*, and the *French* do their Language) different from what they ſpeak; ſo that if any Man ſhould learn *French*, or *Engliſh*, and always ſound it as it is *writ*, or *printed*, he would very hardly underſtand them, as they are vulgarly *ſpoken*; which is the very Caſe of ſuch as learn *Greek* by *Book*, who always ſound every Letter,

Letter, whereas the *Native Greeks* do (what all Nations do more or leſs) ſhorten, and alter the Sound of Words in the Common *Run* of Diſcourſe by a natural Propenſity unto, and Purſuit of *Eaſe*, *Pleaſure*, and *Speed*, which by degrees very much alters the Sound of Words.

The *Turks* having been uſed to call the better *Sort*, that dropt out of the *Inciſions* made in the *Poppy Heads*, *Maſlack*, continued that Name to that Sort after they Conquer'd *Greece*, and call'd the other *Sorf*, which they found in Uſe among the *Grecians* by the Name that the *Grecians* gave it, *viz. Pous*; and ſuch as commonly uſe it they call *Pouſti* by way of Contempt, as if we ſhould ſay *Small beer-Drinkers*, in compariſon of *Wine-Drinkers*.

You may eaſily perceive by what has been ſaid, *Why* our *Opium* hath ſo much Filth in it.

Why it taſtes ſometimes of an *Empyreum*, or *Burning*, in not ſtirring it well while it is boiling into a *Conſiſtence*, and not giving it only a gentle Heat when it begins to thicken, gradually leſſening the Fire, or letting it conveniently decay, and go out of it ſelf; which is a very good *Way* for ſuch as have not other Conveniences; for as the Matter thickens, the *Heat* declines, and ſo becomes ſafe from a Taſte of Burning, if the Fire be duly proportion'd: But all this *Trouble* is avoided by inſpiſſating by the *Heat* of the Sun, which is uſed in ſome Countries.

Note, That the Poppy of which *Opium* is made, in all *Turky*, *Egypt*, *Thebes*, &c. is the great White *Poppy*, which grows very freely in thoſe Parts, and (as I am inform'd) without any manuring of the Ground in ſome Places; certain it is, that they now have whole *Fields* of that White Poppy, out of which they make the *Opium*, as is aforeſaid, by *pounding*, *preſſing*, *boiling*, &c.

CHAP.

CHAP. II.

Of the Election (*or* Choice) *of Opium.*

ALL *Opium* being made in ancient Times by the *Milky Drops* that fell out of the *Inciſions* mention'd in the laſt Chapter, which being a natural and ſimple way, made no difference in the *Opium*, but what Nature it ſelf did; all their Knowledge of the beſt *Opium* conſiſted in diſtinguiſhing the *Theban* from other *Opium*, which was not naturally ſo good.

1. *Theban Opium* was of a lighter *Reddiſh Yellow* than other ſorts, therefore ſome call'd it *White Opium*, not that it was abſolutely white, but only relatively ſuch in compariſon with other *kinds* of *Opium*; as we ſay *White Roſin*, in reſpect of other *Roſin*, thô it is not *white*, but only lighter colour'd than other *Roſins*.

2. *Theban Opium* was moſt hot, bitter, and biting in taſte, from whence you may infer, that the *Opium* which has thoſe qualities in the higheſt *degree* is the beſt.

3. It ſmelled rankly, and vehemently of the *Poppy*, which gives you another good ſign to judge of *Opium*.

4. It burnt with a clearer Flame than any other.

5. Some ſay, that it was weightier than other ſorts. Notwithſtanding all which Differences, they did in *time* find ways to adulterate it, which were theſe:

1. They adulterated it with Juice of *Glauciam*, (or *Apple* of *Love*.)

This

This was diſcernable by the *Yellow Tincture*, that it gave to *Water*, and other *Menſtruums*; whereas the *Theban*, and all true *Opium* gives a *Red Tincture.*

2. It was counterfeited with *reſinous Things.*

This Cheat was diſcoverable by its not being uniform, nor ſo diſſolvable in *Water* as good *Opium.*

3. It was mix'd with Juice of *Lactuca Sylveſtris*, or *Wild Endive leav'd Lettuce.*

This made it of a duller *colour*, and not to ſmell ſo perfectly and rankly of the *Poppy.*

4. It was ſometimes mix'd with the *Milky Juice* of *Spurge*, which being *hot*, *bitter*, and *biting*, was hardly diſcernable, but by its purging and diſturbing quality, and ſomewhat leſs and different.

You may be ſure, that *this*, and all the other *Mixtures* leſſen'd its *Vertue* as an *Opiate*, if conſidered in the ſame quantity, becauſe they muſt take up room in the *Maſs*; but *Lactuca Sylveſtris* being of the nature of *Opium*, made the loſs of its *Vertue* leſs diſcernable.

It is true, that we have none of the *Opium* that was gathered by the *milky Drops* out of the *Inciſions*; and therefore what is ſaid, doth not much concern us as to that ſort; however theſe *Obſervations* will enlighten us as to the *Opium* that we now have.

Of which I cannot find, that there is much *Adulteration* uſed, becauſe (I ſuppoſe) that it is now grown conſiderably cheaper, by reaſon of the vaſt *quantities* that is made, with ſo much eaſe, that it is not worth while to counterfeit it, there being now great Fields of *Poppy* in *Turky*; ſo that our buſineſs will be rather to diſtinguiſh the *Sort*, than the *Adulteration*; thô this ſhall not paſs unregarded, as far as it may concern us.

There

There are two ſorts brought over to us; *one* from *Perſia* and the *Eaſt-Indies*; the *other* from *Turky*, as from *Leſſer Aſia*, (or *Natolia*) *Smyrna*, *Aleppo*, &c.

I. That which is brought from *Eaſt-India*, *Perſia*, *Surat*, &c. is (as I am inform'd) made of the Leaves and Stems of the *Poppy*, and is,

1. More full of *Filth* within it, (for the outſide is not ſo much to be regarded, becauſe of *Accidents*.)

2. It is not ſo *uniform*, *ſmooth*, and *ſupple*, but harſh and rugged.

3. It is not ſo readily diſſolvable in Water.

4. The *Indian* is brought over in *larger Pieces*.

5. It is not brought ſo wrapt in Leaves as the *Turky Opium* is.

Bontius ſays, that they make it of the *Stems* and *Leaves*; if ſo, it muſt be much worſe than the *Turky Opium*, that is made of the *Heads* and *Leaves*.

II. Among thoſe ſorts that are brought out of *Turky*, (and indeed any ſorts of *Opium*)

1. That is beſt that is moſt *bitter*, *hot*, and *biting*.

2. The *lighter*, *whiter*, and clearer its *Flame* is, when it burns, the better it is.

3. The more *uniform*, *even*, *ſmooth*, *tough*, *yielding*, and *complying* it is to be wrought, or brought to any *form*, the better it is.

4. *The more it gives*, *upon*, *or againſt moiſt Weather*, or in a moiſt *Air* of any *kind*, and the better, ſpeedier, freer, and more perfectly it diſſolves in *Water*, the better it is.

5. *The redder the Tincture is that it gives in Water*, Spirit of Wine, or any *Menſtruum*, the better it is; and 'tis never good if it gives only a *yellow Tincture*.

But *Note*, That even the beſt *Opium*, if you take but a very ſlight *Tincture* thereof, will appear yellowiſh, eſpecially in a *white Veſſel*. Therefore my meaning is, that the redder Tincture *Opium* cauſes in *Water*, quantity for quantity, the better it is.

6. *It ſhould have no taſte or ſmell of an Empyreum*, or Burning; for that gives it a nauſeous taſte, and in ſome meaſure ſignifies a loſs of its Vertue by burning, thô this may be inconſiderable.

7. *The leſs Filth it has on the inſide, the better it is.*

8. *The more it ſparkles when cut, and afterward breath'd* upon three or four times, the truer is the *Opium*; for thoſe *ſparkling Particles* are its noble *Volatile Salt*, (or *Sal-Volatile-oleoſum*) and not its *reſinous Parts*, as *Wedelcus*, and others affirm. 1. Becauſe when the *Roſin* and *Volatile Salt* are ſeparated, that ſparkling follows the *Volatile Parts* and not the *Roſin*, wherein they do not appear in the leaſt. 2. Becauſe I find that they are the *Parts* that are moſt apt to diſſolve in *Water*, which the *Roſin* is not. 3. Becauſe they are much altered by a warm and moiſt *Breath*, which the reſinous Part is not. 4. How could that *Opium* be the beſt (as 'tis found to be) that has moſt of them, if it were the *Roſin*, which is the worſt Part of *Opium*? But 'tis highly conſonant to *Experience*, that they ſhould be the *Volatile*, or *beſt Parts* of *Opium*, which is ſo much the better, the more it abounds with them.

9. *If it yields any other Tincture than Red, it is not right*; and the duller or paler the Red is, the worſe or weaker it is.

10. *The beſt is heavier in proportion to its Bulk*, which you may ſoon experiment thus:

Weigh

Weigh an *Ounce* of each in the *Air*, then weigh them (juſt as they are) in the Braſs Scales in *Water*, and the heavier will out-weigh the other in *Water*; for the heavier any thing is, the leſs *Water* takes from its *Weight* in proportion to its *Bulk*; this is an infallible, and moſt ready *way* to know the *Weight* of any thing in proportion to its *Bulk*.

Note, That my *Diſcourſe* is moſt particularly concerning the beſt ſort of *Crude Turky Opium*; that is the beſt that we have in common *Uſe*, and that its *Effects* and not thoſe of any *Preparation* thereof, are ſet down in the following *Chapters*.

CHAP.

CHAP. III.

The Effects of Opium *uſed externally.*

OPIUM uſed *externally* has two ſorts of Effects upon a Humane Body: 1. As, an *Opiate* to cauſe Sleep, take away Pain, *&c.* 2. As an *Alterative* of the Parts it is applied to.

I. *As an Opiate:* It is of very uncertain and uneven *Effects*, when applied *externally*; for ſometimes it cauſes *Sleep*, takes away *Pain*; but it often fails; therefore it is generally much better, ſafer, more certain, and effectual, to uſe it *internally*. I do ſcarce know the caſe wherein 'tis better to uſe it *externally* than *internally*, unleſs it be to ſmell to in ſome caſes: But of theſe Things, more particularly, when we come to the *Uſe* of Opium in *Curing*, *Preventing*, or *Paliating Diſeaſes*; for here we only lay down *Effects*, in order to a *Diſquiſition* of the Cauſe of the Operation of *Opium*, to which its *internal Effects* will mainly contribute; however, it may be very uſeful to that end, to lay down its *alterative Effects*, for thereby we ſhall in good meaſure know the *Principles* by which it operates.

II. Its *external Effects*, as an *Alterative*, are theſe, *viz.*

1. It *incides*, *reſolves*, and *diſcuſſes*.
2. It *relaxes* and *mollifies*.
3. It *maturates* and *ſuppurates*.
4. It *exulcerates*, or *cauſes Bliſters*, if it be very ſtrong, and applied to *Perſons* of a fine *Texture*,

where the Skin is tender; but this *Effect* belongs more properly to the *Maſlack*, or true Ὀπός, that drops from the *Inciſions* made in the *Heads* of the *Poppies*, eſpecially the *Theban*, which affords a very powerful Juice. Hence you may obſerve, that the more it *exulcerates*, or *bliſters*, the better is the *Opium*, *& vice verſâ*.

5. It *is a Pſilotherick*, for it prevents Hair to grow, and cauſes the ſhedding thereof.

6. It *is hurtful to the Eyes* and *Ears*.

7. It *excites Itchings*, applied (in a moderate manner) to the Skin.

8. It *excites Venery*, applied to the *Perinæum*.

CHAP.

CHAP. IV.

The Effects of Opium *uſed Internally, in a moderate Doſe.*

1. THE *moderate Doſe* in *ordinary Uſe*, to produce the following *Effects*, is from one to three *Grains*, (more or leſs) according to the *Circumſtance*, *Condition*, *Caſe*, *Conſtitution*, *Age*, *&c.* of the Perſon who takes it.

2. It operates generally in a *ſhort time* after it is in the *Stomach*, that is, in about *half* an *Hour*, (more or leſs) if taken in a *liquid Form*; and in about an *Hour* (more or leſs) if in a ſolid Form, drinking a *Draught* of *Water*, or ſome *Liquor*, after it; otherwiſe it may be ſometimes near an *Hour* and a *half* before it has its full *Effect*. But the time of its Operation has a conſiderable *Latitude*, according to the Diſpoſition of the *Stomack*, and other Circumſtances, as the *Vehicle* it is taken in, *&c.*

The conſtant Effects of Opium, *uſed internally in a moderate Doſe.*

1. *It cauſes a moſt agreeable, pleaſant, and charming Senſation about the Region of the Stomach*, which if one lies, or ſits ſtill, diffuſes it ſelf in a kind of *indefinite manner*, ſeizing one not unlike the gentle, ſweet *Deliquium* that we find upon our entrance into a moſt agreeable *Slumber*, which, upon yielding to it, generally ends in *Sleep*: But if the Perſon keeps himſelf in *Action*, *Diſcourſe*, or *Buſineſs*, it ſeems (eſpecially when given in a *Morning*, after a moderate Reſt at Night) like a moſt delicious and extraordinary *Refreſhment* of the Spirits upon very *good News*, or any other great cauſe of *Joy*, as the ſight of a dearly beloved Perſon, *&c.* thought to have been loſt at *Sea*, or the like, cauſing ſuch a pleaſant *Ovation* of the *Spirits*, *Serenity*, *&c.* as we find after a competent Meaſure of *generous Wine ad Hilaritatem*, (as Men uſe to ſay.)

It is indeed ſo unexpreſſibly fine and ſweet a *Pleaſure*, that it is very difficult for me to deſcribe, or any to conceive it, but ſuch as actually feel it; for 'tis as if a *Good Genius* poſſeſſed, or informed a Man; therefore People do commonly call it a *heavenly Condition*, as if no *worldly Pleaſure* was to be compar'd with it: *Helmontianus* would doubtleſs expreſs it by the *Archeus* in his very beſt *Humour*.

It has been compar'd (not without good cauſe) to a permanent gentle *Degree* of that Pleaſure, which Modeſty forbids the naming of; and 'tis well worth a Remark, that both are *Pleaſures* of the ſame Senſe, *viz.* that of *Feeling*; for it cannot be a Pleaſure of any other *Senſe*, ſince it is *internal*.

2. *It cauſes a briſk, gay, and good Humour:* Nor do I doubt but it has this *Effect* upon ſleeping Perſons, as far as their Condition is capable of obſerving it; for you ſhall have them often tell of *pleaſant Dreams* after it, when they remember them, and ſpeak of any. See *Bauchin*, and the *Authors* mentioned below under the 4th *Effect* of *Opium*.

3. *It cauſes Promptitude, Serenity, Alacrity, and Expediteneſs in Diſpatching and Managing of Buſineſs:* To which *end*, and that of a good and gay Humour (which are near of *kind*) it is commonly taken in the Morning in the *Eaſtern Countries*, with moſt certain *Effect*.

The truth of which *Wedelius* is forced to confeſs, though quite contrary to his *Hypotheſis* of *Opium*'s *fixing and coagulating the Spirits*; giving an inſtance of "*a certain ſerene Perſon, who when ſhe* "*had any Affair of great moment to diſpatch, did (be-* "*fore-hand) take* Opium *with great advantage; for* "*ſhe thereby found her ſelf every way better diſpoſed* "*for Buſineſs, and more enabled to bear the Fatigue* "*thereof.* Which is the *Subſtance* of what he writes in *Latin*.

Many other *Authors* confirm the *Truth* of theſe *Effects*; but (above all) the conſtant Experience of the *Eaſtern Nations*, puts it out of all doubt.

4. *It cauſes Aſſurance, Ovation of the Spirits, Courage, Contempt of Danger, and Magnanimity*, much after the manner that *generous Wine* does; inſtead of which, the *Turks*, *&c.* uſe *Opium* before *Engagements*, deſperate *Attacks*, *&c.* (as is moſt notorious) to make them Courageous, which it certainly does: For your ſatisfaction as to this, and other *Effects* of *Opium*, not ſo commonly obſerved with us, for *Reaſons* given in *Chap.* VIII. See *Bellonius, l.* 3. *c.* 15. *p.* 179. *Eraſtus Diſp. de Sapor. p.* 65. *Georg. Andreæ Itenerar. Ind. l.* 2. *c.* 9. *p.* 12. *Camerar. Oper. Subciſ. l.* 1. *c.* 93. *p.* 437. *Eraſtus Diſp. de Nar-*

cot. Oberndorf. Hiſtorians alſo add, That when the *Great Turk* makes a conſiderable *War*, the Soldiers buy up all or moſt of the *Opium*; which may be worth a *Merchant's* Obſervation; for it thereupon grows dear, and is much cheaper in times of *Peace.*

5. *It prevents and takes away Grief, Fear, Anxieties, Peeviſhneſs, Fretfulneſs, &c.* Theſe are neceſſary Conſequences of the former *Effects.*

6. *It cauſes Euphory, or eaſie undergoing of all Labour, Journeys, &c.* and that far beyond all *Wines* and hot *Cordials*, or *Spirits*; therefore it is very much uſed in *Turky* and the *Eaſtern Countries*, in laborious Undertakings, great *Journeys, &c.* which Men perform by the *help* of *Opium*, after a prodigious and almoſt incredible manner: But the *Matter of Fact* is ſo common and uſual, that there is no *place* of *doubt*; beſides, that ſome who tried it among us, have found it ſo.

7. *It lulls, ſooths, and* (as it were) *charms the Mind with Satisfaction, Acquieſcence, Contentation, Equanimity, &c.* How ſhould it fail to cauſe theſe *Effects*, ſince it cauſes all the former *gay, pleaſant*, and *brave Humours?*

Dr. *Willis*, and *others*, having no true *Experience*, or Knowledge, of *Opium*, imagined that it cauſed *Courage, Bravery, Equanimity, &c.* by ſtupifying the *Senſes, Brain, &c.* making People inadvertent, dull, and inapprehenſive; which is a great *Miſtake*, and a groundleſs Conceit; for it is a moſt certain Truth (which millions can affirm) that it produces thoſe *Effects* by an *Ovation* and *Pleaſure* of the *ſenſitive Soul* and *Spirits*, as *generous Wine* does before Men are fuddled, or overcome with it; How elſe could they at the ſame *time* be more *ſerene*, and apt for the Management of any Buſineſs, and neat *Diſpatch* of Affairs, as it is moſt certain they are? Theſe *fundamental* Miſtakes about *Opium*, have been

been (as you'll find hereafter) one great *cauſe* why its *Operations* have puzzled and quite baffled all *Enquirers.*

8. *It quiets, allays, and compoſes all Perturbations and Commotions of the Spirits,* (or ſenſitive Soul) *Bloud, Humours, &c.* as in *Hyſterical* Caſes, *Diary Fevers,* that proceed from Paſſions; as, *Anger, Grief, Terrours, &c.* from *violent Motion, Labour, Heat, Tourneys, Convulſions, &c.* or from *Pain*; and *ſtops Bleedings* that proceed from ſuch *Commotions.*

9. *It cauſes a Relaxation of all the ſenſible Parts of the Body,* as the Membranous and Nervous: This is notorious by its *Effects,* as cauſing *Perſpiration, Sweat, Relaxation* of *Sphincters, Vilatation* of the Pupil of the *Eye, Relaxation* of the *Corvea,* and all other *Effects* of *Relaxation,* as you'll find more particularly hereafter.

10. *It cauſes Indolence, or exemption from Pain,* (as all know and allow) and that when *Sleep* does not intervene.

11. *It ſtops, moderates, cures, or paliates all Fluxes,* excepting thoſe by the *Pores,* or ſuch as depend (as that does) upon *Relaxation,* as when *Sphincters* are weak, or paralytical; but theſe laſt are unnatural *Accidents.*

12. *It mightily promotes inſenſible Perſpiration.*

13. *It prevents Shiverings in Ague-Fits, and ſuch-like Caſes, if given in due time and quantity,* which ſhall be ſhown in the *Curative Part.*

14. *It prevents and cures Colds.*

15. *It cauſes a larger and ſlower Pulſe,* ſuppoſing no accidental *Cauſe* to the contrary.

16. *It cauſes Drineſs in the Mouth.*

17. *It has moſt Effect in warm and moiſt Weather.*

18. *It has more Effect upon lax and fine textured Perſons, as Women, Children, &c.* therefore Women ſeldom uſe it in *Turky,* and the other *Eaſtern*

Countries; where it is commonly uſed by the Men.

19. *It cauſes an Efflorescence of the Skin*, barring Accidents of *Cold*, *&c.*

20. *It is obſerved by all, that it mainly affects the* Genus Nervoſum, *and animal Spirits*, and not the *Bloud* and *Humors*.

21. *It increaſes Seed in ſome meaſure.*

22. *It cauſes a great promptitude to Venery, Erections*, &c. *eſpecially if the Doſe be larger than ordinary*; which I would have Men believe without experimenting it; not that I fear to be confuted, but leſt any ſhould injure themſelves by too great a *Doſe*.

This is one great Cauſe (if not the chief) why the *Infidels* of *Turky*, and the *Eaſtern Nations* (eſpecially where *Poligamy* is allow'd, as among the *Turks*, *&c.*) uſe *Opium* ſo much, it never failing to produce this Effect in *hale* and *healthy People*, if the *Doſe* be ſufficient; as is too notorious in all (or moſt) Countries from *Greece* to *Japan* incluſively, who uſe *Opium* for that end.

But as to the *Truth* of this Effect of *Opium*, not only *Authors*, and all the People of thoſe *Eaſtern Nations*, but ſeveral *Merchants*, *Factors*, and *Travellers*, now living in *London*, can atteſt, That it is uſed, for that purpoſe, in thoſe Countries with *Effect*; yea, ſome in our own Nation, that uſe *Opium* in large *Doſes*, can atteſt the ſame, upon *Experience* in their own *Bodies*. Thoſe who deſire to be ſatisfied, may alſo read *Joh. Jacob Saar.* his *Itinerar. Ind. p.* 11. *Olearius*'s *Itinerar. Perſic. l.* 5. *c.* 15. *&* 18. *B. D. D. Sacks, Tom.* 11. *Epher. German. Obſ.* 69. *p.* 126. *Bauchin, p.* 450. *Cardanus, Scaliger, Nich. Monordei, Fogelius de Turcarum Nepenthe, Bellonius*, and *others*; whoſe Words I do not repeat, partly for *Modeſty*'s, partly for *Brevity*'s ſake.

It does (I confeſs) look like a *Riddle*, that a moſt relaxing and ſtupifying *Medicament*, which takes away much of the Senſe of *Feeling*, (and conſequently *Irritations* to *Venery*, as one would think) ſhould notwithſtanding *irritate* thereunto, cauſe *Erections*, *&c.* however, it is moſt certain, tho' a ſeeming *Contradiction*, of which ſort you have many more among the *Effects* of *Opium*.

Uſual and frequent (tho' not conſtant) Effects of Opium, *uſed internally in a moderate Doſe.*

1. *Sleep*, which is ſo far from being a *conſtant Effect* of *Opium*, that it will in me, and many other Perſons, prevent *Sleeping*, even when otherwiſe inclin'd to it.
2. *Pleaſant Dreams.*
3. *Stopping of Vomitings.*
4. *Stilling the Hiccough.*
5. *Taking off Convulſions and Contractions.*
6. *Cauſing Meat to ſtay long at Stomach.*
7. *Moderation, and prevention of Hunger.*
8. *Sweat.*
9. *The Flowing of the Menſes*, tho' not obſerved by vulgar Phyſicians.
10. *The Flowing of the Lochia*, which is as little obſerved.
11. *Voiding of the Stone.*
12. *Delivery of Women.*
13. *Deadneſs of the Eyes, as you ſee in Drunkenneſs.*
14. *Dilatation of the Pupil.*
15. *Growth of the Breaſts, Penis, and Increaſe of Milk.*
16. *Venereal Dreams.*
17. *Nocturnal Pollutions.*

18. Itch-

18. *Itchings in the Skin.*
19. *Much Urine.*
20. *Nauſea.*
21. *Swimmings in the Head.*
22. *Watching.*
23. *A kind of dubious State, between ſleeping and waking.*
24. *It ſtops Hemorrhages* in many caſes.

Many more *Inſtances* of this *kind* might be given of its frequent and uſual *Effects* in *Diſeaſes*; but it would be *endleſs* and *needleſs*, ſince we have mentioned the *Prime*, *General*, and *Fundamental Effects*, upon which all ſuch do depend, and that the particular *Enumeration* of its *Effects* in *Diſeaſes*, belongs to its *curative* and *paliative Virtue*, which will be handled hereafter.

The rare Effects of Opium, *taken in a moderate Doſe.*

1. *Temporary Palſies*, as of the *Bladder*, and ſometimes of other Parts, tho' very rarely.
2. *Faltring of the Tongue.*
3. *Looſneſs of the lower Jaw*, as in the *Drowſie*, *Drunkards*, &c.
4. *Prevention of Sweat*, in ſuch as ſweat too much for want of *Perſpiration.*
5. *Abortion.*
6. *Prevention of Abortion* in ſome Caſes.
7. *Intumeſcence of the Lips.*
8. *Curing of the Dropſie*, of which Dr. *Willis* gives an *Inſtance.*
9. *Curing of Stupors* of ſome *ſorts*, as thoſe from *Colds*, *&c.*
10. *Anxieties and Diſtreſſes.*
11. *Vomitings and Hiccoughs.*
12. *Convulſions.*

13. *Syn-*

13. *Syncopes, Leipothimies, and Faintings.*

14. *Death,* tho' very rarely, and that in very weak *People.*

15. *Purging.*

16. *Raiſing and reviving ſome Perſons that are juſt expiring.*

17. *A long ſtay thereof at Stomach ſometimes.*

18. *Stoppage of Urine.*

19. *It ſometimes proves dangerous after Hemorrhages and large Evacuations.*

1. *Note,* That the *firſt Claſs* of *Effects* being the moſt *conſtant,* are the moſt *proper, genuine,* and *principal Effects,* upon which all other *Effects* depend, unleſs they are *accidental:* It muſt therefore be, that theſe ſhould beſt guide us in the *Diſquiſition* of the *Cauſe of the Operation of Opium.*

2. *Note,* That the *ſecond Claſs,* tho' not ſo *conſtant,* are *natural Effects* of *Opium,* and will be alſo good *Guide* for the ſame purpoſe.

3. *Note,* That there is but little *notice* to be taken of the *rare Effects* for that purpoſe, becauſe moſt *accidental.*

The Effects of the going off (or declination) of the Operation of Opium, *taken internally in a moderate Doſe.*

1. *A general return of all the Diſeaſes and Diſaſters that* Opium *paliated during its Operation*; unleſs it happens that ſome are cured thereby; which (if they be) is generally by the *Benefit* of *Sweat,* or *inſenſible Perſpiration*; as *Colds, Pain* from *Wind,* or *Humours,* that ſhould have paſſed by the *Pores*; as in *Coughs, Tooth-ach,* &c. from Conſtruction of the *Pores*; or by *compoſing* the Fury of the *Spirits,* or *Bloud,* which it very often (yea, generally) cures with one *ſingle Doſe:* But of theſe things, more in the *Curative Part.*

2. *Sweat,*

2. *Sweat*, tho' not conſtantly.
3. *Frequent making of Water*, ſometimes.
4. *A Looſneſs (ſometimes)* even when there was none before the giving of the *Opium*.
5. *Diſeaſes, ſeeming worſe than before the taking of it.*
6. *A melancholy and ſad Depreſſion of Spirits.*
7. *A narrow Pulſe.*
8. *Itching of the Skin.*

CHAP.

CHAP. V.

The Effects of Opium *taken in an Exceſſive Quantity.*

1. A *Heat at Stomach.*
2. *A ſenſe of Weight at Stomach* (ſometimes.)
3. *Gaity of Humour at firſt.*
4. *Sardonick Laughter afterward.*
5. *Laxity, and Debility of all Parts.*
6. *Alienation of the Mind.*
7. *Loſs of Memory.*
8. *Darkneſs of the Eyes.*
9. *Laxity of the* Cornea.
10. *Appearance of divers Colours.*
11. *Deadneſs of the Eyes to the View.*
12. *Faltring of the Tongue.*
13. *A Sopor.*
14. *A ſlow, and wide Pulſe.*
15. *A high Colour.*
16. *Looſeneſs of the Jaw, and Lips.*
17. *Intumeſcence of the Lips.*
18. *Difficulty of Breathing.*
19. *Fury, and Madneſs.*
20. *Venereal Fury.*
21. *Priapiſms.*
22. *Violent Itchings.*
23. *Nauſea's.*
24. *Swimmings in the Head.*
25. *Vertigo's.*

As after Drinking a great Quantity of Wine in a ſhort time.

26. *Vo-*

26. *Vomitings.*
27. *Hiccoughs.*
28. *A turbulent Pulſe.*
29. *Convulſions, and Cold Sweats.*
30. *Faintings and Leipothymies.*
31. *Cold Breath.*
32. *Death.*

Such as eſcape it generally have,

33. *Plentiful Purging.*
34. *Sweats that ſmell of the* Opium.
35. *Violent Itchings* in the Skin.

1. *Note*, That all theſe *Effects* do not happen to all, but ſome to one, and ſome to others.

2. That theſe *Effects* are greater, or leſs, according to the *Doſe*, *Conſtitution* of the Perſon, and other *Circumſtances.*

3. That they are moſt endanger'd thereby, that have a *Lax*, and *fine Texture*, and a weak *Digeſtion.*

4. That a *Looſeneſs* upon it is a good ſign.

5. That it affects ſome by making them Furious, (as *Wine* does) and others Stupid; Generally the Furious are moſt ſafe from *danger* of *Death*: But of theſe Things more hereafter (by *God's Help.*)

CHAP. VI.

The Effects of a long, and laviſh Uſe of Crude Opium.

1. *Relaxation, and Weakneſs of all Parts.*
2. *Inhability, or Liſtleſneſs to do any thing,* exept it be while the *Opium* Operates.
3. *Inhability, or Liſtleſneſs to get up in the Morning.*
4. *A dull, moapiſh, and heavy Diſpoſition,* (as in old *Drunkards*) *except it be during the Operation of* Opium.
5. *Diminution of Appetite.*
6. *Weakneſs of Digeſtion.*
7. *Dropſies.*
8. *Decay of Parts.*
9. *Weakneſs of Memory.*
10. *Stooping in the Back.*
11. *Early Decrepiteneſs.*
12. *Shortneſs of Life.*

} As is obſervable in old *Drunkards.*

13. *Acrimony of Blood.*
14. *Inclinations to Venery.*
15. *Frequent Inclinations to make Water.*
16. *Priapiſms, and frequent Erections.*
17. *Nocturnal Pollutions.*

The Effects of ſudden Leaving off the Uſe of Opium, *after a long, and laviſh Uſe thereof.*

1. *Great, and even intolerable Diſtreſſes, Anxieties, and Depreſſions of Spirits,* which in few *days* commonly end in a moſt miſerable *Death*, attended with *ſtrange Agonies*, unleſs Men return to the *Uſe* of *Opium*; which ſoon raiſes them again, and certainly reſtores them; if it has *time* to operate, before they die; which it ſoon does in a *liquid Form*. Or, if they have not *Opium*, or will not take it, they muſt uſe *Wine* very plentifully, and often, as a *ſubſtitute* to the *Opium*; tho' it doth not perform half as well as *Opium*.

2. *A return of all Diſeaſes, Pains, and Diſaſters, that were palliated by the taking of* Opium.

3. *Dangerous Looſeneſſes.*

4. *Death* follows the leaving it off, after a very long, and laviſh uſe thereof.

The Inconveniences of leaving off the *Uſe* of *Opium*, do bear a certain *Proportion* to the Time, and *Quantity*, that it has been uſed in.

1. *Note*, That the *Turks* do drink ſome Water always after the taking of *Opium*, as being the beſt *Menſtruum* to diſſolve it.

2. *Note*, That it is uſual with them to take a *Drachm* in the *Morning*, and ſo much in the *Afternoons*, and ſo may we, as well as they, if uſed to it; and 'tis a very ſilly ſaying, that you'll find in *Authors*, That they are better able to bear it, becauſe of the *Climate*, *&c.* whereas the more Northern Perſons are better able to take it, than the Southern, as will hereafter appear moſt plainly.

I am

I am told of one near *Banbury*, that takes Two Ounces a *Day*.

3. *Note*, That among the *Effects* of *Opium* may be obſerved many *ſeeming Contradictions*, yet is there nothing more certain than the ſeveral different *Matters* of *Fact*; which (no doubt) has been a great Cauſe to puzzle the *World* about it, and to run Men into ſtrange *Abſurdities* concerning its Operation; and all to deviate ſo far from the Truth, that nothing in *Nature* can be farther, unleſs you'll ſay, that *Heat cools*, or what *pleaſes* the *ſenſitive Soul*, is at the ſame time *abhorr'd* by it.

Now, becauſe theſe ſeeming *Contradictions* in the *Effects* of *Opium*, are the greateſt *Rubs* to be met with, and that the *Reader* may take the better Eſtimate of the *Undertaking*, and my *Explication* of its *Effects*, when I come to it, I ſhall not fear to enumerate them diſtinctly, (tho' they will make the ſtrangeſt *Catalogue* of *Riddles*, that ever was ſeen) truſting in Him, that created this wonderful *Medicament*, that he will enable me to explain all its *Effects*.

The ſeeming Contradictions in the Effects of Opium.

1. It *cauſes Sleeping*, and *Watching*.
2. It *cauſes*, and *prevents Sweat*.
3. It *relaxes*, and *ſtops Looſeneſſes*.
4. It *ſtops Fluxes*, and *cauſes* that of *Sweat*, *&c.*
5. It *ſtupifies the Senſe of Feeling*, yet *irritates by that Senſe to Venery*.
6. It *cauſes Stupidity*, and *Promptitude* in Buſineſs; *Cloudineſs*, and *Serenity* of Mind.
7. It *excites* the Spirits, and *quiets* them.
8. It is *very hot*, yet *cools* in Fevers.
9. It is *hot*, and *bitter*; yet *leſſens Appetite*, even in Cold *Stomachs*.
10. It *ſtops*, and *promotes* Urine.
11. It *relaxes*, and *weakens*; yet enables us to *undergo Labours*, *Journeys*, &c.
12. It *cauſes*, and *prevents* Abortions.
13. It *ſtops Vomiting* above all things; yet *cauſes moſt violent*, *tedious*, and *dangerous Vomitings*.
14. It *ſtops Purging* in a moſt eminent manner; yet *ſometimes cauſes it*.
15. It is *very acrimonious*, yet (as all ſay) *obtunds Acrimony*; however, it allays Pain proceeding from *Acrimony*.
16. It *cauſes* a *furious Madneſs*; yet *compoſes the Spirits above all things*.
17. It *cauſes Dropſies*; yet ſometimes *cures* them (as *Willis* ſays.)
18. It *cauſes Palſies*; yet have I known it to *cure a Palſie*.
19. It *cauſes Drineſs in the Mouth*; yet *takes off* Thirſt in *Fevers*.
20. It *cures*, and *cauſes* a Hiccough.

21. It *ſtanches Blood*; yet cauſes the *Blood to come outward*, (as appears by the *Efflorescence*, or *Redneſs* of the Skin that it cauſes) yet *moves* the *Menſes* and *Lochia.*

22. We have many Inſtances of it *promoting*, and *hindering* Critical Motions.

23. It *raiſes very weak People*, (when nothing beſides will do it) yet it *kills* other *weak People.*

24. It *cauſes*, and *cures* Convulſions.

25. It *cauſes Relaxation, and Contraction* of the *ſame Parts.*

26. It *Relaxes*; *yet cauſes Rigidity, Tenſion, and Erection of the Penis, Priapiſms*, &c.

Thus have I fairly, and faithfully, laid the whole *Onus* of the *Operations, Effects*, and *Contradictory Phenomena's of Opium*, upon my *Shoulders*; however I come off, and clear my ſelf of the *Intricacy*, *Mazes*, and *croſs Effects* thereof, by explaining them; which none upon the View thereof will think poſſible, and none before me durſt as much as enumerate for that *End.*

CHAP. VII.

The Author *contrives a Compendious Way of Examining all Opinions concerning the Operation of* Opium.

HAving, without any *ſly* or *ſordid Evaſion*, or conſiderable *Omiſſion*, (which has been the perfidious Courſe of *Authors* in this Caſe) fully and truly enumerated the *ſenſible* and *certain Effects of Opium* in Humane Bodies, and thereby *empannel'd* a *Juſt Jury* for the *Trial* of *Hypotheſiſes*, which muſt be Judged by the *Effects* or *Phenomena's* of *Opium*; I will now proceed to their *Examination*. But becauſe it would be endleſs to take every one *particularly* into *Conſideration*, I will uſe their *Stratagem*, who *blow up Foundations*, to ſave the tedious Pecking at all the Parts of the *Superſtructures*, which in this Caſe would require an *Age*, and take up all my Time in *demoliſhing* them, which may be better employ'd in *erecting* ſomething that may be uſeful.

I have *conſidered*, and find, That the *Foundation*, in which all *Authors*, both *Ancient* and *Modern*, agree, and whereupon they have hitherto endeavour'd to build, (looking upon it as *firm* and *Warrantable* in all *Ages*) is this, *viz.*

That Opium *operates by diminiſhing or diſabling the Spirits* (meaning the *animal Spirits.*)

The Ancients *affirming*, *That it did ſo by an extreme cold Quality*, &c. And

The

The Moderns (who obſerved it to act, while it is at *Stomach*, by affecting the *Brain*, *Nerves*, *Animal Spirits*, *&c.* and concluded no Action was perform'd without Contact) *infer'd* and agreed, (becauſe no viſible Paſſage could be found from the *Stomach* to the *Head*) *that it muſt of abſolute neceſſity act by Fumes*, *Vapours*, *Auras*, *or Effluviums ſent up out of the Stomach to the Brain*, *Nerves*, *&c.*

So that all the remaining *Queſtion* among the *Moderns* is, Which *Way* thoſe *Fumes* or *Vapours* do the *Feat* ? all allowing the *Fumes* do it.

One ſaying, That they *ſtuff the Pores of the Brain*, and ſo hinder the *Generation* of *Animal Spirits.*

A *Second*, That they *conſtringed*, *and cloſed the Pores together*, thereby hindering the ſaid *Generation.*

A *Third*, That they *fix'd*, *and coagulated the Animal Spirits* ; as *Wedelius*, and others.

A *Fourth*, That they *clouded the Animal Spirits.*

A *Fifth*, That they *acted as a Poiſon* ; as *Willis*, and many others.

A *Sixth*, That they *clog'd the Animal Spirits*, *by adhering to them*, &c.

Not knowing, nor (I think) caring what they ſaid, ſo they humour'd their own *Imaginations*, and *Hypotheſiſes* ; tho' utterly incapable of ſolving the *Effects* of *Opium*, eſpecially its moſt *conſtant*, *proper*, and *genuine Effects.* For, how can a *cold Quality*, (which *Opium* never had) cauſe a *gay* and *briſk Humour*, *Bravery*, *Magnanimity*, *Euphory in Labour*, *Promptitude to Venus*, *&c.* And, how can *Clouds of Vapours* hinder the *Generation* of *Animal Spirits*, by *ſtuffing* or *conſtringing* the *Pores* of the *Brain* ? *Poiſoning*, *fixing*, *coagulating*, *clogging* or *clouding*

clouding the Animal Spirits, cauſe a fine *Ovation* thereof, a *Gay*, *Brave*, *Couragious*, *and Magnanimous Diſpoſition*, *Euphory*, *Promptitude to Venery*, *Serenity*, *Expediteneſs in Management*, *&c.* Which are (as has been ſaid) the *conſtant* and *proper Effects* of *Opium*.

Nor, indeed, was any of thoſe *Authors* ſo foolhardy as to attempt it; Why then did they write, and trouble the *World* to peruſe their *Books*, when they were ſo far from explaining the *Properties* of *Opium*, that they ſcarce ever durſt mention them, nor ſet their *Hypotheſiſes*, and them, as much as in View of one another? Was not this a *tacit Confeſſion* of the *Incompetency* of their *Suppoſitions*? I beg Pardon for calling them theirs, (tho' they themſelves do) for I cannot offer them a greater *Abuſe*, than laying their *Spurious* and *lame Brats* at their *Doors*.

Tho' one ſcarce need ſay any more of them, yet, leſt I be thought preſumptuous, or ſaucy, for ſo much as offering to *ſuſpect* the *general Foundation* of all the *famous Authors* that ever lived, (as *Galen*, *Avicenna*, *&c.* among the *Ancients*; *Etmuller*, *Willis*, *&c.* among the *Moderns*;)

1. *I will ſhew you very juſt Cauſes to ſuſpect the Inſufficiency of the* general Foundation, *viz.*

That *Opium* diminiſhes or diſables the Spirits.

2. *I will prove, That it does not do it by a Cold Quality.*

3. *That it does not do it by Vapours, Fumes, Aura, or any ſuch Way.*

4. *That it diminiſhes, or diſables the* Spirits, *by no Means whatſoever.*

Which

Which *diminiſhing, or diſabling of the Spirits, Cold Quality*, and *Fumes*, (or *Aura*) comprehend the *Foundations* of all *Opinions* concerning *Opium*, that ever I read, or heard of; and conſequently if thoſe Two *Fundamental Opinions* be refuted, all the Superſtructures that have been (in this Caſe) muſt fall to the Ground.

CHAP. VIII.

The Author *ſhews Juſt Cauſes of his Suſpicion, that all Authors have gone upon a wrong Foundation in their Diſquiſitions of the Cauſe of the Operation of* Opium.

I Have ſhewn you, That the *general Foundation* of both *Ancient*, and *Modern* Authors, is,

That Opium *doth diminiſh, or diſable the* Spirits.

And now I will plainly ſhew *Juſt Cauſes of my Suſpicion* of its *Inſufficiency*, which are theſe:

1. I *obſerve*, That all Learned Men are, to this *day*, highly diſſatisfied as to the Cauſe, and Manner of the *Operation* of *Opium*, notwithſtanding all that has been written concerning it; and that it is the *common Cry* on all Hands, that none has illuſtrated the *Operations* of *Opium* to any *Purpoſe*, or given any Satisfaction therein; and therefore *Learned Phyſicians* are ſtill as much upon the *Enquiry*, as ever they were.

It is much more *Civil* and *Reaſonable*, to *ſuſpect* the *Foundation*, that all former *Authors* have built upon, than a *general Failure* in all the moſt Judicious *Maſter-Builders*, that ever endeavour'd to build thereon; for if all the beſt *Architects* of the *whole World* fail to erect a firm *Superſtructure* upon any one *Foundation*, what can we think, but that the *Foundation* is infirm? eſpecially when (as in our Caſe) no *Way* (that *Care*, *Judgment*, *Perſpicacity*, and *Wit* could invent, or think of) has been

been left untried to build thereon; ſo that (tho' I modeſtly call it a Cauſe of *Suſpicion*) it amounts almoſt (if not altogether) to a *Demonſtration*, that the *Foundation* that all *Authors* have gone upon is naught. Would not any conſidering Man, when he ſees all the *Judicious Architects* of the *World* fail to erect a firm *Building* upon a *certain Foandation*, ſeek for another? Therefore who can blame me, if I do? and not blame them, that did not? The meaneſt *Bricklayer*, or *Carpenter*, that ſhould be guilty of ſuch *Stupidity*, as to attempt to build upon ſuch a Foundation as always deceiv'd the *Builders*, would be thought too great a *Blockhead* to be employ'd in Building.

2. I *obſerved*, That moſt Men do (notwithſtanding that *Foundation* is agreed upon) think it impoſſible to explain the intricate, various, contradictory *Phenomena's*, and myſterious *Effects* of *Opium*; ſitting contented, and perſwaded, that it operates by an *occult Quality*, wholly unexplicable, and particularly reſerved from the *Knowledge* of *Mankind*: But Nature works *Mechanically* in *Weight*, *Meaſure*, *&c.* Therefore it is more than probable, that it is only their being upon a wrong Bottom makes it ſeem abſolutely *occult*; for it is impoſſible to find a thing, where it is not; or to build firmly upon an *inſufficient Foundation*; whereas had it been right, and true, it is not to be imagined, but ſome or other would have thereupon done ſomething, that would have ſtood againſt all *Winds*, and *Storms*; which none have done.

3. I *obſerved*, That none durſt venture to lay the *whole*, no, nor one *half* of the Burthen of the *Phenomena's*, or *Effects* of *Opium*, upon that *Foundation*; foreſeeing (doubtleſs) that it could not bear them; and that if they laid any more *Weight* thereon, the whole would totter, and fall to the *Ground*. The *Project* in every *Hypotheſis* is to perſwade

ſwade Men of the *Truth* thereof; and the only *way* to do it, is to ſolve all *Phenomena's* thereby; for if it fails but in one, it is an infallible ſign of its *Inſufficiency*: There was no Reaſon to omit any of the *Phenomena's*, if they could have diſcern'd, that the *Hypotheſis* would have born them; therefore (as has been intimated) it implies a Confeſſion of its *Incompetency*.

4. I *obſerved*, That *ancient Authors* writ of *Opium*, before it came to be of common and general Uſe in the *Day-time* with Healthy Perſons, (as it ſince is in many *Nations*) to cauſe a *gay*, *pleaſant*, and *good Humour*, *take off Sadneſs*, *Melancholy*, and *Anxiety*; To *cauſe Aſſurance*, *Boldneſs*, *Courage*, *Bravery*, *Magnanimity*, *Euphory*, or *eaſie undergoing* of *Labour*, *Journeys*; *Promptitude in Buſineſs*, *Expediteneſs*, and *Serenity*; To *excite to Venery*, *&c.* Which Effects cannot be explained by that *Suppoſition of diſabling the Spirits*, and that they uſed *Opium* only Medicinally for the ſake of ſuch other *Effects* as might be tollerably well explicated by that *Hypotheſis*; ſo that they had not any *Occaſion*, nor *Inducement* to look any farther.

The *Effects* they gave it for was only; 1. *To cauſe Sleep.* 2. *To take off Pain.* 3. *To ſtop Fluxes.* 4. *To Compoſe the Spirits.* 5. *To cauſe Perſpiration, and Sweat.* All which are not inconſiſtent with the *Hypothéſis* of *diminiſhing or diſabling the Spirits*, as the *other* are, and therefore might well deceive them; For,

Firſt, *Sleep* is cauſed by *diminiſhing the Spirits by Labour*, *Watching*, *&c.* as is moſt notorious over the *whole World*; ſo other Things that diminiſh the Spirits, as *Bleeding*, *Vomiting*, *Purging*, and many other Cauſes of *diminiſhing* thereof, do incline us to *Sleep*. Secondly,

Secondly, *Indolence*, or *Exemption from Pain*, is cauſed by nothing more than *want of Spirits*, as in *Paralytical Caſes*, *Stupors*, *Obſtructions*, or *Compreſſions* of the *Nerves*, *Syncopes*, *Leipothymies*, *Deliquiums*, *Faintings* after *Bleeding*, and *Sleep*; which (as was ſaid) is ſo much cauſed by *loſs* of *Spirits*, *&c.*

Thirdly, *Fluxes are ſtopt, or moderated*, by nothing better than *Sleep*, which generally (as was ſaid) proceeds from *loſs of Spirits*; What alſo *ſtops*, or *moderates Fluxes*, more than want of the Senſe of the Irritation of *Humours?* And what takes away Senſe more than want of Spirits? Thus want of Senſe by the abſence of the Spirits, in *Paralytical Inteſtines*, ſtops *Fluxes*; Thus fails a *Paralytical Bladder* to expreſs the *Urine*. So a *Palſie* of the *Membranes*, that include the Glandules, muſt (as in *Sleep*, which relaxes them) ſtop, or moderate all *Defluxions*, *Catarrhs*, *&c.* becauſe they are not ſenſible of the *Irritation* of the *Humour* by Quantity, or Quality; which *Irritation* cauſes the *Defluxions* or *Catarrhs*, by exciting the *Membranes*, to contract, and thereby to ſqueeze out the *Humours* contain'd in the *Glandules*.

Fourthly, *The Compoſure of the Spirits* is procured mainly by *Sleep*, which all loſs of Spirits (as was ſhewn) inclines us to; ſo *Bleeding*, which *diminiſhes the Spirits*, compoſe their Fury in *Fevers*, *Deliriums*, *Madneſs*, *&c.*

Fifthly, *Perſpiration* is cauſed by nothing more than *Sleep*; for we perſpire twice as much in *Sleep*, as when we watch, as is moſt manifeſtly demonſtrable by the *Statick Experiments* of Weighing People; nor is *Perſpiration* ever ſo great as in *Deliquiums*, *Syncopes*, *Leipothymies*, and ſuch like deadiſh Caſes, which are cauſed by *diminiſhing*, *or diſabling of the Spirits*, nay, 'tis ſo in *Animals*,

Animals, quite dead for a little time while they are hot, as is evident by like *Statick Demonſtrations*: The true Cauſe of which is *Relaxation* of the *Pores*, *Skin*, *&c.* for want of Spirits to *contract*, and *conſtringe* them; as ſhall be fully proved hereafter (by *God's Help.*)

Theſe Things were (doubtleſs) the occaſion of that *Hypotheſis*, of *diminiſhing or diſabling the Spirits by Opium*; but how likely are they to err by eſtabliſhing it without any conſideration of its *enlivening*, *encouraging*, and *brisk Effects*, as *Ovation of the Spirits*, *Gaity*, *Bravery*, *Magnanimity*, *Euphory*, *Promptitude to Venery*, *&c.* which can never be ſolved by *Diminution*, *or Diſability of the Spirits*, till *Depreſſion* and *Elevation* thereof are *reconcilable*, and *conſiſtent* at the *ſame time* in the *ſame ſubject*; which can never be till *Diſabling* and *Not Diſabling* are the ſame thing? Have not we then *good Reaſon* to ſuſpect that *general Foundation* of *diminiſhing or diſabling the Spirits by Opium*, which was laid by ſuch as never conſidered any thing of its *generous* and *ſprightly Effects*, which (as has been ſhewn) are its *conſtant*, and therefore moſt *proper* and *genuine Effects*? Who can doubt then but they muſt err, in laying a *Foundation* quite contrary to the very *Properties* of *Opium*?

5. I *obſerved*, That all our *Modern Authors*, and *Phyſicians*, receiving the Knowledge of *Opium*, its *Effects*, and *Uſes*, from thoſe *Ancients*, do uſe it only for the ſame *Ends* and *Purpoſes* as they did; and that our *Modern Authors*, living in theſe *Weſtern Parts* of the World, very remote from the *Eaſtern Countreys*, where it is uſed commonly, and in large Doſes, by People in *Health*, in the *day-time*, to *enliven*, *invigorate*, and *encourage* them, and cauſe the *brave*, *generous*, *and magnanimous*

Effects

Effects aforementioned, *viz. Courage, Euphory, &c.* and finding no *Phyſician* that went before them, to mention theſe *noble, cordial,* and *glorious Effects*; and, if they did at any time ſlightly touch them, to do it with all imaginable *Diſregard, Neglect,* and *Contempt,* as if there was no Heed to be taken of them, but as *idle Tales,* and *improbable Stories,* being contrary, and utterly (as they thought) inconſiſtent and irreconcilable with the *daily,* and moſt *notorious Effects of Opium,* obſerved among us; and to the Univerſal Opinion of all *Authors,* who ſtated *Opium* to be a *Diminiſher or Diſabler of the Spirits,* which could not produce (as they concluded) ſuch *contradictory,* and therefore (to them) utterly *incredible Effects,* and *fabulous Flams,* ariſing (as they fanſied) from ſome ſilly *Errours,* as want of due Obſervation in *Travellers,* miſtaken Diſcourſes, and the like; ſo that (as the ſaying is) they let them in at one *Ear,* and out at the *other,* there being no ſuch contrary *Effects* of any one Thing to be obſerved in the whole *Creation*; and they being well aſſured of the other *Effects* by daily *Experience,* and having never obſerved thoſe *lively Effects,* (for the ſeveral plain Reaſons that you'll meet in the following Paragraphs) had no cauſe to alter their *Opinion,* when all Things ſeem'd to them to make for their *Hypotheſis,* for want of a Notion of thoſe *brisk Effects.*

6. I *obſerved,* That thoſe *brisk Effects* of *Opium* were not taken notice of by our *Phyſicians,* nor indeed, (all things conſidered) do I well ſee how they ſhould, without getting out of the common *Road* of obſerving, which is ſometimes (as I have found) very uſeful upon ſuch Occaſions. For,

Firſt, *Opium* is ſeldom (if ever) given in theſe *Weſtern Nations,* but to Sick People, (as the *Ancients* did) who are utterly incapable of thoſe

brisk

briſk Effects, or (at leaſt) to any remarkable *degree*, that might call for a particular or ſpecial *Advertency*, or *Attention*; without which, they paſſed off as they came, without any *Reflection* thereupon; and ſo ſignified nothing, as if they had never happen'd.

Secondly, We (as the *Ancients* did) generally give *Opium* when People are going to *Bed*, by which means all Opportunity of *Obſervation* is loſt; becauſe *darkneſs*, and being alone, hide, or hinder the ſhewing of any ſuch *Effects*; and the *Phyſician* (whoſe only Buſineſs it is to be more curious in ſuch Matters) is gone to his own *Reſt*, tho', if he were preſent, not likely to take any *Obſervations* of ſuch Matters, whereof he has leaſt *Thoughts*, or *Belief*, as being, in his *Opinion*, contrary to all *Reaſon*, *Senſe*, *Experience*, and the *Opinion* of all *Authors*, of the Stupefactive Quality of *Opium*, in which they all agree.

Thirdly, *Opium* is (as was ſaid) given in theſe Countreys to cauſe *Sleep*, or ſuch *Effects* to which *Sleep* conduces, as *compoſing the Spirits*, *cauſing Indolence*, *ſtopping Fluxes*, and *promoting Perſpiration*; and therefore always given with all careful *Directions*, and *Injunctions*, that may conduce to that *End*, as *going to Bed*, *lying ſtill*, *putting out Lights*, *keeping Silence*, *&c.* which concurring with the *Opium*, cauſe *Sleep*, which is utterly inconſiſtent with ſhewing any of thoſe lively *Effects*, that belong only to a *waking Perſon* to do; ſo that all Opportunity of Obſervation is utterly precluded.

Now, (all the Premiſes conſidered) it cannot be conceiv'd, that ſuch as ſet their mind upon *contrary Effects*, and expect no other, much leſs contrary ones, (againſt which alſo they are highly prejudiced by their *Reaſon*, *Experience*, and *Reading*)

ing) ſhould obſerve ſuch *brisk Effects*, if they did happen; and how can a *brisk Humour*, *Courage*, *eaſie undergoing* of *Labour*, *Promptitude to Venus*, *&c.* be obſerved in Sick, and Infirm *People*, lying in Bed, alone, and in the *dark*, or (which renders it utterly impoſſible) while they are aſleep, and the Thing it ſelf disbelieved, and eſteem'd contrary to *Common Senſe*, and the *Univerſal Sentiment* of the Learned, and all others. Therefore,

7. If (after all) any ſuch *brisk Effect* did ever happen, it muſt be either not regarded, or if obſerved, (which is no *way* likely, as was ſhewn) you may be ſure (for the many plain *Reaſons*, and Cauſes aforeſaid) that it was not imputed to *Stupifying Opium*, (as all eſteem it) but to any other *Cauſe*, or Accident, rather than to a Thing well known to have quite *contrary Effects*. For *Inſtance:*

If the Sick Perſon happen'd to be *good humour'd*, (of which he is ſeldom capable, and utterly incapable of all or moſt of the other brisk *Effects*, as *Euphory*, *Promptitude to Venus*, *Exertion of Courage*, *&c.*) it was either paſſed by as an ordinary Thing of Courſe, and ſo not heeded, or elſe imputed to *Refreſhment* by *Sleep*, *Eaſe* from Pain, or ſome *Amendment* as to the Diſeaſe; or, indeed, to any Thing, rather than *Diſpiriting* and *Stupifying Opium*, that is ſo far (in all Opinion) from exciting the Spirits, that all affirm, conclude, and agree, that it *diminiſhes or diſables them.*

The like is to be ſaid of any of the *lively Effects*, in caſe they happen, and are obſerv'd; Tho' I do not ſee how they can, ſo (at leaſt) as any *Stander by* will refer it to *Opium*; beſides, that as to ſome of the *brisk Effects*, (eſpecially that of *Venery*)

Venery) greater *Doſes* are requiſite, to render it any thing remarkable, than are uſed in theſe *Weſtern Parts*, and that *Modeſty* would much hinder the *diſcovery* of this *Effect*.

Is it not *therefore* very manifeſt, that I had great cauſe to ſuſpect, that both *Ancient* and *Modern Phyſicians* conſider'd things by *halves*, ſince they did not take the moſt *genuine Properties* into their Conſideration, and that they laid their *Foundation* upon the moſt *contrary Effects* to them? It follows then, That the *general Suppoſition* of all the Learned can no more ſolve the true *Properties of Opium* in any Probability, than giving the Reaſon why Fire *hardens Clay* can explain why it *ſoftens Wax*; The *Reaſon*, did I ſay! I ſhould have ſaid, than giving the *wrong Reaſon* why it *hardens Clay*, ſhews how it *ſoftens Wax*; for it will appear in the following *Chapters*, that they gave no *right Reaſon* for any *Effect* of *Opium*, even thoſe they ever allow'd to be its *Effects*; nor laid any *true Foundation* to explain the leaſt, meaneſt and plaineſt *Effect* thereof; foraſmuch as all their *Suppoſitions* are ſo falſe, that there never were any ſuch *Things* as they lay down to explain the Effects of *Opium*, viz.

1. *No ſuch Thing* as *a Cold Quality in* Opium.
2. *No ſuch Things* as *Fumes*, &c. *flying from Opium* to the *Brain*, while it is at Stomach.
3. *No ſuch Thing* as *diminiſhing*, or *diſabling the Animal Spirits* by *Opium*, any way whatſoever. Of which in their Order in the following *Chapters*.

CHAP.

CHAP. IX.

It is proved, That Opium *has no Cold Quality to diminiſh or diſable the Spirits thereby.*

HAving ſhewn juſt Cauſes of my *Suſpicion* of that Univerſal *Foundation* of *Opium*'s *Diminiſhing or Diſabling the Spirits*, I will now proceed to a more ſtrict *Examination* thereof, beginning with the *Opinion* of the *Ancients*, who affirm'd,

That Opium *diminiſhed or diſabled the Spirits by an extream Cold Quality.*

I confeſs that much may be done towards the *diminiſhing, or diſabling the Spirits by* Opium, if it had ſuch a *cold Quality* as the *Ancients* attributed to it; for then it muſt be ſuch a *Coldneſs*, as the coldeſt Things either *actual*, or *potential*, bore no *Proportion* to; for *Ice*, *Snow*, *&c.* bear no Proportion to it, in cauſing the ſame Effects by a *cold Quality*.

It was the manner of the *Ancients* implicitly to believe, and ſubſcribe to what their great *Authors*, and *Maſters* in *Phyſick*, or *Philoſophy*, taught them; whom they adored as infallible *Gods*, as ſoon as their *Mortality* proved the contrary; which was as abſurd, as aſſerting, Tha *Opium*, which is one of the hotteſt Things that Vegetables afford, is *extream cold*; (bleſſed be *God* for our *Light* in *Religion*, and *Liberty* in *Philoſophy!*) Therefore ſome ſuch admir'd *Authors*, or *great Maſters* in *Phyſick*, having aſſerted, that *Opium* acted by an

extream cold Quality, all did implicitly ſubſcribe to it.

The *Devil*, whom they worſhip'd, could not (tho' *a Deceiver from the Beginning*) impoſe more upon their *Faith*, than in cauſing them (for I cannot think but it was ſome ſuch *Evil Power*) to believe, that *Opium* was *cold*, againſt all the *Evidence* of *Senſe* and *Experience*; he might have as well told them, that *Hell Fire* had all the *Properties* of common *culinary Fire*, and yet nothing more refreſhing by its *cold Quality*; for as many of our *Senſes*, as can take notice of *Heat* and *Cold*, do plainly inform us, that it is very hot in it ſelf, and *Effects*. For,

1. Its *Taſte* is very *bitter*, *rank*, *vehemently hot*, *burning* and *biting*, all which *Qualities* are infallible Signs of great *Heat*, and the better the *Opium* is the more intenſe are thoſe *Qualities*; Nay, it is obſerved, that its very *Virtue* is ſtrictly combined to, or conſiſting in thoſe *Qualities*, eſpecially *Bitterneſs*, which if loſt, the *Virtue* is gone, as is commonly *obſerved*, and eaſily *obſervable*.

It was a wiſe Fetch of *Amatus Luſitanus*, in Defence of its *Cold Quality*, to attribute all its *Bitterneſs* to *Glaucium*, that was mixt therewith; whereas *Glaucium* always gives a *yellow Tincture* to *Water*, and *Opium* a red; but the *Opium*, that gave no *yellow Tincture*, was bitter alſo; yea, that was moſt *bitter*, that gave the *reddeſt Tincture*; How comes *Theban Opium*, and indeed all other *Opium*, to be bitter before any thing is mixt with it? How inadvertently abſurd People will be to defend *Abſurdities*; it is pretty to ſee how they will expoſe themſelves to defend a falſe *Opinion*.

2. Its

2. Its *Smell*, which is very *rank*, *ſtrong*, *hot*, and ſuch, as Things highly impregnated with *Volatile Salt*, and *Sulphur*, (the Two hotteſt Principles in Nature) do afford. It is from *Volatile Salt* that *Cantharides*, *Piſmire*, *Spear-Wort*, *Crows-foot*, *&c.* are ſo very hot, as to bliſter, (or exulcerate;) and are not all *hot Spirits* ſuch, upon the account of their *Sulphur*? as *Spirits of Wine*, *Brandy*, *&c.*

3. The beſt and ſtrongeſt *Opium* will alſo *exulcerate*, (as all *Authors* agree) which only *Fire*, or ſuch Things, as have the Particles of *Fire* lodged in them, as *Lixiviates*, *&c.* or the hotteſt Things in *Nature*, will do; as *Cantharides*, *Spear-Wort*, *&c.* It is,

4. For the like Reaſon, a *Pſilothrick*, or *Cauſer of Hair to fall*; which only *Lime*, *Orpiment*, and the hotteſt Things, do cauſe.

5. It is *inflammable*, which only *Sulphureous* Things are.

6. It cauſes a Senſe of a *vehement Heat* at *Stomach*, tho' taken but in the Quantity of a *Drachm.*

7. It *cauſes Drineſs* of the *Mouth*, and *Thirſt*, tho' taken but in the Quantity of 3 *Grains*, which nothing does but hot Things.

8. It *diſcuſſes*; and all Diſcuſſers are *hot*, for it is by *Heat* that they do *diſcuſs*, as *Spirit of Wine*, *Cummin-Seed*, *Volatile Salts*, and all *Hot Spirits.*

9. It *ſoon Operates*, and in a *ſmall quantity*, which is an infallible Proof of the Activity of its Parts, which argues *Heat*, not *Cold.*

10. It *cauſes a gay, pleaſant, and merry Humour*, which only Wine, and hot Liquors, *&c.* do; and one *Grain* of *Opium* will cauſe them as much as ſeveral *Glaſſes* of *Wine*, which argues, that its *Heat* is much greater.

11. I would fain know *how*, or ſee any *Inſtance* of any *Cold Things raiſing the Spirits, cauſing Courage, Magnanimity, enabling People to Labour, Journey, &c.* as *Wine, hot Liquors*, and *Opium* do.

12. *Opium* does very much *open the Pores*, and cauſe *Perſpiration, &c.* which only *Heat*, as that in *Baths, Bagnios, Hot Houſes*, and *Hot Things* do; but Cold ſhuts the *Pores*, as all know. Therefore,

13. *Opium cures, and prevents Colds*; which is another Argument of its *Heat*.

14. It is a great *Aphrodiſiack*, or *Exciter to Venery*, which *Cold Things* chill; but Hot Things, as *Cantharides, Bees, Piſmires, Onions, Garlick, Leeks, Rocket, Squills, Horſe Radiſh, Sem. Human. &c.* do promote.

15. Nothing *cauſes Indolence*, given internally, but *Wine, Hot Liquors, &c.* (as I can think of) and *Opium* cauſes it much after the ſame manner as Wine does, firſt cauſing *Mirth*, and *Jollity*, and, upon increaſe of *Quantity*, very conſiderable *Indolence*. It is true, that *Cold* will externally cauſe a *Stupor*, if it be intenſe, ſo as to conſtringe the Parts, and exclude the *Spirits*; but otherwiſe it makes the *Feeling* more nice, as all know by *Experience*, becauſe every little Hurt affects us more when we are cold than hot: But this is not the *Caſe* of relaxing *Opium*, which is uſed internally to take away *Pain*, as *Wine, &c.*

16. Nothing takes away the *Effects* of *Opium* (or *Drunkeneſs*) better than cold Things *internally*, and *externally*; as *acids*, *dipping* in *Cold Water, &c.*

17. *Opium relaxes all Parts*, which *Heat* does; and *Cold conſtringes*, as was intimated.

18. *Wedelius* confeſſes, (tho' it makes againſt what he ſays) that he never obſerved a *Soporoſe Diſtem-*

Diſtemper, where there was not a *Preternatural Heat*. *Opiolog. Lib.* 1. *Sect.* 1. *Cap.* 12. *P.* 46.

19. If it cauſes *Sleep* by its *cold Quality*, then all Things, that are *cold*, would do it proportionably; *Cucumers*, *Purſlane*, *&c.* would be ſo great *Hypnoticks*, that we ſhould not be able to eat a *Drachm* of them, but that they would cauſe a *great Sopor*; but there is no ſuch thing; and *hot Things* are much more apt to cauſe *Sleep*, or a *Sopor*, as *Wine*, *hot Spirits*, *Onions*, *Garlick*, and ſuch like.

20. *Opium* cauſes a *Redneſs*, or *Efflorescence of the Skin*, making it ſenſibly warmer, as *Heat*, *Wine*, and Strong Liquors do.

21. It cauſes alſo an *Itching of the Skin*, which only hot Things do.

22. Half a *Drachm* of *Opium* in Clyſters has cauſed a violent *Heat* in the *Guts*.

23. It *ſtops Diarrheas*, or *Looſeneſſes*, which Cold cauſes.

24. It *ſtops Deſtuxions*, *Coughs*, *&c.* which Cold cauſes.

25. To pin up all, its *predominant Principles* appear, by *Autopſie* upon its *Chymical Analyſis*, to be *Volatile Sait* and *Sulphur*.

Beſides, this *Opinion* of the *Coldneſs of Opium* is very much exploded, and, indeed, it is ſo apparently *falſe*, and *abſurd*, that I ſhould not have thought it worth while to argue againſt it, but that it lay ſo in my *way*, that regularly I could not well avoid it, without *Breach* of *Order* and *Method*.

I might have added, that it *reſolves*, *attenuates*, *&c.* but it is needleſs to ſay any more.

It is very *falſe*, and *erroneous*, that it *ſtops Fluxes* by *incraſſating*, and *binding*, which are accounted *cold Qualities*; if ſo, how ſhould it ſtop them when Pounds of *Incraſſatives* and *Binders* have failed, tho' the *Opium* was given only in the *Quantity* of a *Grain* or *Two*? How ſhould it ſtop, or moderate *Fluxes*, even while it is yet at Stomach, as it moſt certainly does? It bears (as *Etmuller* well obſerves) no Proportion to the *Bloud*, and Humours, to have any *Effect* that may be remarkable upon them, for a Grain is but as 1 to 115200 to the Blood of him that has 20 Pound of Blood, which an ordinary Man has: Beſides, How can *Altenuatives*, *Reſolvers*, and *Diſcuſſers*, incraſſate or bind? But, more eſpecially, How can ſo great a *Relaxer* of Parts, be a Conſtringer thereof? That is *perfect Contradiction*: And how can a meer *Sal Volatile Oleoſum*, in which all its *Vertue* lies, (as will plainly appear) thicken and bind?

The *Truth* is, that it *ſtops Fluxes* (as Sleep doth) by taking away the ſenſe of the *Irritation* of *Humours*, which ſolicite the Parts to contract, and ſo to extrude and ſqueeſe them out; it *promotes Perſpiration* by relaxing the *Pores* (as *Sleep* doth;) it alſo ſeems to thicken *Rheum*, (as *Sleep* doth) becauſe it cauſing *Sleep*, or (at leaſt) taking away a ſenſe of the Irritation of the *Rheum*, is thereby ſuffered to ſtay till it thickens by the *Heat* of the Body; the *Irritation* alſo at *Windpipe* being leſs, becauſe the *Flux* of the *Rheum* is moderated for the *Reaſon* aforeſaid. But of theſe Things more fully when we come to explain the *Cauſe* or *Cauſes* of the *Effects* of *Opium*.

CHAP.

CHAP. X.

It is proved, That Opium *ſends no Fumes, &c. from the Stomach to the Head, Brain, &c. and therefore that it does not diminiſh, or diſable the Spirits, &c. by that means.*

THO' the *Opinion* of the *Cold* of *Opium* is much exploded, that of *Fumes*, *Vapours*, or *Aura's*, ariſing from the *Opium* at Stomach, and mounting up to the Brain, *&c.* is as much received and embraced; I know none, but ſuch as think it abſolutely neceſſary, conſidering that it is moſt certain, and allow'd by all obſerving Men, That *Opium* produces all, or moſt of its *Effects*, while it is at *Stomach*; That the *Genus Nervoſum* is moſtly concerned in its Operation; and that (as was ſaid) there is no *Operation*, or *Action*, *but by Contact:* So that the *Moderns*, acquieſcing in the Neceſſity of its operating that *way*, becauſe they could conceive no other, (which is no Proof, but a *Defect* of their *Conception*) look upon it as invincible and uncontrolable *Evidence* of its operating by *Detachments* of *Fumes*, or *Effluvia's*, ſent up to the *Brain* from the *Stomach*; which appear'd ſo undeniably *concluſive*, that neither the *want* of a *ſenſible Paſſage*, nor any other *Inconvenience*, ſignified any thing (*with them*) to the contrary; therefore it became an eſtabliſhed *Foundation* by common Conſent; only they differ'd (as was ſhewn) in the manner how thoſe *Fumes* produced the *Effects* of *Opium:* And well they might, ſeeing there is no ſuch thing, nor poſſibility (if they

were) of ever explicating the various *Effects* of *Opium* by that means, as will manifeſtly appear.

I confeſs, that if *Opium* operated by ſuch *Fumes* paſſing from the *Stomach* to the *Brain*, *&c.* it would be eaſie to conceive how it ſhould *diminiſh*, or *diſable*, nay, utterly ruine the *animal Spirits*; and indeed impoſſible rationally to conceive how they could do otherwiſe: But then the *enlivening*, *invigorating*, and *encouraging Effects* of *Opium*, which are its *conſtant* and moſt *genuine* Off-ſpring, would lie upon our *hands*, without any poſſibility of giving an account thereof; for certainly dull, heavy, unnatural, undigeſted, and cloudy *Fumes*, or *Vapours*, could not advantage the *animal Spirits*, cauſe a *Triumph*, or *Ovation*, thereof, at their *acceſs*, *Courage*, *Serenity*, *Promptitude*, *Magnanimity*, *Euphory*, *Inclination to Venery*, *&c.* which we are moſt obliged to regard, as being its moſt *natural* and *proper Effects*.

This *Opinion* of the *Moderns* does preſume, or ſuppoſe, (for they prove nothing)

Firſt, *That Fumes, or Vapours, do readily and freely paſs from the Stomach to the Brain*, becauſe the groſs *Fumes* (as they call them) of a *Grain* or two of *Opium*, always operate before it is out of the *Stomach*.

But they never ſaw ſuch *Fumes* paſs, nor their *Paſſage*, only *ſuppoſe* both; and that meerly upon an *Imagination* that it muſt be ſo, becauſe they (*forſooth*) cannot conceive any other *way* by which *Opium* can affect the *Head*, *Nerves*, *&c.* while it is at *Stomach*; whereas I can, and ſhall (*God willing*) ſhew them another means, or *way*, to do it, that is *ſenſible*, and not wholly *precarious*, as theirs is, and that in the meaneſt manner; becauſe all their *Grounds* to ſuppoſe it, is their *Inability* to *conceive*,

ceive, or *apprehend*, what is (as I ſhall ſhew) very *ſenſible*, nay *obvious* alſo.

Secondly, *They ſuppoſe, That ſuch Fumes will ſerve to ſolve all the Phænomena's and Operations of Opium*; whereas it is utterly impoſſible they ſhould ſolve the *enlivening* and *invigorating Effects* thereof, (as has been ſhewn, and ſhall be further proved, if God permits.)

It were eaſie to evidence, but that it would be tedious and needleſs, (for their Incompetency to ſolve the moſt proper *Effects* of *Opium*, is more than enough) that ſuch *Fumes*, or *Vapours*, can truly ſolve no *Effect* of *Opium*, unleſs it be that of *Death*, or ſome *deadly Symptoms*; nay, they will not ſolve the moſt likely to be cauſed by *Vapours*, *viz. Sleep*, which all Men (as *Wedelius* ſays) allow to be the *Effect* of *Fumes*, or *Vapours*, (in his *Opiologia*, *c.* 11. *p.* 35.) "*Somnum naturalem* (ſays "he) *omnes concedunt producere ſuaviores, & blandas* "ἀναθυμιάσεις, *ſeu Vapores primum ἀναθυμίασιν de-* "*mulcentes, qui cum ſpiritibus animalibus mixti torpi-* "*dos quaſi illos reddunt*: That is, "*All grant that* "*kind and gentle Fumes do cauſe natural Sleep*, &c. Which is moſt certainly falſe; tho' I very much doubt, that this groundleſs *Preſumption*, which (as he intimates) all embrace, has been a great cauſe of this *airy Imagination* of *Fumes* in the *Caſe* of *Opium*; becauſe Men looked upon *Sleep* (agreed upon to be cauſed by *Fumes*) to be the *prime, leading*, and *moſt proper Effect* of *Opium*; which is alſo *falſe*, it being but a *meer Accident*, (as has been ſhown) and when it happens, generally requires *lying*, or *ſitting ſtill*, to aſſiſt it; whereas the *Watching*, that is the *Effect* of *Opium*, requires no *help*, and cannot be put off (as Sleep can, by *Motion*, *Action*, *&c.*) notwithſtanding all *Endeavours* to the contrary. Now I would know of

any

any Man, which is the moſt proper and natural *Effect* of any *Cauſe*, That which nothing can hinder, or that which every *Action* can? But I run too far upon this matter, which belongs more aptly to that part of this *Book*, that explains all the *Effects* of *Opium*; and ſo muſt return to that of *Fumes*, which do not cauſe *natural Sleep*, as manifeſtly appears,

1. Becauſe that which cauſes *natural Sleep*, muſt, in all Reaſon, (as it is always in the wiſe Work of *Nature*) bear a *Proportion* thereto; but *Fumes* (ſuppoſing their *Being*) bear no *Proportion* to our *Sleep*. Certainly a working *Labourer*, that toils all the *Day*, muſt ſpend the *Fumes* of his Body in the higheſt *degree*; and feeding upon dry *Bread* and *Cheeſe*, muſt breed feweſt *Fumes*; yet none ſleeps better or ſweeter than he. The like is to be ſaid of a *travelling* Man, a tired Perſon, *&c.* who often fall aſleep before they eat or drink to renew their *Fumes*, which they had ſpent in an extraordinary manner. Why *Sleep*, that is deſign'd for *Refreſhment* and *Recruit*, ſhould depend upon *Fumes*, no Man can tell; for then our *Refreſhment* would wholly depend thereon, and no Man have any *Recruit* by *Sleep*, but in *proportion* thereunto. Who dares accuſe our *Wiſe* and *Good Maker* of ſuch Contrivances, who in *Nature* always proportions Things to the *Exigencies* thereof? and therefore *Sleep* not to *Fumes*, but to that which was impair'd in us for *want* thereof; which is always contriv'd by *Wiſe Nature* (if you'll obſerve it) to be the prompting *Cauſe* to the *Recruit*; and then *Proportion* is duly obſerv'd, becauſe we are prompted exactly according to the *Exigence* or *Neceſſity of Nature*, as becomes the *Wiſdom* of our *Creator* and *Preſerver*. This *Rule* (if duly attended to) will eaſily, ſpeedily, and certainly lead

lead you to the *Knowledge* of the true *natural Cauſes* of *Hunger*, *Thirſt*, *Inclination to Sleep*, and all ſuch *Calls* for *Reſtauration*. All which I could ſoon ſatisfie you in, but that it is not my *Buſineſs* at preſent, and that it will too much anticipate my deſigned *Tract* of *Animal Mechaniſm*.

Nor doth *Labour* it ſelf bear any *exact Proportion* thereunto, becauſe many healthy People, that are idle all *day*, ſleep long, ſoundly, and ſweetly, every night, as well as *Labourers*: So that (in ſhort) it muſt be ſomewhat that belongs to *Watching* as ſuch; for *Sleep* generally bears the beſt *Proportion* to *Watching*. If we *watch* much, or little, our Sleep bears ſome *Proportion* thereto; tho' there may be in this, as well as in *Hunger*, *Thirſt*, *&c.* *Accidents*, that cauſe the *Promptitude* to be *more* or *leſs*, and ſo vary the true *natural Proportion*; all which have the Nature of *Diſeaſes*, as *canine Appetites*, *Coma's*, *Caros*, *preternatural Thirſts*, *&c.*

What it is that *Watching* cauſes to prompt us to *Sleep*, muſt be ſome Impair made thereby as ſuch, and not the fooliſh Conceit of *Fumes*: And it were eaſie for me to illuſtrate what it is, but that it will require ſome Sheets of *Paper*, and (as I ſaid before) anticipate my *Diſcourſe* of *Animal Mechaniſm*, which I hoped to have publiſhed before this *Book*, and would have been moſt convenient, becauſe the *Principles* therein ſtated may ſerve to explain the *Effects* of *Opium*; but that the *want* of a few *Experiments* has (to my Grief) hitherto delay'd it; and therefore I muſt be put to much Trouble in this Work for want thereof, becauſe I am reſolved not to ſpare my ſelf, in order to ſatisfie the *Reader* in this great and unexplicated *Myſtery*.

2. If

2. If *Vapours* were the cauſe of *natural Sleep*, it is impoſſible that the *prick* of a *Pin*, or a *ſharp Sound*, &c. ſhould awake one ten or twenty times in an *Hour*; for *either* the *Prick* muſt in an *inſtant* diſcuſs all the *Fumes* in being, which is impoſſible to be imagined, and they as often return to cauſe *Sleep* again; *or* intercept their Motion from the *Stomach* to the *Head*, which no Man can have any Conception of the Efficacy of the *Pin*, or *Sound*, ſo to do: *Or* they muſt both *diſcuſs* and *intercept* the *Fumes*, (which indeed if the caſe were ſuch, would be neceſſary to make a clear *Awaking*) which is yet far more unconceivable. What *paltry Trifles* does the *World* embrace, inſtead of *Truth* and *Reaſon!*

3. Several Perſons (whereof I am one) do awake in a minute or two after they firſt fall aſleep in Bed at *night*; which would be abſolutely impoſſible, if *Fumes* cauſed *Sleep*; for the *Fumes* would increaſe *more* and *more*, and make one *more* and *more remote* from waking.

4. Why ſhould *warm Baths*, *Fomentations*, *Feet-waſhes*, *Head-waſhes*, *warm moiſt Weather*, the *Act of Venery*, the *Pleaſure of ſweet Melody*, *gentle rubbing of the Head* in a pleaſant manner, *ſcratching the Back* where it itches, and all gentle *Pleaſures* that are conſiſtent with *lying*, or *ſitting* ſtill, which do all cauſe a very free Perſpiration of *Fumes* at the *Pores*, (that are then moſt certainly opened by all thoſe Cauſes, as may be proved by ſtatick Demonſtration, Magnifying Glaſſes, *&c.*) cauſe Sleep, ſeeing they all cauſe a ſpending of the *Fumes?*

Obj. Some half-witted, unthinking *Caviller* may ſay, That ſuch Things ſtir up the *Vapours*, *&c.*

Anſw.

Anſw. What ſuch mean by *Vapours* ſtirr'd, is not eaſily determinable; but this I know, that all ſtir of *Humours*, or any other thing, hinders *Sleep*; and that the longer ſuch Cauſes of opening the *Pores*, and conſequently of perſpiring *Fumes* do laſt, the more we are inclin'd by them to *Sleep*; ſo that the more our *Fumes* have been ſpent, the more we are inclined to *ſleep*; which is a ſtrange *Contradiction*, if *Fumes* be the cauſe of *Sleep.*

I can but ſmile to think how moſt Phyſicians come to call ſeveral things *Vapours:* Firſt, they ſay, that *Sleep* is from *Vapours*; then call every thing *Vapours* (*right* or *wrong*) that inclines us to ſleep, by reaſon of that falſe *Suppoſition:* How then comes *Camphire* not to be a great Cauſer of Sleep, that is ſo apt to evaporate?

5. *Fear*, *Sorrow*, *Grief*, *Melancholy*, *Depreſſion of Spirits*, *Cold*, &c. do moſt certainly cloſe the *Pores*, (as appears by *ſtatick Experiments*) by which means *Vapours* are much crowded in the *Body*; yet all ſuch *Grievances* do hinder *Sleep*, as they alſo do the *Effects* of *Opium* and *Drunkenneſs:* Therefore they do not proceed from *Fumes*, as the *World* imagines; for then theſe things that crowd in the *Fumes* and *Vapours*, would promote, not hinder *Sleep.*

6. If *Fumes* are the *cauſe* of *Sleep*, then are the cauſe of *Sleep* and *Vertigo's* (as the *Vaporanians allow*) the ſame, it follows then that we could never *ſleep* without a *Vertigo.*

7. Many (as Dr. *Willis* ſays) eat their *Meat*, take their *Drink*, &c. as other People, yet do not *ſleep* at all for many *Weeks* together; which were impoſſible, if the *Fumes* of *Meat* and *Drink* cauſed *Sleep*; for they, by *eating* and *drinking*,

must

muſt have thoſe *Fumes*, and conſequently *Sleep*, as other People, if that were true.

Thirdly, *They ſuppoſe and take it for granted*, (which I do not, for I know the contrary) *That* Opium, *while it is at Stomach, can affect the Brain*, &c. *no other way but by Fumes*; which is a moſt groundleſs Suppoſition: For,

1. How ſhould a *Lump* of *Curd* at *Stomach*, or the Haft of a *Knife ſwallow'd*, and many ſuch things, which can ſend no *Fumes* to the *Head*, cauſe *Convulſions*, *Head-achs*, *Vertigo's*, *Syncopes*, *Leipothymies* of the whole Man, *Manias*, *Furors*, &c. if there were not another *way* for things to affect the *Nervoſum Genus*, &c. while at *Stomach*, beſides ſending up *Vapours* to do it? But of this *matter*, to ſhew how a thing at *Stomach* may affect the *Brain*, and the *whole Syſtem of the Nerves*, &c. and how *Opium* does it without *Fumes*, the 17, 18, 19, 20, *&c. Chapters* will ſhew you at large: Therefore I ſhall ſay no more of this at *preſent*, for it is fit for us *firſt* to overthrow that *Suppoſition of Fumes and Vapours*, before we eſtabliſh our own. For farther *Satisfaction* then, as to that *general Suppoſition* of *Fumes*, let us duly and fully conſider Things; for it is not a ſlight matter to proceed againſt a *General Opinion*, that has continued through all *Ages*, or to wipe off the *Prejudices* acquired thereby. *Obſerve*,

1. That the *Brain* is a *Principal Part*.

2. That it is *very ſoft*, *tender*, and next to a *Fluid*.

3. That very *ſmall*, *fine*, *and gentle Things do highly offend it*, as the *Effluvia's* of ſweet, or ill-ſcented Things, cauſing *hyſterick* and *epileptical Fits*, *Syncopes*, *Faintings*, &c. It is alſo notorious among

among us *Phyſicians*, that a little *Fume*, ſcarce ſenſible as to *Quantity* or *Quality*, riſing from a *Toe*, *Finger*, &c. and arriving at the *Brain*, cauſes dreadful *epileptical Fits*, *Vertigo's*, &c.

4. That our *Wiſe* and *Provident Creator*, has therefore ſecured and fortified all the *Avenues* of the *Brain*, in a more particular manner, by ſeveral *Circumvallations*, viz.

Firſt, With the *Pia Mater.*

Secondly, With the *Dura Mater*, called ſo from its *Hardneſs*, *Solidity*, and *Strength.*

Thirdly, With a *ſtrong Skull*, of a round or arched *Figure.*

Fourthly, With the *Pericranium.*

All which belong to it particularly, beſides other *Integuments* common to it, with other Parts; as, 1. The *Skin.* 2. The *Cuticle.* 3. The *Membrana Carnoſa.* 4. The *Perioſtium:* All which do ſurround it; and after all, it is Thatched (as it were) with *Hair.*

5. That the ſame *Providence* has taken *care* (which is very obſervable) that none of the *Objects* of *Senſation*, nor (probably) any Particle, or *Effluvium*, that flies from them, ſhould ever reach the *Brain*, but only bare *Impulſes*, and they not immediately convey'd, but by the *Intervention* of a *fine*, *tenuious*, *ſoft*, *gentle*, and moſt agreeable *Aura*, *viz.* the *Animal Spirits*, leſt any Offence ſhould be given in the leaſt manner to this moſt tender, delicate, principal Part, and *Royal Seat* of the *Soul*; all which Care had never been, without Neceſſity; for *God* and *Nature* do nothing in *vain.*

And

And if you'll duly conſider the *Organs* of Senſation, that are near the *Brain*, you'll find that they are contrived as *Shutters*, to exclude all extraneous Particles from the *Brain*; for *Impulſes* might have been contrived without their *Intervention*, becauſe they do not alter or improve the *Impulſes* received from Objects; for if they did, we ſhould not have true notice of Things: And ſeeing they do not alter, or improve the *Impulſes*, of what *Uſe* ſhould they be but to exclude extraneous *Particles*, *Fumes*, *Effluvia's*, &c.

For *inſtance*: The *tremulous Motion* of the *Air*, in the caſe of *Sound*, would have as truly hit the *Auditory Nerve*, or *Membrane*, without the *Tympan*; and very often much truer without it, becauſe of the ſeveral *Faults* and *Diſorders* that it is liable to: Yet ſo neceſſary was it thought by the beſt of *Judges*, who cannot err, that it was rather to be placed there, with all its Inconveniences that might follow, than any way expoſe the *Brain*, though to the moſt gentle of Bodies, *viz.* the *Air*, by which (in all probability) the *Animal Spirits* themſelves are nouriſhed, or ſuſtained.

Were it not that extraneous Particles, or *Air*, would offend the *Brain*, What need is there of the *Tympan*, when we know as well by Experience, as by the aforeſaid *Reaſons*, that a *Dog*, &c. can hear as well without it, upon the firſt taking it off, but that the Hearing will afterward decay, becauſe the *Brain*, &c. being expoſed, will be injured?

What is evident in the caſe of the *Ear*, may be made ſo as to the *Noſe* and *Eyes*; for though ſome of my *Readers* may not eaſily conceive it, the Repreſentation of Things might have been conveyed by *Reflections* and *Refractions* of Light, without exclu-

excluding the *Air*, but that it was more convenient and ſafe for the *Brain*, and *Optick Nerve*, (which is much the ſame matter with the *Brain*, and a Production thereof) that the *Air* ſhould be excluded.

6. Notwithſtanding all this *Care* to exclude extraneous *Particles*, how fine ſoever, we do find that thoſe very *Impulſes*, conveyed by the *Animal Spirits* themſelves, in the moſt gentle manner imaginable, do often offend the *Brain*.

Now fairly conſider the great *Excellency* and *Uſe* of the *Brain*, *viz.* to ſeparate the *Animal Spirits*, to accommodate the *Soul* with a fit Seat for it; its *Tenderneſs* and *Softneſs* to be next to *Liquidity*; how carefully it is guarded with about nine or ten *Circumvallations*, or conſiderable *Integuments*; that thoſe we commonly call *Organs* of *Senſation*, are contrived for Shutters out (or Excluders) of the leaſt *extraneous Particles*, *Effluvia's*, or *Aura*; that the leaſt *Fume* that riſes from any *Part*, and arrives at the *Brain*, cauſes ſuch terrible and diſmal *Effects*, and that moſt gentle touches of the *Animal Spirits* do offend it, ſo as to cauſe *tragical Events*, as *hyſterick Fits*, *Vertigo's*, &c. Is it likely, that notwithſtanding the *Conſiderableneſs*, *Tenderneſs*, *Uſe*, and *Excellency* of the *Brain*, the extraordinary Providence uſed in guarding it from *Effluvia's*, or *extraneous Particles*, how fine ſoever, and the apparent Miſchiefs that the leaſt *Fume*, nay, bare *Impulſes*, preſented by the *Animal Spirits*, do cauſe; that the ſame *Providence* that ſo guarded it (which does nothing in vain) ſhould, after all its Care and nice Circumſpection to exclude the leaſt *Fume*, &c. permit, and freely let looſe upon it, and into it, whole and even continual *Guſts*, *Blaſts*, and *Vulcano's*, of *acid*, *acrimonious*, *putrid*, *hot*, *ſtinking*, *corroſive Fumes*, *Vapours* and *Steams*,

ariſing from *glutted*, *debauch'd*, and *ſurfeited Stomachs*, containing all imaginable *Traſh*, *Hodge-podge*, *Vermine*, *Choler*, &c. ſure it is much fitter quite to diſcharge and rid Nature of them at *Mouth*, or rather ſend them downward with their fit Companions, the *ſtinking Ordure* and *Excrements*, than preſer them to the Higheſt and Nobleſt *Part* of the *Animal* and *Sacred Manſion* of the *Soul*.

For if there be ſo *ready*, *free*, *open*, and *conſtant* a *Paſſage* (*ſenſible*, or *inſenſible*) for the *Fumes* of *Opium*, which never fails of its *Effects*; then certainly muſt the *Paſſage* be alike free to all other *Fumes* from the *Stomach*, ſeeing they are ſo to thoſe groſs, venomous, and pernicious *Fumes* of *Opium*, as *Willis*, and moſt of the *modern* and *ancient Phyſicians* do ſtate them to be: Then farewel *Soul*, *Brain*, *Life*, and *all*; for it is not conceivable that the Man can hold out one *Hour* under ſuch *horrid* and *diſmal Circumſtances*, and dreadful *Eructations* of *rude* and *crude Fumes*, who could not bear the arrival of the *leaſt Vapour*, ſcarce ſenſible in *Quantity* or *Quality*, ariſing from any other *Part*; Or is it a peculiar *Priviledge* that the *Stomach* has, thus to ſend *Farts* with their Heels upward, (as *Belching* is call'd) without any offence, to perfume the *Soul's Preſence-Chamber*, (ſaving your Preſence however?) Foh! for ſhame! What ſort of Opinions are theſe? What *thick*, *ſtinking*, and *dark Clouds*, *Scotomies*, and *Stupors*, muſt the *Opiniators* be under, by their own Conſent?

7. If this were the caſe, no *Part* in the whole *Body* would be in ſuch a miſerable ſtate as the *Chief*; for the *Rectum*, or *Colon*, are fitted and fortified by *Nature* to bear ſuch Things; ſo is not the *tender Brain*.

8. What

8. What Horſe's Brain, much leſs Humane one, could bear, inceſſant *Rakings*, *Penetrations*, *Stuffings* of ſuch *unnatural*, *indigeſted*, *heterogeneous*, *rugged*, *acid*, *acrimonious*, *putrid*, and *impetuous Fumes*? If

Gutta cavat Lapidem non vi ſed ſæpe cadendo;

What would become of the tender *Brain*, thus rudely rubb'd and grated, all the days of our *Lives*, if it could hold out any? for it is incredible it ſhould.

9. How would the *Pores* of that ſoft Subſtance, which have no leſs Office (as 'tis univerſally received) than to ſeparate *Animal Spirits*, (which are or ſhould be the fineſt and moſt ſubtile, tenuious, and principal Things in an *Animal*, next the *Soul* it ſelf) be diſcompoſed, torn, dilated, ſtuffed? What a bleſſed Secretion of Animal Spirits (if any) would there be!

10. It is obſerved by all, That the *Brain*, tho' very ſoft, receives the leaſt Change of any *Part* of the *Body*; which could never be (conſidering its tenderneſs) if it were ſo raked by all *ſorts* of *Fumes*; for then doubtleſs ſuch a Body would be moſt changed of any in *Colour*, *Subſtance*, *Texture*, *Bigneſs*, &c. What would become of *Memory*, and indeed of all the *Faculties* of the *Brain*? Can a ſoft, yielding *Subſtance*, continually diſcompoſed, preſerve *Impreſſions* made thereon? If *Fumes* flow'd continually through the *Brain*, they muſt wear out all *Impreſſion*, yea, and the *Brain* it ſelf, in a ſhort time.

11. It would be very dangerous to *eat* or *drink*, if the *Brain* muſt ſuffer ſo much by the *Fumes* of *Meat*, *Wine*, &c. It would be hard to know whether it was beſt to *eat* or *not*, for both muſt be *fatal*.

12. What a vaſt *Difference* ſhould we obſerve, as to *Serenity* of *Mind*, &c. when empty and full? For in this laſt caſe, the *Brain* muſt be all in a *Cloud*, or a *Cloud* in it, or *both*; yet are Men much more *ſerene*, prompt, and fit for any thing, after ſome Glaſſes of *Wine*, than before, and after moderate Eating; than when Hungry, which makes them faint, peeviſh, ill-humour'd, and liſtleſs.

13. If the *Vapours*, or *Fumes*, of *Opium*, flying up to the *Brain*, cauſed all its *Effects*, it is very ſtrange that our *Fumi venduli* had not long ſince found out the *Mountebank-Gambol* of ſtanding upon their *Heads*, to prevent all Miſchief from *Opium* taken in a great *Doſe*; for *Fumes* in a warm living Body would not deſcend into the *Head*. I wonder they did not find out ſuch an eaſie and natural Conſequence of their *Hypotheſis*, if true; they might then have boldly mounted any Stage, freely taken *Opium* in the ſight of the admiring *Rabble*; their *Summerſets*, *Going* upon their *Hands*, &c. would have ſecured them, and turn'd Danger *topſie-turvy* by the help of a *comical Geſture*. This is indeed ſomewhat to *purpoſe*, if it ſucceeds; if *not*, I ſhould think 'twere enough to ridicule their *Hypotheſis* out of all *Credit*, without any farther *Arguments*. I dare join *Iſſue* with them upon that *Point*, that it will not ſucceed, though a neceſſary *Conſequence* of their *Opinion*, if true; wherein they will have this Advantage, That they'll confeſs with one that never did (or will) try it, as being well aſſured of the Falſity of both the *Hypotheſis*, and the *Experiment*, without ſuch a *Trial of Skill*.

Now I think that I have ſaid enough, and would willingly give over arguing, and ſpending any more *Time* to confute an *Hypotheſis* ſo abſurd, that it muſt needs appear ſo to any regular Thinker

Thinker without my *Help*; but all are not ſuch, and the *Prejudices general* and *inveterate*, and of *ſome thouſands* of Years ſtanding, having continued through all *Ages* to this *day*; and I would fain quite put out this falſe *Light*, that (like *Will of the Wiſp*) has brought many a Man into the *Pit* of *Deſtruction*, or *Grave*, while *Phyſicians* were guided thereby. Therefore it being no ſlight *Work* to undeceive many, and a very good Work (if poſſible) to undeceive all; I will (leſt what I have ſaid be not ſufficient to that *end*) add ſomewhat more to the ſame *purpoſe*; though (I doubt) ſome will not be convinced till I ſhew them how Things while at Stomach, may cauſe all the *Effects* of *Opium*, by a *ſenſible Operation*, without the *Help* of *Fumes*, *Vapours*, *Effluvia's*, *Aura*, or any any ſuch thing; which have been the *Aſylum* of the ſhort-ſighted, that could ſee no other Means, and therefore (as was ſaid) concluded Things muſt be as they thought, preſuming that nothing could be that they did not ſee. A ſpecial *Inference*, and a very improving one, which muſt cauſe People never to ſeek for any thing! For why ſhould they, that think there is nothing but what they ſee, look any farther? To proceed then:

14. It is agreed on all *hands*, (as I take it) That the *Animal Spirits* are not generated till there is an *Appulſe* of the *Bloud* at the *Brain*: Can it therefore be imagined, That Indulgent and Wiſe *Nature* ſhould contrive a ſpeedier *Way* to *deſtroy*, *diminiſh*, or *diſable the Spirits*, by *Fumes* and *Vapours* out of the *Stomach*, than to generate them? Theſe are not the *Ways* of *Equal Nature*, which deſtroys and generates by the ſame *Road*; ſo that if *Animal Spirits* are generated by the *Bloud*, they are diminiſhed by ſome *Defect* therein; as *want* of

Matter in the *Bloud* for that *purpoſe*; the *Bloud* not arriving at the *Brain*, and the like.

Note, That I ſpoke in the laſt *Paragraph* of *diminiſhing*, (or deſtroying) not bare *diſabling* the *Spirits*; for the *Spirits*, or *ſenſitive Soul*, may be depreſſed (or diſabled) for ſome *time*, and excited, or elevated, by other *means* than that of the *Bloud*, as by *Pleaſure* or *Diſpleaſure*, *Joy* or *Grief*, *&c.* Thus *good News*, or the *Pleaſure* of any of the *Senſes*, enliven, invigorate, or elevate the *Spirits*, or *ſenſitive Soul*, in a *moment*; this is the *way* that *God* has provided for us upon ſudden *Exigencies*, *Deliquiums*, *Lepothymies*, &c. and thus *Cordials work* ſo ſpeedily (as you'll find hereafter;) ſo may there be a *ſudden Depreſſion* of the *Spirits*, as by *ill News*, *Pain*, &c. which (if you'll be pleaſed to remember) will much illuſtrate Things hereafter.

15. The ordinary *Strainers* of the *Body* are ſo ordered, that they will not admit *Particles* of another *Figure*, eſpecially if larger than the *proper Particles*; much more ſhould it be ſo with the *Principal Strainer* of the whole Body, (I mean the *Brain*) both for its *ſafety*, and of the *whole*, which depends upon the *Animal Spirits*, that are ſtrained, or ſeparated, from the *Bloud* in the *Brain*; therefore the Particles of *Opium*, which are eſteem'd groſs by all, (however are more ſo than the moſt *tenuious Animal Spirits*) cannot enter into the *Pores* of the *Brain*, to diminiſh or diſable the *Animal Spirits*, in caſe its Fume arrived there.

16. It was never the *Method* of *Nature* to ſend Things crude, unprepared, and undigeſted, into the inmoſt and principal *Receſſes* and Parts of the *Body*, without paſſing gradually by the ſeveral Dige-

Digeſtions, Concoctions, Changes, Percolations, Circulations, *&c.* preparatory thereunto; therefore it will not permit crude and indigeſted *Fumes* any *acceſs* to the *Brain*, till they have (as it were) performed their *Quarentine* elſewhere; nor will *Nature*, which always acts conſentaneous to it ſelf, *provide* any *Paſſage* for ſuch rude and crude *Foreigners* and *Strangers*, to ravage the *principal Part* of an *Animal*.

17. They cannot paſs by the *Arteries*, which carry nothing out of the *Stomach*, but all into it, or towards it, and that with a violent Motion, which oppoſes any thing that would paſs that *way*.

18. Nor by the *Veins*, which carry nothing into the *Brain*; but if they enter'd the *Veins* at *Stomach*, they muſt thence paſs into the *Right Ventricle* of the *Heart*, where being rarefied by *Heat*, they muſt take up much *room*, and ſadly diſcompoſe the *Motion* of the *Bloud*, and alſo enter this *principal Part* in a *crude condition*, (tho' much better able to bear them than the *Brain*) then muſt they paſs into the *Lungs*, where you may be ſure they will be ſo ſaucy as to take up the uppermoſt *Room*; and how they will be brought down again into the *Left Ventricle* of the *Heart*, (which they muſt vouchſafe to do, before they can get into the *Brain*) none can tell: There then muſt they ſtick, and cauſe an *Aſthma*, unleſs the Man has the good Luck to be rid of theſe *Rovers* by *Breathing*, and then (Joy be with them! as there will be, when they are gone) they are loſt, and never arrive at the *Brain*: And if it could be conceived, that they condeſcended to come down from the *Lungs*, (contrary to their *Levity*, which is not to be *thought*) what *Pranks* muſt they play in the *Left Ventricle* of the *Heart*, and what at *Brain*, conſidering it cannot bear the *leaſt Vapours!* (as

has been ſhewn;) whereas in this *Caſe* there muſt be a continual Stream thereof, and conſequently a *diſcontinuance* of the *Bloud*, and its Motion. See then how little *Thought* they muſt have, that aſſert it is convey'd with the *Bloud* either to the *Veins* or *Arteries!*

19. Nor by the *Lympheducts*; for then they muſt, contrary to their *natural Levity*, deſcend into the *Receptaculum Chyli*, and out of the *Subclavials* into the *Right Ventricle* of the *Heart*, and afterward run all that wild Riſque mentioned in the laſt *Paragraph*, which was ſhewn to be impoſſible.

20. Nor by the *Nerves*; for then they muſt either run up in the *Road* of the *Animal Spirits*, or in ſome *By-way*. If they paſſed by the *Road* of the *Spirits*, then muſt the *Spirits* be ſtopp'd for that time, (which is no ſhort one) and we ſuffer a *Paralyſis* of the *Stomach* all that time, or be much diſturbed and interrupted; then ſhould we have *Convulſions*, or at leaſt ſome *degree* of a *Paralyſis* of the *Stomach*.

And if they paſſed by ſome *By-way*, or *Road*, beſides that of the *Animal Spirits*, then muſt it be a *full*, or an *empty one*; if full, that Humour (as ſuppoſe a *Succus Nutricius*, for once) muſt be diſturbed and diſcontinued, (as the Animal Spirits were ſhown to be;) and if empty, it would follow, that *Nature* had *void* and *uſeleſs Ducts*, which none ever had the Folly or Confidence to aſſert; or that *Nature* contrived them for that *purpoſe*, which is (as has been ſhown) directly againſt its *Methods* and *Advantage*.

But after all, whither would you have them march in this *By-Road?* for they could not mix or communicate (as good Luck is) with the *Spirits*; and if they did, it is impoſſible it ſhould be without ſuch Diſturbances as I mentioned would follow, if they paſſed in the *Road* of the *Spirits*; it

is

is not common Senſe, that ſuch *crude Blaſts* ſhould *meliorate*, or *enliven the Spirits*, to cauſe *Briskneſs*, *Bravery*, *Serenity*, *Courage*, *Magnanimity*, as *Opium* does, much leſs if thoſe *Fumes* ſtopp'd and crowded in the *Brain*, and any way hinder'd the *Generation* of *Animal Spirits*, as the common *Aſſertion* is.

The like is to be ſaid of their paſſing between the *Pia Mater*, and the medullary Part of the Nerve, (which cannot be allow'd, becauſe of its cloſe *adherence* thereto) with this addition, That they would conſtantly cauſe a *violent Head-ach*, which *Opium*, and *Meals*, (to which *Fumes* are particularly attributed) do often cure.

So if they got up to the *Head*, between the *Pia* and *Dura Mater*, it is *Head-achs*, and not the *Symptoms* of *Opium*, that they would produce; which *Head-achs* (as was ſaid) *Opium* and *Meals* do cure.

21. *Laſtly*, If they paſſed by any means quite on the outſide of the *Nerves* and their *Membranes*, (*viz.* the *Pia*, and *Dura Mater*) then muſt they take their Lodgment (if within the *Skull*) between the *Dura Mater* and the *Skull*, and produce no other *Symptom* but a Head-ach, which (as was ſaid) *Opium* and *Meals* rather cure than produce; and if without the *Skull*, it is quite beſide the *Cuſhion*, and the *Vaporarians* own *Intention*; for in all theſe laſt *Caſes*, they could not affect the *Animal Spirits* for good or evil. Many and very many things may be added, to ſhew the *Impoſſibilities*, *Inconveniences*, *Incoherences*, *Abſurdities*, &c. that attend the *Paſſage* of the *Fumes* and *Vapours* into the *Brain*, *Head*, &c.

22. I had forgot mentioning the *Abſurdity* of its paſſing up at *Gullet*, and ſo to the *Head*, becauſe I could not imagine that any one would be

ſo

ſo beaſtly an *Animal* as to belch up an *Argument* of that kind, conſidering our very *Senſes* tell us, that what comes up that way paſſes out at *Mouth* or *Noſtrils*, and becauſe, if it were ſo, the *Operation* of *Opium*, &c. would be in *proportion* to our *Belching*, which is *ridiculous*.

23. The greateſt *Comfort* of a *Cordial* is at firſt, or ſoon after it is taken; but if 'its *Comfort* were by *Fumes*, or *Effluvia's*, paſſing to the *Bloud*, or any where beſides, the *Comfort* would (as their *Cauſe* of *Fumes* do) increaſe for a long time, and be more after a good while than at firſt. So,

24. If *Opium* operated by *Fumes* while at *Stomach*, which muſt gradually increaſe continually, how comes *Opium* to be at the height of its Operation in a ſhort time, *viz.* in about *half an Hour* after it begins ſenſibly to operate, or an *Hour* at fartheſt, and not increaſe continually in its Operation, as their pretended Cauſe the *Fumes* muſt do by continual ſteaming?

25. If *Opium* operated by ſending *Fumes* by *Paſſages*, &c. from the *Stomach* to the *Brain*, I ſhould think that when it has got out of the *Stomach*, as into the *Inteſtines*, *lacteal Veins*, &c. there ſhould be a kind of *Interval* of its *Operation*, (which is never obſerv'd) till it got into the *Bloud* again; therefore it does not operate by *Fumes*, for the *Pylorus* is always ſhut, but when ſomewhat is ſent downward, which would hinder the mounting of the *Vapours* into the *Stomach*, in order to paſs to the *Brain*.

26. If *Vapours* were the cauſe of *Sleep* after *Meals*, then ſhould we be more ſleepy two or three *Hours* after *Meals*, becauſe of the *abundance* of the *Fumes* that would be crowded into the *Brain* by that *time*; but we are more ſleepy preſently after *Meals*, and if we indulge it but for a *quarter* of an *Hour*, we are refreſhed, and far from *ſleepineſs* after-

afterward, tho' the *Fumes* (if that *Hypotheſis* were true) would be much more at *Brain* two or three *Hours* after the *Meal*: So it is in the *caſe* of *Wine*, if one take a ſhort *Nap* after ſome *Glaſſes*, he may drink a great many afterward without being ſleepy; which plainly proves, that it is not the *Fumes* of the *Wine* is the cauſe of the *Sleep*, becauſe he is not at all *ſleepy*, when there muſt be more *Fumes*.

27. All allow, that hot *Fumes* aſſaulting the *Brain* cauſe *Phrenſies*; if that be true, then the *Fumes* of *Wine* and *Opium* (which are both very hot) muſt always do ſo; but *Opium* and *Wine* alſo do often cauſe *Compoſure*, *Good Humour*, *Sleep*, &c. which are contrary to *Phrenſies*; therefore they do not operate by *Fumes*.

28. "*If Sleep* (ſays *Helmont*, the only Man that "I have read who is againſt *Vapours*) *is cauſed by* "*Vapours aſcending from the Stomach to the Head*, "*obſtructing and intercepting all the Paſſages of Sen-* "*ſation*, *Motion*, *Speech*, *Judgment*, &c. (*as the* "*Schools ſay*) *then a Diſeaſe would have been be-* "*fore the Fall of* Adam, *becauſe Sleep would have* "*been a Diſeaſe*, *that is*, *a flatulent and vaporous* "*Palſie*.

29. All allow *Vomitives* and *Purgers* to operate by *Irritation*, or a *grievous Senſation* of the *Membranes* of the *Stomach*; Why not *Wine*, *Cordials*, *Opium*, &c. by a *pleaſant Senſation*? *Cujus eſt Dolor* (*aut Gravamen*) *ejuſdem eſt Voluptas*; and as a *grievous Senſation* (or Pain) cauſes *Melancholy*, *Depreſſion* of *Spirits*, *Fretfulneſs*, *Laſſitude*, &c. ſo a *pleaſant Senſation* cauſes *Comfort*, *Elevation* of the *Spirits*, *Euphory*, &c. But we have not cleared the *Way* ſufficiently for theſe Matters yet, which will in due *time* be ſolemnly conſidered.

Obj.

Obj. It may be ſaid, That both *Vomitives* and *Purgatives* take ſome *time* before they operate, unleſs a *Nauſea* upon *Averſion* cauſes them to work ſooner; for Things muſt have *time* to inſinuate themſelves (or ſoak) through the *Cruſta Carnoſa* of the *Stomach*, and afterwards to affect its *ſenſile Coat*; which argues that *Wine* and *Cordials*, which operate immediately, do not operate that *way*, but by *Fumes* (or *Effluviums*) paſſing into the *Brain*, or *Bloud*.

Anſw. I doubt indeed, that this *Difference* may be an occaſion of referring the Effects of *Cordials*, and thoſe of *Emitticks* and *Cathartick*s, to different *Cauſes*; but it is very ſtrange, that they ſhould go ſo far as the *Bloud*, or *Brain*, to ſeek for the *Cauſe* of the *Operation* of *Cordials*, which operate in a *Moment*, and go no farther than the Stomach for the Cauſe of the Operation of *Vomatives* and *Purgatives*, which take more *time* to operate; eſpecially ſeeing the *Bloud* and *Brain* have no *Senſation*, and that all *ſenſitive Comforts* happen by that means, I think it were much more proper, firſt, to conſider the *immediate Part* upon which they inſiſt, (when at *Stomach*) eſpecially ſeeing it is ſo very *ſenſible*, before we run roving I know not whither, to ſeek for the Cauſe of a Thing that works, pleaſes, and comforts the *Stomach*, as ſoon as it is down. I take my ſelf running off the proper *Subject* Matter of this *Chapter*, and anticipating that of another; therefore I will be ſhort, and deliver my *Opinion* in this Caſe by way of Poſition, with a familiar Inſtance to illuſtrate it, which may in ſome meaſure prepare you for the Proof of it, and what is to be ſaid thereof more at large hereafter

I ſay then, that *hot ſpirituous Cordials*, (for ſuch indeed all *proper Cordials* are) as *Brandy*, Dr. *Stephens*'s *Water*, and *ſuch-like*, having *ſulphureous Particles* ſo prepared and diſpoſed towards *Heat*, or *Fire*, that they are as it were in *Potentia proxima* (or *next Diſpoſition*) thereto; are mighty apt to contract a *Heat*, as you find by *Spirit of Wine*, or *Brandy*, kept the leaſt *time* in a *warm Place*, or (to come cloſer to the matter) in your *Mouth*; wherein being actuated by its *Heat*, they will as in an *inſtant* grow ſo hot and active, that you can hardly bear them, becauſe *Particles* of *Heat* which penetrate any *Metal*, *Glaſs*, &c. immediately as ſoon as applied thereto, will much more eaſily and ſooner penetrate our ſoft *Parts* at Mouth, or the *Cruſta Carnoſa* at *Stomach*, and ſo reach the moſt *ſenſile Coat* thereof, *pleaſing*, *comforting*, and *exciting* the *Spiritus inſitos* as in a *moment* by their *ſpirituous Heat*, which we actually feel and ſenſibly find to pleaſe and comfort the *Stomach*.

But if ſome *Purging Tincture* had been put into the *Cordial*, or *Brandy*, this would not have ſoaked through the *Cruſta Carnoſa* under ſome *time*, and conſequently not operated till it had. This may be moſt manifeſtly illuſtrated by ſome *hot Brandy*, or indeed any hot Liquid put into a porous Diſh ſet upon one's *Hand*, which preſently warms it; but if the Liquid be tinged with any thing, that *Tincture* will not reach the Hand, till the Liquor, which is its *Vehicle*, ſoaks through, which may be in an *Hour* (*more* or *leſs*) according to the Poroſity of the *Wood*, which Tincture is to be compared to the *Purgative* at *Stomach*.

Hence it follows, That all *Cordials* ſhould be a *ſpirituous* Liquid, if intended for ſudden *Refreſhment*, which *Experience* has taught, and be given actually warm'd, if a very nimble Comfort be required; tho'

tho' the great *Heat* of the *Stomach*, above that of the *Mouth*, will generally be ſufficient. Thus may the *Stomach* be pleaſed and comforted, grieved and purged, with the ſame *Draught*; but *Gracious Providence* has given the *ſtart* to the *Cordial*, which immediately comforts us as a *Heater*.

30. If *Opium* operated by ſuch *Fumes*, it would (at leaſt in a *liquid Form*) begin its *Operation* as ſoon as it is at Stomach; for it would begin to ſend up *Fumes* as ſoon as it began to be warm, which is preſently, and be at a very conſiderable *Height* of *fuming*, and conſequently of *Operation*, in one *minute*, which is about the ſpace of ſeventy ordinary Pulſes; but we do not find it begin to operate in that *Form*, under twenty, thirty, or forty Minutes, which is much about the *time* that a more agreeable, and not nauſeated *Vomitive*, or *Purger*, begin to affect the *ſenſile Coat* of the *Stomach*, and give intimation of their ſo doing. All which, and the Senſe of Pleaſure that we actually then feel at *Stomach*, makes it probable that it operates by affecting the *Stomach pleaſantly* and comfortably, (after the manner of generous *Wine*) as *Purgers* and *Vomatives* do by affecting it *grievouſly*, all of them (*except* the *Wine*, that pleaſes and comforts ſooner becauſe of its Particles of *Heat* gain'd by *Fermentation*) operating much in the ſame *time*, becauſe they take like leiſure to ſoak through the *Cruſta Carnoſa* to the *ſenſile Coat* of the *Stomach*.

31. All ſenſitive *Pleaſure*, *Comfort*, &c. are received by the *Senſes*; and though any Part were ſome way benefited, that has no *Senſe*, no *Comfort* would be perceived; without *Perception*, none could ſay that he is comforted: What fitter Part is there to be pleaſed, and comforted by *Senſation*, than the *Stomach*? which has ſuch exquiſite Senſe, that it can diſcern the *vomitory Particles* in

Infu-

Infuſion of the *Crocus*, or *Regulus* of *Antimony*, which no *Senſation* but that at *Stomach* can diſcern; and ſo ſmall, that a *thouſand Vomitories* made thereof by Infuſion, do not ſenſibly diminiſh the *Crocus*, or *Regulus*, as to *Weight*, or *Bulk*; nor can I conceive where any ſenſible *Comfort* can be perceiv'd by a ſpoonful of Cordial but at *Stomach*, where it actually is, and upon whoſe Coats it immediately inſiſts; Is it not there that we feel the *Comfort*? and where ſhould we find it but there? What would the *Effluviums* of a Spoonful ſignifie, if mix'd with 100000 *times* as much *inſenſile Bloud*? and what Part (beſides the *Stomach*) that the *Bloud* touches, can be ſenſible of it? So that if *Effluviums* were granted, 'tis thither they muſt return to cauſe any conſiderable *Pleaſure*, or *Comfort*: But what need any *Return* of the inconſiderable *Effluvia*, when the main *Body* of the Cordial (yea, all) lies upon the *Stomach* already?

I muſt forbear running into the Buſineſs of other *Chapters*, having been tedious enough upon the Subject of this, and the rather, becauſe it was ſo general and ſo rooted an *Opinion* in the Minds of *Men*, in all *Ages*, and in all *Sects* of *Phyſicians* and *Natural Philoſophers*, that I could not ſay too much to endeavour to free the *World* from the Slavery of ſuch an *Impoſition*, and the innumerable ill Conſequences of ſuch a fundamental and overgrown *Errour*.

Which certainly muſt have been long ſince exploded, if ingenious Men had firſt thought, and then ſpoke freely; but the *Truth* is, there were many and great Cauſes to the contrary, as thoſe intimated in the laſt *Paragraph*, and the mighty *Uſefulneſs*, and ready Officiouſneſs of that Opinion of *Fumes*, to anſwer for all the more obſcure and latent Cauſes of the *Maladies* and *Diſaſters* of the

Brain

Brain and *Genus Nervoſum*. If any enquired or called for the *Cauſe* of a *Vertigo*, the *Phyſician* anſwered (*Fumes*;) of *Epilepſies*, it was anſwered (*Fumes*;) of *Scotomies*, it was *Fumes*; of *Headachs*, *Megrims*, *Coma's*, *Caros*, *Lethargies*, &c. it was *Fumes*; of *Hyſterick Fits*, *Convulſions*, *Spaſms*, *Cramps*, &c. it was *Fumes*; nay, they anſwered as Cauſes to all *Diſtillations*, *Catarrhs*, *Epiphora's*, (or weeping *Eyes*) and all, even ordinary *Tears*; all which they ſaid were only theſe *Fumes* turn'd into *Water* by the *Coldneſs* of the *Brain*, as they are in a *Still*, or *Alembick*; ſo hot *Fumes* accounted for *Phrenſies*, *Deliriums*, *Ravings*, &c. So that however other *Heads* were, the *Phyſician*'s was ſtuff'd therewith; and all *Meteors* of the *Microcoſm*'s Upper *Region*, whether *hot* or *cold*, were (as thoſe in the *Macrocoſm*) formed out of *Fumes*, as he imagined.

Thus you ſee all the *Opinions* and *Hypotheſiſes* that have been, concerning the *Operation* of *Opium*, to be moſt abſurd, and directly contrary to all *Senſe*, *Reaſon*, and *Experience*.

CHAP.

CHAP. XI.

Opium *does not diminiſh or diſable the Spirits by any means whatſoever.*

HAving ſufficiently demonſtrated, that *Opium* cannot *diminiſh* or *diſable the Spirits* by the *cold Quality* of the *Ancients*, or *Fumes* of the *Moderns*, and that neither of them have as much as any *Being*; I ſhall now add, that *Opium* does not *diminiſh, or diſable the Spirits by any other means whatſoever.*

I would not be miſtaken, when I ſay, That *Opium* does not *diminiſh*, or *diſable the Spirits* by any means, (for there is nothing ſo good in *Nature*, but will do it, if uſed unduely, or immoderately, as *Wine*, *Bread*, *Milk*, *Honey*, *Sugar*, *Beer*, *&c.* in exceſs) for I intend, that it does not do it when *duely* and *moderately* uſed.

1. That which refreſhes the Wearied, and highly prevents *Wearineſs*, muſt add to, or excite the Spirits, which is directly contrary to *diminiſhing*, or *diſabling* them; but *Opium* does in a moſt eminent manner refreſh the Wearied, and prevent *Wearineſs*, therefore it does not diminiſh, or diſable the *Spirits*.

Some have been ſo ſilly, and inadvertent, as to object, that it refreſh'd the Weary only by *Sleep*; It is *Matter of Fact*, that it refreſhes them whether they *Sleep*, or no, and that without failing as often as it is uſed in that Caſe.

Others (that were no Wiſer) have ſaid, that it only took off the *ſenſe* of *Wearineſs* by ſtupifying, which happened by the *diminiſhing*, or *diſabling* of the *Animal Spirits*. Bare Inſenſibleneſs cannot enable the Spirits to *Labour* with eminent *Briskneſs* and *Alacrity*, as Men moſt certainly do after *Opium* is taken, being finely *enlivened*, and *invigorated*, as with *generous Wine*; if they do not know this to be true, let them for ſhame hold their *Tongues*, till they know *Matter of Fact*, which if they will not, they proclaim themſelves to be *idle* and *impertinent Babblers*; but if they will patiently and wiſely abſtain arguing, till they are ſatisfied as to *Matter of Fact*, then will they be paſt *Opinion* and *Hypotheſis* in that Caſe; for they will have ſenſible and certain *Knowledge of the contrary*, and the Truth of what I ſay; which will end all *Controverſy*, and *precarious Squabbles* upon falſe *Suppoſitions*, (as the manner is) that cannot lead them to what is Right, but by meer chance, and never to a true *Knowledge*, that they are in the Right, which makes it none in effect; for they can do nothing with *Aſſurance*, but only ſuppoſe, and hope they are in the *Right*, when they are as much out (to their Patient's ſorrow) as *Phyſicians* have been in the *cold Quality*, and *Fumes of* Opium.

It is true, that a *Grain* (or Two) of *Opium*, will, if a Man compoſes himſelf, *ſitting*, or *lying ſtill*, cauſe a *Sleepineſs*, equal to that cauſed by ſpending the *Spirits* by a *Day's Labour*; but ſpending of the *Spirits* is not the only, no, nor beſt *proportioned*, or more *adequate* cauſe thereof, (as I have ſhewn:) If loſs of Spirit were the adequate cauſe of *Sleep*, how ſhould good and generous Wine cauſe *Sleepineſs* after that eminent Rate as it does in moſt People? How ſhould the moſt

pleaſing

pleaſing Muſick incline ſuch as *lie*, or ſit *ſtill*, to ſleep? but if one Dances thereto, it makes him more lively and brisk than ordinary. The like exactly do *Wine* and *Opium*, if Men *lie*, or *ſit ſtill*; but otherwiſe, they make them much more brisk and lively, and able to undergo *Labour*, *Action*, *&c.* Which *Note*, that you may not any more wonder, that *Enliveners* and *Exciters* of the *Spirits* do cauſe *Sleep*, as well as *Diminiſhers* thereof; and obſerve, that they are all pleaſing things, as *Muſick*, *Wine*, and *Opium*, which cauſe *Pleaſant Dreams*, *Pleaſant Watchings*, *Pleaſant Humours*, *&c.* Expect more of this Matter in the *following Chapters*, and all by *degrees*, according as I Judge the prejudiced *World* will bear Things: For a great *Paradox* (how true ſoever) muſt not be abruptly obtruded, but *gently*, and *gradually* uſhered in by inſinuating *Reaſonings*, otherwiſe it will be entertained like a rude *Stranger*, that contradicts a *Multitude* in *Faſhions* and *Cuſtoms* that they have always uſed, and judged to be the very beſt (however blameable.)

Conſider, that if *Opium diminiſhed* or *diſabled the Spirits*, proportionable to the *Sleepineſs* that it cauſes, as a hard *Day's* Labour does, then if *Opium* were given a Man after a hard *Day's* Labour, it would be, as it were, adding another hard *Day's Labour* to cure it, the *Day's Labour* and *Opium* impairing the *Spirits* alike; Think what a miſerable Condition the poor Man would be in, eſpecially if Sleep did not make him ſome amends, it would be ſuch as were utterly intollerable; but ſo far is *Opium* from any ſuch *Effect*, that it refreſhes him tho' he Sleeps not at all after the hard *Day's Labour*, and not only ſo, but will enable him to Work all the following Night with great *Alacrity*, if need requires it.

What a *Condition* would thoſe be in, who take a *Drachm* of it twice a day for 10, 20, or 30 years? Nay, how could any poſſibly do it for half 10 days, if a *Grain* or Two deſtroyed the *Spirits* ſo much, as to cauſe *Sleepineſs* thereby, as *hard Labour* does? Which they muſt allow, that aſſert it cauſes Sleep, by *diminiſhing, or diſabling the Spirits.*

But ſome may ſay, (tho' very inconſiderately) that it only *diſables* them for the *time* of its Operation; That is ſtrange, indeed, conſidering that even during that time they are moſtly enabled to *Work*, or *Labour*, tho' tired before; and that it,

2. Cauſes *Comfort, Refreſhment, Ovation of the Spirits*, all the *time* of its Operation, as *Wine* moderately taken does, eſpecially if People keep themſelves in *Action, Labour, &c.* otherwiſe, indeed, they may fall aſleep upon the comfortable *ſatisfaction, contentation* of Mind, and *acquieſcence* of Spirit, that it occaſions, as *Wine* does.

3. The *firſt Effect* that we find of *Opium* (which may therefore probably be a very *leading, fundamental*, and *ſignificant Effect*) is, that it cauſes a moſt *agreeable, pleaſant, and charming ſenſation about the Region of the Stomach*; which if one *lies*, or *ſits ſtill*, inclines him to *Sleep*, if not, it makes him *gay, good humour'd, brave, &c.* It is a *Pleaſure* ſo ſweet, and *delicious*, that tho' I endeavour'd to expreſs it by the *Ovation of the Spirits* upon Joy, a *good Genius* informing a Man, or the *Helmonſians Archeus* in his beſt *Humour*, or a continual *Venereal Pleaſure*, Wine drank *ad Hilaritatem, &c.* yet (I doubt) all my Ways of expreſſing it do come ſhort of the *charming Complacency* that it cauſes; Therefore if *Wine, Muſick, a good Meal, agreeable Frication of the Head or Back*, the *ſound*

of

of *Waters*, *&c.* do incline us to *Sleep* by the *Pleaſure* thereof, which lulls and ſooths us to it, (as is moſt certain, if we *ſit*, or *lie ſtill*) much more muſt the high *Charms* of *Opium* cauſe it.

That it is a *Pleaſure* that affects by one of our *Senſes*, namely by *Feeling*, is indiſputable; for it is not a *Pleaſure* of the *Eye*, *Noſe*, *Tongue*, or *Ear*, and it muſt be *ſenſitive*, becauſe cauſed by *Matter*; and that *Opium* has (doubtleſs) the like *Effect* upon *Brutes*, who have no other *Pleaſure*, but what is *ſenſitive*; That it is at *Stomach* is alſo *evident*, where we can be pleaſed only by the *Senſe of Feeling*; That it is involuntary, and pleaſes us whether we will or no, and that the ſame Particles excite *Venery*, *Itching*, *&c.*

Now all the *Senſes* (eſpecially *Feeling*, and particularly that at *Stomach*) are given us for *Watches*, and *Sentinels*, to diſcover and give *notice* of what is, or is not *good* and agreeable to our *Animal Nature*; That upon notice of what is good, and agreeable, *Pleaſure*, *Comfort*, *Satisfaction*, *&c.* are conceived; otherwiſe *Diſpleaſure*, *Diſcomfort*, and *Diſſatisfaction*.

What *diminiſhes* or *diſables* our Spirits, does us the greateſt *Evil* that can be, and conſequently *Senſation* would, according to its *Office*, give us ſuch notice thereof as would cauſe *Diſpleaſure*, *&c.* otherwiſe theſe *Sentinels*, that *God* and *Nature* have appointed for *faithful Notice*, would (inſtead of truſty ſervice, which is the *End* they are made for) deceive us, and conſequently do us miſchief, rather than good; which is very Prophane (if not *Blaſphemous*) to aſſert, as being highly abuſive of *God's Goodneſs* and *Wiſdom*, to make Things in *Nature*, that would not only not anſwer, but

act quite contrary to their *Ends*; it follows then, that what cauſes ſuch a mighty agreeable, and pleaſant *Senſation* at *Stomach*, which is the greateſt, and moſt accurate Judge of what is, or is not agreeable to the *Animal*, cannot be deſtructive, or diſabling of its *Spirits*, which are the moſt excellent, and uſeful Things, that belong thereto; Therefore *Opium*, which ſo mightily recommends it ſelf to, pleaſes, and comforts the greateſt *Judge* that *God* has given to a ſenſible Creature to diſcern what is *good* and *evil* for it, cannot *diminiſh or diſable our Spirits.*

One may ſay, (what I dare not) that the Senſation at *Stomach* may deceive us.

We may deceive our ſelves, and ſay ſo, when that which pleaſes the *Stomach*, does not pleaſe our perverted *Imagination*, which makes no *Argument*; let us therefore conſider Things where there is no ſuch vain *Imagination* to contradict the good *Ends* of Nature; if the Stomach and Senſes in a *Brute* or meer Animal, which has no other means to Judge of what is *good* or *evil* for it, ſhould not Judge aright, all the Animals in the whole World would ſoon periſh. It is the vain Opinion of Men that perſwades them that Things are *cold*, when *hot*, *&c.* as in the Caſe of *Opium*, when the Senſes truely inform that it is *hot*; If you'll ſtand to your *Imaginations*, and *Suppoſitions*, (for ſuch all muſt be without the *Information* of Senſe) againſt the *Dictates* of *Senſation*, you muſt inevitably err.

But one may ſay, Is the Senſe at *Stomach* ſuch an infallible *Guide* always?

I

I believe it will be very hard to give many *Inſtances* to the contrary, and prove it well; however, if we do, or may allow ſomething of this *Kind* to a perverted *Stomach* at certain *times*, (to avoid a *ſquabble* about it) it is never to be allow'd, That all the *Stomachs* in the *whole World* ſhould be pleaſed with one and the ſame Thing at all times, and yet that this Thing ſhould be ſo highly pernicious to the *Animal* as to *diminiſh* or *diſable its Spirits*; Then, indeed, it would follow, that the moſt exquiſite Senſe at *Stomach*, to diſcern what is or is not agreeable to the *Animal*, were abſolutely in *vain*, which no Man of *Reaſon*, that has any Apprehenſion of the Wiſdom of *God* and *Nature*, can aſſert.

3. What is more notorious, than that *Pleaſure*, or being pleaſed, raiſes, and *Diſpleaſure*, or being grieved, depreſſes the Spirits? Are not all People *pleaſant*, *gay*, *and good humour'd*, *brisk*, *prompt*, *&c.* when pleaſed? Do not Men Travel, or Labour with more *Eaſe* in Pleaſant *Company*, *&c.* But of theſe Matters, and the Reaſons thereof, more in the following *Chapters*.

4. How can *Opium*, that revives *People* when they are ſo diſpirited that they are even almoſt dying, (as when *Opium* is wanted by ſuch as uſe to take it in *Deliquiums* and *Agonies* from *Pain*, *&c.*) *diminiſh*, *or diſable the Spirits?* It is plain *Contradiction* to ſay that it ſhould.

Next to *Opium*, nothing revives People in ſuch Caſes better than *Wine*, and thoſe Things that produce the ſame, or like Effects, have like *Nature*; and who can ſay that *Wine*, that was made to glad the *Heart* of Man, *diminiſhes or diſables the Spirits?* Or, that *Opium*, which produces all the *ſprightly*, *enlivening*, and *encouraging Effects* of *ge-*

nerous Wine, (in a more eminent manner than *Wine*, and in the 10000*th* Part of its *Quantity*, and for a *longer time* than *Wine* cauſes them) *ſhould diminiſh or diſable the Spirits?*

For *Inſtance*, *Wine* and *Opium*, in a due *quantity*, (but *Opium*, in a far leſs *quantity*, as was ſaid) cauſe a *pleaſant, gay, and good Humour, Courage, Bravery, Magnanimity, Promptitude in Buſineſs, Expeditieneſs in Management, Serenity, Euphory, or eaſy undergoing of Labour, Journeys, Fatigues*, &c. *Both* take away *Sadneſs, Grief, Melancholy, Fear, Depreſſion of Spirits*, &c. *Both* cauſe *Promptitude to Venery* (Sine Cerere & Baccho friget Venus:) *So* Wine *and* Opium *prevent and cure Cold, open the Pores, promote Perſpiration and Sweat, eſpecially the following Mornings*, as Sir *Theodore Mayern, my ſelf*, and *others*, have obſerv'd of *Opium*, and is notorious as to *Wine*. *Both* cauſe *Sleep*, and *take away the Senſe of Pain, and require a greater Doſe than ordinary in Proportion to the Pain*; *Both take off Shiverings from Fear, Cold, or Ague Fits, and cauſe Mirth, Contentation, and Acquieſcence, Drineſs of the Mouth, Thirſt, a Senſe of Heat within us, a Dreaming Condition, pleaſant Dreams*, (if the Quantity of *Wine* be not grievous by its *Heat, Load*, &c.) *Nocturnal Pollution*, and in ſome Conſtitutions *both* cauſe *Vigilancy*; but *Wine* and *Opium* cauſe that more rarely than *Sleep*: Both *ſtop, and cauſe Vomiting* if they ſtay too long at *Stomach*; Both *moderate Hunger*, (Λιμὸν ϑώρηξις λύει) and are good in a *canine Appetite*; Both cauſe *Swimming in the Head*, &c. So

Both in an Exceſſive Doſe,

Do cauſe, at firſt, *Mirth*, and afterward a kind of Drunken *Soper* in ſome, in others *Fury*, or *Madneſs*,

Madneſs, Sardonick Laughter, and *Weight at Stomach, Vomitings, Hiccoughs, great Heat at Stomach, Debility, and laxity of all Parts, Faltring of the Tongue, Scotomies and Darkneſs of the Eyes, Vertigo's, Laxity of the Cornea of the Eye, Dilatation of the Papilla, Deadneſs of the Eyes to the View, Loſs of Memory, Venereal Fury, a high Colour, profuſe Sweats, Purging ſometimes, Alienation of the Mind, Loſs of Memory*; and *laſtly,* greater or leſſer Effects according to the *Doſe, Conſtitution,* &c. So

A long and laviſh Uſe of both,

Cauſes *a dull and mopiſh Diſpoſition, Dropſies, Fall of Humours upon Weaken'd Parts, a Sleepy Diſpoſition, Want of Appetite, Weakneſs of Digeſtion, Aptitude* to *Sterility,* and *Abortion, early Decrepiteneſs, Stooping in the Back, Trembling of the Hands, Weakneſs of Memory, Shortneſs of Life, Difficulty and Danger in ſuddenly leaving them off, Revive ſuch as ſink for Want of either,* and *ſupply the Want of each other.*

How can any have the Face to ſay, that a Thing which agrees ſo with *generous Wine* in Effects, can be a *Diminiſher* or *Diſabler of the Spirits?* The Miſchiefs of exceſſive Doſes, and laviſh *Uſe* of either, is no *Argument* againſt their inſpiriting *Nature*; if it were, then *Wine* is no *Cordial,* tho' made to *glad the Heart of Man,* becauſe of its ill Effects laviſhly uſed: Therefore none can argue from that, that *Opium diminiſhes or diſables the Spirits,* any more than *Wine,* or *Bread* does, a Surfeit of which is moſt dangerous. *Omnis Repletio mala, Panis vero peſſima; & corruptio optimi eſt peſſima:* That is, *All Repletion is bad, but that of Bread is the worſt; and the Corruption of the beſt is the worſt.*

The

The *ſhort* is this; *Wine* and *Opium* agree in all their *Effects*, ſaving ſuch as are Conſequences of their *different Accidents*, as the Quantity of *Wine* that muſt be uſed to cauſe the ſame *Effects* with a little *Opium*; and *Wine* having been fermented; and *Opium* (as may be ſhewn) having ſome *crude* and *viſcid Roſin* in it, which ſometimes ſticks to the *Cruſta carnoſa*, *&c.* of the Stomach; whence it happens, that *Wine* loads one more, heats more, and is more troubleſome upon thoſe *Accounts*, and that *Opium* offends the *Stomach* oftner even in a moderate Doſe, cauſing *Vomitings*, *Hiccoughs*, *Anxieties*, *Diſtreſſes* at Stomach, *Deliquiums*, *&c.* becauſe of the *indigeſtible Roſin* ſticking to the ſides of the moſt ſenſile *Stomach*, as I ſhall farther prove hereafter, (by *God's Help*) ſhewing very eaſie *Ways* and *Means* to ſeparate that *Roſin*, and ſo make it as ſafe, and leſs troubleſome, as it is more effectual than *Wine*.

Opium cannot *diminiſh or diſable the Spirits*, becauſe (as has been proved) it ſends no *Part*, *Fume*, or *Effluvium* to the *Brain*, or *Animal* Spirits, to cauſe ſuch bad Effects while it is at *Stomach*, yet does it produce them while it is there; for, as the *Vaporarians* themſelves (and indeed all Men) allow, there can be no *Deſtruction* without *contact*.

Sanctorius doth well and truely obſerve, by the Help of his *Staticks*, that nothing cauſes *liberal Perſpiration*, but it raiſes the Spirits; it is moſt certain, that nothing in Nature opens the *Pores*, and cauſes *Perſpiration*, more than *Opium*; Therefore nothing ſhould, according to his *Obſervation*, elevate the Spirits more, and, indeed, nothing does, as appears by all that has been ſaid, and will yet more plainly appear.

Loſs

Loſs of Memory by *Opium* (as ſome argue) is not ſo much a *Loſs* of *Spirits*, as *Lanity* of the *Brain*; for People in Drink do not want Spirits, but there is a great *Relaxation* of the *Brain*, and its *Membranes*, and of the whole *Genus Nervoſum*, which *Relaxation* cauſes a ſoft, looſe, and labile *Brain*, that like Liquid Things retains no *Impreſſion*; beſides, that I ſhall (*God willing*) ſhew you hereafter, that Impreſſions cannot be ſo well made upon the *ſenſitive Soul*, by the *Animal Spirits*, upon *Relaxations* of the Senſible Parts, as in *Sleep*, *&c.* for a very plain *Mechanical Reaſon* to be ſhewn in due *time*.

Thus have I, (by the *Aſſiſtance* of its *Maker*, who beſt knows it) cleared *Opium* from the *falſe Aſperſions* of an extreme *Cold Quality*, and *Parcotick Fumes*, both which were commonly call'd *Venemous*, *fatal*, and by all the *ill Names* imaginable, but (as good Luck is) they abuſed nothing; becauſe 'tis manifeſt, that there is no ſuch Thing, nor has it any Quality by which it *diminiſhes*, *or diſables the Spirits*, as is moſt evident from the *Premiſes*, ſo that all that has been ſaid of *Opium*, by way of *Hypotheſis*, to explain its Effects, depending upon its *diminiſhing or diſabling the Spirits by a Cold Quality*, or *Fumes*, is come to nothing, I wiſh it had been as innocent.

CHAP.

CHAP. XII.

Shews what muſt be the true Cauſe of the Operation of Opium.

ALL the *general Foundations* upon which *Authors*, either *Ancient* or *Modern*, erected their ſeveral *Hypotheſiſes* concerning the *Operation of Opium*, having (as manifeſtly appears) no real *Exiſtence*; What *Enchanted Caſtles* in the *Air*, or *vain Phantaſms*, muſt their Structures be? And, how like *deluded Wizzards* muſt they appear, while they ſeem'd to take *high Flights* and *glorious Proſpects* of Cauſes that had no *Reality*?

Thus am I left utterly diſtitute of either *Foundation* or *Model*, unleſs I find out *that*, and frame *this*; which (I hope) may be eaſily done, becauſe (the *cloudy Suppoſition* of *Vapours* having vaniſhed away) there now remains but Two Ways by which an *Internal Medicament* can Operate, *viz.*

1. *As an Alterative of the Blood*, &c. Or,

2. *As affecting the Senſe of Feeling*, either *grievouſly*, as *Vomits*, *Purgers*, &c. Or *pleaſingly*, as *Cordials*, *generous Wines*, *titillating Amphrodiſiacks*, *comfortable Warmth*, *Anodynes*, and ſuch like, that pleaſe the *Nerves* and *Membranes*; which way of Operating is too little obſerv'd by *Phyſicians*, tho' they take great *Notice* of the *Operation* of Things by *grievous Senſation*, as *Irritatives* to *Vomit*, *Purge*, *Salivate*, *&c.* by their *Acrimony*; whereas the *Pleaſers* of *Senſation*, which muſt, as *Contraries*, have *contrary* Operations, are little regarded, or thought of.

1. Opium *does not Operate as an Alterative of the Bloud*, &c.

First, Becauſe it Operates while it is at *Stomach*, or (*at leaſt*) before it arrives at the *Bloud*; which manifeſtly appears ſeveral *Ways*; as,

1. Becauſe it often Operates in a *Liquid Form* in few *Minutes*, and very commonly in a *Quarter* of an *Hour*, in which time it muſt be at *Stomach*, or, at leaſt, far from arriving at the *Bloud*.

2. Becauſe it has been very often Vomited up after it has Operated, and produced its *uſual Effects* for 1, 2, 3, 4, 5, 6, 8, 10, and ſometimes more *Hours*; as evidently appear'd by the *Smell*, *Colour*, *Taſte*, *&c.* of what was Vomited; and by its *Operation* ceaſing after ſuch *Vomiting*; of which *common Experience*, and *Authors*, do inform us: See *Helmont Jus Duumvir.* 62. where he tells of *Opium* Operating at Night, and Vomited up next Morning.

3. Its bare cauſing Vomiting after it has Operated for a good while, is of it ſelf (tho' its *Taſte*, *Smell*, *&c.* did not diſcover it) an infallible Argument of its Operating, while it is at *Stomach*; for 'tis againſt all Reaſon to imagine, that Things ſhould irritate it to Vomit after they are gone into the *Bloud*, and not do it while they are in the *Stomach* it ſelf, as all *Vomitories* do.

The Reaſons why it ſtays ſo long at Stomach, are, 1. Its *Indigeſtiblcneſs*, which plainly appears by *Stools*, *Urine*, and *Sweat*, ſmelling of it, when taken in any conſiderable Quantity; all the *Coctions*, *Digeſtions*, *Circulations*, *&c.* that it paſſes in the Body, ſignifying very little to it, which its cauſing *Itchings* in the Skin, and affecting the *Venereal*

nereal Membranes after its paſſing the Bloud, do alſo argue. 2. The clammineſs of its reſinous Parts ſticking to the *Stomach*, cauſe (as I ſhall plainly prove hereafter) its long ſtay in it; for if the *Roſin* be ſeparate from it, 'twill not then make ſuch a long ſtay at Stomach, as I have often Experienced.

4. We actually feel it cauſing a ſenſe of *Pleaſure* at Stomach during its Operation, therefore it is then in it.

5. It has been carried off by Stool after it has produced its uſual Effects; Therefore it Operated before it arrived at the Bloud.

6. All Obſervers do allow, that *Opium* Operates while it is at *Stomach*; which gave the Occaſion (as you may remember) to the *Hypotheſis* of its Operating by *Fumes* riſing out of the *Stomach*; becauſe they could not think of any other Means by which it might affect the *Head*, *Brain*, *Animal Spirits*, *Nerves*, *&c.* while it was at *Stomach*, but by the Way of *Fumes* or *Vapours*.

It is therefore paſt all doubt, *That* Opium *produces its common Effects while it is at Stomach, and before it arrives at the Blood, and therefore does not Operate as an Alterative thereof.*

Secondly, Becauſe a *Grain* of *Opium*, which Operates very remarkably, bears (as *Etmuller* well obſerves) ſo ſmall a Proportion to the Bloud, that it cannot produce ſuch great, and notable Effects, as an *Alterative* thereof; for a Grain of *Opium* to 20 Pound of Blood, (which an ordinary Man has in his Body) is but as 1 to 115200, or (if 16 Ounces be allow'd to the Pound) as 1 to 153600. But it is no Wonder if a *Grain* ſhould affect the *Membrane* at *Stomach*, ſince the

1000 part of a *Grain* of the *Vomitory Particles* of *Crocus Metallorum*, or *Regulus* of *Antimony*, does affect it ſo eminently, as many other Things will in a very ſmall Quantity; whereas the altering of the Blood to any obſervable *degree*, requires the Uſe of *Alteratives* in great Quantity for ſeveral *Weeks*: Which confirms the former Concluſion, *That* Opium *does not Operate as an Alterative*, as to its common and uſual Effects.

II. Opium *does not Operate by grievous Senſation*, (or Irritation) as *Vomits*, *Purgers*, *Errhines*, *Salivators*, (or Apophlegmatizers) *&c.* do.

Firſt, Becauſe it manifeſtly cauſes a very agreeable, pleaſant, and even charming *Senſation*.

Secondly, Becauſe it takes away *grievous Senſation* or *Pain*, thereby ſtopping *Vomiting*, *Purging*, and all other Effects of *grievous Senſation*, by *Acrimony*, *&c.*

As for the *Vomiting* that *Opium* ſometimes cauſes, it is only *(as ſhall be ſhewn)* by its Reſinous Parts ſticking to the Coat of the *Stomach*, which being ſeparated from it, *Opium* has no ſuch *Effect*, tho' all its *good Effects* remain. So its *Purging* (which happens moſt rarely, and only when a great *Quantity* is given to Men of ſtrong Digeſtion) it is only from its Roſin digeſted, and reſolved in ſtrong *Stomachs*; Hence it is that *Dogs*, and ſuch as have *canine Appetites*, do generally Purge after a great Quantity of *Crude* or *Roſinous Opium*; whereas ſuch as is not *Roſinous* cauſes no ſuch *Effect*. But of theſe Matters more to your Satisfaction hereafter.

Thirdly, Becauſe it cauſes all Effects that are quite contrary to thoſe of *grievous Senſation*; *It* cauſing

cauſing an *Ovation* of the Senſitive Soul and Spirits; *Pain* (or grievous Senſation) a *Depreſſion of Spirits*; *It* cauſing *Euphory* and *Pain*, *Wearineſs*; For what tires more than *Pain*, or labouring in *Pain*? *It* cauſing *good Humour*, *Pain Peeviſhneſs*, *Fretfulneſs*, and *ill Humour*; *Opium* cauſing Relaxation of all Parts, *Pain* Contraction; *That* cauſing free *Perſpiration*, *this* checking it; *That* cauſing Sleep, *this* hindering it; *That* cauſing Contentation Acquieſcence, *this* Diſcontent and Uneaſineſs; *That* compoſing, *this* diſcompoſing the *Spirits*, *Bloud*, &c. *That* cauſing *Fluxes* by *Irritation*, &c. *this* moderating, or ſtopping them; *That* opening the Pores, *Pain* conſtringing them; *Opium* preventing the Shaking Fits in *Agues*, *Pain* bringing them on; *That* cauſing a large and ſlow Pulſe, *this* a quick, hard, and narrow Pulſe; *That* cauſing an *Efflorescence* of the Skin, *this Paleneſs*; *That* pleaſant, *this* unpleaſant Dreams; *That* ſtills Hiccoughs, *this* cauſes them; *That* takes off *Contractions*, *Convulſions*, &c. *this* cauſes them. To be ſhort, *Opium* cauſes all the Effects of *pleaſant Senſation*, and takes off all the Effects of *grievous Senſation*. What can be a more evident Proof of its acting by cauſing a *pleaſant Senſation*? It were endleſs to mention all the *Proofs* that may be made to the ſame Purpoſe, from *Pleaſers* and *Diſpleaſers* of *Senſation*.

Therefore we fairly conclude,

That Opium *does not Operate by cauſing a grievous Senſation*, and there being no other Way left by which it may Operate,

It muſt Operate by cauſing a pleaſant Senſation; which is the *true* and *plain Reaſon* why (as has been ſhewn) it takes off *Pain*, and cauſes all Effects quite contrary to that of *grievous Senſation*;

Irrita-

Irritations by Acrimony, *&c.* which are moſt eminent upon the moſt ſenſible Parts, as the *Stomach*, *Inteſtines*, *Venereal Membranes*, *Skin*, &c. as you may obſerve where the Effects of *Opium* are enumerated.

Now *(gentle Reader)* conſider, That *Contraries* are the true Cure of *Contraries:* What can then cure Pain, and all its Effects, better than *Pleaſure?* 'Tis very ſtrange then, that *Millions* for many Ages finding *Opium* cure, or take off *Pain*, and all its Effects, above all Things, ſhould not attribute its ſo doing to its cauſing a *pleaſant Senſation*, which is the direct contrary to *Pain*, eſpecially ſince every Man that took *Opium* felt an *actual Pleaſure* upon taking thereof, *pleaſant Dreams*, a *pleaſant Humour*, &c.

It may be ſaid, What if it be granted, that *Opium* Operates by a *pleaſing Senſation*, (which I will Thank none for, that have *Feeling* at *Stomach*, or *Reaſon* at *Brain)* how is it poſſible that ſuch *pleaſant Senſation* ſhould cauſe and explicate all the *various*, *ſtrange*, *wonderful*, *myſterious*, and very often *ſeemingly contradictory Phenomena's* and *Effects* of *Opium?*

Anſwer. As eaſily as ever I explain'd any Thing in Nature, eſpecially if my *Tract* of *Animal Mechaniſm* were publiſhed; but it is my *Misfortune* that it is not, however it ſhall not be the *Readers*, tho' it will put me to a great *Trouble*; To evade which, is none of my *Intention*, by *thoſe Words*, but rather to beſpeak the *Reader's Patience* while I am premiſing ſome neceſſary *Præcognita* requiſite to be known before I enter upon the *Explication* of the wonderful and ſeemingly inexplicable *Effects* of *Opium.*

I therefore deſire the *Reader's Leave* to premiſe ſome Things of the *Nature* of *Senſation*, and *ſenſitive Pleaſure*, in order to his more clear and ready Underſtanding my Explication of this *Myſterious* and *Momentous Matter*, look'd upon as ſo dark and abſtruſe a Buſineſs to this day, that ſome have not only yielded it up as a Thing hidden from Mankind, but have earneſtly and ſeriouſly argued, that it acted abſolutely by an *occult Quality*, reſerved in a ſpecial manner (as is the Nature of Spirits) from our *Knowledge*.

That it has been ſo hitherto, I think none can deny, as the *Circulation* of the *Bloud* was for *Thouſands* of *years*, tho' the very *Motion* was *ſeen* by *Millions*; ſo as the Cauſe of the *Operation* of *Opium* has been felt by a far greater number, it therefore will (if I fail not in explaining it) appear ſo clear, that it will be much wondered at (like that of the *Circulation of the Bloud*) why ſo obvious a *Thing* was not found by every one that uſed *Opium*. But (whatever *Opium* is) God's Methods are unſearchable, and often his Wiſe Providence beſtows good Gifts upon the Unworthy, that his free *Goodneſs* may appear; To whom be all *Glory*, *Praiſe*, and *Thankſgiving* for ever and ever. *Amen.*

Note, That while I am upon the Preparatory *Diſcourſe* about *Senſation*, *Pleaſure*, *&c.* in the following *Chapters*, you may ſometimes wonder what I would be at, becauſe you may not perceive the *Drift*, yet do they require your *Attention* as being the *Foundation* of all that is to follow; which you'll plainly perceive afterward, when (I hope) you'll have good *Satisfaction* for your *patient* and *attentive Peruſal* of the Two following *Chapters*.

CHAP.

CHAP XIII.

Of the Oeconomy of Senſation, as far (at leaſt) as it concerns our preſent Purpoſe.

WHEN I had written this *Tract* thus far, I judged it beſt, firſt, to publiſh that of *Animal Mechaniſm*, becauſe it contained thoſe *Principles* that would explain the Matter of *Opium*; therefore laying this aſide, I applied my ſelf to that: But a *New Art*, rightly to *Spell*, *Write*, and *Sweeten* all *Languages*, (that I ſince call'd *Phonography*) coming into my Mind, and thinking it might be very uſeful, and likely to lie for ever in Darkneſs, (as it had always been) unleſs I undertook the *Drudgery*, I ſet my ſelf to it; which taking up more *Time* than I imagined, has to this *day* hindred the finiſhing of that *Tract* of *Animal Mechaniſm*, which I now much want, (as was intimated:) Therefore becauſe I reſolv'd to publiſh this, (that was ſo long ſince promiſed) I am now forced, for want of that *Book*, to premiſe here ſome Things, concerning the *Oeconomy* of *Senſation*, and the *Nature of ſenſitive Pleaſure*, in order to explicate the *Effects* of *Opium*, which might have been ſpared, if that of *Animal Mechaniſm* had been publiſhed.

Conſidering that *Opium* muſt (as was ſhewn) operate by pleaſing the *Senſe* of *Feeling*, it will be requiſite to conſider,

1. *The Oeconomy of Senſation, as far as it concerns the preſent Purpoſe*, for which this *Chapter* is deſign'd.

2. *The Nature of ſenſitive Pleaſure, and its Effects upon the ſenſitive Soul and Body,* which is to be the Subject of the following *Chapter.*

Five Things mainly concern the *Oeconomy* of *Senſation:* 1. The *Object.* 2. The *external Medium.* 3. The *Organs* of *Senſation.* 4. The *Animal Spirits,* (or *internal Medium.*) 5. The *ſenſitive Soul.*

1. The *Object is the Thing perceiv'd by any of the Senſes*; as, *Light* by the *Eye*; *Sound* (or *tremulous Motion* of the *Air*) by the *Ear*; *Odour* by the *Noſe*; *Taſtes* by the *Tongue*; *Opium* by the Feeling, or (as *Helmont* calls it) the *Guſtus* (or *Taſte*) at *Stomach.*

2. The *External Medium of Senſation is that which receives Impreſſions from the Object, and conveys them to the Organs of Senſation.* Thus the *Air* conveys *Sound* (or *tremulous Motion*) to the *Ear*, *Light* to the *Eye*, and *Odour* to the *Noſe.*

3. The *Organs are the Parts of the Body that God has fram'd to receive thoſe Impreſſions, and communicate them to the Animal Spirits,* (or *Internal Medium.*) Thus the *Eye* is the *Organ* to receive the Impreſſion of *Light*, the *Ear* that of *Sound*, *&c.* And the *Membranes* in all Parts of the Body are the *Organs* that receive *Impreſſions* from *Objects* in the caſe of *Feeling*, which is our main *Concern.*

4. The *Internal Medium is the Animal Spirits that receive the Impreſſions from the Organs, and convey them to the Senſitive Soul.*

5. The *Senſitive Soul, which perceives thoſe Impreſſions convey'd to him by the Animal Spirits*; which *Perception* is *Senſation.*

BIBLIOTHECA BODLEIANA

I. *The*

I. *The Part, Office, or Buſineſs, of the Object, in the Matter of Senſation, is to make a ſufficient Impreſſion either upon the External Medium,* (or *Air*) as in the caſe of *Hearing, &c. or immediately upon the Organ,* (or *Membrane*) as in *Feeling, &c.* Therefore if there be no *Impreſſion* of *Light, Sound,* (or *tremulous Motion*) *Odours, Reliſhing Particles, &c.* there can be no *Perception*; or if the *Impreſſions* thereof be weak and faint, the *Perception,* or *Senſation,* muſt be accordingly; or if it be ſo inconſiderable, that it cannot at all affect the *ſenſitive Soul*, then is there no *Perception* thereof. For,

1. *Senſitive Perception is not infinite,* becauſe there are Degrees of *Light, Sound, &c.* that cannot be perceiv'd, tho' they muſt be very ſmall, and inconſiderable: Thus the Light of a Candle at ſo great a *diſtance* that it can hardly be perceived, is ſome *Degree* of *Light*, and makes its Reflection proportionably from a *Wall, Tree, &c.* yet cannot that reflected *Light* from the *Wall*, or *Tree*, be perceived; ſo the ſmalleſt Things cannot be perceived. Yet GOD has in His *Wiſdom* and *Goodneſs* ſo ordered it, that,

2. *Senſitive Perception is of exceſſively ſmall Things:* Thus the *Sound* of a Pin's Head, falling into a Braſs Caldron, is heard at ſome diſtance; the hundreth part of a Grain of very hot and biting Things, are ſenſibly taſted; the thouſandth part of a Grain of *Ambergriſe, Muſk, &c.* very ſenſibly ſmelt; the Light of an exceeding ſmall Spark, ſtruck out between *Steel* and *Flint*, is perceived at a great diſtance: And *Light* in general conſiſts of ſuch tenuious Particles, (if material) that none ever could take any eſtimate of their Bulk. So the *Feeling* at *Stomach* takes very eminent and remark-

able notice of (as was ſaid) the *Vomitory Particles* of *Crocus Metallorum*, or *Regulus of Antimony*, which are ſo ſmall, that a *thouſand Vomits* thereof does not ſenſibly diminiſh the *Crocus*, or *Regulus*, either in *weight* or *bulk*. Therefore it is no Wonder if a *Grain* of *Opium* ſhould affect the *Feeling* ſo ſenſibly as it does, eſpecially at *Stomach*, tho' it cannot make any conſiderable *Alteration* of the *Bloud*.

3. *That whatever affects, or makes impreſſion, upon the Organs of Senſation, is in the ſame moment perceived by the ſenſitive Soul*: So that it is no Wonder, that a *Grain* of *Opium* operates in ſo ſhort a *time*, that is, as ſoon as a *Tincture* thereof inſinuates it ſelf through the *Cruſta Carnoſa* to the *ſenſile Coat* of the *Stomach*; whereas it muſt take a very long time, if it operated as an *Alterative* of the *Bloud*.

Now *Note*, 1. That there is no *way* for any thing to operate upon the *ſenſitive Soul*, in ſo ſmall a Quanty, as *Opium* operates, or in ſo ſhort a Time, as by affecting the moſt exquiſitely diſpoſed *Membrane* at *Stomach*. 2. That the ſpeedy *Way* that *God* has contrived for our *Refreſhment*, *Comfort*, *raiſing* of our *depreſſed Spirits* upon any ſudden Occaſion, as in *Deliquiums*, *Faintings*, *Syncopes*, *Leipothymies*, *&c.* is by the *Senſes*; eſpecially that moſt exquiſite Senſation at *Stomach*, becauſe *Refreſhment* by Nouriſhment and *Alteration*, cannot be perform'd but in a long time, wherein we might in many *Caſes* periſh before we could be relieved thereby: Thus a pleaſing, and therefore comfortable *Odour*, excites the Spirits in a moment; the ſight of a beloved Miſtreſs, or dear Friend, raiſes us immediately, when we are moſt caſt down; as does alſo *ſweet Melody*, and an aggreeable or pleaſant *Senſation* at *Stomach*, as

of

of *Wine*, *Cordials*, *hot Spirits*, *&c.* I hope none will ſay, That Muſick, the ſight of a Bag of Money, *&c.* ſend *Effluvia's* for that end, yet are great Comforters.

II. *The Part, Office, or Buſineſs, of the External Medium, in the Oeconomy of Senſation, being to receive and convey Impreſſions*, as *Sound* (or *tremulous Motion*) from a *Bell* to the *Ear*, *&c.* it muſt be duly qualified for that purpoſe.

It is true, that we are not concerned as to this *external Medium* (or Air) in our Caſe, becauſe *Opium* affects only our *Feeling internally*, and immediately at *Stomach*, where it touches the very *Organ*, (or *Membrane:*) However, becauſe this *External Medium* (or *Air*) is to receive and convey *Impreſſions* after the ſame manner, from the *Object* to the *Organ*, as the *Internal Medium* (or *Animal Spirits*) is to receive them from the *Organs*, and convey them to the *ſenſitive Soul*, and therefore bear exact *Analogy* to each other; and becauſe the *External Medium* (or *Air*) is more obvious than the *Internal*, (or *Animal Spirits*) I think it very convenient to conſider its *Diſpoſitions* and *Requiſites*, as a *Medium*, that we may the more clearly perceive thoſe of the *Animal Spirits*, as ſuch.

1. *It is requiſite that the Air, as a Medium, (being a fluid Body) ſhould be ſpringy*, (or *elaſtick*) becauſe nothing but what is ſo is capable of *tremulous Motion*, (which is *material Sound*) nor of *Compreſſion*, without which, a looſe, tenuious, yielding *Fluid*, as the *Air* is, cannot be fit to convey *Impreſſions*; for the more *ſolid* any thing is, the fitter it is for that end; therefore *Compreſſion* muſt render it *firm*, *tight*, and *cloſe*, that one Part may briskly communicate its *Motion*, or *Impreſſion*, to

the next to it, and that to the next to it, and ſo indefinitely; yet can it never arrive at the Perfection of a *Solid* in carrying of *Impulſes*: Hence it is that *Sound* decays by *degrees*. However, it has many great *Advantages* over a *Solid*, as a *Medium* for the purpoſe of *Senſation*:

Firſt, Becauſe it receives *Impreſſions* better.

Secondly, Becauſe a Solid having *weight*, could not be ſo eaſily moved, in order to convey the *Impreſſions*.

Thirdly, Becauſe there would be no living or being in a Solid, as there is in the *Air*.

Fourthly, Becauſe if moved, *&c.* it would deal very rudely, grate and tear the very *Organs*, and not gently touch them, as the yielding *Air* does; beſides many other Inconveniencies, which to mention is to little or no purpoſe. So being *fluid*, *tenuious*, *yielding*, &c.

2. *It is* (as was intimated) *requiſite, that it ſhould be compreſſed*, for the better conveyance of *Impreſſions*, the more the better; for then (like a *Gut* blown very tightly) a ſmall *Impreſſion* cannot be made upon one part thereof, but it is communicated a good *way* to other Parts: But if not compreſſed, you may compare it to a *Gut* half full of *Air*, or a looſe ſoft Lock of *Wooll*, that yields, and will not convey *Impreſſions* at all, or very faintly; whereas if the *Air* be tightly *compreſſed* in a *Gut*, *&c.* you cannot make a little *Impreſſion* (or *Dent* thereby) at one *end* of it, but the whole *contain'd Air*, having leſs room by ſo much, becomes more compreſſed, and conſequently thruſts ſo much the harder againſt all the *ſides*, and the farther end thereof, eſpecially if the *Gut* has no *vent*, or that it be not too wide; for, in the *firſt Caſe*, the *Air*, that ſhould be kept in for the *communication* of the *Impreſſion*, having

having Liberty at the *Vent*, takes its courſe that way, and ſo diſappoints the continuation of the *Impulſe*, (or *Impreſſion*) either wholly, or in great meaſure; In he *ſecond Caſe*, the *Impulſe* bearing but a ſmall *Proportion* to the whole, and alſo decaying in *Proportion* to the *Liberty* it has to widen, becomes much more inſenſible, or leſs remarkable.

Thus if you make a *Dent*, or *Impreſſion*, of the bigneſs of half a ſmall *Pea*, at one end of a *Gut* ſo filled with *Air*, that is of the bigneſs of one's Thigh, and two Yards long, it will bear a very ſmall *Proportion* to the whole, and conſequently very inſenſibly affect it; for 'tis like a *Drop* (as the Saying is) added to an *Ocean*; but if an *Impreſſion* (or *Dent*) of that *bigneß* be made upon a *Gut* no bigger than a *Pea* in *diameter*, the *Thruſt*, or *Impreſſion*, will be very conſiderable at the other *end*, for the Reaſons aforeſaid. So that you plainly ſee, 1. That the more *Air* is compreſſed, the better it conveys *Impreſſions*: Hence it is that we hear *Sounds* better, and farther, when the *Air* is moſt compreſſed, and the *Quickſilver* high in the *Barometer*, (or *Weather-glaß*) and upon low Grounds, tho' flat, and without any *hollowneß*, than on the *tops* of high Hills that are flat alſo; becauſe the *Preſſure* of the *Air* is leſs on high Hills. I mention the *Flatneß* in both Caſes, leſt any ſhould attribute it wholly to the more free *Expanſion* of the *tremulous Motion* on the tops of Hills, which indeed is a *Reaſon* where the *Flatneß* is not alike, as far as the *Sound* goes. 2. That the narrower the *Gut*, *Duct*, or *Pipe*, the *Air* is in, the ſmarter and more ſenſible will be the *Impreſſion* at the farther *end* thereof, which may be confirmed and illuſtrated by many *Demonſtrations*, *Inſtances*, and *Experiments*.

Hence

Hence it is, *That* if one ſpeaks at one end of a *Pipe*, that is but an Inch in *diameter*, you'll hear it much better at the other *end* than in a *cloſe Gallery* of the ſame length, tho' this will advantage it much more than the open *Air*: *That* if one ſpeaks ever ſo ſlowly at one *end* of a long Piece of Timber, it is manifeſtly and diſtinctly heard at the other *end*, through the narrow *Veſſels*, and between the Fibres of the *Wood*: *That* all *Sounds* are *ſharper* in *narrow Pipes*, *&c.* How eaſie is it then to contrive inviſible *Whiſpering-Places*, which the World ſo much admire, and ſome *Religions* make ſuch great *Uſe* of to deceive the People by pretended Divine and Oracular *Reſponſes*, of which the *Reader* may hereafter be aware.

It is for like Reaſons that *Guns*, *Bells*, *&c.* are better and farther heard along hollow *Valleys*, than upon *Plains*; that *Sounds* are heard ſo well the ways that *Rivers* run; for it is a *vulgar Error* that the *Water* does advantage the *Sound* upon *Rivers*; if it did, you'd hear farther at *Sea* than upon *Land*; which is ſo falſe, that the quite contrary is true, *Sounds* being much farther heard by *Land* than at *Sea*. It is a common Obſervation in *Sea-Fights*, that the *Sound* is heard at a much greater diſtance upon the *Land* than at *Sea*.

There is indeed another *Advantage* in *Valleys*, (and therefore upon *Rivers*) *viz.* the ſeveral *Reverberations*, or *Eccho's*, from the *Hills* and high *Banks*, *Rocks*, *&c.* on the *ſides* thereof; but this not much concerning our Purpoſe, I muſt (for the preſent) paſs them and ſeveral *Obſervations* upon *Sounds*.

For the aforeſaid, and other *ends*, it is notorious that the *Air* is *ſpringy*, and always under the *compreſſion* of the *Atmoſphere*, or elſe it would be of little *uſe* as a *Medium*.

I know but one thing more to our Purpoſe that is worth the mentioning, in reference to the *Analogy* between the *Air* and *Animal Spirits*, as *Mediums of Senſation*, *viz.*

3. *It is requiſite, or convenient at leaſt, that the Air have an homogeneous Continuity*, which much more advances it in conveying *Impulſes*, (or *Impreſſions*) than when it is diſcontinued, divided, or ſever'd, by other *heterogeneous Particles*, eſpecially if theſe be in motion between the Parts of the *Air*; for then they very much diſappoint and diſgregate the *Impreſſions* made thereon.

Therefore it is, that we hear ſo much better after *Sun-ſet*, or in the *Nights*, eſpecially the *Summer-time*, than in the *Day*, when the *Particles* of *Heat*, and others thereby raiſed, do too much divide, diſcontinue, and diſgregate the *Impreſſions*, and the Parts of the *Air:* Where you may obſerve how Good and Wiſe *Providence* orders Hearing to be more uſeful in the Night, when Seeing fails. It is a vulgar *Errour*, (tho' little thought ſo to be) That the Cauſe of the Difference of hearing Sounds *before* and *after Sun-ſet*, is the *Noiſe* that is made in the *Day-time*, and the Silence of the *Evenings* and *Nights*; which one ſingle Inſtance (tho' thouſands may be given) will fully demonſtrate, *viz.*

In the Famous and Well-governed *Univerſity* and *City* of *Oxford*, there is ſcarce any *Noiſe* made at the Times of *Divine Service* on the *Lord's Day*, all People being either ſilent at Church, or ſhut up quietly and ſilently in their reſpective *Houſes* or *Colleges*, (the *Heat* of the Days in Summer-time, but moſtly the good Order of the Place, cauſing it:) But after *Sun-ſet*, moſt People are out, walking and diſcourſing, or talking at their *Doors*, *Arbours*, or *Gardens*; and all Children

dren (that noiſie Part of Mankind) are now permitted to go out, who act their Parts in *Playing*, *Running*, *Calling*, *Yawling*, and *Crying out* one to another; inſomuch that (all things conſider'd) I cannot imagine but there muſt be in general an hundred times more Noiſe made then, than in the the time of *Divine Service* in the *Heat* of the *Day*; yet may you, notwithſtanding all the *Noiſe*, hear, in the *Twilight*, any thing twice as far as in the time of *Divine Service* in the *Heat* of the *Day*, (I believe I might have ſaid four or ſix times as far.) The ſame may be obſerv'd in any *Town* or *City* that is kept in good Order at the time of *Divine Service*, or in *Camps*, &c. upon ſeveral Occaſions.

It is not only conſonant to Reaſon that the *Air* ſhould be ſo diſcontinued by the Particles of *Heat*, *&c.* but obvious to the Sight that it is ſo; for in a great *Heat*, the Summer-time, and cleareſt *Day*, you may ſee the very *Air* in a wavering tremulous Motion, which could not be ſeen of it ſelf, without the mixture of other *Parts*; for diſgregation of Parts, (as you ſee even in pellucid homogeneous Things powder'd) cauſes Opacity.

III. *The Buſineſs, or Office, of the Organs of Senſation, in the Oeconomy thereof, being to receive and communicate the Impreſſions to the Animal Spirits with all the ſmartneſs they can*, it is manifeſt, that in the *Membranes*, (or *Organs*) *Tenſion is their main Requiſite.* Hence it is that when the *Tympan* of the *Ear* is tenſe, the *Cornea*, and other Tunicles of the Eye ſufficiently ſo, we hear and ſee acutely and accurately; to that end *God* has given us a *Power* to render the Tympan more tenſe when we liſten; to contract the Pupilla of the Eye when we look very intently, *&c.* And we ſee, that when the

Cornea

Cornea is relaxed, (as it is always when the Eye looks deadiſh, as in *Sleep*, *Drunkenneſs*, *fainting Fits*, *&c.*) yet then we either not feel at all, or much worſe: So it is when the *Tympan* is relaxed. We alſo always put the *Tongue* in a *tenſe* condition, when we would taſte a Thing exactly. So when any Part is relax'd by Warmth, *&c.* we do not feel ſo well and nicely, as when the Part is cold, or more tenſe, or rigid; nor in *Sleep*, as when *awake*, becauſe all Parts are relaxed in *Sleep*, and contracted when we are awake, which manifeſtly appears,

1. Becauſe we perſpire leſs when we are awake, than when aſleep, which happens becauſe the Pores are cloſed by the *Contraction*, or *Conſtriction*, when we are awake, and opened, or looſened, by *Relaxation* when aſleep. In all *Relaxations*, as that which happens by *Pleaſure*, *Warmth*, *Leipothymies*, *Sleep*, *&c.* we perſpire *more*; and *leſs* in Contradictions, by *Cold*, *Fear*, *Grief*, *Pain*, or any *grievous Senſation*, or *Paſſion*.

2. Becauſe all Parts are firmer when we are awake, and more looſe and flaccid when we are aſleep; none can doubt but Firmneſs is from *Tenſion*, or *Contraction*: But in this *matter* you may expect farther *Satisfaction* by and by.

Obj. Some may needleſly ſay, How came *Tenſion* and *Contraction* to be Concomitants, or *Effects* one of the other, ſeeing we make Things more *tenſe*, as a Drum's Head, *&c.* by *Extenſion*, not *Contraction*?

Anſw. I purpoſely ſtarted this *Objection* to clear the *Caſe*. Therefore, 1. Obſerve, That *Violin-Strings* will grow ſo tenſe (as will any thing elſe of like *Nature*) by *Contraction* in moiſt Weather, that

that tears them to pieces ſometimes upon that account, and always puts them upon a greater ſtreſs; for when a thing is fixed at both *ends*, it is the ſame thing to ſhorten, or contract, the String, to render it *tenſe*, as to take ſomething from its length between thoſe two fix'd Points; both the *Contraction* and the *Winding* do only take ſomething of the Length away, that is between thoſe two Points, where the Ends are faſtned; which cauſes a great ſtreſs of the ſhortned String, to reach thoſe two Points that it is faſtned to: As, ſuppoſe you have a String of 11 Inches long, faſtned at both ends at the diſtance of 10 Inches, it will be very looſe; then ſhorten it one Inch, by winding up ſo much, or by ſome means contract the String to 10 Inches, or any way ſhorten it an *Inch*; then it will juſt reach the Points, and be tenſe, if faſtned at them. So there is *Contraction* neceſſarily cauſing *Tenſion*, which was to be *demonſtrated*.

It will be the ſame in effect, if a String put round any thing is ſhortned by Moiſture, or otherwiſe, it muſt grow more tenſe; and ſo muſt 500 Strings, if ſo ſhortned, or an entire Membrane that covers or includes the whole. Thus Membranes (as a Gut contracted upon included Air) muſt, when they contract, grow more tenſe upon the included *Animal Spirits* in the *Nerves*, or otherwiſe; for it is the ſame as forcing much Air into a narrow, or contracted Gut, or Bladder, which muſt make them *tenſe*, while the elaſtick Body muſt thruſt out the harder, the more it is compreſſed. And that the Membranes, and all ſenſile Parts, are more contracted when we are awake, doth farther moſt plainly appear: Becauſe,

3. The

3. The *Cornea* of the *Eyes* (which is a viſible and certain ſign of the *Relaxation* of all the *ſenſile Parts* of the *Body*) is relax'd in Sleep, as any one may ſee; for that is the cauſe of the deadneſs of the Eye in *Sleep*, which upon awaking is immediately gone, by the *Cornea* contracting into a tenſe condition upon its *Contents*, by which means it becomes *tenſe*, *rotund*, *hard*, *ſmooth*, *ſhining*, and reflects a brisk *Speck* of Light, (as round Things do) which makes it look lively; whereas when 'tis lax, as in *Sleep*, *Syncopes*, *Faintings*, *&c.* it is uneven, ſoft, and reflects an uneven, dull, indefinite Light, all which cauſes the deadneſs of *Looks*. Therefore (as was intimated) there is no better ſign of *Relaxation* than deadiſh Looks.

4. The *Pupilla* (which is another ſign of *Relaxation*) is relaxed, or dilated, in *Sleep*, and contracted when we are awake.

5. All Motions of the *Body* are better performed when we are awake; which argues the greater *contraction* of Parts; for *Relaxation* (as in *Sleep*, *Deliquiums*, *Drunkenneſs*, *&c.*) weakens all *Motion*.

6. That *Efflorescence* of the Skin which People have when aſleep, (which is cauſed by the *Relaxation* of the *Skin* admitting the Bloud more into it; as *Paleneſs* is by the *Contraction* of the *Skin* in *Cold*, *Fear*, *&c.* repelling the Boud) diſappears upon awaking, by *reaſon* that the *vigilative Contraction* (ſo I call it) does ſend the Bloud out of the Skin by ſqueezing it back, or repelling it.

7. Meaſure the Body ingeniouſly and accurately, and you'll find it contracted and narower, after *awaking*, than in *Sleep*.

8. Hence it is that you find, when the *Body* is pretty full of *Moiſture*, and the Weather hot, a ſudden *Sweat* upon awaking; becauſe the whole

Body

Body contracting, does, like the contortion of wet Linnen, cauſe an exudation of its *Moiſture*, by a *mechanical expreſſion*, or *ſqueezing*.

9. Hence alſo it is that we are ſubject to take *Cold*, even in a warm *Room*, if we watch long; becauſe the *Pores* being cloſed by that *vigitative Contraction*, hinder *Perſpiration* too long, and too much: Therefore it is that all *Colds* are worſe towards the *Evenings*, becauſe that *Contraction* cloſes the *Pores* all *day*; and not only *Colds*, but many other *Diſtempers*, eſpecially ſuch as *Perſpiration* is good for; as indeed it is for moſt *Diſeaſes*, as being the moſt *natural* and *conſiderable Evacuation*: *Moſt natural*, becauſe it requires no voluntary Motion, or Irritation of the ſenſile Parts, as that of *Siege*, *Urine*, *&c.* which either require the *Will*, or *Irritation* by *Quantity* or *Quality*, or *both*, or *all three*; but *Perſpiration* (like *Fumes* in a Chimney) requires only that its little *Funnels* (the *Pores*) ſhould be open, becauſe our *Fumes* paſs (as the other do) by their own natural Levity: And it is *moſt conſiderable*, becauſe univerſal, and that much more is evacuated that *way*, than by all *Means* and *Ways* whatſoever.

Hence it is that all Membranes gaining a *Tenſion*, by the *vigilative Contraction* in manner aforeſaid, are more rightly diſpoſed to receive and communicate *ſmart Impreſſions* to the *Animal Spirits*, while we are awake, which was the Thing aim'd at, and will be much more illuſtrated by the *Conſideration* of the *Animal Spirits*, and the *Senſitive Soul*.

Note, That the *Membranes*, *Veſſels*, and *Roads* of the *Animal Spirits*, being much narrowed and compreſſed by this *vigilative Contraction*, *Two* other main *Requiſites* for exact *Senſation* do of courſe

courſe follow, (ſo conſentaneouſly do the Works of *God* conſpire to their *Ends*) *viz.*

Firſt, That an *Impreſſion* made upon the *Animal Spirits* in *Pipes* ſo narrowed, is better, more exactly and ſmartly convey'd to the *ſenſitive Soul*, as has been ſhewn, by the *Analogy* of the *External Medium* in *ſlender Pipes*.

It is by ſuch narrowing of the *Nerves*, *Pipes*, *Roads*, *&c.* of the *Animal Spirits*, that *cold Weather*, which contracts the Parts, makes our *Feeling* more *nice* and *ſmart* than *warm Weather*, which relaxes the *Veſſels*, and gives the *ſpringy Animal Spirits* (for ſuch they are, as ſhall, by His Aſſiſtance that made them, appear) leave to expand, by which means, and the *Veſſels* widening, the *Feeling* grows duller, for want of compreſſion of the Spirits.

By what has been ſaid, you may ſee why Perſons of a fine and *delicate Texture* (that is, of *ſmaller* and *ſlenderer Veſſels*) have a more exquiſite *Feeling*; that little *Animals*, as *Spiders*, *Flea's*, and many ſuch, have moſt *nice* and *accurate Feeling*, becauſe their *Nerves*, *Veſſels*, *Pipes*, *&c.* are proportionably ſmall, and the ſmaller they are, the more accute is their *Feeling*, for the *Reaſons* aforeſaid; which was abſolutely neceſſary, becauſe they deal with ſmall Things proportionably, as their *Food*, *Treading*, *&c.* and that ſmall Things may harm them, unleſs they take diſtinct notice thereof to defend themſelves; whereas *Elephants*, *Camels*, *Horſes*, *&c.* can, becauſe of their large *Veſſels*, ſcarce feel ſuch Impreſſions, as would cruſh thoſe little *Animals* to pieces. *Lord, how manifold are Thy Works! In Wiſdom Thou haſt made them all!*

It is from this *Fineneſs* and *delicate Smallneſs* of the *Nerves*, *Fibres*, and *Membranes*, *&c.* that one Part has a more exquiſite *Senſation* than another, and that the extream *Parts* have (generally ſpeaking) better *Feeling*.

Secondly, It follows, that by reaſon of the *vigilative Contraction* of the ſenſile Parts, the *Animal Spirits* muſt gain a conſiderable *compreſſure*, whereby (as the *External Medium* is rendred fitter to convey *Impreſſions* by the help of *Compreſſion*) they are better diſpoſed to convey *Impreſſions* to the *ſenſitive Soul*; for the *Internal* and *External Medium* having like Office in the *Oeconomy* of *Senſation*, and (as you'll find) like *Qualifications*, muſt be affected alike by *Compreſſion*; but whether they are the ſame thing, or no, I ſhall not need the *Diſcuſſion* of that Point here; therefore I leave it to my Tract of *Animal Mechaniſm*.

IV. *The Office, or Buſineſs of the Animal Spirits* (or Internal Medium) *being to receive Impreſſions from the Organs, and convey them to the ſenſitive Soul*, as that of the *External Medium* (or *Air*) was to receive them from the *Object*, and convey them to the *Organ*; the *requiſite Diſpoſitions* for its purpoſe, are manifeſt from the *Analogy* of the *External Medium*, *viz.*

Firſt, *That they ſhould be ſpringy*, (or *elaſtick*;) and that they are ſo, appears,

1. From their very Office, which being *tenuious* and *fluid*, they could never perform (as the *Air* cannot) without being ſpringy.

2. If they were not *elaſtick*, and thereby compreſſible, their *Veſſels* could never be ſo contracted (as has been ſhewn) without ſqueezing them quite

out

out of them, which is a Diſorder not to be ſuppoſed in the *Works* of *God.*

3. If they were not *elaſtick* (or ſpringy) they would not fill their Veſſels upon *Relaxation* thereof, which would leave a *Vacuity*, and thereby cauſe a *diſcontinuance of Motion*, or (at leaſt) a great *diſorder* of it, which would cauſe diſmal *Convulſions*, if not *Death* it ſelf; which is moſt likely.

4. They could not be ſo active, nor indeed at all active, without *ſpringineſs*; for they cannot act up and down, and all manner of ways, (as they do) by either *Levity* or *Gravity*, or by any other known or imaginable *Qualification*, but *Elaſticity* (or *Springineſs.*)

5. It cannot be conceived why they ſhould be more active one time than another without *Elaſticity*; but they are more active at one time than another, as appears by ſeveral *Places* or *Paſſages* of the Premiſes, and in the *waking* more than in ſuch as are *aſleep.*

6. It is manifeſt, that they are *elaſtick*, by their ſpringing into a Limb held up or down; and, that with ſuch Force as to cauſe a great *Pain*, after they have been excluded from it by ſome Accident, as leaning, or preſſing too hard upon a Nerve, *&c.* for neither *Levity* nor *Gravity* can do ſo, eſpecially both up and down (as was ſaid;) nor is there any Propulſory Engine for them, as is for the *Bloud*, therefore it muſt be from their *ſpringineſs.*

7. They could not cauſe briſk and ſmart *tremulous motions* in the *Body*, if they were not *elaſtick*, for ſuch cannot be conceived by any means without it; but there are ſeveral briſk and ſmart *tremulous motions*, cauſed by the *Animal Spirits*, as in the *Shiverings* of *Ague Fits*, *Frights*, *Cold*, *Surprizes*, *ſudden* or exquiſite *Pain*, *Tremors* of the *Hands*, *Head*, *&c.* in *Old Age*, in ſome *Convulſi-*

ons, &c. Therefore the *Animal Spirits* that cauſe them are *elaſtick.*

8. Muſcles have no ſpringineſs of themſelves, when the *Animal Spirits* are excluded from them, as in *Palſies, &c.* but all *Muſcles* in their *Exertion* are very ſpringy, inſomuch that if you hold any of them back, or reſtrain them from their motion, and again ſuddenly leave them at liberty during the *Exertion*, they, or any Part moved by them, will ſpring out very violently, as in *Flipping*, an *Arm held back*, &c.

But nothing proves this Matter better than the *Tongue*, in forming the *Sound* of the Letter *R*, for in that Caſe the *Tongue*, after it is put in *Tenſion* and *Exertion*, being ſuddenly hit againſt the Inſide, or Gums of the Upper Teeth, does thereupon (as Springy Bodies uſed to do) fall into a *tremulous motion*, or *jarring*, that cauſes the *ſnarling ſound* of *R*, which nothing but ſpringy Matter can do.

9. Were they not *ſpringy*, they could never convey the *tremulous motion* of *ſound* to the *ſenſitive Soul*, and indeed over all the *Syſteme* of the *Nerves*, by which is cauſed (as may be proved) that Motion of Conſent call'd *Dancing*, and the *Fingers, &c.* to move and keep *Time* with the *Muſick*, even when it, or the *Finger*, are not as much as thought of, becauſe the *Animal Spirits* have the ſame Capacity with the *Air*, to receive and convey it, by Reaſon of their *ſpringineſs*, and greater by Reaſon of their more forcible *Compreſſion* by the *Vigilative Contraction*, ſuper added to the *Compreſſion* of the *Air*, under which they are, as well as the *Air* it ſelf, as plain Reaſon tells us; for that which Compreſſes the whole Body, muſt needs Compreſs the *Animal Spirits*: The

Expe-

Experiments of the *Air-Pump* do confirm the ſame.

10. There can be no doubt but the *Animal Spirits* are nouriſh'd, or ſuſtain'd by the *Air*, if they be not *Air*; therefore they are *elaſtick*. What needs any more *Arguments*, when ſeveral of the former are Demonſtrative? And, that,

11. All *Phyſicians* and *Philoſophers* (that I know of) do allow, that the Animal Spirits are *elaſtick*.

Secondly, *It is requiſite*, (as was ſaid of the *External Medium*) *that they ſhould be compreſſed*, to render them fit to convey *Impreſſions*; and that they are compreſſed is evident (as was before intimated.)

1. By the *Atmoſphere*. 2. By the *Vigilative Contraction*; which makes them much more diſpoſed to *convey Impreſſions* than the *External Medium*; beſides, that very often Two other *Contradictions* (that are ſhewn in the remaining *Part* of this *Chapter*) are added thereto; and, that the *Animal Spirits* are wholly contained in *Pipes*, (to prevent their Expanſion) and that of the narroweſt ſizes that can well be imagined; but the *Air*, or *External Medium*, is at large in the *Atmoſphere*; ſo that all the *Impreſſions* made upon the *Animal Spirits* are very tightly, cloſely, and ſmartly convey'd, nor have they but a little Way to paſs, that is, the *length* of the *Animal* at moſt, which alſo may be ſome Advantage to ſmall *Creatures*. But in *Sleep* the *Vigilative Contraction* being loſt, and the *Animal Spirits* thereupon expanded, all Impulſes muſt needs be carried very faintly, both becauſe the *Organs* (or Membranes) are indiſpoſed by *Relaxation*, and the *Animal Spirits* by *Expanſion* upon that *Relaxation*, for want of due *Compreſſion* to fit them.

Thus have you (after many vain Enquiries) the true Mechanical Cauſe of the Difference of Senſation, Sleeping, and Waking, and the plain Reaſon, why our Motions are ſo feeble in Sleep, viz. *Becauſe the Animal Spirits have loſt much of their Force, Springineſs*, &c. *for want of due Compreſſion, by Reaſon of the Relaxation of all the Veſſels that include the Spirits.*

Thirdly, *It is* (in ſome Meaſure) *requiſite, that the Animal Spirits ſhould have an Homogeneous Continuity*, as was ſhewn by the *Analogy* of the *External Medium*, which does not convey *Impreſſions* as well in the *Heat* of the *Day*, as in the *Night*, or after *Sunſet*; becauſe its Parts are more diſcontinued and diſgregated by the Particles of *Heat, Fumes, &c.* in the *Day Time*; nay, if Things be diſcontinued, they never carry *Impreſſions* ſo well, tho' placed contiguouſly afterward; Thus a long *Tree* that conveys ſounds ſo exactly from one end to the other, while all is continued, and in one Piece, will not convey the *ſound* ſo well if it be cut into many *Pieces*, tho' they are afterward put cloſe one to the other.

As to this Matter of *Continuity* in the *Animal Spirits*, ſeeing it does not much concern us, and that *People* in a State of *Health* are ſuppoſed to have it, and that it is not our *Buſineſs* here to enter upon the Conſideration of Nervous Diſtempers, I need not uſe any more Words about it; but that if it any Way happens to be diſcontinued, as either by the *Penury* thereof, that they do not quite fill all Parts of their *Veſſels*, or any Matter intercepting their Parts, or that the *Veſſels* ſhould be ſo relaxed, or widen'd, that the *Animal Spirits* cannot ſo well fill them up, *&c.* ſuch Cauſes muſt deſtroy

deſtroy or leſſen Senſation, tho' the bare mixing of *Fumes* with them would not (conſidering the ſhortneſs of the *Way* that Impreſſions are carried in *Animals*) much alter the Caſe, as you find *Fumes* in the *Air* do not much hinder *ſound* at the diſtance of a *Yard* or *Two*, wherein it is inſenſible (to common Obſervers at leaſt;) ſo that if ſome *Fumes* from a Grain or Two of *Opium*, did mingle with the *Animal Spirits*, it would not cauſe a ſenſible *difference* of *Feeling* in the ſhort ſpace of the length of an *Animal*: But I have proved, That no ſuch *Fume* from the *Opium* mixes with them, therefore need ſay no more of this *Matter*.

V. *The Office or Buſineſs of the ſenſitive Soul in the Oeconomy of Senſation, being to perceive the Impreſſions conveyed to him by the Animal Spirits*, that he may, if he finds them diſagreeable, beſtir himſelf in Defence of the *Animal*.

Firſt, *It is requiſite he ſhould attend to all Impreſſions offer'd him by the Animal Spirits*, otherwiſe *Impreſſions* of great Concernment may eſcape his notice, and conſequently want his *Aſſiſtance* by Way of Defence. For

It is manifeſt, That when his *Attention* is diverted by any *Object*, more eſpecially by ſuch as mightily pleaſes him, as in the *Act* of *Venery*, and other *Pleaſures*, eſpecially if *intenſe*, that he does not perceive other *Objects* at the *Time* that he is ſo diverted; and if the *pleaſant Diverſion* be *intenſe*, and *permanent*, as in the Caſe of *Opium* and *Wine* drank in a conſiderable Quantity, he is ſo taken up, diverted, or charm'd therewith, that he does not attend to the Buſineſs of *Senſation*. This is one *Reaſon* why ſuch as are far gone in

Drink, have none of their *Senſes* aright; but as to the *Illuſtration* of this *Matter* you may expect more hereafter.

Note, That the *ſenſitive Soul* is the only Thing in an *Animal* that has *Perception*, and therefore the only Thing that is ſenſible of any *Grievance*, *Wearineſs*, *Hunger*, *Pleaſure*, *Comfort*, &c.

Secondly, *It is requiſite, that it ſhould uſe all Means that is in its Power, that the Impreſſions ſhould be brought to it very entirely, exactly, ſmartly*, &c. ſo as to have due notice of all *Objects*, and the ſmalleſt *Impreſſions* that may be.

For which good *Ends* and *Purpoſes God* has endued the *ſenſitive Soul* (as will be fully proved) with a Power of contracting all the ſenſile, ſmall, and ſlender *Pipes*, *Veſſels*, or *Paſſages* of the *Animal Spirits*, for the more expreſs, diſtinct, and accurate Conveyance of all *Impreſſions* by the Help of *Compreſſion*; Therefore the *ſenſitive Soul* taking the *Advantage* thereof, for better Information, in order to *Self-Preſervation*, does (by the Appointment of the Preſerver of all Things) execute his *Power* by the aforementioned *Vigilative Contraction* of thoſe *Parts*, to cauſe their *Tenſion* and *greater Compreſſion* of the *Animal Spirits*, to improve the *Impreſſions* that are to be convey'd to him, and render them more obſervable; This *God*, who has made nothing to be idle, and particularly ordered the *ſenſitive Soul* in *Adam* for Labour, eſpeceally in *Reference* to their own Safety and Preſervation, has made to be the ordinary *Employ* or *Day-Work* of the *ſenſitive Soul*, that by the ſaid *Vigilative Contraction*, the *Organs*, *Membranes*, *Veſſels*, *&c.* may be render'd more *tenſe* and *firm*, and the *Animal Spirits* more *compreſſed*, *ſpringy*,

ſpringy, *prompt*, *ſlippant*, and *forcible*, for the Benefit of *Senſe* and *Motion*, upon all Occaſions of *Defence*, *Flights*, *Struggles*, *&c.* which is our State of *Vigilancy* (as has been intimated.)

But the keeping of the ſaid Parts, Membranes, &c. in *continual Contraction*, even againſt the *Renitency* of the *elaſtick Spirits*, (which reſiſt, and thruſt the harder againſt their *Veſſels*, by how much the more they Compreſs them by the *Vigilative Contraction*) being a continual tedious *Labour* and *Fatigue*, of which the *ſenſitive Soul* being *ſenſible*, (as the only Perceiver of *Laſſitude*, or indeed of any Thing beſides, in an *Animal*) and in his *Nature* but *material*, *changeable*, *fatigable*, *frail*, *ſubject* to be worn out, and *capable* of *Decay*, (which makes the Certainty of *Death* in *all Animals*, and in us ſince the *Fall* into an *Animal Nature*) does, upon that Account, and leſt the continual *Contraction* and tenſive Streſs of Parts, by that Means, ſhould ſpoil their *Tone*, and to recruit the waſted *Sprits* by Reſt, (after tugging all Day at the *Vigilative Contraction*) grow willing to give over the *Drudgery*, however convenient for the *Uſes* aforeſaid; Therefore being allow'd convenient *Reſt* by his Maker, he, for the great Benefit of *Refection*, without which he cannot continue his Being, and for the ſweetneſs of *Eaſe*, looſens the Reins of *Vigilative Contraction*; whereupon *Senſation* and *Promptitude* to *Motion* (which were maintain'd by that *Contraction*, cauſing the *Tenſion* of *Organs*, and *Compreſſion* of the *Animal Spirits*, as has been *Mechanically* demonſtrated) fail by the *Relaxation* of thoſe *Organs*, *Membranes*, and *Veſſels* of the *Spirits*, and the conſequent *Expanſion* of the *Animal Spirits*; ſo that now only the Compreſſion of the *Atmoſphere* remains, which (as you ſee in a *Gut* half full of Air under that Preſſure) is not ſufficient to *convey the*

Im-

Impreſſions with any *Smartneſs*, or cauſe the *Animal Spirits* to ſpring vigorouſly into *Motion*; which Decay or Failure of *Senſe* and *Motion* by *Relaxation*, and the conſequent Expanſion of the *Animal Spirits*, is the State of *Natural Sleep*.

Note, That *Relaxation* is a neceſſary Conſequence of the *Privation* of *Contraction*, and requires no *Labour*, but a bare Remiſſion of that *Contraction*.

Note, That the Watching Part of our Lives is upheld by *Force*, and that *Nullum violentum eſt diuturnum*, and conſequently a neceſſity of *Sleep*, and at laſt of *Death* it ſelf.

Thus have you the true *Reaſon* of *Sleeping* and *Watching*, which will naturally, plainly, and eaſily ſolve all the *Phenomena's* thereof; for it is moſt evident from the Premiſes:

1. Why *Watching* and *Sleeping* obſerve a Proportion between them; the being tired with one being the cauſe of the other.
2. Why *Senſe* and *Motion* do fail ſo much in *Sleep*, *viz.* by the *Relaxation* of all Parts, and *Expanſion* of the *Animal Spirits*.
3. Why they always fail together, and in like *Proportion*.
4. Why they do not wholly fail in *Sleep*; becauſe the Compreſſure of the *Atmoſphere*, *&c.* remains.
5. Why in *Sleep* the *Limbs* are (like a *Gut* half full of *Air*) *lax*, *limber*, *flaccid*, and yielding all manner of *Ways*; becauſe all the innumerable ſmall *Veſſels* that contain the *Elaſtick Animal Spirits*, are (as that half fill'd *Gut* I mentioned) not tightly fill'd, which if they were, would be *firm* and *tenſe*,

tenſe, as ſuch a *Gut*, blown up very full and forcibly, is; which *Veſſels* being all over the *Body*, confirm the whole Tone when we are awake, and the *Vigilative Contraction* compreſſes the *Animal Spirits* into a Steadineſs, and (as it were) a kind of *Solidity*.

6. Why (as appears by *Statick Demonſtrations*, and *Experiments*) we perſpire more when aſleep than awake; becauſe the *Pores* are cloſed by the *Vigilative Contraction*, and open'd in *Sleep* by the *contrary Relaxation*, which therefore always cauſes free *Perſpiration* where-ever it happens, as in *fainting Fits*, *Syncopes*, *Leipothymies*, and by *Warmth*, eſpecially if moiſt and emollient, as in *Baths*, *Fomentations*, *Feet Waſhes*, *Head Waſhes*, *&c.* as alſo when *Pleaſure relaxes*, as in the *Act of Venery*, great Joy, after good *Meals*, or ſome *Glaſſes* of *Wine*, *&c.* all which cauſe plentiful *Perſpiration*, becauſe they relax, and thereby open the *Pores*, (as more fully appears in the *following Diſcourſe*) by Reaſon of the Pleaſure that they cauſe, which diverts the ſenſitive Soul from his Employ of *Contraction*.

7. *Why*, the *Pores* being open by the *Relaxation*, we *ſweat* in our Sleep, if we are fill'd with Matter for it, *viz.* Ἱδρὼς πολὺς ἐξ ὕπνου ἄνευ φανερᾶς ἀσιτίης γινόμενος, τὸ σῶμα σημαίνει ὅτι πλεῖον τροφῆς, That is, *Much Sweat in Sleep argues, that much Food* (or Nutriment) *was taken*; of which *Drink* is the greateſt Part in Bulk, even in Sober Perſons. I mention this to ſhew the Difference in the Caſe of *Perſpiration* and *Sweating*, for that always happens in *Sleep*, but not *Sweat*, unleſs the *Body* be well fill'd with Moiſture; To ſhew the Cauſe of which *Difference*, will be the Buſineſs of my Tract of *Animal Mechaniſm*, if I have not hereafter an *Occaſion* to do it in this *Tract*, as (I ſuppoſe) I may.

8. *Why*

8. *Why* Sleep cures Colds (by opening the Pores.)

9. *Why* the Skin is more florid in Sleep; becauſe (as has been ſaid) it being relax'd admits the *Bloud* into it, which *Vigilative Contraction* does in good meaſure repel, and thereby cauſe the Skin to appear more *white* and *pale*, as it is, and any one may obſerve upon awaking.

10. *Why* the *Eyes* look deadiſh in Sleep, *viz.* becauſe (as has been ſhewn) the Humors do not fill up the relaxed *Cornea* to a due *Tenſion* and *Rotundity*, which (as was ſaid) makes the *Cornea ſhine*, ſparkle, and particularly to reflect a brisk *Speck* of Light, (as ſhining round Things muſt do) which *Speck* if Painters omit, the *Eye* looks deadiſh, therefore they ſhould, when they have a mind to expreſs the *Deadneſs* of the *Eyes*, as in *Fainting Fits*, *Syncopes*, *Sleep*, *Death*, *Wanton looſe Oglings* of *Lovers*, *Drunkenneſs*, *&c.* omit that Speck, or rather draw it duller, wider, and diſcompoſed in Figure, with the *Pupil* very large, and the Upper *Eyelid* falling down looſely, which would exactly expreſs the *Deadneſs* of the Eye in all thoſe Caſes of *Relaxation*, in which alone it ſo appears. *Note*, That the *Reaſon* why ſome in ſuch Caſes ſee *divers Colours* before their *Eyes*, is, becauſe the uneven *Cornea* variouſly retracts and reflects the Light, which I mention becauſe none (that I know of) have obſerved the Cauſe.

11. *Why* People are more ſleepy in warm moiſt *Weather*, *viz.* becauſe the Parts are more relaxed, and the Preſſure of the *Atmoſphere* leſs to aſſiſt the *Vigilative Contraction*, to keep us in a waking State by the *Compreſſure* of the *Animal Spirits*: How much better therefore is a *cool* and *dry Air*, that raiſes the *Mercury* high in the *Barometer*, (or *Weather Glaſs*) both for *Heath* and *Action*? becauſe it renders the *Animal Spirits* more power-

ful,

ful, prompt, and *ſlippant* by the *Compreſſion.* This ſhould be obſerv'd by ſuch as are to run *Races* alone, lift *Weights*, or perform any Thing that requires *Strength*, *Vigour*, or *Speed*; nor can I doubt, but if we had an Artificial Means to compreſs Men's *Bodies* in a high manner, (as by putting them into convenient Cavities, and forcing Air upon them) but they would be much ſtronger for the Time, and thereby enabled to do *Exploits* beyond their ordinary Strength; which puts me in mind of ſeveral Things that confirm it very much, as Mens lifting of greater Weights in low Places, than on the top of very high *Hills*, where the Preſſure of the *Air* is leſs to compreſs the *Animal Spirits*; *The Contraction* of all Parts in lifting of great Weights; *The* prodigious *Leaps*, and *Swiftneſs* of ſome Perſons in great *Frights*, *Terrors*, *&c.* which mightily contract the *ſenſile Parts*, and *Veſſels* of the *Animal Spirits*, by which Means they are render'd more *ſpringy* and *powerful.*

Note, That the true Cauſe of Strength is the Compreſſion of the *Animal Spirits*, and that (probably) the Force of Muſcles may ſome way or other depend upon't, which is not my Buſineſs to explain at preſent.

Note, That it is the *Membranes* are primarily contracted, and the Medullary Part of the *Nerves*, *Spirits*, *&c.* compreſſed thereby by Conſequence.

12. *Why* the *ſoft fleſhed*, and *moiſt*, are more *ſleepy*, as *Children*, *&c. viz.* becauſe the *Compreſſion* of their *Animal Spirits* is not ſo great by Reaſon of the *laxity* of their Parts, ſo are they weaker for the ſame Reaſon, which tells you why *little* Men,

Men, whoſe Fleſh is firmer, that are no bigger than *Boys*, are much ſtronger than *Boys* or *Women* of the ſame bigneſs.

13. *Why* warm and emollient *Baths*, *Fomentations*, *Feet* or *Head Waſhes*, *&c.* do (as *moiſt* and *warm Weather*) cauſe *Sleepineſs*; and indeed all Things that cauſe *Relaxation*, or incline the *ſenſitive Soul* to leave off contracting, as *Wearineſs*, *&c.* do cauſe *Sleep*.

Note, That in dry Bodies, as old People, *&c.* ſuch *Emollient Baths*, *Fomentations*, *&c.* with the Uſe of *Emollient Moiſtners* inwardly, will cauſe *Sleep* very finely, when *Opium* it ſelf will not; and that *Opium* in ſuch Caſes ſhould be uſed with ſuch Things both *internally* and *externally*; but (which is not obſerv'd) the *Baths*, *Fomentations*, *&c.* ſhould not be above the Warmth of *Bloud*, becauſe the *Heat* may otherwiſe cauſe too much motion of the *Bloud* and *Spirits*, which is a great Enemy to *Sleep*, that *conſiſts in their Reſt, and the aforeſaid Relaxation of Parts*, by both which co-operating, you may, and cannot fail to cauſe any Man to *Sleep*, if you can make them concur.

14. The ſame *Relaxation* cauſes the *Pulſe* to be larger and ſlower in Sleep, *Nocturnal Pollutions*, want of due Contraction and *Senſation* at Stomach, by which Means the Meat ſtays longer there in our *Sleep*, than when we are awake; So,

15. *Frets*, *Commotions*, and *Perturbations* of the *Spirits*, *&c.* are compoſed by *Sleep*, becauſe the *ſenſitive Soul* (who is the *Original* of all *motion*) is at Reſt, and that the *Animal Spirits* being expanded, are nearer their abſolute *Reſt*, which conſiſts in a full and perfect *Expanſion*, ſo that there is no farther *Endeavour* towards *Motion*.

16. Sen-

16. Senſation being much leſſened by the *Expanſion* of the *Animal Spirits* upon the ſaid *Relaxation*, the Senſe of the *Irritation of Humours* is thereby leſſened, or quite taken away, whereupon all *Fluxes* occaſioned by the *Irritation of Humours*, as *Diarrhea's*, *Diſenteries*, *Catarrhs*, *&c.* are ſtopt or moderated (at leaſt) by *Sleep*; Beſides, that *Relaxation* being quite contrary to *Contraction*, by which thoſe *Humours* are ſqueeſed out, lets the Humours ſtay quietly where they are, *Relaxation* being more for receiving, containing, detaining, and ſuſpending Humours in the Parts, than ſending them forward, as you ſee in a Spunge firſt contracted, and afterward ſuffered to dilate, or expand it ſelf in a *Diſh* that has ſome Water in it, which it takes into it ſelf, and ſuſpends till ſomething ſqueeſes it out by contracting it.

17. Therefore it is that the Spittle does not come into the Mouth in Sleep, or very little, and that People are apt to awake thirſty, tho' it is ſoon taken off in ſome meaſure by the *Vigilative Contraction* ſqueezing out the *Spittle* into the Mouth, unleſs there is ſome ſpecial Cauſe to the contrary.

18. For the ſame Reaſon the *Menſtruum* of the *Stomach* comes but very ſlowly into the Stomach in Sleep, which is one *Cauſe* that *Digeſtion* goes on but ſlowly in *Sleep*.

Note, That *Digeſtion*, and ſending the Chyle out of the Stomach, depending both upon *Contraction*, they are haſtned and retarded in *exact Proportion*, ſo that the *Extruſion* keeps equal *Pace* with the *Digeſtion*. How equal and duely proportioned are the Works of Nature!

19. It is plain alſo from what has been Stated concerning *Sleep*, why *Ague Fits* ſeldom (if ever)

ever) take *People* in the time of their firſt ſound *Sleep*, becauſe the *Shivering* is cauſed by a *grievous Senſation* of the *ſenſile Parts*, which cannot well happen in that *ſound Sleep*, wherein there is ſo little Feeling by Reaſon of the ſaid *Relaxation*; and becauſe *Relaxation* oppoſes *Contraction*, by which that *Shivering* is promoted. Such a *Relaxation*, and Failure of *Feeling* thereupon, is the true Cauſe why *Opium* puts off *Ague Fits*, &c. So,

20. The *Relaxation* in *Sleep* ſtops *Vomiting*, by taking away the *ſenſe* of the irritating Cauſe, and quieting (as I have intimated) all Motions in general; ſo *Sleep* ſtops *Hiccoughs*, *Hemorrhages*, *Diary Fevers*, &c.

21. Why *Watching*, *Labour*, or what impairs the Spirits, and tires the *ſenſitive* Soul, inclines us to Sleep, that is, diſpoſes the *ſenſitive Soul* (the only Feeler of Laſſitude) to give over Contracting the Senſile Parts, which (as will plainly appear by and by) ſpends the Spirits, as Sleep by relaxing them cauſes a *Recruit* thereof.

To be ſhort, (tho' one can hardly be too long in ſolving *Phenomena's*, which is the *Proof* of the *Truth* of a Man's *Aſſertion*) the *Mechanical Demonſtration* that I have made of the State of *Sleeping* and *Waking*, does ſo evidently explicate all the *Phenomena's* of both, that I am even aſham'd to run any farther upon ſuch plain Matters, (ſo obvious are Things when the *Truth* is known,) and therefore (having mention'd thoſe *Circumſtances* and *Effects* of *Sleep*, that mainly concern us) I muſt give over, leſt the *World* ſhould think, that I take all my *Readers* to be *Idiots*, by uſing too many Words in ſo obvious a Thing; or, that I am no better for uſing them without Cauſe; for the *Truth* of this Matter ſeems to me to out-

ſhine

ſhine all the *Arguments* I can make for it, ſuch Splendour does *Truth* ſhew upon the firſt *Glimps* thereof, as I take the Account I gave of *Sleep* and *Watching* to be; for the Opinions I have met concerning them were quite *contrary* to, or very *remote* from what I have ſtated.

1. They went quite *contrary* to it that ſaid, That the *Animal Spirits* were expanded, and the *Pores* of the *Brain*, *&c.* more open (and conſequently more lax) in *Watching*, as *Willis, and ſeveral others*; who therefore ſay that *Coffee, Volatile Salts, &c.* are *Antihypnoticks*, (or good againſt too much *Sleepineſs*) becauſe they cauſe an *Expanſion* of the *Spirits*, and open the *Pores* of the *Brain*, ſuppoſing (forſooth) that they marched up and down, and ſo kept the greater ſtir upon the falſe Imagination of their *Roads* being more open, which (as was proved) are really more cloſe. *Coffee* keeps us from *Sleep* by drying, binding, and both Ways conſtringing the *Veſſels*, as alſo by a wide grating Quality, which therefore does irritate them to contract, beſides that the Saline Particles cauſing an *Agitation*, may contribute thereto, ſo that by *conſtringing* and *agitating*, it directly oppoſes Sleep, which proceeds from Relaxation and Quietneſs.

2. They were very *remote* from the Mark, that ſaid (as *Wedelius* aſſerts all do) that *Vapours* were the cauſe of *Natural Sleep*, which bear no manner of *Proportion* thereto (as was ſhewn;) As they were alſo who madly talk'd, That the *Animal Spirits*, which have neither *Life*, *Senſe*, *Motion*, or *Election*, did of themſelves retire very knowingly to the *Brain* in *Sleep*, and left the *Limbs*, *&c.* deſtitute of them, whereas (as has been *Mechanically* proved) they have more *Room* than that at other times in the Limbs, and all the *ſenſile Parts*.

But I will not argue againſt ſuch ſenſeleſs and precarious *Abſurdities*; it is not worth the while, eſpecially ſince the *Truth* is manifeſtly diſcovered: It would not have been ſo ſilly to have affirm'd the quite contrary, *viz.* That the *Animal Spirits* are forced into the ſoft and yielding Brain, in Watching, by the *Vigilative Contraction* of all the *ſenſile Parts* repelling them, as when Cold repels them by a ſtrong *Contraction* of the Parts, and cauſes a *Stupor* or *Sleep* thereof (as they call it.) But what have we to do with ſuch inſufferable *Traſh*? Therefore bidding it adieu, let us purſue our *Buſineſs*.

That it is the *Senſitive Soul*, and nothing but it, has that *Contracting Power*, is evident;

1. Becauſe it is the Original of all *Motion* in the *Animal* as ſuch; and that nothing beſides it has any *Life*, *Perception*, *Motion*, or *Power*, and therefore muſt reſt till they are moved.

2. Becauſe, That when the *Senſitive Soul* is diverted by *intenſe Pleaſure*, from attending his Buſineſs, immediately *Relaxation* follows; as in the *Pleaſure* of the *Act of Venery*, by *Wine*, *Joy*, *&c.* in which you have all the *Effects* of *Relaxation*, as *Deadneſs* of the *Eyes*, *Dilatation* of the *Pupilla*, plentiful *Perſpiration*, *Floridity* of the *Skin*, a large *Pulſe*, and ſometimes a conſiderable *Failure* of *Senſe* and *Motion*, as in the moſt pleaſant time of the *Venereal Act*, *Deliquiums*, *Drunkenneſs*, *Syncopes*, or *Ecſtaſies* upon *intenſe Pleaſure*, (which are very properly called *Ecſtaſies*) *Leipothymies*, *Leipopſychies*, *&c.* which ſignifie the *Soul's leaving us* without his Help by *Contractions*, which he then does not exerciſe, as being charm'd, and wholly taken up with *Pleaſure*. This is the true Cauſe of all *Deliquiums*, *&c.* upon *Pleaſure*, *Joy*, *&c.* all which cauſe great Relaxations, and thereby Loſs of *Senſe* and *Motion*, as being its neceſſary Conſequences.

3. Be-

3. Becauſe *grievous Senſation*, which belongs only to the *Senſitive Soul*, puts us immediately out of *Sleep* into a *Vigilative Contraction*.

4. Becauſe the *Senſitive Soul* can, when we are Sleepy, oppoſe it, by continuing the *Vigilative Contraction*; which proves *Vigilative Contraction* to be in his *Power*.

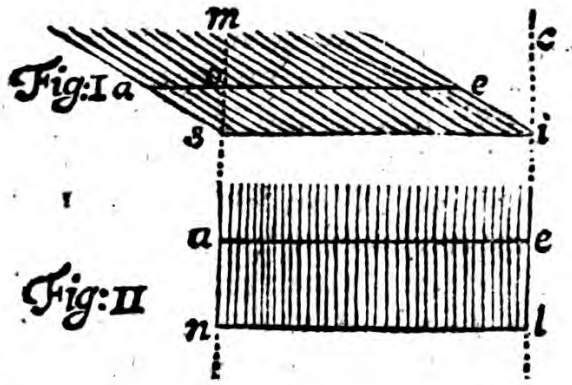
Note, That there is alſo other ſorts of *Leipothymies*, *Deliquiums*, *&c.* upon the *Senſitive Soul*'s being over-tired, (whereof *Natural Sleep* is but a common and ordinary *Degree*, that happens of Courſe for our Relief) or over-born with ſome *Fatigue*, &c. as when ſomewhat grieves at *Stomach*, and that it has laid about it all manner of *Ways*, by *Vomiting*, *Convulſive Motions*, *&c.* to be rid of it, till it can work no longer; whereupon it lays down the *Cudgels*, deſiſts from all further Endeavour by *Contractions*, yielding it ſelf to *Eaſe*; ſeeing all Striving is to no Effect: So, that tho' this *Deliquium*, and the former, differ in their firſt Cauſes, yet do they agree in the laſt and immediate, *viz.* the *Senſitive Soul*'s not attending his Buſineſs of *Contraction*, whereupon follows a *mighty Relaxation*, as appears by the *Deadneſs* (or *Relaxation*) of the *Cornea*, *Dilatation* of the *Pupil*, a *great Laxity* of all Parts, a large *Pulſe*, or none, very plentiful *Perſpiration*, Stops of *Hemorrhages*, and all Fluxes that require *Contraction*, &c. which happen both upon the Account of the great *Relaxation* it ſelf, (as has been ſhewn) and the almoſt abſolute Reſt of all Things by the *Senſitive Soul*'s withdrawing himſelf from *Buſineſs*, more than in Sleep it ſelf. I therefore obſerving the Degrees of *Sleep*, &c. do *Note*, That (*God* and *Nature* uſing a due *Proportion* in all Things) the *Senſitive Soul* uſes ſeveral *Degrees* of *Relaxation*, according as he is tired, and *Refection* is wanted: Hence it is, that

ſuch as are much tired *ſleep* more profoundly, that our *firſt Sleeps* are the ſoundeſt, and that Sleep gradually *declines* in degrees (as we are recruited) till we awake; the nearer which we are, the more we *dream*, the ſtate of *Dreaming* being a kind of Twilight between ſound *Sleep* and Awaking, or between a full *ſomniferous Relaxation* and *vigilative Contraction*. And as the *Senſitive Soul* uſes all *degrees* of *Contraction* below that of the *Vigilative*, till it comes to bare *Compreſſion* of the *Air*; ſo it can exerciſe *ſuper-vigilative Contraction*, (if I may ſo call it) that is, much higher *degrees* thereof than what was requiſite ordinarily for a ſtate of *Vigilancy*, as in Caſes of Danger to the *Animal*, *Frights*, *Terrours*, *grievous Paſſions* and *Senſations*; by which means the *animal Spirits* being more compreſſed than under the ordinary *vigilative Contraction*, Senſation grows more *nice* and *ſmart*, and Motion more *prompt* and *vigorous* (they always going together) for the *Defence* of the *Animal*, by extraordinary *Flight*, *Repulſion*, or otherwiſe. Hence it is, upon *Fear*, *Terrour*, *grievous Paſſion*, or *Senſation*, (which manifeſtly proves the Being of ſuch an extraordinary *Contraction* upon ſuch Occaſions) That,

1. *Perſpiration* fails in a yet higher degree than under bare or ordinary *vigilative Contraction*, as appears by infallible *ſtatick Experiments* and *Demonſtrations*.

2. It is by reaſon of the ſaid *defenſive Contraction*, (for ſo I call it, becauſe it is excited in an extraordinary manner for the *defence* of the *Animal* in time of need, or great *Exigence*) That in *Frights*, *Terrours*, *&c.* our *Hair*, *Dogs*, &c. does ſtand on end, or more upright; 1. Becauſe the *Pores* do, by that violent *Contraction*, ſtrictly cloſe about the *Root* of the *Hair*, that it cannot ſwag, incline, or

or yie'd any way, by reaſon of its *Weight*, &c. as when the Skin is more *lax* and *ſoft*, and the Pores, wherein the *Hair* is fixed, more open. 2. Becauſe (which is the *main Reaſon*) the ſaid *Contraction* renders the oblique *Pores* more upright; as ſuppoſe the *Pores* and *Hair* do naturally ſtand obliquely, (as they do to carry off Wet, *&c.*) as in *Fig.* 1.



And that (*a*) in *Fig.* 1. is, by the ſaid *Contraction*, brought nearer to (*i*), as much as is from (*a*) to (*o*), then will the *Pores* and *Hair* ſtand upright, as in *Fig.* 2. and the Skin *a*, *o*, *e*, *i*, *s*, contracted and brought within the prick'd *Perpendiculars*, whereas in *Fig.* 1. it excur'd beyond the *Perpendicular n*, *m*, as much as is from *a* to *o*.

3. For the ſame Reaſon it is, That the Face, in *grievous Paſſions* and *Senſations*, as acute Pain, *&c.* is contorted and wrung awry, as you ſee in Perſons that cry becauſe of *Grievances*, (after the ſame manner as when they ſtrive to lift up a great *Weight*) and that at the ſame time Tears, and Moiſture at *Noſe* and *Mouth*, are ſqueezed out by the ſame *Contraction*; which makes People uſe the Saying of *Caſting Snot about* when Men cry. It is for the ſame *Reaſon* that *People*'s Mouths *water*

extreamly when they are trimm'd with a bad *Razor* that puts them to *Pain*, which contracts the Parts, and ſqueezes out the Spittle.

4. The *Pulſe* grows ſenſibly narrower and harder by the ſame *Contraction*.

5. It is by the *Contraction* upon *grievous Senſation*, that our Mouths water very much upon a *Nauſea* at *Stomach*, becauſe of the continuity of the Membranes of the *Mouth* and *Stomach*.

6. The ſame *Contraction* is the true *Reaſon* why People, upon *Hunger* (which is a *grievous Senſation at Stomach*) have ſo much Moiſture (or Spittle) in their Mouths, and ſo much the more when they ſee good *Victuals*, and cannot have it, becauſe the *Grievance* which cauſes the *Contraction* that ſqueezes it out, is by ſo much the greater. This is the cauſe why the Mouth waters when hungry *People* ſee or ſmell good Victuals. By the ſame Contraction Moiſture is ſqueezed out into the *Oeſophagus*, (or *Gullet*) and the *Menſtruum* into the Stomach at the ſame *time*; where (obſerve *God's* Good and Wiſe *Providence*) that *Hunger* which calls for *Meat*, at the ſame time provides Spittle to lubricate it for ſwollowing, and to help *Digeſtion*, render the *Gullet* ſlippery and diſtenſible, and cauſes the *Menſtruum* to flow more abundantly into the *Stomach*; and all this when moſt needed, and that exactly in *proportion* to the *Hunger* (or *grievous Senſation*) that cauſes the *Contraction*.

It is well worth your *noting*, That God's *Wiſdom* does always cauſe the *Want* of what is neceſſary in *ſenſile Creatures*, to be the ſolliciting and urging Cauſe for ſupply, that a due *Proportion* may be obſerved between the Supply and the *Want*; which may upon the telling of it appear ſo plain a Caſe, that it is ſcarce worth the mentioning; but (believe me) it is ſo little obſerv'd, (as plain

as

as it may ſeem to be) that *People* have, and do err extravagantly for *want* of noting it; which if they had noted, they could never have ſaid that *Vapours*, or the *retiring* of Spirits into the *Brain*, *&c.* was the *Cauſe*, or *Call* of *natural Sleep*; nor *feigned Menſtruums* to be the cauſe of *Hunger*; but would have duly conſidered what is mainly ſupplied by *Eating*, or recruited by *Sleeping*, &c. and then had nothing to do but to conclude the *Defect* of that to have been the Cauſe that ſolicited for the Supply in *proportion* to the *Defect*: Which, if obſerved, will moſt naturally and eaſily lead you to the true *Knowledge* of the Cauſes of all *Appetites* in an *Animal*, upon a few Minutes Conſideration; for want of which moſt plain and (one would think) very obvious *Method*, the deviating *World* has ſadly puzzled it ſelf about the Cauſe of *Hunger*, *Thirſt*, *Sleep*, and the like, to this *day*, and ſtill is in Diſputes about them, of which (tho' my advertent *Reader* may well prevent me, by uſing that *natural Method*) I ſhall (*God willing*) give an account in my Tract of *Animal Mechaniſm*: Only *note* here, That I do not mean bare privative Defect, as ſuch, to be the poſitive Cauſe; but that the Defect of what keeps or guards the Stomach, *&c.* from the Grievance, cauſes other Matter to grieve it, cauſe Hunger, *&c.* without which means, no Proportion can be obſerved between Hunger and what takes it away, or our *Food.*

7. The ſame *defenſive Contraction* does, upon *grievous Senſation*, as *Pain*, *Cold*, *Terrour*, *&c.* cauſe a *Corrugation* of the *Scrotum*, contract the Skin into little *Tubercles* like that of a *Gooſe-Skin*, *&c.*

8. By it, upon *grievous Senſation*, as by ſqueezing the *Noſe* very hard, pulling the *Hair*, *Sand*, or any ſuch thing, in the *Eye*, or a *Grievance* by the *Volatile Particles* of *Onions*, *Muſtard*, *Horſe-Radiſh-*

Roots, *&c.* the Parts and *Membranes* about the *Eyes* contracting, ſqueeze out *Tears*, that what grieves the *Eyes* may thereby be waſhed away, or qualified, as much as the *Tears* can do it.

9. By this *Contraction* repelling the *Bloud*, the *Skin* grows *Pale* by *Cold*, *Fear*, *Pain*, *&c.* which alſo cloſing the *Pores*, ſtop *Sweat*, as in a moment. You'll have an account hereafter how *Contraction* may cauſe Sweat by *ſqueezing* in ſome Caſes, and ſtop it by *ſhutting the Pores* in other Caſes.

10. It is by it that *Contraction*, that *Fear*, *Cold*, *&c.* cloſing the *Pores*, and repelling the Bloud, ſtanch Bleeding: So happens alſo a greater *Contraction* of the *Pupil* of the *Eye* by the ſame Cauſe.

11. It is the *Violence* of this *Contraction* upon *Fear*, *Terrour*, *Pain*, *Cold*, *&c.* cloſing the ſmall *Veſſels* of the *Animal Spirits*, and thereby repelling them, cauſes the *Shivering* in thoſe *Caſes*, by the *Renitency* of the *elaſtick Animal Spirits* ſpringing back again, *toties quoties*, having gain'd more *elaſtick Force* by the very *Compreſſion* it ſelf, which that *Contraction* cauſes; ſo that by reaſon of the dubious *velitation* (or *skirmiſhing*) between the repelling *Contraction* and the *ſpringing Spirits*, happens a *tremulous Motion*, (as of *quavering Springs*;) which *Shivering in Ague-Fits* did formerly lead me to the *Situation* of the *Cauſe* of *Agues* (when I writ my Book *De Febribus intermittentibus*) in the *Anguſtiæ* at the end of the *Veſſels*, which terminate in the *Membranes*; the *grievous Senſation* of which, cauſes all the Shivering that happens in any Caſe to *Animals*.

12. By the ſame *Contraction*, when very violent, and of the whole Body, *cold Sweats* happen in *Pain*, *Fear*, *Terrour*, &c. while it violently ſqueezes out the outmoſt, and therefore coldeſt Moiſture

of

of our *Bodies*, as *Laundreſſes* do Water out of wet Linnen by *Contortion*. Thus if you dip one *half* of a wet cold Sheet in hot Water, wrapping the hot ſide within the cold, or let a *warm Sheet* that is contorted cool on the out-ſide of it, and then wring it as *Women* do Linnen, the Water that firſt exudates will be cold; for in this *Caſe* the cloſing of the *Pores* avails nothing to hinder it, as long as the expreſſing *Force* maſters it; more *eſpecially* in *Animal Bodies*, wherein the Parts are ſo contrived, that *Humours* deſign'd for *Excretion* cannot well return, and therefore muſt, upon *Contraction*, run out.

Hence it is that *Alum*, or *Vitriol*, which are very aſtringent, and therefore cloſe the *Pores*, will notwithſtanding cauſe the *Mouth*, or *Noſe*, to run very plentifully with Moiſture, by *contracting* all the *Membranes* about the *Mouth*, or *Noſe*, and thereby ſqueezing out the *Moiſture* deſign'd to be excern'd, which cannot return, becauſe the *Parts* are contriv'd againſt the return or *readmittance* thereof; whereas *Alum*, or *Vitriol*, will ſtanch or ſtop *Bloud* by the ſame *Contraction*, becauſe it may return (as not being deſign'd to be excern'd) either into the *Arteries*, and ſo paſs by other *Branches* thereof, or (which is more ready and natural) keep its courſe into the *Veins*. So the two *Riddles* (that I have known ſome *Proud Phyſicians* amaz'd at, tho' but *Trifles*) of *Alum* and *Vitriol* cauſing the Spittle, *&c.* to come out, inſtead of ſtopping it by their *Aſtringency*, and their ſtopping *Bloud* at Noſe at the ſame time they cauſe the *Snot*, or other *Humours*, to run out, are unfolded.

13. It is by this mighty *Contraction* growing to an enormous *degree*, that the *Animal Spirits* being violently compreſſed, grow exceeding irrequiete, as upon *Convulſions* in great *Pain*, or very grievous Senſa-

Senſation at *Stomach*, *&c.* while the *ſenſitive Soul* compreſſing them with mighty *Force*, and ſomewhat diſorderly and unevenly, becauſe of the *Confuſion* and *Hurry* he is in to relieve the *Animal*, they by their ſpringineſs fling up and down with great *Vigour*. This makes *convulſive Motions* have great Strength.

14. The Body under this Contraction is manifeſtly ſhrunk by meaſure, eſpecially when the Senſation is very grievous, but moſt of all if they cauſe a *general Convulſion*; which I manifeſtly obſerved in a little Bitch, that was convulſive all over for three Hours, and was juſt expiring, when I gave her the *Sal Volat. Oleoſ.* of *Opium*, which perfectly reſtored her by relaxing the Veſſels.

Some may think it ſtrange, That *Nature* ſhould contrive a more nice and ſmart Senſation (which the *Contraction* of the *Veſſels* of the Animal Spirits muſt cauſe by *compreſſing* them, *&c.*) in *Pain*, and by it; which becomes ſo much the more acute; whereas one would judge, That *Nature* would rather contrive its *Eaſe* than improve its *Smart*.

You are to know, That the *Pain* is in order to *relieve* the *Animal*, by exciting all its *Powers* to defend, expel, or reject the *Cauſe*; and that, without a *grievous Senſation*, the *ſenſitive Soul* is neither minded nor excited to do it; and the more the *Pain* is, the more it is ſtirr'd up to *Self-preſervation*, and (as was ſhewn) the more vigorous do its *Motions* grow by the *Compreſſion* of the *elaſtick Spirits* to perform that Work; ſo *Nature*, not regarding the *Pain* (which is rather for good) as much as taking away the Cauſe, advances that, for this *Purpoſe*; like a wiſe *Phyſician*, who finding a *Grievance* at *Stomach*, not ſufficient to excite effectual *Vomiting*, to throw away the grieving Cauſe, adds to the *Grievance* by giving a *Vomit*; which becauſe (as was ſaid) *Nature* is

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proportionably excited *to*, and invigorated *for Self-preſervation*, ſufficiently ſollicites and enables it, by a ſtronger *Contraction*, to reject the *grieving Matter*.

As the greater the Relaxation is, the more is the Reſt of all Parts; and the weaker the *Animal Spirits* (becauſe leſs compreſſed) the gentler are all Motions, (as you ſee in *Sleep*) conſequently the leſs is the *Expence* of *Spirits*; ſo that in *Sleep* we generate more than we ſpend, and are thereby recruited: So the more the *Contraction* is, the more violent is the Motion of the *Heart*, *Inteſtines*, and of all Parts, and conſequently the Expence of Spirits is the greater.

Therefore it can be no Wonder, That *Contractions* do cauſe great *Commotions of Spirits*, *Diary Fevers*, *&c.* when you conſider,

1. That the *ſenſitive Soul* is, by the *grievous Senſations*, &c. that cauſe them, put upon a great *Fret*, *Concern*, and *Hurry*, to defend the *Animal*, and lays about him all manner of ways for *Self-preſervation*.

2. That the *Animal Spirits* are, by means of great *Compreſſion* cauſed by the *defenſive Contraction*, in a very forcible *Springineſs*, which cauſes all the Actions that are continual, involuntary, and of courſe, to be perform'd with great Violence, proportionable to its compreſſed Elaſticity. Beſides that,

3. The *Syſtoles* of the *Heart* are oftener repeated. All which conſpire to cauſe greater *Commotions* upon *grievous Senſations*, whereby *Diary Fevers*, *&c.* are cauſed, which are eaſily and naturally cured by *Sleep*, or *Relaxation*, at preſent compoſe and quiet thoſe *Perturbations*. Who knows (tho' it is not my *Buſineſs* to diſcuſs it at preſent) but that the *Contractions* in the *cold Fits* of *Agues*, have a great hand

hand in cauſing the *hot ones*? How otherwiſe ſhould *Opium*, by only taking away the grievous *Senſation* of the *cold Fits*, take off, or prevent the hot Fits alſo? But of this, in my often-mentioned *Tract*, (though not ſo often as it grieves me that it is not publiſhed.)

How reaſonably may we now expect, That pleaſant Senſation may cauſe quite contrary Effects to that of *grievous Senſation? viz. Relaxation*, and all its *Effects*, (which have been in ſome meaſure enumerated in the Caſe of *Natural Sleep* in this *Chapter*) viz. *Satisfaction*, *Compoſure* of *Frets* and *Commotions*; as of diary *Fevers*, *hyſterick Fits*, &c. *Perſpiration*, *quieting* of *Vomitings*, *Hiccoughs*, &c. *leſſening* of *Feeling*, and conſequently a ſtop and *moderation of all Fluxes* that depend upon Irritation of Humours, as *Diarrhea's*, *Dyſenteries*, *Catarrhs*, *Vomitings*, *Drineſs of the Mouth*, (as in *Sleep*, for want of the *Contraction* to ſqueeze the Spittle out of the Glandules into the Mouth) *Nocturnal Pollutions*, &c. But of the *Nature* and *Effects* of *Pleaſure*, you'll find more in the next *Chapter*.

Beſides the *Vigilative* and *Defenſive Contractions*, (which ſeem to be Things of courſe upon *Waking* and *Grievances*) the *ſenſitive Soul* has a *Contraction* at *Will*, as that of the *Pupilla*, when an *Animal* is intent upon *Seeing*; of the *Tympan*, when intent upon *Hearing*; of the *Muſcles* of the *Legs*, when intent upon *Walking*; and ſo of all the *Muſcles* of the *Body*, which I call *Intentive Contraction*, that he can perform either along with, or without the other *Contractions*, or without any great *degree* thereof, as when one is conſiderably relaxed with the *Pleaſure* of *Wine*, *very good News*, &c. nay, ſometimes even in *Sleep*, as is manifeſt by the *Noctambuli*, (or ſuch as walk in their *Sleep*) and ſuch as

ſpeak,

ſpeak, ſtrike, *&c.* while aſleep: And as the *Defenſive Contraction* does all it can in our *Defence*, without the *Direction* of the Will, as in *Vomiting*, *Sneezing*, *Purging*, &c. upon *ſenſible Irritation*; ſo this *Intentive Contraction* does all it can to the ſame Purpoſe, by the *Direction* and *Dictates* thereof.

Note, That inſenſile growing Things that do not move, as *Trees*, *&c.* have none of theſe *Contractions*, but what happens by *Cold*, and *Compreſſion* of the *Atmoſphere*, which are ſufficient it ſeems for *Nutrition*, but not for *Senſe* and *Motion*; it follows, That in compleat *Syncopes*, when the *ſenſitive Soul* gives over all *Contractions*, that we are much in the ſtate of a Plant.

All thoſe three Contractions, *viz.* the *Vigilative*, *Defenſive*, and *Intentive* do, becauſe they promote Motion, and cauſe it more or leſs, (as you find the *Vigilative* cauſes much more of it than *Sleep*, and the *Defenſive* more than that, *&c.*) ſpend the *Spirits*, cauſe *Wearineſs*, &c.

The *Vigilative Contraction* does of it ſelf, without any conſiderable *Grievance* or *Labour*, that is, without the *Denfenſive* or *Intentive Contraction*, tire the *ſenſitive Soul* in about 16 *Hours*: Hence it is that the idleſt Perſon, that is moſt free from *Care*, *Trouble*, or *Pain*, cannot well hold out without the Recruit of *Sleep* any longer.

The *Defenſive Contraction*, or that of *Grievances*, being added to the *Vigilative Contraction*, the Spirits are faſter ſpent, and the Perſon tired proportionably ſooner, according as the *Grievance* is *more* or *leſs*, and conſequently the Endeavours of the *ſenſitive Soul* to be rid thereof.

To both which *Contractions*, (*viz.* the *Vigilative* and *Defenſive*) if you add the *Intentive*, (or *Labour*) then are you ſooner and more tired than by only thoſe two *former Contractions*; for this laſt Caſe is labouring in *Pain*, (or under a *Grievance*) which notoriouſly tires Man or Beaſt ſooner than ordinary: The direct contrary to which, is ſleeping ſoundly and ſweetly, without Trouble, Pain, or Dreams; for a *dreaming Condition* has too much of the *vigilative Contraction* in it, to be pure *Relaxation* and *Recruit*.

Now according as theſe *Contractions* are, or are not added one to another, we are ſooner or later before we are tired, (ſpeaking generally, and not conſidering *Cuſtom* and *Habit*, which concerns us not.)

You ſee that all the three *Contractions* concurring, do ſoon and ſadly tire us, that no *two* of them tire us as much as the *three* together; that is, neither the *Vigilative* and *Defenſive*, without the *Intentive*; nor the *Vigilative* and *Intentive*, without the *Defenſive*; and the *Vigilative* alone leaſt of all: Yet *allowance* muſt be made for the Intenſneſs of the *Defenſive* and *Intentive*; for either of theſe two being very intenſe, may tire as much as both, in a moderate *degree:* Thus a Man may be tired with violent Labour in four Hours, tho' not in *Pain* as much as one that moderately labours in ſome ſmall *Pain* for the ſame *time*.

Obſerve, That we recruit in eight Hours (generally ſpeaking) as much by relaxation in *Sleep*, as we ſpend by *vigilative Contraction* in ſixteen: I take the Reaſon of that to be, That *Relaxation* widening all the Paſſages of the *Body*, the Nutriment is admitted into them more fully and freely,

as

as the *Bloud* is into the Skin in *Sleep*, and all *Relaxations*, which cauſe an *Efflorescence* thereof in thoſe Caſes. Hence it is that we are ſo much recruited and nouriſhed in Sleep; that Children grow more than others proportionably; that Relaxers cauſe the *Breaſts*, *&c.* to grow.

Note, What a mighty *Reſtaurative Relaxation* is! By its help, for *eight Hours* in *twenty four*, we can watch all, and labour moſt of the other *ſixteen*, all the *days* of our Life: It follows, That if we could any *way* half relax the *vigilative Contraction* while we *Labour*, take a *Journey*, or the like, that we might perform prodigiouſly, without being tired. Hence it is, That becauſe *Pleaſure* (as has been intimated *relaxes*, as *Grievances contract*, (of which you may expect farther *Proof* in the next *Chapter*) that ſuch as work, or travel, pleaſantly diverted all the time, are tired very little or nothing in a long time; and that ſome will dance whole Nights with ſweet Muſick, and agreeable beloved Company, without being ſo much tired, as they would be if they us'd the ſame Motions for a quarter of the *time* without either of the *pleaſant Diverſions*. The like is to be ſaid of any other *Pleaſure*, as drinking a good *Glaſs* of *generous Wine* every *half hour*, or ſo often as to continue the *ſenſe* of its *Pleaſure* at *Stomach* all the time they *labour* or *travel*; for 'tis a *vulgar Errour*, (tho' the univerſal Sentiment of Mankind, both Learned and Unlearned) That *Wine*, *Cordials*, &c. do comfort, elevate, and excite the *Spirits*, (as 'tis call'd) by adding their Spirits to, or joining them with ours; whereas it is only by cauſing a *pleaſant Senſation*, particularly at *Stomach*: For which *Paradox*, I am obliged (tho' in great haſte to come to the *Explication* of *Opium*) to give my Reaſons, which are as follows, *viz.*

1. It cannot be imagined how a *ſenſitive Creature*, as ſuch, can conceive any *Comfort*, or be ſenſible thereof, but by *Senſation*: To ſay he is comforted, and not ſenſible of the *Comfort*, is a *Contradiction*; for *Comfort*, as ſuch, belongs to a perceiving *Being*; and an *Animal*, as ſuch, perceives nothing but by the *Senſes*; and therefore there can be no *Comfort* but by *pleaſant Senſation*; nay, as ſuch it is his *Comfort*: So *Muſick*, *pleaſant Sights*, *Odours*, and agreeable Objects of all the Senſes, are comfortable, becauſe *pleaſant*. I hope that none will ſay, That *Muſick*, *Sights*, *good News*, *&c.* (which highly comfort) have any *Spirits* to add to ours: The truth is, That *God* and *Nature* have given us our Senſes for that end, and preſent *Refection* in Caſes of *Faintneſs*, *Depreſſion* of *Spirits*; And what more proper to convey Comfort to us, than what is ſenſible of it?

2. It is another thing to add by way of *Nutrition* to our *Spirits*, (which are inſenſible Things, and therefore never properly comforted any more than a *Plant*, that is nouriſhed as well as they:) But the *ſenſitive Soul* being pleaſed, muſt needs conceive *Satisfaction*, *Comfort*, *Joy*, &c. How he can be pleaſed when ſenſible of nothing, I know not; nor how he can be comforted without being firſt pleaſed, nor how pleaſed but by *Senſation*.

3. The *Eſſence* of *Animal Comfort* does not conſiſt in having many *Spirits*; for one in moſt grievous *Pain* and *Miſery*, by which he is much diſcomforted, caſt down, depreſſed in Spirit, *&c.* may have great plenty of *Spirits*; and one that has not half as many, highly comforted, by pleaſing *Objects* of *Senſe*, *good News*, &c.

4. If we ſtaid for *Comfort* by a *Meal* of *Meat*, *&c.* till it added to our *Spirits*, we might ſtay long enough; nay, if we ſtaid for *Comfort* till

we

we found it by that *Addition*, we ſhould never find it; for we cannot in that caſe find what we do not feel: We poſſibly, after two or three days eating and drinking, may find our ſelves ſtronger; but (after all) ſuppoſe us in very great miſery at the ſame time, Where's the Comfort of it, when the Spirits are otherwiſe depreſſed by *Pain, ill News?* &c.

5. Hunger is a *grievous Senſation* at Stomach; which is cured, and we comforted, by cauſing a *pleaſant Senſation* by *Meat*, *Wine*, &c. inſtead thereof; and not by adding *Spirits*, which is a great Miſtake. It is true indeed, that we are comforted, but it is moſt manifeſtly by pleaſing the *exquiſite Senſation* at *Stomach*, which *God* has placed there for that *End*: Hence it is that all *Cordials* muſt be pleaſing to the Stomach, or elſe they are no *Cordials*; and that *Wine*, and all ſuch Things as pleaſe the *Stomach*, are apt to take away much of the *Sharpneſs* of *Hunger*, for a time at leaſt.

6. How ſhould *Wine*, which has a great Acidity in it, and ſo very good for *Digeſtion*, cure a *canine Appetite*, which is a *grievous Senſation*, but by cauſing a pleaſant one in its room, by which means the *grievous Senſation* is taken off? For *Pleaſure* and *Grievance*, (or Diſpleaſure) which are *Contraries*, cannot be in the ſame *Subject* at one *time*. Thus it is that *Opium* takes off *Hunger*, *canine Appetite*, &c. But of this hereafter.

7. How ſhould a Quart of Wine, drank in a minute or two, have all the *comfortable Effects* of *Wine* in a *quarter* of an *hour* while it is at *Stomach*, if it were to ſtay for this Comfort till it added Spirits to ours, ſince the matter of *Effluvia*, or *Fumes* paſſing into the *Bloud*, is diſproved?

8. Why ſhould our *Comfort* be ſo great while it is at *Stomach*, and none by that time it is got into the *Bloud*, but that the *Stomach* being very ſenſile, the Spirits of the *Wine* do highly pleaſe by their *Agreeableneſs* thereunto? It matters not whether it had Spirits or no, ſo it cauſed a *pleaſing Senſation*; for a *Draught* of *Water* in a high *Fever*, and when we are very faint with *Thirſt*, very much comforts us without any *Spirits*, as does a Veniſon-Paſty a hungry Perſon, by *agreeable Senſation* taking off the *grievous Senſation* (called *Hunger*) and all its conſequent Faintneſs, *&c.* before it can add any *Spirits* by Nutrition.

9. What need we ſeek any farther? Do not we find a *pleaſing Senſation* at *Stomach*, when we are comforted with any thing, and the *Comfort* to bear a *Proportion* to the *Pleaſure?*

10. Are not we *prompt*, *blithe*, *gay*, and *brave*, while the *Wine* is at *Stomach?* And very often fit for nothing, *dull*, *heavy*, *mopiſh*, &c. by that *time* it is got into the *Bloud?*

Therefore we may ſafely conclude, That the *Spirits* of the *Wine* do comfort us, by cauſing a *pleaſing Senſation*, and not by adding its Spirits to ours, according to the ſettled Sentiment of the World, that is not yet arrived to the *Learning* or *Knowledge* why the moſt common Cordial comforts them. What Spirits has a Grain of *Opium*, while at Stomach, to add to ours; or can it add, if it had them? Yet no *Wine* comforts us as much as *Opium*, becauſe it pleaſes us ſo much, (as was and will be yet much more fully ſhewn.)

Note, That beſides what was ſaid of the Grievouſneſs of the three *Contractions*, to tire the *animal* or *ſenſitive Soul*, he is much depreſt and caſt down, upon the Perception of *Grievances*, as *Hunger*, *Pain*, &c. Becauſe they, 1. Affect him with *Grief*

and

and *Diſpleaſure*, and conſequently with *Diſcomfort*, *Anxiety*, &c. becauſe of the very *Dolour*. 2. With *Care* and *Solicitude* how to be rid of it. 3. With the Toil of *Defenſive Contraction* to endeavour it.

All which cauſes *Melancholy*, *Depreſſion* of *Spirits*, *Puſillanimity*, *Perturbations*, *Frets*, *Diſcompoſure*, *Diſſatisfaction*, *Anxiety*, *Solicitude*, *Peevliſhneſs*, *Diſcompoſure*, *Diſcomforts*, *Liſtleſneſs*, &c. as you ſee in ſuch as are *Hungry*, or in *Pain*; to which if you add the *Fatigue* and *Effects* of the *Defenſive Contraction*, and the *Intentive*, as far as it is exerciſed for *Self-preſervation* in this Caſe, you may (obſerving what has been ſaid) eaſily ſolve all the *Phenomena's* of *grievous Senſation*, and as eaſily conclude what muſt be the *Phenomena's* and *Effects* of *pleaſant Senſation*, by the Rules of Contraries, *viz. Satisfaction*, *good Humour*, *Eaſe*, *Comfort*, *Ovation* of *Spirits*, *Relaxation*, &c. of which we are going to ſpeak.

CHAP. XIV.

Of the Nature of Senſitive Pleaſure, and its Effects upon the Animal, as far as it concerns our preſent Purpoſe.

Senſitive Pleaſure is a Complacency of the ſenſitive Soul, reſulting from the Agreeableneſs of the Object to the Organ of Senſation: Thus are we pleaſed with what is agreeable to the *Eye*, *Ear*, *Tongue*, *Stomach*, &c. And what is agreeable to thoſe *Organs*, is agreeable to the *Animal* in general: 1. Becauſe *God* has made and appointed them (eſpecially the *ſenſile Membrane* at Stomach) to be as it were the Touchſtone of what is agreeable to the *Animal*. 2. Becauſe the *Membranes* (or *Organs*) are of the ſame *active Principles* with the *Animal*'s *Body* in general; otherwiſe they would not be fit *Taſters*, *Triers*, or *Touchſtones* of what is good or bad for the *Body* in general.

Now the *active Principles* of the *Membranes*, (or Organs) are *Volatile Salt* and *oily Parts*, or a *Sal Volatile Oleoſum*, which is predominant in them, and all the Parts of the *Body*; therefore ſuch Things as have a *Volatile Salt* join'd with ſome *oily Parts*, muſt be in a ſpecial manner agreeable and pleaſing to the *Membranes*; for *ſimile ſimili gaudeat*.

Hence it is, That what abound in Volatile Salt, as *Snails*, *Earthworms*, and Things of that *kind*, are ſuch fine *Anodynes*, and ſo pleaſing to the *Membranes*, &c. That the Seed of *Animals*, which is a *Sal Volatile Oleoſum*, and Things of that nature, as *Onions*, *Garlick*, *Rocket*, *Sives*, *Bears Garlick*,

lick, *Oyſters*, *Cockles*, *Shallot*, &c. do ſo pleaſe and tickle the *Venereal Membranes*, and thereby *excite Venery*; and that ſuch Things are generally ſo very agreeable to the *Stomach*, (with which we are mainly concerned, as the Chief Judge of what is agreeable to the *Animal*) and ſo main Ingredients of *Reliſhes*, *Sauces*, &c. to render them pleaſing to it.

Here it is obvious to *note*, (what is alſo very commonly obſerved). That the moſt pleaſing Things to the *Stomach*, *Venereal Membranes*, &c. have thoſe *Principles* more active, warm, and tickling, than the *Membranes* themſelves, becauſe the *ſenſitive Soul* is highly pleaſed with what finely actuates, tickles, and cauſes an Ovation of the *Spiritus inſiti* of the *Membranes*. Hence bare Warmth is ſo very pleaſing, as are alſo gentle *Frictions* of the *Head*, *Back*, &c. for the ſame *Reaſons*.

1. The oily Parts (as all know) do pleaſe the Feeling (with which we have to do) by their ſmooth, gentle, and ſoft touch. Thus Milk, Emulſions, and other *Anodynes*, as the Root and Flower of *Water Lily*, *White Lily*, &c. become agreeable to the *Membranes*, and therefore relax and eaſe *Pain*. Hence it is that all *Aliments* have an agreeable Sweetneſs, the Pleaſure whereof takes off the grievous Senſation called Hunger.

But the *Pleaſure* of oily Parts, becauſe they do not ſo actuate, ſtir, and titillate the *Spiritus inſiti*, is but flat, ſlow, and dull, without they are join'd with ſome other Particles that are pleaſing to the *Membranes*, that actuate and finely titillate the Membranes, and *Spiritus inſiti*; therefore to make them highly and charmingly pleaſing, they ſhould have join'd therewith,

2. *Volatile Salt* being a more *active agreeable Principle*, which may finely and pleaſingly excite, actuate, titillate, and cauſe an Ovation in the *Spiritus inſiti*, as *Onions*, *&c.* at *Stomach*, *Sem. Animal.* upon the *Venereal Membranes*, *&c.*

But, as was ſaid of the *Oily Parts*, That they cannot cauſe ſo exalted a *Pleaſure* without the *Volatile Salt*, ſo the *Volatile Salt* alone, or too little qualified, and ſmooth'd over with Oily Parts, is too rude, pungent, or acrimonious, as in *Cantharides*, *Bees*, *Piſmire*, *Aſarabacca*, *Spear-wort*, *Crowsfoot*, and other *Vomitory Volatiles*, which becomes ſo by over-ſtinging the *Membranes*, and ſtirring the *Spiritus inſiti* overmuch into a ſort of *Fury*, inſtead of an *agreeable Ovation.*

It follows therefore, That it is neither *Oily Parts* alone, which if too much, often nauſeates the *Stomach*, nor *Volatile Salt* alone, no nor every *Mixture* thereof, but a certain due *Proportion* of both, ſo as to have the *Volatile Salt* ſomewhat more predominant than in our Membranes, that it may comfortably *actuate*, *titillate*, and *excite* our *Spirits*, as *Warmth*, *Frications*, *&c.* do, muſt cauſe the moſt *charming* and *exalted Pleaſure*; For Things exactly of the ſame *degree* of *Oil* and *Volatile Salt*, with our *Membranes*, can cauſe but a ſlow *Senſation*, becauſe they make little or no *Alteration* therein, which is one of the great *Requiſites* of *Senſation*; for that which makes no *Alteration*, as the *Saliva* in the *Mouth*, the ſame *degree* of *Light* that is in the *Eye*, of *Sound* as in the *Ear* already, *&c.* cannot be perceiv'd, becauſe where no *Difference* is made, nothing can be perceiv'd, for the *Organ* is affected but as it was before the *Object* was offer'd, and conſequently we cannot perceive that any new thing was objected, and therefore cannot be at all ſenſible thereof; ſo if it makes but

a

a ſmall *Difference*, the *Senſation* can be but ſlow, and ſlight Proportionably, as of a little degree of *Light* more than is in the *Eye*, *&c.* for it is only that little that is perceived; for (as is notorious to all who underſtand any Thing of theſe Matters of *Senſation*) it is only the *Exceſs* of *Impreſſion* to what was upon the *Organ* before, that is perceived; for that is all that is *new* above what was thereon before, and therefore all that is to be, or can be perceived more than was before (as was ſaid.) Hence it is, that *Fleſh* or other *Things*, that have the *Sal-Volatile Oleoſum*, or the ſame *Principles*, that the *Membranes* of the *Stomach*, *Venereal Parts*, *&c.* have, in much the ſame *degree*, affect them but with a gentle *Pleaſure*. Therefore we muſt have ſuch a mixture wherein the *Volatile Salt*, as in *Semine Animali*, *Onions*, *&c.* is ſenſibly more active than in our *Membranes*, to actuate the *Spiritus inſiti* of the *Membranes*, and cauſe an Ovation therein, which is (as was ſaid of Comfortable *Warmth*, *Fricatious*, &c) very agreeable and pleaſant to the *Senſitive Soul*, who looks upon ſuch as friendly and active Auxiliaries to our *Spirits*, whereas the other are as *lazy Friends*, wherein he takes not the like *Complacency*; You may perceive much of the Difference in this Caſe in *Muſtums*, (or new *unfermented Wines*) which indeed do lazily pleaſe by their *acceptable ſweetneſs*, but do not ſo *actuate* the *Spiritus inſiti* as the ſame *Oily Parts* when rendered *active*, *ſpirituous*, and nearer the Nature of *actual Heat* after *Fermentation*; which then being very readily actuated by the *Heat* of the *Stomach*, do briskly and chearfully return the *Kindneſs* by *actuating* our *Spirits*, and putting them into a pleaſing *Ovation*, of which I could give you a very pat and pregnant Inſtance in a Thing actuated into a very high degree of pleaſing by *Frication* and

Agitation, which was otherwiſe almoſt inſenſible; but Modeſty forbids me.

Note, How the ſluggiſh Oily Parts in *Muſtums* do, by being *ſpiritualized* by *Fermentation*, as it were, ſupply the place of *Volatile Salt* in *actuating*, and in ſome meaſure *titillating*, tho' not to that high degree as the more *poinant Volatile ſalt* in *Semine Virili*, and the *like*, becauſe the *Sulphureous Oily* Particles, however ſeparated, diſgregated, and ſet at at liberty by *Fermentation*, retain much of their ſmoothneſs, and never can arrive at the *titillating* Power of *Volatile Salts*, as is evident in *Amphrodiſiacks* upon the Account of *Volatile Salts*, as *Cantharides*, *Bees*, *Piſmire*, *&c.* which *Wine* in 100 times the quantity cannot equal in *Titillation*.

Nor is it enough to have the *Sal Volatile Oleoſum* duely qualified, as to the *Quantity* and *Quality* of both the *Oily* and *Saline Parts*, and theſe predominant, and of a fine brisk and gently tickling Activity;

But the *Oleous* and *Salino Volatile* Parts ſhould (to make a compleat and permanent *Pleaſer* of the *Membranes*) be very intimately combined, ſo as not eaſily to ſeparate one from the other, otherwiſe they will not duely conſpire and co-operate to cauſe the *Pleaſure*, but the *Volatile Salt* will act ſeparately as ſuch, that is *irritating*, and not finely and pleaſantly Tickling, as *Semen Humanum*, *&c.* wherein the Oil and *Volatile Salt* are firmly join'd together.

I therefore conclude, That the moſt excellent Thing to pleaſe the *Membranes*, muſt be ſuch as *Semen Humanum*, that is, not too *Oily*, (for then it

it would not ſufficiently pleaſe by a fine *Titillation*, and actuating of our Spirits) nor too full of *Volatile Salt*, as *Muſtard*, *Aſarabacca*, *&c.* nor have too *accrimonious* a *Volatile ſalt* with too little *Oleous Parts* to correct it, for in both theſe laſt Caſes the *Irritation* would be *grievous*; nor have the *Oleous* and *Volatile* looſely combined. But,

That it ſhould be a *Sal Volatile Oleoſum, wherein the* Volatile Parts *are briſker, and ſomewhat more active than ours, yet ſo corrected by* Oleous Parts *intimately combined therewith, as to render it of a moſt agreeable and pleaſant Titillation, ſuch as would pleaſe all Membranes, but eſpecially thoſe that have moſt accute Senſation, as the* Stomach, *and* Venereal Membranes, (both which *Opium* moſt ſenſibly pleaſes) which are ordered ſo to be for Preſervation of the *Individuum*, and *Species*, the one to invite us to *Eat*, and the other to *Procreate*; But to ſatisfie you yet farther, as to the *Stomach*, which concerns us moſtly,

Note 1. That the more *exalted* and *intenſe* the *Pleaſure* is, the higher are its *Effects* upon the *Senſitive Soul* in pleaſing, comforting, and elevating it; and upon the *Body*, in relaxing all the *Senſile Parts* thereof, as that of *Wine* is higher than that of *Muſtum*, *&c.*

Note 2. That the better the *Organ* is diſpoſed for *Senſation*, the higher the *Pleaſure* or *Diſpleaſure* is; for he that has his *Noſe*, *Tongue*, *Ear*, *Membranes*, *&c.* ill diſpoſed for *Smelling*, *Taſting*, *Hearing*, *Feeling*, *&c.* has not ſo much *Pleaſure* in ſweet *Odours*, good *Taſtes*, *Muſick*, *Pleaſers* of the *Feeling*, *&c.* nor ſo much *Diſpleaſure* in bad *Scents*, *&c.* It follows,

Note 3.

Note 3. That *cujus eſt Dolor ejuſdem eſt Voluptas*, that is, the *Part* or *Membrane* that is capable of *intenſe Pleaſure*, is ſo of *intenſe Pain* or *Diſpleaſure*. For *Inſtance*, If the *Stomach* be capable of great *Grievances*, it is ſo of great *Pleaſure*, God having diſtributed them alſo equally.

Note 4. That, ſince the great *Uſe*, *End*, and *Buſineſs* of *Senſation*, is to give *notice*, and inform the *Animal* of what is, or is not good and agreeable to it, it follows, that the *Wiſdom* that made us would place the moſt exquiſitely and critically diſpoſed *Organ* (or *Membrane*) of *Senſation*, where ſuch *notice* is moſt requiſite and uſeful; and conſequently there muſt be more *Pleaſure* or *Diſpleaſure* conceiv'd at Things agreeable or diſagreeable, that the deſcending and relieving *Motions* and *Comfort*, may be proportionable.

Note 5. That ſuch exquiſite, exact, and nice Notice is moſt requiſite at *Stomach*.

Firſt, Becauſe all our Nutriment, good and bad, is to paſs that Way to be Judged of.

Secondly, Becauſe it is the laſt *Part* that it arrives at before it receives a conſiderable change; for when it is changed, no ſuch true and ſincere *Judgment* can be given thereof, as could be before.

Thirdly, Becauſe the Faults, Defects, or Negligences of the *Taſte*, and the *External Senſes*, are to be remedied and corrected there, or no where, therefore the *Stomach* is as the laſt Judge of *Appeal*, and ſhould be moſt exact and infallible in *Judging*; or as the laſt inner, or *Main Guard* in a *Fort*, *Town*, or *Caſtle*, which if the *Enemy* paſs, the whole is endanger'd, if not loſt.

Fourthly, Becauſe the Concern being ſo great, Senſation ſhould be the more exquiſite there, to excite the *Animal Powers* to make Defence, by

repel

repelling, rejecting, or detruding the *Enemy*, which *Powers* (as has been intimated) are excited according to the *degree* of *Senſation*, eſpecially ſeeing there is no voluntary *Power*, or *Contraction* of the *Stomach*, but only the *Natural*, which is always excited by *Senſation* in ſuch Caſes, or not at all.

Fifthly, *Senſation* ſhould be *critical* and accurate at *Stomach*, to inform us preciſely when we ſhould Eat or Drink.

Sixthly, To inform us exactly when we have Eaten or Drank enough; for all this is done by *Senſation*.

Therefore *God* has placed a moſt Senſile *Membrane* at the *Stomach*, as moſt manifeſtly appears;

Firſt, By its taking, and giving notice of ſuch Minute *Things*, that no *Senſe*, *Part*, *Organ*, or *Membrane* can; for it takes *notice* of, and informs the *Senſitive Soul* (as has been ſaid) of the Vomitory Particles of the *Crocus* and *Regulus* of *Antimony*, which are ſo indefinitely ſmall, that no other *Membrane* or *Organ* of Senſation, but that at *Stomach*, can take notice thereof, becauſe the *Crocus* and *Regulus*, after they have afforded 1000 *Vomits* from their Bodies, are not ſenſibly diminiſhed either in *Weight* or *Bulk*; nor doth the *Stomach* take and give a ſlight, but very remarkable *notice* thereof, that is ſufficiently powerful to excite not only all the *Natural Powers* of the Part, and of all the *Auxiliary Muſcles* that uſually aſſiſt to *Vomit*, but to cauſe a *Contraction* (and that very often ſtrongly Convulſive) of all, or moſt of the *Muſcles*, and *Membranes* of the whole Body, ſo great is the *Sway*, or *Regimen* of the *Stomach*, by *vertue* of its *exquiſite ſenſility*.

Secondly,

Secondly, By its giving *notice* of *inimicous Particles*, and very tenuious *Effluvias*, that fly in the *Air*, which no Organ of *Senſation*, or *Membrane*, but that at *Stomach*, can obſerve. For *Inſtance*, Some that hate *Cats* very much, will know, that there is a *Cat* in the ſame *Room* with them, tho' ſilent, and ſhut up in a *Trunk* or *Cupboard*, where neither the *Eye*, *Ear*, *Noſe*, *Taſte*, or immediate *Feeling*, can be at all concerned or affected. That it is the *Stomach* that is affected, is apparent, (tho' a Thing not thought of;) 1. Becauſe the *firſt notice* they have is plainly at *Stomach* by a a kind of faint *Diſtreſs*, not unlike a beginning *Nauſea*; If the Curious will enquire, they will find it to be as I ſay. 2. Becauſe all *Perception* of Material Things is by *Senſation*, and that it is evident no other *Organ* of *Senſation*, or *Membrane*, is concerned. 3. Becauſe, if the *Cat* continues in the Room, and is not removed, they fall a Vomiting, or into *Anxieties* or *great Diſtreſſes* at *Stomach*, or *Faintings* and *Syncopes*, which are the common and known *Effects* of a grieved or oppreſſed *Stomach*.

Juſt ſo does it (tho' theſe Things are not, or not duely obſerved) take, and give notice of *Peſtilential Effluvias*, which cauſe the like *Faintings*, or a kind of *Nauſea* at *Stomach*; Thus People diſcern that they are (as they call it) *Plague ſtruck*, and often fall (as in the Caſe of the *Effluvias* of the *Cat*) into dangerous *Deliquiums* and *Syncopes*, of which many in *Plague* Times ſuddenly dye, as Cat Haters would (for ought I know) if they continue long in the ſame Room with a Cat, as they do with *Peſtilential Effluvias*; Therefore it were good preſently to remove them from the *Place* wherein they were ſtruck, becauſe the *Air* (as the *Room* wherein the *Cat* is) is fill'd with the perni-

pernicious Particles; for you ſee in the Caſe of the *Cat*, that removing the Man or the *Cat* gives Relief, and it were better removing the *Man*, but that he is more Cumberſom, becauſe the *Room* is already tainted with the *Effluvias*, and in the *Caſe* of the *Plague* it is only the Perſon that can be well removed. This proves how uſeful Removals may be, and how convenient in *Plague Time* it would be to remove to the *Wind-ſide* of a *Town* or *City* that is tainted, according as the *Wind* changes, and how convenient *Winds* are to convey away the *Effluviams*, and good Stomachick Cordials, that are warm and pleaſant, to fortifie the *Stomach*, and open the *Pores*, which all Things that cauſe a ſenſe of *Pleaſure* do, as *Wine*, *Spirits*, *&c.* to which if ſome good *Preparation* of *Opium* were added, it would be moſt convenient. How many *Stories* have we of Perſons well fill'd with *Wine*, who wonderfully eſcaped *Infection*; I pray *God* this *Hint* may be improv'd to the *Preſervation* of *Mankind*; Therefore I add, that much may be in a good *Quantity* of *Wine* in this Caſe; 1. Becauſe, *Quod intus eſt prohibet alienum*, that is, *What is within hinders ingreſs of another Thing.* 2. Becauſe the *Perſpiration* will be the greater, both upon the Account of the greater opening of the *Pores* by the *Pleaſure* of the *Wine*, and the greater *Quantity* of Matter to be perſpired carry off the *venemous Particles.* 3. Becauſe the *Senſitive Soul* is thereby much comforted, refreſhed, and invigorated; but I would have the *Wine* ſo uſed, as to keep a continual *Warmth*, *Pleaſure*, and *Comfort* at *Stomach*, which is the main Cauſe of all the good; I think a *Glaſs* every Hour, after taking 2 or 3 at firſt, may hit the Mark beſt, the Reaſon of which will appear hereafter.

Thirdly,

Thirdly, The *Stomach's exquiſite Diſpoſition* to *Senſation*, above all other *Organs* and *Membranes*, appears by this, *viz.* That the Offences of the other *Organs* of *Senſation* (even by their proper *Obejects*) do often affect the *Stomach* more than thoſe very *Senſes* or *Organs* themſelves. For *Inſtance*, If we ſmell a great Stench, the *Stomach* is often more offended thereat than the *Noſe*, as is manifeſt from the *Vomitings*, *Faintings*, and *Deliquiums* that are cauſed by the *Stomach* upon that *Account*; ſo the bare *Seeing*, *Feeling*, and *Taſting* of a naſty Thing, do cauſe *Nauſeas*, *&c.* at *Stomach*, yea, the very naming of ſuch Things has much offended it, and cauſed ſuch *Effects*, which may be thought very ſtrange, conſidering that there paſs no *Effluvias* from the *ſound* of *Words*, but the *Reaſon* will appear in the following *Paragraph*.

Fourthly, All *Paſſions*, *Commotions*, and *Perturbations*, that happen in the Body, do often affect the *Stomach*, and ſometimes ſo grievouſly, as to cauſe *Nauſeas*, *Vomitings*, great *Anxieties* at *Stomach*, *Faintings*, &c. Thus *Fear*, *Terrour*, *Surprizes*, *Anger*, *Grief*, *Pain* in other Parts, *&c.* cauſing ſome Motion in the *Animal* more than ordinary, (of which the *Stomach* being ſenſible) do cauſe the aforeſaid Diſturbances; Therefore it is no *Wonder*, if the *Hearing* one mention a Naſty Thing, which cauſes an *Abhorrence*, and the Motions conſequent thereunto, ſhould (as was ſaid in the precedent *Paragraph*) cauſe the nice *Stomach* to be offended.

It is moſt manifeſt from the Premiſes, that no *Organ* or *Membrane*, can compare with the *Stomach*, as to its *exquiſite Diſpoſition* for *Senſation*; it follows then,

That

That Grievances or Pleaſure at Stomach muſt have the greater Effects;

1. Becauſe the Intenſeneſs of either will be proportionable to the *Senſation.*

2. Becauſe the *Powers* of the *Animal* that are to defend it (which are *Contractions*) are affected according to the *Senſation*, and that it is there moſt requiſite ſenſibly to affect them.

3. Becauſe what affects the *Stomach* influences the whole *Animal*, more than the *Senſation* of any other Part.

4. Becauſe of the conſiderable Stay that Things make at *Stomach* to cauſe *Grievance* or *Pleaſure*, whereas that of *Pleaſure* is generally very momentary in other Caſes.

5. Becauſe, being within the *Body*, we carry our *Pleaſure* or *Grievance* with us, (as a *Vade Mecum*) wherever we go, and therefore,

6. It is a *Pleaſure, &c.* that cannot ſo well be taken away from us, as that of the *Tongue, Ear, Noſe, Eye, &c.* may, by removing the *Objects*; and therefore it remains with us in our very *Sleep*, as far as we are capable of *Senſation* at that Time, cauſing pleaſant *Dreams, &c.* and ſo agreeably entertaining us *Sleeping* or *Waking*, when the Pleaſure of all the other *Senſes* fails us. Which will appear farther hereafter.

The *Pleaſure* at *Stomach* excells even that of *Venery*, if not in *Intenſeneſs*, yet in ſeveral other *Reſpects, viz.*

1. Becauſe of its *duration*, that of *Venus* being *momentary*, but that of *Wine* at *Stomach* laſts a good while, and that of *Opium* many hours, 'tis therefore that the *Effects* of theſe Two are more remarkable and taken notice of.

2. Be-

2. Becauſe, that at *Stomach* may be continued as long as we pleaſe, by a new ſupply of *Wine*, *Opium*, *Cordials*, *&c.*

3. Becauſe it may be excited, when, and as often as we pleaſe, if we have thoſe *Cordials* at *Hand.*

4. Becauſe it is not attended with any Expence of *Strength*, *Depreſſion* of *Spirits*, *&c.* as that of *Venery*, but the quite contrary, *viz.* with more *Vigour*, *Elevation* of the *Spirits*, *&c.* one being by *Emiſſion*, and the other upon *Admiſſion* of what is *agreeable.*

It is for the *ſeveral Reaſons* contain'd in the *Premiſes*, that the *Effects* of *Grievance*, as *Hunger*, *&c.* or *Pleaſure*, are more *conſiderable* and *remarkable* at *Stomach*, and that Things agreeable thereto have, by way of *Eminence*, gain'd the Name of Cordials; That *Wine*, *Spirits*, *Opium*, *&c.* do cauſe a more permanent and notable *Gaity*, *Pleaſantneſs*, *Good Humour*, *Serenity*, *Promptitude*, *Ovation of the Spirits*, (or *Senſitive Soul*) *Bravery*, *Courage*, *Magnanimity*, *Euphory*, or eaſie undergoing of *Buſineſs*, *Relaxation*, with all its Effects, as *Deadneſs of the Eye*, *Dilatation of the Papilla*, *Perſpiration*, &c. which are hardly noted in other *ſhort Pleaſures*, unleſs it be in that eminent (tho' ſhort) one of *Venus*, which is a *Pleaſure* of the ſame *ſenſe* of *Feeling*, as that of *Opium* and *Wine* are.

Therefore pleaſing the *Stomach* is one of the greateſt Things to be regarded in the *Practice* of *Phyſick*, to Comfort, Satisfie, or Compoſe the *Spirits*; by which Means I have often performed ſuch Cures, that neither I, nor (I ſuppoſe) any other, could otherwiſe perform, namely, *Dejections of Appetite*, *Untowardneſs at Stomach*, &c. when

when all the ordinary and uſual Means have failed, by asking them what they moſtly deſired or long'd for, and letting them have it; or if they could not tell of any Thing that they long'd for, I have mentioned to them all the Reliſhing Things that I could think of, and ſuch as were grateful to the Stomach, till they faſten'd upon ſomewhat that they liked or fancied, and then being given them, it generally had the deſired Succeſs.

The *Stomach* is grieved (for it will concern us to know how, becauſe *Opium* cauſes *Vomiting*, *&c.*) generally ſpeaking;

1. *By Things hard of Digeſtion*, as heavy *Bread*, *Muſhrooms*, *Roſins*, and ſuch like.

2. *By Things acrimonious or pungent*; as Vomitories of *Aſarabacca*, *Groundſil*, *Squills*, &c. which abound with *Volatile ſalt*.

3. *By Things that ſtick to the Stomach*, which often cauſe moſt diſmal and tedious Vomitings, and (when they fail to relieve, by rejecting the *grieving Matter*) *Hiccoughs*, *Anxieties*, *Diſtreſſes*, *Syncopes*, and ſometimes fatal *Succumbencies*, *Nature* and all *Endeavour* failing to work any farther for the *Animal's Relief*; Theſe Things happen moſt commonly when indigeſtible Roſin ſticks to the *Stomach*, eſpecially if they be join'd with any *Pungent*, *Volatile*, or *Acrimonious Particles*. Hence it is, that *Reſinous Vomits* are quite baniſh'd out of the *Practice* of *Phyſick*, and it were well if *Reſinous Purgers* were ſo alſo, eſpecially ſuch as have conſiderable *Acrimony*, unleſs given with the *Yolk* of an Egg, *Lixivials*, or in *Tinctures*, with *Spirituous* Things to keep the *Reſinous Particles* from *Coaleſcence*, and adhering to the *Stomach*, *&c.*

1. *Note*, (for we ſhall have ſome Occaſion for it) That Reſinous Things, join'd with *Volatile* irritating *Particles*, have all the ill *Qualities* aforementioned, *viz. Hardneſs of Digeſtion*, *Aptitude to ſtick* to the *Stomach*, and *Volatile Particles* to irritate and tear its *Coats* all the *time* they ſo ſtick to it; and therefore ſuch Things have diſmal *Effects*, eſpecially in weak *Stomachs* that cannot *Digeſt* them.

2. *Note*, That the *Diſtreſſes* at *Stomach*, cauſed by a *grievous Senſation*, are of Two ſorts; 1. Such as are the *Endeavours* of *Nature*, or the *Senſitive Soul*, in Defence of the *Animal*, as all *Vomitings*, *Purgings*, *Convulſions*, *Hiccoughs*, *Throws*, *Strugglings*, *Agitations*, *Contractions*, *Watchings*, *&c.* which are accompanied with *Melancholy*, *Fretfulneſs*, *ill Humour*, *&c.* becauſe of the *Grievance*. 2. Such as follow the Yielding and Succumbency of Nature, or the *Senſitive Soul*, after being tired and over-born by the *Fatigue* of *Defenſive Contraction*; as *Faintings*, *Diſtreſſes*, *Agonies*, *Syncopes*, and *Leipothymies*.

3. *Note*, That *Syncopes*, or *Leipothymies*, are cauſed by the *Senſitive Soul*'s being over-born, (as was ſaid) tired, and ſpent, and giving over his fruitleſs *Contractions*, *Defenſive*, and *Vigilative*, upon a ſudden, as being to no *Purpoſe*, as he does gently and gradually give over *Vigilative Contraction* to cauſe *Sleep*; ſo that *Syncopes* are only greater, ſuddener, and more abſolute *Derelictions* of the whole Concern of *Contractions*: Hence it is, that *Perſpiration* is greater in *Syncopes* or *Leipothymies* than in *Sleep*, the *Laxity* of the *Cornea* and the whole Body greater, the *Feeling* leſs, or quite gone, that all *Motions* become much ſlower, or none, by the want of *Compreſſion* of the *Animal Spirits*, and diſmal *Derelictions* of all *Contractions* by the *Senſitive Soul*. Hence it is, that all the Effects of *Sleep* are yet greater in *Syncopes*. 4. *Note*,

4. *Note*, That therefore it ſeems, all the *Difference* between *Sleep*, and a *Leipothymy*, is, that in this the *Senſitive Soul* quite throws the Reins of *Contractions* away, and in *Sleep* keeps hold thereof, and only lets them *looſe*, and as *Refection* is made, ſtraightens them more and more, till they come to the *Degree* of *Vigilative Contraction*, which perfectly awakes them; Therefore Sleep grows ſlighter toward Morning, becauſe *Contraction* gradually comes on. Here you may ſee (but I muſt ſtop leſt I run too far) why every Thing that cauſes *Contraction* of the Senſile Parts, as *Pain*, and all *Grievances*, are apt to awake People, and keep them ſo, as *Relaxers* cauſe *Sleep*, and continue it.

5. *Note*, That tho' I have particularly ſpoken of the *Stomach*, as being moſt concern'd, and the beſt *Example* of any *Membrane*, yet do not I exclude any *Membrane* from being capable of *Pleaſure* by the like Things.

As for the Effects of Pleaſure upon the Senſitive Soul, I have upon ſeveral Occaſions ſaid, or intimated enough concerning them; and even the *Vulgar* know, that *Pleaſure*, or being pleaſed, makes *People* good, and gay humour'd; That it elevates the Spirits, raiſing Courage, (as Wine does) and enables every *Animal* to Labour, or Travel the better, as *Horſes* by the Sound of *Bells*, eſpecially if tunable, and in *Company* with *another Horſe* that they have a kindneſs for; How *Soldiers* March more eaſily with *Merry Comrades*, that are full of *Jeſts*, and *pleaſant Stories*, or with *Drums*, *Trumpets*, *Kettle Drums*, *Hautboys*, and other *Muſick* that pleaſe the Ear; How much more *brisk* and *blith* are we in a fair *Sunſhine*, which pleaſes the *Eye*, than at other *times*? Some think, (according to the *Vulgar Errour*) that it

is the *Goodneſs* of the *Air* does it; but it is plainly otherwiſe, for you find the change moſt remarkable in your ſelf juſt upon going out of *Doors* into the Sun-ſhine, whereas you had the ſame *Air* in your Chamber; nor is that fine *Lightneſs* of *Humour* to be found, if it be Cloudy, tho' the *Air* be better, as may be obſerv'd by the *Barometer*, and other *Weather-Glaſſes*; nor in the *Night Time*, nor where the *Sun* does not come, nor are blind People ſo affected, therefore it is the *Pleaſure* of the bright *Sunſhine* that cauſes it.

If Mean, Slight, Tranſient, and External *Pleaſures*, cauſe ſuch *Effects*; how much more then will an *intenſe*, *internal*, and *continued Pleaſure*, upon the moſt exquiſitely diſpoſed *Part* for *Senſation* of all the whole *Body*, which is mainly deſign'd for thoſe Purpoſes of *Pleaſing* and *Comforting*, to invite us to nouriſh our ſelves, and to ſatisfie the *grievous Senſations* of *Hunger* and *Thirſt* by the *Pleaſure* of *Meat* and *Drink*, ſuch Pleaſant Effects? Thus the *Fretfulneſs*, *Peeviſhneſs*, *ill Humour*, *Melancholy*, *Puſillanimity*, *Inaptitude*, and *Liſtneſneſs*, that attend the *grievous Senſation* of *Hunger*, are taken off, and cured, by the *pleaſant Senſation* that a *good Meal*, or ſome *Glaſſes* of *Wine*, do cauſe; Hence it is that we cannot Sleep when *Hungry*, becauſe *grievous Senſation* contracts the Senſile *Parts*, and are apt to it after Meals (the Pleaſure of which relaxes us) if we ſit, or lie quietly, and ſilently; but if we do not, we are more lively, and fit for Buſineſs. *Inſtances* of this *Kind* are ſo numerous and *notorious*, that I need ſay no more of the *Effects* of *Pleaſure*, in cauſing a *good Humour*, *Elevation of the Spirits*, *Satisfaction*, *Content*, *Compoſure*, *&c.*

Is it poſſible that one ſhould be *highly pleaſed*, and not *take Comfort* therein; *take Comfort*, and not be *elevated* in *Spirit*, well ſatisfied, and contented?

Therefore it is *ſtrange*, and *very ſtrange*, that People ſhould leave *Wine*, *Cordials*, *Meats*, *Spirits*, *&c.* actually, and ſenſibly pleaſing, ſatisfying, and comforting us at Stomach, (where there is a *Membrane* moſt exquiſitely diſpoſed for *Senſation*) and run after *Fumes* and *Effluvius*, (that were never in our Caſe in being) to the *Brain*, or *Bloud*, that have no ſenſe to entertain them, and conſequently can receive no *ſenſible Comfort* by them; If this be not ſeeking a *Needle* in a Bottle of Hay, where it never was, when it ſticks moſt ſenſibly in their *Fingers*, nothing is. We ſhould think it a ſtrange ridiculous *Action* in a *Child* or *Natural Fool*; but great is the *Privilege* and *Authority* of the Learned! So much may ſuffice as to the Effects of Pleaſure upon the *Senſitive Soul.*

As for the Effects of Pleaſure upon the Body, it is Relaxation of all the Senſile Parts thereof, as appears;

1. Becauſe it's contrary, *viz. Diſpleaſure*, or *ſenſitive Grievance*, cauſes *Contraction*, (as has been manifeſtly ſhewn.)

2. Becauſe it cauſes a liberal *Perſpiration*, which is a *certain Effect* of *Relaxation*, (as the Want of it is of *Conſtriction*) and that it cauſes Perſpiration is moſt certain by *Statick Experiments*, and *Demonſtrations. Sanctorius*, *Sect.* 7. *Aph.* 19. *&c.*

3. Becauſe the *Pleaſure* of *Wine*, and the *Venereal Act*, manifeſtly looſens all the *Limbs*, as *Sleep* does.

4. Becauſe, that in thoſe *Pleaſures*, as alſo upon the ſight of a Beloved Miſtreſs, *&c.* the *Eyes* look *deadiſh*, by reaſon of the Laxity of the *Cornea*, and that the *Pupilla* is dilated.

5. The Skin (as has been intimated) looks *Florid*, which made the *Ancients* ſay, That the Bloud and Spirits came outward to meet the *good* and agreeable Things.

6. Becauſe all *Pleaſure* that is conſiſtent with *lying* or *ſitting ſtill* in a ſilent quiet manner, inclines us to *ſleep*, as *Muſick*, *pleaſant Frication* of the *Head*, *Back*, or any *itching Part*, ſweet and acceptable *Odours*, a *Thing* of very acceptable taſte held in the *Mouth*, *Wine*, *Meats*, *Venus*, the *pleaſant ſound* of the fall of *Waters*, *Whiſtling Winds*, *Rocking*, *Undulating* in *Hammocks*, *&c.*

7. Becauſe in *Coition* it relaxes the Neck of the *Womb* to admit the *Animal Elixir Vitæ*; of which we have moſt evident *Proof*, and ſome *eminent Inſtances*, that I forbear the Relation of out of Modeſty.

8. Pleaſure cauſes a large and wide *Pulſe*, as *Relaxation* always does.

9. A Loſs or great Diminution of Senſation, as in the *Venereal Act*, (which if it were of continuance, would exactly imitate *Opium* in its Effects) upon *Drinking Wine*, *&c.* the Effects of which being of greater *duration*, and by taking ſomewhat into the Stomach, (as *Opium* is) are very like that of *Opium*.

10. Intenſe *Pleaſure*, *Joy*, *&c.* do frequently cauſe *Ecſtaſies*, *Syncopes*, *Leipothymies*, which are only great *Relaxations* (as has been ſhewn.)

11. You ſee that the Pleaſure of Wine cauſes *Faltring* of the *Tongue*, which is the Effect of *Relaxation*, as in *Sleep*, *Palſies*, *&c.* and relaxes the whole Body.

12. Wine

12. Wine alſo prevents Laſſitude, (as all pleaſant *Diverſions* do) and cauſes all the *Effects* of *Relaxation*, as taking away *Pain*, cauſing a *Deadneſs* of the *Eyes*, *Dilatation* of the *Pupilla*, *Floridity* of the *Skin*, *Perſpiration*, *Diminution* of *Senſation*, *Mirth*, *good Humour*, *Sleep*, *&c.*

Note, That *Pleaſure* being generally from External *Objects*, and alſo ſhort, ſlight, and tranſitory, is the true Reaſon of the great *Penury* of Things that bear any compleat *Analogy* to *Opium* in its great *Effects*, which made it ſeem more amazing, and confound People; whereas all the *Difference* is nothing but its cauſing an *internal*, *intenſe*, and *permanent Pleaſure*: All *Pleaſures* have the ſame *Effects*, but that they are ſhort, ſlight, fading, external, inconſiderable, intermitting, interrupted by ſome grievous *Objects*, *Thoughts*, *Paſſions*, as Fear, Care, Solicitude, Melancholy, *&c.* but the *Pleaſure* of *Opium* we carry within us continually, whether we will or no, waking and ſleeping, without any intermiſſion or interruption, and that in a high degree for many hours.

Doubtleſs that of *Venus*, if it were half as laſting, would be as dangerous as that of a great Doſe of *Opium*, or Wine drank in a vaſt Quantity, which is in a manner as dangerous as *Opium*, and for the ſame *Reaſon*, *viz.* by overdoſing, a great *Relaxer* by the *Pleaſure* it cauſes.

The Cauſes why the *Pleaſure* of the *Venereal Act*, as a large *Doſe* of *Wine*, *Opium*, *&c.* take away *Pain*, are;

1. Becauſe the *Senſitive Soul* cannot attend to Two Things at once; therefore when a Senſe of Pleaſure is introduced, there cannot be at the ſame time a Senſe of *Pain*, which tho' not noted in *ſhort*, *tranſient*, and *deſultory Pleaſures*, (as almoſt all are beſides that of *Wine* and *Opium*) yet the more permanent do exact our *Notice* and *Attention*,

tention, becauſe they exclude Pain for ſo conſiderable a time that they amaze us.

2. Becauſe the *Senſitive Soul* attends more willingly to *Pleaſure* than to *Pain*, ſo that Pleaſure engroſſes his *Attention* (as was intimated.)

3. Becauſe *Pleaſure* and *Pain* (or *Diſpleaſure*) are Contraries, and cannot co-exiſt in the ſame Subject (or *Senſitive Soul*;) therefore when *Pleaſure* affects it, *Pain* cannot.

4. Becauſe *Relaxation* (which is the *Mechanical* and *main Reaſon*) gives ſuch Liberty to the *Animal Spirits* to expand, that they become unfit for want of Compreſſure, to convey any Impreſſions ſmartly, which is requiſite to cauſe a *ſenſe* of *Pain*, that is cauſed by a ſmart *Impreſſion*. To which you may add, That

5. *Pleaſure* and *Relaxation*, where they continue, (as in the Caſe of *Wine* and *Opium*) do highly improve one another, becauſe they mutually cauſe one another; for Pleaſure cauſes *Relaxation*, and *Relaxation*, as you find in a ſweet Slumber, *&c. Pleaſure*; ſo that permanent *Pleaſure* muſt highly advance *Relaxation*, which takes away *Pain* by preventing all *ſmartneſs* of *Impreſſion* by the now *yielding Nature* of the expanded *Animal Spirits*, which are, as *Air* in a Gut half full, or a Rowl of Carded *Cotten* or *Wooll*, fit only to carry a gentle or no Impreſſion to the farther *End* thereof.

So that upon the giving of *Opium* when the *Pain* does once begin to diminiſh, it is not long afterward before it goes quite off; for if the *Pleaſure* does but take off *one* in *ten* of the *Pain*, it is a ſign, that it will be an eaſie matter for it (that is, upon the *Improvement* for the *Reaſons* aforeſaid) to overcome *one* in *nine*, and yet much eaſier to overcome *one* in *eight*, and ſo on; Therefore it is a certain *ſign*, that you have given enough to take away

away the *Pain*, if it once ſenſibly decreaſes; and conſequently all *Phyſicians* ſhould then not give any more *Opium*, tho' the *Pain* is not yet quite off: For if the *Relaxation*, cauſed by *Pleaſant Senſation*, was of force enough to overcome the greater *Contraction* by the greater *Pain*, which oppoſed it more ſtrongly, it will ſuffice to overcome the leſs. This intimates, (and 'tis Experienc'd) that *Doſes* muſt be proportioned to the *Pain*; for tho' a few *Glaſſes* of *Wine* may take off the ſenſe of a *ſmall Pain*, more muſt be drank to take off a greater; and ſo of *Opium*, becauſe the *Contraction* by *Pain* reſiſts the *Relaxation* by *Pleaſure*.

Having ſhewn how *Sleep* and *Pleaſure* take away *Pain* by *Relaxation*, permitting the *Animal Spirits* to expand, and grow unfit to carry *Impreſſions* ſmartly, and that therefore *Sleep* ſtops or moderates all *Fluxes* that depend upon *Irritation* of the *ſenſile Parts* to cauſe them to Contract and ſqueeſe out the *Humours* that cauſe the *Flux*, while the ſame *Relaxation* opens the *Pores*, and ſo lets out the *Fumes* of the Body, which only (like Smoak in a Chimney) require an open Paſſage by reaſon of their *Levity* which carries them off; it plainly appears how *Pleaſure*, that takes away the ſenſe of *Pain* or Irritations by the like *Relaxation*, muſt ſtop the firſt ſort of *Fluxes*, that require the *Irritations* to contract the *Parts*, and promote that of *Perſpiration*, (as in Sleep) which requires only the opening of the *Pores*; ſo that I need add no more *Words* about it, for the ſame *Cauſe* muſt have the ſame *Effect*, therefore an *intenſe* and *permanent Pleaſure* muſt have all, or much of the *Effects* of *Sleep* in general (as has been ſhewn:) It cannot therefore be any Wonder that *Opium* cauſes Sleep. Yet is there *Difference* between *Sleep* and *Pleaſure* upon other Accounts, tho'

not

not upon the Account of *Relaxation*, *viz.* becauſe;

I. That *Sleep* requires alſo a reſt of *Spirits*, (or the *ſenſitive Soul*) whereas *Relaxation* by *Pleaſure* is conſiſtent with motion of the Spirits, either by *outward Action*, or *internal motion* thereof, by ſome *inward Cauſes*. Hence it is;

Firſt, That we can *Labour*, *Travel*, *Dance*, &c. and enjoy *Pleaſure* and its *Relaxation*: *Volantary motion*, which requires only a particular *Contraction* of ſome Parts by the *Dictates* of the *Will* or *Appetite*, being conſiſtent with the *general Relaxation* by *Reaſon* of the *Prerogative* of the *Will*. Thus do we move, tho' more relaxed, or when moſt Merry and pleaſed with *Wine*; nay, ſome will walk in their *Sleep*, (when extreamly intent upon a Thing) as when awake; which ſhews the *ruling Power* of *intentive Contraction*, that may be exerciſed with *Relaxations* and other *Contractions* as the *Will* it ſelf may, or *intentive Appetite*.

Secondly, That *Pain* is often taken away by *Opium* by the *Diverſion* and *Relaxation* cauſed by *Pleaſure*, and its *Inconſiſtence* with *Pain*, without *Sleep*, which requires the aforeſaid *Reſt*; That bare *Relaxation*, as ſuch, does not include, tho' *Relaxation* ſuffices to take away *Pain*.

Thirdly, That *Opium* does by its *Heat*, *active Particles*, *&c.* hinder ſome Perſons to Sleep, yet have you in both theſe laſt Caſes all other *Effects* of *Opium*, as *Pleaſure*, *Indolence*, *Relaxations*, &c. which ſhews how far *Sleep* is from being a *conſtant*, and the moſt *genuine Effect* of *Opium*, as is generally imagined; however we muſt allow it (as has been ſhewn) to be a mighty *Diſpoſer* of us towards *Sleep*, becauſe of the *Relaxation* that it cauſes, which is the main *Requiſite* of *Sleep*.

II. That

II. That *Pleaſure* does, without *Nutritive Refection*, by the Complacency it cauſes in the *ſenſitive Soul*, produce *Comfort*, *Satisfaction*, *Compoſure*, *Elevation of the Spirits*, *Euphory*, *&c.* of which Sleep is either not at all capable, or but in a *low degree*, proportionable to the *ſenſation* that it has, which is but little; however a *Pleaſure* that remains within us, even in our *Sleep*, as that of *Opium*, may well cauſe Pleaſant *Dreams*, *&c.*

The *Reader* may *obſerve*, that in all *Places*, where I mention, that *Relaxation* cauſes the opening of the *Pores*, that I ſpeak only of *Perſpiration*, as the *Effect* thereof, without mentioning *Sweat*.

1. Becauſe *Perſpiration* is the only *conſtant* and *infallible Effect* thereof, by reaſon that the *Levity* of the *Fumes* cauſes them as certainly to paſs at the *Pores* when open, as *Smoak* paſſes up at an open *Chimney*.

2. Becauſe *Sweat* is an *uncertain Effect* thereof, for it requires that the *Body* be well fill'd with moiſture, tho' there is a *Relaxation* or *Opening* of the *Pores*; as *Hippocrates* very rightly intimates in that *Aphoriſm* of his that I cited in the laſt *Chapter*. 1. Becauſe *Sweat* has not that *Levity* that the *Fumes* have, to cauſe it readily to move as ſoon as the *Pores* are open. 2. Becauſe *Relaxation* is more apt to *receive*, *detain*, and *ſuſpend Humours*. 3. Becauſe the protruſive Motion of the *Heart* is weaker in all *Relaxations*; and all ſee how much its *Vigorous Protruſion* contributes to *Sweat* upon *Action*. 4. Becauſe a *Heartfull* of Bloud does not make ſuch a *Puſh* forward when the *Arteries* are widen'd by *Relaxation*. 5. Sweat having more of Continuity, Conſiſtence, and Viſcidity, cannot flow out ſo readily at the Pores, as

a meer Vapour. However, if the *Body* be full of *Moiſture*, and the *Pores* open, there being a Natural Courſe that *Way*, and the *Heart* continually protruding it farther and farther, a *Sweat* follows, and that whether they Sleep or not.

3. Becauſe *Sweat* (as was in ſome ſort intimated) is ſometimes cauſed by the *ſtrong Protruſion* of the *Heart*, as in *Motion*, *&c.* and upon that *Account* comes more under the *Title* of *Fluxes* cauſed by *Contraction*, than *Relaxation*, of which *Perſpiration* is a conſtant Effect.

4. Becauſe *Sweat* is ſometimes cauſed by another ſort of *Contraction*, *viz.* the *Compreſſion* of the whole *Body* by a violent *Defenſive Contraction*, as in *great Terrour*, *Agonies*, and the like; cauſing thereby (as was ſhewn) by the Compariſon of a wet Sheet wrung, (whoſe out *ſide* is cold) a *cold Sweat*, which that of *Alum* or *Vitriol*, cauſing an *Exudation* of the *Spittle* into the *Mouth* by conſtringing the Parts, does illuſtrate very plainly.

Therefore you ſee I had juſt Cauſe not to mention *Sweat* as a certain and proper *Effect* of *Relaxation*, without good *Diſtinctions* firſt made; tho' unwary *Authors* that talk any Thing one after another, not knowing what they ſay, make it their common ſaying, That *Sleep* and *Opium* ſtops all *Fluxes* but *Sweat*, whereas they ſhould have rather ſaid, but *Perſpiration*; for *Opium* and *Sleep* alſo will ſometimes hinder *Sweat*, *viz.* that from *Pain*, *Terrour*, *&c.* and that as happens juſt upon awaking by the ſtronger *Syſtole* of the *Heart*, and *Contraction* of the whole Body, and that alſo upon motion, unleſs the Body be (as was ſaid) full of *Humours*, or Moiſture. Therefore it is a *Vulgar Errour* to ſay *Sweat* inſtead of *Perſpiration* in the Caſe aforeſaid.

You

You may remember, that in the *Beginning* of this *Chapter* I concluded, that a *Sal-Volatile-Oleoſum*, ſuch as *Semen Humanum*, wherein the *Oily* and *Volatile Parts* are ſtrictly combined, and the *Volatile* ſomewhat more *active* (or *acrimonious*) than that in our *Membranes* in general, muſt be moſt pleaſing to the *Membranes* by a fine *Titillation*, *&c.* therefore if *Opium* ſhould prove to be ſuch, we need not wonder at its titillating to *Venery*, nor indeed its cauſing a *high* ſenſe of *Pleaſure* upon any *Membrane*, (they being all of the ſame *Nature*) but eſpecially upon the moſt exquiſitely diſpoſed *Membrane* of the *Stomach*, and the *Venereal Parts*, nor conſequently its cauſing all the aforementioned *Effects* of *intenſe Pleaſure*, as *Comfort*, *Satisfaction*, *Ovation*, *&c.* of the ſenſitive Soul, (or *Spirits*) and *Relaxation* of all the *ſenſile Parts*; which will eaſily ſolve all the *Phenomenas* of *Opium*, however numerous, myſterious, and ſeemingly contradictory, as you'll find.

Let us therefore now ſee, *whether* Opium *be ſuch a* Sal-Volatile-Oleoſum, *wherein the Volatile Particles are ſomewhat more active or acrimonious than ours*; *and the Oily*, *and Volatile Parts ſtrictly combined?* If ſo, the *Buſineſs* is done, the Nail is hit on the *Head*, and I may ſay Ἕυρηκα.

CHAP.

CHAP. XV.

Shews what are the Principles of Opium, *and which cauſe the good and bad Effects thereof.*

HAving tried (if not tired) your Patience, and premiſed what I thought neceſſary in the foregoing *Chapters*, I now reaſſume the Thread of my *Diſcourſe*.

As for the *paſſive Principles* of *Opium*, which do or ſignifie little or nothing, we need not be ſolicitous, only tell you that it has much of *Earth* and *Water* in it, and more or leſs of *that* according to its *Foulneſs*, and of *this* according to its *Moiſtneſs* or *Drineſs*; and that it always has more *Water* in it in *moiſt Weather*, for I never knew any Thing ſo apt to take in moiſture, and to alter accordingly in its *ſubſtance*, (tho' not in *vertue*) ſo much, that I have uſed it as an *Indicator* of the *Weather*, and it never fails to ſhew the *degree* of *moiſture* in the *Air*, if it be kept in a convenient Place, where Accidents, as the *Sun*, *Fire*, *&c.* may not alter the Caſe, and always in the ſame Place.

Our Buſineſs therefore being to enquire after the *active Principles of Opium*, I ſhall proceed in this Plain and Natural Method, *viz.* I ſhall Enquire;

1. Which *are the predominant active Principles of Opium?* And how combined, *&c.*

2. Which

2. Which *of them produce the good and laudable Effects of* Opium? *And why?*

3. Which *of them produce its ill Effects? And why?*

I. As to its *active Principles which are predominant.*

First, It manifeſtly appears, That *Opium* is highly impregnated with *Volatile Salt.*

1. By its *biting*, and *pungent Taſte*, which is the certain *Effect* of *Volatile Salt*; as in *Muſtard*, *Horſe-Radiſh*, *Creſſes*, *Arum*, (or *Wake Robin*) *Scurvigraſs*, *Rochet*, *Spearwort*, *Crowsfoot*, *Squills*, *Radiſh*, *Arſmart*, *Onions*, *Garlick*, and very many Plants of the ſame *Kind*, which have their *biting* and *pungent Taſte* (as all know and allow) from their *Volatile Salt*; and ſo have all Plants of the like *Taſte*, which are therefore commonly eſteem'd to be *Antiſcorbuticks.*

2. By its *rank* and *vehement Smell*, being ſuch, as is by the common Conſent of the Learned always attributed to *Volatile Salt* alone, or join'd with ſome *Oily Parts*, as the ſmell of *Semen Virile*, (to which I take that of *Opium* to be moſt like) of *burnt Hoofs*, *Horns*, *Skins*, *Membranes*, *&c. Garlick*, *Onions*, *Rocket*, *Piſmire*, *Soot*, *&c.*

3. By its ready *Diſſolution in Water*, *moiſt Air*, *&c.* which muſt be from its *Volatile Salt*, becauſe it has very little Fixed Salt, and becauſe *Volatile Salt* is the moſt diſſolvable Salt that is in Vegetables before they have paſſed the Fire.

4. By its *Diſſolution in Spirit of Wine*, which *Volatile Salts* are more apt to do than Fixed Salts; and this is one *Reaſon* why it is ſo apt to diſſolve in all *Menſtruums*, eſpecially the Three main

ones,

ones, *viz.* The *Watery*, the *Salino-Volatile*, (as *Spirit of Salt Ammoniac*, *Spirit of Harts-Horn*, *&c.*) and the *Spirituo-Sulphureous*, as *Spirit of Wine*, *Brandy*, *&c.* in which laſt Things its *Sulphur* that is join'd with the *Volatile Salt*, doth much help it to diſſolve.

5. By its *inciding* and *diſcuſſing Quality*, when *externally* applied; which *Qualities* muſt be attributed to its *Volatile Salt*, it having no other Principle that can cauſe *thoſe Qualities*, eſpecially in that eminent *degree* as *Opium* has them, and ſeeing it is not a Thing that has undergone *Fermentation*, as Vinous Spirits, and that it has but one in 32 of the Fixed Salt in its Maſs, as the moſt Excellent Dr. *Crew* proves.

6. By its *reſolving Quality*, being *externally* applied; for *Reſolution* is cauſed by ſuch Parts as eaſily *penetrate* and *mix* with our *Skin*, *Fleſh*, *&c.* and ſuch as do ſo muſt be of like *active Principles* with our *Parts*; for all know, that eaſineſs of *mixture* is by likeneſs of Parts, and the *active Principles* of our *Skin*, *Fleſh*, *&c.* are *Volatile Salt*, join'd with ſome *Oily Particles*, (as has been ſaid;) Therefore *Opium* muſt have ſuch *Principles* to be ſo great a *Reſolver*. Hence it is, That *Gum Ammoniacum*, *Hemlock*, and ſeveral *Gums*, *Plants*, *&c.* that are ſaturated with *Volatile Salts*, are ſuch good *Reſolvers*; but it is worth a very particular Remark, That all *Narcotick* Plants are very eminent, yea, the very beſt *Reſolvers* of *hard Tumors*, and the like, as *Solanum lethale*, (or *deadly Night-ſhade*) *Hemlock*, *Henbane*, *Mandrake*; and the more *Narcotick* they are, the more *Reſolving*.

7. By its *exulcerating* or *bliſtring Quality*, (which is but a ſtronger ſort of *Reſolution* of Parts;) which the beſt and ſtrongeſt *Opium* that is gathered by Drops out of the Inciſions of the Poppies Heads, (as *Authors teſtifie*) and the beſt

we

we have (as ſome ſay) will do, upon very tender *Skins*, or at leaſt rubify, as *Muſtard*, *&c.* will; which moſt evidently proves its *Volatile Salt*; for all *Bliſterers*, as *Cantharides*, *Piſmire*, *Crowsfoot*, *Spearwort*, *Garlick*, *&c.* do it upon the Account of their *Volatile Salt*, unleſs it be *Lexivials* which have paſſed the Fire, which *Opium* has not.

8. Its offending the Eyes, as Onions, Muſtard, *&c.* do, when it is applied thereto, argues its *Volatile Salt*.

Note, That the very beſt *Opium*, as the *Turks*, *Maſtach*, *&c.* does cauſe this Effect moſt of all, which manifeſtly proves, that the *Vertue* of *Opium* does mainly depend upon *Volatile Salt*, which is moſt certainly the *Cauſe* of that *Effect* of *exulcerating*, (or *bliſtering*) as all do allow in Things that have not paſſed the Fire.

9. Its *Pſilothrick Quality* proves the ſame, for it cauſes the *Hair* to fall by the ſame *Principles*.

10. Its *eminent Titillation* to *Venery*, as *Cantharides*, *Bees*, *Piſmire*, *Sem. Virile*, *Garlick*, *Onions*, *Leeks*, *Horſe Radiſh*, *Muſtard*, *Rochet*, *Baſil*, *Oiſters*, *Bears Garlick*, *Crows Garlick*, *&c.* do moſt infallibly argue the Abundance of its *Volatile Salt*, by which thoſe Things, and all other *Plants* that have much *Volatile Salt*, excite to *Venery*.

11. Its Aptitude to evaporate and flie away, argues its *Volatility*.

12. Its *cauſing a Tickling*, and *Itching* in the *Skin*, does moſt directly prove the ſame; nor does any Thing that is taken inwardly cauſe it more: It muſt have a very *Titillating Volatile Salt*, that will, in ſo ſmall a Quantity as *Opium* is uſually taken, cauſe ſuch *violent Itchings* (as it does) in the Skin, after it has paſſed all *Digeſtions* and *Concoctions*.

13. Its *Bitterneſs* proves the ſame: For the Curious and moſt Perſpicacious Dr. *Grew* ſays, That Bitterneſs proceeds *from Sulphur well impregnated with alcaline or acid Salt ſhackled with Earth*; but it is certain, that it is not an *acid* in *Opium*, for the many *Reaſons* given, and to be added. He alſo ſays, *That when Sulphur and the Alcaline are more equal, they produce a tawny colour*; and *Opium* rudely torn is *tawny*, till the *Air* alters it. All which *Sylvius* confirms, where he ſays, *Pran. Med. L.* II. *Cap.* XXVI. 80. *Omnia amara volatili ſale abundant, ad quod conſtituendum oleum quoque concurrit, ſive Sulphur.* That is, *All bitter Things abound with Volatile Salt, to conſtitute which Oil (or Sulphur) concurs.* I cannot chuſe (tho' I do not much depend upon *Authority* in the general) but value the Aſſertions of ſuch Men, by way of Concurrence at leaſt.

14. The *Acrimonious Sweats* that it cauſes, proves the ſame.

15. It is alſo *Diuretick*, as, and after the ſame manner with *Cantharides*, *Bees*, *Piſmire*, *Millepedes*, *Scurvygraſs*, *Horſe Radiſh*, *&c.* that is, by *Titillation* upon the *Account* of the *Volatile Salt*, which appears by its exciting to *Venery* at the ſame time, as all thoſe *Volatiles* do.

16. Its *cauſing Vomitings* (as it often does) is an undoubted ſign of its *Volatile Salt*; for all *Vegetable Vomits* are ſuch upon that Account, unleſs it be ſuch as may move Vomiting meerly by their being loathed, or nauſeated, which only cauſe ſome particular Perſons to Vomit; but ſuch as are *conſtant Vomitories* are ſo upon the Account of their *Volatile ſalt*, as *Aſærabocea*, *Groundſil*, *Foxgloves*, *Squills*, *&c.* given in a ſufficient Quantity.

17. Its lively *Effects*, as Courage, *&c.* prove the ſame.

18. All

18. All *Authors* that have been Curious, do agree, that *Opium* abounds with *Volatile Salt*, as *Helmont*, *Lemery*, *Le Febure*, *Wedelius*, and indeed every one that ever I read, tho' moſt of them attribute its Effects to a *Sulphur*, which makes their *Teſtimony* of its *Volatile Salt* the ſtronger, as being forced to confeſs it againſt their *Hypotheſiſes*.

19. After its *Fermentation* with Leaven in a Sand Heat for 14 days, it affords a *Volatile Salt* in good Quantity, but mixt with *Oil*, which is ſeparated from it by Diſſolution in Water, Filtring, *&c.*

20. Its Spirit ferments with Acids, therefore is *Volatile*.

Laſtly, (to Pin up all) if you either *Chymically* Analyſe it by Fire, or ſet it to Cryſtalize, after it is evaporated to a due Condition ſo to do, it affords a great Quantity of *Volatile Salt*.

Therefore it is paſt all manner of doubt, (for which *End* I have the longer, and more particularly inſiſted upon this *Point*) that it is highly impregnated with *Volatile Salt*: But, as I ſaid in the laſt *Chapter*, it is not enough for it to have *Volatile Salt*, but it muſt be ſuch as exceeds our own, or other Animals in *Activity*, *Briskneſs*, *&c.* by Reaſon of *Quantity* or *Quality*, or both, that it may tickle up, excite, and cauſe a fine and agreeable *Ovation*, or glowing in our Spirits, which (as was ſhewn) is very pleaſant, (as in the Caſe of *Sem. Viril.*) eſpecially when agitated by *Warmth*, *Frications*, or ſuch Actuating Cauſes.

Secondly, It manifeſtly appears, That the *Volatile Salt* of *Opium* exceeds ours in Activity, Briskneſs, *&c.*

1. By its *exulcerating* (or bliſtering) *Quality*, eſpecially if it be very good *Opium*.

2. By its *Pſilothrick Quality*, to cauſe the Hair to ſhed.

3. By its *irritating to Venery* in ſo eminent a *Degree*, as *Cantharides*, *Bees*, *Piſmire*, *&c.* do, and even beyond the ordinary Courſe of *Sem. Virile*, which is moſt ſaturated with *Volatile Salt* of any *Part* of the *Animal*, as appears by its Diſſolution (like *Opium*) in *Watery Menſtruums*; its *rank ſmell*, its *titillating* to *Venery*, its *Weight*, *&c.* which is much the ſame with that of *Opium*, both ſinking in *Water*, *&c.*

4. By its *great Irritations to make Water*, like *Cantharides*, *Bees*, *Piſmire*, *Millepedes*, *&c.* when it is taken in a good Quantity, or often.

5. By its cauſing *Vomitings* in a very ſevere manner, which it would not do without a very *poinant Volatile Salt*.

6. By its cauſing ſuch violent *Itchings* in the *Skin* (eſpecially if taken in any Quantity) after it has paſt all *Digeſtions* and *Concoctions*. And,

7. By its *cauſing acrimonious Sweats*, after it has paſt thoſe *Digeſtions* and *Concoctions*.

8. By its *cauſing a very pleaſant Senſation at Stomach*, far above any *Fleſh*, *Jellies*, or any *Animal Nutriment*.

9. By its *offending the Eyes* ſo much by its *Acrimony*, as *Muſtard*, *Onions*, *Horſe Radiſh*, *&c.* do.

10. By its very *pungent* and *acrimonious Taſte* above all Fleſh or Fiſh.

11. By its very rank and vehement Scent, equal to, if not exceeding that of *Semen Virile*.

12. By its *Chymical Analyſis*, whereby it affords a very *acrimonious Volatile Salt* in great plenty, which *Helmont*, *Wedelius*, and others, do confirm.

There-

Therefore it is alſo paſt doubt, That the *Volatile Salt* of *Opium* is more *active*, *acrimonious*, and *titillating*, than thoſe in our *Membranes*, or in *Sem. Virile* it ſelf. But ſeeing it is not *Volatile Salt* alone, (as was ſhewn) which agrees only with one of the *active Principles* of our *Membranes*, (and may be, and is of it ſelf too acrimonious and rude for the *Membranes*, without its being ſweetned up, and ſmooth'd into a more gentle and pleaſing *Agreeableneſs* by Oily Parts) we muſt ſee, whether it is not alſo *Oily*, (or *Sulphureous*) and conſequently a *Sal-Volatile-Oleoſum*, agreeing in both the *active Principles* of our *Membranes*, that it may thereby be the more delectable, gentle, and agreeable.

Thirdly, It is very obvious and evident, That *Opium* is *Sulphureous*.

1. Becauſe the Juice of the *Poppy*, whereof it is made, is of it ſelf, when it drops out of the *Inciſions*, *Milk-white*, which colour in Liquids (eſpecially the Juice of Plants) proceeds from *Sulphureous Particles* mixt with *Water* (or *Phlegm*) as *Milk*, *Emulſions*, *Chyle*, *Cinnamon Water*, and the *Tinctures* of all *Sulphureous* Things dropt into *Water*, do evince.

2. Becauſe it is *inflammable*; for nothing is ſo but what is *Sulphureous*.

3. Becauſe *Opium* will ſoften with a *dry Warmth*, which all, and only, *Sulphureous Things* will do; as all *Roſins*, *Tallows*, *Pitches*, *Turpentines*, *Oils*, and ſuch *Sulphureous Things*.

4. Becauſe it is very *bitter*, and that Oleoſe Particles are always (as Dr. *Grew* and *Sylvius* truely ſay) one Ingredient of a *bitter Taſte*.

5. Its *tawny colour* does alſo (as was ſaid according to Dr. *Grew*) argue much *Sulphur*.

6. Its hot Taſte proves the ſame; for a proper *hot Taſte* is from *Sulphur*, as the *biting* or *pungent* is from *Volatile Salt*.

7. Becauſe of its pungent and ſtrong Smell, which denotes *Sulphur*.

8. Its being ſo diſſolvable as it is in Spirit of Wine, Brandy, and other *Sulphureous Menſtruums*, proves the ſame.

9. Its *diſſolving Quality* argues, that it has the ſame *Principles* with our *Skin* and *Fleſh*, which are *Oleoſe* as well as *Salino-volatile*, and that nothing is a compleat *Diſſolver*, but ſuch as have both; becauſe *Agreeableneſs* in Principles being the *Baſis* of Diſſolution, (as you ſee in *Menſtruums*, and the Things therein diſſolv'd) there is no good, kind, or compleat Diſſolvent of our Fleſh, *&c.* but what participates of both; becauſe otherwiſe there would be a *Diſagreement* in one Reſpect.

10. It appears by *Autopſie* upon the *Chymical Analyſis* of *Opium*, &c. that it has a very conſiderable Quantity of *Sulphur*.

11. So if you only diſſolve it in Water, you'll find much Sulphureous Subſtance undiſſolved at the bottom.

12. All (or moſt) of the *Modern Authors* attribute its Operation to *Sulphur*, agreeing, that it is well impregnated therewith.

Therefore Opium conſiſts very much, as to its *active Principles*, of a *Sal-Volatile-Sulphureum*; but ſtill this does not compleat a moſt agreeable *Sal-Volatile-Oleoſum*; 1. Becauſe it may be a *Sal-Volatile-Reſinoſum*, and yet be a *Sal-Volatile-Sulphureum*. 2. If it be a *Sal-Volatile-Oleoſum*, the Oil and the *Volatile Salt* may be ſo disjoin'd, as not to conſpire and co-operate to pleaſe the *Membranes*, but act ſeparately, as *Oil* and *Volatile Salt* given out of divers *Spoons*, and cauſe no more

Effect

Effect than *Oil* of *Olives* and *Spirit* of *Sal Ammoniack* taken inwardly, one acting too ſoftly, lazily, and greaſily, to cauſe any brisk and agreeable *Ovation* of the *Spirits*, and the other too rudely ſtinging the Membranes; therefore we muſt proceed in our *Enquiry*.

Fourthly, *Opium* has a ſort of Reſinous *Sulphur*, that is looſe, and not united with the *Volatile Salt*; which plainly appears;

1. Becauſe, if you diſſolve *Opium* in *Water*, cold or hot, or any Watery *Menſtruum*, you'll find a good quantity of *Roſin* undiſſolved at *bottom*, while the *Volatile Salt* is all or moſt diſſolved in the Water, (eſpecially if the Water be often repeated) and quite ſeparated from the *Reſinous Part* which ſubſides, without any more trouble; which ſhews, that the *Volatile Salt* and it are not combined, but in a very looſe and diſtinct manner.

2. Becauſe, if you firſt diſſolve *Opium* in *Spirit* of *Wine*, which imbibes the *Roſin*, it is eaſily again precipitated by plain *Water*, leaving behind it all or moſt of the *Volatile Salt* in the Form of a *red Tincture* in the *Menſtruum*, as it does alſo in the former Caſe.

Note, That the *Reſinous Part* of *Opium* has no Effect as an *Opiate*, for if it be well waſhed with Water (as was ſaid) it has no Operation of that kind, or ſo little, that it is not worth the minding, but all the *Vertue*, *Specifick Taſte*, *Smell*, *&c.* is carried away in that *red Tincture*, which has all the good *Effects* of *Opium*, as Experience aſſures us.

3. Becauſe, if *Opium* be very much torrefied, moſt of the *Volatile Salt* is evaporated, and with it moſt, if not all, the *Vertue* of *Opium*; but the *Roſin* remains as a deadiſh Stuff in Reſpect of the *good Effects* of *Opium*, tho' it is (as ſhall be proved) the Producer of the ill *Effects* thereof. Therefore this Roſin muſt be wholly rejected.

Fifthly, The Red *Tincture* aforeſaid has all, or moſt of the *Volatile Salt* in it.

1. Becauſe *Water* is the Proper Menſtruum for Saline Things, and that the *Tincture* reduced to an *Extract* gives very much in *moiſt Weather*; which Quality it muſt have from the *Volatile Salt*, becauſe it has very little Fixed Salt.

2. Becauſe the Specifick *Bitterneſs* which proceeds from *Volatile ſalt*, and *Oily Parts*, is wholly in that *Red Tincture*.

3. Becauſe that *Tincture* has alſo the Specifick *Rankneſs* of *Smell* that the *Volatile Salt* (as was ſhewn) gives the *Opium*, by the Help of ſome *Oily Parts*.

4. Becauſe that *Tincture*, reduced to an Extract, has the *biting* Taſte of *Opium*, which (as was ſhewn) proceeds from its *Volatile Salt*.

5. Becauſe that *Extract incides, diſcuſſes, reſolves, is Piſlothrick, titillates to Venery*, cauſes *Itchings* in the Skin, *acrimonious Sweats, &c.* all which are (as was ſhewn) the Effects of *Volatile Salt*.

But what need I inſiſt ſo much upon its *Effects* to prove it? When,

6. It appears by *Cryſtalization* of the *ſaid Tincture*, after it has been evaporated to a due *degree*, that it contains the *Volatile Salt* in it, which in a cool Place ſhoots to elegant *Cryſtals*; and that,

7. It

7. It is found therein by *Chymical Operation* by *Fire.*

Sixthly, The ſaid *Tincture* is *Oleoſe.*

1. Becauſe the Redneſs of the Tincture muſt be from *Oily Parts*; for pure ſincere *Volatile Salt* gives no ſuch Tincture.

2. Becauſe it is *bitter*, one Ingredient of which *Taſte* is ever Oily Parts (as was ſaid.)

3. Becauſe of its *rank ſmell* like *Sem. Viril.* which proves it to be *Sulphureous*; for the *Volatile Salt* alone has only a quick ſmell, or Urinous at fartheſt.

4. Becauſe it is of a *Hot Taſte* when reduced to an *Extract*, which *Heat* of *Taſte* conſidered diſtinctly from its pungent, or biting *Taſte*, muſt be from *Sulphureous* or *Oily Parts.*

5. Becauſe *Spirit of Wine*, and other *Spirituo-ſulphureous Menſtruums*, do readily diſſolve it when reduced to an *Extract.*

6. Becauſe the *Extract* ſoftens with dry warmth, as Sulphureous or Oily Things do.

7. Becauſe a true *Sal-Volatile-Oleoſum*, wherein the *Volatile Salt* and *Oily Parts* are intimately combined, (as you find in all *Bloods*, *Tinctures* of ſeveral *Plants* that have ſuch a *Sal-Volatile Oleoſum*) is *red.*

8. Becauſe it could not otherwiſe ſo finely pleaſe the *Membranes*, *cauſe Sleep*, *compoſe the Spirits*, *&c.* if it were all *Volatile Salt*, which is wholly *pungent* and *acrimonious*, mightily *oppoſes Sleep*, and cauſes a great ſtir in the Bloud and Spirits.

But, (as I ſaid as to its *Volatile ſalt*) what need I inſiſt upon its *Effects?* When,

10. Its

10. Its *Inflammability* (after it is reduced to an Extract and dried) puts it out of all Queſtion; And that,

11. An *Oil* may be ſeparated from the *Volatile Salt*, tho' not without Trouble, becauſe that, (as is requiſite to compleat it in the higheſt degree)

Seventhly, The *Oily Parts*, and *Volatile Salt*, are very intimately, and ſtrictly combin'd, as fairly appears,

1. By the *Difficulty* to ſeparate them.

2. By the *Redneſs* of the *Tincture*, (as in *Blood*, *&c.*) for when *Oily* (or Sulphureous) *Particles* are looſe therein, they make *either* a *white Colour*, as the *Roſin* does in the Drops that fall out of the Inciſions in the Heads of the *Poppies*, which are *Milk white*; or leave the *Volatile Spirit* perſpicuous, as in a ſort of artificial *Sal-Volatile-Oleoſum* that is ſold at the *Apothecaries* Shops in *London*.

3. Becauſe it imparts its *Tincture*, which depends upon both, to all *Menſtruums*.

4. Becauſe it imparts its Vertue, which depends upon both, to all *Menſtruums*.

5. Becauſe it imparts its *Specifick Smell*, which depends upon both, to all *Menſtruums*.

6. Becauſe it imparts its Specifick, *hot*, and *biting Taſte*, which depend upon both the *Oily* and *Volatile Particles*, to all *Menſtruums*.

7. Becauſe it will hold its *Vertue* many years, which it could not, if the *Volatile Salt* and *Oily Parts* were not very ſtrictly combined.

8. Becauſe, that notwithſtanding the *Digeſtion* at *Stomach*, it has held its *Specifick Vertue*, *Smell* and *Taſte*, after it has been in it 4, 5, 6, 7, 8, 9, 10, 11, 12, 18, or more *Hours*, as appear'd by its Operating ſo long, and afteward its being Vomited up with the ſame *Taſte* and *Smell* that it had

had at first; than which there cannot be a greater Argument.

9. Because it has been carried off by Stools, which had its *Specifick Smell* after many *Hours* remaining in the *Stomach.*

10. Because its Operation in general lasts long. *Charas* mentions one that it Operated with for about 30 *Hours*; and *Wedelius* another, whom *Opium* caused to Vomit constantly about 18 *Hours* after it was taken.

11. Because it has its *Effects* upon the *Venereal Membranes* after it has passed the *Digestion* at *Stomach*, the Effects of the *Choler*, and *Succus Pancreatus* in the *Duodenum*, been strained through the Coats of the *Intestines* into the *Lacteals*, and through the *Glandules* of the *Mesentery*, mixed and circulated with the *Bloud*, *&c.*

12. Because, after all that, it has its *Effect* upon the Skin, by causing an *Itching* therein.

13. Because it not only causes *Acrimonious Sweats*, but such as evidently *smell* thereof, which argues, That the *Specifick Combination* of the *Oily* and *Volatile Parts* baffles all *Coctions*, *Digestions*, *Circulations*, and *Percolations*, that have happened in the *Body*. *Dioscorides* and *Æginela*, speaking of *Opium*, say, Ὄσμη τε τοῦ φαρμάκος δι' ὅλου τοῦ σώματος ἐκ δίδοτας, that is, *The smell of the Medicament is expanded over the whole Body.* Which Things of its Nature do, as *Garlick*, *Onions*, *Semen Animale*, which causes Rankness all over Male Creatures, as *Rams*, *Boars*, *Bulls*, *&c.*

14. *Le Febure*, in his *Chymistry*, *Part* 2. *p.* 33. says, That *Opium has a Volatile Salt inseperably mixt with Sulphur* (or Oily Parts.)

15. *Wedelius*, in his *Opiologia*, *Lib.* 2. *Sect.* 1. *Cap.* 4. *P.* 91. speaking of *Opium*, says, *Sal ejus cum sulphure intime combinatum sudores efficit*, that is, *Its salt being intimately combined with sulphur*, (or *Oil*)

Oil) *cauſes Sweat.* And, *Lib.* 2. *P.* 143. Κεδον *obtinuit non facile diſſipabilem,* that is, *It has a contexture not eaſily diſſipable.*

18. All know how apt *Volatile Salt* and *Oily Parts* are to combine; Therefore

Opium acts and produces its uſual good Effects by a *Sal-Volatile-Oleoſum,* ſomewhat more active than that in our Membranes, whoſe Principles are moſt intimately and ſtrictly combined, and ſo that it is qualified in the higheſt degree for our Purpoſe; Becauſe,

1. It agrees in *Principles* with our Membranes.

2. That its *Sal-Volatile-Oleoſum* is more active and vigorous than that of the *Membranes,* to actuate and excite the *Spiritus inſiti,* and finely to tickle and gratifie the *Membranes.*

3. That the *Volatile Salt* and *Oily Parts* being ſo intimately combined, do deliciouſly qualifie one the other for that Purpoſe; While the Oily ſmooths and lenifies the *Volatile Salt,* and the *Volatile Salt* actuates and quickens the Oily; And that being ſo combined,

4. Both conſpire to a permanent and exalted *Pleaſure* of the *Membranes,* eſpecially at *Stomach,* and the *Venereal Parts,* where they are ſo exquiſitely diſpoſed for *Senſation.*

Therefore the *Sal-Volatile-Oleoſum* of *Opium,* ſeparated from its *Roſin,* is moſt conſummate, and beſt qualified, that poſſibly can be imagined, to *pleaſe, gratifie,* and *finely* to *titillate* our *Membranes,* or *Organs* of *Senſation*; which was the Thing required.

I can-

I cannot better illuſtrate its Nature, than by the moſt exalted Thing in an Animal, *viz.* its *Semen:* Therefore for Confirmation of its *Principles*, and *Excellency* therein, I will conſider its *Likeneſs* and *Agreement* therewith;

1. In being both a *Sal Volatile-Oleoſum.*
2. In having a more active, vigorous, and exalted *Sal-Volatile-Oleoſum*, than any Part of the *Animal.*
3. In having the *Volatile Salt* and *Oleous Particles* intimately combined, for *Semen Animale* will (as *Opium*) keep very long uncorrupted, as appears by its long ſtay in the *Veſiculæ ſeminales* of ſome *Animals*, that do not excern it in many years.
4. In that both are apt to mix with all ſorts of *Menſtruums*, and both *Mole minima, Virtute maxima.*
5. In having much the ſame Smell, *viz.* a rank and vehement one.
6. In tainting the Body therewith (as has been ſhewn.)
7. In being much of the ſame *Weight*, as appears by both ſinking in *Water*, *&c.*
8. The *Taſte* muſt (in all Probability) have a Rankneſs in it like that of *Opium*, becauſe it gives a *rank Taſte* to the whole Body of *Male Creatures.*
9. Both excite *Venery*, cauſe Erections, *Venereal Fury*, and *Nocturnal Pollutions*, *&c.*
10. Both cauſe *Boldneſs*, *Courage*, and *Magnanimity*, which are reckon'd among the *Effects* of *Opium*, and are the *common Effects* of *Plenitude* of Seed in *Animals* (that are otherwiſe *puſillanimous*) in *Times* of *Copulation*; ſo Modeſt and Sheepiſh *Boys* grow much more *aſſured*, *bold*, and (as they commonly call it) *Manlike*, upon *Puberty*; and *Girls* grow more Womanlike in their *Diſpoſitions*; and

and 'tis my *Obſervation*, That the *Men* who breed moſt of the *Sem. Virile*, are generally, if not always, the moſt *Valiant*.

11. Both do cauſe a great *Relaxation* upon the *Pleaſure* thereof, as appears after a good *Doſe* of *Opium*, and upon *Emiſſion* of the other; by the *Deadneſs of the Eyes*, (or *Laxity* of the *Cornea*) in both Caſes, *Dilatation of the Pupill*, *Floridity of the Skin*, *large Perſpiration*, *laxity of the Limbs*, *Sleepineſs*, *loſs of Memory and Senſe*, *alienation of the Mind*, *a wide Pulſe*, *Indolence*, *loſs of Feeling* in both Caſes, and other Signs of *Relaxation*.

12. Both *Opium* and *Puberty* cauſe a growth of the *Penis*, *Breaſts*, and *increaſe Milk*, by Reaſon of the *Relaxation* that they cauſe, which (as in *Sleep*,) cauſes the greater *Nutrition*; but of the manner how it happens upon *Relaxation*, more hereafter, if there be occaſion. Hence it is,

13. That both *Opium* and *Puberty* are apt to bring down the *Menſes*, and open the *Viæ*, by the *Relaxation*; and that *Marriage* (or the Pleaſure of *Venereal Acts*) do by the like *Relaxation* promote the *Menſes*; That both *Opium* and ſuch Acts are apt to cauſe Miſcarriages by relaxing the Neck of the Womb, *&c.*

14. Both cauſe *Sadneſs* and *Dejection* when the Operation is over, as indeed *Pleaſure* generally does, eſpecially if intenſe.

15. Both *Opium* and *Sem. Animale* prevent *Laſſitude*, and cauſe *Euphory*, or eaſier Undergoing of *Labour*; Hence it is, that *Stone Horſes* will not be ſo ſoon tired when full thereof, and quickly recover if tired; which might doubtleſs be obſerved in other *Animals*, but that they are not uſed to Labour, and ſo not obvious to be obſerved.

16. *An-*

16. *Authors* do ſay, That *Sem. Virile* takes off *Venereal Impotence*, procures *Love*, *&c.* which doubtleſs muſt be by exciting to *Venery*, as *Opium* does. Thus the *Genitals* of *Bucks*, *Boars*, *Bucks* of *Hares*, *Cocks*, *&c.* do (as *Opium*) excite *Venery*; and the Seed of *Animals*, as of a Camel, and the aforeſaid Creatures, come to be eſteemed *Hypnoticks*; and (doubtleſs) all *Animal Seed*, eſpecially of the more Salaceous *Creatures*, is an *Opiate* in ſome *degree*.

To be ſhort, The main (if not all) the *Difference* in their *Effects* ariſes only,

1. From the *Different Parts* that they affect; becauſe *Opium* affects the *Stomach*, the *Venereal*, and all the *Membranes* in *general*; and *Sem. Animale* only the *Venereal Parts* immediately, tho' an intenſe *Pleaſure* of one Part does affect the whole.

2. That *Opium* does affect with a Senſe of Pleaſure more permanent, *viz.* for many *Hours*, (as has been ſaid) and that the *Pleaſure* of the other is *Momentary*.

Therefore Opium *acts by cauſing an intenſe, permanent, and charming Pleaſure of the Membranes in general, but more particularly of the* Stomach *and* Venereal Parts, *as being more exquiſitely diſpoſed for Senſation for the Preſervation of the* Individuum *and* Species.

It cannot be much wondred at, conſidering our *Active Principles* are a *Sal-Volatile-Oleoſum*, and that *Opium* is ſuch, and that we naturally carry an *Opiate* within us, that in ſome Caſes our ordinary *Sal-Volatile-Oleoſum*, or that of the *Choler*, *Semen*, *&c.* being by ſome accident exalted

alted towards the Nature of *Opium*, may have the Effect of an *Opiate* upon us, by cauſing *Sopors*, and *Lethargick Diſtempers*, *Furor uterinus* by *Titillation*, *&c.*

Thus the Spume of ſome *Male Animals*, *Mummy*, *&c.* are reputed Opiates. *Borellus* ſpeaks of a *Soporiferous Aura*, that proceeded from ones *Thumb*, cured by a *Cauſtick*. I have read of a *Cataphora* from *Worms*, a *Soporiferous Fume* from the *Womb*, and very many ſuch ſorts of Inſtances, which Things are now eaſily conceived; for 'tis but ſuppoſing a Fume of the Nature of *Sem. Animale*, or its *Aura*, (for I can no longer doubt but it is an *Opiate*) and it would have much the ſame *Effects* with *Opium*, if it were fit to uſe it after the ſame manner.

Having ſhewn, 1. *Which are the predominant active Principles in* Opium, *and how combined*, &c. 2. *Which of them produces the uſual and laudable Effects of* Opium; *And why in general*; I come now to the Third Particular, *viz.* to ſhew,

III. *Which of them produces its ill Effects*; *And why.*

Its *ill Effects* are theſe, *viz. Nauſeas*, *Vomitings*, which are generally very diſmal, with great diſtreſs, and ſometimes dangerous; *Swimming* in the *Head*, *Hiccoughs*, *Diſtreſſes*, *Anxieties*, *Convulſions*, *Faintings*, *Leipothymies*, *Syncopes*, &c.

1. *Note*, That its *grievous Effects* are at, or about the *Region* of the *Stomach*, or particularly the Mouth (or Pit) thereof, or thence ariſing by *Conſent.*

2. *Note*,

2. *Note*, That (ſeeing there is nothing ſo good, but may cauſe evil *Effects* in an exceſſive Quantity) this *Enquiry* is more properly, What *Principle*, or *Principles* of *Opium*, do cauſe thoſe ill *Effects* in an *ordinary Doſe*? for what will in a *moderate Doſe*, will (be ſure) cauſe them in an *exceſſive Doſe*.

3. *Note*, That all the *conſtant Effects* of *Opium* (as you may obſerve in the *Enumeration* thereof in the *Fourth Chapter*) are *good and laudable Effects*; it follows therefore, that the *bad* are *accidental*.

1. It is not the *Earthy* or *Phlegmatick Part* of *Opium* that cauſes thoſe *ill Effects*, becauſe they are *Paſſive Principles*, and conſequently have not ſuch a *Power*, beſides that they are known to be *innocent*.

2. *Opium* has all thoſe *ill Effects*, when both the *Earthy* and *Phlegmatick Parts* are ſeparated from it, as when an Extract of well *torrefied Opium* is made in *Spirit of Wine*, for by that means the *Phlegmatick Part* is dried up, and the *Earthy Parts* ſubſide, and are ſeparated; yea, ſuch *Extracts* made by *Spirit of Wine*, do cauſe thoſe *evil Effects* rather more than *crude Opium* with its *Earth* and *Phlegm* in it, as *Experience* aſſures us, and *Reaſon* will plainly confirm by and by, however fond the World is of ſuch *Preparations*.

3. It is evident from the *Premiſes*, that the *Sal-Volatile-Oleoſum* of *Opium* cannot cauſe thoſe *Vomitings*, *Hiccoughs*, &c. for they are the *Effects* of *grievous Senſation* at *Stomach*; but the *Sal-Volatile-Oleoſum* cauſes a moſt agreeable and *pleaſing Senſation* at *Stomach*.

4. Nothing quiets *Vomitings*, *Convulſions*, *Hiccoughs*, &c. more than that *Sal-Volatile-Oleoſum* of *Opium*.

5. *Experience* informs us, That the *Sal Volatile-Oleoſum* of *Opium*, ſeparated from all other *Parts* and *Principles* thereof, never cauſes ſuch *evil Effects*, as I, and *another Phyſician* in *London*, can teſtifie; as does alſo *Le Mort*, in the moſt Learned Dr. *Love*'s *Collectanea*, where he ſays of ſuch a *Preparation* thereof, as contains only the *Sal-Volatile-Oleoſum*, That *Nunquam Anxietates circa Præcordia, aut Phantaſias conciliat*; That is, *It never cauſes Anxieties about the Mouth of the Stomach*, &c. for that is moſt properly to be underſtood by (*Præcordia*;) *Wedelius* teſtifies the like of ſuch another *Preparation*, and ſo do ſeveral *Authors*, tho' they did not (in the leaſt) know why, but only by *Experience*.

6. Its *Fixt Salt* is *innocent* in its *Nature*, and but the 32d Part of *Opium*, which is too inconſiderable in an ordinary moderate Doſe to cauſe any *ſenſible Effect*.

It follows *therefore*, That it muſt be the *Reſinous Part* of *Opium*, which it has in a conſiderable Quantity, that muſt cauſe thoſe ill *Effects*. This manifeſtly appears;

1. Becauſe a *Tincture* of *Opium* in *Water*, which takes up none of the *Roſin*, but lets it fall into the Bottom, never cauſes any ſuch *ill Effects*; which it does not alſo, if reduced to an *Extract* by *Evaporation*, yet have they all the uſual *good Effects* of *Opium*.

2. *Wedelius* in his *Opiolog.* aſſures the ſame of the like *Preparation* in *Phlegm* of diſtilled *Vinegar*. *L. 2. Sect. 1. C. 5. P. 92.*

3. An

3. An *Extract* of *Opium* in *Spirit of Wine* does often cauſe thoſe *ill Effects*, and no other *Preparation* cauſes them as often. "*Wedelius ibid. A Lau-*
"*dano opiato cum Spiritu Vini correcto ſolum ferè*
"*obſervavimus ortos Vomitus; a noſtro vero, quod*
"*cum Phlegmate Aceti diſtillati fieri diximus, nun-*
"*quam Vomitum, vel Nauſeam ſaltem, contigiſſe*
"*meminimus.* That is, *We have obſerved Vomitings*
"*almoſt only from* Laudanum *prepared with* Spirit
"of Wine, *but never any Vomiting or Nauſea from*
"*that prepared in Phlegm of diſtill'd Vinegar.*
Which he confirms, *L.* 1. *ſect.* 2. *c.* 4. *p.* 62. ſaying (in *Latine*) "*That a curious Obſervation is to be*
"*noted, by which it appears, that an Extract of*
"Opium, *with* Spirit of Wine, *ſhews more Nar-*
"*cotick Force*, by which he means, *That it cauſes more ill Effects than prepared in diſtilled Vinegar*; Whereas that in *Spirit of Wine* has nothing more in it than that in *Vinegar*, beſides the *Reſinous Parts*: Therefore theſe do cauſe all the *Miſchief*.

Note alſo, That an *Extract* in *Spirit of Wine* has in it (*Quantity* for *Quantity*) more of the *Reſinous Parts* than *Crude Opium*, both becauſe the Earthy Parts, that help'd to make up the Bulk, are taken away in that Preparation, and becauſe the *Spirit of Wine* imbibes the *Roſin* more greedily than other *Principles* of the *Opium*; ſo that every *Doſe* muſt in *Proportion* have much more *Roſin* in it than *Crude Opium*. Therefore it is no wonder that it cauſes thoſe *ill Effects* more frequently, ſince the *Roſin* is moſt certainly the Cauſe thereof, as has been, and ſhall be more fully, and beyond all contradiction, proved.

Yet is this the *Preparation* boaſted of by the blind and inadvertent World; it would amaze, nay terrifie a Man to ſee what great Care is taken

to be ſure to render *Opium* miſchievous, by ſolicitouſly uſing *Spirit of Wine* in extracting *Laudanums*; and then, and not till then, they boaſt of the *Preparation*, as *Charas* and very many others do, calling it, not without great Oſtentation, (and deſperate *Folly*) their *Laudanum*: May it be *theirs*, and none others; a *Turk* would be a Madman to uſe it for *Crude Opium*, becauſe it has much more of the pernicious Principle in it; It is the common, and much eſteemed way, *firſt* to extract it out of *Water*, (and then it is very good, laudable and innocent) but thought nothing worth till they *extract* the *Roſin* (that is all left behind by the *Water*) in *Spirit of Wine*, and add it to the other; then do they with great *Authority* praiſe it, that is, when they have wiſely added the *Poiſon* to the *Panacea*; It is as if they added *Ratsbane* to a *Cordial*, and not think the Cordial worthy Commendation till they have done ſo.

4. It appears, That the *Roſin* is the Cauſe of thoſe *Ill Effects*, in that they happen at *Stomach*, or from it by conſent, ſince *Opium* has nothing in it that can offend the *Stomach* but the *Roſin*; of which it was ſhewn in *Chap.* 14. how very offenſive it is to the *Stomach* by its *Indigeſtibleneſs* and *ſticking* to it, but even intolerable if alſo arm'd with *pungent Particles*, ſuch as *Volatile Salts* have, with which *Opium* abounds.

5. It has been never obſerved, that any *Preparation* of *Opium*, that was ſeparated from the *Reſinous Parts*, did ever cauſe any ſuch *ill Effects*. But,

6. It has been often obſerved, That if *Crude Opium*, or a *Reſinous Preparation* thereof, was given alone in the *Form* of *Pills*, or any *ſolid Form*, that it was very apt to cauſe thoſe *Effects*: *Wedelius* ſays, That he never obſerved thoſe *Miſchiefs*

but

but after *Preparations* thereof in the *Form* of *Pills*; and it follows from what he has ſaid before, that it was either *Crude Opium*, or that *horrid Extract* out of *Spirit of Wine*, both which are *Reſinous.*

Note, That ſince the very Form that it is given in doth ſo much alter the Caſe, it follows, that it is not poiſonous in it ſelf as ſuch.

7. It is obſerved, That *Crude Opium*, *Extracts* in *Spirit of Wine*, and ſuch *Reſinous Preparations*, ſtay very long at *Stomach*, *viz.* 4, 5, 6, 7, 8, 9, 10, 11, 12, nay, ſometimes 18 or 20 Hours, as *Charas* himſelf intimates in reference to a *Gentleman* that took *half a Drachm* of his *Extract* 2 or 3 times a Week, That he *Vomited* if he took a *Clyſter* before 20 Hours were expired after the taking of it; That certainly argues, that it, or a great part thereof, was ſtill at *Stomach*, which *ſtay* is a moſt grievous Thing to the *Stomach* when it is beyond the uſual time that Things are digeſted in it. *Now* ſuch a *ſtay* can be attributed to nothing but the *Roſin* ſticking to the *Coat* of the *Stomach*, for that *Preparation* of *Charas* had nothing in it but what was diſſolved in *Water*, (which is therefore always diſſolvable at *Stomach*) and the *Roſin* extracted out of the *Spirit of Wine*; therefore it was *indiſſolvable* and *viſcid Roſin* that cauſed ſo long a *ſtay*, tho' that *Gentleman* did, by ſtrength of *Digeſtion*, conquer it at laſt, and that without *Vomiting*, unleſs he (as was ſaid) took a *Clyſter* within the 20 *Hours*: Its long ſtay at *Stomach* is manifeſt alſo, in that after 20 *Hours* it purged him, and not before; which *Purging* (as ſhall be ſhewn hereafter, and has been in ſome meaſure hinted) happens by the *Diſſolution* of the *Roſin* by a ſtrong *Digeſtion*; and therefore it happens only when *Reſinous Preparations* are given

in good Quantity to Men that have ſuch a *Digeſtion*, or a *Canine Appetite*, as an Experienced *Perſon* in the Matter of *Opium* informed me, and I ſince obſerved to be very true.

8. It muſt be ſomewhat in *Opium* that is indigeſtible and ſticking to the Stomach, or elſe it could not cauſe Vomiting ſo long as it does, that is, 12, 14, 16, or more Hours, whereas other Vomits do generally operate but for 2 or 3 Hours at fartheſt, and *Opium* has nothing in it indigeſtible and ſticking but its *Roſin*.

9. It is to be *noted*, That when *Opium* is prepared, join'd, or given, with ſuch Things as deſtroy or prevent the *ſticking* of its *Roſin* to the *Stomach*, and help its *Diſſolution*, *Digeſtion*, or ſlipping out of the *Stomach*, it cauſes no ſuch ill *Effects*, tho' *Crude Opium*, or a *Reſinous Preparation*, be given. Thus if you prepare it by *Lixivials*, which alter the nature of the *Roſin* by (as it were) *Soapifying* it, and thereby take away its *ſticking Quality*, and rendring it (as Soap is) diſſolvable, ſlippery, and paſſable at *Stomach*, it cauſes no ſuch *Diſturbances*. Hence it is that *Lixivials* are found to be ſuch true *Correctors* of *Opium*, (tho' the *Reaſon* has not been conſidered, as will appear hereafter) and that the *Sapo Tartare* makes *Matthew*'s (or *Starkey*'s) *Pill*, and the *Pilulæ pacificæ*, ſo ſafe, and free from *ill Effects*; as alſo *Salt* of *Tartar* does *Libavius*'s and *Langelott*'s famous *Preparations*: Of which expect more when I come to ſpeak of the *Preparation* of *Opium* in *Chap.* 26. So,

10. If you ſubdue *Opium*, as you do *Roſins* and *Turpentines*, with the *Yolk* of an Egg, before you give it, it becomes ſafe, becauſe you, by that means, diſſolve its *Roſin*, and prevent its adhering to the *Coat* of the *Stomach*, and render it *digeſtible* and *paſſable*, which is a moſt certain *ſign* that its *Roſin* cauſes thoſe ill *Effects*. 11. It

11. It is for the ſame *Reaſon,* that *Opium* finely powdered, and mixed with other *Things* that keep its *Reſinous Parts* from a *Coaleſcence,* as in *Venice Treacle, &c.* that it is not ſo apt to cauſe thoſe *evil Effects*; This (I doubt not) made the Ancients, who had no better *Way,* give it in *Electuaries* finely divided among other Things, which they did ſo frequently, that all *Electuaries* came to be call'd *Opiates*; This (upon Experience I ſuppoſe) made *Galen* ſay, That *Opium* was not ſafe alone, but mix'd with other Things it became a good *Medicament.*

12. *Wedelius* ſays, That it ſeldom cauſes *ill Effects* when given in a fine Powder with other Things; yet is it the ſame in Subſtance, and to all Intents, but that the *Reſinous Parts* being ſegregated and ſcattered, become more ſubduable, and leſs liable to *Coaleſcence*; whereas if it be given alone in the Form of a *Pill,* all the *Roſin* falls together upon one Part of the *Stomach,* and there ſticks. Therefore *Crude* or *Reſinous Opium* ſhould never be given alone in the Form of a *Pill.*

13. The Blundering *Ancients* giving Wine to correct (as they thought) the *cold Quality* of *Opium,* found by *Experience,* that *old generous Wine* taken pretty freely after *Opium,* did very much prevent thoſe *ill Effects*; but it could not be by correcting the *cold Quality* of *Opium,* which it has not, nor indeed for any imaginable *Reaſon,* but that being a *Sulphureous Menſtruum* it helped the *Diſſolution* and *Digeſtion* of the *Roſin,* and the more for being *old* (as all know) becauſe more ſpirituous, defecated, and vigorous; whereas had it not been for that *Reaſon,* Wine muſt have rather increaſed its Effects than otherwiſe, as being an *Opiate.*

14. It is for the ſame Reaſon, that a *Tincture* of *Opium* in *Spirit* of *Wine* is found to be much ſafer than the *Extract* made out of it, tho' the Subſtance is the ſame, becauſe that in the *Tincture* the *Particles* of the *Roſin* are finely divided and ſcattered, and ſo ſubduable, and not like to *ſtick* to the *Coat* of the *Stomach*.

15. *Opium in Clyſters* has kill'd People by ſticking to the *Inteſtinum rectum*, whereas it has nothing in it, as is apparent from the *Premiſes*, that can hurt, by ſticking to them, but its Reſinous Parts; much more then may it grieve the more exquiſitely ſenſile *Stomach* by the ſame means.

From what is ſaid it will be obvious how duely to prepare and correct *Opium*, tho' there has been no true Conception thereof hitherto, but meer groundleſs and phantaſtick Imaginations.

Objection. Some may ſay (for the Folly of the World is great) Why ſhould not an Extract out of Spirit of Wine be good? For ſince Wine corrects it, much more ſhould Spirit of Wine do it by its more active *Sulphureous Spirit*?

Anſwer. So it will, if you pour it upon it in the *Stomach*, or a Digeſting Pot, for then it will much contribute to its *Diviſion*, *Digeſtion*, and taking off its *Viſcidity*, as *Spirit of Wine* does in any *Veſſel* wherein you pour it upon *Roſin*; but it is quite another *Matter* when reduced and reunited into the *Form* of an *Extract* again, and all the *Spirit of Wine* evaporated (or otherwiſe ſeparated) from it, for then the *Reſinous Parts* are in *Statu quo* of *Coaleſcence*, and want to be ſeparated by *Wine* or *Spirit of Wine*, *Lixivials*, *Yolk of an Egg*, *&c.* as much as ever.

Obj. It may be ſaid, That the *Roſin* of *Opium* is but as other *Roſins*, therefore why ſhould it offend ſo much in the Caſe of *Opium.*

Anſ. For Three very manifeſt Reaſons; 1. That it is a *Roſin* of a peculiar *Clammineſs* and *Viſcidity.* 2. That it has Acrimony in't, as appears by its Purging Quality if it be given in any Quantity, and that the *Stomach* diſſolves it (as was ſhewn.) 3. That it is join'd with the pungent Particles of the *Volatile Salt* of the *Opium*, which, when it ſticks to the *Stomach*, it holds to it, tearing it too long and continually with thoſe *Points* upon the ſame *Part*, which muſt cauſe *Diſtreſs* and *Vomitings* in Weak *Stomachs* that cannot digeſt it, and that ſometimes to no *Purpoſe*, whereupon follows *Convulſions*, *Hiccoughs*, *&c.* and all *Endeavours failing*, an *Yielding* or *Succumbency*, followed by *Faintings*, *Syncopes*, *Leipothymies*, &c. and ſometimes *Death* it ſelf, for it muſt be a moſt grievous Thing to be ſo continually ſtung in the ſame Part of the moſt *ſenſile Membrane* of the *Stomach* without Remedy or Redreſs. If ſome have died of a little *Gum Ammoniacum*, or *Sagapenum*, ſticking to the *Inteſtinum Rectum* or *Colon*, which are the Sink of the *Body*, and fitted for and uſed to bear all *Fæces* and *Traſh*, much more muſt the *nice* and exquiſitely diſpoſed *Membrane* at *Stomach* be grieved by ſuch *pointed Roſin*, as that of *Opium*, ſticking to ſome Part thereof; beſides, that the *Stomach* does peculiarly hate and loath, that any Thing, how gentle ſoever, ſhould ſtay too long in it, which creates frequent and ſad *Diſturbances* in ſuch whoſe *Stomachs* are relaxed, (as 'tis alſo in the Caſe of *Opium*) and cannot in due *time* diſcharge themſelves of the grieving Matter; *Therefore* ſuch as are moſtly troubled with thoſe *diſmal Symptoms* after *Reſinous Opium*,

Opium, are People that have fine *Textures*, and ill *Digeſtions*, with whom it muſt, and does deal for a good while, as a *Pleaſer* of the *Stomach*, till the *indigeſtible Roſin* that is ſtuck to it, does therefore, and becauſe it holds the *Points* of the *Volatile Salt* ſo tediouſly and importunately to one Part, grievouſly teaz and urge the *Stomach* to *Vomit*, *&c.* which it does in ſome ſooner, in others later, according to their *reſpective Diſpoſition* of *Stomach*. Hence it is that it operates pleaſingly in ſome for *ſeveral Hours* before it excites a *Nauſea*, *&c. viz.* 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, and more *Hours*, and in ſuch as have a *ſturdy Texture*, and *ſtrong Digeſtion*, operates only pleaſingly all the *time*, becauſe their *Senſation* is not ſo nice, and that they gradually digeſt the *Roſin*, which, if the *Opium* was given in a *large Doſe*, does (as *Roſins* diſſolved are apt to do, eſpecially if they have any *Acrimony* as this has) turn into a *Purger*, which brings down *Ordure* that ſmells of the *Opium*, and ſo the Danger is over: How common is it, that *Vomitories*, being much ſubdued in ſome *Stomach*, turn to be *Purgers*?

Thus it happens with *Dogs*, that have a *robuſt Texture*, and *ſtrong Digeſtion*; but ſuch *Reſinous Opium* deals ſeverely with *Cats*, and commonly kills them. You may ſee from the *Premiſes*, *why* it cauſes ill *Symptoms* oftner in *Women*, and *Children*, than in *Men*, and in *fine textur'd* Men, than the *robuſt*, and in ſuch as have weak *Digeſtions*, rather than in them that have *ſtrong*; *why* it cauſes all the *Symptoms* of *pleaſing Senſation* at firſt, and the *ill Effects* afterward; *why* ſome have no *ill Effect* after it, even in a large Quantity, unleſs you'll call *Purging* an *ill Effect*; *why* ſuch as Purge after a great *Doſe* eſcape the Danger,

ger, as *Dogs, &c. why* their *Vomits*, eſpecially the firſt, ſmell, *&c.* of the *Opium*, tho' the *Vomiting* happens after many *Hours*; *why* the *Vomitings* are ſo very *tedious* and *ſevere, viz.* becauſe of the ſtubborn Adherence of the *Roſin* to the *Stomach*; *why* it operates ſo long a *time* in ſome, in compariſon of others, *viz.* by ſtaying ſo long at *Stomach.*

1. All which ſeem to me a good Argument, That ſuch as dye with *Opium*, dye while it is at *Stomach*, and conſequently, becauſe of the *Roſin* which muſt needs be fatal in great *Doſes*, ſeeing it is ſometimes ſo very grievous in *Doſes* of a *Grain* or Two, that bring *People* even to *Death's Door* with *Vomitings*, *Diſtreſſes*, *Syncopes*, *&c.* yea, and has kill'd ſome, even in that ſmall Quantity, as I am inform'd.

2. Some evidently dye while it is at *Stomach*, becauſe they dye ſoon after they Vomited up ſomewhat that ſmelled of it, tho' poſſibly the *Roſin* ſtill ſtuck to it.

3. Becauſe others evidently dye of the *Vomiting* and its plain *Effects* at *Stomach.*

4. Becauſe they commonly dye with a *Hiccough.*

5. Men dye of it within the uſual time that it ſtays at *Stomach*, which is ſometimes 20 *Hours* for certain; whatever more it may be when large *Doſes* are taken; and to me it ſeems an *Argument* of its killing at *Stomach*, when they dye after 20 *Hours*, becauſe if it did not ſtick at *Stomach* all that time, the *Operation* muſt have been over, or, at leaſt, much declined, and conſequently the Height of the *Danger* paſt.

6. I cannot find that any have died of *Opium* when the *Roſin* was ſeparated from it, tho' I do not deny but that it may kill then, as an immoderate

derate Quantity of Wine has done. But this I can tell, that one did, at Mr. *Banks*'s the *Chymiſt* in *Wallbrook* in the *City* of *London*, drink (as Mr. *Banks* inform'd me) a *Pint* and a *Half* of ſuch a Liquid Preparation of *Opium*, that had the *Roſin* ſeparated from it, that had the Power of 3 Ounces of *Opium* in it, and it never harmed nor diſcompoſed him, but that he Vomited about an Hour after it was taken; whether he did ſo by Reaſon of the *Opium*, or becauſe the Perſon was Crop-ſick, (as they call it) by Reaſon he had drank much Wine before, or both, I cannot determine.

Now (I hope) that my inquiſitive Reader is fully ſatisfied,

1. That *Opium* does not act by a *Cold Quality*, nor by the Means of *Fumes*, nor any how by *diminiſhing or diſabling the Spirits*, (except it be that the *pernicious Roſin* may do ſomething of that *kind* by its aforeſaid ill Effects) but by pleaſantly affecting the *Membranes* at *Stomach*, *Venereal Parts*, *&c.*

2. That *Sleep* is cauſed by *Relaxation*, and *quieting* the *Spirits*.

3. That *Pleaſure*, eſpecially if *intenſe* and laſting, as that by *Opium*, *comforts*, *enlivens*, *encourages*, and *cauſes an Ovation* of the *ſenſitive Soul* and *Spirits*; and *Diſpleaſure* cauſes *Sadneſs*, *Dejection*, *&c.*

4. How *Pleaſure* muſt cauſe *Complacency*, *Satisfaction*, *Content*, *Acquieſcence*, and *Compoſure* of the *ſenſitive Soul* and *Spirits*, as *Grievances* cauſe the contrary.

5. How *Pleaſure*, elevating and keeping up the *Spirits*, and cauſing an entire *Relaxation* of the *Defenſive*, and a great *Relaxation* of the *Vigilative* Con-

Contraction, which tire the *ſenſitive Soul*, muſt cauſe *Euphory*, or eaſie undergoing of *Labour*, *Journeys*, *&c.* without *Laſſitude*, as *Experience* ſhews.

6. How *Pleaſure* cauſes *Relaxation* of all the *ſenſile Parts*.

7. How the ſaid *Relaxation* (as in *Sleep*) does, by ſuffering the *Animal Spirits* to expand, and thereby making them unfit to carry *Impreſſions* ſmartly, which is neceſſary to convey a ſenſe of *Pain*, (for a *ſmart Impreſſion* is the very cauſe of it) take away *Pain*: To which you may add, That the *ſenſitive Soul*'s attending willingly to the Senſe of *Pleaſure*, is diverted from *Pain*, and that a Senſe of *Pain* cannot be in the ſame Subject with *Pleaſure*, which being therefore once excited, *Pain* muſt diſappear; but that of taking away all *ſmartneſs* of *Impreſſion* by *Relaxation*, is a plain *Mechanical Cauſe*.

8. How therefore all *Fluxes* that are cauſed by, or require a *grievous Senſation*, or *Irritation* by *Quantity* or *Quality*, to maintain and continue them, by cauſing a *Contraction* of the Parts to ſqueeſe out the *Humours*, muſt be moderated for want of *Senſation* (upon ſuch *Relaxation*) to irritate the Parts, as it happens in *Sleep*, or in any Caſe where *Relaxation*, and thereby *Expanſion* of the *Animal Spirits*, incapacitates them to carry *Impreſſions* ſmartly, which is of the *Eſſence* of *Pain*, (as has been ſhewn.)

9. How *Perſpiration* muſt be promoted by *Relaxation*, which opens the *Pores*.

10. How, that by the ſame Means, *Sweat* alſo muſt be promoted, if the Body be full of moiſture.

11. How *Opium* (or *Semen Animale*) being of the ſame *Principles*, and of like Principles with *Cantharides*, *Piſmire*, *Bees*, *Garlick*, *&c.* muſt excite to *Venery*, cauſe *Itchings* of the *Skin*, *&c.*

12. How

12. How *Opium* may, by too high an *Ovation* of the *Spirits*, cauſe *Watching*, while *Pleaſure* cauſing *Relaxation*, *&c.* may take away *Pain*; for *Relaxation*, as in *Sleep*, *Syncopes*, *&c.* is enough to take away *Pain*; but to Sleep, *Quietneſs* of the *Spirits* is alſo required, as well as their *Expanſion* by *Relaxation*; ſo that *Pain* may very well be taken off without *Sleep*, as it often is by *Opium* that always relaxes.

13. How the *Pleaſure* that *Opium* cauſes, is (as was ſaid) by the ſame *Principles*, and therefore of the ſame Nature with that which *Animal Seed* cauſes upon the *Membranes*, but that *Animal Seed* cauſes it only upon one Part, and *Opium* upon the *Membranes* of the *Stomach*, *Venereal Parts*, and all other in *general*, and that only for a *Moment*, but *this* of *Opium* for many *Hours*, by which Means the *Effects* of *Relaxtion* by *Pleaſure* come to be more remarkable; as after much *Wine*, whoſe Effects is ſomewhat laſting and *internal*, as that of *Opium* is.

14. How the *Roſin* of *Opium* cauſes its *ill Effects* by its *Indigeſtibleneſs*, *adhering Quality*, and *tedious ſtinging* of the exquiſitely nice Coat of the *Stomach*, by continually teazing and urging it by its *Acrimony* and *acute Volatile Points* or *Spicula*.

Therefore having, 1. *A moſt perfect and compleat Sol-Volatile-Oleoſum* in *Opium*, of the ſame pleaſing *Principles* as to all *Membranes*, (as *Animal Seed* is to the Membranes of *Venus*) whereby they muſt be *pleaſed*, *tickled*, and *relaxed*; 2. *A pernicious Roſin* indigeſtible, ſticking, and arm'd with *acrimonious* and *ſtinging Points*, which muſt highly offend the moſt *ſenſile Coat* at the *Stomach*; I am now ready (by *God's Aſſiſtance*) to explain every *Phenomenon*, or *Effect* of *Opium*, however *Amazing* and *Myſterious*, hoping they will not remain long ſo.

CHAP.

CHAP. XVI.

The Explication of the Effects of Opium *uſed Externally.*

ITS Effects Externally uſed are of Two ſorts, *either,*

I. As an *Opiate*, or *pleaſing Tickler of the Membranes*; Or,

II. As an *Alterative* of the Parts that it is applied to.

Firſt, As an *Opiate* or *Pleaſer of the Membranes*, it has the ſame *Effects* as *Opium* uſed internally, and for the ſame Reaſon; therefore the Cauſe of its Operation, in this Caſe, will be better ſeen by the Explication of its *Internal Effects*, which are far more perfect, compleat, and certain.

Secondly, As an *Alterative* of the Parts that it is applied to, which are the following, *viz.*

1. It *incides*, *reſolves*, and *diſcuſſes* by its pointed, penetrating, and *volatile Salt*, inſinuating it ſelf into the *Parts* and *Humours* of the *Animal*, becauſe its Particles are fine, minute, and agreeable thereto, (as *Menſtruums* to the Things to be diſſolved:) Then by its *Volatility* it *diſcuſſes* what it has ſo *incided* and *reſolved*.

2. It *molleſies and relaxes* by its *Sal-Volatile-Oleoſum* ſo reſolving the *Parts* and *Humours*, and thereby kindly looſening them; Thus *Opiates*, as *Sola-*

Solanum Lethale, (or deadly Night Shade) *Hemlock*, *Mandrake*, *&c.* come to be of excellent Uſe in hard *Tumours* of the *Spleen*, *Tophouſneſs*, *&c.*

3. It *Maturates and Suppurates* for the aforeſaid Reaſons, for nothing can better diſpoſe towards Maturation and Suppuration than *relaxing*, *mollefying*, and *reſolving*.

4. It *exulcerates* or cauſes *Bliſters*, or at leaſt *rubifies* tender Skins, if it be very ſtrong, becauſe of its *Volatile Salt*, as *Cantharides*, *Spearwort*, and other Things do upon the ſame Account. But this *Effect* belongs mainly to the true *Maſtack*, or Ὄπος, that drops from the *Inciſions* made in the *Heads* of the *Poppies*, more eſpecially the *Theban*, which affords a moſt powerful *Juice*, for Exulcerating or Bliſtering is but a ſtronger, fuller, and therefore *painful Reſolution*, as you ſee by the Cuticle upon Bliſters reſolved into a kind of Jelly.

5. It is *Pſilothrick* for the ſame Reaſons, for while it ſo reſolves the Parts, it looſens the Roots of the Hair, and ſo cauſes its ſhedding.

6. It *hurts the Eyes*, becauſe of its Acrimony, by Reaſon of the *Volatile Salt*.

7. It *cauſes Itching in the Skin* by the *Titillation* of the ſame *Volatile Salt*, as you find by the Application of *Squills*, and the like.

8. It *excites Venery*, by the ſame *Titillation*, on the *Veneral Membranes*.

CHAP.

CHAP. XVII.

The Explication of the Effects of Opium *uſed internally in a moderate Doſe.*

NOte, That becauſe *Opium* has been generally hitherto uſed either *Crude*, or with its *Reſin* in it, the *Effects* of *Opium* are accordingly conſidered as *common Experience* thereupon has given *Opportunity* of *Obſerving* them; but as I proceed I ſhall ſhew you where the Reſinous Part of *Opium* is concern'd in the *Effect*.

1. It is manifeſt why *Opium* may well operate in a very *ſmall Quantity*, as it uſually does, becauſe the leaſt Matter imaginable *affects* the *Senſes*, (as has been ſhewn;) for the Thouſandth Part of a grain of *Ambergriſe*, *Muſk*, *&c.* affects the *Smelling*, the Hundredth Part of a *Grain* of very acrimonious Things the *Taſte*, which cauſes very ſenſible *Pleaſure*, or *Diſpleaſure*, according as it is agreeable, or not; much eaſier may the exquiſitely diſpoſed *Membrane at Stomach*, which is affected with Things ſo indefinitely ſmall, that no other *Senſe*, or *Membrane*, can take notice of, as the Particles of *Crocus Metallorum* in *Vomits*, *Effluvias* from a *Cats Body*, *peſtiferous Effluvias*, and the like; of all which the *Stomach* is ſo ſenſible, that they thereby cauſe moſt violent Symptoms, which are (as was ſhewn) proportioned to the Senſation. Therefore it can be no *wonder*, that a *Grain*, or *leſs*, of *Opium*, ſhould affect the ſenſile Coat of the *Stomach*, and thereby cauſe a Senſe of *Pleaſure*; for that which is nice to diſcern grieving *Particles*, is ſo to diſcern pleaſing ones,

(as has been ſaid.) *Cujus eſt Dolor ejuſdem eſt Voluptus*, that is, *Pleaſure*, and *Diſpleaſure*, belong to the ſame Part, and (as was ſhewn) in *equal Degree.*

This proves, That it muſt Operate by pleaſingly affecting the *Stomach*, for it were otherwiſe impoſſible, that ſo little a *Quantity* ſhould cauſe ſuch *remarkable Effects*, and that before the *Opium* is out of the *Stomach*; but it is ordinary for the *Stomach* to cauſe *mighty Effects* by its Senſation of very ſmall Things, otherwiſe inſenſible and inconſiderable as to the Production of any obſervable *Effects*; and therefore it would be a Miracle, if it did any other *Way* cauſe ſuch great and numerous *Effects*. *Helmont* obſerved, That *Pro Remedio reſtaurativo Archæi (ſive Animæ ſenſitivæ) non requiritur Unciarum & Drachmarum Quantitas, ſed pauca Grana*; That is, *Very little ſerves to comfort the Archæus* (*or Senſitive Soul*;) becauſe it is done by *Senſation*, (as I have proved.)

2. It is as evident how a hot, brisk, and *Salino-volatile* Thing, as *Opium* is, muſt affect the *ſenſile Coat* of the *Stomach* in a *ſhort Time*, as *Vomits*, *Purgers*, *&c.* do; which it does much in the ſame Time with thoſe Things, that is, as ſoon as they inſinuate themſelves through the *Cruſta Carnoſa* of the *Stomach*, and reach its *ſenſile Coat*, which is the Reaſon that *Opium*, *Vomits*, *Purgers*, *&c.* make ſome, and like *Delay*, before they *Operate*; which is alſo a Proof, that all of them Operate by affecting the *ſenſile Coat* of the *Stomach*, all the Difference being, that one affects pleaſantly, as *Wine*, *Meat*, and *Cordials*, and the other by a *grievous Senſation.*

The Explication of the Conſtant Effects of Opium *uſed internally*, &c.

1. *The firſt and leading Effect of* Opium is, cauſing *a moſt agreeable, pleaſant, and charming Senſation about the Region of the Stomach.* This is a *Property* that belongs to it *omni & ſemper*, and indeed *ſoli* to *Opiates*, if the Degree, Duration, and Fineneſs of the *Pleaſure* be *conſidered.*

How manifeſt is it, from what has been ſaid of the moſt Compleat and Conſummate *Sal-Volatile-Oleoſum* of *Opium*, which exactly agrees in Principles, *&c.* with *Semen Animale*, that ſo highly pleaſes and titillates the *Membranes*, with which it not only agrees in *Principles*, (as was ſhewn) but has them more *active*, *actuating*, and *titillating*, than any *Membrane*, that it muſt of neceſſity highly pleaſe all *Membranes*, more eſpecially ſuch as are moſt exquiſitely diſpoſed for Senſation, as the moſt *ſenſile Membrane* at *Stomach* is, not only by its *Agreeableneſs*, but by a moſt Charming and Captivating *Titillation*, that actuates and cauſes a fine Ovation, and ſerene glowing of the *Spiritus inſiti* of the *Stomach*, which makes it pleaſing in the higheſt manner, having all the *Requiſites* to cauſe a Senſe of *Pleaſure!* and that is not all, *but it being taken into the Body, it cauſes a long, continued, and permanent ſenſe of Pleaſure, which we muſt neceſſarily carry along with us as a* Vade Mecum, *even Sleeping or Waking, Reſting or Moving, or whatever we do, or wherever we are*; by which *Means*, it far excells all other *Pleaſures*, and conſequently produces ſuch mighty *Effects*; all other *Pleaſures* being *momentary, tranſitory, deſultory*, or *interrupted*, except that of *Wine*, and

Cordials at *Stomach*, which therefore have the *likeſt Effects* to that of *Opium*, tho' they do not equal it in the *Intenſeneſs* or *Duration* of the *Pleaſure*, unleſs they are repeated, (as indeed they may be) which made me to intimate, That drinking a good *Glaſs* of *Wine* every *Hour*, and by that Means keeping the freſh *Pleaſure* thereof continually at the *Stomach*, (like that of *Opium*) is the beſt Way to cauſe a long *Euphory* of *Labour*, *Journeys*, *&c.* which may come near the Performance of our *Divine Sal-Volatile-Oleoſum* of *Opium*, tho' never equal it for Reaſons already ſufficiently hinted, *viz.* becauſe *Wine* wants its moſt agreeable Compoſition, and fine *Titillation* of the *Volatile Salt* that *Opium* and *Animal Seed* have.

Note, That the *Pleaſure* of *Opium* may, to ſome inadvertent *Perſons*, ſeem very indefinite, tho' it is at *Stomach*, (as it muſt be) becauſe the *Pleaſure* immediately relaxing all Parts, and gratifying the Senſitive *Soul*, which informs the whole, ſeems to be *general*, tho' Originally only at *Stomach*.

2. Our *Conſummate Sal-Volatile-Oleoſum* muſt cauſe a *blith, gay, and good Humour*; for being pleaſed with any Thing (as is the *Vulgar Obſervation*) cauſes a *good Humour*, how much more muſt ſuch an *intenſe*, *agreeable*, and *continual Pleaſure*, that we always, and every where carry along with us, ſo do! How common a Saying is it, *He was pleaſed with ſomewhat, for I found him in a good Humour!*

3. The like is to be ſaid of *its cauſing Promptitude, Serenity, Alacrity, and Expediteneſs in Diſpatching and Managing of Buſineſs*; for theſe are but natural and neceſſary Conſequences of a *blith, gay, and good Humour*, and therefore always go together; for the *ſenſitive Soul* being put in

in a *fine Ovation*, by the *continual Pleaſure*, is more active; and having thereupon (as was ſhewn) wholly excuſed himſelf from the *Care*, and ſolicitude of the *Defenſive Contraction*, and, in great Meaſure, of the *Vigilative Contraction* alſo, is more at *leiſure* to attend the Managery of other Affairs without *Diſtraction*; beſides, that he is *actuated* and *enliven'd* by the aforeſaid *Ovation* of the *Spirits*, and pleaſing *Titillation* into an *Alacrity* and *Promptitude* for any Buſineſs; with which alſo he is leſs tired, becauſe he has (as was ſaid) rid himſelf of the *Fatigue* of the *Contractions*, that (as was manifeſtly proved) do cauſe *Laſſitude*, which otherwiſe can hardly touch or affect him at all in the State of *Relaxation*.

4. *It muſt cauſe Aſſurance, Ovation of the Spirits, Courage, Magnanimity*, (as *Wine* does) by elevating the *ſenſitive Soul* by *Pleaſure*, and a high *Titillation* of the *Spiritus inſiti*, by its *Volatile Parts* actuating them, as the *Animal Semen* does all *Creatures* in *Times* of *Copulation*, tho' it immediately affects only the *Venereal Membranes*, but ours does actuate them not only in thoſe *Membranes*, but alſo in the more exquiſitely diſpoſed *Membranes* for Senſation at *Stomach*, and ſoon after, all over the *Body*.

5. *It prevents and takes away Grief, Fear, Anxieties, Peeviſhneſs, Fretfulneſs, &c.* for the aforeſaid *Reaſons*, which cauſe a *blith, gay*, and *good Humour, Promptitude, Courage, &c.* for it is impoſſible to be *gay*, and *good Humour'd, Serene, Chearful, Courageous*, and *Magnanimous*, and at the ſame Time *Sorrowful, Fearful, Peeviſh, Fretful, &c.* If the bare Senſe of an ordinary *Meal* of *Meat* at *Stomach*, which cauſes but a ſlow *Pleaſure* in compariſon with *Opium*, takes off the *Peeviſhneſs, Fretfulneſs, &c.* that the *grievous Senſation* of *Hunger* cauſes, how much more muſt the intenſe and *charming Pleaſure* cauſed by *Opium*, that is ſo agree-

able, even far beyond *Wine* it ſelf, (as has been ſet forth) take away all ill *Humours*, *Fretfulneſs*, *Peeviſhneſs*, *&c.*

Obj. But it may be ſaid, That *Sleepineſs*, which depends alſo upon *Relaxation*, as the *Effects* of *Pleaſure* do, cauſes a *Peeviſh*, *Fretful Humour*, as is commonly obſerved.

Anſ. It is ſo far otherwiſe in the Caſe of *Opium*, that it is quite contrary; for, 1. The Sleepy are not Peeviſh, unleſs you put them by ſome Means out of the *Pleaſure* of enjoying *Sleep* or *Relaxation*, for if you let them alone they will not trouble you with Peeviſhneſs, nor any ill *Humour*; but it is the calling them from their *relaxed Condition*, to the grievous Task of *Contractions*, that vexes them; ſo that it is the *Want* of continuing under the *Relaxation* that frets them, and the more, becauſe the *Fatigue* and *Tedium* of *Contraction* did put them upon the *Relief* of *Sleep*, of which if diſappointed, they are much vexed.

But in the *Caſe* of *Opium*, you cannot ſo eaſily rob them of their *Pleaſure*, which they carry continually within them in an uninterrupted manner, unleſs ſome very *grievous Thing* happens, which cauſes more *defenſive Contraction* than the *Opium* cauſes *Relaxation*; tho' even this alſo is generally ſoon overcome by the *Pleaſure* continually inviting the *Relaxation*, and promoting it, whereas the *Interruptions* thereof are *tranſitory*; but at the worſt it is but taking more *Opium*, and the *Work* is done; for, I obſerve, that the *Doſe* of *Opium* muſt be ſufficient to introduce ſuch a Senſe of *Pleaſure* as cauſes a *Relaxation* of the *Contraction* cauſed by the *Grievance*: Hence it is certain, that a greater *Pain* requires a larger *Doſe* of *Opium*, (as has been intimated.)

6. All

6. All know, that *Pleaſant Diverſions*, as *Muſick*, *Pleaſant Jeſts* and *Stories*, *fine Sights*, *&c.* do cauſe *Euphory*, and *an eaſie undergoing of Journeys*, *Labour*, *&c.* Therefore, if ſuch interrupted, tranſient, and ſlight *Pleaſures*, do it ſo much, it will be eaſily granted me, that a continual, and more *intenſe Pleaſure*, that is always preſent without any *Interruption* or *Intermiſſion*, (as that of *Opium*) muſt cauſe a more eminent and permanent *Euphory*, proportioned to the *Pleaſure*, which cauſing *Relaxation*, prevents the *Fatigue* (or *Laſſitude*) that is cauſed only by *Contractions*, either *Vigilative*, *Defenſive*, or *Intentive*, (as I have proved.)

So that I do not conceive, how the *Noctambuli* (or ſuch as Walk in their Sleep) can ever be tired, if they Travelled ever ſo far, (if they could Eat and Drink) becauſe the *Relaxation* of the *Sleep* recruits them as much as they ſpend of *Spirits*, *&c.* ſo Perſons that cauſe ſuch *Relaxation* by *Opium*, and ſo repeat it as to maintain the *Relaxation*, can hardly be weary; which is the true, plain, and *Mechanical Reaſon*, why the *Turks*, and other *Eaſtern People*, do, by the Help of *Opium*, perform prodigious *Journeys* without being tired; which may therefore (in *Alluſion* to the *Noctambuli*) be call'd *Opiambuli*, (or *Opambuli*) as being a kind of Artificial *Noctambuli*, becauſe they are much relax'd by the *Pleaſure* that *Opium* cauſes, as the other are by *Sleep*. *Qui Lætitiâ afficiuntur* (ſays *Sanctorius*) *nullam in Itinere Defatigationem ſentiunt*; That is, *The Merry are not Weary*, (as the Saying is) becauſe Mirth, being pleaſant, cauſes *Relaxation*, as *Opium* does, in ſome meaſure.

Note, That as to all the foregoing *ſerene* and *briſk Effects*, a full and liberal *Perſpiration*, which it alſo cauſes, (as will be ſhewn) contributes much thereto a *poſteriori*; for, as *Fire* burns ſlowly and dully, if the Smoak does by any means return upon it, and very *ſerene* if not, ſo it is with the *Flame* of *Life*, if clouded with, or clear'd from *Vapours* by *Perſpiration*. Sanctor. Sect. 7. Aph. 17. *Melancholia ſuperatur liberâ Perſpiratione*, & *Aph.* 30. 31. *Edulia aperientia Gaudium movent*; That is, Such as open the *Pores*, and cauſe *Perſpiration*, cauſe *Joy* or *Mirth*.

7. It *lulls, ſooths, and, as it were, charms the Mind with Conſent and Acquieſcence*, for the ſeveral Reaſons couched in the Premiſes, and becauſe the *fine, continual*, and *charming Pleaſure* of *Opium*, (ſuch as ſome *Glaſſes* of *generous Wine* cauſes) muſt needs have ſuch an *Effect*.

8. It *quiets, allays, and compoſes all Perturbations and Commotions of the ſenſitive Soul, Spirits, &c.* 1. Becauſe it ſo *lulls, ſooths*, and *charms* the *ſenſitive Soul*, (as is aforeſaid) who is the Original of all *Motions* in the *Animal*. 2. Becauſe all *Motions* are, by the *Relaxation*, proportionably abated (as was demonſtrated.) Thus *Opium* takes off *Hyſterick Fits, Fevers* from Commotions of the Spirits, *Convulſions, Stops Hemorrhages*, (or *Bleeding*) *&c.*

9. *It cauſes a Relaxation of all the ſenſile Parts of the Body*, by Reaſon of the great and continual *Pleaſure* that it cauſes; and how *Pleaſure* cauſes *Relaxation*, I have ſhewn in *Chap.* 14.

10. *It cauſes Indolence, or Exemption from Pain*, by cauſing ſo high and laſting a *Pleaſure*; 1. Becauſe that *Pleaſure* takes up the *Attention* of the *ſenſitive Soul*, who delights in't. 2. Becauſe a *ſenſe of Pleaſure and Pain* cannot be at the *ſame Time* in the *ſame Subject*, being they are *Contraries*.

3. Be-

3. Becauſe the *Membranes* being relaxed, and the *Animal Spirits* expanded, the Impreſſions of Pain cannot be carried to the *ſenſitive Soul*, becauſe they cannot convey *Impreſſions* ſmartly being thus relaxed and expanded, (as has been demonſtrated by the Compariſon of a *Gut* half full of *Air*, *&c.*) and all *Impreſſions* of *Pain* muſt be ſmart, or elſe they are not *Impreſſions* of *Pain*; for gentle *Impreſſions* are ſuch as belong to *Oils*, *ſmooth*, and *ſoft Things*, or when the *Animal Spirits* can hardly carry any *Impreſſions*, but gently, as in *Sleep*, and other *Relaxations*, as that upon *Pleaſure*, *&c.* which is our Caſe.

Note, That it will cauſe *Indolence* without cauſing *Sleep*, becauſe *Sleep* requires *Relaxation* and *Quiet of the Spirits*, but *Indolence* requires only *Relaxation*, (as was ſhewn) which always follows the charming *Pleaſure* of *Opium*.

11. It *ſtops*, *moderates*, *or palliates moſt Fluxes*, and promotes *Perſpiration*; becauſe the *Relaxation* takes away the ſenſe of the *Irritation* of Humours, which cauſes a *Contraction* to ſqueeſe them out, and that the ſame *Relaxation* opens the *Pores*, to let the *Fumes* out, which paſs by their own *Levity* upon the opening of the Pores. *Nihil magis* (ſays *Sanctorius*, Sect. 7. Aph. 6.) *reddit liberam Perſpirationem quam Animi Conſolatio*, *(aut voluptas)* & Aph. 19. *Animi Conſolatio*, *quacunque de cauſâ*, *aperit meatus*, *& largam Perſpirationem facit*.

Now you may perceive why *Opium*, and good *Cordials*, do moderate *Fluxes* by *Stool*, even before they are out of the *Stomach*, becauſe the *Pleaſure* there cauſed *relaxes* all *Parts*, and thereby cauſing an *Expanſion* of the *Animal Spirits*, the ſenſe of the *Irritation* is loſt, becauſe the *Expanded*

Spirits

Spirits cannot carry the *Impreſſions* ſmartly to the *ſenſitive Soul*, which muſt be, to cauſe a *ſenſe* of *Irritation*, or *grievous Senſation*: By the *ſame Reaſon*, only warm *Trenchers* applied to the *Belly*, or ſitting upon a *warm Stool*, *&c.* moderates a *Looſeneſs*, becauſe the *Pleaſure* of the *Warmth* relaxes, and ſo takes away a ſenſe of the Irritation by the aforeſaid *Expanſion* of the *Spirits*.

12. *I have juſt now ſhewn how it promotes inſenſible Perſpiration, viz.* by the *Relaxation* opening the *Pores*, and letting out the *Fumes*; which I need not have mentioned again but for Order ſake, that all may thereby ſee, that I evade the *Explication* of no Effect, nor, indeed, need I, for they are now obvious enough, even without my *Explication*, to any *Sagacious Perſon*; ſo that the *Plainneſs* may give greater cauſe to paſs over ſome untouched, than the *Difficulty*; but it is not fit that either ſhould cauſe any Omiſſion in ſuch a *mighty Concern*, that was never Explicated, and ſcarce ever thought poſſible.

13. *Opium prevents Shiverings in Ague Fits*, becauſe that (for the Reaſons aforeſaid) it takes away the ſenſe of the *Irritating Humours* that cauſes them.

14. *It prevents and cures Colds*, by the *Relaxation* that its *Pleaſure* cauſes, whereby the *Pores* are kept very open, and *Perſpiration* (as was ſhewn) promoted. Beſides, that it preventing the Senſation of, hinders it to conſtringe the Pores, by cauſing a grievous Senſation.

15. *It cauſes a larger and ſlower Pulſe*, becauſe of the *Relaxation* that the *intenſe* and *continual Pleaſure* cauſes, by which the *Arteries* are widened, and the Motion made ſlower; 1. Becauſe the *Animal Spirits* are weakened by the *Relaxation* of their Veſſels, and their *Expanſion* thereupon. 2. Becauſe the ſenſe of *Irritation*, by which the *Heart* is ſolicited to move faſter, is loſt. 16. *It*

16. *It cauſes Drineſs in the Mouth*, (as Sleep doth;) 1. Becauſe the *Dilatation* of the Glandules, by the *Relaxation*, detains and ſuſpends the *Humours*; and 2. Becauſe the Senſation being leſſen'd, the Membranes that include the *Salival Glandules* are not irritated to *Contraction* to ſqueeze out the *Saliva* (or Spittle.) 3. Becauſe the *Pulſe* is ſlower to cauſe an Extruſion of the Humours.

17. *It has moſt Effect in warm and moiſt Weather*, becauſe both Warmth and Moiſture promote *Relaxation*, by which *Opium* does (upon the Account of the Pleaſure it cauſes) perform its *Effects*.

18. *It has more Effect upon fine aud lax Textures*, for the ſame Reaſon, and becauſe their *Senſation* is more nice, and affected more with Pleaſing or Grieving Things: Therefore it affects *Children* and *Women*, eſpecially the Nice, and Delicate, more than Men; which may be the Reaſon why *Women* do not uſe *Opium*, in the *Eaſtern Countreys*, as much as *Men*.

19. *It cauſes an Efflorescence* (or Redneſs) of the Skin, (as *Sleep* or *Wine* do) becauſe the Skin being relaxed, admits the *Bloud* to come into it very freely, as *Cold*, *Fear*, *&c.* contracting the *Parts* of the *Skin*, repel it, or ſqueeſe it out, or back again; Thus Perſons that drink much, get Red Noſes, by frequent *Relaxations* of the Skin, which widen the Roads of the Bloud more and more; Hence it is that the Bags at a Turky-Cock's Neck are red when he is pleaſed, and ſoon pale again when diſpleaſed.

20. *It affects the Genus Nervoſum, or Animal Spirits*, (which is a common Obſervation) *more than the Bloud*, becauſe it Operates by affecting *Senſation*, wherein the *Nerves* and *Membranes* are moſt concerned, and not by *altering the Bloud*, to which it bears no *Proportion*, to cauſe any remarkable *Effects*.

Note,

Note, How plainly this *Conceſſion* of all *Authors* confirms what I ſaid, *viz.* That it does not operate as an *Alterative* of the *Bloud*, *&c.* but by *affecting Senſation*, as I have proved.

21. *It increaſes Seed in ſome Meaſure*, becauſe it adminiſters a *Sal-Volatile-Oleoſum* of the ſame Nature with it, and by its *Titillation* ſolicites and invites the ſending of its Matter that way, as is obſervable in ſuch as uſe much *Titillation*; but to ſpeak *plainly* and *mechanically*, I think that this mainly happens, becauſe of the *Relaxation* of the Parts admitting (as was ſaid of the *Efflorescence* of the Skin by *Relaxation*) the *Bloud*, or Materials of *Seed*, more freely into the *Teſticles*, and all the *Seminary Veſſels*, eſpecially, being that the *Titillation* cauſes an oftener emptying of the ſame, in order to receive thoſe Materials with leſs *Oppoſition*, for *Quod intus eſt prohibet alienum*, that is, *What is within hinders the entrance of other Matter*; Nothing can receive more than what it can contain, but what is often emptied can ſucceſſively receive much.

22. *It cauſes a great Promptitude to Venery, Erections, &c.* (eſpecially if the *Doſe* be larger then ordinary) becauſe being of the ſame *Principles* with *Animal Seed*, and (in all *probability*) ſomewhat more *titillating*, and of like *Principles* (tho' more gentle) than *Cantharides*, it muſt highly *titillate* thoſe Parts, and conſequently cauſe a great *Promptitude* to *Venery*.

CHAP.

CHAP. XVIII.

The Explication of the frequent (tho' not conſtant) Effects of Opium, *in a Moderate Doſe.*

1. IT *cauſes Sleep*, becauſe it highly diſpoſes thereto by the *Relaxation* that its *Pleaſure* cauſes. Thus *Muſick*, *agreeable Frications*, and many other *Pleaſures*, nay, all that are conſiſtent with *lying*, or *ſitting ſtill*, and ſilent, incline us to *Sleep*; but none can compare with the *ſweet*, *continual*, and *tranſcendent Pleaſure* of *Opium*, that we carry along with us for many *Hours*; whereas other *Pleaſures* are either remiſs, or interrupted, or tranſient in their *Nature*; for *continuance* in gentle *Pleaſure*, as the fall of *Waters*, *Whiſtling of Winds*, effects much towards Sleep, ſo *Intenſeneſs* does alſo, tho' *momentary*, as that of *Venus*; how much then muſt a *continual* and *intenſe Pleaſure* cauſe it, eſpecially when *Reſt*, *Silence*, *&c.* is added thereto.

Note, That *Sleep* is ſo far from being a *Property* of *Opium*, that it does not belong to it *omni*, *ſoli*, or *ſemper*; yet *People* have generally look'd upon *Sleep* as ſuch, which cauſed many *Errours*.

2. *It cauſes pleaſant Dreams*, becauſe the very *Sleep* is cauſed and continued by *Pleaſure*, when it is by *Opium*; which *Pleaſure* being all the *time* we Sleep within us, muſt needs ſuggeſt *pleaſant Dreams*, or none, for how can ſad and *melancholy Dreams* ſeiſe one that is in a *gay* and *pleaſant Condition*, as far as one in *Sleep* is capable thereof.

3. *It*

3. *It ſtops Vomiting*; 1. As it doth other *Fluxes*, by taking away the *ſenſe* of *Irritation*. 2. By highly pleaſing, and thereby *quieting* and *compoſing* the *Commotion* of the *Stomach*. 3. By relaxing it, which oppoſe the *Contraction*, by which Vomiting is perform'd.

4. *It ſtills Hiccoughs* for the ſame Reaſons.

5. *It cauſes Convulſions and Contractions to ceaſe.* 1. Becauſe it induces a *Relaxation*, which takes them off. 2. By taking off the ſenſe which the *Irritating* cauſes. 3. By *compoſing* the Spirits.

6. *It cauſes the Meat to ſtay long at Stomach*, (as Sleep does;) 1. *By relaxing the Stomach*, ſo that it is not ſubject to *contract* to ſend it out. 2. *By ſtilling all Motions*, whereby the *Stomach* grows proportionably unactive. 3. Becauſe the *Relaxation* oppoſes the *Contraction*, by which the *Menſtruum* is ſent into the *Stomach*, or the *Saliva* into the Mouth; both which are therefore much wanted in *Sleep* for the like *Reaſon* (*as has been ſhewn.*)

7. *It moderates and prevents Hunger*; 1. Becauſe (as was ſaid) the *Menſtruum* is not ſo plentifully ſent or ſqueeſed into the relaxed *Stomach*. 2. Becauſe it takes away the ſenſe of *Hunger*. 3. Becauſe it leaves the Meat to ſtay too long at *Stomach*, by *Reaſon* that it is relaxed, more inſenſible and proportionably languid in motion (as in *Sleep*.)

8. *It cauſes Sweat*, when the *Body* is full of *moiſture*, (as *Sleep* doth) by relaxing, and thereby opening the *Pores*; and not (as People commonly talk) by attenuating, and the like, for a *Grain* of *Opium* bears no *Proportion* to the *Bloud* and *Humours*: That it cauſes it meerly as *Sleep* does, is manifeſt, not only becauſe it bears not a due *Proportion* to the *Work*, as an *Alterative*, but becauſe Men do not Sweat in that Caſe (as in *Sleep*) without much moiſture in the *Body*, where-

as

as much would not be attenuated as ſoon as leſs: Therefore it is only an *Exudation* of the Humours upon a Plenty thereof, and opening of the Pores. *Sanctorius*, *Sect.* 1. *Aph.* 22. "*Inviſibilis Perſpiratio fit* "*viſibilis*, *quando Nutrimentum eſt nimium*; That is, *Inviſible Perſpiration becomes viſible (Sweat) when nouriſhment* (or *moiſture*) *is too much*, which exactly agrees with that of *Hippocrates* cited in *Chap.* 13. Ἰδρῶς πολὺς, *&c.*

9. *It cauſes the Menſes to flow*, when nothing is wanting but the opening or relaxing of the *Viæ* or *Pores* they iſſue out at, as when they are naturally too narrow and cloſe; as upon the firſt Tendency to them in *young Girls*, or when ſtopt by *Reaſon* of any undue *Contraction* thereof, as by *Pain*, *Cold*, *Sorrow*, or other *grievous Paſſions*, all which do cloſe the *Pores*. Beſides, it does irritate thoſe very ſenſile *Venereal Parts* to *Erection*; and I have reaſon to think, that it does by a *general Relaxation*, cauſe an *Increaſe* of *Blood*, as it does of the *Breaſts*, *Milk*, *&c.* cauſing, as it were, an *Artificial Puberty*, or (at leaſt) much promoting the *Natural*, and therefore is of excellent *Uſe* in this Caſe in Judicious Hands, tho' little thought of in *Practice*.

Obj. Here I may be ſure of an *Objection*, That it ſtops all *Fluxes*, but *Sweat* or *Perſpiration*.

Anſ. It is as *falſe* as it is a *common ſaying*, if they do not mean only ſuch *Fluxes* as proceed from *grievous Senſation*, and *Contraction* thereupon; for how can that which relaxes all Parts, ſtop any *Flux* that depends upon *Relaxation*? as *Stillicidium Urinæ* by *Relaxation* of the *Sphincter* of the *Bladder*, *involuntary Flux per Anum* by the *Relaxation* of its *Sphincter*, and ſuch like; ſo do I ſpeak of a *Flux* that may often depend upon *Relaxation*, (as I have ſhewn.)

Obj.

Obj. But it may be *objected*, That it particularly ſtanches Bloud, how then ſhould it promote the *Menſes*?

Anſ. *Experience* tells me it does, and *Reaſon* confirms it: It *ſtanches Bloud*, by compoſing the Fury of its Motion, but that does not hinder, but it may relax the *Pores* for *Sweat*, *Menſes*, *Lochia*, *&c.* to paſs; and, why not for the *Menſes* and *Lochia*, as well as *Sweat*, by opening the *Pores*, I would fain know? conſidering alſo the *Titillation* that it cauſes upon thoſe *Venereal Parts*, which may very much ſolicite their *motion*.

10. *It cauſes the* Lochia *to flow* for the ſame Reaſons that it does the *Menſes*. This I have great *Experience* in.

Note, That the *Menſes*, *Lochia*, and *Perſpiration*, are Natural *Evacuations* that have *Pores* deſigned for them by *Nature*, the opening of which by *Relaxation* muſt make *way* for them: Suppoſe, when the *Bloud* flows ſo much into the Skin as to cauſe an *Efflorescence*, by the *Relaxation* thereof, after *Opium* is taken, that there were *Pores* to carry out *Bloud*, as there is for *Sweat*, why ſhould not one flow as well as the other? But there are ſuch *Pores* for the *Menſes* and *Lochia*, and large ones too, and therefore it muſt promote them; and why ſhould not *Relaxation* do it, as well as *Contraction*, by *Cold*, *Terrour*, *Grief*, *&c.* ſtop them? for *the Effects of Contraries are contrary*.

11. *It cauſes the Stone to paſs*; 1. Becauſe it relaxes, and ſo widens the *Paſſage*. 2. Becauſe it may move with little or no *Pain*, which contracts the *Parts*, and ſo hinders its Paſſage, therefore the *Uſe* of *Opium*, with ſome other Helps, is the greateſt

greateſt Means that can be, or ever will be, for the *Stone*, till the *Diſſolution* of it is found out, not only to give *Eaſe* in the *Caſe* of the *Stone*, but to cauſe it to paſs; for both which *Purpoſes* it excells all Things, and doth both at once.

12. *It cauſes the Delivery of Women*, by relaxing the Neck of the *Womb*, as it does that of the *Bladder* to *deliver* Perſons of the *Stone*, but in the *Delivery* of *Women* it is not to be uſed but in particular Caſes, and by a very Skilful Hand; 1. Becauſe it is apt to take off all the *Womens Pains*, and Throws, and ſo quite diſappoint the *Delivery* for a day, 2, 3, 4, or more ſometimes. 2. Becauſe it cauſing a great *Relaxation*, the Parts after *Delivery* will be very unapt to cloſe and contract duely as they ſhould in ſuch Caſes, otherwiſe ſeveral Inconveniences may enſue. 3. It may be pernicious upon the Account of the Evacuation of Bloud that then happens. But theſe Things belong more properly to the Uſe of *Opium* in *Cure*.

13. *It cauſes Deadneſs of the Eyes*, (as in *Drunkeneſs*, *&c.*) becauſe the *Cornea* is relaxed, ſo that the *Humours* do not fill it up to a *tenſe Rotundity*, as when 'tis more contracted.

14. *It cauſes the* Pupilla *to dilate*, becauſe of the ſame *Relaxation*.

15. *It cauſes a Growth of the Breaſt*, *Penis*, *and Increaſe of Milk*, by Reaſon of the ſame *Relaxation*, as the Pleaſure of the *Semen* upon *Puberty* does, or as *Emollients* and *Relaxers* applied to the *Breaſts*, increaſe Milk, *&c.* by making more Room for it, *&c.*

16. *It cauſes Venereal Dreams*, becauſe of the *Titillation* of the *Venereal Membranes* that it cauſes.

17. *It cauſes Nocturnal Pollutions* for the ſame Reaſon, and becauſe it *relaxes* the Parts.

18. *It cauſes Itchings in the Skin*, becauſe of its *Titillation* by its *Volatile Salt*.

19. *It cauſes much Urine*, as *Cantharides*, *Bees*, *Piſmire*, *Millepedes*, *&c.* do, by its *Volatile Salt*, which titillates and irritates thoſe Parts, by its relaxing the Pores of the Kidneys, and rendring the Humours more penetrating, in ſome meaſure, by the *Volatile Salt*.

20. *It cauſes a Nauſea*, by its *Roſin* ſticking to, and teazing the ſenſile Coat of the *Stomach*. The Reaſon why it is generally ſo long before it cauſes a *Nauſea* or *Vomiting*, is, that its *Pleaſure* does at firſt prevent it, till at laſt the ſticking Roſin urges it by its long Stay, and vexatious Adherence.

21. *It cauſes Swimmings in the Head* by Conſent, when the *Stomach* is grieved by that *Roſin*, as you find upon *Nauſeas before Vomiting*, or when any Thing does much offend the *Stomach*, as much *Drink* or *Wine*, which when they have Vomited, thoſe *Swimmings* ceaſe.

22. *It cauſes Watching* in ſome Perſons, who are of very *moveable Spirits*, by actuating and ſtirring their Spirits by its active *Volatile Salt*, tho' it does at the ſame time pleaſe the *Membranes*, and conſequently relax the ſenſile Parts, and thereby cauſe *Indolence*, the Effect of *Relaxation*; which it alſo does, when People keep themſelves from *Sleep* by *voluntary Motion*, and therefore takes away *Pain*, even when Men Travel, *&c.*

Beſides, there are ſome ſort of Perſons, that upon *Joy*, *good News*, *Pleaſure*, or the like, are too much *elevated*, or have a *reſtleſs Ovation* of the *Spirits*, which will not ſuffer them to *Sleep*, tho' they are in a *Pleaſant Condition* all the time; This may be the Caſe of ſome that cannot *Sleep* after *Opium*, tho' they are all the Time (as they call it) in a *Heavenly Condition*, for (as I have ſaid) a

Quietneſs

Quietneſs of the Spirits is requiſite to cauſe Sleep, as well as *Relaxation*, but *Relaxation* alone, and thereby *Expanſion* of the Spirits, ſo that they cannot carry *Impreſſions* ſmartly, is ſufficient to cauſe *Indolence*; and the *Pleaſure* to cauſe a *Heavenly* (or very *pleaſant*) *Condition*. Sanctor. Stat. Med. Sect. 7. Aph. 28. ſays, That *Lætitia perſeverans per multos dies ſomnum impedit*: *Perſevering Pleaſure* may do the ſame, by like *Reaſon*, that is, too much Agitation or Ovation of the Spirits.

Sometimes too large a *Doſe* cauſes *Watching*, by over-actuating and exciting the *Spirits*: *Medicum vini generoſi, & Allium* (ſays *Sanctorius*) *conciliant ſomnum, & Perſpirationem, ſi vero plus juſto ſumantur, utrumque prohibent, perſpirabile tamen in Sudorem convertunt*, that is, *A little generous Wine and Garlick will cauſe Sleep and Perſpiration, but too much hinder both, yet they convert the perſpirable Matter to a Sweat*; which *Wine* and *Garlick* have the Nature of *Opiates*, and the Reaſon why they Sweat, is, the *Quantity* of the *Wine* affording more Moiſture, *Hippocrates* ſays.

23. *A dubious State between Sleeping and Waking*, is cauſed, when the *Relaxation*, upon the *Pleaſure* of *Opium*, inclines to Sleep, but the irrequiete *Ovation* of the *Spirits*, by the *Pleaſure* and *Titillation*, will hardly ſuffer it, yet highly pleaſes, and puts them in a ſweet agreeable Condition.

CHAP. XIX.

The Explication of the rare Effects of Opium *in a Moderate Doſe.*

1. IT *cauſes temporary Pulſes of the Bladder, and ſometimes of other Parts*, by its over relaxing the *Parts*, and cauſing thereby an *Expanſion* of the *Elaſtick Spirits*, which (as was demonſtrated) weakens their *Motion*.

2. *Faltring of the Tongue* does (as in *Relaxation* by *Drunkenneſs*) proceed from the ſame Cauſe.

3. *Looſeneſs of the Lower Jaw*, as you ſee in the Drowſy and Drunken People, is from the ſame *Relaxation*.

4. *It ſometimes prevents Sweat*, by cauſing a very *Liberal Perſpiration* (as was ſhewn;) for (as *Sanctorius* ſays, who ſhould know it) much inſenſible *Perſpiration* and *Sweat* cannot conſiſt, eſpecially in a Temperate Perſon, who Eats and Drinks moderately; Therefore, if you keep a Perſon, that *Sweats* much at *Night*, in a free *Perſpiration* all *Day*, by the Help of an *Opiate*, you'll much leſſen or totally prevent the *Sweat* at *Night*, as in *Conſumptive Perſons*, &c.

5. *It cauſes Abortion*, by relaxing the Neck of the *Womb*, which alſo the *Pleaſure* of Coition ſometimes does for the like Reaſon, and would be much more apt to cauſe it if it continued long, as that of *Opium* does. *Note* the Inconvenience of *Coition* after *Impregnation*; This is the great Cauſe that *Whores* are not apt to bear Children, becauſe Frequency of Pleaſure does over-relax the *Collum Uteri*.

6. *It*

6. *It prevents Abortion*, when *Fear*, *Terrour*, or any contracting Cauſe, as *Grief*, *grievous Paſſions*, or *Senſations*, do threaten it, by its taking off the *Contraction* and *Grievance* that cauſes it.

7 *Intumeſcence of the Lips* is from their *Relaxation*, admitting the Bloud and Humours into them in a plentiful manner; beſides, that their *Laxity*, and the *Inadvertency* occaſioned by the Diverting *Pleaſure* or *Drowſineſs* that follows, letting the *Lower Lip* hang down careleſly (as is uſual in ſuch Caſes) may by expoſing much more of that *Lip* (which is moſt concern'd in this *Effect*) make it ſeem larger, as a hanging *Lip* does.

8. *It may cure a Dropſy*, (as Dr. *Willis* doth inſtance;) 1. By cauſing a free *Perſpiration*, which is much wanted in thoſe Caſes. 2. By relaxing the *Pores*, and making way for the *Humours* to paſs. 3. By cauſing much *Urine*, as *Cantharides*, *Millepedes*, *&c.* do, upon the Account of their *Volatile-Salt*, with which *Opium* abounds.

9. *It cures Stupors* that proceed from *Contraction*, as by *Cold*, *&c.* by relaxing all Parts.

10. *It cauſes Anxieties and Diſtreſſes*, by the *Roſin* ſticking and teazing the *Stomach*.

11. *Vomitings and Hiccoughs* proceed from the ſame *Cauſe*.

12. *Convulſions* are cauſed by the ſame *Roſin*, while it continually urges the *Stomach* to *grievous Vomitings*, which at laſt draw other Parts (as the *Stomach* uſually does when under great *Grievances*) into violent *Contractions* or *Convulſions* by conſent, to endeavour its *Aſſiſtance*, becauſe the *defenſive Contraction* growing very high by the almoſt intolerable and tedious Grievance at *Stomach*, cauſes a mighty *compreſſion* of the ſpringy *Animal Spirits*, by which Means they grow very forcible, irrequiete, and violently ſpringy, under the *urgency* of an enormous *Compreſſure*, which cauſes ſuch *Convulſive Motions*.

Note, That ſuch a *violent Compreſſion* of the *Animal Spirits* into a great ſpringineſs, is the cauſe of the Strength of *Convulſive Motions*, ſo that ſometimes a ſtrong Man can hardly hold a Child's Limb in ſuch *Caſes*.

13. *Syncopes*, *Leipothymies*, and *Faintings*, follow, when the *ſenſitive Soul* being quite *tired*, and *overborn* by the *Fatigue* of ſuch *Diſtreſſes*, *Vomitings*, and *Defenſive Contractions*, to reject and excuſs the ſaid adhering and teazing *Roſin*, yields it ſelf to *Reſt*, and lets go the Reigns of *Contraction* as being fruitleſs, and no longer endurable; whereupon all the *ſenſile Parts* being relaxed in the higheſt *degree*, they thereby grow unfit for Senſation, and the *Animal Spirits* expand as far as the *Atmoſpherical Compreſſure* permits them, ſo that they grow incapable to *convey Impreſſions*, by which means *Senſe* fails, and *Motion* alſo for the ſame Reaſon, becauſe the *Animal Spirits* looſe their *ſpringy Endeavours* for want of a ſufficient *Compreſſion* to render them flippant for the Purpoſe; which is the Cauſe (as in *Sleep*) that *Senſe* and *Motion* fail together; of the great *Perſpiration*, and all other *Effects* of *Relaxation* in ſuch *Syncopes* or *Leipothymies*, in a yet higher *degree* than in *Sleep*, wherein the *ſenſitive Soul* does not quite let go the *Reigns* of *Contraction*, as appears by the *Motions* that remain, as of the *Heart*, *Inteſtines*, *&c.* tho' far more remiſs in Sleep than in a Waking State.

Note, That ſuch *Leipothymies* are (as was hinted) of the ſame Nature as *Sleep* is, but that they are ſuddain, more profound, and not ſo uſual, natural, and of courſe, as *Sleep* is, which makes them more *amazing* and *ſurprizing*; *therefore* it follows, that they are (as *Sleep* is) a Means of *Recruit*, when

when all working and tugging by *Defenſive Contractions* fail, and ſo the laſt *Refuge* of the *ſenſitive Soul*, when over-tired, in order to recover Strength for a freſh Engagement with the *Enemy*; (as being tired at *Night*, the *ſenſitive Soul* looſens the Rigns of *Contraction* to enable him the better to fall to his *Work* the next Day:) This you'll find by all *Reaſon* and *Experience* to be the true State of *Leipothymies* upon *Grievances* and *Fatigues*, tho' not hitherto minded (that I know of.)

Many true and uſeful *Conſequences* do hence follow; as, That we are not always to diſturb them, or put them out of theſe *recruiting Leipothymies* by grievous Means, as *Prickings*, *Pinchings*, *&c.* but only by *Cordials* and *Refreſhing Things*, as you would Treat a Perſon much tired; or by letting them take their *Nap* (if I may ſo call it) if there be not very eminent Danger. But 'tis endleſs, and beſides my Purpoſe, to make a particular *Diſcourſe* of this Matter, which will belong more properly to my Tract of *Animal Mechaniſm*.

14. *Death* happens ſometimes, tho' very rarely, and that in very *weak People* that take little or no *Suſtenance*, becauſe *either* when fallen into ſuch *Syncopes*, they never come out of them, by Reaſon that they have not within them wherewith to recruit their *Spirits*, or, that *Opium* taking them much ſpent and tired with Diſtempers, cauſes, as in weak and wearied People, a moſt *profound Sopor*, which not recruiting them, who take or digeſt no Suſtenance, they muſt rather grow weaker and weaker, (for ſomewhat is ſpent while we live) and conſequently the *Sleep* or *Sopor* more and more *profound*, till they Sleep their laſt, for *want* of ſome *Recruit*, which is the very Thing that naturally leſſens Sleep and awakes us, when there is no

other apparent Cauſe; for as the being *tired*, and *want of Recruit*, cauſes Sleep, ſo the *having it* cauſes *Waking*, or (which is the ſame in *Effect*) no farther need of *Relaxation* for Recruit's ſake, ſo that the ſenſitive Soul fall to his uſeful Work of *Vigilative Contraction* for *Senſe* and *Motion's* ſake.

15. *It ſometimes cauſes Purging*, which happens (as far as I have obſerved, or can learn) only when it is given in a good Quantity to Perſons of a *ſtrong Digeſtion* or *canine Appetite*.

The Caſe is thus; When Perſons, that are of a *ſtrong Digeſtion*, take a *Reſinous Opiate* in good Quantity, they do in great meaſure by their fixed Salts at Stomach, and *ſtrong Digeſtion*, ſubdue the *Volatility* of the *Opium*, and diſſolve its *Roſin*, which then (as *acrimonious Roſins*, or *Vomits* ſubdued by *fixt Salt*, uſe to do) cauſes *Purging*; Hence it is, that it generally (if not always) Purges *Dogs*, and People of a high *canine Appetite*, and that ſometimes meeting ſuch fixed Salts, it Purges the *Conſumptive*. *Bartholine* ſays, That *Mandrake Juice purges when it meets with acrimonious fixed Salt*. *Eraſtus* and *Quercelan* do agree, That it has a *Purgative Quality*, but that it does not always exert it; 1. Becauſe it takes away the Senſe of *Irritation*. 2. Becauſe it is given in too ſmall a *Quantity*. The *Reaſons* are Juſt and Right, and not only conſiſtent with, but confirm what I ſay.

Note, That this is not intended of the *Purging* that happens after the *declination* of its *Operation*, which is (as you'll find) from another Cauſe, therefore this does not ſmell of the *Opium* as the other does, becauſe it is paſt and gone before that in the *Declination* happens; Of which more in its *proper Place*.

16. *It*

16. *It raiſes and revives ſome Perſons that are almoſt expiring*, in Two Caſes; *One* is, when ſuch as have been uſed to take it are even expiring for want of it (of which more hereafter.) The *other* Caſe is, when *violent Contraction*, as from *Pain*, *Cold*, *Vomitings*, and *Grievous Paſſions*, as *Terrour*, *&c.* are the Cauſe, that People are almoſt expiring, for it takes off the *Contractions* by relaxing, *&c.*

17. *It ſtays very long at Stomach*, when the *Roſin* thereof ſticks to the *Stomach*, and is there detain'd; Beſides, that the *Stomach* being relaxed, and having little *ſenſe* or *motion*, (as in *Sleep*) does not ſoon digeſt it or diſcharge it: It is fine in this Caſe, and all other, to obſerve how *Senſation* and *Motion* go Hand in Hand, keeping equal *Pace* and equal *Proportion*, as it plainly muſt be by the Principles of *Relaxation* and *Contraction*, which I have ſtated and proved.

18. *It cauſes ſtoppage of Urine* ſometimes (eſpecially in old *People*) by over relaxing, and cauſing a kind of a *temporary Palſie* of the *Bladder*, (as was ſhewn) and taking away the ſenſe of the *Irritation* of the *Urine*, which ſhould contract the *Bladder* to ſqueeſe it out; by which Means it happens ſometimes, that the *Bladder* comes to be ſo over extended beyond its due *Tone*, that they cannot contract it to make *Water*; in all which Caſes ſtrong *Contracters*, as *Cold*, *Terrours*, *&c.* immediately cures them; the very putting the *Scrotum* to the Edge of a cold Chamberpot has effected it ſeveral times by my *Advice*; tho' (if need be) you muſt come to Daſhing of *cold Water* upon the *Region* of the *Bladder*, or Pumping on it, or Dipping in it, *&c.* ſo *Terrour*, and cauſing a very ſmart *Pain*, eſpecially near thoſe Parts, will do much, but Cold is the readieſt and beſt *Remedy*.

19. *It*

19. *It ſometimes proves dangerous after great Hemorrhages or Evacuations*, as Tapping in Dropſies, *&c.* becauſe the *Relaxation* hinders the Parts duely to contract upon what remains, which may cauſe great Miſchiefs, as *Diſcontinuation* of *Motion*, *&c.*

Thus have you all the *conſtant*, *frequent*, and *rare Effects* of *Opium*, taken *internally* in a *moderate Doſe*, ſo naturally, eaſily, plainly, and mechanically explicated, that People may (in my Judgment) more admire, how all fail'd of diſcovering the manner of their *Production*, than that I found it; as Men are apt to think of the *Circulation* of the *Bloud*, which now (as I hope the *Effects* of *Opium* do) ſeems very obvious; both which Caſes are to me very ſtrong *Arguments* of a Being that *rules* and *diſpoſes*, *darkens* and *illuminates*, *&c.* as he pleaſes, when I conſider, that both the *Circulation of the Bloud*, and the *Cauſe of the Operation of Opium*, (*viz. Pleaſure at Stomach*, *&c.*) fell under the Senſes of many Millions, who in *one Caſe* ſaw the *Bloud* move, and in the *other* felt the *Pleaſure*, yet was *neither* diſcovered for many Thouſands of years; eſpecially conſidering alſo, that in the *Caſe* of *Opium* Thouſands of Ingenious Men have diligently enquired after the Cauſe of its *Operation*, who made no farther ſtep in't than to ſtate Things that have not as much as *Exiſtence*, (*viz.* a *Cold Quality*, and *Fumes* flying from the *Stomach* to the *Head*) to be the Cauſe thereof. Therefore it is plain, That *neither is he that Planteth any Thing*, *neither he that Watereth*, *but GOD*, *that giveth the Increaſe*, of Knowledge, and of other Things: To whom be all Glory.

CHAP.

CHAP. XX.

The Explication of the Effects of the Declination of the Operation of Opium *in a Moderate Doſe.*

1. A *General Return of all Diſeaſes and Diſaſters,* when the *Operation* of *Opium* is over, becauſe it does not (as was ſhewn) operate as an *Alterative*, but a *pleaſing Diverter* of the *ſenſitive Soul* for ſome *Time*, during which it cauſes a *general Relaxation* of all the ſenſile Parts, whereby the *Animal Spirits* being expanded, grow unfit to convey *Impreſſions* ſmartly, which is requiſite to cauſe a ſenſe of Pain, *&c.* (as has been often ſaid.)

But it cures ſeveral *Diſtempers, viz.* ſuch as pleaſing and comforting the *ſenſitive Soul, compoſing the Spirits, Relaxation, Perſpiration, Sweat, &c.* can quite take away; Of which more particularly when we come to ſpeak of the *Uſe of Opium* in *Cure.*

2. *Sweat* happens in the *Declination* of its Operation, as Sir *Theodore Mayern, my ſelf,* and *others,* have obſerved, becauſe that now all the *Parts* contracting, which by their *Relaxation* ſuſpended all *Humours* during its *Operation*, do Mechanically ſqueeſe out the congeſted *Humours*, there being leſs *Room* in the *Body*, as was ſaid of *Sweat* upon awaking, by the *Return* of the *Vigilative Contraction* after *Relaxation* during the Sleep, which is to be compared to the *Relaxation* during the Operation of *Opium*, and the *Return* of the *Contraction,*

traction, when 'tis ended; beſides, that both upon the *Going off of the Operation*, and *Awaking*, the Motion of the Heart growing more vigorous, (as it does upon Motion by the *Intentive Contraction*) does more powerfully propell the *Humours* out at the *Pores* (as happens in *Sweat upon Motion.*)

3. *Frequent making of Water* happens, *partly* by the *Titillation* of the *Volatile Salt* (as by *Cantharides*, *&c.*) that is now ſeparated from the Bloud; *partly* by the *Contraction* of the whole Body ſqueeling it out at the *Kidneys*, as when People are *Cold*, they make more Water for that Reaſon.

4. *A Looſeneſs* may, and does happen ſometimes from the like *Contraction* ſqueeſing out the *Humours* that were ſuſpended during the *Relaxation* by the *Opium*, which is common for ſuch *Contractions* to cauſe, as by *Cold*, *Terrour*, *&c.* and becauſe *Senſation* grows more *nice* and irritable by the *Humours*, by *Reaſon* of the *Contraction*, which is the more for the *Grievance* of failing of the Pleaſure of *Opium.* Therefore,

5. *Diſeaſes*, *Pains*, *&c.* ſeem worſe upon the *Return* of the *Grievances*, becauſe of the great *Eaſe* they had during the *Operation* of the *Opium*, *Contraria inter ſe magis eluceſcunt*; and it is particularly obſerved of *Pleaſure*, That it leaves Men worſe then it found them. Thus a Man is worſe, more ſad, *&c. Poſt Coitum*, more *Melancholy* after all ſorts of *Pleaſure*, inſomuch that it is grown to a *Proverb*, viz. *After Merry comes Sorry*, (or, *After Mirth comes Sorrow*;) as alſo *Minus gaudebis*, *minus dolebis.* Therefore,

6. *Melancholy* does often (if not always) happen in ſome *degree*, after its *Operation* is ended; 1. Becauſe of the Return of the *Contractions* (or *Toil*) of the *ſenſitive Soul.* 2. Becauſe (as was ſaid) the Senſe of *Pleaſure*, newly loſt, aggra-

vates

vates the Sorrow, as has been ſhewn after *Coition, &c.*

7. *The Pulſe is narrow*, becauſe the *Contraction* returns with *Melancholy*, and *Return* of *Diſaſters* improve when that ſo happens, as it generally does.

8. *Itching of the Skin* happens about this time, becauſe that now the *Volatile Salt*, which cauſes *Titillation*, is arrived as far as the *Skin* upon its march out of the *Body*.

CHAP.

CHAP. XXI.

The Explication of the Effects of Opium *in an Exceſſive Doſe.*

THE *Cauſe* of moſt of theſe *Effects* will be evident from the Explication of the former, becauſe the *Difference* is only in the *Quantity* of the *Opium*, therefore I am often neceſſitated to ſpeak much the ſame as I have done before.

You cannot expect any *good Effects* from its *Exceſs*, any more than you have from *Wine*, (tho' the beſt of *Cordials*, next to the *Sal-Volatile-Oleoſum* of *Opium*) but rather leſs, becauſe *Opium* is join'd to a *pernicious Roſin*, which you may be ſure will be very grievous to the *Stomach* in great Quantities, if it was ſo in little.

The *Evil Effects* in this Caſe, do mainly proceed, *either* from *too much Relaxation*, as in *Drunkeneſs*, *or*, from the *Roſin at Stomach*.

1. *A Heat at Stomach* is cauſed by the intenſe *Heat* of the *Opium* in a *great Quantity*, it being ſenſibly a very hot Thing.

2. *The Senſe of Weight at Stomach* is cauſed by the *great Relaxation* that it cauſes, which renders the *Stomach* proportionably weak, and unable to endeavour its own *Relief*, ſo that the *Roſin*, *&c.* lie heavy upon't; Thus we find a *great Heavineſs* at *Stomach*, when any Thing grieves it, that it cannot reject or diſcharge.

3. *Gaity*

3. *Gaity of Humour is cauſed at firſt* (as by the *Pleaſure* of a great Quantity of *Wine*) by its pleaſing *Agreeableneſs* to the *Membrane* at *Stomach*, till the *Relaxation* grows enormous, as by a *great Doſe of Wine ſuddenly drank*, to which it is very like in all its *Effects*, except ſuch as proceed from the *Roſin* ſticking at *Stomach*, which *Wine* has not.

4. *Sardonick Laughter* is cauſed (as you ſee in *Drunken People*) when they are diſabled by the great *Relaxation*, that they cannot well Expreſs themſelves by the failing Tongue, they endeavour it by a ſilly kind of *fained* or *made Laughter*, (as they call it) while the pleaſing *Titillation* at *Stomach* much inclines them to *Mirth*, if they knew how to manage and carry it on.

5. *Laxity, and conſequently Debility of all Parts*, is cauſed by the extraordinary *Relaxation* of them by a continual and permanent ſenſe of *Pleaſure*, which happens conſiderably in the Momentary *Pleaſure* of *Venus*, much more in this *continual* and *laſting Pleaſure*, when a great *Doſe* makes it intenſe, as in *Drunkenneſs*.

6. *Alienation of the Mind* is cauſed (as in *Drunkenneſs*) by an over-*Relaxation* of the *Brain* and its *Membranes*.

7. *Loſs of Memory* happens by the ſame Means, (as in Drunkenneſs.) So,

8. *Darkneſs of Eyes* is cauſed by a *Relaxation* of the *Coats* and *Membranes* of the *Eyes*, but mainly by the *Expanſion* of the *Animal Spirits* by that *Relaxation*, which (as in Sleep) renders them unfit to convey the *Impreſſions* of *Light*, *&c.*

9. *Laxity of the Cornea* is from the ſame *Relaxation.*

10. *Appearance of various Colours* happens by (as was ſaid) the unevenneſs of the *Cornea*, *&c.* when ſo relaxed, whereas when 'tis duely contracted it is round, even, polite, and truely repreſents Things.

11. *Dead-*

11. *Deadneſs of the Eyes to the View*, is (as has been ſhewn) from the *Laxity* of the *Cornea*, which makes it flag, lie looſe, look dully, and not duely reflect a *ſmart* and *brisk ſpeck* of *Light*, as it does when *tenſe*, *round*, and *polite*, by its *Contraction* on the *contain'd Humours*, which then duely fill it.

12. *Faltring of the Tongue* is from the ſame *Relaxation*, as in *Drunken Perſons*.

13. *A Sopor* is from the *ſame Relaxation* over all the *ſenſile Parts of the Body*, by which Means *Senſe* and *Motion* are diminiſhed or loſt by the *Expanſion* of the *Animal Spirits*, which (as has been ſaid) being not duely compreſſed, become unfit for *both* at the ſame *time*.

14. *A ſlow and wide Pulſe* is from the ſame Cauſe, becauſe the ſaid *Relaxation* permits the Arteries to widen, and the *Animal Spirits* to expand, and conſequently renders the *motion* of the Heart *ſlow*, which is the cauſe of the *Pulſe*.

15. *A high Colour* or *Efflorescence of the Skin*, has been explain'd.

16. *Looſeneſs of the Jaw and Lips* is from the ſame *Relaxation*, (as was ſhewn;) and ſo is,

17. *Intumeſcence of the Lips*, (as has been ſhewn)

18. *Difficulty of Breathing* may be from *Two* different Cauſes; *either* by the *Relaxation* weakening the *requiſite Motions* for want of *Compreſſure* of the *Animal Spirits*, and by the *Flaccity* of the Parts themſelves; *Or*, by a great *Grievance* at *Stomach* upon the *Account* of the *Roſin* ſticking to it, and cauſing a *Convulſion* of thoſe Parts; both which may happen.

19. *Fury and Madneſs* may alſo happen, *either* by the exalted *Pleaſure* of its *Titillation*, as in *Drunkards*, who therefore ſcarce know what they do, the *Mind* being (as was ſaid) *alienated*; *Or* it may happen (as I have often known a kind of *Madneſs* to be produc'd) by a great *Grievance* at *Stomach*;

Stomach; which may well be from the *Roſin* grieving and teazing the *nicely ſenſile Stomach*; They may be eaſily diſtinguiſhed, *one (viz.* that from the Roſin at *Stomach)* being with great *Diſtreſſes, Anxieties, Convulſions, &c.* and the *other* without any.

20. *Venereal Fury* proceeds from the high *Titillation* of the *Venereal Membranes* by the *Volatile Salt* of ſo much *Opium*, as if *Cantharides, Bees, &c.* were taken internally; but that theſe cannot ſo agreeably titillate thoſe Parts as *Opium* does, whoſe *Volatile Particles* are render'd more pleaſing by *oily ones*, and therefore much of the Nature of *Semen Virile.*

21. *Priapiſms* are cauſed by the ſame continual *Titillation.*

22. *Violent Itchings of the Skin* are cauſed by the ſame tickling *Volatile Particles* in great Abundance, proportionable to the *exceſſive Doſe.*

23. *Nauſeas* are cauſed by the *Roſin* ſticking at, and ſoliciting the *Stomach* to *Vomit.*

24. *Swimmings in the Head* are by *conſent*, becauſe the *Stomach* is grieved by that *Roſin*, as is obſerved in many Caſes from a *grieved Stomach* upon a *Tendency* to *Vomit*, as when it is overloaden with *Wine*, or *indigeſtible Victuals*, or when Perſons are *Sea*, or *Coach-ſick, &c.* for it is not in theſe laſt *Caſes*, becauſe the *Brain* is offended (as People imagine) that they are *Sick*, or *Vomit*, but the *Swimming in the Head*, and *Offence* of the *Brain* happens, becauſe the Stomach is offended by the Motion of the *Coach* or *Ship*, by Reaſon of its moſt *exquiſite Senſation*, which the *Effluvias of a Cat, peſtiferous Particles*, and *Commotions* cauſed by mear Paſſion, can, and do offend, (as was ſaid) ſo as to cauſe *Vomitings, Anxieties, &c.* much more then may the Motion of a *Ship* or *Coach* do it. I ſhall not here enter into Contro-

verſie with thoſe that aſſert, That it is the *Head* is firſt offended in a Coach or Ship; it is ſufficient for my *Purpoſe*, that *Grievances at Stomach* do commonly cauſe *Swimmings in the Head*, for taking off thoſe *Grievances* cures them, as *Eating* when it is from the *Grievance* of *Hunger* or *Wind at Stomach*, and diſcharging the *Stomach* of a great Load of Wine, Ale, or indigeſtible Matters, when ſuch Things cauſe it, do cure ſuch *Swimmings in the Head.*

The *Way* how *Grievances* at *Stomach* do cauſe thoſe *Swimmings*, is by cauſing a *Contraction* (as all *Grievances* do, but eſpecially thoſe at *Stomach*) of the *Membranes* of the *Brain*, as it does of all other, but mainly of theſe, becauſe very ſenſile; by which means the *Animal Spirits* being compreſſed, grow more *irrequiete* and skipping up and down, and the *Compreſſion* not being continually alike in general, or the *Arteries* affording an uneven and forcible ſupply of them (or *Fumes*) from the Bloud by the *Compreſſion*, nor affecting all Parts of the *Brain* with equal *Force*, becauſe the Pleaſure endeavour to relax, *&c.* there muſt thence ariſe *Eddies*, *Vortices*, or *Whirls* thereof, which cauſe *Swimmings*, *Vertigo's*, *&c.* according as they happen to be moved.

That they happen from ſuch *Contraction* is manifeſt;

1. Becauſe the *Grievance* at *Stomach* can add nothing elſe to the *Brain*, or its *Membranes*. 2. Becauſe they are taken off by pleaſing the *Stomach*, and conſequently by *Relaxation*, as by a *Glaſs of Wine*, *Victuals*, an *Opiate* that is not reſinous, *&c.*

It is here well worth your *notice*, That all *conſent of Parts* (a Thing much admir'd) is only by *Contraction* or *Relaxation*, which ſuddenly affect the whole Syſteme of the *Nerves* and *Membranes*.

25. *Vertigo's* are from the ſame Cauſe.

26. *Vomitings* are cauſed (as was ſaid) by the great *Grievance* of the *acrimonious Roſin* ſticking to the Coat of the *Stomach*.

27. *Hiccoughs* are from the ſame Cauſe, which happen upon the decay of Power vigorouſly to Vomit, dwindling into thoſe fruitleſs *Convulſive ſubſultory Jerks*, or Half *Endeavours*.

28. *Diſtreſſes and Anxieties* muſt neceſſarily attend ſuch a *grievous Senſation* and Defection of *Nature's Endeavour*, as being overborn and diſabled to work for it ſelf.

29. *A turbulent Pulſe* muſt be an Effect of the foregoing Tumults.

30. *Convulſions* happen (as was ſhewn) by the enormous *Compreſſion* of the *Animal Spirits*, by Reaſon of the *violent Contraction* upon the great *Grievance* by the *Roſin* at *Stomach*, which cauſes them to skip and fling up and down very forcibly under the ſqueeſe of the *Compreſſion*, and poſſibly skirmiſhing under the Viciſſitudes of it and *Relaxation*.

31. *Faintings and Leipothymies* are cauſed (as has been explain'd) by the ſenſitive Soul's being over-tired by the Fatigue of *Defenſive Contraction*, and yielding himſelf to Reſt from all *Contraction*, as the laſt Relief, *&c.* whereupon *Senſe* and *Motion* do fail for want of *Compreſſion* to render the Spirits ſpringy, active, and fit for the *Purpoſe*.

32. *Cold Breath* is but a neceſſary Conſequence of the Loſs of Motion, and therefore of *Heat*, by ſuch *Leipothymies* and *Faintings*.

33. *Death* is cauſed Two manner of Ways, that is, *either* by an utter *Expenſe of Spirits*, and thereupon a *Dereliction* (or *Extinction*) of the *ſenſitive Soul* by reaſon of thoſe *Diſtreſſes* and *Fatigues* upon the Account of the *invincible Roſin*; Or by too much *Relaxation* diſabling all the *motions* of the *Body*, as in ſuch as dye being *dead Drunk*, which looking not unlike an *Apoplexy*, makes *Authors* ſay, that *Opium* cauſes *Apoplexies*.

Such as eſcape *Death*, do ſo generally by

34. *Plentiful Purging*, which is occaſioned by a *great Quantity* of the *Roſin* of *Opium* meeting a ſtrong *Digeſtion* and fixed Salts (as has been ſaid.)

35. *Sweats that ſmell of the Opium* are cauſed, 1. By the Openneſs of the *Pores* by *Relaxation*. 2. By Plenty, or at leaſt ſufficiency of Moiſture for that End; for otherwiſe (as was ſhewn) it would be only *inſenſible Perſpiration*. 3. By the great Quantity of *Volatile Salt* attenuating the Humours. 4. By the ſtrict, intimate, and even indiſſoluble *ſpecifick Union* or *Combination* of the *Volatile Salt* and *Oily Parts*, which makes it hold its *ſpecifick Smell* to the laſt.

36. *Violent Itchings in the Skin* muſt of neceſſity follow a great *Quantity of Opium*, ſince it cauſes ſuch *Itchings* (as was ſhewn) in a *ſmall Quantity* by the *Titillation* of its *Volatile Salt*.

Note, That theſe *Effects* do not all happen to all Men that take it in an *exceſſive Doſe*, but ſome to one, and ſome to others, (as was intimated in *Chap.* 5.) according as they are more or leſs troubled with the *Roſin*, *Quantity*, *Relaxation*, *&c.*

CHAP.

CHAP. XXII.

The Explication of the Effects of a long and laviſh Uſe of Opium.

AS an *Exceſſive Doſe* of *Opium* is *Intemperance* for *one time*, ſo a *long and laviſh Uſe of it* is an *habitual Intemperance* for a long *time*; therefore if you could not rationally expect *good Effects* in that Caſe, any more than from the *beſt Wine* taken ſuddenly in a vaſt *Quantity*, it follows, that you cannot expect *good Effects* from an *habitual Intemperate Taking* of it, any more than from a *long and laviſh Drinking of Wine*, tho' both are excellently good in their *Kind*, (but that the *Opium* has the pernicious reſinous Part join'd with it;) There is nothing ſo good, whereof an *intemperate Uſe* is not *miſchievous*, *God* having ſo ordered it to deter from, and puniſh *Intemperance*, and the *Abuſe* of his *Creatures*; Therefore ill *Effects* are not always to be imputed to the *viciouſneſs* of the Things uſed, but frequently of the *Perſon* that imprudently uſes them.

1. *Relaxation and Debility of all Parts* is contracted by the habitual over-relaxing thereof by the *laviſh Uſe of Opium.*

2. *An Inhability of doing any Thing without it* is contracted by the *habitual Pleaſure*, *Comfort*, *Promptitude*, and *Euphory* it cauſes when taken, without which the *ſenſitive Soul* becomes lazy, liſtleſs, and averſe to all *Actions*; it is as if a Man, uſed to Dance to Excellent *Muſick*, were required to do it without any *Muſick* at all, nor as much as *Thoughts* of it, or mumbling it within

himſelf; Or that one who Drinks nothing but *Wine*, and Eats the beſt, ſhould be ſuddenly denied both, and forced to live upon *Bread* and *Water*; Or, that ſuch as always take *Tobacco* at their *Studies*, ſhould be ſuddenly debarr'd thereof, and required to Study without it; How very liſtleſs would a Man be in ſuch Caſes? Tho' hardly any of the *Compariſons* come up to that of *Opium*, becauſe of the *charming Pleaſure, mighty Euphory* and *Promptitude* that it cauſes; it is as if one were ſupported, and wholly depended upon *Cordials*, and ſuddenly denied them, *&c.*

3. *An Inhability of getting up in the morning till it is taken, and begins to operate*, proceeds from the ſame Cauſe. A *Mechanical Reaſon* may be expected here alſo as to theſe Matters, but it will hardly bear it, any more than how the *Will* or *Appetite* cauſes the firſt *Impulſe* toward *voluntary Motion*; all that can be ſaid is, that without the *Opium* the *ſenſitive Soul* is, when he does any Thing, to act under the *Toil* and *Difficulties* of a full *vigilative Contraction*, (as being awake) *intentive Contraction*, (as acting) and *defenſive Contraction*, (as being grieved) when the *Operation of Opium* is over, (as after *Venereal Pleaſure, &c.*) ſo that now he labours under the great *Diſadvantages* and *Drudgery* of all the *Three Contractions*, whereas by the *Pleaſure, fine Titillation* of *Opium*, and *Relaxation* conſequential thereunto, he was eaſed of all the *Defenſive Contraction*, which is the moſt grievous, and in great meaſure of the *Vigilative*, (as has been ſhewn) which makes *Working, Journeying, &c.* very eaſie to him; Therefore it is as if one that delights in *Muſick*, Danced to Charming Melody in beloved Company, with pleaſing *Refections* of *Wine, &c.* and in the *other Caſe*, as if one *laboured* in *Grief* or *Pain*. Now ſuppoſe that one, uſed never to Act or Work without ſuch

mighty

mighty *Pleaſant Advantages*, and Cauſes of *Euphory*, were required to *act* under the *Preſſure* of the *Three Contractions*, (or in *Grief* or *Pain*) how liſtleſs would he be to Act, Work, get up, *&c.*

4. *A dull, moapiſh, and heavy Diſpoſition*, muſt be the Effect, unleſs it be while they *pleaſe*, *comfort*, and *enliven themſelves* by the *Opium*, becauſe their *Brain* is habitually over relaxed; which is the very Caſe of old *Drunkards*, who have (as 'tis ſaid) drank away their *Parts* by ſuch an *habitual Relaxation* of the *Brain*, (which over-much *Sleeping* cauſes alſo upon the Account of the like *Relaxation*) therefore they muſt be moapiſh till the pleaſing *Titillation* of *Opium* enlivens them.

5. *Diminution of Appetite* is cauſed by an *habitual Relaxation* of the *Stomach*, taking away its *Senſation*, and ſuſpending the *Menſtruum* from flowing to it as freely as it ſhould, and would, if there were a due *Contraction* to ſqueeſe it out.

6. *Weakneſs of Digeſtion* happens from the ſame Cauſes.

7. *Dropſies* are cauſed by the *Relaxation* weakning the Parts, and making them thereby *ſuſceptible* of Humours; as alſo by *Diminution* of *Appetite* and *Digeſtion*, (as in old *Drunkards.*)

8. *Decay of Parts* (or *Wit*) happens from habitual *Relaxation of the Brain*, and its *Membranes*, (as in old *Drunkards.*)

9. *Weakneſs of Memory* proceeds from the ſame Cauſe (as in old *Drunkards.*)

10. *Stooping in the Back* is cauſed by the *habitual Relaxation* of the Parts, which weakens and cauſes them to comply with our *Tendency* and *Uſe* of bending forward, and yield to the greater Weight, that is (generally ſpeaking) on the foreſide of the *Back-bone* (or *Perpendicular*;) ſo that Stooping muſt gradually follow thoſe conſpiring Cauſes, as it does in *habitual Drunkards*, whoſe Parts are relax'd.

11. *Early Decrepiteneſs* muſt proceed from the aforeſaid *Relaxation* ſpoiling the Tone of Parts, and cauſing *Want* of *Appetite*, *Digeſtion*, *&c.* (in the manner before ſhewn.)

12. *Shortneſs of Life* muſt be the *Effect* of the ſame Cauſes.

13. *Acrimony of Blood* proceeds from the Abundance of *Acrimonious Volatile Salts* taken in the *Opium*, wherein it is much more acrimonious than our natural *Volatile Salt*, and in greater *Quantity* proportionably; Therefore it can be no Wonder, that,

14. It *excites Inclination to Venery* by that acrimonious *Salt*, which is *analogous* to that of *Cantharides*, *Ants*, *Bees*, *&c.*

15. *Frequent Inclinations to make Water* is alſo a know and common Effect of ſuch a *Salt*, by its irritating and ſoliciting the *Bladder*, *&c.*

16. *Priapiſms and frequent Erections* are, and muſt be from the ſame Cauſe.

17. *Nocturnal Pollutions* are neceſſary Conſequences of the *Relaxation* and the *Titillation* cauſed by thoſe *Volatile Salts*, (as was ſaid.)

CHAP. XXIII.

The Explication of the Effects of Leaving off Opium, *after a long and laviſh Uſe thereof.*

I. GReat, *and even intolerable Diſtreſſes, Anxieties, and Depreſſions of Spirits,* do happen; 1. Becauſe the *ſenſitive Soul,* who is ſo much comforted, diverted, and ſupported by the habitual and dearly beloved *Pleaſure* that *Opium* cauſes, being ſuddenly deprived thereof, (by which it was mainly ſuſtain'd) is exceedingly diſappointed and caſt down. 2. Becauſe he now labours under the ſore Burthen of the Three *Contractions,* ſo that every Thing ſeems, and is really more grievous to him; for now it acts as one in *Pain* or *Grief,* and every Thing affects him more ſmartly proportionable to the *Compreſſion* cauſed thereby of the *Animal Spirits,* unleſs he returns to the Pleaſure of *Opium,* which elevates it again; Or uſes *generous Wine,* as its *ſubſtitute,* tho' it does not equal it, either in the *Intenſeneſs* or *Duration* of the *Pleaſure,* unleſs repeated (as I have ſome where directed) once in Half an Hour, or an Hour, in a moderate manner, which cauſes a *continuance* of the *Pleaſure,* tho' it cannot equal the *Intenſeneſs* of that of *Opium,* which therefore has the *greater Effects.*

II. *A Return of all Diſeaſes, Pains,* and *Diſaſters,* muſt happen generally, becauſe the *Opium* takes them off by a bare *Diverſion* of the Senſe thereof by *Pleaſure.*

III. *Dangerous Looſeneſſes* happen ſometimes, becauſe the *Senſation* grows more grievous; for, as the *pleaſant Senſation* cauſed by *Opium,* takes away

way the *Perception* of the Irritation of Humours, ſo the *Grievance* of Loſing that *Pleaſure* cauſing *Contraction*, makes all *Senſation* ſmarter, and conſequently more irritating, ſo that the *Humours* have thereby more of the Effect of *Purgers*, which operate (as all agree) by *Irritation*; Beſides, that the *Humours* before detain'd and ſuſpended by *Relaxation*, (as in *Sleep*) are now therefore pour'd down in greater *Quantity* by the advanced *Contraction* ſqueeſing them out, as the *Return* of the *Vigilative Contraction* after *Sleep*, cauſes Men to be more apt to go to Stool upon awaking, or getting up in the *morning*; which may be well compared (in ſome meaſure) to Purging, after Leaving off the Uſe of *Opium*, ſince it relaxes as *Sleep* does, and that for a much longer *Time* by a continued Uſe thereof.

IV. *Death commonly follows*, for all the Reaſons aforeſaid, eſpecially the great and *intolerable Diſtreſſes* of Soul that they are under, unleſs *Opium* be uſed, which ſoon ſets them right, or *Wine* (its *Subſtitute*) ſo frequently uſed, as to continue its *Cordial Pleaſure* at *Stomach*.

Nothing now remains but to take a ſhort *Review*, to ſee whether I have explain'd all the *amazing Contradictions* that ſeem to be in the *Effects* of *Opium*; for tho' it is really done, yet may it not ſo well appear as when ſet one againſt the other. It would be *Tautology* to repeat all the *Reaſons*, therefore I ſhall only mention them in the cloſe *Order* I at firſt enumerated them, that you may ſee that they are all explicated in the former *Diſcourſe*.

You may well remember, that I have ſhewn;

1. How it cauſes *Sleeping* and *Watching* (in divers Perſons.) 2. How

2. How it *cauſes* and *prevents Sweat.*

3. How it *relaxes* and *ſtops Looſeneſſes* (even by *relaxing.*)

4. How it *ſtops Fluxes*, and *promotes Sweat* and *Perſpiration.*

5. How it *ſtupifies the Senſe of Feeling*, yet *irritates it.*

6. How it *cauſes Stupidity*, (if you ſit or lie ſtill) otherwiſe *Promptitude in Buſineſs.*

7. How it *cauſes Cloudineſs* and *Serenity*; *That*, if one lies ſtill and dozes; *This*, if he keeps in *Action*; *That*, by an *exceſſive* and *laviſh Uſe* thereof, which cauſes *Moapiſhneſs*; *This*, by a temperate occaſional taking thereof, eſpecially in the *Morning*, upon *Journeys*, *&c.*

8. How it *excites the Spirits, yet quiets and compoſes them in Hyſterick Fits, Diary Fevers*, from *Pain, Commotions, &c.*

9. How that it is *very hot*, and *takes of Fevers.*

10. How tho' it is *hot and bitter, yet it leſſens Appetite and Hunger*, which is a *grievous Senſation*, by cauſing a *pleaſant one.*

11. How it ſometimes ſtops Urine, by relaxing the *Bladder*, *ſuſpending Humours*, *&c.* and promotes it by its tickling *Volatile Salt*, as *Cantharides*, *Bees*, *Ants*, *&c.* do.

12. How it *relaxes, and thereby weakens*, as in *Sleep*, *&c. yet enables to perform Labour, Journeys*, *&c.* with great *Euphory*, by *divertive Pleaſure.*

13. How it *cauſes* and *prevents Abortion*; *That*, by *over-relaxing*; *This*, by *allaying Pains, Terrours*, *&c.* that might cauſe it.

14. How it *ſtops Vomiting* by taking off *Irritations*, *&c.* and *cauſes it* by the *Adherence* of its *indigeſtible* and *viſcid Roſin.*

15. How it *ſtops Purging*, and *ſometimes cauſes it* by the *Diſſolution* of its Roſin by a ſtrong *Digeſtion*,

geſtion, fixed Salts, *&c.* when its Quantity is conſiderable; which makes it happen but rarely.

16. How tho' *acrimonious*, *it takes away the ſenſe of Acrimony.*

17. How it *cauſes Madneſs*, and *cures it* by compoſing the Spirits, *&c.*

18. How it *cauſes Palſies* by relaxing the Parts, and making them ſuſceptible of Humours, cauſing ill *Digeſtion*, *&c.* And *may cure them* (as Dr. *Willis* gives an *Inſtance*) by opening the *Pores.*

19. How it *cauſes Palſies*, and cures *Stupors*, *&c.* that proceed from *Cold* and *Contracting Cauſes.*

20. How it *cauſes Drineſs in the Mouth*, yet (by taking off *Fevers*) often *cures it.*

21. How it *takes off Hiccoughs*, and *cauſes them*, as it does *Vomiting*, and for the ſame Cauſes.

22. How it *ſtanches Bloud* by quieting its motion, yet promotes the *Menſes* and *Lochia* by relaxing, opening, and widening the Veſſels and Pores.

23. How it *ſtops critical motions*, that depend upon *Irritation* and *Contraction*, and *promotes ſuch* as depend upon *opening the Pores.*

24. How *it revives People that are at the Point of Death* for want of *Opium*, or by *violent Contractions* and *Convulſions*, and is *fatal to other weak Perſons.*

25. How it *cauſes Convulſions* by its *grieving Roſin*, and *cures them* by quieting and compoſing the Spirits by pleaſing them.

26. How it *cauſes Contraction* by the *grievous Senſation* that its *Roſin* cauſes, and *Relaxation* by the *pleaſant Senſation* that its *Sal-Volatile-Oleoſum* cauſes; by *That it cauſes* many ill *Effects*, not here named, and by *This it cures* them; for how can ſuch *contrary Cauſes* (according as one or the other prevails) not cauſe *contrary*, and ſeemingly *contradictory* Effects at *divers Times*, and in *divers Perſons.*

27. How

27. How it *relaxes*, yet *cauſes the Tenſion, Rigidity, and Erection of the Penis, Priapiſms, &c.* by its *Titillation.*

Thus have you all, even the moſt myſterious and *ſeemingly Contradictory Effects* of *Opium*, explain'd and reconcil'd, and that ſo eaſily, that if there were no other *Proof* of the *Truth* of my *Foundation*, it is ſufficient to convince any Man of its *Validity*, conſidering the *Vaſtneſs* of the *Number*, and *Perplexity* of the *Nature* of thoſe *Effects*, that are all with ſuch *Facility* explain'd, is able even to diſparage the *Performance* as *mean* and *obvious*, (like that of the *Circulation of the Bloud*, or *America* when found out) did not the *newneſs* of the Thing, the baffled *Endeavours* of all Mankind, and the ſeeming Impoſſibility of ever finding it out, (which was almoſt agreed upon) ſpeak in its *behalf*. Conſider, that nothing can be *plain* and *eaſie*, but what is *true*, and conſequently nothing valuable but what is ſo; what's true Knowledge, but *the Knowledge of Things as they really are?* And when a Thing is known as really as it is, it muſt be plain, and never ſo till then; for to take a Thing to be what it is not, is all *Darkneſs, Errour, Puzzle, Confuſion*, and *Vanity*, as all Diſcourſes of *Opium* have hitherto been.

It is no *Wonder* then, that the *Cauſe of the Operation of Opium* grew more and more obſcure, while they ſtated *the Cold Quality of very hot Opium, the Belching up of Vulcano's of Fumes from the Stomach to the Head*, (which have no Exiſtence) *their acting as a Poiſon of the Animal Spirits, their fixing and coagulating them, their clogging them by Adherence, or clouding them, their wedging themſelves among the Animal Spirits*, (none knows how) *and thereby diſabling them, their ſtuffing the Pores of the Brain,*

***Brain**, or compreſſing it, and thereby hindering the Generation of Animal Spirits*, to be the *Cauſes of the Noble and Pleaſant Operation of Opium*, without any *Foundation* in *Nature*, or the leaſt *Evidence* of *Senſe* or *Reaſon*, but vain *Phantaſtical Imaginations* form'd in the *Chimera-Forges* of their *Wanton Brains*, while they endeavour'd (*Right* or *Wrong*) to appear conſiderable *Folks*, by doing nothing to the *Purpoſe* in a kind of pretty, plauſible, and impoſing manner, thereby ſtuffing the unwary *World* with wrong and vain Conceptions and impertinent *Prejudices*, which are the greateſt *Obſtacles* of *Knowledge*.

I would fain know, which of thoſe *Hypotheſiſes* can tollerably ſolve 1 in 10 of the *Phenomena's* that I have enumerated, or, indeed, any one *Phenomenon truly*, *mechanically*, and *demonſtratively*; yet are thoſe *Whims* the *glorious Productions* of Thouſands of years Studies, and ſolicitous *Diſquiſitions*; tho' every one that took *Opium*, actually felt the true Cauſe of its Operation, *viz.* The *pleaſing Delight that it occaſioned, by affecting the Membranes and Animal Spirits*, after the manner that I have at large ſet forth.

Good God! what blund'ring Groper is Mankind?
Who daily felt the Cauſe it ne're could find!
Tho' Thouſands ſought it with an eager Mind.

CHAP. XXIV.

Of Opium *ſeparated from its noxious Part, (or Roſin) and whether it is a* Panacea, *&c.*

THus far have I ſpoken of Crude *Opium* jointly with its *Roſin* or *noxious Part*, now I will conſider it ſeparated from it, and ſhew how to do it. *Galen* ſays, That it is very difficult to find an *excellent Remedy* without a *noxious Quality.*

And it is as difficult to find any Thing ſo *noxious*, as not to afford a *good Medicament*; which you ſee in *Vipers*, *Scorpions*, *Mercury*, *&c.*

All, or moſt *Phyſicians*, unanimouſly agree, That *Opium* has ſuch a *noxious Quality*, that cauſes *Vomitings*, *Hiccoughs*, *Diſtreſſes*, *Anxieties*, *Convulſions*, chiefly at or about the *Region* of the *Stomach*; and that if it were freed from it, it would be the *nobleſt of Medicaments*: Who can otherwiſe imagine? ſeeing it is ſo excellent and univerſal a *Remedy*, as it is now uſed in the *World*, without ſuch an excellent *Preparation* thereof, wherein the *noxious Principle* is ſeparated from it.

Of which *Paracelſus* ſays, That whoever ſhall enjoy it, will be a Profeſſor of no leſs Knowledge than *Apollo*, *Machaon*, or *Podalyrius*, tho' he was the greateſt Maſter of *Arcanas*, *Panaceas*, *&c.* yet does he *confeſs*, "*That a Preparation of* Opium *ſtood* "*him in ſtead, and perform'd his Buſineſs, when* "*all his great Medicaments fail'd him; and that it* "*will diſſolve Diſeaſes, as Fire does Snow*; or uſes Words to the ſame *Effect.* *Helmont*

Helmont, being in a kind of *Rapture*, upon Conſideration of its Excellency, burſts out into this *Exclamation*; *Happy is the Sick Man whoſe Phyſician knows how to ſeparate the deadly (or noxious) Part from* Opium!

Platerus affirm'd, *That he could with a Preparation of* Opium *preſerve the broken Wheel of Life.*

Etmuller ſays, *That* Opium *may deſervedly be eſteem'd a general Remedy*; and the main *End* of his *Tract*, *De parvis Morborum Initiis*, is to ſhew how *Volatiles*, more eſpecially *Salia-Volatilia-Oleoſa*, (as that of *Opium*) may in ſmall Quantities alter us, and cure our *Diſeaſes.*

It were endleſs to tell you the *Eulogies* of the Learned concerning ſuch a *Preparation* of *Opium*, which they generall conclude to be a moſt noble *Panacea*; therefore many, and very ſolicitous have been the *Diſquiſitions* of the Ingenious and Induſtrious, to find out this *heroick*, *generous*, and *moſt glorious Medicament*. I am fully ſatisfied, that the pure *Sal-Volatile-Oleoſum of Opium*, duely ſeparated from its *noxious Roſin*, *Droſs*, *&c.* is the very Thing; ſome of the Reaſons that convince me are as followeth, *viz.*

1. Becauſe *Opium* has no other *Principle* in it, that ſignifies any Thing as to its laudable and noble *Effects*, but its *Sal Volatile Oleoſum* (as has been ſhewn.)

2. Becauſe the *Sal-Volatile-Oleoſum* of *Opium* produces all its *good Effects.*

3. Becauſe the *Sal-Volatile-Oleoſum* duely ſeparated from its *Roſin*, and other Principles, produces no ill *Effect* in a moderate *Doſe.*

This

This added to what has been Diſcourſed at large of the *Principles of Opium*, is (I think) ſufficient to ſatisfie any Man, that the *Sal-Volatile-Oleoſum of Opium* (ſo ſeparated) is the great *Panacea* that is ſought for.

However, becauſe we are upon the *greateſt Thing* in *Phyſick*, (as may be well inferr'd from what has been already ſaid) and that the *World* has been under great *Fears*, *Jealouſies*, and *Blindneſs*, concerning this *Matter*, and the *Uſe* of *Opium*; it will be well worth our While to give all imaginable *Satisfaction* in this Caſe, therefore I will,

Firſt, Lay down all the requiſite *Qualifications* of a *Compleat Panacea*, as far as I can collect out of the moſt Eminent *Authors*, and my own Conſideration thereof.

Secondly, I will particularly enquire as to each of the *Qualifications*, whether the *Sal-Volatile-Oleoſum* of *Opium*, duely ſeparated from every other *Principle* of *Opium*, is furniſhed therewith?

Thirdly, I will ſhew you how duely to ſeparate its *Droſs*, *Roſin*, *&c.* ſo as to leave a pure, ſincere *Sal-Volatile-Oleoſum* of *Opium* for *Uſe*.

The requiſite Qualifications of a Panacea *are theſe*, viz.

1. *That it ſhould highly pleaſe our Senſation at Stomach*; becauſe the *Stomach* is contrived and appointed by *God* and *Nature*, as the *Touchſtone* to try, a *Sentinel* truely to inform, and a *Critical Judge* to determine, what is, or is not agreeable to our *Nature* in general, and therefore (as has been ſhewn) endued with a wonderful *ſagacity* and *nicety of Senſation* for that *End*. It follows

then, that a *Panacea* ſhould be very pleaſing and agreeable to the *Stomach*, and therefore very *cordial*.

2. *That it ſhould be highly pleaſing to the ſenſitive Soul*, which is the *Principle of all Motion, Action*, and *Alteration* in an *Animal*; This *Helmont* couches under the Name of pleaſing the *Archæus*.

3. *That it ſhould take away all Grievances of the ſenſitive Soul* (or *Archæus*) becauſe its *Grievance* is the *Eſſential Form* of *Diſeaſes*, for even Morbid *Matter*, unleſs it cauſes a *Grievance*, cauſes no more *Diſeaſe* than it does in a dead Carcaſs, as *Helmont* and *common Reaſon* aſſures us; therefore *Diſ-eaſe* and *Grievance* are only Two Words ſignifying the ſame Thing, and nothing is capable of *Grievance* in an *Animal*, as ſuch, but the *ſenſitive Soul*.

4. *It ſhould compoſe, comfort, enliven, encourage, and invigorate our ſenſitive Soul and Spirits*, as being the *Principles* of *Motion* in our *Animal Nature*, in order to ſelf Preſervation; for *Nature* (or thoſe *active Principles* within us) is the *Curer* of *Diſeaſes*, and we *Phyſicians* only its Miniſters to offer it good Means, *&c.*

5. *The Principles of a* Panacea *ſhould be agreeable to the beſt, nobleſt, moſt active, and predominant Principles of our Bodies.*

6. *Thoſe Principles in the* Panacea *ſhould be more vigorous than ours*, to reduce them, when deficient, and exalt them, when depreſſed, clog'd, *&c.*

7. *It ſhould be a general Reſolver of Humours*, for which Cauſe the *Liquor Alcaheſt* is ſo much extolled for a *Panacea*. Hear what the great Phyſician *Claudius de la Courvee* ſays, *Uni morboſæ, & ſemper preter Naturam humorum coagulationi, unique eorundem colliquationi, cui perpetuo intendit natura, diligenter ſtudeas; hujus adjuvandæ, illius corrigendæ modum ſi aſſecutus fueris, habebis in Praxi ſecretum*

omni

omni auro potabili, omnique Antidoto preſtantius; denique plus poteris in Praxi, quam ſi curſus Aſtrorum, Metallorum vires, aut totam callueris panaceam.

8. *It ſhould, after ſuch Reſolution of Humours, compoſe, concentrate, combine, and unite the good Principles.*

9. *It ſhould diſcuſs the bad and uſeleſs Parts.*

10. *It ſhould open the Pores to give them their Exit,* by that moſt univerſal, natural, plentiful, kindly, and eaſie *Evacuation.*

11. *That* (after all) *it ſhould (like the Liquor Alcaheſt)* remain very much unaltered in it ſelf.

Now whatſoever is endued with theſe Eleven moſt noble *Qualifications*, muſt be in the Eſtimation of any *Rational Phyſician* or *Phyloſopher*, *a glorious Panacea*, that is fitted to take off the *Matter* and *Form* of all *Diſeaſes*, (or *Grievances*) as far as it is in the *Power* of a *Natural Medicament* (or *Alterative*) ſo to do; Therefore, let us ſee, how the pure *Sal Volatile-Oleoſum* of *Opium* is furniſhed therewith?

1. *It is ſo highly agreeable and pleaſing to our moſt nice Senſation at Stomach*, which is given us for a *Touchſtone*, *Watch*, and *Judge* of what is agreeable and beneficial to our *Bodies*, that nothing in the whole World is ſo agreeable and pleaſing to it, and therefore nothing is more agreeable and beneficial to our *Animal Nature*; it would imply a *Contradiction*, that the *Stomach*, which is given us (and accordingly qualfied) to make a true *Report* of what is, or is not agreeable and beneficial to us, ſhould always (tho' it may by *Accident* poſſibly) give us a *falſe Report* of the *Agreeableneſs* of Things; It would be more than *Prophaneneſs* to attribute ſuch deceitful, unkind, and unwiſe *Contrivances* to the infinitely *Good* and *Wiſe*; therefore

the *Stomach* does infallibly teſtify, and aſſure us, that it is moſt agreeable to our *Nature*, ſeeing it is always ſo to it; *Agreeableneſs* and *Diſagreeableneſs* with which, is appointed and ordain'd by *God* and *Nature* to be the *Teſt* and *Touchſtone* of what is agreeable or otherwiſe to our *Animal Nature*.

Obj. Why then, being ſo agreeable to the *Stomach*, ſhould it not create an *Appetite*, but rather leſſen it?

Anſ. Tho' ſome may be ſo weak as to make ſuch an *Objection*, becauſe Things agreeable to the *Stomach* are commonly reputed to cauſe an *Appetite*, yet (the Matter duely conſidered) the Caſe is quite contrary; for *Appetite* (or *Hunger*) is a *grievous Senſation* at *Stomach*, which cannot be expected from Things that gratifie and pleaſe the *Stomach*, which are the adequate Cure of a *grievous Senſation* (or *Hunger*;) Thus *Meat* and *Drink* (as has been ſhewn) cure an *Appetite*, grievous Senſation, or Hunger; Thus *Wine* and *Opium* do (by pleaſing the *Stomach*) cure a *canine Appetite*, *&c.* Therefore you may *Note* by the by, that all *Meat* and *Drink* that pleaſe the *Stomach*, and gratifie its *Senſe*, are really *Opiates* in ſome *degree*, cauſing good Humour, Sleepineſs, *&c.*

Appetite or *Hunger*, tho' it is a convenient *Call* or *Intimation* of *Want* of *Supply* and *Recruit*, is, as ſuch, a conſequent of *defect*, and ſo unnatural, tho' call'd *Natural*, becauſe it is a Thing that happens of courſe, to direct us how to proportion Things to the *Exigence* of *Nature*; of which there would be no need, if we could otherwiſe proportion good and agreeable *Refection* to our *Wants* thereof: In ſhort, it is a *Diſeaſe* which

Thing

Things agreeable and pleaſing to the *Stomach*, as our *Panacea*, muſt cure, or elſe it would not be a *Panacea*; and (as was ſhewn) nothing can be a more proper Cure of *Grievance* (or *Diſpleaſure*) than *Pleaſure*; Therefore what is agreeable to our *Stomach*, and conſequently to our *Body*, muſt cure not cauſe *Appetite*, as *Meat* and *Drink*, *&c.*

Obj. But it may be ſaid, That *Appetite* argues a good *Digeſtion*, which is good for the *Body*.

Anſ. It does indeed argue a quick *Digeſtion*, and great Expence of the *Recruits* taken in, but ſtill it is all bottom'd upon *Deficiency*; and *Digeſtion* may be, and is very often too quick, as in the *Boulimia*, (or *canine Appetite*) Nature delights in a gentle, kind, and gradual *Diſſolution* of the *Meat* at *Stomach*; to which you'll find, by and by, that *Opium* very much conduces by its *reſolving Quality*.

2. *Nothing in Nature is more pleaſing to the ſenſitive Soul*, as appears by the whole Series of our Diſcourſe, and the explaining all the *Phenomena* or *good Effects* of *Opium* by that very *Pleaſure* of the *ſenſitive Soul*. Therefore,

3. *It* (as was manifeſtly ſhewn) *does thereby take off all Grievances*, which are the *eſſential Forms* of *Diſeaſes*; and the *eſſential Forms* of *Diſeaſes* being taken away, (*which give them being, and make them to be what they are*, according to the *Definition* of an *eſſential Form*) the very being of *Diſeaſes* muſt be taken away: Therefore our *Sal-Volatile-Oleoſum* is a *compleat Panacea*, that takes away the *Eſſence* or Being of *Diſeaſes*, in taking away the *Grievance* thereof.

Here it may be ſaid, that the Matter of the Diſtemper remains, and conſequently a *Diſpoſition* to a *Relapſe* as ſoon as the *Sal-Volatile-Oleoſum* has ended its Operation.

But what need it end at all, if you pleaſe? It may be renewed without *Danger* (for this is not as *reſinous Opium*) till the Matter is ſubdued thereby, which it will alſo do, as appears more manifeſtly by the following *Qualifications*. For (as has been ſhewn)

4. *It compoſes, comforts, enlivens, encourages, invigorates, and cauſes a great Euphory of the ſenſitive Soul and Spirits*, which are our *Natural active Principles* of Motion, by which all ill *Matter* is effectively ſubdued when they act with *Alacrity* and *Vigour*, they being the *Principal Agents*, and we *Phyſicians* but (as was ſaid) *Miniſters*, or as *Handmaids*, to offer or hand *good Matter*, *Medicaments*, or *Inſtruments*, to thoſe *Principal Agents* of *Nature*; and that this *Sal-Volatile-Oleoſum* of *Opium* is the moſt proper *Matter* or *Medicament* we can put into *Nature's* Hands ſo invigorated, appears manifeſtly in that,

5. *Its Principles are the moſt agreeable to the beſt, nobleſt, moſt active, and predominant Principles of our Bodies*, as has been proved moſt evidently *plene & plane*, nor is it only agreeable, but,

6. *More vigorous and powerful to actuate, reduce, alter, or exalt our Principles*, according to the Direction of our invigorated *Nature*, (or ſenſitive *Soul* and *Spirits*) which having ſo convenient an Inſtrument, and highly qualified a Matter, will ſoon alter the perverſe, renew the decaid, acuate the dull, and elevate the depreſſed, effete, and pall'd Humours of our Bodies, eſpecially ſeeing,

7. *That*

7. *That the* Sal-Volatile-Oleoſum *of* Opium *being ſo agreeable and powerful, muſt be the greateſt Reſolver of Humours that can be imagined*; for all *Reſolution* is by an Agreement of Particles, which makes them eaſily miſcible, inſinuate into, and penetrate each other, eſpecially if one be ſomewhat more vigorous and penetrating than the other, as the *Sal-Volatile-Oleoſum* has been plainly proved to be; Thus it is, that all *Menſtruums* do ſo reſolve things of their own Nature, and ſo purifie and cleanſe them, by taking to themſelves what is meerly and purely of the ſame *Nature*, and rejecting or letting go their Hold of what is otherwiſe: Where it is worth noting, how upon the Account of the intimate Combination and Union of the *Volatile Salt* and *Oily Parts* in our *Panacea*, it is diſſolvable in all *Menſtruums*, and conſequently an *univerſal Reſolvent* of all the *Humours* of our Bodies, which its *external reſolving* of all *Humours* and *Tumours* does alſo prove. Now if it be ſuch a *Reſolver*, of which there is no Place to doubt, then as *Claudius de la Courvee* ſays, it muſt excell all Things in altering and reducing all the Humours of our Bodies to a good and agreeable Condition. Nor does it only thus reſolve them, and thereby ſeparate (as was ſaid) the good from the bad, but,

8. (When it has ſo done) *it, by the amicable Agreeableneſs of its* Sal-Volatile-Oleoſum, *compoſing Faculty, ſtrict Combination of its Principles, joins to, concentrates, congregates, and* (as it were) *cements the beſt and moſt agreeable into a cloſe Union and firm Texture*, by (as was ſaid) the Direction of *invigorated Nature*, which is of it ſelf (the good being once ſeparated from the bad) highly ſufficient (without any other Help) to unite Parts ſo agreeable, and of themſelves inclined to unite and combine, tho' all the Parts of *Opium* (like thoſe of

the great *Diſſolvent*) were gone; and when that is done,

9. *The high diſcuſſive Quality of the* Sal-Volatile-Oleoſum *muſt be very effectual for the Diſſipation and Diſcuſſion of the ſever'd effete Particles*, which muſt be highly aſſiſted and improved by the brisk and chearful Motions of *Nature*, (*viz.* the *ſenſitive Soul* and *Spirits*) ſo (as is aforeſaid) invigorated; Nor is this all, but to compleat and perfect the Operation,

10. *It lays open all the Pores of the Body* (as has been Demonſtrated) to let them out, and give the ill Particles their *final Exit*, by the moſt *natural* and *plentiful Way* of *Evacuation*, leaving the Body free from all *Miaſms* and *Impurities*.

11. I have ſufficiently ſhewn *how unalterable it is in it ſelf*, *Chap.* 15. ſo that like the *Liquor Alcaheſt* it is not made to be ſubdued, but to ſubdue and reſolve *Humours*.

Now, what can be required more in a *Medicament*, and how can the *ſenſitive Soul* and *Spirits*, (or *Nature*) ſo invigorated, and endued with all *Euphory* and *Chearfulneſs* by this *glorious Medicament*, whoſe *Principles* are not only agreeable to our nobleſt ones, but more powerful and intimately combin'd, ſo reſolving of Humours, ready to unite the good, and to diſcuſs the bad, and carry them off by the *Pores*, ever fail (being duely adminiſter'd) of good Effect in altering all the *Humours* of our Bodies?

Hippocrates, in his *Book De Naturâ Hominis*, ſtates the Cauſe of Diſeaſes to be a *Diſgregation of Humours*, by which he ſeems to imply, that the Power of *congregating* and *concentrating* of Humours, were ſufficient to accompliſh a *Panacea*; which is but one *ſingle Qualification* in eleven of

our

our *Sal-Volatile-Oleoſum*, tho' this alone (as is experienced even in common Preparations of *Opium*) ſuffices very often to cure Diſeaſes by compoſing Commotions, as in *Diary Fevers* from *Perturbations*, *&c.*

Thus the bitter and firm textured *Cortex* (as I have ſhewn in my *Book De Febribus intermittentibus*) takes off *Ague Fits*, by re-combining the ſegregated *Humours* with the Bloud, which it ſuddenly doing, leaves a Diſpoſition in the Bloud, when ever it meets with a ſegregating Cauſe, (as *Purging*, *violent Motion*, *Inſolation*, *intemperate Drinking*, *&c.*) to a *Relapſe*, by a ſecond Separation of the Morbid Matter from it, as you have it more at large in my ſaid *Book*, *p.* 166, 167, *&c.* 242, 243, *&c.* where you may ſee how *Opiates* conduce very much to a ſpeedy Cure by the *Cortex*, by *compoſing*, *&c.* *Martianus* ſays, *Comm. de locis in Homine*, p. 76. *Opium ſiſtit & prohibet humorum Diſgregationem*; That is, *Opium hinders Diſgregation of Humours.*

Now you may perceive the true *Qualifications* of a *Sal-Volatile-Oleoſum*, ſo much ſought for by the *Learned* as a *Panacea*; and how far the common ones, that are ſold in the *Apothecaries* Shops, are from being ſuch.

Sylvius (indeed) had an excellent one, with which he did many, and great *Cures*, which being conſidered, (had he not confeſſed his Ignorance of the Cauſe of the Effects of *Opium*) and the Narrative he makes of its Vertue and Performance in his *Preface* to the *firſt Book* of his *Praxis*, and that he delighted ſo much in the *Uſe* of *Opium*, even when he was young, that he was call'd by the Name of *Doctor Opiatus*, and that he declares no Oil was added in its Preparation,

ration, and that it is intimated that the *Oil* and *Volatile Parts* were ſtrictly combined, would have made me ſuſpect, that it was the *Sal-Volatile-Oleoſum* of *Opium* that he uſed, which if it was not, I dare be confident, that (notwithſtanding all its Excellency) it was not as good.

I am very well ſatisfied, that a true and conſummate *Sal-Volatile-Oleoſum* is not to be made barely by *Art*; Enquirers might have better ſucceſs if they ſought it among the Natural Tribe of bitter Plants that are agreeable to the *Stomach*, which have all in them a *Sal-Volatile-Oleoſum*, but how to pick and cull is (I think) beſt ſeen by the requiſite *Qualifications* of a *Panacea* that I have ſtated. There have been many in whoſe Hands *bitter Things* have been as a *Panacea*. One in *Germany* cured moſt Diſeaſes with *Wild Sage*. Some have done great Things with *Agrimony*, others with *Bean Trefoil*, ſome with *Centaury*, others with *Gentian*, *&c.* and the famous Dr. *Lower*'s Practice ran almoſt altogether upon bitter Things, which did him great Service in his *Tincture* of Steel, (as he call'd it) that he often made in Deſtill'd Waters, that could take little or nothing to Purpoſe of the *Tincture* of *Steel*, (whether out of Ignorance or Deſign, I will not, tho' I may determine) which ſhews, that it was the bitter Things that did the good, and made it as a *Panacea*, and not the *Steel*.

However, certain it is, that promoting the *Diſſolution* of Meat at *Stomach*, which the bitter *Salia-Volatalia-Oleoſa* do, is a great Foundation for *Cure*; and (no doubt) our *Sal-Volatile-Oleoſum* does, by its *inciding*, *dividing*, and *reſolving Quality*, contribute very much to a due *ſolution* thereof at *Stomach* by *Connaturalneſs*, as all *Menſtruums* do,

do, (eſpecially if it be *Fleſh*, which we uſe moſtly, and requires moſt help to be reſolv'd) which may very well be, tho' it leſſens *Appetite* by pleaſing *Senſation*; for (as was ſhewn) it is quite another Thing to cauſe *Appetite*, (or a *grievous Senſation*) and *Reſolution* (or *Digeſtion*) of the Meat at *Stomach*; for Wine helps *Digeſtion*, yet, by the *pleaſing Senſation* that it cauſes at *Stomach*, it cures a *canine Appetite*, and at any time (if you'll obſerve it) takes off the *Eagerneſs* of *Appetite* for the preſent; you can better ſtay without Meat after a *Whet* before Dinner, than you could without it; ſo that the Wine anſwers that of a *Whet* as to *Digeſtion*, tho' not to *Appetite* or *Hunger*, which is a *grievous Senſation* that Wine muſt rather Cure than Cauſe.

It is true, that *Wine* or *Opium* may, by cauſing a ſenſe of *Pleaſure* at *Stomach*, cauſe ſome ſtay of the Meat at *Stomach*, but it does not thence follow but the *Digeſtion* may be the truer, becauſe more gentle and gradual, as it may, and does happen in *Sleep*, when Things that are not very hard of *Digeſtion* are eaten, which are not good at any *Time*.

You may remember how Bliſters (to which *Opium* is near of Kind, as has been ſhewn) do quickly by their *reſolving Nature*, turn the *Cuticle* (as if digeſted) into a ſort of *Gelly*; what a mighty Help would ſuch a Degree of *Reſolution* be to the *Digeſtion* at *Stomach*, when it is, by that Means, like the Skin of a well boil'd Cow-heel, half turn'd to a Gelly, and from a Thing that is very hard of *Digeſtion*, to be very eaſie, as is alſo a *Boar's Skin* in *Brawn* by reaſon of the *prior Reſolution* in the Boiling.

If (as *Sanctorius* ſays) *inſenſible Perſpiration* hinder'd is the Cauſe of moſt Diſeaſes, what is more proper to Prevent or Cure them than this *Sal-Volatile-Oleoſum*, which cauſes *Perſpiration* above all Things?

I have been lately inform'd, That in ſome Parts of the moſt Eaſtern Countries, they Uſe *Opium* as a *general Medicament* or *Panacea*.

Dr. *Willis* and *Sylvius* ſay, it hinders the *Coagulation* of the *Bloud*; how many *Chronical Diſeaſes* may it then Prevent or Cure? That is the great Effect of the *Alcaheſt*, and that is it that mainly qualifies a Medicament for a *Panacea*, as *Courvee* aſſerts, and all Ingenious Men allow.

Wedelius ſays, That it happily reſtores the *Tone* of the *Bloud*; What is then wanting to the Preſervation of Health?

Paracelſus ſays, That *Tam homini quam Morbo ſomnum conciliat*; That is, That it puts the Diſeaſe aſleep, as well as the Man.

☞ *Platerius* cured the *Gout* with it *ſafely*, *quickly*, and *pleaſantly*, and I know one that can do it, eſpecially if it be at the firſt coming of the Fit.

Willis gives an Inſtance of one perfectly cured of a *Dropſie* and Pocky Pains by the Uſe of *Laudanum*.

☞ *Horſtius* perfectly cured an *Hypochondriacal Perſon*, that was troubled with *Stupidity*, *Watchings*, *Loſs of Appetite*, *Trembling*, and direful *Epileptical Convulſions*, and paſt all *Hopes*, by the *Uſe* of *Opiates*.

I *my ſelf* have often ſeen *Defluxions* and *Catarrhs* cured by the uſe of *Opiates*, and one of an inveterate ill Habit of Body of many years ſtanding.

Wedelius ſays, That it reſolves the *Grumeſcence* of the *Bloud*, alters and diſſipates the tenuious Parts of it, tempers the acrimonious, *&c.*

The *Ancients* uſed it againſt *Agues* with great ſucceſs.

You may (to confirm this Matter farther) obſerve, that among the conſtant and frequent Effects of *Opium*, there is no bad ones, unleſs there be 2 or 3 purely upon the Account of its *Roſin*, (as has been ſhewn) therefore when it is ſeparated from it there is no Cauſe to fear the *Uſe* of the *Sal-Volatile-Oleoſum*, unleſs it be (as in the Caſe of *Wine*) when 'tis taken in an *exceſſive Doſe*, or uſed *too long* in a laviſh intemperate manner; ſo that when I have ſhewn how duely to prepare it, and the moderate and ſafe *Doſes* thereof, it may be uſed altogether as ſafely as *Wine* in a proportionable *Doſe*; for what Harm can there be in moderately pleaſing the *Membranes*, particularly at *Stomach*? which all the beſt Things we uſe, as *Wine*, *Cordials*, *Meat*, and *Drink*, do, (which are therefore all *Opiates* in ſome degree) thereby aſſuring us of their *Goodneſs* and *Agreeableneſs* to our *Bodies*, tho' they do it not in ſo high a dgree as our *Sal-Volatile-Oleoſum* does, which is the more *Authentick Certificate* of its Excellency; tho' it is to be ſtill confeſſed, that *Exceſs* of the beſt Things, as *Joy*, *Comfort*, *Pleaſure*, *Wine*, *Cordials*, *&c.* have, and may do miſchief; but what need Exceſs therein, any more than in *Wine*, *Meat*, *Cordials*, *&c.* which then (like it) are all inconvenient and injurious to the Body. All

All this I have ſaid to adminiſter Cauſe to improve the *Practice* of Phyſick by the *Uſe* of this *Panacea*, (now that it is known) by introducing its noble *Uſe* as an *Alterative* to Cure, as well as formerly to palliate *Diſeaſes*, it being a far more beneficial Thing to *Cure* than *palliate*.

Remember how the *Cortex*, *Mercury*, *Antimony*, and other the moſt effectual and glorious *Medicaments* have been traduced, and ſcandalized by the ignorant *Imaginations* of the Unlearned, who having no true *Knowledge* of the *Vertue* of Things, wholly depend upon *Fears* and *Jealouſies* to guard them from their imagined ill *Effects*, which (generally ſpeaking) only the ſame *Ignorance*, *Fears*, and *Jealouſies*, gave a *Phantaſtical Being* to.

It remains, that I in the next Place ſhew you;

1. *The true Preparation of this* Panacea *or* Sal-Volatile-Oleoſum.
2. *Other Preparations of* Opium *that are next it in Safety and good Effect, and why they are ſo.*
3. *The moderate and truly ſafe Doſing of them all*, there being no Danger in well prepared *Opium*, but from *Exceſs* in the *Uſe* thereof.

CHAP.

CHAP. XXV.

Of the Preparation of the Panacea, *or true Sal-Volatile-Oleoſum of* Opium.

SEeing that the *Sal-Volatile-Oleoſum* of *Opium* muſt be ſuch an effectual, generous, and general *Medicament*, that is both *cordial* and *alterative* in ſo tranſcendent a manner, it well deſerves a careful and curious *Preparation*; therefore I will be very particular therein. To that end,

1. *It muſt be ſeparated from all the noxious Roſin, and all Filth and Droſs of the* Opium.

2. *It muſt be kept entire without weakening, or any way altering it, or adding a new Quality thereto.* Therefore,

I. *Opium muſt not be torrefied,* according to the *Common Practice*; 1. Becauſe the fineſt and moſt volatile Part (which is the very beſt) is thereby loſt. 2. Becauſe the reſinous and earthy Parts (which are not ſpent that *way*) grow more in Proportion to the *Sal-Volatile-Oleoſum*; ſo that *torrefying* cannot be allow'd, unleſs preſerving the *Bad*, and deſtroying the *Good*, be allowable. The vain and oſtentatious Pretence of deſtroying (I know not what) *narcotick Sulphur*, (which is a Nickname given by Ignorance to the beſt Parts of *Opium*) is moſt inſufferable ſtuff. 3. Becauſe all *Empyreum* (which renders it very nauſeous) can hardly be avoided in torrefying it; but ſuppoſe it were, What need is there otherwiſe ſo to damnifie it? (as is aforeſaid.)

Obj.

Obj. It is found to be more innocent, after ſuch *Torrefaction.*

Anſ. I grant that it happens ſo ſometimes; but it muſt be meerly by *Accident*; either, 1. Becauſe it meets with a ſtrong *Digeſtion* at *Stomach*; *Or*, 2. By the Cuſtom of poudering it, which is always directed, and done after the *Torrefaction*; by which means the *reſinous Parts* being divided and ſevered, become leſs liable to a *Coaleſcence* at *Stomach*, and conſequently leſs offenſive and more ſubduable: Eſpecially, 3. When it is mixed (as generally it is) with other things that keep the Parts of the *Roſin* from *Coaleſcence*, and leave them more conquerable by the *Digeſtion*, as the *Ancients* found by *Experience*; who therefore did generally, if not always, mix it in a ſmall quantity, with many other things in great quantity, in the form of *Electuaries*, as in *Venice-Treacle*, *Mithridate*, *&c.* though nothing in them corrected the *Opium* otherwiſe than by dividing and ſegregating its Parts. This indeed is like that of *divide & impera*, or interlining ſuſpected Soldiers with truſty, or friendly ones, to prevent a miſchievous *Conſpiracy*: But how much better is it to have no Enemy to conteſt with, by a due and compleat ſeparation of the Roſin from the *Opium!* Otherwiſe you muſt be obliged to good Accidents, if ever torrefied *Opium* becomes ſafe, becauſe all the *noxious Roſin* is left in it.

Therefore if after *Torrefaction* you will give it in a Maſs, without poudering it, and mixing it with other things, you'll find its ill *Effects* to be as bad, if not worſe, than ever; as you will alſo, if you afterward extract it out of *Spirit of Wine*, reducing it into the *Form* of *Pills*, by which means the

the ſevered Parts of the *poudered Roſin* do again coaleſce into a *lumpiſh Condition*, which renders it worſe than *crude Opium*, as *Wedelius*, my ſelf, and others do teſtifie; becauſe the *Opium* being ſomewhat weakened, and all the *Roſin* remaining, the *Doſe* of the *Opium*, and conſequently of its *Roſin*, muſt be increaſed. As, ſuppoſe 8 Grains of *crude Opium* has 2 of *Roſin*, 2 of other *Droſs*, 2 of *Phlegm*, and 2 of *Sal-Volatile-Oleoſum*; and that 2 *Grains* of the *crude Opium* containing *half a Grain* of the *Sal-Volotile-Oleoſum*, was the *Doſe*; then if in *torrefying* it, one Grain of the *Sal-Volatile-Oleoſum* be loſt, and another of the *Phlegm*, there will remain only 6 *Grains* of the *Opium*, with the Virtue of one Grain of the *Sal-Volatile-Oleoſum* in it; therefore 3 *Grains* of it muſt be now uſed, to have half a Grain of the *Sal-Volatile-Oleoſum*, which 3 *Grains* will contain half the *Roſin* of the whole Maſs, that is, one *Grain*; whereas there was but *half a Grain* thereof in the 2 *Grains* of *crude Opium*: Therefore torrefied *Opium* is in it ſelf much worſe than crude *Opium*.

And it is yet worſe, if after *Torrefication* you make an *Extract* of it in *Spirit of Wine*; for then the *Droſs* and *Phlegm* being ſeparated from the 6 *Grains*, nothing will remain in the *Extract* but the *reſinous Part*, with leſs of the Virtue of the *Sal-Volatile-Oleoſum*, which is not taken up ſo greedily, as the *Roſin* is, by the *Spirit of Wine*; beſides that, ſome of this *Volatile Part* may be loſt, and that the *Roſin* is now more compacted, as not having as much as the droſſie, earthy, or watry Parts to ſever and keep its *noxious Particles* at a diſtance, to render them (as was ſhewn) more ſubduable and digeſtible at *Stomach*. See what Pains the inconſiderate World does take (and exceedingly boaſt of) to render *Opium* by *Torrefaction*, *Ex-*

traction in *Spirit of Wine*, *&c.* at leaſt twice as nozious as *crude Opium*, without accounting how far the *Sal-Volatile-Oleoſum* that remains is impair'd by the *Fire* and *Spirit of Wine!* It is therefore no *Wonder* that *Wedelius* declares, That he found more Miſchief by ſuch *Extracts* out of *Spirit of Wine*, than any other *Preparation* of *Opium*. It is plain then,

II. *That we muſt not extract it out of Spirit of Wine*, or any ſuch *ſulphureous Menſtruum*; 1. Becauſe more apt to extract the *Roſin* than the *Sal-Volatile-Oleoſum*. 2. Becauſe the *Roſin* will be more compacted. 3. Becauſe the *Spirit of Wine* may in ſome meaſure alter it.

III. *We muſt not extract Opium firſt out of Water, and afterward out of Spirit of Wine, and then mix them together, and evaporate them to an Extract:* For this is (as was ſaid) wiſely taking care to add the *Poiſon* to the *Panacea*, or *Roſin* extracted by the *Spirit of Wine*, to the *Sal-Volatile-Oleoſum* extracted by the *Water*; beſides the Impair and Loſs made of the *Sal-Volatile-Oleoſum* by the *Spirit of Wine*, and the *Evaporation*, how gentle ſoever it be.

Here it will be ſeaſonable to *note*, That there is a general great *Fault* committed by Preparers of *Medicaments*, eſpecially ſuch as pretend to moſt *Curoiſity* therein, in endeavouring (*right* or *wrong*) to have all the Principles of the Plant, *&c.* join'd together in their *Medicaments*, however *noxious* or *contrary* to the Purpoſe, (as you ſee in the *Inſtance* juſt now mentioned) whereas they had much better do as the great *Helmont* ſays, *Pharm. & Diſpenſ. Modern.* 12. "*Sanguinem a cruore, & Parenchymate* "*Plantarum diſtinguere, & ſeparare diſcant Tyrones,*

"*ſi*

"*ſi quicquam laude dignum per ſimplicia egiſſe meditentur.* That is, "*Let Beginners learn to diſtinguiſh and ſeparate the true Bloud of Plants from their Cruor (or dead Gore) and Parenchyma, if they think to do any thing Praiſe-worthy by Simples.* You'll find this to be very pat in the true *Preparation* of the *Sal-Volatile-Oleoſum*, whoſe *Ruby-colour* makes it look like *Bloud*, while the *Roſin*, *Earth*, and *Droſs*, make the Appearance of a dull and dead Cruor, (or *Gore.*)

If they took a *Tincture* of *Opium* in *Spirit of Wine*, and uſed it ſo, it would not be ſo bad; for then the *reſinous Particles* are diſſeminated, and not ſo liable to *Coaleſcence* at *Stomach*; but ſo great is the Stupidity, that they take care, by reducing it into the *Form* of an *Extract*, to combine them and make them as noxious as is poſſible; and then they think them worthy to be boaſted of as their *Noſtrums*, proclaiming their *Ignorance*, and glorying in their greateſt *Shame* and *Diſgrace* of Mankind, that Humane *Species* ſhould have any ſuch *unthinking Brutes* in it.

IV. *We muſt not uſe Acids in the Preparation thereof*; 1. Becauſe being in their *Nature* oppoſite to *Volatile Salts*, it cannot be done without Injury to the *Sal-Volatile-Oleoſum* of *Opium*. 2. Becauſe they cannot ſo well agree with the *oily Parts* of it. Yet are they not ſo much to be blamed as *Extracts* made in *Spirit of Wine*, or *ſulphureous Menſtruums*; becauſe *acid Menſtruums* leave the *Roſin* behind them untouched, or not extracted.

V. *A Salino-Volatile Menſtruum*, as *Spirit of Sal Ammoniac*, of *Urine*, *&c.* is not ſo proper: 1. It may render the *Sal Volatile-Oleoſum* of *Opium* too acrimonious. 2. Becauſe by its Volatility, Acri-

mony, *&c.* it may cauſe too great a ſtir in the *Blood, &c.* and ſo oppoſe or hinder *Sleep*, which is one of the moſt happy and uſeful *Effects* of *Opium*, (or its *Sal-Volatile-Oleoſum.*) 3. Becauſe it may have undue *Effects* by altering its *general Diſpoſition:* Nay,

VI. *We are not to uſe a lixivial Menſtruum*, (tho' ſo much cried up) 1. Becauſe it extracts the *reſinous Parts*, which *(experto crede Roberto)* I have found to be pernicious upon that account, like *Extracts* in *Spirit of Wine*, unleſs great care be taken to ſeparate thoſe *Parts* (which is not eaſily done) by *Filtrations, &c.* 2. Becauſe being very apt to join with the oily Parts, and quite to deſtroy their Nature, by converting it into a kind of *Sapo*; it may deal ſo with ſome of the *oily Parts* of the *Sal-Volatile-Oleoſum* of *Opium.* 3. Becauſe there is no need to run any of theſe Hazards, ſince the *Sal-Volatile-Oleoſum* may be *(as I ſhall ſhew)* eaſily extracted in its *Purity*, without thoſe *Troubles* and *Dangers.* 4. Becauſe any Tincture made thus is apt to let go the *Roſin* at *Stomach*, if it be diluted with aqueous Moiſture taken before, with it, or after it; which ſo being let go, coaleſces, and does miſchief.

VII. *The uſe of Fire* any way (beſides that of its Torrefaction) is much to be ſuſpected: 1. Becauſe the *Sal-Volatile-Oleoſum* may be in ſome meaſure thereby evaporated: Or, 2. An *Empyreum* contracted: And, 3. The *Roſin* (as was ſaid of its *Torrefaction*) grows the more in Proportion, if any of the *Sal-Volatile-Oleoſum*, or but the *Phlegm* be (by that means) evaporated, and the *Remainder* kept for *uſe.* And particularly,

VIII. The Diſtillation thereof may cauſe mighty Alterations in its *Properties, Strength,* &c.

We

We muſt therefore avoid all theſe *Ways* of preparing it, and yet muſt we,

1. *Separate the Sal-Volatile-Oleoſum of Opium from all its Roſin, Earth, Filth, and Droſs.*

2. *No way weaken it, alter it, or add new Qualities thereto,* but preſerve this moſt Noble and *Ineſtimable Medicament* in its *Purity* and *Sincerity.*

To this end *Rain-water diſtill'd,* uſed cold, anſwers all Intents: For,

1. It readily imbibes the *Sal-Volatile-Oleoſum* of *Opium*, without *Fire, Heat, lixivial Salts,* as *Salt* of *Tartar, &c.*

2. It imbibes none of the *Roſin* of the *Opium,* but lets it all ſubſide together with the earthy and droſſie Parts, ſeparating the lighter *Filth* (if there be any) to the *ſurface.*

3. It no way weakens, alters, or adds any new *Quality* to the *Sal-Volatile-Oleoſum.*

4. Whatever cold Water diſſolves, which is the *General Drink,* or *Menſtruum*, appointed by the *All-wiſe Creator* for the Diſſolution of all Things taken into the *Stomach* of *Animals*, is eaſily diſſolved at *Stomach* by its more powerful and agreeable *Menſtruum.* And not only ſo, but,

5. *Water* it ſelf is a mighty *Stomachick,* and *Cauſer of Digeſtion*, as *Hippocrates* poſitively declares, *L. 6. Epidem. Sect.* 4. But there's no need of quoting *Hippocrates* in ſo notorious a thing, daily Experience tells us the ſame: Do not all *Animals,* by its Help, digeſt their Food? Do not all *Mineral Waters* (ſcarce any excepted) create an *Appetite,* and cauſe *Digeſtion,* even when no ſuch *Effect* can be attributed to the *Mineral* they contain? Than which they do alſo (as

may be very eaſily proved) more good (generally ſpeaking) ἄριστον μὴ ὕδωρ; for which, and many more *Reaſons*, it is great *Neglect* and *Folly*, that it is not more uſed for *Extracts*, *&c.* for then they readily diſſolve at *Stomach*, and thereby *ſweetly* and *ſpeedily* take *Effect*, giving it the leaſt *Labour* and *Diſturbance* that may be, as is experimentally found in that of *Aloes*, *Scammony*, *Briony*, *Hellebor*, *Agaric*, *Rhubarb*, *Coloquintida*, *Sena*, and what not? unleſs the *Vertue* lies in the *reſinous Parts*; for then *ſulphureous* or *lixivial Menſtruums* are convenient. How inconvenient are they then, when the *Evil* or *Miſchief* lies therein, as in our caſe!

6. It is not to be doubted, but *Water* generally imbibes what is beſt and moſt agreeable to our *Bodies*, it being the *general Menſtruum* appointed by *Wiſdom* it ſelf for that *Uſe*, and to be the *Vehicle* of what is beſt in all our Food, *&c.* to the *Bloud*: However, there can be no *doubt* of (what mainly concerns us at preſent) its moſt ready diſſolving our *Panacea* in the *Stomach*, that does it out of it, when cold, without the convenient digeſtive Heat and powerful *Menſtruum* that it finds there. Therefore,

Take *of diſtilled Rain-water* 24 *Ounces*, *of choice Opium ſliced thin* 8 *Ounces*; *put them together in a ſtrong Glaſs Veſſel of Bottle-metal, that contains about* 3 *Pints*; *let it be of a tall Figure, with a Mouth that conveniently receives a Cork, (a large Glaſs Bottle may ſerve the turn;) cork it ſo as the Cork may be eaſily taken out, ſhaking it* 3 *or* 4 *times a day for* 6 *days, and keeping it in a place free from Froſts, or any very ſenſible degree of Heat: Which being performed, lay the Veſſel ſide-long for* 24 *hours longer, and afterward decant and filtre your Tincture,* (which will be of a *Ruby colour*) *and put it into a Glaſs*

Bottl

Bottle of ſuch a Bigneſs as that it may fill it within a ſmall matter of the Cork; and ſo let it ſtand for 3 *or* 4 *days; then pour off ſome of the ſurface of it, and inſtead thereof, put ſweet Oil thereon: Let the Veſſel have a convenient Duct, or Pipe, in the ſide thereof, to empty it out upon occaſion.* This I call the *Liquid Panacea* of *Opium.*

To the Fæces *add a Pint of cold diſtill'd Water, ſhaking the Veſſel* (as before) 3 *or* 4 *times in the day; let it ſtand on it* 24 *hours, and in the morning decant it into another Veſſel; repeat the ſame quantity of diſtill'd Rain-water, till the Opium no longer tinges it, or very inconſiderably in* 24 *hours: At laſt you may uſe Water kept hot by a Fire,* &c. *the better to extract the remaining* Sal-Volatile-Oleoſum. *Evaporate all theſe laſt Waters in* Balneo *to the conſiſtence of an Extract.* This I call the *Solid Panacea* of *Opium.*

GOD and *Nature* act by ſimple Means; and nothing (in imitation of Them) is more commendable in a *Medicament* than *Simplicity*; therefore I ſhall add nothing to the *Panacea's*, but wholly leave that to other *Phyſicians* to pleaſe *themſelves* or *Patients*, by adding *Ambergriſe*, *Muſk*, *Saffron*, *Oil of Cinnamon*, or *other chymical Oils*, *Sugar*, or the like, according to their *Intent.*

I have obſerved, That (as Reaſon tells us) its *Smell* is beſt palliated by other *rank Smells*, as that of *Onions*, *Garlick*, *Aſa-fœtida*, *&c.* and its *bitter Taſte* with bitter things, as *Gentian*, *Centaury*, *&c.* Therefore when Perſons that know its *Smell* and *Taſte* are avers to take it, (if the other more acceptable Things will not ſuffice for that purpoſe) uſe ſome of theſe; You may, when you are in haſte, infuſe half a dozen ſlices of *Gentian-root*,

and one ſlice of an *Onion*, or a bruiſed *Clove* of *Garlick*, or both, in a *Glaſs* of *Wine*, for one *hour* for a *Vehicle* in that caſe: 'Twere better to infuſe them longer, if you have time; but you'll find, that the *liquid Panacea* has not ſuch a mighty rank Taſte, or Smell, but that it is eaſily palliated by ſuch means, if the *Opium* had no *Empyreum*. The *ſolid Panacea* may be alſo palliated by the ſame Things, conveniently mixed therewith.

I know there are other *Ways* and *Means* to ſeparate the *Roſin*, *&c.* as extracting a Tincture of *Opium* in Spirit of *Wine*, and afterward precipitating the Roſin with diſtilled Rain-water; but this is attended with more Trouble and many Inconveniences, that are avoided by the *cold diſtilled Rain-water*: For, 1. You know not how the *Spirit of Wine* may (as was ſaid) alter it. 2. This is going round the *Buſh*, and compounding two *Menſtruums* together, whereas the ſimple *Water* uſed alone is much better. 3. You cannot thus ſeparate the reſinous Particles ſo perfectly, by *reaſon* that the *Spirit of Wine* muſt retain ſome of them; and if you add more and more *Water* in the *Precipitation*, the Tincture becomes too much diluted, and very weak: How much better is it to uſe a *Menſtruum* that never takes up any *Roſin*, and conſequently needs no ſuch *Separation* and *Labour* of *Precipitation!* It is better not to admit an *Enemy* to one's Country, than afterward to endeavour his *Expulſion*; for he will at beſt leave ſome Marks of his Hoſtility behind him, as the *Roſin* will in the *Spirit of Wine*.

The like *Inconveniencies* there will be in ſeparating it by the way of *Diſtillation*; as, 1. The altering of it by the Tyranny of Fire. 2. The loſs of it by *Evaporation.* 3. The addition of the Particles of Fire thereto. 4. The never ſeparating it ſo well that way. 5. The diſuniting of the *Oil* and *Volatile Salt* in ſome meaſure. But what Experience may hereafter teach Men, I will not determine, neither can I.

But this I can, That as it was even *miraculous*, that People ſhould never mind the Cauſe they daily *felt*, and ſolicitouſly *ſought* for; ſo it is as ſtrange that they could not hit upon the plain Uſe of Water (ſo very common in all Hands) for a *Menſtruum*, either by *Chance* or *Conſideration*, in all the *Eaſtern* Parts of the World, where it is ſo univerſally taken, or in the inquiſitive *Weſtern* Parts of the World, where it has been ſtudied and conſidered by great Numbers with the utmoſt *Diligence:* But they paſſing over *Water* as deſpicable, becauſe common, (for Familiarity breeds Contempt) tho' its being made the *Drink* of all living Creatures by the *Omniſcient* ſhould commend it above all things, did like thoſe, that regardleſly paſs over a *Jewel*, or *Treaſure*, and having once left it behind them, proceed farther and farther from it, the greater progreſs they make, concluding that it was not to be found the way they paſs'd; not becauſe it was not there, but becauſe they could not ſee it.

As for the keeping of the *liquid Panacea* uncorrupted, I do not find it apt to change; however, becauſe made ſo eaſily by bare throwing it into Water, it need not be kept long, but may be made upon all occaſions, or at leaſt one under the other,

other, as the Apothecaries ſpend it, who (it is not improbable) may by their great *Ingenuity* and *Experience* in thoſe Matters, find other convenient Means to preſerve it for their purpoſe.

CHAP.

CHAP. XXVI.

Of other Preparations of Opium, *that are abſolutely or tolerably ſafe in a moderate Doſe.*

I. *ALL Preparations are very ſafe in a moderate Doſe, wherein the reſinous Part of the* Opium *is wholly ſeparated from it.* Such are all *Extracts* made in *aqueous Menſtruums*, or any other that imbibes none of the *reſinous Parts* of *Opium*: As the *Preparation* that *Wedelius* has in his *Opiologia*, *L.* 1. *Sect.* 2. *Cap.* 5. *p.* 65. which is extracted out of *Phlegm* of *Vinegar* that remains after the Preparation of *Arcanum Tartari.* So *Laudanum liquidum Cydoniatum*, and *Langelott*'s *Laudanum*, if the reſinous Part be duly ſeparated, are very ſafe and commendable for the like *Reaſon*; as is alſo *Le Mort*'s Extract out of *Rain-water*, *Diacodium*, *&c.*

II. *All Preparations wherein the reſinous Parts of* Opium, *tho' not ſeparated from it, are ſo alter'd, order'd, divided,* &c. *as not to ſtick to the Stomach, and render'd digeſtible and paſſable out of it without Offence*, may be ſafely uſed. Of this kind there are, or may be two *Sorts*:

Firſt, Such wherein the Nature of the *Roſin* is altered (in ſome *degree* at leaſt.)

Secondly, Such wherein, tho' the *Nature* of the *Roſin* is not deſtroy'd, yet is it ſo ordered, divided, *&c.* as not to ſtick to the Stomach, but render'd digeſtible and paſſable without Offence.

Of the *Firſt Sort* are,

1. *Such Preparations, wherein the reſinous Part of* Opium *is quite altered in its Form and Nature by Chimiſtry, or artificial Tortures of Fire*; which becauſe hardly to be done without much impairing the *Sal-Volatile-Oleoſum*, will be neither commendable, nor worth while, conſidering how eaſily, without that *Trouble*, *Pains*, and *Labour*, even the *Roſin* it ſelf may be ſeparated wholly from the *Opium* by *aqueous Menſtruums*.

2. *Such Preparations wherein the reſinous Parts of* Opium *are altered, and* (as it were) *ſoapified by lixivial Salts or Soaps*, which readily engage and intimately join with the ſmall *reſinous Particles* of the *Opium*, by long and ſtrong pounding them together in a *Mortar*, or otherwiſe (as in *Matthew*'s (or *Starkey*'s) *Pill*, *Bates*'s *Pacifick Pill*, *&c.*) by which means thoſe *reſinous Particles* become (in a great *degree* at leaſt, if not wholly) miſcible with, and ſo diſſolvable, and digeſtible in the Liquors we drink, and eaſily ſubduable by the *Menſtruum* at *Stomach*, out of which it alſo eaſily paſſes, by *reaſon* of the great ſlipperineſs it acquires (which alſo prevents its ſticking) by that intimate mixture with the *Soap* (or *Lixivials*:) Therefore I take thoſe *Pills* of *Matthews*'s, and Dr. *Bates*'s, to be *ſafe Preparations*, tho' not to be compar'd to the *Panacea*, wherein all *Danger* and its *Cauſe* is quite taken away by wholly ſeparating the reſinous Parts, *Earth* and *Filth*, of the *Opium* from its *Sal-Volatile-Oleoſum*: And (doubtleſs) had *Matthews*, *Starkey*, and *Bates* known, that the *Roſin* of *Opium* had been the Cauſe of its ill *Effects*, they would never have ſpent *Months* in preparing the *Sapo tartareus* to correct *Opium*, when they might, with the hundredth part of the Trouble, and fortieth

tieth part of the *Time*, wholly have taken away the *pernicious Part* by *aqueous Menſtruums*, which they only pretend to correct by the *Sapo tartareus*; tho' I allow it (for the *Reaſons* aforeſaid) to be a good *Corrector*, yet cannot it equal the total *ſeparation* of the *pernicious Parts*.

I am of Opinion, (upon my beſt *Thoughts* and ſome *Experience*) That intimately mixing and ſubduing *Opium* with good white *Soap*, may (for the *Reaſons* aforeſaid) prove a good and ready *Corrector*, or Preventer, of the *Adheſion* of the *reſinous Parts* of *Opium* to the *Stomach*, much conduce to its *Diſſolution*, or *Digeſtion* therein, and nimble ſlipping out of it, and thereby prevent all the *ill Effects* of *Opium*, which it cauſes by the *Adheſion* and *Indigeſtibleneſs* of its *Roſin*.

Of the Second Sort *of* Preparations *of* Opium, *wherein its* Roſin *remains wholly unaltered in its Nature, yet becomes ſafe by dividing it*, &c.

This is mainly, (if not altogether) done by a fine and through *Diviſion* of the reſinous Parts of *Opium*, and keeping them afterwards from a *Coaleſcence* in, and *Adheſion* to the *Stomach*, by which means they become digeſtible, or at leaſt paſſable without Offence. This may be done,

1. *By Torrefaction, till the* Opium *is very friable, and then finely poudering it*, and mixing it with ſuch things as are of good *Conſiſtence*, *&c.* to keep the Parts of *Opium* from a *Coaleſcence*, as in *Venice Treacle*, *Mithridate*, *Diaſcordium*, the *Philoniums*, *&c.* This was the *Way* and *Method* that the *Ancients* uſed; which cauſed *Galen* to ſay, "*That* "*Opium alone* (that is, undivided and unmix'd with "other things to prevent its *Coaleſcence*, *&c.*) *was* "*dangerous; but mixt with other things was ſalutiferous*, (which

(which they found by *Experience*, not knowing the Cauſe, but attributing the Safety thereof to ſomething among the many Ingredients as a Corrector of the *Opium*.) Hence it was that they put ſmall Quantities thereof into Electuaries made of many and much other *things*, that kept the Particles aſunder; which they did ſo commonly, that (at laſt) all *Electuaries* were call'd *Opiates*. Thus we had thoſe *Compoſitions* above named, which are ſafely uſed for the *Reaſons* aforeſaid; not that any thing therein corrects I know not what *poiſonous* or *narcotick Quality* in *Opium*, but that the other Ingredients divide its *Roſin*, and afterward keep its *Particles* from *Coaleſcence* and *Adheſion*.

2. *Diſſolution of Opium in Spirit of Wine*, or ſuch *ſulphureous Spirits* which finely divide the *Roſin*, and uſing the bare *Tincture* before the reſinous Particles are again compacted (as in *Extracts*, *&c.*) may be of *uſe*, if duly adminiſtred.

But here a *Caution* is to be uſed, That you take it not in, or drink any *aqueous* or *phlegmatick Liquid* with it, or before, or after it, in two or three hours; which if you do, the *reſinous Particles* will be precipitated thereby, and ſo ſtick to the *bottom* of the *Stomach*, cauſing thereby the uſual ill *Effects* of *Vomiting*, *Anxieties*, *&c.* Therefore it ſhould be given only in a *ſpirituous Liquid*.

Note alſo, That if you give a *Solution* thereof in any *Lixivium*, you take Care not to dilate it by any *Means* by *aqueous Liquids* in Two Hours before or after you take it; for then there being but little Lixivial Salt in proportion to the Liquid, the *reſinous Parts* are let go, and precipitated to the Bottom of the *Stomach*; as in the Caſe of the *Spirit of Wine* ſo dilated: Of which I have ſeen a very convincing *Inſtance*; for one that had an Eſteem of *Lixivials* in this Caſe, not only (according to *Helmont*, and the *Common Cry*) to cor-

rect

rect *Opium*, but alſo to extract its *Vertue* the more effectually, made a *Tincture* of *Opium* in *Water*, lixiviated with *Salt* of *Wormwood*, whereof he took the Quantity that he had ſeen me give of my *Liquid Panacea*, in a *Coffee-Diſh* full of *Water*, which precipitating the *Roſin* in the *Stomach*, cauſed him to *Vomit* in about an *Hour* after, and continued ſo to do for about 15 *Hours*. By which you plainly ſee, that the great Secret of *Lixivials* to correct *Opium*, lies meerly in its *Diviſion* of the *Roſin* thereof, (as in the Caſe of *Spirit of Wine* and *poudering* it) and afterward keeping its *Particles* aſunder during its Stay at *Stomach*; which the *Sapo tartareus* does (and probably other *Soap* may do) very well, for the ſeveral *Reaſons* aforeſaid.

3. *Diſſolution of* Opium *in the Yolk of a rear new laid Egg*, by pounding the Doſe that you intend to take, with a little Quantity of the *Yolk*, till both be thoroughly mixed, and then taking it in the remaining Part of the Yolk: By which Means you not only finely divide the *reſinous Parts* of the *Opium*, while the *Yolk* of the Egg intimately mixes with them, (as it does with other *Roſins* and *Turpentines*) but ſend along with it into the *Stomach* what is digeſtible in it ſelf, and more and more divides and ſeparates the *reſinous Parts*, and highly contributes to their final *Diſſolution* and *Digeſtion*; ſo that (I doubt not) but you'll find this *new*, ready, and agreeable *Means*, as good (if not better, all Things conſidered) than the former, and even equal to the *Sapo tartareus*.

By what is ſaid, tho' ſhort, you may (becauſe it is the clear Truth of Things) Judge of the *Goodneſs* of all Preparations of *Opium*. And,

1. *That*

1. *That reſinous Things ſhould not be added to Opium*; becauſe ſuch (like its own *Roſin*) renders it more indigeſtible, and apt to ſtick at *Stomach*: Hence it is, that the *Styrax Pill*, having reſinous Things in it, and crude *Opium*, does ſo often cauſe diſmal *Effects*, tho, (forſooth) much eſteem'd for the *Lungs*, *Coughs*, *Defluxions*, *&c.* for having ſuch *Balſamick reſinous Things*, as *Styrax*, and *Olibanum* in it, whereas the Benefit is from the *Opium*. Had Dr. *Bates* known the Cauſe of the *Miſchiefs* of *Opium*, he would never have put *Benjamin* in his Pacifick Pill.

2. *That all Preparations made of Extracts in Spirit of Wine, are to be rejected*, ſuch *Extracts* being much worſe than *Crude Opium*, and Experimentally found to be ſo; therefore our common *London Laudanum*, being made of *Opium* prepared in Spirit of Wine, is no commendable Preparation, tho' ſo much uſed, and cried up; which alſo *Experience* proves, in that it ſometimes cauſes the ill *Effects* of *Opium*, when given alone in a good *Doſe*. You'll find more of theſe Matters when you come to *Chap.* 29. which conſiſts of *general Rules* and *Cautions* concerning the Uſe of *Opium*, therefore (tho' I may add ſome Uſeful *Obſervations*) I put an end to this Matter at preſent for that Reaſon; and becauſe what is to be truly done in the *Preparation* of *Opium* is very evident from what is ſaid, ſince the Cauſe of the *ill Effects* of *Opium* is now certainly known to be its *Roſin*; to the *Separation* or due *Alteration* of which, ſo as to cauſe it to paſs the *Stomach* without *Adheſion* or Offence by its *Stay* or *Indigeſtibleneſs*, all regard muſt be had in the *Preparation* thereof, as is in the following Preparations, which are therefore ſafe.

CHAP.

CHAP. XXVII.

Shews the beſt Preparations of Opium, *where to find them, and what is their reſpective Doſe,* &c.

YOU may infer out of the Premiſes, which are the beſt *Preparations* of *Opium*, viz.

1. *Such as have the reſinous parts of* Opium *ſeparated from them; as,*

1. *The liquid Panacea of* Opium. } Deſcribed in C. 25.
2. *The ſolid Panacea of* Opium } of this *Book.*
3. *Diacodium (or ſyr. e mecon.)* —— In the *London Diſpenſatory.*
4. *Laudanum liquidum Cydoniatum.* —— In experienced *Mr. Wilſon's Chymiſtry*, and in curious *Mr. Staphurſt's Officina chymica Londinenſis.*

Note, That there are ſeveral needleſs Proceedings in this *Preparation*, as that of putting *Yeaſt* to it *&c.* Let your Aim in making it be to ſeparate the *reſinous Parts*; therefore inſtead of two Expreſſions directed, uſe only a careful *Decantation*, becauſe the *Roſin* may paſs by *Expreſſing* it.

5. *Wedelius's Laudanum*, which is his *Opilogia, L.* 1. *Sect.* 2. *Cap.* 2. *P.* 65.

Note, That the *ſpumous part* on the *Surface* is to be taken off, and the clear *Tincture* to be decanted from the Fæces, and afterward evaporated in *Balneo*, to the Conſiſtence of an *Extract.*

6. *Le Mort's Extract out of Rain-water*, which you have in the moſt Learned *Dr. Love's Collectanea Chymica. P.* 304.

II. *Such Preparations, wherein the reſinous Parts of* Opium *are altered, and as it were ſoapified by lixivial Salts, or Soaps*; viz.

1. *Dr. Starkey's, or Matthews Pill*, which you have in *Mr. Wilſon's Chymiſtry, p.* 271, 272. In ingenious *Mr. Shipton's Pharmacopœia Bateana*, among the *Pills*; and in *Mr. Staphurſt's Officina Chymica Londinenſis*, among the *Laudanums p* 51.

Note, That the main Things to be regarded in the making up of this *Pill*, are 1. To ſpare no Labour in pounding, ſubduing, and intimately mixing the *Sapo tartareus* and the *Opium*. 2. That the *Sapo* ſhould be twice as much as the *Opium*; that it may the better ſubdue the reſinous part of the *Opium*.

Note, That as to the other Things contain'd in the ſaid *Pill*, they may, or other things be added, or omitted, according to the Intention of the *Phyſician*; only this I ſay, that it is very convenient other things ſhould be added to the *Sapo* and *Opium*, the better to ſeparate and diſgregate the parts of the *Opium*, (as has been intimated.)

Note, That if the Maſs be too dry, you may (as Mr. *Wilſon* directs) uſe ſome of the Oil that ſeparates from the *Soap*, or rectified Oil of *Turpentine*, *q. ſ.* to moiſten it.

2. *Dr. Bates pacifick Pill*; which you have among the *Pills*, in *Mr. Shipton's Pharmacopœia Bateana*.

Note, That the ſame Things are to be obſerv'd, as to this and *Starkey's* Pill, in all Particulars.

Note, That the *Benjamin* ſhould be omitted, as being *reſinous*.

III. Such

III. *Such Preparations of* Opium, *wherein its reſinous Parts remain unalter'd in themſelves, yet ſo divided, ſeparated,* &c. *as to be render'd innocent. ſuch are,*

1. *Venice Treacle.*
2. *Philoneum Perſicum.*
3. *Philoneum Romanum.*
4. *Diaſcordium.*
5. *Mithridate.*

} All which you have in the *London Diſpenſatory.*

Note, That in all theſe *Preparations,* the *Opium* ſhould be carefully mixed with the other Ingredients; and to that end, either torrified and finely pouder'd, or diſſolved in Water, which divides all its Parts, and then throughly mixed with the other Ingredients while 'tis off, or after 'tis reduced by *Evaporation* to the *Conſiſtence* of a *Syrup,* or ſomewhat thinner.

6. *Sydenham's Laudanum,* which you'll find in *Mr. Wilſon's Chymiſtry.*

Note, That the main Care in this Preparation, is to let the Liquor have a ſufficient time to clear from the *Fæces,* and to ſeparate from it; that you may by that *means* have leſs of the *Roſin.*

Note, That this is beſt given in a *ſpirituous Liquid,* leſt its *Roſin* (tho' it cannot have much in it, if well decanted) be precipitated at *Stomach.*

Note, That the *Henbane-ſeed* in the *Philoniums* ſhould be left out, 1. Becauſe it makes the *Doſe* more uncertain. 2. Becauſe it is not to be eſteem'd ſo much as *Opium*; at leaſt you multiply things without neceſſity in putting it in.

Note, That Pil. e Cynogloſſo (as was ſaid in the *laſt Chapter* of *Pil. e Styrace*) is a very ill Compoſition, both upon the Account of the *reſinous Things* that it contains, as alſo the *reſinous Preparation* of *Opium* that it is made of; and therefore does (as that *e Styrace*) often cauſe grievous *Effects*: Nor do I think the *London Laudanum* (whoſe Name does probably recommend it more than any Thing elſe) worthy a Place among the *beſt* and *ſafeſt Preparations*, becauſe the *Opium* is render'd worſe, or more reſinous, than the crude, by being extracted out of *Spirit of Wine*; and becauſe it has too few other Ingredients to divide, ſegregate, and keep its *reſinous Parts* from *Coaleſcence*; ſo that it may, and ſometimes does cauſe ill Symptoms; ſo *Philonium magiſtrale* is to be rejected for the like *Reaſons*, beſides that it is otherwiſe a fooliſh *Preparation*, becauſe *Opium*, *Benjamin*, *Myrrh*, and *Mummy*, are ordered to be made an *Opiate*, or *Electuary* with *Spirit of Wine*, which is ridiculous. So *Troch de Carabe*, and *de Terra Lemnia*, are not without their Faults, becauſe one has *Frankincenſe*, and the other *Olibanum* in it, (which are reſinous) tho but in a ſmall Quantity. *Seif de Thure*, having a great Quantity of the *Frankincenſe*, is not commendable, ſince the *Opium* is alſo crude.

Now having ſhown you, which are the beſt and worſt *Preparations*, and why; it remains, that I ſhow you the *juſt Doſes* of the *beſt* and *ſafeſt*; whoſe Number is very ſufficient to anſwer all Intents, without medling with ſuch as may not be ſo ſafe, or neat.

An Explanation of the Table of Doſes.

I Had once added an *Explicatory Table* of the *Marks* I uſe; but afterward conſidered, that all *Phyſicians* and good *Practitioners* in Phyſick do know them, and that it was not fit to intruſt others therewith. Therefore I ſhall only add ſomething for the better and readier *Uſe*, of the premiſed *Table* of *Doſes*.

1. *Note*, That the ſort of *Perſons*, that you have to deal with, are placed in the *uppermoſt Space* of the ſaid *Table*, and the *Doſes* fit for ſuch and ſuch Perſons, put directly under them in the ſame *Column*.

2. *Note*, That there are three ſorts of *Doſes* of every particular *Preparation*, that is the *leaſt*, *middle*, and *higheſt Doſe*, under every ſort of *Men* or *Women*, which are alſo of three ſorts, the *ſtrong*, *midling*, and *weak*, as you ſee in the *upper Space*.

3. *Note*, (therefore) That when yon are about to give an *Opiate* to any *Man* or *Woman*, that you firſt look in that upper Space for the ſort of Perſon you are to give it to, as *weak*, *ſtrong*, or *midling Men* or *Women*: Then carry your *Eye* down in that *Column*, till you come over againſt the *Preparation* that you intend to give; and there you'll find in the ſaid *Column three ſorts of Doſes*; the *loweſt* on the *left Hand*; *the higheſt* on the *right Hand*; and the *moderate Doſe* between them.

As ſuppoſe you are about to give a *middle Doſe* of the *Liquid Panacea* to a *ſtrong Man*; ſee for (*ſtrong Men*) in the *upper Space*, and for *liquid Panacea* in the *firſt Column* on the left Hand; under the Word (*Opiates*) and where the *Column* that belongs to *ſtrong Men*, and the *Space* that belongs

to *Liquid Panacea* do meet, there you'll find, *gt.* 20——30——40 for the *leaſt*, *middle*, and *higheſt Doſe*; give which you think fit, according to your *Intention*.

So if you are about to give the higheſt Doſe of the (*ſolid Panacea*) to a *ſtrong Woman*, you'll find under the Words (*ſtrong Women*) over againſt (*ſolid Panacea*) *gr.* i——*gr.* i¼——*gr.* iſ8) which ſhews you, that *gr.* iſ8 is the *higheſt Doſe* for a *ſtrong Woman*, and ſo of all the reſt.

4. *Note*, That I have been ſo cautious in doſing all the *Opiates*, that you may very ſafely give the higheſt Doſes to all, but very weak Perſons; to whom it is hardly fit to give any Thing, by reaſon of extream *Weakneſs*.

5. *Note*, That if you give any to *young Perſons*, under the *Age* of 20. you ſhould proportion the *Doſes* not ſo much (as idle *Cuſtom* directs) according to their Years, as *Bulk* and *Strength*.

For *Inſtance*, allowing *ſtrong Men* to be 200 *pound Weight*, you muſt give a *ſtrong Youth* of 100 *Pound Weight*, *Half* the *Doſe* of the *ſtrong Man*, and ſo of all other, only allowing ſomewhat leſs the younger they are, becauſe of the *Softneſs*, *Fineneſs* or *Laxity* of their *Texture*; eſpecially if they be very young, to whom *Opiates* muſt be cautiouſly given; or only *Diacodium* (which is beſt in that Caſe) and that in a ſmall Proportion alſo; for young Children cannot bear *Opiates*, as well as grown *Perſons*, no not in Proportion to their *Bulk* or *Weight*.

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CHAP. XXVIII.

The Cure of the ill Effects of Opium.

HAving ſhewn how to prepare *Opium*, ſo as to render it ſafe and innocent in a *Moderate Doſe*, and how much that *Moderate Doſe* is, one may be apt to think that this *Chapter* is needleſs; but when you conſider how many there are that may be negligent, wilful, want Time, Skill, *&c.* to prepare it, or take too much, or too long of it, and that the *Phyſician* muſt be able to Anſwer and Remedy all ill Accidents that may happen, you'll find it very requiſite that I ſhould ſhew how to cure the ill *Effects* of *Opium*, which proceed either,

1. From *its Roſin at Stomach*; Or,
2. From *too much Relaxation by an Exceſſive Doſe*; Or,
3. From *a long and laviſh Uſe of it*; Or,
4. From *a ſudden leaving it off*, after a long and laviſh Uſe thereof.

I. *To Cure the ill Effects of the Roſin at Stomach, you are,*

Firſt, To know whether that be the Cauſe; which you may learn,

1. By conſidering whether *Crude Opium*, or ſome *reſinous Preparation* thereof, was taken, eſpecially by it ſelf, in the *Form* of a *Pill* or *Pills*, as an *Extract* thereof out of *Spirit* of *Wine*, or *Pil. e Styrace*, or *London Laudanum*, or the like, not duly prepared, as has been directed.

2. By the *Symptoms*, which are theſe, *viz.* a *Nauſea*, *Puking*, *Vomiting*, *Hiccough*, *Convulſions*, *Diſtreſſes*, and *Anxieties* about the *Stomach*, particularly the Part call'd the *Pit* of the *Stomach*, *Swimmings* in the *Head*, *Vertigo's*, *Palpitations* and *Tremblings* of the *Heart*, *Agitations*, *Uneaſineſs*, a *Turbulent Pulſe*, and (after a Struggle of *Nature* under thoſe *Symptoms*) *Faintings*, *Leipothymies*, *Syncopes*, *&c.* which laſt you muſt not take for certain *Signs* and *Symptoms*, unleſs the former have preceded them, becauſe it is not impoſſible but they may happen from the *Quantity* of the *Opium*, Condition, or Conſtitution of the Perſon, *&c.* but this (when all Things are compared together) will be eaſily Judged of, eſpecially if you obſerve;

1. *Whether* thoſe *Faintings* or *Leipothymies* be not more like the *Failures* and *Stupors* of *Drunkards*, than bare *Faintings*; if they be of the firſt ſort, then do they proceed from an over-*Relaxation* occaſioned by the *Opium*, and not from its *Reſin*, the Cure of which belongs to the *ſecond particular*.

2. *Whether* they are more attended with the Signs of *Relaxation*, as *Deadneſs of the Eyes*, *Faltring* of the *Tongue*, *Darkneſs* before the *Eyes*, *Dilatation* of the *Pupilla*, *Efflorescence* of the *Skin*, *Laxity* of the *Limbs*, *Want of Feeling*, *Stupidity*, *Sleepineſs*, *Failure of the Senſes*, or of *making Water*, *loſs of Memory* or *Underſtanding*, a *dry Mouth*, a *ſlow* and *wide Pulſe*, and other Things much like the State of a *deadiſh Drunkenneſs*; for then thoſe *Failures* are the *Effect* of *Relaxation* by the *pleaſant Senſation* that the *Opium* cauſes.

But after all, it is the *ſort of Opium* that was taken, and the firſt *Symptoms* of a *Nauſea*, *Vomiting*,

ing, &c. are moſt to be depended upon, for it may happen ſometimes (as after a great *Doſe*) that the *Roſin* may ſtick, *&c.* and the *Relaxation* be exceſſive alſo.

Secondly, When you are ſatisfied, that it is the *Roſin* at *Stomach* that cauſes the Miſchief, and not bare *Relaxation*, you are not to *promote* or *ſtop* the *Vomitings*, leſt in the *firſt Caſe* you torment and endanger the *Perſon* to no *Purpoſe*, for the *Roſin* does generally (if not always) ſtick too faſt, and too little in *Bulk* to be ſhaken off by *Vomiting*, or the *Contraction* of the *Stomach*, as appears by the tidious *Vomitings* that happen thereupon, and the Nature of the Thing; ſo that (I believe) it is ſeldom or never carried off that *way*, and that when *People* are at laſt relieved, it is by a gradual *Waſte*, *Diſſolution*, or *Digeſtion* of the *Roſin*, as in great meaſure appears alſo by its *Purging* ſome Perſons after *Vomiting*, and a *long time* after it is taken in a *conſiderable Quantity*. *Nor* are you to *ſtop the Vomiting*, as not knowing what *Nature* may Advantage her ſelf thereby, but indeed it is more than you can do, generally ſpeaking, (if not always) while the *Roſin* teazes, urges, and ſtings the *Stomach*.

It evidently follows, that the *Cure* muſt conſiſt in the *Diſſolution* of the *Roſin*.

For this Purpoſe you have Four Effectual *Diſſolvers* of the Roſin, (as you may obſerve from the *Chapter of the Preperations of Opium*) *that may be uſed with ſafety in a Moderate Doſe*; 1. *Lixivial Salts*, whereof the beſt is *Salt of Tartar*. 2. *Sulphureous Spirits*, whereof the beſt is *high rectified Spirit of Wine*. 3. *The Yolks of Eggs*, whereof the beſt is the *Yolk of a rear new laid Egg*.

4. *White*

4. *White Soap*, or rather the *Sapo Tartareus*. With theſe judiciouſly uſed, you may (by Gods Bleſſing) Relieve and Cure the Perſon grieved with the *Roſin* (or noxious Part) of *Opium*.

1. Give with all poſſible ſpeed *One ſcruple of Salt of Tartar*, in a Spoonful or two of *Brandy*, or ſome other *hot Cordial Spirit*, (if Spirit of Wine be too hot) placing the Perſon in the very ſame Poſture that he was in when he took the *Opiate*, that it may fall directly upon its *Roſin*, which moſt probably ſticks where the *Opiate* firſt fell upon the *Coat* of the *Stomach*; then ſtay for a Minute or two, and give a Spoonful or two of the Brandy or Cordial, with (if need be) the Salt of Tartar in it.

If you find Cauſe, either becauſe the firſt *Doſes* were Vomited, or that the Quantity of the *Roſin* was great, or that the *Perſon* grows worſe, you may often repeat it, for we muſt not be ſparing in ſafe Things in dangerous Caſes, I think it may well be repeated after every Vomiting *toties quoties*.

I have a great *Opinion* of the *Yolk of an Egg* in theſe *Caſes*, not only becauſe it does (as the other Things) mix with the *Roſin*, but becauſe being of a good Conſiſtence, it ſticks to it, and faſtens upon't the better, and is not ſo clearly ſhaken from it by every *Vomit*, as Liquids are; therefore I think it very Uſeful to be given now and then immediately after *Vomiting*; however, let no other Food be given but it, and be ſure to uſe it when you have not the aforeſaid *Things*, I believe it will be found by *Experience* (which is yet much wanted, becauſe it has not been uſed) to be the very beſt *Help* in theſe Caſes, for the afore-

aforeſaid *Reaſons*, and becauſe its fine Oilineſs will correct the *Volatile Salt* of *Opium*. I cannot imagine but *White Soap*, or rather the *Sapo tartareus*, (if you have it by you) may be of very good uſe to diſſolve and carry off the *Roſin*.

2. When the *Vomiting* begins to ceaſe, you muſt diſtinguiſh well whether it be becauſe the Perſon is better, and the *Stomach* diſcharged of the *Roſin*, or becauſe tired *Nature* yields it ſelf to Reſt, by a ſort of *Succumbency* to the *Fatigue* or *Leipothymy*.

You may eaſily diſtinguiſh theſe Caſes; for in the *firſt Caſe* every Thing ſeems better, and in the *laſt* worſe, ſaving that the *Vomiting* ceaſes, which was an endeavour of more *vigorous Nature*, and therefore its failing is now an ill *Sign*.

In this *Caſe* good Old *Wine*, and *Spirituous Cordials*, which may rowſe and invigorate *Nature*, and alſo engage with the *Roſin* by their *Sulphureous Spirit*, muſt be of excellent *Uſe*.

Note, That if you want *Salt* of *Tartar*, other *Lixivial Salts* may ſerve, as thoſe of *Wormwood*, *Broom*, *&c.* only you muſt give at leaſt One *Third* more; and in Caſe of great Haſte and Urgency, you may give the very Aſhes of *Wormwood*, *Broom*, or any Vegetable, in 2 or 3 times the Quantity as the Salts are to be given, in 2 or 3 *Spoonfulls* of *Brandy*, or a *Glaſs* of *Old Wine*, or both mixed together, for the very roughneſs of the *Aſhes* will, in ſome meaſure, contribute to wear off the *Roſin*, and thereby aſſiſt the *Lixivial Salt* that is in them.

3. If

3. If the Quantity of the *Reſinous Opium* was great, it will be convenient, when you perceive the *Vomiting* begin to abate, to give as much of *Daffee's Elixir*, or *Tinctura Sacra* made in ſome Spirituous Liquor, as does uſually give Six Stools; it is beſt *Purging* with a Liquid, becauſe ſpeedier in *Operation*, and that it ſhould be *Spirituous*, to help the *Diſſolution* of the *Roſin*.

1. *Note*, That you alſo take *Care* not to be too buſie with *Spirituous Liquors* when they are much relaxed, and have ſuch *Symptoms* as Drunken People have, eſpecially if they appear in a high *degree*, for too much of them may promote the *Relaxation*.

2. *Note*, That in *Faintings* or *Leipothymies* after ſuch *Vomitings* and *Struggle* of *Nature*, you muſt not ſo much excite them by *grievous Senſation*, as *pinching*, *pricking*, *&c.* (for thoſe *Leipothymies* are (as was ſaid) a ſort of *Recruit* as *Sleep* is, and therefore the laſt *Refuge* of *Nature* for that *End*) but with *Spirituous* and *Comfortable Things*, as knowing that there is an awaking by *Recruit*, (which is Natural) as well as by *grievous Senſation*, which is forced and unnatural (as has been ſhewn.)

II. *To Cure the Effects of too much Relaxation* by an exceſſive Doſe, *&c.*

Firſt, You muſt be ſatisfied, that the *ill Effects* thereof are from too much *Relaxation*.

1. By conſidering the *Preparation* of *Opium* that was taken, for if you find that it was ſuch as had the *Roſin* duly ſeparated from it, you may be ſure

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ſure, that the *ill Effects* are only from *Relaxation*, becauſe the *Doſe* was too great; or if it was a Preparation that had the *Roſin* ſo ſubdued or altered, as you find directed to render it ſafe, you may preſume the ill *Effects* are from over-*Relaxation*; for ſuch *Preparations* are otherwiſe ſafe and innocent, *except* when the *largeneſs* of the *Doſe* (as that of good *Wine*) cauſes too much *Relaxation.*

2. By the *Symptoms*, which are theſe, *viz. Alienation of the Mind, Loſs of Memory, Stupidity, Sleepineſs, Sopors, Failures* of the *Senſes*, as *Darkneſs* of the *Eyes, ſeeing* Things *double, various Colours before the Eyes, Loſs of Feeling, Eaſe from Pain, &c. Deadneſs of the Eyes* to the View, *Dilatation of the Pupilla, Efflorescence* of the *Skin, Laxity* of the *Lower Jaw, Intumeſcence*, and *Laxity* of the *Lips, Faltring* of *the Tongue, Sardonick Laughter, Laxity* and *Weakneſs* of all *Parts*, a *general Ineptitude* to *Motion, Failure* in *making Water, going to Stool*, and in all Things that require *Strength, Contraction, Motion, &c. Difficulty of Breathing*, a *wide* and *ſlow Pulſe*, a *Condition* in general very like that of *Drunkenneſs*, which alſo proceeds from *Relaxation.*

Secondly, When you are ſatisfied that *Relaxation* is the Cauſe, uſe all Means to procure a due *Contraction* of all Parts; which is to be done,

1. By removing the Cauſe of the *Relaxation:*

2. By uſing all good Means for *Contraction.*

Firſt, therefore, give a brisk, quick, and ſtrong *Vomit*, both to diſcharge the *Opiate*, and cauſe *Contraction* of Parts by a *grievous Senſation.*

Pro-

Proportion it to the *Deadneſs*, *Stupidity*, or *Sleepineſs* of the Perſon, ſo as to give it of twice the ordinary Strength of *Vomits* in Caſe there is great *Danger* from thoſe *Symptoms*, and that they are of a high *Nature*.

After the *Perſon* has Vomited 3 or 4 *Times*, or ſo often as that you may judge the *Stomach* well cleared of the *Opiate*, give *Half* an *Ounce* of *Cream* of *Tartar* finely poudered in thin *Broth*, *Whey*, *Water*, *Small Beer*, or any convenient Liquid, which will correct the *Opiate* if any remains at *Stomach*, turn the *Vomit* to a *Purger* to clear the *Inteſtines* alſo, and contribute much to the *Contraction of Parts*, which you muſt always have in your *Thoughts*, as the ruling *Intention* in this Caſe. Therefore,

Secondly, You muſt uſe *Contracters* all the *Time*, the chief of which are *Cold*, *grievous Senſation*, (or *Pain*) *Terrour*, *Fear*, *Voluntary Motion*, and *Acids*, which laſt cannot be ſo well uſed during the *Vomiting*, leſt they ſtop it.

Therefore (eſpecially if the Perſon be very Stupid) keep him very *Cold*, for he will hardly feel it, nor take *Cold*, becauſe the *Relaxation*, and the Inſenſibleneſs of *Grievance* by *Cold*, *&c.* keeps the *Pores* open; let him be (if poſſible) in ſome Motion, as *Walking*, *Hewing*, *Sawing*, *Knocking*, *Tugging*, *&c.* the more *violent* it is the better, becauſe it cauſes more *Contraction* and *Agitation* to prevent *Sopors*; To force him to Motion, (if need be) *Pricking*, *Pinching*, or *Whipping* him about the *Legs*, *&c.* will be of good *Uſe*, becauſe *grievous Senſation* adds *defenſive Contraction* (which is the greateſt ſort) to that of the *intentive Contraction* by *voluntary Motion*.

Theſe

Theſe Means failing, he ſhould be expoſed ſtark naked to the coldeſt *Air*, and in deſperate Caſes thrown ſuddenly at unawares into *cold Water*; by which Means you cauſe *Terrour*, *Surpriſe*, and *Cold*, (which are the higheſt and moſt forcible *Contracters*) to conſpire to the *Contraction* of Parts; Hence it is that Drunken *People*, who are ſo from *Relaxation*, become Sober, as in a moment, by that *Means*.

All the *time*, but during the *Vomiting*, let him uſe *cold Acids* in great Plenty, and very manifeſtly acid, for they will not only contribute to *Contraction*, but very much correct the *Opiate*; To this End *Juice* of *Oranges* or *Lemmons*, *Verjuice*, or *Water* acidulated to a good *degree* by *Verjuice*, *Vinegar*, *Juice* of *Lemmons*, *Spirit* of *Vitriol*, *Sulphur*, or the like, will be very proper.

Where you have not the Convenience to plunge them into *cold Water*, (as is directed) daſhing or pumping very cold Water, or Water with a Fourth Part of *Vinegar* upon their naked *Bodies*, will be of great Uſe, eſpecially if ſurpriſingly done, to cauſe the more *Terrour* and *Concern*.

Theſe Things may be done *more* or *leſs*, as Cauſe may require, which muſt be left to the *Diſcretion* of the preſent *Phyſician*, or Friends and Standers by (in Caſe there be no *Phyſician*:) I only Caution, that *Contracters* ſhould not be uſed too ſparingly, and that you ſhould never ceaſe to advance in the *Uſe* of them till you perceive their good *Effect*, and then to continue them as occaſion requires.

Note,

Note, That the Caſe may well happen, that the *Roſin* may ſtick at *Stomach*, and yet no Signs or Symptoms appear but thoſe of *Relaxation*, by *Reaſon* that the Feeling at *Stomach* may thereby be diſabled to take any notice of it.

To be ſure of this, you have no other *Means*, becauſe the *Symptoms* and Effects of *grievous Senſation* cannot appear, where it is not (for the aforeſaid *Reaſon*) but to examine whether the *Opiate* was a *reſinous one*, as *crude Opium*, *Extract* out of *Spirit* of *Wine*, or the like, for then you may conclude, eſpecially if they were given in a *maſſy ſolid Form*, as that of *Pills*, *&c.* without ſevering the Particles of the *Roſin* by other Things, as the *Yolk* of an *Egg*, *&c.* that the *Roſin* may in all Probability ſtick at *Stomach*, tho' its Symptoms do not appear for the aforeſaid *Reaſon*.

In ſuch a Caſe the beſt Advice that I can give is, externally to uſe all Contracting Means, as is directed, and internally the Means preſcribed for *Diſſolution* of the *Roſin*, for you'll thereby anſwer both *Intentions*.

Failure of making *Water* often happens in theſe *Caſes*, which you may generally help by only clapping the *Scrotum* to the cold Chamber *Pot*, or into *cold Water*, and if that will not do, put ſome *Vinegar* into the *Water*, and that failing, he muſt be ſtript, and cold Water pumpt or dafhed upon the *Region* of the *Bladder*.

III. *To Cure the ill Effects of a long and laviſh Uſe of Opium.* Theſe *Effects* (as you may eaſily obſerve, if you take a *View* of them where they are enumerated in *Chap.* 6.) are either,

1. *From*

1. *From an over-much and habitual Relaxation of Parts*, as *Weakneſs*, *a Moapiſh Diſpoſition*, *Diminution of Appetite*, *Weakneſs of Digeſtion*, *Dropſies*, *Weakneſs of Memory*, *&c.* Or,

2. *From Acrimony*, as *frequent Irritations to make Water*, *Priapiſms*, Erections of the *Penis*, fruitleſs Inclinations to *Venery*, *&c.*

In this *Caſe* (as in that of old *Drunkards*, which is much the ſame) there is no good to be done till the *habitual Cauſe* is removed, *viz.* the *Taking* of *Opium*, which ſuddenly to leave off is (as was ſhewn) very dangerous. Therefore, in order to leave it off ſafely;

1. You muſt ſtop your Hands, and not increaſe the *Doſe* that is taken, by which Means it will come gradually to have little or no *Fff 2*

2. When you find that it is come to that paſs, your Work is half done; then only leſſen it both Part every *Day* till you come to take none at all.

3. If during this *retrograde Courſe* you find any *Faintneſs*, drink a *Glaſs* of good Stomach-Wine *toties quoties*, as *Gentian*, or *Centary Wine*, or the like, made by Infuſion in *Claret*; or, if you want ſuch, a *Glaſs* of the *Claret* it ſelf; which Things will excite the *Spirits*, and help *Digeſtion*.

4. When you have quite ended the Taking of *Opium*, continue to Uſe ſuch *Wines* when you are faint, and every Morning take in a *Glaſs* of *Gentian Wine* Two Drams of the *Chalybeate Wine* deſcribed in the *London Diſpenſatory*, increaſing about a Scruple every *Day* till you come to *Half* an *Ounce*, which take for Two Months at leaſt, afterward decreaſing, as you encreaſed, till you come to One *Drachm*, and ſo give over.

But if you find *Occaſion*, you may continue that Courſe longer, or as long as your *Phyſician* thinks fit.

After all, you may uſe a *Glaſs* of *Claret* when faint, but be ſure to be moderate, and not run from one *Exceſs* to another.

As for the *Acrimony* of *Bloud*, that is more during the *Taking* of *Opium*, and will ſoon after gradually wear off, eſpecially by the Courſe directed; if not, *Camphire* is the *adequate Remedy*, of which with equal Parts of White *Roſin*, and *q. ſ.* of Mucilage of *Gum. Tragac.* you may make *Pills* of 5 *Grains* weight, taking 4 of them every Night at *Bed-time* in a rear *Yolk* of an Egg, as long as it is neceſſary; for *Camphire*, by its fine *Sulphur*, corrects the *volatile Acrimony* of *Cantharides*, *Opium*, *&c.* and ſo allays *Titillation* to *Venery*, *&c.* as is obſerv'd.

IV. *The ill Effects of a ſudden leaving off of Opium*, as *Anxieties*, *Diſtreſſes*, *Depreſſions of Spirits*, which (as was ſaid) are very dangerous, are remedied no other *way*, but either,

1. *By returning to the Uſe of Opium*, which is a moſt certain *Cure*, and afterward (if you pleaſe) give over the *Uſe* of it after the manner that I directed, which you'll find to be ſafe; nor can I adviſe you to truſt any other *Method* of leaving it off, unleſs it be,

2. *By ſubſtituting Wine inſtead of Opium*, which is not quite ſo *ſafe* or *certain*; your beſt *Method* of uſing it, is to drink a good *Glaſs* of it ſo often as to keep the Comfort thereof at *Stomach* continually, that ſo it may anſwer the more *permanent Effect* of *Opium*, and keep you from a *faint Condition*;

dition; but ſeeing alſo that this Courſe is not convenient to be continued long, you muſt gradually leſſen the *Doſe* of this, as you are directed to do that of *Opium*, till you come to take none, or (at leaſt) a moderate and wholeſom Quantity.

Note, That if ſuch as uſed to take *Opium* are even almoſt expiring for *want* of it, you muſt, to prevent imminent *Death*, give a *Liquid Preparation* thereof to the *value* of what the Perſon was uſed to take, in a *Cordial Vehicle*, as *Spirit* of *Wine*, *Brandy*, or the like, becauſe ſuch hot *Spirituous Vehicles* do (as has been ſhewn) immediately give ſome Comfort by actuating and warming *our Spirits*, till the *Opium* comes to Operate, which will not be long, becauſe it is in a *Liquid Form*; if you find the Perſon ſink notwithſtanding, he may be kept up by repeating the *Brandy* or *Cordial* without any *Opium* in it, till the *Opiate* operates, which will certainly (by *God's* Help) ſet him right, in caſe it does but begin to operate before he is dead. See *The Philoſ. Tranſact. for June, July, Auguſt*, 1696.

Note, That it is a very *falſe Imagination* that *Authors* have of the *Turks* Capacity (by *Nature*, *Climate*, or the like) to take more *Opium*, or in greater Quantity than we may, but that they make more *Uſe* of it, and by that means come to take 2 or 3 *Drams* a *day*; for they begin with ſuch ſmall Quantities as we commonly give, till by a long Cuſtom of taking it they come to take the *ſaid Quantities*, which is but ſmall in Compariſon of what ſeveral *Engliſh* People that have been uſed to it do, or have taken, as I could Name ſeveral to you, if I had not *Reaſons* to the *contrary*; however, I am at Liberty to tell you the Quantities, tho' I muſt forbear naming the *Perſons*;

ſons; ſome have daily taken 2, 3, 4, 5, 6 *Drams*, nay, I have heard of ſome that have taken an Ounce a Day, and of One that took *Two Ounces*, whereas the Learned and Curious Dr. *Edward Smith*, could find none about *Smyrna* who took above 3 *Drams* a Day.

All this is moſt agreeable to Reaſon, and the whole Current of my *Diſcourſe*, *viz.* That it can be better born in *cold* than *hot Weather*, and conſequently in *cold* than *hot Climates*; by *firm* Fleſhed Perſons, than ſuch as have *ſoft* and *flaccid Fleſh*, as the *Southern* People have in Compariſon of the *Northern*, and ſuch as inhabit *cold Countreys*. Therefore you may be ſure that ſuch as Enquire into the Cauſe, why the *Turks* and other *Eaſtern People* can take greater Quantities than we can, ſeek for the Reaſons of Things before they know the *Fact*, nay, when the *Fact* is *quite contrary* to what they build upon; We may as well expect *Edifying Diſcourſes* from them that Enquire why Fire is cold? Water dry? and the like, as from ſuch as ſuppoſe Things contrary to true and ſenſible *Experience*.

CHAP.

CHAP. XXIX.

Some general Rules, Cautions, &c concerning the Uſe of Opium.

THo' there is hardly any *Rule, Caution,* or Thing worthy of *Obſervation,* concerning the *Uſe* of *Opium,* but what is implied, or eaſily inferable from what has been ſaid; nor, (now that the true Nature of *Opium* is diſcovered) can there be ſuch *Fears* and *Jealouſies* (which multiply *Cautions*) concerning the *Adminiſtration* thereof; (for every one may now eaſily ſee wherein its *Danger* and *Benefit* lies) yet becauſe a *Chapter* of *Rules* and *Cautions* may be expected, as being uſual, and to have a *ſingle View* of ſuch as lie more ſcatter'd, and not ſo readily found in the *Body* of the *Book,* I will, to introduce the *Uſe of Opium* with more *Clearneſs* and perfect *Security,* give you a *Collection* of *general Rules* and *Cautions* concerning its *Uſe*; whereof ſome are mentioned, and moſt inferable from the *Premiſes.*

I. As to its *Subſtance.*

1. It ſhould be always given, freed from its Reſinous Parts, if you can get ſuch a *Preparation.*

2. It is alſo neat and convenient, that it ſhould be freed from all its *Earth* and *Dr ſs.*

3. Never give *Opium,* but either ſo prepared, or with its *Reſin* ſo ſubdued, ſegregated, or altered, as I have ſhown in the ſafe *Preparations* thereof. It follows that,

4. *Crude Opium,* and *Extracts* made in *ſulphureous Spirits,* are utterly to be rejected.

5. Never give it mix'd, or join'd with *reſinous Things.* (as has been intimated.)

6. Never mix, or join it with other *Opiates*; 1. Becauſe none of them are ſo good. 2. Becauſe they are not ſo well known. 3. Becauſe it makes the *Doſe* more uncertain. 4. Becauſe thoſe other *Opiates* are uſed unprepared.

7. *Pil. e Styrace*, becauſe made of *reſinous Opium*, join'd with *reſinous Things*, as *Styrax calam.* and *Olibanum*, is an *inſufferable Preparation*, (tho' commended) and therefore has frequent ill *Effects*, to my *Knowledge.*

8. *Pil. e Cynoglosſâ* is ſuch another, having two *Opiates* in it beſides *Opium*, extracted out of Spirit of Wine, (which is far worſe than *crude Opium*, tho' by the way of *Eminence* call'd *Opium prepared*, in our *Diſpenſatory*) *Styrax calam.* and *Olibanum*, which are *reſinous.*

9. *Laudan. Lond.* is alſo an ill Preparation, as having the *Opium* extracted out of *Spirit of Wine* to make it worſe than when *Crude*; therefore has ſometimes ill *Effects*, eſpecially when uſed alone in the *Form* of a *Pill*, in a large *Doſe*, (as was ſaid.)

10. *Philonium magiſtrale* is alſo to be rejected, becauſe the *Opium* is prepared in *Spirit of Wine*, and *Benjamin* added, which is *reſinous.*

11. *Philon. Rom. & Perſic.* are tolerable, becauſe the *Opium* is diſgregated, and mix'd (as *Galen* would have it) among much, and ſeveral other Things, which keeps it's *reſinous Parts* from *Coaleſcence.*

II. As to its *Form.*

1. *A Pilular Form* of *crude Opium*, or any *reſinous Preparation* thereof, wherein the *Roſin* is not duly ſubdued, ſegregated, altered or corrected, is (as has been ſhown) the moſt pernicious.

2. *The*

2. *The Form of an Electuary* is commendable; 'tis in ſmall *Quantity*, mix'd therein with many or much other Things, that prevent the *Coaleſcence* of the *reſinous Particles.*

3. A *liquid Form* is generally good, becauſe the Parts, as in a Tincture of *Opium* in *Spirit* of *Wine*, are ſevered, and ſegregated; yet it is not ſo very ſafe, where the *Roſin* is not ſeparated; becauſe if Care be not taken (as has been directed) the *reſinous Particles* may be precipitated at *Stomach*, and ſo *coaleſce* and ſtick to it.

4. The Operation of *Opium* is quicker in a *liquid Form*, but more laſting in a *ſolid Form*, eſpecially if the *Opium* be *reſinous*; which, tho' noxious in general, yet has the *Advantage* of *Duration*, where it may be born, as in Perſons of a *robuſt Texture* and *good Digeſtion*, or where Cuſtom has taken off it's Grievounſeſs, as you find in habitual *Tobaco-taking*, &c.

5. The *liquid Panacea* of *Opium*, is better for *Alteration*; becauſe it is the firſt Fruits of the *Opium*, and more ſincere and unaltered by *Fire* than the ſolid. But,

6. The *ſolid Panacea* is better, where a ſtay at *Stomach* and the Inteſtines is convenient, as in ſtopping of *Vomiting*, *Looſeneſſes*, &c. To be brief,

7. *Liquid Forms* ſhould be always given in foul *Stomachs*, where the *Digeſtion* is weak, in *Feavers*, and when a nimble Operation is requiſite.

III. As to its *Doſe.*

1. *The mean* or *middle Doſe* is generally to be uſed; and where there is no *Direction* to the contrary.

2. *The mean Doſe* may ſerve, *except* in *violent Pain*; or where much of the *Opiate is loſt*; (as it happens very often in *Vomiting* or *Looſeneſs*) or to

excite *Venery*; becauſe thoſe Parts are remote, and require a very *ſenſible Titillation*. But as to theſe matters, you'll have *particular Directions* in the *reſpective Caſes* in the following *Chapters*, that treat thereof in a *ſpecial manner*.

3. The *Doſe* muſt be proportionably leſs in the *fine* and *lax-textured Children*, *Women*, *warm* and *moiſt Weather*, *weak Stomachs*, *Perſons* much *debilitated*, or *over-tired* with *Work*, *Labour*, *Diſeaſe*, &c.

IV. As to its *Vehicle*.

1. It ſhould generally, (unleſs there be particular Cauſe to the contrary) be pleaſant and agreeable to the *Taſte* and *Stomach*, that it may rather conſpire with the *Opiate* to pleaſe the *Membranes*, &c. than contradict the *Senſitive Pleaſure*, that it cauſes.

2. It ſhould not be an *Acid*, becauſe it infringes the *volatile Nature* of *Opium*, except ſome particular Caſe requires it; which will be ſeen hereafter.

3. It ſhould not be a *Volatilo-ſaline*, eſpecially to cauſe *Sleep*, or becauſe that may render it too acrimonious or pungent, and ſo hinder *Sleep*, *Compoſure*, &c.

4. It ſhould not be *lixivial*, becauſe its fixed Nature oppoſes the *volatile*; *except* it be, where the *Opiate* is *reſinous*, to help it's *Diſſolution*. Therefore,

5. *Wine*, or *fermented Liquors*, *Cordials*, *Waters*, or ſmooth and pleaſant Liquids, as *Emulſions*, *Milk* and *Water*, Water and Sugar, *&c.* will be the moſt proper (generally ſpeaking.)

6. The *reſinous Opiate* ſhould be always given in *ſulphureous Spirits*, *Wine*, or *ſtrong Liquors*, or in a *lixivial Vehicle*, or rather in both mixed; or in a *rear Yolk* of an *Egg*, or finely poudered and well mixed with *Electuaries*, *Bolus's*, *Conſerves*, *thick Syrups*,

rups, *Pulps*, or any *Thing* that is innocent, and of a good Conſiſtence, to keep the *reſinous Particles* aſunder, and to prevent their *Coaleſcence*; for which *End*, I judge, that good white *Soap* muſt be (becauſe of the *Alkali*, its *Slipp'rineſs*, and *Aptitude* to join with the *Roſin*) a good *Vehicle*, the *Opium* and ſcrapings of the *Soap* being mixed with a little *Roſe-Water*, (and what elſe you think fit, to render them more acceptable) by pounding them in a *Mortar* for a good while, to an intimate mixture.

V. As to *Time*.

1. Give the *Liquid Forms* half an Hour at leaſt, or an *Hour*, before the *Time* you would have them operate.

2. Give the *ſolid Forms* an *Hour*, or an *Hour* and a *half*, before you would have them operate.

It is very ſilly, not to give them till the very *Time* that they ſhould operate, as 'tis uſual at Bed-time, when they ſhould be then operating, and cauſing *Sleepineſs*, that the *Reſt* and *Eaſe* of lying down may concur with it; whereas if People are unapt to *ſleep*, (as generally they are who take *Opium*) they, not taking it till Bed-time, lie toſſing and tumbling, grow uneaſie, and reſtleſs, and the Bed hard, and (in a great part of the Year) too Hot, before the *Opium* operates, ſo that the *Opium* cannot take Effect, by *Reaſon* of *Diſquietudes*, ſo the *Perſons* lie all or moſt *Part* of the *Night* without any *Sleep*; whereas if it be ſo given as to cauſe a great *Sleepineſs* by the *Time* they go to Bed, their lying ſtill a very little Time (which they are then apt to) and the Bed being ſoft, eaſie, cool, and pleaſant, they immediately ſleep, and their Spirits being compoſed, continue their *Sleep* all, or moſt *Part* of the *Night*. Therefore I have often come where People had not ſlept, tho' they took an *Opiate* at Bed-time, and given them the very ſame a convenient Time before, and they have ſweet-

ly

ly ſlept, to their Heart's *Deſire* and *Refreſhment*.

4. Give *Opiates*, as to Meals, at leaſt 3 *Hours* before and after them, or about the middle Time between them, if it be in the *Day-time*, or when the *Stomach* is near empty, or but little or light matter in it; which if gentle and agreeable, will help Men to *ſleep*: But great *Repletion* and perfect *Emptineſs* or *Hunger* (which is a *grievous Senſation*) do diſturb or hinder *Sleep*.

5. *Opiates* may, and have proved inconvenient *before* or *after Letting of Blood*, and *Hemorrhages*, eſpecially if the *Evacuation* was large, and ſudden; the *Reaſon* is, becauſe the Perſons being very diſpirited, and ſo much inclined to *Sleep* of themſelves, may ſleep too much and dangerouſly; and becauſe *Opium* relaxing hinders the *Veſſels* duly to contract upon the remaining *Blood*, which may cauſe a *Diſcontinuance* of its Streams, by *Reaſon* that the diminiſhed *Blood* may not ſuffice to fill up the relaxed *Veſſels*; tho' this may ſeldom happen, becauſe the *Compreſſure* of the *Air* is appointed by moſt wiſe *Providence* to cloſe all our *Veſſels* in ſuch *Caſes*; but it muſt be better done, when the Parts themſelves do alſo duly contract, which *Opium* hinders.

6. You have much the ſame *Reaſon* not to give them ſoon after other large *Evacuations*, where a due *Contraction* of the Parts is requiſite; as after Tapping (or *Paracenteſis*) in *Dropſies*; *Childbirth*, &c.

7. *Opiates* are beſt given in the Morning, to cauſe *Euphory* or *briſk Effects*, becauſe the *Refreſhment* gain'd by the Night's *Sleep* does not only concur towards *Euphory* and *Briſkneſs*, but alſo much oppoſe *Sleepineſs* and *Drowſineſs*, which are not conſiſtent with *briſk Effects*.

VI. As to *Perſons.*

1. It is not convenient to give *Opiates* to Perſons *very young* or *very old.*

2. They agree better with *Men* than *Women* or *Children*; With Men of a robuſt and hard, rather than of a weak, fine, tender, and ſoft *Texture*; with ſuch as have a *ſtrong Digeſtion*, than a weak; and in *general* with the *ſtrong*, rather than the *weak.* Therefore,

3. Never give them to *Perſons* that are very weak, eſpecially if they take, or digeſt no *ſuſtenance*, or extreamly little, for Reaſons already given; nor to ſuch as are near their *End*, or almoſt expiring; ☞ *Except* it be for *want* of *Opium*, or by *Extremity* of *Contraction* by *Terrour*, *Pain*, *Cold*, *Convulſions*, &c. for then it will do *Wonders* in preſerving People, that are otherwiſe paſt all *Hopes*, by relaxing, taking away *Pain*, *Contractions*, &c.

4. It is not ſo agreeable to the very *fat* or *moiſt*, becauſe they may be over-relaxed; nor to the very *lean*, and *dry*, &c. (eſpecially to cauſe *ſleep*) becauſe it is apt to irritate and actuate their Spirits too much, by which means *Sleep* is much hinder'd.

VII. As to *Maladies*, and *Diſeaſes*, &c.

1. *Opiates are not convenient* in *Relaxations*, as ſuch; as *general Palſies*, *Hemiplegia's*, *Palſies* of the *Eyes*, *Deadneſs* of them, *Dilatation* of the *Pupil*, *Relaxation* of the *Tympan* of the *Ear*, of one *ſide* of the *Face*, which makes the other *ſide* contract; and and ſo draw the *Face* awry; for 'tis not a *Spaſm* or *Convulſion* (as Men imagine) of the contracting ſide, but a *Reſolution* of the other, which permits

mits the *Antagoniſt Muſcles* of that ſide to contract without *Oppoſition*, and draw the Face toward the ſtrong or ſound *Side*: *Relaxation* of the *Uvula*, or the annex'd *Valvæ*, (which laſt is known by Snuffling without any other evident Cauſe, or by obſerving that it does not ſhut in ſounding *u*, (in *but*, *cut*,) &c. by it ſelf; *Relaxation* of the *Larynx*, and *Windpipe*, (which is known by a hoarſe kind of *Whiſper* without a *Cold*, or any *evident Cauſe*;) Of the *Pharynx*, or *Gullet*, (which is known by a *Depravation* of ſwallowing without *Pain*, or *Tumor*, or any evident Cauſe;) A *Paralytical Aſthma*, or difficulty of Breathing, wherein Men heave the *Shoulders* without any apparent Cauſe; *Relaxation* of the *Stomach*, as when Meat ſtays too long at *Stomach*, &c. A *Palſie* of the *Inteſtines*, or *Guts*, as when one is bound, and cannot refer it to any other Cauſe; Of the *Bladder* (when one cannot make *Water* without any other Cauſe to refer it to;) *Relaxations* of the *Sphincters* of the *Bladder*, and *Anus*, (that is, when *Urine*, or *Ordure* fall from one *involuntarily*;) nor are they convenient in *Baths*, unleſs great *Relaxation*, as for Paſſage of the *Stone*, &c. is intended.

Nor in *Ruptures* as *Bronchocele*, (of the *Windpipe*;) *Exomphalos* (of the Navel) *Bubonocele* (of the *Groin*;) or the Fall of *Humours*, *Guts*, *Fat*, &c. into the *Scrotum*, or of the *Fundament*, *Womb*, or the *Vagina*, &c. *except* it be to reduce them.

Nor in *Lunations*, *Sprains*, *Laxity* and *Weakneſs* of *Joints*, *Limbs*, *Back*, &c. *Extenſions* of *Nerves*, *Tendons*, *Ligaments*, &c. Nor where *Relaxation does or may improve the Diſtemper, or do harm*, as in *Apoplectical* and *ſoporoſe Caſes*, as *Coma*, *Caros*, *Lethargy*, &c. *Weakneſs* of *Memory*, *Stupidity*, *Moroſis*, *Nightmare*, *Drunkenneſs*, &c. *Syncopes*, and *Faintings* from *Relaxation*, as the original Cauſe; as from *Exceſs of Joy*, *Pleaſure*: *Large Evacuations*

when

when the Parts cannot well, and duly contract upon what remains, as after *Child-Birth*; profuſe *Hemorrhages*, *Tapping*, (or *Paracenteſis*,) or any *large Evacuation* of *Humours* in *Dropſies* of the *Belly*, *Breaſt*, or *Head*; nor (as has been hinted) in *Dropſies*, tho' without any ſuch *Evacuation*, unleſs it be upon ſome ſpecial Conſideration of the learned; nor in *Tremblings*, or *Shakings* of the *Head*, or *Hands*, &c. from *Weakneſs*, as in *old Age*: Nor in *Fluxes from Relaxation*, as too much *Sweat*, *Gonorrhœa Simplex*, *Diabetes*, *nocturnal Pollutions*, *Chylous Flux*, *Lientery*, *involuntary Flux* of *Urine*, or *Ordure*, and ſome ſorts of *immoderate Fluxes* of the *Menſes*, or *Lochia*, which owe their Cauſe to *Relaxation*; or *Aptitude* to *Abortion* from that Cauſe, and indeed generally in *Women* with *Child*, leſt it ſhould cauſe *Abortion* by relaxing the *Neck* of the *Womb*. Or where *Contraction* is beneficial, as to empty a *foul* or *replete Stomach*, *Choler*, &c. by *Vomiting* or *Stool*, or an ill *Humour* any *way*. Therefore

II. *Opiates are not convenient when grievous Senſations are uſeful*, as to excite *Expectoration* when Matter threatens *Suffocation*, in *Vomicas*, *Pleuriſies*, *Peripneumonias*, *Conſumptions*, *Spitting of Blood*, &c. When *Hunger* calls for *Food*, and *Reſtauratives*; that of *ſtuffing* at *Stomach* excites *Vomiting*; that of *Urine* ſolicites us to a due *Excretion* thereof, that of ill *Matter* at *Guts* cauſes an *Evacuation* thereof; ſo that when a *Criſis* is to be by the *Help* of *grievous Senſation*, or *Irritation*, *Opiates* are not convenient, for it takes off the Senſe of *Irritation*; but when a *Criſis* is to be by *Relaxation*, as by opening the *Pores* to cauſe *Sweat*, *Perſpiration*, &c. then is it of excellent *Uſe*: So, that *great Queſtion*, (that has very much puzzled the learned) *whether Opium is convenient before a Criſis &c?* is plainly, and *mechanically* anſwer'd.

III. *Opiates*

III. *Opiates are not convenient* where *Titillation* by the *Acrimony* of *volatile Salts* is the Cauſe of the *Diſeaſe*, as in troubleſom *Erections*, *Priapiſms*, *Nocturnal Pollutions*, *Venereal Furies*, too much *Salacity*, and *Titillation*, *Itchings* of the *Uterus*, *Scrotum*, *Penis*, *Skin* in general, *&c.*

IV. I ſcarce need tell any, that *Opiates* are inconvenient when the *Meconium* of Children ſhould be evacuated; or when one is *bound* in *Body*, or apt to be ſo; but there may be a *Time*, when the *learned Phyſician* may think fit, to give them even to the *Coſtive* in *urgent Caſes*, for he can order ſomewhat along with them, or ſoon after, to open the *Body*; who may alſo ſee Cauſe ſometimes to vary from theſe general *Rules*, when *Neceſſity* and *good Reaſon* direct him ſo to do, tho' they are nevertheleſs *general* in their *Nature*, and not to be tranſgreſſed without *ſpecial Cauſe*, and *mature Deliberation.*

V. *Opiates are not ſo convenient* where there is much ſlimy, moiſt, and phlegmatick Humours, by Reaſon that the Parts are ſubject in ſuch Caſes to be too much relaxed.

I have been the fuller (eſpecially upon the *Head* of *Diſeaſes*) that I may hereafter have nothing to do, but to ſhew the *beneficial Uſe* of *Opiates duly prepared*, more particularly of the *Panacea's* of *Opium*, of which I am going to ſpeak.

CHAP. XXX.

The Method contriv'd to ſhew the Uſe of well-prepared Opiates (more eſpecially the Panacea *of* Opium.)

HAving ſhewn the *Nature* and *Principles* of *Opium*, which produces the good, which the bad Effects; *how* and *why* they do ſo; *how* to ſeparate, ſubdue, and correct the *bad Principles*; the due *Doſes* of good *Preparations*; *how* to *cure* all the ill *Effects* of *Opium*, and *general Rules* and *Cautions* concerning it, and in what Caſes it may not be convenient; I have now nothing to do but to ſhew the *beneficial Uſe* of the *Panacea*, (or well prepared *Opiates.*)

To make it more agreeable to *rational Minds*, and fix its *Uſes* better in *Memory*, I will ſo proceed by its *Effects*, that the very Title of every *Chapter* may imply the Reaſon of its *Uſe*, which is either *internal* or *external*, and both of them either,

I. As it is a *Pleaſer of Senſation*, (or an *Opiate* ſpecially ſo call'd) by which means it produces all the *good Effects* that are notoriouſly obſerved, which are mention'd in *Chap.* 4, 5, 6. *Or*,

II. As it is an *Alterative of the Bloud, &c.* which is all Improvement, becauſe almoſt wholly diſregarded, and never brought into any *Method* to this *day*, tho' it is the far nobler *Uſe*, by how much *Curing* excels bare *Pleaſing*, or *Palliating*, tho' theſe laſt *Uſes* have already rendred it the moſt *general Medicament* that is in being, inſomuch that *Sylvius* ſaid, having only reſpect to this Uſe, That he had rather not be a *Phyſician*, than not know the *Uſe* of *Opium*. III. As

III. As an *Evacuative* by relaxing and opening the Pores.

Its *Effects* and *Uſes*, as a *Pleaſer of Senſation*, are fairly reducible to theſe *general Heads*, *viz.*

1. Its *comforting*, *gratifying*, *encouraging*, and *invigorating* of the *ſenſitive Soul* and *Spirits*.
2. Its *compoſing* the *ſenſitive Soul*, *Spirits*, *&c.*
3. Its *relaxing* all the *ſenſile Parts* of the *Body*.
4. Its *cauſing Sleep*.
5. Its *cauſing Indolence*, or taking away *Pain*.
6. Its *ſtopping Fluxes*, that depend upon *Irritation*, *grievous Senſation*, *Contraction*, *&c.*
7. Its *promoting Fluxes*, that depend upon *Relaxation*.
8. Its *cauſing Titillation*.
9. Its *cauſing Vigilancy* (or *Watching*) in ſome *Perſons*.

Its *Effects* and *Uſes*, as an *Alterative*, are,

1. To *invigorate Nature*, or the *ſenſitive Soul*, and *Spirits*, which are the *Principles* of all *Motion* and *Alteration* for the *Preſervation* of the *Animal*.
2. To *give Nature*, *or the ſenſitive Soul*, *an Euphory* in that Work of *Preſervation*, *Alteration*, *&c.*
3. To *adminiſter freſh and moſt agreeable Principles* for that *end*.
4. To *adminiſter ſuch as are more vigorous* and powerful than our own, in order,
5. To *reſolve all ill Humours*, as vigorous and agreeable *Menſtruums* do.
6. To *compoſe*, *combine*, *concentrate*, *or unite the good and agreeable Parts of thoſe Humours*, and by its *Agreeableneſs* to join with them, and cauſe a ſtrict combination of Parts, to intercede and (as it were) cement them.

7. To

7. To *diſcuß the ſeparated and effete Parts of thoſe Humours* by its brisk *Volatile Salt.* And,

Its *Effects* and *Uſes*, as an *Evacuative*, are,

1. To *cauſe a liberal Perſpiration*, to give thoſe effete Parts their *Exit* in the moſt natural, plentiful, kind, and univerſal manner.

2. To *cauſe Sweat*, when there is ſufficient Matter for that end.

3. To *relax and open the Pores for the Menſes and Lochia, &c.*

CHAP. XXXI.

Of the Uſe of the Panacea, *or well-prepared* Opiates, *to comfort and invigorate the ſenſitive Soul and Spirits.*

I Have ſhewn *how* and *why* it cauſes a *blithe, gay,* and *good Humour, Serenity, Ovation of the ſenſitive Soul and Spirits, Alacrity, Promptitude, Aſſurance, Courage, Magnanimity, Euphory,* or *eaſie Undergoing of Labour, Journeys, &c.* It therefore follows,

1. That it muſt *prevent* or *take off Sadneſs, Melancholy, Cloudineſs, Slowneſs, Dulneſs, Liſtleſneſs, Lazineſs, Baſhfulneſs, Cowardiſe, Fear, Puſillanimity, Laſſitude, Diſtreſſes, Anxieties, Solicitude,* and all ſuch *grievous Paſſions,* as *Wine ad Hilaritatem* does.

2. That by *fortifying the ſenſitive Soul and Spirits,* it muſt *prevent contagious Infections,* and mightily *enable* and *invigorate Nature* to ſubdue and conquer what is inimicous to it in all *Reſpects.*

3. That it *prevents* and *takes off Faintings* and *Leipothymies* that happen from the aforeſaid Cauſes, as thoſe upon *Fear, Terrour, hard Labour,* being *Plague-ſtruck,* and the like.

I. The *Form* that it is to be given in is indifferent, unleſs a very ſudden *Effect* is required, as may happen in *Fainting Fits, &c.* for then (as was ſaid) a *liquid Form* in *Wine,* or *hot Cordials,* is beſt.

II. The

II. The *Doſe* in theſe Caſes muſt be *moderate*, and ſometimes, in great *Caſes*, the *higheſt*; for great *Grievances* cauſe *proportionable defenſive Contraction*, which oppoſes the good *Effect* of the *Panacea*, *&c.*

III. The *Vehicle* ſhould be a Glaſs of *generous Wine*, cordial fermented *Liquors*, *comfortable Spirits*, or ſuch-like; to which you may add (if you pleaſe) *pleaſant* and *comfortable* Things; as, *Tincture* of *Saffron*, or its *Spirits*; *Chymical Oils*, as of *Cinnamon*, *Nutmegs*, *Saſſaphras*, *Cloves*, *&c.* (dropp'd into *Sugar*) *Ambergriſe*, *Muſk*, *&c.*

IV. The *Time* of giving it, is at ſuch a convenient *diſtance* before the Time that you would have it operate, that it may produce its *Effects* at the *Time* deſired. See the *General Rules* as to *Time.*

When it is requiſite to continue its *Effects*, as in long *Journeys*, or the like, repeat it as ſoon as you find the *Effects* of the former *Doſe* begin ſenſibly to decay; becauſe it takes ſome *Time* to operate.

V. The *Regimen*, when *Action* or *Buſineſs* is intended, is to keep in *Motion*, *Diſcourſe*, or the like, leſt you ſleep or grow drowſie.

But when you intend *Sleep*, obſerve the *Regimen* directed in the *Chapter* of its Uſe to cauſe *Sleep.*

Tho' leſs *Suſtenance* will ſerve when you uſe it, yet muſt it not be omitted in a moderate manner.

The *Kind* muſt be ſuch as is eaſie of *Digeſtion*, and apt to promote *Perſpiration*, as *light Bread*, *Mutton*, *Lamb*, *Neat's-Tongue*, *Sweet-breads*, and *Lamb-ſtones*, with agreeable *Sauces* that may help

Digeſtion and *Perſpiration*; which is a great Cauſe of *Serenity* and *Alacrity*, (as *Sanctorius* obſerves) becauſe that thereby *Fumes* and *Vapours*, which cloud and clog the Spirits, are evaporated, and the Spirits become ſerene and expedite.

It is to be obſerved, That *Parſly*, *Selery*, *Onions*, *Horſe-Radiſh*, *Garlick*, and ſuch *warm* and *volatile Plants*, promote *Perſpiration*.

Your *Drink* ſhould be good *Stomach-Wine*, or *Wine* and *Water*, or fine *clear Drinks*, not too new.

1. *Note*, That (as has been intimated) drinking good, acceptable, and generous *Wine*, ſo often (yet moderately) as to keep a continual Senſe of its *Pleaſure* at *Stomach*, is the beſt Subſtitute to it that can be uſed; for it will thereby anſwer much of the *permanent Effect* of well-prepared *Opium*, tho' not quite ſo convenient in many *Reſpects*; as, 1. Becauſe it muſt be ſo often repeated. 2. Becauſe its Effect is not ſo fine and charming. 3. Becauſe the *Wine* heats more. 4. Becauſe it waſhes the *Stomach* too often, and the like.

2. *Note*, That when People are in an untoward Condition, or (as they call it) out of *Sods*, the next *day* after *Drinking*, Men often adviſe taking the Hair of the ſame Dog, (that is, *drinking* ſome of the ſame *Wine* or *Liquor*) it is beſt for them to uſe it as I juſt now directed; for their Caſe (upon the good *Effect* of the *Wine* ceaſing) is much like that upon the going off of the *Operation* of *Opium*; which may alſo (in this *Caſe*) be uſed inſtead of *Wine*, to procure a better and blither Condition for that *day*, that uſes to be very troubleſome to *Drinkers*.

3. *Note*,

3. *Note*, That good *Preparations* of *Opium* may be conveniently uſed to Horſes, to prevent their being tired, or take off their Wearineſs, and cauſe them to go on; but I would not adviſe any Preparation in this Caſe but the *liquid Panacea* in good *Ale* or *Beer*, and that only in the ſame Quantity as is uſed to Men, till farther *Experience* emboldens the *Practice*: By ſuch means, (I cannot doubt it) any *Jade* may be made to appear lively, go well, *&c.*

CHAP. XXXII.

Of the Uſe of the Panacea, &c. *to compoſe the Senſitive Soul, Spirits,* &c.

I Have ſhown *how* and *why* it *compoſes* and *quiets* the *ſenſitive Soul*, *Spirits*, *Bloud*, *Stomach*, &c. and by that means allays all the *Fury*, *Commotions*, *Perturbations*, and *turbulent Exorbitances* thereof, and that often without *Sleep*, but much better with it. It follows therefore,

1. *That it prevents and takes off all Frets and turbulent Paſſions of the ſenſitive* Soul; as, *Anger*, *uneaſie Agitations*, and *Toſſes of the Mind*, *Peeviſhneſs*, *Fretfulneſs*, *Diſcontents*, *Diſquietudes*, *Diſſatisfactions*, *Murmurs*, *turmoilings* and *vexatious Thoughts*, *Anxieties*, *Solicitudes*, *&c.* and all the *evil Effects* thereof; as, *Watchings*, *Waſte of* Spirits or *Strength*, *Laſſitudes*, *Hypochondriacal Melancholy*, *Cachexies*, *Scurvies*, *&c.* But theſe laſt belong moſt properly to its *Alterative Faculty* or *Vertue*.

2. *All involuntary furious Agitations of the ſenſitive Soul and Spirits*; as, *Madneſs*, more eſpecially *Melancholy Madneſſes*, or ſuch as proceed from *grievous Thoughts* or *Apprehenſions*, *Loſſes*, *Croſſes*, *Deſpair*, *Fears*, *Terrours*, or *the like*; but they are not ſo good in *Merry Madneſſes*, as thoſe from *Joy*, *Venereal Fury*, and ſuch-like, which anſwers the great Diſputes about *Opiates* in *Madneſſes*, *Deliriums*, *Epileptical Fits*, *Convulſions general* and *particular*, as thoſe of the *Head*, *Riſing of the Lights*, *Vomitings*, *Hiccoughs*, *Sabbings*,

bings, Reckings, Convulsive Asthma's, Palpitations, and *Tremblings* of the *Heart*, *Shakings* and *Shiverings* upon *Fear, Terror, Cold, Pain, Ague-Fits, Convulsive Colicks, Hysterick Fits, Iliack Passions, &c.*

3. *All Fevers and Frets of Humours that happen from any of the aforesaid Causes*; Or from any *violent Motion*, voluntary or involuntary, as *Labour, Running, Hewing, Fighting*, or any *vehement Exercise, Ratlings, Tossings, Concussions* in *Coaches, Waggons, Boats* in stormy Weather, *violent Riding, &c.* Or from *Heat* of *Fire, Sun, Baths, Hot-Houses, Bagnio's, Crowds, lying too many* in one *Bed*, or with too *much Clothes*; Or from *grievous Sensation, Irritation*, or *Pain*, as *Fevers* upon *Inflammations, Abscesses, Buboes, Stone, Colick, Cardialgia, Wounds, Fractures, Dislocations, Contusions, Amputations, Lithotomy, Paracentesis*, or any painful Operation of the *Noble Art* of *Chirurgery*; *Agony*, or *Pain* of the *Small-Pox*, as its *second Fever*, and the like: Or from *Fluxes*, as tedious and turbulent *Vomitings, Diarrheas, Dysenteries, Cholera's, Iliack Passions, artificial Purging*, and all *symptomatick* or *immaterial Fevers* whatsoever, which either never had any *Matter*, but proceed from such agitating Causes as I mentioned, or remain (as some do) after the *grieving Matter* is carry'd off by *Vomiting, Purging, &c.*

I forbore mentioning *Pleurisies* and *Peripneumonia's* among the *Fevers*, that it prevents or takes off, because there are great *Disputes* whether *Opiates* are convenient in those Cases, which I hope to determine.

Unless it be when the said Distempers are come to that pass, that it is dangerous to cause *Sleep*, or take away any of the Sense of the *Irritation* of the Matter to be expectorated, lest it

ſhould be too much amaſs'd in the *Bronchias*, or Wind-pipe, and ſo choak the Perſon, I ſee no cauſe to forbid them any more than *Sleep*, or *Opiates*, in other *Inflammations*, wherein they are highly beneficial, to give *Eaſe*, cauſe *Sleep*, *compoſe* the *Spirits*, and take off, or at leaſt moderate the *Fever*.

But I ſee many good *Reaſons* to uſe them: 1. Becauſe, as a *Sal-Volatile-Oleoſum*, they reſerate and reſolve *clammy Humours*, and are ſo agreeable in Principles (as *Menſtruums* ſhould be) to the thing to be reſolved; I cannot doubt but *Red Poppy* is, upon *Experience*, ſtated a *Specifick* in thoſe *Caſes* for that *reaſon*. 2. Becauſe theſe *Diſtempers* (as *Hippocrates* ſpeaks) are from a *ſegregation of Humours* by *Agitation*, *&c.* and *Opiates* excellent *Compoſers* thereof. 3. Becauſe they are ſuch great *Diſcuſſers*; and, 4. Open the *Pores* to let the diſcuſſed Matter quite out of the Body. 5. Becauſe it may be that by its *Relaxation* upon ſuch *Reſolution*, the lodged Matter may be cauſed to flow off, and circulate again, and ſo be gradued, diſcuſſed, and carried off by the open *Pores*. 6. Becauſe it envigorates Nature to perform thoſe Things; And, 7. Gives *Eaſe* and *Recruit* of the *Spirits* by *Sleep*. So that all Things conſidered, I think (as *Experience* aſſures us) that *Red Poppy*, or *Opiates* in due *Quantity*, are the very beſt *Remedies* that can be uſed. Hence it is that

Wedelius calls *Opium* an *Antipleuritick Specifick*, he having obſerved, (as I and others have done) That the whole *Courſe* of the *Diſeaſe* and *Expectoration* will ſucceed much better by their *Uſe*. He adds alſo, That he has very often cured them by its help, without *letting of Blood*; which is

an

an infallible ſign of their *good Effect*, ſince the *Pleuriſie* can hardly be cured without *Bleeding*. I cannot ſee how an Effect that bears ſuch Analogy to *Sleep* can do any more *Harm* than *Sleep*.

Etmuller alſo adviſes the giving of *Opiates* not only in the Beginning, but alſo during the *Increaſe* of the *Pleuriſie* or *Peripneumoniæ*: So that I conclude, That they are of *excellent Uſe* in thoſe *Diſeaſes*, unleſs it be when *Sleep* or them may cauſe too much Inſenſibleneſs of the *Bronchias*, and ſo retard *Expectoration*, when the Caſe is ſuch that the Want thereof may endanger the Perſon's being choak'd.

We have alſo many *Hiſtories* of Perſons cured in other *Fevers* by large *Doſes* of *Opiates*. I ſuppoſe that *reſinous Opiates* cauſing Vomiting and great Diſturbances, by reaſon of ill *Digeſtion* in thoſe Caſes, might be one great Cauſe of People's *Fears* and *Jeolouſies* in giving *Opiates*, which is eaſily prevented by giving *liquid Opiates* void of any reſinous Particles, as the *liquid Panacea*, *&c.*

4. It does, by compoſing, quieting, and appeaſing the Motion and Perturbation of the Bloud, conduce much to the ſtop of its *Efflux* in *Hemorrhages* (or *Bleedings*) that are *unnatural*; as at *Noſe*, in *ſpitting* and *vomiting of Bloud*, *bleeding* at the *Hæmorrhoids*, in *Dyſenteries*, *piſſing of Bloud*, *&c.* and ſometime in profuſe *Menſes*, when they happen from a *Fever*, or too much Motion of the *Bloud* and *Spirits*, and not an *over-Relaxation* or *Dilatation* of the *Pores*, which muſt be well diſtinguiſhed.

I. The *Form* muſt be liquid in all *Fevers*, and is alſo moſt convenient, generally ſpeaking.

II. The

II. The *Doſe* may be the moderate, or middling, *except* it be where the *Pains* are great, or where much of the *Opiate* is loſt, as in *Vomiting*, *Looſneſs*, *&c.* for which ſee the *General Rules*.

III. The *Vehicle* ſhould be (generally ſpeaking) cooling, compoſing, and incraſſating Liquids, as *Emulſions*, *Milk* and *Water*, or the like; but in ſettling the *Stomach* uſe agreeable warm and comfortable Cordials, or *Wine* burnt with *Aromaticks*, or the like.

IV. The *Time* is, when 'tis convenient according to the *General Rules*, and your *Intention* of its Operation; therefore where there are *periodical Paroxyſms*, or *Exacerbations*, as in the *Small-Pox* and many *Diſeaſes*, in the *Afternoons*, or towards the *Evenings*, give it the due *Time* before, that it may have its full *Effect* by the Time the *Paroxyſms*, or *Exacerbations*, are expected to begin, and be not ſo mad as to be regulated by *Night*, or *Day*, or *Bed-time*, *&c.* (as is uſual) which are no *Symptoms*, *Signs*, or *Effects*, of the *Diſtemper*, but of the Motion or Poſition of the *Sun*, *Stars*, *&c.* which are not the Subjects of your Cure, nor can be: The *Want* of which moſt obvious and rational *Practice*, has ſadly diſappointed inconſiderate *Phyſicians*, and often hazarded, if not deſtroyed the *Patients*.

V. The *Regimen* is the ſame as that to cauſe *Sleep* which you have in *Chap.* 35. and ſhould be by all means uſed in this *Caſe*.

1. *Note*, That *Opiates* are not to be uſed (as has been intimated) where the *Commotion*, *Flux*, *&c.* is for apparent and ſpeedy *Benefit* of *Nature*, as in *Vomiting* upon *Repletion*, or to diſcharge the *Stomach* of ſomewhat that offends it, or a *Looſneſs* to clear the *Inteſtines*, or the like.

2. *Note*,

2. *Note*, That when any *Evacuation* is to be made by *Vomit* or *Stool*, the beſt way in theſe Caſes is to uſe large *Dilutions* of ſome contemperating Liquid, inſtead of *Vomitories* and *Purgers*; therefore uſe only lukewarm *Water*, or (which is beſt) boil'd with a little *Carduus* in't, or *Carduus-Poſſet*, or the like, to cauſe *Vomiting*; and more agreeable *Dilutions* for the Inteſtines to waſh off ill *Humours*, as a Gallon of Water, with half an Ounce of Cream of Tartar, or rather the purging Salt of the Waters diſſolved in it, or ſome part thereof, uſing all cold, or but very little warm'd, giving the *Opiate* or *Panacea* immediately after the Perſon has done *Vomiting* or Purging, in a ſmall *Glaſs* of *Wine*, or agreeable *Cordial*, to warm and comfort the *Stomach* and *Inteſtines*, which, becauſe of the ſmallneſs of the *Quantity*, the Moiſture and Coolneſs of the diluting Liquids and the *Opiate*, can cauſe no *Inconvenience* by its inconſiderable *Heat*.

CHAP.

CHAP. XXXIII.

Of the Uſe of the Panacea of Opium, *&c. to relax.*

HAving ſhown, that *Opiates* relax all the ſenſile Parts of the *Body*, and *how*, and *why*; it follows that they are of excellent *Uſe*,

1. *To prevent and take away all Contractions that happen from grievous Paſſion, or Senſation,* (*or Pain*) as *Convulſions, Shiverings, Shakings, Cramps, Tenſions, Palpitations and Tremors of the Heart* from *Fear, Terrour, Grief, Melancholy, Anxiety, Solicitude, Anger, Fretfulneſs, Concern, Surpize,* &c. Or from *Cold, Pain, Acids,* &c. as *Contraction* of the *Sphincter* of the *Bladder* from thoſe Cauſes, by which the *Urine* is often ſtopt, as alſo by the *Pain* from the *Hæmorrhoids, Inflammations, Small Pox, Colicks, Acrimony, Excoriation,* &c. (which often hinder the making of *Water*, as they alſo do ſometimes going to *Stool, ſwallowing*, &c.) *Shivering* in *Ague-Fits*; *Stupors* from *Cold*, or *Pain* which (as was ſhown) proceed from a *violent Contraction*; in all which it will ſcarce ever fail of due *Effect*: by this *Means* you may (as I have often done) cure thoſe *Diſaſters* ſafely, ſpeedily, and pleaſantly even to a *Wonder* and *Amazement*, (as if charm'd by a *Spell*) when others know not what Hand to put to them, and are quite baffled thereby.

By the ſame Means (tho' little, or not at all minded) you may prevent great *Tumours* upon *Pain*; as when by a *Thorn*, or any *grievous Pain* the *Arm, Legs, Thighs*, &c. begin to ſwell; for the

the Swelling, which often grows prodigiouſly, and ſeizes the whole *Limb*, if not a great Part of the *Body*, threatning and often cauſing Mortifications and Death it ſelf, is cauſed by the *Pain* contracting, and ſo girding the Parts, that the *Bloud*, *Lympha*, &c. cannot paſs, by which Means the Humours being ſtagnated, and crowded in by the Force of the *Arteries*, and dam'd up by the *Contraction*, moſt dreadful *Tumours* happen; whereas the *Pain* being taken away by the *Opiate*, and all the Parts relaxed, they are, and muſt be prevented by plain *Mechaniſm*, if uſed timely. For *Pain* can cauſe Tumours by no other Means beſides *Contraction*, which *Opium* muſt prevent by taking away the very *Pain* it ſelf.

2. *To help the Cure of all other Contractions*; *as Tenſions*, *Rigidities* of *Nerves*, *Membranes*, *Tendons*, *Ligaments*, *Muſcles*, &c.

3. *To relax, or make way for Things to paſs*, as *Sweat*, *Fumes*, *Small Pox*, *Meaſles*, *peſtilential, or venemous Effluvias*, *Menſes*, *Lochia*, and the like, to *paſs* through the *Skin* or *Pores*: A *Child*, dead, or alive, *After-birth*, *Mole*, *clodded Bloud*, &c. to *paſs* through the Neck of the *Womb*, when too narrow by *Nature*, or contracted by *Pain*, *Cold*, *Terrour*, &c. A *Stone* to paſs the *Ureters*, or Neck of the *Bladder*, by taking away the *Pain* that contracts them and hinders the Paſſage of the *Stone*; ſo that (in the Hand of an ingenious *Phyſician*) there is not a better, nor as good a *Remedy* to cauſe a *Stone* of any paſſable Bigneſs to come away, for it paſſes through the relaxed or widened *Paſſages* without *Pain*; to help which, other *Relaxers*, as *Warmth*, *emollient Baths*, *Fomentations*, *Clyſters*, together with ſlippery and emollient Things inwardly taken, and at laſt a great Stream of *Urine* well contrived and timed when the Parts are moſt relaxed, ſuppled and lubricated, do much conduce. I would

would have all who are troubled with the *Stone* *Note this.*

Note alſo, That to hold and dam up the Urine a long Time, is of excellent *Uſe* well managed, when the *Stone* is in the *Ureters*, becauſe when the *Urine* has fill'd up the Bladder very tightly, that it will receive no more, it muſt diſtend the *Ureter*, which is the Cauſe that very many are eaſed, either by the removal or diſcharge of the Stone after a ſet *Time*, which gives *Occaſion* to call them *Fits* of the *Stone*, becauſe they laſt for much about the ſame length of *Time*; however, the large and ſudden *Evacuation* of *Urine* muſt, by leaving the Part looſe, *&c.* conduce very much to the Paſſage of the Stone, *Clods of Bloud*, *Phlegm*, *Matter*, &c. that ſtops the *Urine.*

4. *To relax, or make Way for Things to be put into the Body, when there is Occaſion*, as in *Reductions* of *Hernias* (or *Ruptures*) of a *fallen Fundament*, *Womb*, or *Vagina*, in which Caſes it is of neat *Uſe*, both by *relaxing*, and *taking away Pain* during the *Operation.* It may be alſo of *Uſe* when the ſtrictneſs of the *Collum Uteri* hinders the *Admiſſion* of *Sem. viril.* both as a general *Relaxer*, and as cauſing greater *Pleaſure* of thoſe Parts, and a proportionable Relaxation thereof; for it is by the *Pleaſure* in *Coition*, that the *Collum Uteri* is opened, or relaxed, (as is obſerved) which immediately cloſes again, when the ſenſe of *Pleaſure* is ended; yea and ſo much the ſtricter, becauſe the *Loſs* of *Pleaſure* is (as was ſhown) a *Kind* of *Grievance*; hence it is, that *omne Animal poſt coitum eſt triſte*; and not becauſe of loſs of Spirits (as is vulgarly imagined) for we can loſe little or no Spirits by that which is ſo ſeparated for *Excretion* before-*hand*, as the *Semen* is.

5. *To*

5. *To enlarge any Part for the due Reception of what is convenient, or neceſſary,* as the *Breaſts* to receive Milk, (by which Means it comes to be ſuch a great *Increaſer of Milk*) The *ſeminal Veſſels*, (as *Sem. virile* does upon *Puberty*) to receive the *Semen*: Thus it cauſes the *Penis* to grow, as the *Semen* upon *Puberty* cauſes it, and *Cocks Combs*, Turkey-Cocks red Bags at the Neck, *Proboſcis*, &c. to grow at the Time they are fit for, or begin to tread; for the *Relaxation* cauſed by the *Pleaſure* of the *Semen* makes the Party more capable of the *Nutriment*. Thus it is, that Sleep cauſes the *Growth*, *Fatning*, and Thriving of *Animals*, and red Noſes to grow ſo large by frequent *Relaxation* upon the *Pleaſure* of *Wine*, *Ale*, &c. (as was ſaid) to which Quantity diſtending the Parts may in the laſt mentioned Caſe contribute.

I. The *Form* of *Opiates* in this Caſe may be either *ſolid*, or *liquid*, as you think fit.

II. The *Doſe* muſt be proportioned to the *Relaxation* that you deſire; for *more* relaxes more; and *leſs*, leſs; ſo muſt it be alſo proportioned to the *Contractions*, that it is to take away; therefore very *grievous Paſſions*, or *Senſations*, which cauſe proportionable *Contractions*, require greater *Doſes*, becauſe their *Grievance* and *Contraction* do ſtrongly oppoſe the *Pleaſure* and *Relaxation* that *Opiates* cauſe; therefore *great Pain* (as you'll find in its due place) requires an extraordinary *Doſe*.

III. The *Vehicle* in *Contractions* from *grievous Paſſions* ſhould be *VVine*, or ſome comfortable *Cordial*; *except* they be the more turbulent *Paſſions*, as *Anger*, *Fury*, &c. where *Compoſers*, as *Emulſions*, *Milk*, and *VVater*, &c. are beſt.

In

In all other *Caſes*, emollient and ſuppling *Vehicles* are moſt proper, as *ſoft*, *ſmooth*, and *ſlippery Decoctions*, *Broths*, &c.

IV. The *Time* to give them is, at the due Diſtance before Bed Time, when the Intentions are conſiſtent with *Sleep*, which it ſelf is a great *Relaxer*; otherwiſe any Time will ſerve, as Occaſion or the Intention of the *Phyſician* requires it.

V. The *Regimen*.

1. As to *Meat* and *Drink*, is uſing moiſt, emollient and lubricating Things, as ſmooth Broth, ſomewhat fat; butter'd Roots, Herbs, Sawces, Gruels, Milk-Meats, young Fleſh, as of roaſting Pigs, Veal, Lamb, &c. Smooth Drinks as *Ale*, *Whey*, &c.

2. As to *ſleeping* and *waking*; that relaxes, and this contracts; therefore, that *conduces*, this *hinders*.

3. As to *Reſt* and *Motion*; that *relaxes*, and this *contracts*.

4. As to the *Paſſions of the Mind*; the *Pleaſant* as *Mirth*, *Joy*, *Pleaſure*, Comfort, and all ſuch, do relax; and the *Grievous* as *Terrour*, *Fear*, *Grief*, *Melancholy*, &c. *contract*, as *Pain* does.

5. As to *Air*, the *warm* and *moiſt*, or that when the *Quickſilver* is low in the *Barometer* (or *Weather-glaſs*) does *relax*, as do warm *Baths Fomentations*, &c. eſpecially if *emollient*: Dry and cold *Air* and that when the *Quickſilver* is high, do cauſe *Contraction*.

6. As to *Excretion*, and *Retention*; generally *Excretion* does make *Room* and *Way* for things to paſs through, or into the relaxed Parts, (as *Clyſtering* for Paſſage of the *Stone*, *Child*, *Reduction* of *Hernias*, &c.) But be ſure not to make the *Excretions* grievous, becauſe all *grievous Senſation* cauſes *Contraction*.

CHAP.

CHAP. XXXIV.

Of the Uſe of the Panacea *of* Opium, *&c. to take away Pain or grievous Senſation.*

THIS it does (as was ſhown) by diverting the *ſenſitive Soul*, and introducing a Senſe of *Pleaſure*, which, (being contrary to *grievous Senſation* or *Pain*) cannot be in the ſame *Subject* with *Pain*; but chiefly, and *mechanically* by relaxing all Parts, and permitting the ſpringy *Animal Spirits* to expand, and ſo become unfit to carry *Impreſſions* ſmartly; which is requiſite to cauſe a ſenſe of *Pain.* (as has been proved.)

Therefore it is of moſt happy and glorious *Uſe* in all *Pains*, but eſpecially to be uſed

1. *In ſuch as are not for any Benefit to the Perſon pain'd*, in *Order* to alter, or evacuate the grieving *Cauſe*, as in *Pocky*, *ſcorbutical*, or *hypochondriacal Pains*, or ſuch as proceed from any ill *Habit* of *Body*, &c.

2. *Where Pain hinders the taking away of its Cauſe or ſome Benefit*; as when the *Pain* of the *Stone* does by contracting the *Parts* hinder its own *Paſſage*; that of a *Teneſmus* hinders going to ſtool; that of the *Sphincter* of the *Bladder* hinders its opening to let out *Urine*, *clodded Bloud*, *Phlegm*, *Matter*, or any ſuch Thing; when that of the Neck of the *VVomb* hinders Delivery of a *Child*, *After-Birth*, *Mole*, *clodded Bloud*, &c. that of the Mouth of the Stomach hinders *Vomiting*, when requiſite; or that of the *Pylorus* hinders the *Detruſion* of *Chyle*; or that of the *Inteſtines*, as by an *Inflammation*, &c. ſtops

the Paſſage of the *Ordure*, and cauſes an *Iliack Paſſion*; or that of the *Gullet* hinders *ſwallowing*; of the *Larynx* Breathing; or that of any Part hinders *Perſpiration* or deſired *Sweat*; or that of the *Venereal Parts* ſtops the *Menſes*, or *Lochia*, &c. In all which *Caſes* it is, and muſt in all *Reaſon* be of excellent, and (if duly managed) of almoſt (if not altogether) infallible *Effect*, by taking away the *Pain* which cauſes the Part to contract, and make the *Stop*, &c.

3. *Where the Cauſe of the Pain cannot be removed but by Perſpiration, Sweat, Menſes, Lochia, or Urine*; as in *Pains* in the Habit of the *Body*, *Limbs*, &c. From *Cold*, *Wind*, or *Vapours*, *Gout*, *Rheumatiſms*, *Stitches*, *Pleuriſies*, *Inflammations*, and many of the *Caſes* aforementioned, it is excellent: As it is

4. *Where the Pain, Irritation, or grievous Senſation, cauſes Nature to work irregularly*, as in *Iliack Paſſions*, *hyſterick Fits*, *Fruitleſs Convulſions*, *canine Appetite*, &c. In which Caſes it excells all other Means for many Reaſons.

5. *Where the Pain is not likely to have a timely Effect for good, till People may be too much worn out.*

6. *In all Pains that have not any material Cauſe* from the *Humours*, &c. of the Body, as ſuch as happen from *Paſſions*, *Wounds*, *Pricks* of *Nerves*, *Tendons*, *Fractures*, *Diſlocations*, *Amputations*, *ſevere Chirurgical Operations*, &c.

7. *In all Pain from Inflammations, Suppurations, Abſceſſes, Tumors where Repulſion is not convenient or poſſible.*

8. *In all Pains that are more likely to cauſe Fevers than any Benefit, as in many of the former.*

To be ſhort, it is good and uſeful in all *Pain* and *grievous Senſations.*

1. *Except* all ſuch as tend to the ſpeedy and timely *Benefit* of Perſons, as thoſe in *Womens Labour*;

bour; *Grievances* at *Stomach*, that cauſe Vomiting upon *over-Repletion*, or by Reaſon of ſomewhat that grieves, and is not convenient to ſtay at *Stomach*; or *Irritations* to expectorate, when much wanted, as happens ſometimes in *Vomicas*, *Pleuriſies*, *Peripneumonias*, &c. Or ſuch as irritate, and ſolicite to make Water, go to Stool,&c. When Evacuation of *Urine*, *Ordure*, *ill Humours*, &c. is requiſite.

2. *Except* when *grievous Senſations* are neceſſary *Calls* or *Intimations* for *Supply*, *Refreſhment*, &c. as *Hunger*, *Thirſt*, &c. which ſhould be taken off only by the Pleaſure of good *Meat*, and *Drink*; leſt Nature be defrauded: Where you may obſerve an Inconvenience, that may happen by the *frequent Uſe* of *Opium* taking away *Appetite* without *Nutriment*. Tho' this is much compenſated by the *Relaxation*, and *Recruit*, that *Opiates* give, and their moderating the Expence of Spirits by taking of *Contractions*; and may more (if not wholly) by a regular and conſtant way of *Eating* and *Drinking* temperately at uſual *Times*, tho' the *Hunger* may not, by Reaſon of the *Opiates*, be ſo great as at other *Times*.

I. The *Form* is indifferent, and to be ordered only according to the *general Rules*, remembring that the Liquid is beſt for *Speed*.

II. The *Doſe* muſt be proportioned to the *Pain*, or *grievous Senſation*, and always rather more than when there is no *Pain*, becauſe its *Contraction* oppoſes the *Relaxation* to be induced by the *Opiate*.

Obſerve this Method. Firſt give a good *Doſe*, then ſtay about 2 or 3 *Hours*, and if the *Pain* be not at all leſſen'd, you may ſafely then give *half* the *Quantity* again, and afterward about a *third* Part of

the *Doſe* every 2 or 3 *Hours* till it begins to abate; but upon the leaſt ſenſible *Abatement*, you muſt forbear to give any more, becauſe that which did in ſome *Meaſure* abate the *Pain*, does in the ſame *Proportion* abate the *Contraction*, and conſequently it has leſs to conteſt with, therefore will be ſure to conquer it; for the ſame *Power*, that could ſubdue *ten* in ſome Meaſure, will ſubdue *nine* in a greater *Meaſure*, and *eight* more eaſily than *nine*, &c. till the *Pain* quite ceaſes; whereas if you add more *Power* to the *Opiate*, it may be too much, eſpecially when the *Pain* is thereby conquered, and that it has no *Contraction* to conteſt with; for then it will be as if a *great Doſe* were given to one that had no *Pain*; but if the *Pain* increaſes again, you may ſafely repeat the *Half Doſe*, &c. every 2 or 3 *Hours*, till it again begins to abate, and no longer; which you had better obſerve to do as ſoon as ever the *Pain* begins to return, becauſe it takes ſome *Time* to operate; it follows then, that the *liquid Form* is moſt convenient in this *Caſe* for *Expedition*.

My particular and effectual manner of uſing it in the Gout, will be ſomewhat too tedious to be ſet down: Therefore ſince it may be obvious enough to the ſagacious, that conſider what has been ſaid, and the Nature of the Diſtemper, I will paſs that by at this Time.

III. The *Vehicle* in *cold Stomachs*, and *Conſtitutions*, may be a Glaſs of *Wine*, or ſome temperate *Cordial*; but in hot *Caſes*, or where a *Fever* is feared, *Emulſions*, *Milk* and *Water*, or *Water* alone, or other acceptable cooling Things, or ſuch as are directed in the Caſe of procuring *Relaxation* in the *laſt Chapter*; becauſe it is *Relaxation* that takes away *Pain*, as has been *mechanically demonſtrated*. But here there is no need of being ſcrupulous as to the *Vehicle*, unleſs it be in reſpect of *Heat* and *Cold*, as the Caſe happens.

IV. The

IV. The *Time* may be any *Hour*, as the Caſe requires; only remember, that *Sleep* conduces much to *Relaxation*, and therefore to the taking away of *Pain*.

V. The *Regimen* to be uſed in the Caſe of *Relaxing* in the laſt *Chapter* will ſuffice, but 'tis convenient (as was ſaid) to regard the *Stomach*, and *hot* and *cold Conſtitutions*; eſpecially where there is any *Fear* of *Fevers*; by giving cooling Liquids, as *Emulſions*, &c. and avoiding hot or *ſolid Things*, eſpecially ſuch as are hard of *Digeſtion*, as *Fleſh*, *Fiſh*, *Eggs*, &c.

1. *Note*, That it is very adviſable, not to defer the *Uſe* of *Opiates* too long, till People are very weak, tho' it may ſeem that they would hinder ſome due *Evacuation*; for I cannot ſee what *Harm* a *Refreſhment* by them may do, any more than by *Sleep*, both depending upon the ſame Cauſe, viz. *Relaxation*: It is true, that by *Reaſon* of *Sleep*, or an *Opiate*, the *Evacuation* may be a little defer'd. What then? would any Man deny *Sleep* for that *Reaſon*? Why then ſhould a *Phyſician* deny an *Opiate* to cauſe it, reſpite *Nature*, and enable it to bear its Burthen, or engage with *Difficulties* the better?

2. Remember always that *Sleep* is a great *Help* to take away *Pain*, and ſo are all Things that conduce to *Relaxation*, or pleaſant *Diverſion*.

3. Uſe Means in *Pain* of the *Hemorrhoids*, *Fundament*, or *Inteſtinum rectum*, and indeed in any *Pain* within the *Guts* (unleſs it proceeds from a Looſeneſs) that *Opiates* may not bind Men too much; as *Lenitives* internally, or *emollient Clyſters*, or which of them may be moſt eaſily and conveniently done, and moſt to the Purpoſe.

CHAP. XXXV.

Of the Uſe of the Panacea *of* Opium, &c. *to cauſe Sleep.*

IT *primarily* cauſes *Sleep* by relaxing and compoſing, quieting, ſoothing, pleaſing, and lulling the *ſenſitive Soul* and *Spirits*; it always *relaxes*, but does not always ſufficiently *compoſe* or *quiet* the Spirits to cauſe *Sleep*, to which both are requiſite: *Secundarily*, by taking away *grievous Paſſion* or *Senſation*, when they happen to hinder it.

1. *As Soporiferous, it is of incomparable Uſe in all troubleſom Watchings*, whether they be from *grievous Paſſion* or *Senſation*, or *irrequiete Motion* of the Spirits, tho' not ſo certain in this laſt Caſe as in the former; and therefore proves ſometimes unſucceſsful in ſome *Perſons*, and in ſome ſort of *Madneſſes*, as the *Merry* or *Furious*, tho' it is effectual in *Melancholy* and ſlow *Manias*, (as has been intimated) for bare *Relaxation* ſuffices in the Two *firſt Caſes*, where *Sleep* is hinder'd by *Contraction*, which it never fails to take off, if given in a due Quantity, as has been directed.

2. *To recruit the Spirits*, as when People are tired with *Labour*, *Journeys*, *Diſeaſes*, *Conflicts of Nature*, as by *Convulſions*, *Vomitings*, *Purgings*, *Hyſteric Fits*, and the like.

3. *To relax, compoſe, take away Pain, moderate Fluxes that depend upon grievous Senſation*, (or Irritation) and its conſequent *Contraction*; or from *Motion* or *Segregation* of *Humours*.

4. To

4. *To promote Fluxes* that depend upon *Relaxation*, as *Perſpiration*, *Sweat*; as alſo the *Menſes* and *Lochia* in ſome Caſes; of all which you have particular *Chapters*, which *ſee*.

I. The *Form* may be indifferently, either *ſolid* or *liquid*, as 'tis beſt liked, and moſt ſuitable to *People's Minds*, *Palate*, *&c.*

II. The *Doſe* moderate, except it be, 1. Where ſome by *Accident* require otherwiſe, as *Pain*, *Looſeneſſes*, *Vomitings*, and to titillate the *Venereal Membranes* becauſe remote; which ſee in the *reſpective Chapters* of the Uſe of *Opiates* in thoſe *Caſes*. 2. Where the *general Rules* direct otherwiſe, as in the *ſoft fleſhed* People, *Children*, *Women*, *&c.* where the Doſe muſt be leſs.

III. The *Vehicle* muſt be the ſame as is directed to Compoſe; but in *old People* 'tis obſerved, that ſmooth Spirituous Things, as good Ale, *&c.* conduce very much to cauſe Sleep, becauſe *Sulphurs* do qualifie the *Volatile Salt* of the *Opium* (as was ſhewn.)

IV. The *Time* in *general* is at the due diſtance before Bed-time, that is directed in the *general Rules*; but *Opiates* may be given at any *Time* when the Caſe requires, as in the *Small-Pox* about 12, 1, or 2 in the *Afternoon*, according as the *Exacerbations* (which happen in the *Afternoon*, or towards the *Evenings*) do ſeiſe them; and in *Agues*, at the due *diſtance* before the *Paroxyſm* invades them; ſo that the Operation thereof may be full and compleat before the *Time* that the *Fits* are to begin; and ſo in all other *Caſes* of the like Kind.

V. The *Regimen* in this Caſe muſt have a Twofold Aſpect; 1. To promote *Relaxation*. 2. To compoſe and quiet *Motions* and *Perturbations* of the *Spirits*, *Bloud*, *&c.* *Relaxation* and *Quiet* being the Two Cauſers of *Sleep*.

As to the *firſt*, the *Regimen* muſt be the ſame as is directed in the *Chapter* of the *Uſe* of the *Panacea*, *&c.* to *relax*; but as to *compoſing* and *quieting* the *Spirits*, I ſhall add ſomewhat, tho' *Relaxers* are generally good for this Purpoſe, unleſs join'd with ſome agitating *Accidents*, as *Heat*, or the like.

1. As to *Diet*, it ſhould conſiſt of *cooling*, *incraſſating*, *inviſcating Things*, that are not *aromatick*, *acid*, or *ſaline*; ſuch are *Milk-Meats*, *Emulſions*, *Almond Milks*, *Chicken Broth*, with cooling Herbs, *Water-gruel*, *freſh* and *young ſoft Fleſh*, *Lettuce*, *Purſlane*, *Spinage*, *Herb Mercury*, *Mallows*, and ſuch like; *Mucilages*, as of *Quince*, *Fleabane*, &c. The *Drink* may be *Milk and Water*, Whey, or ſuch unfermented Liquors, or ſmooth Small Beer not too old, for all ſtale Drink is naught; *Water* where it agrees, *&c.*

2. *Reſt of Body and Spirits* muſt be contrived by all means, as by *leaning*, *lying*, or *ſitting ſtill* without any motion after it is taken, till Bed-time, and therefore let the Perſon (if the *Seaſon* permits) be as much undreſſed as may be, in a *looſe Garment*, or *Morning-Gown*, all that *Time*, and be help'd off with his Cloaths, that he may not agitate his *Body*; when ſleepy, (and not before) let him go into a cold Bed in Summer, and but a little warm'd in Winter, and only have what Bed-cloaths ſuffices, and pleaſes him beſt, and then lie abſolutely ſtill without *Noiſe*, *Light*, or *Fire* in the Room.

3. *Reſt and Tranquility of Mind* is very neceſſary, which ſhould be not only free from *grievous Paſſions*, but from all Exceſs of Joyous ones, which too much agitate the Spirits.

4. The *Air* ſhould be moiſt and moderate, and if not ſuch by the *Weather*, render'd ſo by *Art*, eſpecially in *Fevers*.

5. All

5. All *Evacuations* ſhould be made, that may any *way* diſturb his *Sleep*, before he betakes himſelf to it; nor ſhould the *Stomach* be overfull or empty, leſt any *Grievance* may be thereby created.

6. *Emollient tepid Baths, Fomentations, Feet-waſhes, &c.* do finely diſpoſe People to Sleep, but take care they be not too hot, for heat cauſes a *ſtir* of *Bloud* and *Spirits*, which is an Enemy to *Sleep*.

1. *Note*, That *long Sleeps* after great *Fatigues*, or long *Watching*, ought not to be very frightful, if the *Doſe* was moderate, and that the Perſon takes *Suſtenance*.

2. *Note*, That old or dry Perſons, or ſuch as are very unapt to Sleep after *Opiates*, are often cauſed to *Sleep* by *ſmooth Wine, Ale, Cowſlip Wine*, or the like, becauſe the gentle *Oilineſs* of ſuch *Liquors* do correct the *Acrimony* of their *Volatile Salts*, and at the ſame time cauſe a Senſe of *Pleaſure*, which relaxes and cauſes *Sleep*. It has been obſerved, that even *Ambergriſe* and *Muſk* (which exagitate the Bloud and Spirits) cauſe old Men to Sleep, which happens by their *fine Sulphur* readily faſtening upon the *acrimonious Volatile Salts*, as *Spirit* of *Wine* does upon *Sal Ammoniac*, which being mixed do ſoon *coagulate*: Therefore I am apt to think, that *Camphire* would be of excellent *Uſe* to correct the *Opium*, and the *volatile Salts* of the Body in ſuch Caſes, becauſe it is Experimentally certain, that it corrects the *Acrimony* of *Urine*, of *Semen Virile*, *Cantharides*, *&c.*

3. *Note*, That the drier the Body is, the more unapt are *Opiates* to cauſe *Sleep*; therefore dry *Bodies*, as of *old Men*, *Hectical Perſons*, *&c.* ſhould be well moiſtened by *incraſſative Moiſteners*, as *Emulſions*, and ſuch Things as are above-mentioned and ordered in the *Chapter* of the relaxing *Uſe* of *Opiates*.

From

From what is ſaid, I do conclude, that *Opiates* do cauſe *Sleep* very readily where the *Oily Parts* abound; and that Things, that have a fine *Oleous Sulphur*, are very good *Correctors* of it, where acrimonious *Volatile Salts* abound, in order to cauſe *Sleep*; and that hence it is, that ſome ancient People will often Sleep better by the Uſe of the aforementioned ſmooth *fermented ſulphureous Liquors*, than by the *Uſe* of *Opium*; from all which it appears, that *Sleep* is not ſuch a *Property* of *Opium* as People make it to be, becauſe, that beſides relaxing, *Sleep* alſo requires a great *Reſt* of the *Spirits*, and the *ſenſitive Soul.*

It ſeems very probable from the Premiſes, that *Anodyne Sulphur* of *Vitriol* would be excellent to cauſe *old Men* to Sleep; for it doubtleſs cauſes Sleep only by obtunding and qualifying our *Volatile Salts*, as *White Roſin*, and other *Balſamicks*, will often do.

CHAP.

CHAP. XXXVI.

Of the Uſe of the Panacea *of* Opium, &c. *to ſtop Fluxes.*

IT *palliates, moderates, and ſtops Fluxes*; 1. By taking away the ſenſe of the Irritation of Humours, which cauſe *Contraction* to ſqueeſe them out, and promote their motion. 2. Becauſe it compoſes and ſtills the motion of Humours by the *Relaxation* and the *Sleep* that it cauſes, which quiets motions. 3. Becauſe thereby, and by its combining *Agreeableneſs* and *Texture*, it *congregates* the *diſgregated Humours*. 4. Becauſe the *Relaxation* ſuſpends the *Humours*. 5. Becauſe it *diſcuſſes* ill *Humours*. 6. Becauſe the *Pores* being opened by the *Relaxation*, the Humours that cauſed the Fluxes are gradually perſpired by that moſt natural and univerſal ſort of *Evacuation*; for 'tis plain *Reaſon* and common *Obſervation*, that a plentiful *Evacuation* at *Pores* ſtops *Fluxes per Anum*, *&c.* and if it continues, perfectly *cures* them. ☞ Hence it is, that the *Uſe* of *Opiates* continued, does happily not only palliate, but perfectly cure *Diarrheas*, *Dyſenteries*, *Defluxions*, *Catarrhs*, *&c.*

It therefore follows, that it is of great *Uſe*,

1. *To palliate, moderate, or cure all Fluxes that proceed from Irritation of Humours*, as *Vomitings*, *Looſeneſſes*, cauſed by the Humours of the Body, or Things given, as *Diarrheas*, *Dyſenteries*, *Artificial Purging*, *Iliack Paſſions*, *Cholera Morbus*, (after the Humour is ſomewhat ſpent) *Defluxions*, *Catarrhs*, *immoderate Spitting*, *Gonorrhea Notha*, (that

is,

is, of ſlimy Humours by Reaſon of *Acrimony*) *Fluor albus* from the like Cauſe, or any other *Flux* of that Kind.

2. *To moderate or cure Fluxes that proceed from too much motion of the Bloud, Humours, &c.* as *Hemorrhages* at *Noſe*, *Lungs*, *Stomach*, by the *Hemorrhoids*, *Piſſing of Bloud*, *immoderate Flux* of *Bloud* by the *Menſes*, *Lochia*, Stool, *&c.* when they proceed from that Cauſe, as may alſo ſome *Defluxions.*

3. *To ſtop Fluxes that proceed* (as *Hippocrates* ſays) from *Segregation of Humours*, by compoſing and combining them; from which Cauſe many ſuch *Fluxes*, as I have mentioned, do happen.

But it is not adviſable to uſe them in *Fluxes*, that are apparently, or very probably, for ſpeedy and ready Benefit; otherwiſe (as was ſaid of *Pain*) uſe them to reſpite *Nature*, which they do as *Sleep* does, nay, in many *Caſes*, the Continuance of their *Uſe* may quite Cure them, for the ſeveral *Reaſons* given in the beginning of this *Chapter*; What a pleaſant *Cure* then do ſome refuſe that reject them? leaving their *Patients* to be worn out with diſmal *Pains*, *tedious* and *profuſe Evacuations*, *want of Appetite and Digeſtion*, the common Conſequences of *Diarrheas*, *Diſenteries*, *&c.*

I. The *Form* of *Opiates* in this *Caſe* ſhould generally be *ſolid*, becauſe it ſticks better to its Work; whereas the *fluid* is more ſubject to be evacuated in *Diarrheas*, *Dyſenteries*, and *Vomitings*, tho' ſometimes the *Liquid* may be convenient in *Vomitings*, as when that Form is more agreeable to the *Stomach*, or that you would have a more ſpeedy *Effect*, *&c.* In other *Fluxes*, where the *Opiate* is not liable to be evacuated too ſoon, it is indifferent what *Form* you uſe. II. The

II. The *Doſe* in *Fluxes*, where 'tis probable ſome Part of the *Opiate* may be carried off without *Effect*, as in *Vomitings*, *Diarrheas*, *Dyſenteries*, *Choleras*, *&c.* the *Doſe* muſt be (generally ſpeaking) pretty large, otherwiſe a *moderate Doſe* may ſerve; In ſuch *Caſes* due Conſideration is to be had of what is loſt by the *Evacuation*, at which you may eaſily gueſs in *Vomiting*, by what comes up, if its *Colour*, *Smell*, *Taſte*, be obſerved, as alſo by the *Frequency* and *Violence* of the *Vomiting*, and noting how the *Stomach* clears it ſelf of what is ingeſted by the *Quantity*; and laſtly, by the *Effect*; of which, if what was given fails, more of the *Opiate* muſt be given by *degrees*, till it ſtops the *Vomiting* in ſome meaſure.

In *Looſeneſſes* give Half the firſt *Doſe* every Four *Hours* till the *Flux* begins to be moderated, then be more wary in giving it, for what is afterward given may have its full *Effect*; therefore be very cautious, by giving but ſmall Quantities both in this Caſe and in *Vomiting*, when they are moderated in ſome *degree*, becauſe *Opiates* then have their full Effect without any *Diminution* or *Oppoſition* thereof.

In other *Fluxes* a *moderate Doſe* may ſerve, as in *Defluxions*, *Catarrhs*, *&c.* however let the *Doſe* rather incline to the higheſt than the loweſt, and ſuffice (if poſſible) to cauſe Sleep, which is a great Effect in theſe Caſes.

III. The *Vehicle* in *Vomiting* ſhould be ſmall in *Quantity*, pleaſant, comfortable, and warming, leſt you ſhould by either *Quantity* or *Quality* give any offence to the Stomach; pleaſing it anſwers the ſame *Intent* with the *Opiate* it ſelf, and has often good *Effect* without *Opium*; for, indeed, every

every *Pleaſer* is proportionably an *Opiate*, and *Opium* is only ſuch in an *intenſe* and permanent *manner*; therefore the *Vehicle* muſt be agreeable, as *Wine*, *Hippocras*, or *Wine* burnt with *Spices*, *Roſemary*, *&c.* or the beſt *Cordials*, or *Wine* with ſome *Ketchup*, *Caviare*, or *Anchovis*, or a little *old Cheeſe* diſſolved in it upon the Fire, according as the Perſon likes *one* or the *other*; which laſt (tho' not uſed in common *Practice*) are of very great *Benefit*, where they are pleaſing and well liked of.

In *Looſeneſſes*, ſuch *Wines* and *Cordials* as are *ſubaſtringent* ſhould be afforded (after the peccant Matter is evacuated) to comfort the *Bowels*; but the *mentioned Salt Things* are not convenient in this *Caſe*.

In *Defluxions*, incraſſative *Compoſers* are the beſt *Vehicles*, as *Emulſions*, *&c.* See the *Vehicles* for Compoſing, for they are all proper in this *Caſe* alſo.

IV. The *Time* is at any *Hour* when there is *Occaſion*; but *Sleep* conducing, the proper Time will be (unleſs Need otherwiſe requires) at the due and directed diſtance before Bed-time.

V. The *Regimen*.

1. As to *Diet* in *Vomitings*, offer nothing to the *Stomach* but ſuch Things, and in ſuch *Quantities*, as was directed for *Vehicles*; only in *Vomiting*, before the grieving Matter is diſcharged, it will be often convenient, before the *Opiate* is given, to give *good Quantities* of innocent *Diluters*, as luke-warm Water, plain or *Carduus-Poſſet*, between the *Vomits*, to dilate and render

the

the *Vomiting* more eaſie; but when you would ſtop the *Vomiting*, uſe but *ſmall Quantities* of ſuch Things as are above directed for *Vehicles.*

Diluters in great Quantity do alſo ſucceed very well in *Looſeneſſes*, to waſh off the *ill Humours* before the *Opiate* is given, and it is the beſt *Practice* that can be; but the *Chalybeate Waters* are the very beſt for that Purpoſe, (tho' *Poſſet*, or very thin *Chicken*, or *Mutton Broth*, are uſeful) for it anſwers all good *Intentions*, it *dilutes* and *qualifies* the peccant *Humours*, ſtrengthens the *Bowels*, leaves a *binding Quality* after the *Dilution* is made, reſtores *Appetite* and *Digeſtion*, which are both much amiſs in ſuch *Caſes*, and adds moiſture to the *Bloud*, which is under a *Fret* or *Febricula* for want thereof, becauſe all *Liquids* are carried off by Stool; but much of this goes to the *Bloud*, where it alſo waſhes off ill *ſaline Particles*; ſo that (believe me) it is of it ſelf a moſt compleat and adequate *Remedy* in ſuch *Caſes*, if taken to 3 or 4 Quarts for 1, 2, or 3 *Days.*

1. *Solid Meats*, or Things hard of *Digeſtion*, muſt be avoided, becauſe the *Digeſtion* is infirm, but *Milks* thicken'd with *Rice* or *Flower*, *Rice Gruels*, a *light Bread* or *Rice Pudding*, *Gellies*, *Marmalet*, a *Toſt* out of *Claret* with *Nutmeg*, *Cinnamon*, and ſome *Loaf Sugar*, *Emulſions*, *Almond Milk*, *Cheeſe-Cakes*, *Cuſtards*, and all *ſub-aſtringent Incraſſatives* are beſt, as alſo in all *Defluxions.*

2. As to *Sleeping*, and *Waking*; that's *good*, and this *bad.*

3. As to *Reſt*, and *Motion*; that is convenient, this not.

4. As

4. As to *Paſſions*, the *joyous* are convenient, the *grievous* not.

5. As to *Air*, the *dry* and *temperate* is beſt.

6. As to *Excretion* and *Retention*, what is ſaid above is ſufficient, ſaving that *Vomits* are very often convenient (eſpecially if the *Looſeneſs* is occaſioned by the *Stomach*) to moderate it before the Opiate is given.

CHAP.

CHAP. XXXVII.

Of the Uſe of the Panacea *of* Opium, &c. *to cauſe Fluxes or Evacuations, as Perſpiration, Sweat,* &c.

IT (as was ſhewn) promotes ſome *Fluxes*, or *Evacuations*, by relaxing and opening the *Pores*. Therefore,

1. *It is of excellent Uſe to carry away noxious Vapours, or Effluvia's, by the Pores of the Skin,* to prevent *Putrefactions*, and cure them; to carry off *venomous Particles* in the *Plague*, *infectious Diſtempers*, *Bitings of Serpents*, *mad Dogs*, *&c.* ill *Fumes*, *Wind* in the *Bloud*, or *Habit* of the *Body*, that cauſes *Stitches*, *Tumors*, *&c.*

2. *To carry off noxious Humours the ſame way*, eſpecially ſuch as ſtagnate or offend in the *Habit* of the *Body*; as in *Colds*, *intercutaneous Water*, *Leucophlegmatia*, and ſometimes in *Dropſies*, (as Dr. *Willis* obſerves) in *Declinations* of *Diſeaſes*, to carry off the concocted morbid Matter in *Rheumatiſms* and *Gouts*, particularly that which is call'd the *Wind-Gout*.

3. *When Perſpiration is any way hindred*, as by grievous *Paſſions*, *Senſations*, (or *Pain*) acid, auſtere, or cold *Humour*, by which many *Diſeaſes* are cauſed. Thus 'tis very uſeful in *Grief*, *Sorrow*, *Anxieties*, *Solicitude*, *Melancholy*, *Panick Fears*, *Cachexies*, *Scurvies*, *Hypochondriacal Caſes*, wherein it performs wonderfully when all things fail, as you find in *Chap.* 24.

4. To

4. *To promote the* Menſes *or* Lochia, *when ſtopp'd by reaſon of the conſtriction of the Pores* by ſuch grievous *Paſſions* or *Senſations*, or by *acid*, *auſtere*, or *cold Humours*, external *Cold*, *&c.* by its relaxing and opening the *Pores* and *Ways*, and ſoliciting the Parts by a gentle agreeable *Titillation*: Hence ſome juſtly call it ἀνασωματὸν τῶν φλεβῶν; that is, *An Opener of the Mouth of the Veins*, (or *Bloud-Veſſels*) by which means (as has been ſhewn) *Puberty*, *Coition*, *&c.* do kindly and naturally cauſe the *Menſes* to flow, while the ſame Relaxation cauſes an *Increaſe* of *Bloud*, as it does of *Milk*, by widening the *Veſſels*. This is all *Mechanical Truth*, that will anſwer, upon Experience, as the moſt Ingenious Dr. *Edw. Brown* can witneſs, who is the only Man (as far as I know) that ſeems to have this *Practice*.

5. *It promotes Urine*, by the like opening or relaxing of the Pores of the Kidneys by its *titillating Volatile Salt*, as *Cantharides*, *Bees*, *Piſmires*, *Millepedes*, *&c.* do.

6. *It may probably be of great uſe in cutaneous Diſtempers*, either by taking large Quantities of proper Liquids, and ſweating them out again by its help, to waſh of ill *Particles*, or to open the *Pores* for the admiſſion of *external Medicaments*.

Note, That they are *natural Fluxes* it promotes, and *unnatural* ones that it ſtops; which proves its operating as an *entire Friend* to *Nature* both *ways*.

I. The *Form* may be which you pleaſe, or is moſt agreeable to the *Patient*.

II. The *Doſe* moderate, *except* it be when extraordinary *Relaxation* or *opening of the Pores* is deſired.

III. The *Vehicle* ſhould be ſuch as is proper to prepare the *Humours* to paſs by *Sweat*, or *inſenſible*

ſible Perſpiration, or the *Bloud* by the *Menſes* and *Lochia*; therefore ſhould (generally ſpeaking) conſiſt of attenuating Things, as *Volatile Spirits*; and in the *Plague*, *venemous* and *contagious Caſes*, of *Alexipharmacks*; of *Diureticks* to promote Urine; and ſo in all *Caſes* of what is proper in the reſpective Humours for their *Exit* or *Paſſage*.

IV. The *Time* (becauſe *Sleep* conduces to open the *Pores*) may be at the due *diſtance* before *Bed-time*; but that hinders not but it may be given, when there is occaſion, at any other time.

In the *Plague* it ſhould be ſo often given as to keep the *Pores* always open. *Mayern* gives an *Inſtance* of a *Phyſician* that had all Signs of *Death*, *Petechiæ*, a *Carbuncle*, &c. who recovered by taking *Laudanum* 6 times a *day*, (I ſuppoſe 24 *Hours*, or the *natural Day* is meant thereby.)

V. The *Regimen* muſt be ſuch as is proper, convenient, and uſual in the *reſpective Caſes*; for 'tis endleſs to mention all; it requires a *Volume*.

To *cauſe Sweat*, much temperate Liquids muſt be always given, eſpecially in *Fevers* or *dry Bodies*, as the *Hypochondriacal*, *&c.* Moſt part of the Liquids ſhould be given before the *Opiate*, that they may have time to get into the Bloud by that time the *Opiate* operates, which does ſo (as was ſhewn) while 'tis at *Stomach*.

To *move the Menſes*, proper means ſhould be uſed for a due time before the *Uſe* thereof, becauſe the *Effect* expected in this Caſe from *Opiates*, is only to open the *Ways* or *Pores*: So *Humours* in *Leucophlegmatia's*, *&c.* ſhould be duly prepared for the like *Reaſon*.

To *cauſe Perſpiration*, it is convenient in *cold Conſtitutions*, and *old People*, gently to warm the

Bloud with 2 or 3 Glaſſes of generous *Wine*, a little *Garlick*, *Onions*, *Selery*, or the like, to attenuate and cauſe *Evaporation*, which *Heat* promotes; but if you over-heat the *Bloud*, it hinders *Perſpiration* by its growing grievous; for what is ſo, cauſes *Contraction* and cloſing of the *Pores*.

Note, That nothing can be ſo good to cauſe *Perſpiration* or *Sweat*, becauſe it not only opens the *Pores*, but takes away any grievous *Paſſion* or *Senſation* that may cloſe them, and atenuates, reſolves, *&c.* by its *Volatile Salt*.

CHAP.

CHAP. XXXVIII.

Of the Uſe of the Panacea, &c. *as a Titillative.*

THis it does (as was ſhewn) by its *Volatile Salt*, as *Cantharides*, *Bees*, *Piſmire*, *Sem. Viril.* *&c.* Therefore,

1. *It is of great uſe to excite to Venery, cauſe Erections*, to actuate a dull *Semen* for the ſake of lawful *Propagation.*

2. *To increaſe the Semen*; 1. By the *Titillation* of the *Venereal Parts*, which invites it thither by the *Agitation* thereof, as *Frication* of the *Breaſts*, and thoſe Parts, cauſe Increaſe of *Milk* and the *Semen*. 2. By the *Pleaſure* thereof relaxing the *Parts*, which cauſes a greater Flux of it, (as of *Milk* to the *Breaſts*, and Nouriſhment to any Part.)

It is obſervable how deſirous *Rachel*, being Barren, was of the *Opiate* call'd *Mandrake*, ſo that ſhe parted with her *Beloved Husband* to her Siſter *Leah* for a Night to purchaſe it; Whether it was any means to cauſe her to Conceive, which ſhe did afterwards, is not to be determined, tho' it ſeems not altogether unlikely.

3. *Its Uſe to increaſe Milk* is ſpoken of in the *Chapter* of its Uſe to *Relax*, only it does it here as *Titillating*, and there as *Relaxing.*

4. *It conduces to move the Menſes* by its *Titillation.*

5. *The Titillation of its Volatile Salt*, (as *Cantharides*, *&c.* do) *moves us to Urine.*

I. The *Form* is wholly indifferent.

II. The *Doſe* muſt be *large*, and generally greater than any I have mentioned, and poſſibly requires a *Repetition* thereof to excite to *Venery*; tho' I ſhall not preſcribe any more than I have in the *Table* of *Doſes*, but leave it to *Judicious Phyſicians* to do as they think fit, where there is a *juſt Cauſe* for its *Uſe*, which I will not expoſe to every luſtful *Goat*.

It is not unlikely but one great Cauſe of the *Ignorance* of its *Uſe* to excite *Venery* in theſe *Weſtern Parts* of the World, may be the ſmallneſs of the *Doſes* that we uſe, beſides the *Reaſons* mentioned in *Chap.* 8. and that ſuch Circumſtances might occaſion the *Diſputes* and *Contradictions* that have been about the *Effect* of *Opium*; whereas there is nothing more ſure than that it has ſuch an *Effect*, (if the Doſe be large enough) and that moſt of the *Eaſtern Nations* uſe it for that end with *infallible Effect*.

III. The *Time* ſhould be 5 or 6 *hours* before the *Effect* is expected, or at Bed-time, to cauſe its *Effects* towards the *Morning*, particularly in the Caſe of exciting to *Venery*.

IV. The *Regimen*.

As to *Diet*, it muſt be Nouriſhing, Warming, Comforting, and Titillating, with *reliſhing* and *high Sauces*, *Oiſters*, *Anchovy*, *Caviare*, *Cockles*, *Ketchup*, *Mango's*, *Garlick*, *Onions*, *Leeks*, *Bears Garlick*, *Rocket*, *Sives*, *Shelot*, *Ginger*, *Aromaticks*, *Roots of Satyrion*, *Feaverfew*, *Goats-beard*, *Silver-weed*, *Skirrets*, *Parſnips*, and *Artichoaks*.

The

The *Uſe* of *Ambergriſe*, *Muſk*, and *Civet*, is commended; but good *Stomach-Wines*, and the like, are certainly of Uſe; *Sine Baccho friget Venus*: But it is certain, That *Camphire* and *ſulphureous Things unfermented*, as *Oils*, *Roſins*, and *fat Things*, oppoſe *Titillation*, as do alſo ſlimy, mucilaginous, and cooling Things.

CHAP. XXXIX.

Of the Uſe of the Panacea *of* Opium, *&c. to cauſe Watching.*

I Have ſhewn how *Opiates* cauſe *Watching* in ſome *Perſons*, by *reaſon* of the over-agitating and actuating the *Spirits*, and *Titillating* by its *Volatile Salt*; yet do they, by cauſing *Pleaſure* and *Relaxation*, ſupport the *Spirits*, while the extraordinary *Ovation* of them hinders *Sleep*.

Therefore it is of *Uſe* to ſuch as it cauſes *Watching* to, when 'tis requiſite for them to watch about any *Buſineſs*, *Labour*, *Journeys*, *&c.*

I. The *Form* may be either *Solid* or *Liquid*.

II. The *Doſe* moderate.

III. The *Vehicle* ſhould be *Acids*, or other Liquids with Volatile Salts.

IV. The *Time* may be at any *Hour* when wanted.

V. The *Regimen*, quite contrary to that of *Sleep* and *Relaxation*, *viz.* to uſe *voluntary Motion*, *&c.*

CHAP. XL.

Of the Alterative Uſe of the Panacea *of* Opium.

YOU ſee the mighty *Extent* and *general Uſe* of the *Panacea of Opium* as a *Pleaſer of Senſation*, which takes up the Nine laſt *Chapters*, to mention the Heads of its *Performances* without deſcending into all particulars, becauſe their Number is indefinite.

How univerſal then muſt its *Uſe* be, when we add thereto its Effects as a conſummate *Alterative* which, 1. *Invigorates Nature* by comforting the ſublimeſt Principles thereof, *viz.* the *ſenſitive Soul* and *Spirits*, that are the Original of all Motion and Action. 2. *Furniſhes them with an indefatigable Euphory* in the great Buſineſs of our *Preſervation.* 3. *Puts the beſt Means into the Hands of invigorated Nature* for that End, that is, moſt *agreeable Principles*, even more powerful, and of a greater *Energy* than our own; which muſt (as agreeable and exalted *Menſtruums* do) reſolve all Humours, *congregating* the good, and homogeneous, and *ſeparating* the effete and heterogeneous Parts, which it, 4. *Diſcuſſes and diſſipates*, by its brisk and active *Volatile Salt*, and *at laſt*, 5. *conveys out of the Body* by a *liberal Perſpiration*, the *moſt natural, univerſal, and copious* Way of *Evacuation.*

All which being conſidered, it is (I think) manifeſt, that it muſt excel all other *Panaceas.*

1. Becauſe

1. Becauſe *it takes away the Grievance* or *Form of Diſeaſes upon the very firſt Adminiſtration thereof*, whereas other *Medicaments* do that but gradually as they alter or ſubdue the *Matter*.

2. *Becauſe it highly comforts Nature* (or the *ſenſitive Soul*, and *Spirits*) *from the very Commencement of the Cure*, and through the whole Proceſs thereof, if duly repeated; which other *Medicaments* do only by inſenſible *Degrees*, as they gain upon the *Diſeaſes*.

3. *Becauſe it procures Sleep*, the ſweet and chief Refreſhment of, and firſt *Cure* in *Nature*, ſo that I cannot ſee what can be deſired in a *Medicament* that it is not accompliſhed with; whereas other *Panaceas* are deficient, or at leaſt come very ſhort of ours in theſe *extraordinary Qualifications*, which ſeem to make it abſolutely *compleat* and *conſummate*.

4. Becauſe it from the very firſt *compoſes all Perturbations* and *enormous Motions* of the *ſenſitive Soul* or *Spirits*; which *Helmont* attributes to the *Archæus*, placing all Diſeaſes therein, and therefore ſays "*Ort. Imag. Morb.* Sect. 12. *Univerſale quoddam ar-*"*canum conſopotivum, & ſedativum Archæi eſt adhi-*"*bendum*, that is, *An univerſal Remedy, that appeaſes* "*the Archæus, ſhould be uſed.* And what appeaſes or compoſes it more than, or as much as *Opiates? Therefore* I cannot wonder that *Paracelſus* ſhould declare that it ſerved his *Purpoſe* when all his *Arcanas* fail'd; or that *Helmont* ſhould be in a *Rapture* upon the Apprehenſion of the Excellency of *Opium* if the noxious Quality were ſeparated from it, tho' he had a very wrong Notion of its Operation as appears, *Poteſt. Medicam.* Sect. 4. where he ſays, that *Opium Archæum abigit, & fugat*, that is, *Opium chaſes and puts the Archæus to flight*, which on the contrary it highly pleaſes, and comforts.

It

It is endleſs, and a *Kind* of *Impertinence*, to deſcend into *Particulars* in the *Uſe* of a Panacea. Therefore having ſhown how it operates by *invigorating Nature*, cauſing *Euphory*, *Eaſe*, *Sleep*, *reſolving all Humours*, (as a general *Menſtruum*, or *Alkaheſt*) *congregating the good*, *ſeparating*, *diſcuſſing*, *and carrying off the bad Particles*, &c. it remains only, that I ſhow you how to uſe it, as to *Form*, *Doſe*, &c. leaving the Adminiſtration thereof in particular Caſes to *Phyſicians*, therein concern'd.

I. The *Form*, that I mainly approve of to alter, is the *Liquid*, becauſe the *ſolid* is in ſome Meaſure (tho' not much) impair'd by the *Evaporation* to the due *Conſiſtence*, and does not conſiſt of the fineſt Parts, as the liquid does.

II. The *Doſe* may be at firſt about 20 *Drops*, adding a *Drop* to every *Doſe*, till the Diſtemper is in good meaſure abated; then let the ſame Number of *Drops* be continued till the Perſon is well, and afterward abated by a *Drop* every Day till you come to ten, or leſs, or to ſuch an inconſiderable *Doſe*, that you can find no Effect at all.

Note, That tho' I am cautious in the *Doſing* till truſty Experience gives more *Aſſurance*, yet do I believe that no Inconvenience will be found by far greater Doſes, if by any, unleſs very exceſſive, as 1 or 2 *Gallons* of *Wine* is in reſpect of a *Pint*, which in ſuch *Doſes* may be, and is injurious.

Such as have *Pain* to be taken off, muſt uſe it as is directed in the *Chapter* of its *Uſe* to take away *Pain*, gradually encreaſing ſo as to keep it off, and when the *Cure* is in great Meaſure perform'd, muſt continue and decreaſe as is aforeſaid; the like is to be ſaid as to *Fluxes*, &c.

III. The

III. The *Vehicle* may be in *general* plain *Water*, or rather altered, and made bitter by an Infuſion of the Ingredients of the *bitter Decoction*, or *Agrimony*, *Wood-ſage*, *Bean Trefoil*, or the like good bitter Things, that are known by *Experience* to cauſe a good *Digeſtion*.

In *particular Caſes* the *Vehicle* may be appropriated to the *Diſeaſe*; yet always ſo ordering it, that it may be *ſtomachical*.

IV. The *Time* ſhould generally be in the Morning, unleſs *Sleep* at *Nights* is to be procured thereby; if ſo, you muſt order Things as in the *Chapter* of its *Uſe* to cauſe *Sleep*.

V. The *Regimen* muſt be exact *Temperance* and *Moderation* in all Things. and,

1. As to *Diet*, let it be appropriated to the *Diſeaſes*, and always of ſuch Things as the *Stomach* digeſts without any *Difficulty* or *Diſturbance*.

2, As to *Sleep*, it ſhould be moderate, yet ſo much as fully recruits and refreſhes.

3. As to *Reſt* and *Motion*, the like Moderation muſt be uſed; for Motion muſt not be *violent*, or over-waſting of the Spirits in any *Reſpect*; yet muſt gentle Motion and Exerciſe be uſed; Riding on Horſeback (to ſuch as can do it) is a very wholſom *Exerciſe*.

4. As to *Excretion* and *Retenſion*, you ſhould never *Purge*, or *Vomit*, during its *Uſe*, unleſs there be a very ſpecial Cauſe; and then I would have the *Vomit* to be only carduated *Water*, and for Stools, only ſo much of the *Scots Pill*, or *Stomach Pill*, as will ſerve to open the *Body*, to be taken at *Bed-Time*, or at ſuch *Time* of the Night as to cauſe no Diſturbance before you are up in the *Morning*; but (generally ſpeaking) cauſing no *Evacuation* is beſt, but what is the Conſequence of the *Panacea* it ſelf, which cauſes the *beſt*, moſt *natural*, *univerſal*, and *conſiderable Evacuation* by the *Pores*

5. As

5. As to the *Air* the dry, and temperate as to *Heat* and *Cold*, but rather inclining to Coldneſs, is the beſt; for you cannot ſo well err on this Hand, becauſe the *Pores* will be kept open, and Colds prevented in a high manner by the *Uſe* of the *Panacea*, beſides that *Coolneſs* is moſt agreeable to *Digeſtion*.

6. As to *Paſſions* of the Mind, all the grievous ones ſhould be avoided, and a fine even *Chearfulneſs* maintain'd as much as may be; it will be very eaſily continued by the *Help* of the *Panacea*, which cauſes it above all Things.

1. *Note*, That theſe *Directions* do generally concern its *Uſe* in *Chronical Caſes*; for as to *acute Diſeaſes*, and *particular Caſes*; it muſt be left to the *Management* of the *preſent Phyſician*.

2. *Note*, That its *Uſe* as an *Evacuative* has been ſufficiently treated of in the *Chapter* of its *Uſe* to cauſe *Fluxes* and *Evacuations*.

3. *Note*. That notwithſtanding all I have ſaid of the moſt excellent *Qualifications* of the *Panacea* of *Opium*, I ſubmit all to farther *Experience*, at the *Introduction* of which I mainly aim, by endeavouring to take off *People's Fears* and *Jealouſies*; which have ever been the greateſt Hinderers of Improvement in Cure, more eſpecially in *Reference* to the Uſe of *Opiates*, (which without Doubt) will cure many *Diſeaſes* more than ever they were uſed for, (at leaſt as *Alteratives*) which if my *Diſcourſe* does Occaſion, I ſhall thank and praiſe the *Author* of all Good, for making me inſtrumental thereto.

CHAP. XLI.

Of the External Uſe of Opium.

ITS *External Uſe* is (as the *Internal*) either,

I. As a *Pleaſer of Senſation* (or an Opiate ſpecially ſo call'd.) *or*,
II. As an *Alterative.*

Firſt, as a *Pleaſer of Senſation*, (or an *Opiate*, properly and ſpecially ſo called) it is ſcarce worth While to treat of it (becauſe of the *Uncertainty*, *Ineffectualneſs*, and ſometimes *Danger* thereof) unleſs it be to *caution* Men concerning it; for my part, I ſeldom or never uſed it *externally*, unleſs it was in *Venice-Treacle*, *Diaſcordium*, or *Mithridate*, which have but little *Quantities* thereof; nor can I ſee why it ſhould be at all uſed *externally* as an Opiate, *except* it be when *Opiates* cannot be uſed *internally*, where they have more even, certain, and better *Effect*; or in very few *Caſes* which will be mentioned: The main therefore that I can do in this *Caſe*, is to acquaint you what others have found by *Experience* concerning its *external Uſe.*

1. It has been found dangerous to apply *Opiates* to the *Sutures of the Head*; it has kill'd ſome, and *Galen* is againſt it *L.* 2. *de Comp. Med.* I have ſomewhere read of a Man who, after a certain Conteſt for *Victory*, being very hot, took off his *Helmet* to refreſh himſelf after the *Victory* he had obtain'd; which *Helmet* his *Emulators* ſmear'd on the inſide with *Opium*: He afterward put it on, and ſoon died.

2. It

2. It is applied more ſafely to the *Forehead* or *Temples*, but the Quantity of *half a Scruple* ſhould not be exceeded in this *Caſe*; *Fernelius* commends the Application of it to the Forehead in *Head-Aches*, *Phrenſies*, &c mixed with *Ointments*; *Wedelius* did alſo uſe *Venice Treacle* and *Extract* of *Opium* to the *Temples* with good Succeſs in *Pain* of the *Head*; he alſo found the like Succeſs in applying it behind the *Ears*.

Note, That the Continuance and Conſtancy of its Operation, where it takes *Effect* applied *externally*, may be very beneficial in ſome *Caſes*; but even that may be anſwered by *internal Uſe*, if it be repeated.

3. All, or moſt, do agree that it is too acrimonious to be applied to the *Eyes*.

4. *Geigerus*, *Fernelius*, *Heurnius*, &c. do commend its *Uſe* to ſmell to, being made into a *Ball* &c. with *odoriferous Things*; and I have an *Opinion* that this Way of uſing it may be excellent, conditioned, that not above *Half* a *Scruple* of *Opium* be uſed. 1. Becauſe but a ſmall Quantity, and that of its fineſt Parts, is thus received into the *Body*. 2. Becauſe it may be removed at Pleaſure, and then, (as ſome ſay) the *Effect* immediately ceaſes. This is very well worth the experimenting; for it would be very neat to be able to cauſe *Sleep*, and its other *Effects* with *Safety*, as long, or as ſhort a *Time*, as we pleaſe, and no longer; for this cannot be done, when it is *internally* given, but its Operation will have its Courſe, without extraordinary Means and Trouble; but when *externally* uſed, the very Cauſe of the Danger (if any ſhould happen) can be immediately removed, by taking of the *Opiates* from the *Noſe*.

5. That of *Geigerus*, and *Langius*, uſing only one *Grain* of *Opium* to the *Puncture*, or *little Wound* made

made by a *Leech* behind the *Ear* to cauſe *Sleep*, and that with *Effect*, ſeems to me to he attributed more to the *Bleeding*, which always inclines Men to ſleep, than to the *Opium*.

6. Crude *Opium* has kill'd People by putting it in hollow *Teeth*, as ſome Obſervers aver.

7. Applied to the *Ears*, it relaxes, and (as it were) reſolves the *Tympan* and other delicate *Membranes* concern'd, and thereby offends the Hearing.

9. *Galen* ſeems to be againſt the Application of it to the Nape of the Neck, becauſe ſo near the Original of the *Nerves*.

Note, That it is not convenient to uſe it, where *Reſolution*, and *Relaxation*, may do any Harm, as was ſaid of the Tympan of the *Ear*, &c.

10. *Venice Treacle*, *Mithridate*, and *Diaſcordium*, are ſafely applied *externally* to the *Region* of the *Stomach*, to appeaſe *Vomiting* and *Hiccoughs*, *moderate Looſeneſſes*, &c.

11. *Savanarola* and *Octavius Horatianus* uſed it to the Navel to cauſe *Sleep*; and with *Rue*, *Myrrh*, *Frankincenſe*, and *Wax*, to move to *Stool*; which it perform'd (as the laſt mentioned *Author* ſays.)

12. *Sylvius* uſes it in his *carminative Plaiſter* to diſcuſs Wind, which is rational.

13. Some of the *Ancients* applied it to the *Perinæum*, *Kidneys*, *Region* of the *Pubis*, &c. to chill *Venus* by the *cold Quality* they attributed to it, which is all *Stuff* grounded upon that moſt abſurd *Hypotheſis*.

14. They alſo attributed its *Pſilothrick* Quality to *Cold*; than which nothing does more faſten, and cauſe the Hair to grow; as you ſee in *Winter-Time*, when all *Furrs* are longer, and faſtned better to the Skin. Into what *Fooleries* a falſe *Opinion* will lead People.

15. It

15. It has been uſed by *Hieron Mercurialis* in *Ulcers* of the *Womb* with Succeſs, and without danger, as he ſays, *L.* 4. *de Morb. Mul. c.* 7. *p.* 281.

16. It has kill'd People in *Clyſters* by ſticking to the *Inteſtinum rectum*, which was doubtleſs by Reaſon of its *Roſin*, for it has nothing in it beſides the *Roſin* that can ſtick to do any manner of Harm; which is a moſt *demonſtrative Reaſon* of the *Perniciouſneſs* of its *Roſin*, for if it can kill there, much more where there is ſuch exquiſite *Senſation*, as is at Stomach.

However, 'tis known by Experience that *Venice Treacle* and *Diaſcordium* are, becauſe of the Diſſemination of the *Opium*, and ſmallneſs of the Quantity, ſafe in *Clyſters*, and very uſeful in *Dyſenteries* and *Diarrhæas*, as our *Panacea* muſt be, that has no *Roſin* in it, and diſſolvable in *Water*, or any Humours of the Body.

17. It may be uſed in *Suppoſitories* when the *Roſin* is ſeparated from it, but I would not adviſe the *Uſe* of above 4 *Grains* in this Caſe; or if 8 or *ten* be uſed, the *Suppoſitory* ſhould not remain long in the *Body*. This I ſay for Caution's ſake.

18. It has been uſed reduced to an *Ointment* or *Balſam* with *Oil of Roſes*, &c. to the Soals of the *Feet*, to cauſe *Sleep*, with good Succeſs. *Valentius Polidamus*, *L. de Doloribus Capitis. p.* 78.

19. *D. Franciſc. Hildeſheim* aſſerts, that it takes away *Pain* in *Cauteries*, but ſays it is apt to cauſe *Grangrens*.

20. *Crollius* in his *Baſil. Chym. p.* 235. ſays, That 2 Pills of *Opium*, each containing 8 Grains, being put up into the *Noſtrils*, ſtopt a deſperate *Hæmorrhage* at *Noſe*; but I ſhould hardly truſt it in this Caſe. Poſſibly the *Bloud* might ſtop by ſome other Cauſe, a ſmall *Deliquium* not obſerved, or the like; for *Deliquiums* ſtill all Motion by a ſudden *Relaxation* which (as has been ſaid) ſuſpends

all Humours, and weakens the Motion of the Heart, (if it does not ſometimes quite take it off) for the Time.

Secondly, as an *Alterative Emplaſtick*, &c. it (as was ſhown) *incides*, *reſolves*, *diſcuſſes*, *mollefies*, *maturates*, *ſuppurates*, and is *pſilothrick* and *titillative*; Therefore is of *Uſe*,

1. In *Phlegmatick* and *Oedematous Tumours*.

2 In *windy Tumours*, *Pains*, *Stitches*, &c.

3. *To ripen Boils*, *Buboes*, *Abſceſſes*, and the like.

4. *In all hard Tumours* of the *Spleen*, *Breaſts*, *Cancers*,, *Tophouſneſs*, &c. in which *Caſes* it is (as other *Opiates* are) of excellent *Uſe*, by their powerful *reſolving* and *relaxing Faculties*.

5. *To cauſe Nouriſhment of Parts*, Increaſe of Milk, *&c.* by *Relaxation*; as *Sleep*, *Puberty*, *Pleaſure*, &c. do (as has been ſhown.)

6. *To cauſe the ſhedding of Hair* by *Reſolution* of the *Parts*, as by a *Cauſtick*, *Veſicatory*, &c. with which it agrees in its exulcerating Faculty, when it is very ſtrong, as the true *Maſlach* (or ὄπος) which we have not.

7. *To excite to Venery* by its *titillating Volatile Salt*, if apply'd to the *Perinæum*.

YE bleſſed Minds! who in an inſtant know
What in five Thouſand Years none here below
Could learn! How mean are we? how great are you?
O, for your happy State! while dull Mankind
Oft' *ſee* and *feel* the Things they *cannot find*,

Who

Who did not *ſee* the Bloud *move to and fro?*
Yet could none its *Circulation* know,
Till *God* enlighten'd *Harvey*; then did he
Perceive what others *ſeeing* could *not ſee.*
So till *God* was to my Enquiries kind,
Millions ſought and felt what they ne're could find.
What is vain Man, without th' *all knowing Mind?*
To whom all Glory be, all Thanks, and Praiſe,
As was, is now, and fit to be always.

Amen. Amen. Amen.

FINIS.

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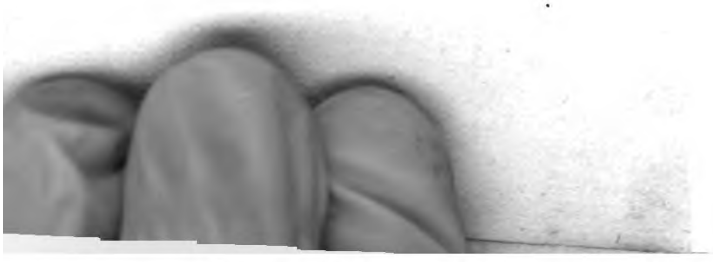

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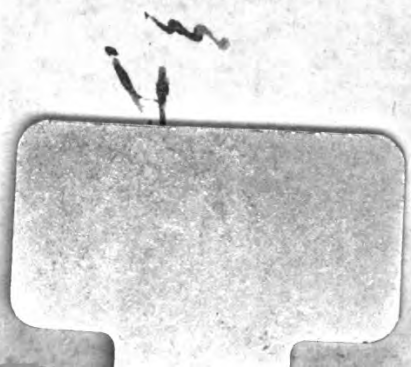

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