

A dissertation on the stone in the bladder : in which are consider'd, the nature of the human calculus, the doctrine of menstruums, or the dissolvent for the stone ... ; in a letter to a physician in London / by William Schaw, M.D.

Contributors

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A

DISSERTATION

ON THE

Stone in the Bladder.



DISSERTATION

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Stone in the BLADDER :

In which are Consider'd,

The Nature of the human *Calculus*, the
Doctrine of *Menstruums*, or the Dis-
solvent for the *Stone*; and how far they
are agreable to the Laws of Philoso-
phy, and the Animal Oeconomy.

In a LETTER to a Physician in *London*.

By WILLIAM SCHAW, M. D.

THE SECOND EDITION with ADDITIONS.

L O N D O N,

Printed, and Sold by R. GOSLING, at the *Crown* and *Mitre*
in *Fleet-street*; W. MEADOWS, at the *Angel* in *Cornhill*;
and T. COOPER, at the *Globe* in *Pater-noster-Row*. 1739.

[Price One Shilling.]

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and T. Cooper, at the Shop in the Strand.

[Price 1s. 6d.]



T O

Dr. *William Cockburn,*

Fellow of the *Royal Society*, and of the
College of Physicians, London:

S I R,



HE repeated Opportunities in the Course of Your
Acquaintance, which You have been pleased to ho-
nour me with in a particular Manner, have af-
forded me the greatest Satisfaction. Your Appro-
bation of my Opinion in the most Controverted Subjects in the
Contemplative Part of Physick, and the Reception the fol-
lowing Treatise has met with in the World in its former
Edition ; These Reasons, with Your particular Patronage,
have induc'd me to send Abroad this Second

DEDICATION.

I Apprehend This will appear more particularly necessary at this Juncture, when the Honourable House of COMMONS have under their Consideration a Medicine for Dissolving the Stone in the Bladder.

I Flatter myself, That an Enquiry of this Kind may very much contribute to the Assistance of That Honourable Body, in their Appeals to Proper Judges in this important Matter: This Benevolent Design is only worthy of such Noble Patrons, and the Publick Benefit accruing from thence to Mankind will stand a Lasting Testimony of their Generous Benefaction.

I am,

S I R,

Your Most Obligated,

Humble Servant,

W. SCHAW.



A

DISSERTATION

ON THE

Stone in the BLADDER.



O relieve the Afflicted, and cure the Anguish, and Pains of our Fellow-Creatures, will be easily granted an Undertaking full of Humanity, and worthy of a compassionate Disposition; and at the smallest Expence, either to their Fortunes, or Constitutions, this Provision is made; it will enhance the Bounty, and render their Cure, which is often more insupportable, and equally dangerous with the Disease, pleasant, and agreeable.

No Malady entail'd upon human Creatures, more frequently occurs ; no Disease carries along with it more excruciating Tortures, nor a more formidable Train of Symptoms ; neither is any Cure attended with more barbarous Circumstances, than That of freeing Persons from the Attack of stony, petrify'd Substances found in the Cavity of human Bladders , by the only effectual Means hitherto known ; to wit, the Operation of *Lythotomy*.

The *Gravel*, or *Stone*, are very different Diseases in respect of Production, and Cure ; these small, fabulous Concretions, differently modify'd, produce the Train of Symptoms that attend the confirmed *Calculus* ; such as Exquisite Twinges and Pains, Suppression of Urine, violent Vomitings, and the convulsive Motions of the Muscles of the Thigh, &c. And therefore examining from such Circumstances, the most Experienc'd Practitioners can't possibly decide what latent, extraneous Substance is included in the Bladder.

P R O B L E M.

The little fabulous Mollicles never can be converted into the true, and genuine Stone.

The Disposition of the component Particles seem extremely different in the Arrangement ; that they are both constituted of the self-same Principles, and elementary Corpufcles, must be allow'd ; but the Difference lies in
the

in the various Proportion, and Combination of these Elements; which universally, thorow Matter, constitutes the Effence, or peculiar Properties of such, and such Substances, and thence from the predominating Principle, they must be endow'd with peculiar corresponding Qualities. This is the true, specifick, or intrinsick Virtue, which constitutes the Difference in Bodies; even of the same Class of Matter. Thus in crude, and natural Stones found on the Surface, and in the Bowels of the Earth, in one general Character they all agree, and correspond; to wit, in a firmer Cohesion, or Union of the Particles, so that they are denser than any other Kingdom of Nature; yet how widely do they differ, even amongst themselves. Some are replete with certain Principles, which Others enjoy in a less Degree, or not at all; and from the Combination, and Proportion, that these Principles bear to the crude, and undigested *Chaos*, such is the Estimate, and Value of them.

This analogous Sketch will sufficiently serve to give a general Hint, that these small, petrify'd Substances, or fabulous Concretions, are not only different from the genuine Stone, but there is also a prodigious Variety amongst the true Ones, in Regard of their various physical Properties.

Causes of the STONE.

THE productive Causes of the Stone, are either Natural, or Accidental : By the first, I mean a certain Disposition in the general, animal System, both solid and fluid, to afford a *Pabulum*, or contribute a Substance fit for its Generation : And a particular Formation in the evanescent Extremities of the renal Arteries ; and more immediately in the uriniferous Ducts of *Belleni*, which favours extremely its Origin.

In the general Mass, or *Red Blood*, there are combin'd a great Variety of different Series, or Orders of Particles of different Densities, and other Properties ; and the whole Business of the Laws of the Animal Oeconomy is so to blend, incorporate, and render homogeneous that Fluid, so that no Quality may be predominant, and exceed the others ; and consequently prevent all preter-natural Concretions, which would subvert the Harmony, and destroy the regular Functions of Life.

This nice Ballance being unhing'd, a Degeneration of the Liquids will ensue ; and then according to a particular, pre-disponent State of such, and such organiz'd Parts, there will arise correspondent Diseases.

A Similar Instance will make this seeming hypothetical Reasoning more intelligible, and obvious : Let us suppose such a System as abounds with rich, strong Fluids, and elastick, or springy Fibres ; in such a Constitution there is a *Diathefis* to all Diseases, arising from an increas'd *Momentum* of the Liquids : And where there is a certain Disposition in the vesicular System in any given Part, there will the Seat of the Disease be ; if in the intercostal Arteries, a *Pleurisy* arises ; if in the *Glands* about the *Fauces*, an *Angina inflammatoria*, &c.

Daily Occurrences in Life present to us innumerable Instances of the accidental Causes of this Disease ; if a particular spasmodick Contraction shou'd seize these *Ducts* ; or if a casual, external Pressure should affect them, then from the Pressure communicated, their transverse Sections wou'd be so far diminish'd, as to hinder a free Transition of these Particles, which in a natural State they admitted ; and therefore lay the *Stamen*, or *Basis* of the *Stone* ; seeing these Strainers, or secretory Canals can't admit of a Separation of the grossest Particles.

From the fairest, and strictest chymical Experiments We are entirely assur'd, that the true *Calculus* may be analized into a certain Quantity of *Salt*, *Oil*, and a *Caput mortuum*, or earthy Particles ; where there is found a general Mass, that is impregnated with too great a Proportion of these Principles, they must form preter-natural Cohesions in the Extremities of the above-mentioned

Ducts ; and if we once allow of the smallest Mollicle, or Particle to exist, it will soon be encreas'd in its absolute Bulk ; since all similar Particles mutually attract one another ; so that the productive Cause depends on the Vascular System, and it acquires its Accretion chiefly by the Particles, with which the Fluids are so profusely charged.

It is also notoriously evident, that there is a greater Proportion of Air blended, and incorporated with the human *Calculus*, than any other Stone of equal Bulk, which it yields upon Experiments. So that in Regard so much Air goes to its Composition, it must be more spongy, or have a greater Number of Interstices, replete with this pervading Fluid ; and therefore specifically lighter.

So far our Theoretical Reasoning is necessary for the dilucidating the subsequent Treatise ; which is far from being a compleat, or perfect Account of the Generation of the *Calculus humanus* ; neither did I design it as such ; but supposed it a necessary Prelude for accurately, and fully deciding what was the Import of the following Undertaking.

Nothing is a greater Discouragement to Industry, and Ingenuity, than a supercilious Negligence ; or perhaps, even a professed Contempt of Merit : Credulity is the other dangerous Extream ; Nothing sure can give greater Life, or Spirit to the audacious Attempts of ignorantly-bold Pretenders, than even a favourable Opinion of the
Fates

Fates they promise ; but when this grows into Applause, there can be no Bounds set to their insolent Ignorance ; a thousand tricking Schemes are form'd artfully to delude Others, and all their Cunning is set to Work to support their thus unexpected Characters, by Partizans of their own Creating.

Begging Pardon for this Digression, which I dare say, no Man could possibly have manag'd with more Temper ; I proceed to the Matter in Hand.

A *Pebble*, thus form'd in the above-mention'd *Ducts*, is at length protruded into the *Pelvis* ; where it acquires new Matter, and by its own Gravity, at length, falls thorow the *Ureters*, and from thence into the Cavity of the *Bladder*. I designedly here omit taking Notice of the exquisite Pain it produces, when it arrives at that Part of the *Ducts*, which pierces the *Coats* of the *Bladder* ; and there run in a slanting, and oblique Direction, which must encrease the Resistance, by Means of the strong lateral Pressure, and consequently the Pain.

In this Cavity is the Scene of Sorrow and Pain, and from whence no Art, as yet known, cou'd ever free the labouring Object ; except by the Operation of *Lytotomy*. But this is attended with so much Horror, and Pain in all Subjects, and so much Danger in ancient Persons, which seldom, or never can recover the *Hemoragy*, the subsequent Inflammation, and necessary Fever ; that a wise Man wou'd
almost

almost as soon choose to run the Hazard of the Disease, as to be racked by the Hands of a Surgeon.

But happy those Days, or Persons rather ! whenever shall be found out that long sought for, but in vain hitherto *Menstruum*, or Dissolvent for the Stone. That such a Substance may be found out is far from being chimerical, or absurd ; On the contrary, nothing favours more the known Laws of Philosophy, and the Doctrine of *Menstruums* in general, than such an *Hypothesis* ; there is a relative Configuration, or Disposition of Parts, between the Dissolvent, and Body to be acted upon ; and wherever a Fluid is found, whose component Parts bear a certain Proportion to the similar Interstices of the solid Substance, such a Liquid will pervade its whole Substance, unhinge its Composition, and prove its Dissolvent. And as there are no two such Bodies in Nature, that have the same Arrangement of Particles, and partake of the self-same physical Properties ; therefore an universal *Menstruum* never can exist.

Hence appears the Reason, why that Liquor, which can break asunder the strongest Bars of Iron, yet won't touch a soft succulent Substance ; and *vice versa*, why *Aqua regia* won't affect any Metal but Gold : And why an ardent, spirituous Vehicle has no Influence on *Salts* of any Tribe, but will immediately dissolve any vegetable Concrete ; such as *Resins* and *Gums*.

The Reason is not obscure, or dark ; we may suppose all Liquids, except Water, to consist of so many exceeding subtle, and minute Corpuscles, which from their Figures may justly be termed *Mechanical Powers*, acting with all the Advantage that can arise from their different, physical Properties ; *i. e.* The component Atoms partake of so many different Configurations, and in Proportion to their Figures, so they affect, and influence other Bodies. Some are triangular ; Others globular, spheroid, cubical, hexagenial ; &c. This we observe to be the Case in *Salts* of all Kinds, and hence is the Reason why they affect us with different Impressions, or Sensations : And wherever a Fluid, that is chiefly made up of spheroid Particles, can be found out, it will be found the most universal Dissolvent ; because this can enter at any Orifice, or Hole, whose circumscribed Line is a great Arch of a Circle.

P R O B L E M.

Previous to the Solution of any hard Substance, the Body must be immers'd in the Menstruum pure, and genuine.

That certain subtil *Effluvia* often issue from one Substance, and impregnates another, must be granted : As for Instance, a Glass Cylinder rubb'd hard, so as its Parts are put in Motion, and then immediately apply'd to another Substance, it will impart its Electrical Quality, which it soon loses: But this subtil Theory can never take Place in our present

sent Question ; or if it did, the Particles wou'd be considerably alter'd by passing thorow a certain, intermediate Column of the Atmosphere ; because it meets, and is blended with a vast Number of heterogenial Particles, which must considerably alter the Properties of the Fluid, and consequently is not, phyfically fpeaking, the fame Liquor ; feeing it is incorporated with another Medium. *Q. E. D.*

COROLLARY I.

It follows, That fupposing We are certain of a Liquor, which has all the Properties for diffolving the human Calculus ; yet if this is adulterated, or incorporated with a Fluid of any other Quality, this our Attempt must prove abortive ; because the above-fuppofed Fluid must be sent in pure to accomplifh this End. Hence it is demonftratively certain, that a Fluid must be thrown by Injection into the Cavity of the Bladder ; and that with the Caution of its being always emptied, and freed of Urine before You fet about the Operation.

Without any Reflection the Fancy is monftroufly grofs, and fundamentally erroneous, and weak in fuch as imagine, that ever this can be accomplifhed by Medicines of any Form given by the Mouth. The Laws of Phyfiology will admit of no fuch Deduction : Consider the Nature, and Bufinefs of Digestion ; Remember the continual Supply of the Liquor *Inquilinus* ; that active, animal Fluid, capable of affimulating, and converting any alimentary Sub-
ftance

stance into the proper Nature of the Animal ; of extricating every Thing that is dissolvable, and the grosser, and more solid Parts are quite disengag'd, and their Mollicles further broke, and attenuated by the concussive Motion of the elastick, and springy Fibres. Are not the bile, and pancreatic Juice active, saponacious, animal Liquors fit for blending, and intimately uniting Principles; that formerly jarr'd, and had no Propensity to mutual Adhesion? Are not animal, and vegetable Substances bitter and sweet, oleaginous and aqueous ; all reduced into the same Form, or Mode, in the *Duodenum*? In short, are not the jarring Elements reduced to a peaceful Mixture, and compose an homogeneous Substance.

Next view the subtil capillary Tubes, the Lacteals, their various Directions, and Terminations ; and consider whether, or not, the utmost Caution imaginable is not provided that all Substances may be animaliz'd; or lose their proper, intrinsic Virtues, and so compose a Fluid fit to repair the Devastations of the Machine, and to assist, and carry on the Laws of Circulation : And if the compound Action of all the Instruments assign'd by Nature for Chylification, are not sufficient for this Purpose ; view the haimopoetick Organs, the Percussions, and Re-percussions between the elastick, vibrating, animal Tubes, and their included Liquors.

To say any Thing more minutely on this Head, would oblige me to discuss the whole animal Oeconomy ; or the Laws of the organiz'd System : But this short Sketch, I

flatter myself, will be effectual in Converting the most deliberate, and confirmed Adversaries to this Doctrine ; that is, to the Side of Nature and Truth.

All this is contemplative, and has a specious Appearance ; but will Mankind renounce their Senses ; and bely their Judgments purely out of Complaisance to any Theoretical Dissertation ? I'm just of the same Opinion ; I will not renounce my Sense, and Reason, because a subtil Sophister tells me of the Fallaciousness of the Senses, and a thousand such Dreams ; that because we may be deceiv'd, and there is a Possibility of being mistaken ; that therefore I am in an Error : No ; I wou'd not be understood as if I meant any such Imposition.

I never did, nor would reason against Truth, when it was fairly to be seen, and demonstrated ; but I always chuse to be rigidly scrupulous in consenting to, and admitting of Facts ; much more so, when they seem involv'd in Absurdities, and scarce have the Plea of Probability to recommend them. There requires so much Dexterity, and Exactness, in searching for so many Examples, and Instances sufficient to confirm, and prove the Truth of their *Data* before they can be admitted ; that if these Circumstances were duly attended to, many wou'd be more cautious, and circumspect in daring to insult over the Credulity of Mankind with the Skreen of Truth on their Side, while really Sense and Reason opposes, and is against it.

It is more than probable, nay, it even amounts to the Certainty of a Demonstration, that there are several Substances, both natural; particularly of the vegetable Kingdom; And the *Materia Medica* affords us many Medicines of this Nature, that have an Influence on the Urine; and act chiefly on this Secretion, both as to its Quality, and Quantity.

It would be quite foreign to my Purpose, to consider the Powers of Medicines that particularly influence the Secretion of Urine, and discuss the same in a minute, methodical Manner; but an Instance, or two of such as are most remarkable, may be worth While, and not all impertinent.

1. *Mineral Waters* of all Kinds, in whatever Degree they are impregnated, encrease the Quantity of this Excretion; which can be easily accounted for, if we will give ourselves the Trouble to consider, that the Quantity of any given Secretion of the Body is *cæteris paribus*, as the *Momentum* of the general Mass: And since it is evident both *a priori*, and Experience itself, that the Principles, with which the aqueous Vehicle is saturated, are of that Nature as to brace up the relaxed, and flaxed Fibres, and render them more springy; the Consequence will be a brisker Circulation: And hence the Separation of these Principles that are any longer unfit for Motion, will be as the Squares of the Times.

Other Medicines act by Imparting a certain, peculiar Quality to the Urine ; and from hence the Partizans of this *Hypothesis* conclude, that this is analogous to, and serves to make us comprehend the better, how certain as yet unknown Medicines may dissolve the Stone itself, when in the Cavity of the *Bladder*.

I know, and confess, there are a great many that impart certain Qualities to this Secretion ; such as all Preparations of *Turpentine* : The *Allium*, that volatile, and penetrating natural Salt, so notoriously famous for rendring the Urine fetid, not only by taking it internally ; but it has the same Effects by external Application to any Part of the Body, and keeping it to the Place for some Time, it will pervade the subtil inhaling Vessels, so numerous over the whole Surface ; and contaminating, and mixing with the Fluids, acts upon this Secretion in a very particular Manner.

2. Another Instance shall suffice our Purpose, the *Cinaria*, so commonly made Use of in the daily Business of Life ; One, fond of this, regaling himself with too profuse a Plenty, will soon afterwards, Ten to One, curse his Over-Indulgence, when dusky, black, fetid Urine, something so uncommon, is voided ; and yet no Symptom of any Disease in such a Case : Whether wou'd the Patient, for so I must call him, or the Doctor be most surpris'd.

Poisonous, or malignant Vegetables, as well as *Minerals*; such as the *Cicuta Terrestris*, *Napell*: *Nux vomica*, *Solan*: *Vulgar*: *Hyoscyam*: &c. have surprising, and uncommon Effects on this Excretion; but this is in common with a Pervertion of the whole Animal Oeconomy, disturbed in all its regular Exercises; so that One, from a comparative Institution of all the Symptoms, can scarce be mistaken in Asserting the true, and real Cause.

Now, I say, from all these Considerations taken together, and which I have fairly stated in their utmost Force, it don't so much as even amount to a Suspicion of Probability, that such Substances as affect the Urine, either by encreasing it in Quantity, or imparting certain Qualities to the same; that therefore such may, and do prove a *Menstruum* for the Stone in the Bladder. It is a Falsity couch'd under a specious Pretence: It is tamely begging the Question, and at once monstrously running cross to the fixed, and inviolable Laws of the Animal Oeconomy; which must eternally preside over every Operation as long as Nature is the same.

I can't imagine, that a Person is knowing, and at the same Time serious, in adducing the Operation of such Medicines, as a Reason, that because the Urine may be encreas'd in Quantity, or alter'd in its Properties by certain Substances; that therefore there must be such as will dissolve the Stone when generated; and upon the same Account, that there may be such I will agree to; but from a

very

very different Reason. This proves that certain Productions act chiefly on the renal Glands; but, in the Name of Wonder, does it follow from hence, that they will unhinge a hard, petrify'd Stone, and dissolve the same.

To have Recourse to the pityful, and unmeaning Subterfuge of saying, That tho' the Medicines prescrib'd for this Purpose, won't dissolve the Stone in the open Air; yet the Alteration its Principles undergo, and the Properties by this Means it must acquire, renders it fit for that Purpose in the Business of Circulation, and Secretion.

This has been already prov'd altogether inconsistent with the stated Laws of the Oeconomy; and if its being blended, and incorporated with the Urine in the Bladder, gives it any better Title for Accomplishing the Ends, for which it was designed; I own, it surprises me, that this Excretion itself, replete with the elementary, constituent Particles of the Stone, does first compose this petrify'd Substance, and then dissolves it when made.

COROLLARY I.

From this it is plain, that when this Disease arises from an hereditary Right, i. e. a Disposition in the Frame to favour its Generation; that it will be more difficult to reduce

reduce this Substance, when form'd into small Particles, or Mollicles, and so pass off without any Pain, and absolutely impossible to hinder a subsequent Production.

In the Entry of this Discourse, I was inclin'd to think, as the most rational Scheme in Accounting for the Origin, and Accretion of the Stone; That the mutual Inclination, that all similar Particles in Nature, have to one another, was a sufficient Solution; now where these are in the greatest Quantity, there the mutual Attraction will be so much stronger, since the Corpuscles must be similar; and hence its Composition more dense, or firm; and therefore more difficult to be dissolved.

COROLLARY II.

When this arises from Accidental Causes, as there must be innumerable in the Daily Business of Life; As for Instance, Any External Pressure communicated to the Region of the Loins, will so far compress the Renal Arteries, which, from their very natural Disposition, must considerably break, and retard the Projectile Force of the Circulating Fluids; in Regard that in their Distribution, they form large Segments of Circles; which Contrivance is of the utmost imaginable Advantage for the Business of Secretion; and more

est

especially the nicer organiz'd Parts, such as the Ducts, and Papillæ urinifiræ; and consequently, their transverse Sections so much diminished, as not to admit of a free Transition of such Particles as ought to be expell'd; that is, the more sluggish, and inactive; or such as have the smallest Quantity of Matter under the greatest Surface; these having the least Propensity to Motion by Means of the lateral Pressure; will be retarded in their Progress; and acquiring Particles of a similar Nature, at last, will produce a Substance, but of a very different Constitution, and physical Properties from the above-mention'd: When this is truly the Case, which may very easily be known from many antecedent Circumstances and Symptoms, there is a demonstrative Certainty of this being dissolved, and the Returning for ever prevented.

Having endeavour'd to make appear, that it requires more Inquiry than is generally imagined, to decide in what State a *Menstruum*, or Dissolvent, can possibly have Success; and where it is Beating the Air to attempt the same: As also from the known Laws of *Physiology*, how absurd it is to imagine, that this can be accomplish'd by any Medicines given by the *Primæ Viæ*.

Now it is my Business to substitute a Method, that includes none of the Disadvantages that the other is involv'd in; and what has Reason, Truth, and Nature on its Side.

I don't here pretend to assert that I know any Production, however administer'd, that is a Dissolvent for the *True Stone*, I wish I was Master of such ; Mankind, as they have a just Claim, shou'd very soon be convinc'd of the free, and generous Contempt I have, for keeping any Thing a Secret, that could be of the smallest Service to my Fellow Creatures : But so far I flatter myself, I may be of Use in directing such in whose Hands this *mighty Secret remains*, or *by Chance may fall*, of the infallible Method of using the same.

And tho' I cannot positively demonstrate what Medicines, or Preparations can accomplish this, yet it remains no Difficulty with me positively to determine, with the greatest Certainty, what cannot do it.

In Order to calculate the Operation, or Powers of Medicines, we ought perfectly to understand the Structure of the organiz'd Part, where the Scene of Acting is ; the Properties of the Medicines ; and from thence we can ascertain how such, and such a Substance must act.

Hence it is, that all Medicines, which are acrid in their Nature ; whether this is natural, as all acid, or alkaline, acescent, alcalescent, muriatic, &c. Productions ; or if it is the Effect of certain Processes, and Preparations ; and consequently they act as so many Mechanical Powers, which can't with Propriety be reduced to any fixed, and determined Class of Virtues: These, I say, in the Nature of Things must

be excluded the Supposition; and are absolutely unfit for this Purpose: What wou'd be the Effect of such, who, from their active Principles, or sharp Angles, tear, wound, and abrade the *Mucus* from the internal Surface? It must be Increasing the Pain from the Stone, since Re-action is always contrary, and equal to Action; exciting a *Hæmorrhagy*, leaving the delicate, nervous Fibrils naked, and bare to these wounding *Spiculæ*; *Inflamations*, *Gangrenes*, with their direful, and mortal Attendants, succeed: This must be the Catastrophe arising from such a Class.

On the Contrary, the more inert, soft, and gentle in the Operation, or Emolient, any Medicine is, the fairer Chance does it bid for the *Menstruum*, or Dissolvent for the Stone. And this may be easily drawn from what has been said before.

I wou'd then honestly advise this to be given by an Injection in both Sexes by the *Urethra*; with the Precaution of unloading the Bladder antecedent to the Operation, if I may so call it; on such a Supposition, the Medicines arrive at the proper Place where they are to operate, genuine; and in their utmost Perfection: Nor can this bring any destructive Consequences on the *Præviæ Viæ*; which is often the Case, when repeated Doses, and a tedious, limited Time are necessary to accomplish the End: For as soon as this is prostituted, it's in vain to try the Power of Medicine; because, seriously speaking, it is no longer fit to be acted upon; but every Thing is
sent

sent in crude, undigested, and a sure Origin of Diseases is founded. During which, such a Course, as a prudent Physician shall think necessary, must be undergone ; so as to fortify the Humours, and hinder a fresh *Chaos* from getting Head, and laying the *Basis* for a second Pebble.

Was a Person so fondly prejudic'd, at any Hazard, to believe every Thing ; and renounce the strongest positive Evidence, that don't tally with his pre-conceived Opinions ; I don't attempt to prevail on such an One, or determine him in the least ; but I flatter myself, that he, who has but a moderate Knowledge in the Structure of the Parts, and from thence can deduce their Actions, will do Truth the Justice as to be of my Opinion.

Let then the Supporters of an internal Medicine have Recourse to the imaginary *Vie cæcæ* ; these surprising, sly Passages which could never yet be discover'd, going in their various Meanders from the Stomach to the *Vesica Urinaria* ; this will be equally abortive with the other, when it is brought to the Test of an impartial Inquiry. It wou'd be a sufficient Answer to deny the Fact, it is their Business to prove the same ; which, I dare say, they will not care to do.

But, for once, granting them their Hearts Desire, let them consider what an Alteration the Business of Mastication, the great Quantity of Liquor separated from the

salivary Glands, the Liquor *Inquilinus* in the Cavity of the Stomach, and the Conquassation produced by the muscular acting Fibres, must impart ; and at length the necessary physical Change, which attends all Bodies in Motion, even in their own assumed minute Vessels ; and this always in Proportion to the Space to be passed over ; then this idle *Hypothesis*, I foresee, will come out invested with all the Difficulties that attended the former ; with this Addition, the very Essence of all Absurdities, that no such Tubes do exist.

By this Time, I fear, I have wearied out your Patience ; I could have said a great Deal more, equally conclusive with what is gone before, and carrying in it the strongest Degree of Certainty, and Evidence ; but where Truth is the *Basis*, and fair, and impartial Reasoning deduces the Consequence, this must be for ever simple, and obvious ; and therefore commands the strictest Assent.

I might have subjoined several Cases, where Medicines, with an Intention for Dissolving the Stone, have been giv'n ; and sad to relate was their Catastrophe : If Persons will allow themselves to be convinc'd from the most evident Symptoms, and a necessary Train of Concomitant Circumstances, a *Mortification*, and *Gangrene* of the *Bladder* has clos'd the Scene.

Thus,

Thus, Sir, I thought, as it employ'd some of my leisure Hours, and put an Opportunity into my Hands of Considering Things with Coolness, and Impartiality ; so it would not be altogether disagreeable to You ; who even applaud, and commend the weak, and imperfect Attempts of Reasoning with Freedom ; and if herein I am a single Instance of striving against the Stream, yet I'm sure I have You on my Side ; which Consideration will always be the greatest Pleasure in Life to

S I R,

Your Obligated, Humble Servant,



POST-

P O S T S C R I P T.



AS the only Objection that has been made against the first Edition, was the Want of *Experiments* to confirm, and establish my Doctrine; I beg Leave, by way of Postscript, to vindicate myself from this Charge; the only Facts that were necessary to be known for the Support of my Principles, is the *Analysis* of the human *Calculus*; and to have made any Trials to confirm what I have said in reference to this, wou'd have been trifling, and vain; since all that I have assumed are confirmed by that fair, and impartial Enquirer into Nature, Dr. *Hales*, in his Book of *Statics*: Neither was my Design to determine any Dissolvent for the Stone in the Cavity of the *Bladder*. Had this been the Case, a Physiological Enquiry wou'd have been fully as absurd for Accomplishing the same, as a Demonstration of *Muscular Motion* wou'd be in Assisting a lame Man to walk.

My only Intention was honestly to decide, from the known Laws of the Animal Oeconomy, and the Physical Properties of the *Human Stone in the Bladder*, how far a *Menstruum*, without having investigated its Principles and Qualities, cou'd possibly act: It is so far from being my View of Things, that a *Dissolvent* can never be found out; that on the other Hand nothing is more agreeable, and consonant to the Animal Oeconomy, than such a Supposition:

And

And to make this still more evident, in *Page 25*. I have inserted a *Theorem*, for deciding what Qualities such a Medicine must be invested with ; the Method of Applying, or Using the same, follows as a necessary Consequence from the fore-going Reasoning.

Thus I am of no Party, I know of no Medicine that can accomplish this Effect ; and so soon as any can bear the most regular, and impartial Scrutiny, it shall give me Pleasure ; as it will establish me in my Principles, and be the strongest Demonstration of the Truth of my Doctrine : To wit, That a *Dissolvent for the Stone in the Bladder*, is agreeable to true Philosophy, and the Laws of the Animal Oeconomy.

F I N I S.



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