

**Lithiasis anglicana, or, A philosophical enquiry into the nature and origin of the stone and gravel, in human bodies, &c.; : Wherein is considered, the possibility of dissolving such animal tartar or calculous concretion. In a letter to David Hartley, author of the cases in behalf of Mrs. Stephen's medicines. To which is added, an account of a new and safe method of cure for the ischury, or total suppression of urine ... / By Henry Bracken.**

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LITHIASIS ANGLICANA:  
OR, A  
PHILOSOPHICAL ENQUIRY  
INTO THE  
NATURE and ORIGIN  
OF THE  
STONE and GRAVEL,  
IN  
HUMAN BODIES, &c.

Wherein is considered,  
The Possibility of dissolving such ANIMAL  
TARTAR or Calculous CONCRETION.

In a LETTER to  
DAVID HARTLEY, M. D.  
Author of the Cases in behalf of Mrs. Stephens's Medicines.

To which is added,  
An Account of a new and safe Method of CURE for the  
*Ischury*, or total Suppression of URINE; whereby  
many People's Lives may be saved, that would other-  
wise perish under that *fatal Distemper*, when not re-  
lieved by the *Catheter* or any *Ischurietic* or *Diuretic*  
*Medicines*, whatsoever.

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By HENRY BRACKEN, M. D.

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Μέγα Βιβλίον Μέγα Κακόν.

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L O N D O N:

Printed for T. COOPER, at the Globe in Pater-  
Noster-Row. MDCCXXXIX.

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In a Letter to  
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BY HENRY BRACKEN, M.D.  
M.D. Bichler M.D. Kasse

LONDON:  
Printed for T. COOPER, at the Globe in Patern-  
oster-Row. MDCCLXXII.

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T O

Doctor HARTLEY.

S I R,

HAVING lately read over what you have said about Mrs. *Stephens's Medicines*, with relation to their dissolving the *Stone*, I take the Liberty of writing you my Thoughts upon the Subject, tho' I suppose you will soon say I am arguing against *Matter of Fact*; however, let that be as it may, I will publish my Opinion, and leave the learned World to judge of the Reasonableness of what I advance.

IN your *Reasons and Answers* to the Objections against Mrs. *Stephens's Medicines*, you say, "That *Physicians* of Character and Experience seem for some time to have left off enquiring into the Nature and Efficacy of Medicines said to dissolve *Stones*, contenting themselves with prescribing *opiate* and *lenient Medicines*, &c."

Why now, Sir, I must beg your Pardon, for one of the greatest *Men* in his Way, which this Age has produced (to wit) *Professor Boerhaave*, lately deceas'd, to my certain Knowledge, gave himself a deal of Trouble, and tried many Experiments in order to discover a proper and safe *Dissolvent*; yet notwithstanding his great Skill in the Art of *Chemistry*, and Knowledge in the Nature and Properties of *Body*, his Researches and Trials proved futile and ineffectual: But you will say the Discovery is not Mrs. *Stephens's*, but her late Brother's,

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ther's; I don't care whose it is, it will scarce be heard of a Year hence; for every *Age* produces some strange *Nostrum* or other, as daily Experience teaches: *But if Fools did not go to Market bad Ware would not be sold.* And in my Opinion these sort of *Nostrums* deserve no better Character than what the Fellow gave the *Fox Cubs*, viz. that there was never a better amongst them; for few or none of them will stand a strict Scrutiny, nor will any of them suit every Constitution, tho' some of them may the fickle Part of the *English*; and as my Prediction with relation to *W---d* and *Ta---r*, and Mrs. *Mapp* is fulfill'd, therefore I now pronounce the Fate of the present Doctress Mrs. *Stephens*, viz. That by your Means and the publick Advertisements, she will sell a great deal of her Medicines (as you call them) at high Prices, before the necessary Trial can be made in order to know whether they will dissolve the *Stone*; then again, she will get the Interest of the 5000 *l.* all the while, and pray for what? Why not for her Medicines to be used during Trial, for you don't say that, but I say for her Trouble of advertising and crying up her *Secret*, which in the end will prove of little or no Benefit in dissolving the *Stone*; and *in twelve Months Time the Nostrum will be blown up, and follow the rest of the Tribe of such short-liv'd and indigested Compositions.*

It would have been better concerted (in my Judgment) if an ingenious *Surgeon* in every County, together with a *Physician* or two, had had some of Mrs. *Stephens's* Composition sent them to make Trial of, upon *Patients* really afflicted with the *Stone* in the *Bladder*; I say really, because I know many have supposed themselves to have the *Stone* by the Symptoms (they have heard) accompanying such Disorder, yet upon Trial no such Substance was to be found; others I have known  
who

who have had scarcely any of the common Symptoms, notwithstanding which, there has been found a large *Stone* in the *Bladder* when the *Catheter* was introduced: Therefore such People, together with the *Gentlemen* of the several *Hospitals* in *London*, would have been better Judges than those already pitch'd upon; but the Thing seems a Piece of *Quackery* quite thro', as I hope to shew hereafter. And if *Dr. Sharw* be concern'd in it upon the present Proposals, I should be sorry to hear it, for I look upon him to be an ingenious worthy Man.

*First*, I shall take Notice of the most common *Symptoms* or *Diagnostic Signs* of a *Stone* in the *Kidneys*, and they are these, (*viz.*) a fixed Pain in the Region of the *Loins*, heavy and continual, like a Weight in the Substance of the *Kidneys*, but the *Stone* passing out of the *Pelvis*, or hollow Part of the *Kidney*, there arises a tearing pricking Pain, of all Kinds the most severe.

*Secondly*, The *Patient* complains of an Inflexibility of the *Back-bone*, which is occasioned from a Compression and Irritation of the *Nerves*, by the rough irregular Body that is now passing thro' the *Ureters* in its Way to the *Bladder*. *Thirdly*, A burning Heat of the *Loins*. *Fourthly*, A Numbness of the Leg of the same Side with the affected *Kidney*, and sometimes a Retraction or drawing up of the *Testicle* for the same Reason. *Fifthly* and lastly, The *Urine* either bloody, or thin and watry, and small in Quantity; I mean, that the *Sick* only makes a Spoonful or two of *Urine* at a time, tho' he has frequent Motions hereto; but after the *Stone* is fallen into the *Bladder*, the *Urine* is presently made very thick and full of Contents, being sometimes of a blackish Colour, and in large Quantities.

The Complaints which attend the *Stone* and *Gravel* in the *Kidneys*, and which distinguish this Distemper accurately from *Cholic-Pains* are these, to wit;

*First*, A fixed Pain in one or both *Kidneys*, tho' for the most part one *Kidney* is only affected; this Pain generally tends towards the *Testicles*, all along the *Ureters*; whereas the *Cholic-Pain* is always wandering, and afflicts the *Patient's* Belly all round like a *Girdle*, but the other keeps either to the *Loins*, or Sides of the Belly, according to the Length of the *Ureters*, which pass from the *Kidneys* to the *Bladder*, and 'till such time as the *Stone*, or Piece of *Gravel*, drop into the Capacity of the *Bladder*, the *Patient* must not expect any Ease, unless forc'd by *Opiates*, &c.

*Secondly*, The *Cholic-Pain* is increased upon eating, but the *Nephritic* or *Gravel-Pains* are rather lessened. *Thirdly*, The *Cholic-Pain* is more eased from Discharges by Stool or Vomiting; and *lastly*, in *Gravel-Pains* the Urine is first of all clear and thin, by Reason it is percolated thro' a kind of *Gravel-bed*, which may, in some measure, be compared to the Effect that a *porous Stone* has upon troubled Water put into it when properly made hollow; for these Stones, such, as I am told, are used in the *Island of Barbadoes*, &c. will let the Water thro' them *Guttatim*, or Drop by Drop, and much more pure and clear than it was before; and just thus it is with the *Urine* that is voided before, or immediately upon a *Fit* of the *Gravel*; for the same is clear and thin for no other Reason, than, that Part of the Contents, such as its *Tartar*, *Salts*, &c. stick and adhere to the fabulous Matter already amass'd in the *Pelvis* of the *Kidney*, or in the *Ureters*; and for such Reason it is percolated thro' a *Gravel-bed* as I have just now mentioned, but as soon as the gravelly Concretion

tion either breaks by *Nature* or *Art*, the *Urine* becomes turbid and full of *Contents*, which last Sign is a pretty sure one, that the *Fit* will not last long, altho' I have now and then known it so fall out, that the *Gravel-Pains* have caused such violent Vomitings of *Bilious Juices*, that notwithstanding the *Urine* was rendered turbid and thick, and full of *gravelly Matter*, yet all the *Anti-emetics*, the famed one of *Riverius*, viz. *Salt of Wormwood* and *Juice of Lemon*, not being omitted, I say, all *Anti-emetics*, in several Cases of this Nature, where I have been an Eye-Witness, have failed, and the *Patient* has died in *Convulsions*.

Indeed I can't say but these People might have made too free with *spirituous Liquors*, as *Drams* of all Kinds, *hot Negus's* (as they are call'd) and the like, when they were seized with the *Gravel*, imagining that *Wind* was the Occasion of their Reachings to vomit, and also the Parent of the violent Eructions which they were troubled with, so that by this Means they had destroyed the *Digestive Faculty* in a great measure, and therefore the *Stomach* was become so tickle and squeamish, that nothing would rest upon it, and consequently all Kinds of *Anti-emetics*, as well as most of the *warm Cordials*, were immediately puked up, and a kind of inverted *peristaltic Motion* of the *Alimentary Tube* brought on. This is a deplorable Case, and therefore all such who are subject to the *Gravel*, &c. should refrain, as much as may be, from habituating themselves to tipple the common spirituous Liquors, too frequently used on these and such like Occasions, such are *Geneva*, *Aniseed-Water*, &c. with all the Tribe of spirituous Compounds, which are more or less hurtful to the *Stomach*, only as they are of a higher or lower *Proof*, (as 'tis call'd) that is, all Liquors which approach nearest to a *pure Spirit* are most hurtful  
to



to our Bodies, since they may truly be said to contain most *Fire*; for pure *Alcohol*, or *Spirit of Wine*, properly rectified, is nothing else but so much *latent Fire*, as may soon be made appear by applying a Piece of lighted Candle, or the like to it, for it will burn away to a perfect Dryness at the Bottom of the Pot.

Indeed it has been made plainly out, by the late *Professor Boerhaave*, that *Fire* exists in every thing quite thro' the *Creation*; but then again, that Principle is sooner (by a great deal) put into Action in some Bodies than others, so that those Liquors which approach near to actual *Fire*, can scarcely ever be proper or needful for us to drink; and really, the many Instances we daily see of *Men*, who have enervated themselves even so as to become meer *Skeletons* or *Walking-Ghosts*, are abundantly sufficient to deter us from abusing our Time and Constitutions by drinking such poisonous and baneful *Drams*; for altho' it may be imagined that *Windy-Flatulences* may be the chief Cause of the untoward and painful *Symptoms* of the *Gravel*, and that 'tis most likely to ease the *Patient* by the Administration of some hot *Cordial* called a *Carminative*, yet it is very absurd, and as far from *Truth* as possible, because there is no such Distemper, in the main, as the *Windy-Gravel*, for the troublesome flatulent Erućtations which generally attend *Fits* of the *Gravel*, &c. are occasioned from what we call an *Oscillation* of the Branches of the *sixth Pair* of *Nerves*, which are spread upon the *Kidneys*, *Bladder*, &c. for these Branches of *Nerves*, being interwoven with the *eighth Pair*, which supply the *Stomach*, it is therefore reasonable to suppose, or indeed more than barely reasonable, that when the *Kidneys*, *Ureters* or *Bladder* are irritated by *Gravel*, &c. there will be an *Oscillation* as I have said to the *Stomach*, and consequently Con-

vulsions

vulsions of that Bowel brought on; and that this is the Case with breeding Women, is as plain, for the same Branches of *Nerves*, viz. those called *plexus Hepaticus* and *plexus Splenicus* of the *sixth Pair* furnish out Nerves to the *Womb*, &c. which carry on the *Oscillation* mentioned, and the Woman continues to vomit frequently 'till the unusual Sensation in the *Womb* become habitual, and then it ceases.

It is likewise the same in *Sea-sickness*, as 'tis call'd, for the *Brain* being unused to such Motion as the Ship gives it, the Person will heave and vomit 'till such Agitation becomes habitual; yet that there are those, who never feel any Disturbance from the Motion of a Ship at Sea I own it, but this proceeds from a peculiar Make and Disposition of *Fibres*, not easily to be accounted for, any other-wise than by having Resort to *Hippocrates's θεῶν τι*, — or *divinum quid*; for altho' many things are plain and obvious to our Senses, (provided we would give ourselves the Trouble, or rather the Pleasure of searching after *Truth*;) yet a great many Truths will still sleep in Oblivion, and more especially in those *Ages* when *Men* choose to judge from their *Eye-sight* rather than their Reason.

I could yet run many Divisions upon this *Topic*, I mean the *Oscillation* of the *Nerves*, such as that brought about in Children breeding *Teeth*, for many of these are subject to *Diarrhæas*, &c. and this meerly from an Irritation of the *nervous System*, by the *Teeth* which are about to enter into, or cut thro' the *Gums*; and it is likewise the Fate of many, after a Debauch with strong Liquor, to be troubled with an *aching Head* from the same Cause, for it is not the Fumes of the Liquor, that fly up to the *Head*, as many of the *Vulgar*, who take themselves to be made like *Guns*, believe, but the Branches of the eighth Pair

Pair of *Nerves* which are irritated and made uneasy by the Debauch, and consequently an *Oscillation* carried on to the *Brain*, from whence the *Head-ach*, &c. Farthermore, a violent *Head-ach* will occasion Vomitings for the Reasons before recited, but enough of this; therefore to return to my Subject-matter.

I have said that the *Urine* is clear and thin in a *Nephritic-Pain*, or *Fit* of the *Gravel*, and that it becomes thicker and more troubled as the *Fit* goes off; on the other Hand the *Urine* is thickest at the Beginning of *Cholic-Pains*.

*Lastly*, The Diagnostic Signs of a *Stone* in the *Bladder* are a Sense of Weight in the *Perinaeum*, and the Region of the Groin; a perpetual Desire of making Water, with violent Pain succeeding, especially at the End of the *Penis*, with a most troublesome and frequent Endeavour to piss after all the *Urine* is expell'd, and this often occasions a *procidencia Ani*, or falling down of the Fundament: to these may be added, *bloody Urine* upon Riding or hard Exercise; but the only sure Way to know whether there be a *Stone* in the *Bladder* or no, is to have a Trial with the *Catheter*, and that will put Matters out of Dispute, provided an ingenious Man has the handling of the Instrument.

Now, Sir, let us consider a little the Nature of *Human Urine*, and then we shall be better able to form a right Notion of the Cause of the *Stone*. *First*, I say, *Urine* is an *aqueous Lixivium*, that washes off and unites with it self whatever is capable of being dissolved in Water and carried thro' the fine Vessels of the *Kidneys*, and for this Reason it contains the *spirituous*, *saline* and *saponeous* Parts of the Blood, and these too pretty well concocted into the true Nature of the *animal Body*. I would be understood of *Urine* made at least

least twelve Hours after Eating or Drinking, and in that Time it will be sufficiently acted upon by the Vital Powers: I say, such *Urine* will discover to us no kind of *Salts* besides neutral ones; neither is there any *Alkali* or *Acid* in it's Composition, as appears from proper and repeated Trials made by the truly learned in *Chemistry*; nay, even tho' *Urine* has been detain'd in the *Bladder* 120 Hours, in which Time it must certainly become putrid, there has not been any *Alcaline* Quality discovered, and tho' a Person drink large Quantities of *Rhenish-Wine* and stale *Malt-Liquors*, and live mostly on *Vegetable Food*, *sour Sauces*, &c. yet no *Acid* shall be discover'd in his *Urine*; and therefore I say *first*, the *Urine* is neither *Acid* nor *Alcaline*, but *Fetid*, and pregnant with *Salt* and *Earth*; I mean, there is not naturally any of these Qualities in *Urine*; but it is agreed, that it may acquire something of an *Alcaline Acrimony*, by being attracted into the Pores of a spongy Stone in the *Bladder*, and lying there for some Time. *Secondly*, No Nutriment is carried out of the Body with the *Urine* in a healthy State, but on the contrary, all the most *acid*, *putrid*, *subtil Particles* that are unfit for any farther Nourishment, and which, if retain'd, would injure the animal Oeconomy having discharged their Office of Nutrition; being then separated from the *Chyle*, *Milk*, *Blood* and *Fluids* that are hence derived, and at last evacuated by the *Kidneys*, &c. Hence it appears, that the *Urine* exhibits to us those Humours that of all are the most changed by the Powers of our Nature; changed indeed, for the Retention of them, as I have said before, would be highly injurious to the Body.

If we take a Quantity of *Urine*, and in a Sand-heat evaporate the Humidity till the *Feces* become thick as *Honey*, and then throw upon the same

*Fæces* as much *Rain-water* as the Liquid evaporated, this new Addition, by the Assistance of a small Digestion, will become as perfect an *urinous Liquor* as it was when it came out of the *Bladder*; and the same *Phenomena* will happen after several the like Repetitions.

It is yet a Dispute whether the Separation of the ferous Part of the Blood in the Kidneys is caused by a kind of *Fermentation*, or meerly by *Percolation*; and those who favour the last Opinion tell us, that the quick straining off of large Quantities, after smart Drinking, is an Evidence against *Fermentation*, by Reason there is no Time for it.

But let us consider a little how *vegetable Tartar*, or what the *German* Language signifies to us by the expressive Term of *Wine Stone* is formed, and then we can give a better Guess how *animal Tartar* is produced: *Wine Stone* or *Tartar* then is produced in the following Manner, *viz.* the expressed Juice of Summer Fruits, being perfectly fermented, and hence acquiring the Name of *Wine*, by standing long deposits its *Lees* called the *Mater* or Mother of the *Wine*; and after this the *Liquor* becomes fine, if this clear *Liquor* is drawn off into a clean Vessel, it will in time generate little Corpuscles, which move about in the middle of the *Liquor*, shine, gliffen, are sharp and subtil; and these being afterwards dispersed from the *Center of Gravity* of the *Wine* towards every Point of its Surface, fasten or stick to the concave Surface of the Cask, and by this Means incrustate every Part of it where the *Wine* can come at it; the *Wine* then continues to discharge gradually more and more of the same Matter which very easily adheres to, and is as it were attracted by the former, and this goes on till the Body of the *Wine* contains no more of it.

If the *Wine* now having deposited its *Tartar*, and consequently grown milder and more soft, is drawn off, and the Cask filled again with *Wine* not yet fined, this will still add more of the same *Matter*, which will be sooner generated than the other was, being attracted to the Sides in a shorter Time by the Efficacy of the *Crust* already formed: This is the real Production of that surprizing *Body* which is a true *Chrystal of Wine*, but not formed only at the Bottom, as other saline Chrystals are, but equally in every Part of the surrounding Vessel, and is in a great many of its Properties perfectly distinct from the *Lees of Wine*, tho' it comes in its Nature pretty near to them. There is a vast Difference of it according to the *Wines* from which it is generated, *acid* and rough *Wines* yield more of it, but sweet soft ones less, and *Wines* that are prevented from thoroughly fermenting, produce a smaller Quantity than such as are become very subtil and thin by Means of a perfect *Fermentation*. This is plain in the *Rhenish Wines*, &c. and the Colour of the *Tartar* agrees always with the *Tincture* which the Skin of the *Grape* gives, from which it is produced: Thus *red Wines* produce *red Tartar*, and white ones *white*.

*Tartar* obtain'd in this manner, may truly be styled the *native Salt* of Vegetables, which is *acid* and very easily converted into an *Alkali*. It will not dissolve either in *Water*, *Wine*, or *Vinegar*, without the Assistance of *Heat*, but remains like a common Stone unaffected: And in the same manner as the *Vessel*, so does this *Tartar*, contain or keep together the *Wine* from which it is generated; that is, *Tartar* does not sink down or fall to the bottom Part of Vessels, but is equally adherent to their inward Surfaces. Again,

To dissolve *vegetable Tartar*, it is necessary that

the Water boil in which you would infuse it, but as soon as ever the same grows cold, the *Tartar* hardens again, and acquires the Name of *Crystals*, or *Cream of Tartar*.

Farthermore, whilst it is burning in the Fire it produces more *elastic Air* than any other known *Body*, as has been proved by *Professor Boerhaave* as well as by our own Countryman, the ingenious Doctor *Stephen Hales*; and the first of these worthy Men I well remember to have seen him often afraid of having his *Retorts* broken, by striving with his strongest *Lute* or *Cement*, to keep in or confine this flatulent *Sylvestrian-Spirit* (as he is pleased to call it) and notwithstanding all his *Art*, there is so much *elastic Air* in *Tartar*, that it would either burst the *Glasses*, or else vent itself at the *Junctures*.

From hence it may be understood how and in what manner *vegetable Tartar* is produced; let us therefore enquire a little how *animal Tartar* or the *Calculus Humanus* is formed in our Bodies. And

*First*, I say, that as *vegetable Tartar* is the Product of a thoroughly compleated *Fermentation* of vegetable Juice, as I have already hinted, so *animal Tartar*, or what we commonly call the *Stone* or *Gravel*, is produced from *Humours* thoroughly digested, that is, those People who are *Athletic* and of a firm Construction of *Fibres*, are more subject to the *Stone*, *Gravel*, *Gout*, &c. than People of a more *lax* and flabby State of the *Solids*; and tho' I own there are some Exceptions to this general Rule, yet I am sure it will hold good as to the far greater Part of Mankind, which answers my End, since a few Exceptions strengthen rather than weaken *general Rules*; and if any of a lax Constitution, whose *Fibres* are weak and flabby, happen to be troubled with the *Stone* or *Gravel*, I am of Opinion such must be what we call *great Sweaters*,

*Sweaters*, or that perspire more than common, from whence their *Urine* is render'd rancid and full of *Tartar*, or in other Words, it is less dilute than theirs who void most of the superfluous *Serum* by the *Kidneys*, and in this consists the Generation of the *Stone* and *Gravel*, as shall be shewn hereafter, I mean, so far as to our natural Constitutions; but as to *Liquids*, &c. which we support ourselves with, no doubt but the *Distemper* is frequently brought on by them; and altho' the *Negroes* in *Africa* are not very subject to the *Stone*, by Reason of their plain and low Feeding, together with their *Liquors* which is mostly *Water*, and now and then a little sweet *Palm-Wine*, yet here and there, I am well inform'd, the *Distemper* happens amongst them, which I fancy must proceed from some *Waters* of that Country, tho' generally speaking, the *Waters* in *Africa* are the lightest in the known World.

The Reason is plain, why the firm and strongly *elastic Fibre* is more subject to the *Stone*, &c. since where this happens the digestive Faculty must of consequence be stronger, and from hence the *Humors* will be more elaborate and thoroughly digested, all which produce greater Abundance of *Tartar* in the *Kidneys*, &c. and the *Urine* is render'd more *rancid* and *urinous* (as we call it) and this *calculous Concretion* may, without all manner of Doubt, be called *Urine Stone* with as much Propriety, as that hard compact Body produced by *Wine* is called *Wine Stone* by the *German Chemists* and others, in Contradiction to the *Tartars* of other *Fluids*, as *Wine*, *Water*, &c. for even the latter of these *Fluids* contains a deal of *stony* or *tartarous Matter*, as may be seen by the *Insides* of our *Tea-Kettles* that have been in Use any considerable Time.

Indeed



Indeed there is great Difference in *Waters* in this Particular, for some contain a great Quantity of incrusting Matter, more especially that of the River *Seyne*, which runs thro' *Paris*, I have often observed to fur up the Pipes or *Conduits* to such a Degree that they have become useles, and new ones been obliged to be put down in their room; and from hence, no Doubt, the Inhabitants who drink those Waters are more liable to the *Stone* and *Gravel* as well as other *anomalous Concretions*, such as the *Gout*, &c.

It would be endless to repeat all the *petrifying Waters* mention'd in History, but a very remarkable one of this kind we have in our own Country, *viz.* the *Dropping-Well* near *Knareborough* in *Yorkshire*, which in a very short time turns most Things that are immerfed in it into *Stone*, and the *philosophical Reason* I think is this, *viz.* The Waters of the *Dropping-Well* at *Knareborough* are pregnant with subtil or very small Particles of *Stone*, which floating along till they meet with a porous Body that may receive a Number of them, then *coalesce*, *petrify*, and become as much a *Stone* as it is possible to imagine: and really I cannot say but I was a little surprized when my *honest* and *facetious Landlord*, Mr. *Carter* of *Knareborough*, presented me at Table with a *Swine's Cheek* (as 'tis called) *turned into Stone*; this made me immediately reflect upon the dismal Consequences which might ensue upon drinking the Waters of such petrifying Springs or Wells; for if such *Particles* enter the *Lacteal* or milky Vessels with the *Chyle*, they may in one Part of the *Body* or other form *anomalous Concretions*, such as the *Gravel*, *Stone*, &c.

I don't remember any *Springs* or *Wells*, which Authors have mentioned, that are not in some Measure indued with the incrusting or petrifying Quality

Quality I am speaking of, I mean in *England*, except the *Water* conveyed in a Pipe for the Benefit of the Inhabitants of *Hodsdon* in *Hertfordshire*, also that at *Hovering-Hill* in *Essex*, likewise that which supplies *Hampton-Court*, and at the Fountain-Head at Mr. *Harvey's* of *Comb*, and the Waters at *North-Holmes*, and in *Old-Park*, which supply the Dean and Prebendaries, and other Inhabitants of *Canterbury*; and the only Reason why those Waters are so soft (as we call it) is because they contain very little if any *Tartar* or stony Particles, for they arise and pass thro' *Gravel*, and neither *Gravel*, *Stones*, nor *Flint*, produce *Tartar*, by any Experiment with *Fire* or *Fermentation*, which may seem a *Paradox*; but I must allow that the Incrustation in *Water-Pipes*, &c. is not in all Respects alike to vegetable *Tartar* produced from a perfect *Fermentation*; no, I take it, that these *Incrustations* are only small Particles of *Stone* which float along till they meet together in such Manner as to *coalesce*, as I have already said; but to return.

I think it may be allowed, that what I have hinted of the *Stone* in animal Bodies is true; I mean, that it is produced from *Humours* thoroughly digested; and in order to illustrate farther upon the Subject, I shall beg leave to show what I would infer from the Word *Humours* in *Animals*, for it is a *Term* very often used, or rather abused by *Physicians* (if I may call such People so;) and since nothing is more common than to hear People of all Ranks and Conditions often make Use of the Word by saying, such an *Animal*, whether *Man* or *Beast* is full of *Humours*, when, if they be asked the Meaning, they generally answer little to the Purpose; therefore, for the Information of such, I design to show what's meant by the Word *Humours* in Animal Bodies, for of all the

Parts of an *Animal* I think these are the least understood; and your common *Farriers, Grooms, &c.* have it so often in their Mouths, that it would make one sick to hear them in the Application, since they only use it as a Cloak to their Ignorance.

First then, an *Animal* is defined an *Hydraulic Body* which subsists by a constant and determin'd Motion of *Humours thro' its Vessels*, and which contains within itself certain Vessels like the *Roots of Vegetables*, by which it draws or absorbs that *Nutrimēt* which supports its *Being*, and increases its *Magnitude*.

Now the *Vessels* which thus perform the Office of *Roots*, are observed in almost every kind of *Animal*, and that chiefly in the small Guts, going by the Name of the *Lacteal* and *Mesenteric Veins*; the first, as well as the Vessels we call *Lymphatics*, spread themselves upon the *Mesentery*, and the *Mesenterics*, or *Venæ Mesaraicæ*, run between the two external *Laminae* of the *Mesentery*: There are also in this Part of the Body a great Number of small *Glands*, the biggest of which, in the Middle of the *Mesentery*, is called the *Pancreas Asfelli*; then I say farther, that the *Food* and *Drink* which *Animals* take in, being applied to the Mouths of these absorbent *Vessels*, is the *Matter* by which they subsist, and is the same to them that the *Earth* is to *Vegetables*; and the concave Superficies of the *Mouth, Oesophagus* or *Gullet, Stomach* and *Guts* in *Animals*, are the Parts to which the Nourishment is applied, and thro' which they receive it; and hence it appears plain, that the Difference in *animal* and *vegetable Bodies* (with relation to this Particular) is, that the *first* take in their Nourishment by *internal*, and the *latter* by external absorbent Vessels; for as the *Earth*, which is the Support of *Vegetables*, is always without them, *Animals* on the contrary receive their Nourishment from

from within, and altho' some *Men* have asserted, that nothing passes into the *Blood* that is injected by way of *Clyster*, because, say they, you can't force the *Valve* of the *Colon*, yet it is plain from Experience, that the *Jesuit's-Bark* will cure *Intermitting Fevers* when administer'd in *Clysters*. There are also authentic Accounts of several superannuated People who have been nourished for Years by *Broths*, &c. taken in by the Fundament, when the *Stomach* had lost its *digestive Faculty*, in so much that it nauseated all Kinds of *Food*; nay, some have gone so far as to assert that the Aged have been kept alive by the outward Application of fresh *Flesh* to the *Scrobiculus Cordis* or Pit of the *Stomach*; and this for some Months without one Morfel of *Solid* or Drop of *Liquid* by the Mouth: Indeed I cannot say but I a little scruple giving my Assent to the last *Relation*, but I am well satisfied that there are, what we call *vasa Inbalantia*, or absorbent Vessels all over the outside of our Bodies, as well as all along from the Mouth downwards; and my *Preceptor*, viz. the very worthy and much learned *Professor Boerhaave*, lately deceas'd, I remember so far to have refined on the Subject, that he gave it under his Hand that the *French Disease* might be contagiously taken in by receiving only a Piece of Money from a Person afflicted with it; but I suppose he might mean, that the *Pox* might be propagated this Way, when the Person from whom you receive the *Money* is afflicted with the *venereal Lues* when in its *last Stage*; and then indeed, there are sufficient of venomous Streams or *Effluvia*, especially if there be *Buboes* in the *Groin*, which may so affect the Piece of Money in a

Man's Pocket, that he shall propagate the *Distemper*; tho' I think this is refining a little too far upon the Point; however, we should allow the *Professor* some Latitude on the Subject of the *French Pox*, for he has often told me he got above a *Thousand Pounds a Year* out of England for curing that *Distemper* only: So we should allow him to play FARINELLI a little, I mean, that he was not much in the Wrong, if he could frighten People in this *Distemper*, or those who even deserved it, so as to squeeze a *round Fee* from them; since it might perhaps scare them from committing the Crime which occasioned the *Distemper*: I mean this, *viz.* If People were positive that the *Clap* and its Concomitants never appear'd in *Human Bodies*, unless it was first preceded by a Running, commonly (tho' erroneously) styled a *Gonorrhœa*, they would be more sinful in that way than they are; but the very Name of a *dry Pox* is most terrible to *Debauchees*, and the frightful Train of Evils supposed to arise from thence, are sufficient Curbs to the licentious Libertine; and notwithstanding more People are *pox'd* in *Imagination* than otherwise, yet it is no ill Policy, in my Opinion, either for this or the next World, to discipline those who deserve such *loathsome Distempers*, altho' they really are not infected by the *Contagion*; and I assure you, Sir, Dr. Boerhaave did this with a Witness, for he sweat them within an Inch of their Life, 'till he had wasted away most or all the *fatty Membrane*, which we term *Adiposa*, in which Part this *Gentleman* believed the *venereal Venom* fixed itself, tho' I am well satisfy'd, by many and repeated Tryals, that the *Lues Venerea* or  
*French*

*French Pox*, may be easily cured (when in the *first Stage* as we call it) without so much ado about it; nevertheless, *qui vult decipi decipiatur*; and those who want a *May-Pole* e'en let 'em pay for it. Now to return:

What I have observ'd of the *absorbent Vessels* in Animals, holds good even in those Kinds which we may call *Testiparous*, in Contra-distinction to the *Oviparous* and *Viviparous*, for these, as *Limpins* or Muscles, *Oysters* and other *Zoophyta*, whose Shells adhering to Rocks or Pieces of Wood, contain an *Animal* firmly fastened to them by a very tenaceous *Ligament*; for these very Shells, so long as the *Animal* lives, receive from this inclosed *Body* by certain Vessels destined to this Office intirely, their Sustenance, Support and Increase, while the *Animal* itself takes its *Food* in by the Mouth, and conveys it into the Intestines or Guts, in the same Manner as other *Animals* that are at Liberty to move from Place to Place.

I could yet farther illustrate this Doctrine, by shewing how *Oviparous Animals* are, as it were, planted in their Yolks till they grow to Maturity and Strength enough to break their Shells; and from hence it may be observed, how evident the Analogy is between *Plants* and *Animals*. But let us yet look a little farther into *Nature*, and we observe, that there are among Vegetables, some that are fixed in the Earth, others fluctuate about in the Water, and a third sort grow in both: In like Manner we learn from our own Observation, as well as from *Zoographers*, that there are some *Animals* that live on the *Land*, some on the *Water*, and others, to answer their different Necessities, are

equally suited to live on the *Land* or *Water*. Furthermore, as *Plants*, by the Apertures of the Vessels on their Surface, draw in the *Humours*, (if I may so call them) that float about in the *airy Fluid*, so likewise the Bodies of Animals are known to do the same.

But we shall yet farther find an Agreement between them, if we consider that they are both supported by the same kind of Nourishment; for as *Plants* flourish and increase by the Juices they draw out of the *Earth*, so *Animals* live, either upon *Vegetables*, or the Parts of other *Animals*, which upon Examination we shall find have been fed with *vegetable Juices*; and therefore, the *Matter* of both of them are the same; and as the *Juice* which *Vegetables* receive from the *Earth*, is not of their *Nature*, but crude at its first Reception, in the same Manner, the *Food* which *Animals* take in, and the *Chyle* which is produced from it, does not presently put on the *Animal Nature*, but retains a considerable Time the Properties of those *Bodies* from whence it was derived: Indeed afterwards, by the surprising Effect of the *Animal Machine* upon them, and the Mixture of the Juices with them that are already concocted, the crude ones by Degrees are wonderfully changed, and in every Part of the *Body* they put on new Appearances; but it is abundantly sufficient to my Purpose to observe, that the longer the *Food* has been taken into an *Animal*, the oftener it has circulated through every Part of its *Body*, and the greater Number of its Juices it has been mix'd and incorporated with; the more it constantly recedes from its own *Nature*, and approaches nearer to that of the *Body* into which it is received.

Now

Now amongst the *Humours* of *Animals* there is one that is vastly more subtil than all the rest, and this is called the *Exhaling Spirit*, and seems to contain that singular Quality which is peculiar to every particular *Animal*, and which distinguishes it from any other; and this we learn evidently in the Diversion of *Hunting*, for we shall see the *Hounds* follow the *Hare*, altho' a *Fox* may here and there have cross'd the Train of her *Scent*, (as 'tis call'd); and I have farther observed, that after a *Deer* has been blown, that is, after the *Hounds* have given him a Brush, and made him breathe quick, they would stick particularly to the same *Deer*, altho' he should run through twenty *Herds*; and the same thing may be observ'd in *Dogs* following their Masters through common Ways, where there has been Numbers of Persons passing and repassing, and at last finding them out, which is surprizing; but shews how much we differ one from another in this *Exhaling Spirit*, and no Doubt but we do the same in regard to the rest of the *Humours* of our *Bodies*; and this sufficiently shews us, why some Bodies may, and yet others may not, breed the *stony Concretion* we call *animal Tartar*; I mean, that according as we part with this Exhaling Spirit, or sweat more or less, we shall be more or less subject to breed the *Stone*; and altho' the Ancients imagined that the *Stone* in the *Kidneys* or *Bladder* increased most in the *Winter Season*, because, say they, *Perpiration* is less in the *Winter* than *Summer*, so the Matter that should go off by the Pores must of consequence adhere to, and increase the Bulk of the *Stone*. But these *Adepts* might with equal Reason assert, that such *Perpiration lessened* must increase



increase the Bulk of the *Brain, Lungs, &c.* No, the true Reason of the *Stone's* Increase, or rather the Cause of its appearing in *Laminæ* or Coats, is this, *viz.* when we perspire most, (as we certainly do in the Summer Season) then our *Urine* is most *rancid* and *urinous*; and from the Account I have given before, it must in such Case be more replete with *Tartarous Particles*, and consequently add to the Bulk of the *Stone* in the *Kidneys* or *Bladder*. For if what is perspired off by the Pores in the Skin, was to pass off by the *Kidneys*, as is the natural Way when Perspiration is obstructed, I say, in this Case, the *Urine* would be more dilute, and the Particles of *Tartar* be kept farther asunder, so that they would not (so soon) come within the *Sphere* of one another's Activity and cohere, but on the contrary, be washed along the *Current*. Neither is there near so much *animal Tartar* form'd in the *Urine* in *Winter* for the aforesaid Reasons.

This may be made manifest to any one, who will take the Trouble of keeping his *Urine* awhile; for let him but for some Time piss in the same Pot without washing it, and for the like Time afterwards make Water into a Pot that has about a Wine Glass full of Spring or Rain Water put into it first, and every Time the Pot is half full or thereabouts to empty it; I say, if this be done and a little of the Rain Water put into the Pot every Time after it is emptied, without cleaning, it will be found, that more *fabulous Matter* may be scraped off by far, from that Pot which had no *Spring Water* put into it, than from that which contain'd pure *Urine* from Time to Time.

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What I would infer from hence is, that the *Sweat* or perspirable Matter, which is something of Kin to Rain Water in its Nature, will, when it passes off by the *Kidneys*, &c. hinder the Growth of the *Stone* or *Gravel*.

*Secondly*, Water constitutes the greatest Part of the animal Fluids, as has been sufficiently proved by the most able *Chemists*, and in Reality it makes so great a Part of our Bodies, that there is scarcely any of the solid Parts without it.

*Thirdly*, There is a particular Kind of *Salt* in the Humours of our *Body*, particular, I say, because those *Salts* we take in with our *Food*, suffer no Alteration from the *digestive Faculty*.

This *Salt* is far from a fixed one, nor yet so volatile as ever to exhale from the *Body* of the hottest *Animal*, I mean, so long as it continued in a State of *Health*; however, if this *Animal Salt* be apply'd to a Degree of Heat little less than that of boiling Water, it will become intirely volatile: Neither is this *Salt acid*, unless it happens to be made so from Things of that Nature, which the *Animal* had received from without into the *Body*; nor lastly, is it found to be *alcalious* (so long as the *Animal* is in *Health*) nay, nor even in the Experiment made of it from *Urine* retained five Days in the *Body*, by a Disorder of the urinary Passages; but I agree that this *Salt* will be turned into a perfect *Alkali* by Putrefaction, or a great Degree of *Heat*, yet when in its natural State, as it is when procured by Inspissation, and letting it stand undisturbed, you can artfully reduce it into little Glebes, it appears to be a *Salt* different from any one we are yet acquainted with; it is supposed

supposed indeed to approach the nearest to *Sal Ammoniacum*, but in some of its Properties it differs from that too; for *Sal Ammoniacum*, if put into a strong Fire, will be all raised without undergoing any Alteration, whilst that which is drawn by Fire from *Urine*, (which is the *Lixivium* of the *Animal Salts*) is immediately and intirely *alcalious*.

In short, after a great many *Experiments* made on purpose to discover the true Nature of this *Animal Salt* as it really exists in sound Bodies, and acts there by its own peculiar Virtue, it appears to be of a mild Disposition, possessing a saponaceous Quality, occasioned from an Oil that is united with it, being a kind of *middle Salt* between a *fixed* and *volatile one*, having not the least Mark of an *Alcali* or an *Acid*, being easily however resolvable into a very *fetid Oil* and a *volatile Alcaline Salt*, which is much disposed to Putrefaction.

*Fourthly* and *lastly*, There are four sorts of Oil in animal Bodies of very different Natures, the first Kind are so subtil that they will bear mixing with Water, and become volatile with a small Degree of Heat, in which respect they very much resemble the *Spirits* of *Vegetables* in their natural State, tho' they differ vastly from those which are produced from them by the Help of *Fermentation*.

The second kind of Oil contains but a very small Quantity of Salt, and is of an exceeding soft and smooth Nature, serving to lubricate and supple the more rigid Parts of our Bodies, and this is called *Marrow* in the Cavities of the *Bones*, and amongst the Membranes, &c. it is called *Fat* or *Membrana Adiposa*; in both which  
the

Places it is reserved for particular Purposes; for the *Marrow* hinders the *Bones* from being so friable and brittle as they otherwise would be, and the *Fat*, or *Oil* in the rest of the Parts, helps to sheath and soften the sharp Humours of the *Animal Body*; and it is this sort of *Oil* which is observed to swim upon the Top of the *Blood* taken from the Arm, &c.

The third sort of *Oil* in Animals differs from the former, being concreted with the Animal Salts, and so rendering them of a *saponaceous Quality* peculiar to the *Animal Body*, this kind is more acrid, fætid, and volatile.

The fourth and last kind of *Oil* in Animal Bodies is designed (by the all-wise Creator) to unite firmly together the Elements of the Solids, but still so as to leave them a requisite Degree of Flexibility; this *Oil* is produced from the Putrefaction of Bodies in *Air*, &c. and when alone it always discovers an intolerable noisome Smell.

Some Authors add a fifth Kind, which they procure from the inspissated Juices of *Animals*, as from *Hens Guts* or the like, by exposing them a long time to the Action of a strong *Fire*, and so produce that wonderful Preparation called *Phosphorus*, which, tho' kept in pure Water, will flame when exposed to the *Air*, and rubb'd gently with one's Finger.

What I have said in relation to the *Humours* or Juices contained in an *Human Body*, may serve to illustrate their Nature and Uses; and in my Opinion, he that has not had the Curiosity to enquire out the several Ways, and consider how *Stones* may be generated out of the Body, not only must be unable satisfactorily to explicate how they are produc'd in the *Kidneys*, *Bladder*, &c.

but will scarce keep himself from embracing such *Errors*, as the Knowledge I am recommending would easily protect him from: For we find the *Ancients* in general, as well as most of the *Moderns*, to have reasoned very abstrusely concerning the Production and Growth of the *Calculus Humanus*; nor do I remember any Person to have come nearer *Truth* than *the Noble Van Helmont*, in his Treatise call'd *Lithiasis*.

This Person of Quality, born at *Brussels* in the *Low-Countries*, in the Year 1588, was an excellent *Physician* and *Natural Philosopher*, as appears by his Writings, yet he had too many Whims and Notions about his *Dissolvent* for the *Stone*; for he seems satisfied that he could waste away this Concretion in the *Kidneys*, &c. which I think is impossible (especially where it happens to be of the harder kind) and in my Thoughts, if ever it be done, I mean, if ever any thing be found out that will pass the Digestions and Alterations, it must necessarily meet with before it can arrive at the *Stone*, it will only act upon the softer sorts and hinder the Growth of *Gravel*; and if *Mrs. Stephens's Medicines* will do it, (as pretended) there is no Doubt remains, but that they would perform better if they were injected thro' a *Catheter* into the *Bladder*; for by this Means the *Patient* would be eased of the nauseous Draughts he is prescribed to swallow down for so many Months together; and as to any Pretence which may be made of the *Medicines* not being so efficacious in dissolving the *Stone* in the *Bladder* when injected in the Manner I have mentioned, it is the greatest of Absurdities, and what cannot be advanced except by those *Smatterers in Philosophy*, who pretend much, yet know very little. From

From what has been said it will be very easy, for the ingenious Part of Mankind, to judge of the Possibility of dissolving or wasting away this common and very great Enemy to Human Bodies; for as I have said before, were it not for the *mucous* and slippery mucilaginous Matter, which is separated from the *Blood* and Juices, in order to give a Covering to the *Pelvis* of the *Kidneys*, as well as the *Bladder*, I say, were it not for this providential Defence, I am persuaded that we should scarce any of us escape the painful Distempers of the *Stone* and *Gravel*, as well as be more subject to *Ulcers* of those Parts of the Body; and it is for this Reason no Doubt, that *soft demulcent Liquors* are preferable to those which are more beerish, to prevent the *Stone* and so forth; and I think it may be allowed, that the poorer sort of People are, from their drinking much *Water*, *small Beer*, *Milk*, &c. more free from the *Stone*, *Gravel* and *Gout*, than those who drink much *Wine* and strong Malt-Liquors; and tho' we oftentimes find that the meaner sort of People have the *Stone*, yet I am of Opinion, that the Reason of it proceeds from their Constitutions being for the most Part stronger, and their *Fibres* more firm and rigid, from whence, as I have observ'd, the *Urine* is voided of a stronger favour, and more full of *animal Tartar*, to which the Exercise and Sweating of these working People does not a little contribute; for if this Sweat or perspirable Matter, was to go off by the *Kidneys*, the *Urine* would of Consequence be more *dilute* and less *urinous*, and the tartarine Particles be thereby kept so far asunder, that they could not coalesce in order to form a *Stone*.

As to *Hops*, or high Hopp'd-Liquors being prejudicial in Cafes of the *Stone*, *Gravel* and *Gout*, I take them in general to be fo, from their being ftronger or fmaller, or more or lefs depurated; that is, *Hops* are not in themfelves pernicious, fo far as I have obferved, notwithstanding there was an *Act of Parliament* made formerly againft the pernicious Ufe of this *Kentifh Commodity*; but I have feen many *Acts of Parliament* with a fpecious Preamble, wherein the Health of the Subject has been feemingly at Heart, yet, if the *Revenue* fuffered by it, *the Commonality might eat either Hops or Hay whether they pleased*: But to return.

It is agreed upon by the moft eminent Authors of *Experimental Philofophy*, that *Humane Urine*, when highly alcaliz'd, will difsolve or reforb its own *Salts*, *Tartar*, &c. and if Mrs. *Stephens's Medicines* which are now upon Tryal for difolving the *Stone*, contain, as I have been informed from the Learned and Ingenious Dr. *Stephen Hales*, Author of the *Vegetable and Hemafstatic Experiments*, I fay, if thefe Medicines (as ſhe calls them) contain a good Quantity of *Lime*, flacken'd or fallen in the *Air*, it may, by a long continued Ufe, as it is directed, fo alter the Nature and State of the Juices, that the *Urine* may become highly Alcaliz'd, and thereby its *Salts*, as well as ſmall Pieces of *Gravel* or tartarous Matter, may be reforbed and difsolved by it; and perhaps likewise the fofter Kind of *Calcule* may (in ſome Meafure) yield to its Efficacies; but I fear the harder Sort will not be wrought upon by either Mrs. *Stephens's Medicines*, or even any other pretended *diffovent* whatfoever, without deftroying the  
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Constitution, if taken by the Mouth, or hurting the Office of the *Bladder*, if inserted thereinto by the *Catheter*, *Syringe*, &c.

I am far from depreciating or ridiculing any Attempt that may be made for a *Dissolvent* of the *Stone*, &c. although I have practised as a *Lithotomist*, above Twenty Years, with as good Success as the rest of our Fraternity; no, I declare I value the good of Mankind, more than to wish them so ill as to hazard so dangerous an *Operation*, if the *Stone* could any way with Safety be dissolved; and I cannot but Question the Truth of some of the Cases related on Mrs. *Stephens's Account*, for I apprehend that her Medicines may in the Case of a large *Stone*, so soften the Outside of it that it will be a kind of *Mucilage*, and then it will lie easy and without much Pain to the *Patient*, which may make him, as well as some of the Faculty, not over skilled in the Profession, imagine a Cure performed; but then say you, there are People that have been try'd by the *Catheter* both before and after taking the *Medicines*: True, but the *Surgeons* who had the Handling and Direction of the *Instrument*, might be as much deceived as I remember Mr. *St. A-d-e*, the famous *Anatomist* was, by the Woman of *Godalmin* in *Surry*, who he thought bred *Rabbits*, because he took some Pieces of such *Animal* away from her, and under this surprize he ran and told the late *Queen CAROLINE* a most terrible Story no doubt; but had he considered this, *viz.* that every Thing that is nourished in the *Womb*, must either have an *umbilical Cord* and *Placenta*, or be some ways adherent to the Fund or Bottom of it, so that the Vessels may inosculate, or spread



spread themselves into the *Creature*, in order to be Nourished, otherwise no Blood could be communicated from the *Mother* to the *Child*, or even to any *parenchymatous* or fleshy Mass; and for this Reason, I say, Mr. *St. A-d-e* might have easily seen, whether the *Rabbets* he took away from the *Woman* had any way adhered to the *Womb*, or if she herself had procured them young ones with small *umbilical Cords*, he might have been satisfied, where there is a *Navel-string* there must be a *Placenta*, and that if he could not find the latter, he should have doubted of the Truth of the *Woman's Relation*.

You will think it odd for me to bring the above Comparison, but I only do it to shew how People may be mistaken, unless they have both *Judgment* and a good *Finger*; and, it is not unlikely, but the *Surgeons* who try'd the *Officer* of the *Tower* ( I think it was ) might not search sufficiently for the *Stone*, which you say was in that Gentleman's *Bladder* before he used *Mrs. Stephens's Medicines*; and although they might touch upon it with the *Catheter*, yet being softer on the Outside than it was before his taking the *Medicines*, probably they might imagine the *Stone* was intirely dissolved: I have not heard how this *Gentleman* has his Health since your *Cases* were published, but you cannot blame me for withholding my assent till I have more convincing Proofs, especially since you yourself have taken these *Slops* above a Year for the Cure of the *Stone*, without Effecting it; for by an Account I lately had from *Dr. Hales*, I find you have yet a larger *Stone* in the *Bladder*, which was not long since plainly discovered

discovered, on founding the Part with a *Catheter*.

If I may be allowed to speak it without Arrogancy, I have been conversant with as able Men as any the *Faculty* has produced, more particularly the late Learned, *Ingenuous*, as well as *Ingenious Professor Boerhaave*, with whom I have often reasoned upon this Subject; and have been Witness to repeated *Experiments* in order to discover a proper *Dissolvent* for the *Stone* in the *Bladder*, yet all his Tryals were vain and ineffectual, for whatever would dissolve the *Stone* out of the *Body* was not safe to be used inwardly; yet I must own he did, with his usual Candour and good Will towards his Fellow Creatures, strongly recommend our pursuit after such a *Dissolvent*, for that he was not without Hopes but such Thing would one Time or other be discovered; yet I dare say, he never dream'd that this *precious Jewel* would first fall into the Hands of a *Woman*; but perhaps it may indeed, as well as the *Longitude*, be discovered by some common *Mechanic*, which, as the Learned say, will be the Case if ever such Thing be found out.

The late Learned and indefatigable Industrious *Professor Boerhaave*, hath in my Opinion wrote accurately upon the *Stone* and *Gravel*, in his Book entitled *Aphorismi de Cognoscendis et curandis Morbis*, and in his 1428 *Aphorism*, he has these Words, *Neque enim de Specificis Lithontripticis hætenus vera fides*, a plain Declaration that this celebrated *Physician* and *profound Philosopher*, gave no Credit to any of the cry'd-up *Lithontriptics* or specific Preparations then in Vogue, for breaking or dissolving the *Stone* in  
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the *Kidneys* or *Bladder*, notwithstanding what he had observed from the Writings of *Paracelsus*, or the noble *John Baptist Van-Helmont*, and others of later Date, who imagined they had the *Secret*; but this as I have said, should not deter us from making *Experiments* in order to find out a safe *Dissolvent*, and no doubt but it will be best performed with such Things as destroy the putrifying Quality of the *Urine* in the *Kidneys*, &c. and of this sort the following have been observed most remarkable, viz. the essential *Extract* of *Saffron*, or *Aroma Philosophorum* of *Paracelsus*, prepared according to Process LXV of *Boerhaave's Chemistry*, translated by *T. Dallow*: Next to this is *Glauber's sweet Spirit of Nitre*, which was the famous *Lithontriptic* of the renown'd *de la Boe Sylvius*, and formerly sold as an *Arcanum* at a high Price for such Purposes; and *Van-Helmont* had a great Veneration for the *Spirit of Salt* made with *Oil of Vitriol*, *Millepedes* or *Woodlice* (as affirmed by *Wilhelmus Laurembergius*, once a learned Professor of *Physic*) as a powerful *Dissolvent*; for he declares in a Narrative of his own Publication, that he was Cured of a *Stone* in the *Bladder* by the Use of them, bruised and drank in *white Urine*.

I must also declare, that to those troubled with *Gravel Pains*, I have found a *medicated Ale* of great Benefit, and I really believe, if the *Patient* would continue the Drinking of it half a Year or longer, (for Things of this Kind must be continued a long while together) it would bring away most or all the *Gravel*, lodging in the *urinary Passages*; the Method of preparing it is, to take an Ounce and a half of *Daucus*  
or

or wild Carrot Seed, to a Gallon of Ale-Wort, made without any Hops; and when it is worked long enough with Yeast or Barm, to tun it up with the bruised Seed mixed with it. And if one make eight or ten Gallons at a Time it is best, nor will it be unpleasant *Liquor*; the great Boyle tells us, that an eminent *Physician* assured him of the Virtue of this Seed in *Nephritic Cases*, for where he recommended the Use of them he mostly lost his Employ on that Account, insomuch that he smiling said, their Efficacy was too Great in such Disorders.

It is likewise found by Experience, that the soft *Malt-Liquors* sold in the Public Houses in London, are of Service in the Stone and Gravel; more particularly the common Porter, (as it is called) is a favourite *Liquor* of an able Statesman of the present Times, who finds his Account in it, not only as a Preservative against the Gravel, &c. but also in relation to *Politicks*; for his negotiatory Schemes (as I am well informed) never answered better, than when they were settled over a Mug of the pacific *Liquor* called Porter.

I remember a remarkable Instance of these *Liquors* being Beneficial in the Stone, which was this, viz. — Smith, Esq. late of Kendal in Westmoreland, came to Dr. Worthington, of Wigan, (with whom I was then Apprentice) to be Cut for the Stone, but not agreeing upon Terms, he went to London, with a Design to be Cut by Mr. Fern, of St. Thomas's Hospital; but when he had stay'd about a Fortnight in Town, and drank the common soft *Liquors*, (it is all one, whether they are prepared from Malt or Molasses) he found himself so easy, that

tho' he lived there several, nay I think ten or a dozen Years, he never was Cut; but if ever he try'd to come down into the Country, he piss'd Blood by the Time he got to *Barnet* or *St. Alban's*, and turn'd back in a hurry to his old Friend *Porter*, &c. which by its contrary Quality to Liquors that breed the *Stone*, made the Outside of it soft, and consequently it lay easy.

The following was a Secret with *Dr. Fuller*, who writ the *Pharmacopœia Extemporanea*, one of the best Books of its Kind, extant at that Time of Day; and what he has said in relation to the *Stone* in the *Kidney* being forced into the *Ureters*, is very Just; therefore he prescribes the *Medicine* only in Cases of *reddish Gravel*, which is a sort that very seldom grows to a *Stone*; (as we say) the Prescription is this. Take Juice of *Parsley*, one Ounce and a half; of *Brandy*, half an Ounce; of *Oil of Aniseed*, two Drops; of *Spirit of Sal-armoniac*, eight Drops; and of *Sugar*, two Drachms; mix.

Then follows his Account of its Virtues; viz. *Urinam ciet, saburram pituitosam, Tartarum granulenscens, & Arenulas quam potentissimè expellit. In grandiori verò Calculo, ab hujusmodi valenter provocantibus, omnimodo absistendum erit; nè, si in Rene sit, eum in Ureterem fortitèr impellant, ejusque Canalem, (quasi Epistomio) strictim obturent; atque ità Suppressionem Urine funestam inferant. Si in vesica; ne mucum viscidum (qui Calculum crasse obvelat, illiusque Asperitates, quasi Thecâ, mollitèr recondit) eluant, atque etiam Calculum ipsum fortiùs exagitent; è caveâ, ubi quietus latuit, deturbent; dirumque trucemque Paroxysmum pessime excitent.*

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By this Description it appears, that Dr. Fuller had a just Notion of the *Gravel* and *Stone*, for in the latter of these all forcing Medicines do Harm, by Reason if the *Stone* be in the *Kidneys*, and thence dislodg'd by jolting the Body on Horseback, &c. or forced out by *diuretic Medicines* into the *Ureters*, and there happen to stick, the Consequence is, violent *Leipothymies*, enormous Vomitings and Death itself, which was the Case of a very honest Neighbour of mine, just at the Time I am treating upon this Point; for he happened to ride twenty Miles after he had had a deal of Rest and Ease, by which he forced a *Stone* out of the *Kidney* into the *Ureter*, that caused a Suppression of *Urine*, (in a great Measure) occasioned Bilious Vomitings, and killed him in about eight or ten Days: Now in this Case, no Help could be administered from any Quarter, therefore it may with more Justice be stiled a *Miserere mei Deus*, than the *Iliac Passion* or Disease called the *Volvulus*, which is frequently under such piteous Term.

Secondly, all such Things, as by their soft and mucilaginous Quality, help to sheath the Points or Asperities of the *stony Concretion*, are of Service; and of this Kind is the *Radix-althea* or *Marsh-mallow Root*, a Decoction of which properly edulcated, is excellent, since it has been found, that this *Root* of all others, contains most *Salts*; I mean, it contains more of a *diuretic Salt* than any of the Mucilaginous ones, and it is by this Contexture of Parts, that it both forces *Urine*, and guards the Vessels thro' which the *Sabulous* or gravelly Particles pass, against the Irritations of such Particles, and

sharpness of the Humours that happen to be fecerned on such Accounts.

The Root of *Asparagus* is also of Service, either in Decoction or Inspissation, and that for the very Reason that was assigned by *Van-belmont*, for its breeding the *Stone*; for he imagined, that because it occasioned the *Urine* to be voided in a putrid State, therefore it might breed the *Stone*, &c. but it is so far from that, that all Things which contribute to the *Urine's Putrefaction*, or in other Words, *whatsoever affects the serous part of the Blood, so as to cause the Urine to be voided in a turbid and putrified State, I dare say will upon Tryal, be found to hinder the generation of Gravel or Animal Tartar*; for nothing is more plain than this, *viz.* that so sure as any Person, Subject to the *Gravel*, makes clear pellucid *Urine*, so sure he must have a *Fit* of the *Distemper*, and the Reason is also as plain, because when the Particles of *Gravel* are so gathered together that they partly obstruct the Passages of the *Urine* in the *Pelvis* of the *Kidneys*, it is then percolated, as it were, through a *Gravel-bed* clear and transparent; but when these heaps of *Sabulous Matter* are broken, either by *Nature* or *Art*, it is then the *Urine* is rendered high-coloured, turbid, and fuller of Contents.

*In fine*, I am of Opinion, that the only way to keep clear of the *Stone* and *Gravel*, is to drink *soft demulcient Liquors*, such as will hinder the *Animal Tartar* from forming a *Stone*, of which enough before; and to live much on *Herbs, Roots, &c.* such chiefly are *Turnips, Parsnips, &c.* but when once the *Nucleus*, or *Kernel* of the *Stone* is found in the *Kidney* or *Bladder*,

*der*, it is a most deplorable Case, for then it is that the *Tartarine Particles* of the *Urine* are more attracted by far, than they were before, and the *stony Concretion* comes on a-pace; this Truth I need not farther illustrate, than by recommending the shooting of *Salts* in *Crystallization*, to the Observation of the *Reader*; for he'll find when they approach so near, as to come within the *Sphere* of one another's Attraction, they will then coalesce very fast, and the more so, as the *Saline Crystal* increases in bulk, and just so it fares with those who have the *Stone*.

I own I have seen hard *chalky Substances* vomited up in Quantities from the *Stomachs* of some People, and such like Concretes caught up from the *Lungs* of others; and I have read Accounts of *stony Concretions* in several Parts of the *Body*, besides the *Kidneys* and *Bladder*; but whether these are to be brought under the *Doctrine* I have advanced, I much Question; for, as I have said before, so I have good Reason to believe, that the *Calculus Humanus* is formed from *Urine thoroughly digested*, &c. so that these Concretions, I mean those of the *Stomach*, *Lungs*, and those in the Heads of *Craw-fish*, commonly called *Crab's Eyes*, or *Lapides Crancorum*, &c. must proceed from other Causes, not very hard to be assigned, if Brevity did not at present restrain me from it.

I shall now proceed to give you an Account of a new Operation I have several Times performed, with wished for Success, in a total Suppression of *Urine*, which Distemper you know we call the *Ischury*; and this I have been forced to, when neither the best *Ischurietics* would



would make the *Patient* void his *Urine*, nor the *Catheter* be in such Cases introduced; and, as the *Operation* was never practised in such Complaints, I esteem myself Happy in being the *first Discoverer* of it. And I do assure you, that you have it under my Hand as it was performed by me, as well as a just Account of what occurred to my *Patients* afterwards; but *first* I beg leave to shew, what was my Reason of venturing out of the common Road or Practice, on these Occasions. And it was this, *viz.*

In the Year 1723, I was called upon to visit *Thomas Dickenson*, of *Heysham*, near *Lancaster*; he was then about sixty Years of Age, and likely enough to live twenty Years longer, had not an *Ischury* or Suppression of *Urine* seized him.

When I came to him I found him in great Agonies and violent Pain, and laying my Hand upon the Region of the *Bladder*, I found he had *three* or *four Pints* of *Urine* contained in it; besides what he might have else where between the *Kidneys*, &c. for when the *Bladder* is full of *Urine*, I am of Opinion, the *Pelvis* of the *Kidneys*, as well as the *Ureters*, are violently upon the stretch, by Reason the *Bladder* is already so distended with *Urine*, that the *Detrusores Urinæ* contract spontaneously, and with as much force as possible to get rid of the Enemy, whereby the *Urine* is hindered from entering the *Bladder*, and kept back in the *Kidneys*, *Ureters*, &c. and from hence the *Sick* complain of Excrutiating Pains in the *Loins*, &c. But to proceed.

When I found so much *Urine* in the Man's *Bladder*, I judged it more to the Purpose, to  
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send for my *Catheter*, than to try *diuretics* or *Ischurietic Medicines*, for when once the *Fibres* of the *Bladder* are stretched beyond their *natural Tone*, or in other more plain Words, when the *Weight of Urine* to be moved, exceeds the *Force* or contracting Power of the *muscular Fibres* of the *Bladder*, then it is that a *Suppression of Urine*, or what we call an *Ischury*, is produced.

As for the *procatarctic*, or first Cause of this *Distemper*, I think it may be termed a Kind of *Palsy*, in which the *first* and *second* Pair of *Nerves* of the *Loins* spread upon the *Bladder*, are in some sort obstructed; and when once this happens, as is often the Case in old Age, when *Nature*, as we call it, has been worn out by excess as well as length of Years; I say, when this falls out, the *Bladder* fills so insensibly, that the *Patient* does not feel the *Weight of Urine*, till his *Bladder* be on the stretch to a great Degree, and then indeed, he has frequent and violent straining to make Water, but can only make a few Drops at a Time, so that till the *Load* be removed by *Art*, he must continue in Pain as if he was poised upon a *Pitchfork*.

I must own, that when we talk of *Paralytic Diseases* or *Indispositions* in any Part of the *Body*, we talk by guess; but if the *Authors* who treat upon such Diseases, would keep within Compass, one would allow them now and then, to talk of *Animal Spirits*, &c. but they should not with Dr. *Willis*, once the famed *London Æsculapius*, order the *Animal Spirits* to move backwards and forwards, and sometimes Circular, just as he wanted them to serve his  
turn,

turn; all which this *Habile Homme* hath performed in his Books *de Pathologia Cerebri, de Morbis Convulsivis*, and also in his *Pharmaceutica Rationalis*; in some of which *Treatises*, he has not only made the *Animal Spirits* move in the directions I have mentioned, but seems to have try'd, as much as he could, to make them move in *Curve Lines*, which I don't doubt but he would have done, had his Skill in *Geometry* carried him so far; so that in the main, his *Doctrine* is only the *Doctrine* of the *Antients*, disguis'd under *new Forms*, and all his boasted *Philosophy*, depends upon the uncertain wandering of the *Blood* to all the *Parts* of the *Body*; and particularly upon the voluntary *Motion* and *Refluence* of his *nervous Liquor*, through all manner of *Passages*; and, as *Physicians* of all *Men* seem covetous of new *Discoveries*, so they are commonly taken with the novelty of *Terms*, but the more sagacious *Part* of them seem to avoid these *Mistakes*, and to proceed upon *Experiments* and *Demonstrations*; I mean, at least, so far as either our own *Eyes* or the help of *Glasses* will discover; and from what we see, we can draw such *Conclusions of the Motion of Matter* which eludes our *Sight*, that unless a *Man* will deny his *Reason* he must assent to them.

What I would infer from hence is, that whenever I make Use of the Term *Animal Spirits*, I hope it is done in such Manner, as may plainly be understood; which if so, it answers my End; but many there are who have filled Pages upon Pages, with Discourses upon the *Nervous Fluid, Liquidum Nervosum, &c.* whose learned Performances amount to  
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no more than so many *Entbusiastic Dreams* or *Philosophical Romances* of trifling *Sages*, such as those who tell us of *substantial Forms* of inanimate *Bodies*, *Occult Qualities* and the like *Absurdities*, contained in the *Doctrines* of *Plato*, *Aristotle* and their followers. But to return.

This *Distemper* may likewise have its rise from retaining the *Urine* too long, whether through *Modesty* or *Laziness*, the first of which was the Case with the *famed Astrologer Ticho Brabe*, Son of *Otho Brabe*, who being Travelling in a Coach with the *Emperor Rodolphus II.* Son to *Maximilian*, the second King of the *Romans*, he, out of *Modesty* retained his *Urine* so long, that he died of an *Ischury* in the 55th Year of his Age; which Example should deter all Mankind from being guilty of such *ill-timed Modesty*.

One Thing farther I must observe to you, Sir, that though I have had several *Women* afflicted for some Weeks with this *Distemper*, I never had occasion to perform my Operation upon them, because the Passage to their *Bladder* is so short and streight, that they may be relieved from Time to Time with a proper *Catheter*, and by this, along with other Means, the *Bladder* may recover it's *natural Tone* and Power of *Contraction*; nay, I have known the Case happen to one Woman, who carried her Burthen so low during her *Pregnancy*, that the Head of the *Infant* when it grew large, so pressed the Neck of the *Bladder*, that I was obliged for a Month before her Time, to take off her *Urine* with a *Catheter*.

An *Ischury* may likewise proceed from too great a *Contraction* of the *Sphincter Vesicae*, or

Muscle at the upper Part of the Neck of the *Bladder*, whereby the Egress of the Urine is totally stopt, or at least so as to be only rendered *guttatim*, or Drop by Drop, and in such Case it is called a *Strangury*, or *Urinæ Stillicidium*; for the Office of the *Sphincter Muscle* of the *Bladder* is to Contract to a certain Degree and no farther, which, if it should exceed it would (together with the necessary weight of *Urine* brought on by such Cause) so oppose the Action of the *Detrusores Urinæ*, &c. that it would be impossible for a Man to void his *Urine* under such Circumstances.

When I had taken this Man's *Urine* off by the *Catheter*, he was very easy and free from Pain, and even as well as any of his Family, till about *six* or *eight* Hours afterwards, when the *Bladder* began again to press his *Loins*, *Hips*, &c. with the Weight of Water, so I was obliged to go Morning and Evening to him in order to take off his Load, otherwise he was upon the Rack tossing and tumbling about from Place to Place like one in Distraction; he continued after this Manner for about a Week, and I used all the common Things inwardly as well as outwardly in such Cases, but I found the Neck of the *Bladder* by the frequent Introduction of the *Catheter*, begun to swell and obstruct my Design; however, I took off his *Urine* as long as I could, yet I found at last I must be obliged to desist, for no Passage could be traced so as to enter the *Bladder* by the *Urethra*; in *fine*, he died in about three or four Days afterwards.

The next *Patient* that was under my Care, was a *Joiner* about thirty Years of Age, who was working

working at some Wainscoting at Mr. Coles, of Coat, near Lancaster; he was upon some Scaffolding that gave way, which threw him upon the Edge of one of the Boards that supported the Scaffold, and this happening even between his Legs he dropt plumb down and so crushed himself, that he could not make *Water*, upon which, when he could bear the Pain no longer, I was called to assist him; he was no way bruised except in the Place mentioned, nor could I observe any outward Tumour or Swelling; however, as he was in such Pain and his Bladder ready to burst with *Urine*, I thought proper to ease him as soon as possible, without staying for the Effect of *Diuretic Medicines*; so I introduced the *Catheter* and drew off about *two Quarts of Urine*; after which he was easy and walked on Foot to Lancaster from Coat, which is about three Miles, but the next Day he was as bad as ever, and could not get quit of a spoonful of *Urine* at twenty *Fits of straining*, notwithstanding he had *Terebinthinate Clysters*, *Spirit of Nitri Dulcis*, with other forcible *Diuretics* administered to him at due Intervals; I also ordered him to sit over an *emollient Fomentation* two or three Times a Day, in order to relax, if possible, the Parts about the Neck of the *Bladder*, which were bruised by the Fall, but all to no manner of Purpose; then I tried *emollient Injections* with a *Syringe* through the *Catheter*, into which I dropt a little *Chemical Oil of Juniper*, but all would not do, for the *Sphincter Muscle* of the Bladder continued to swell inwardly, so that at last I could not find a Passage without violence to the Parts, which I found were as tender as

possible, for the End of my *Catheter* seemed sometimes to pass into a Kind of *Fungous Flesh*, after which there would issue out some Drops of *Blood*; this was about a Week from the Time of his Fall.

Some may imagine that I might perhaps handle these *Patients* too rudely, or, that it has been want of Judgment in me, otherwise say they, I might easily have passed the *Catheter*; but I would have such *Tyro's* to know, that I am perhaps as nimble Finger'd, and as well acquainted with the Parts of an *Human Body*, as those who may find fault with my *Practice*; indeed when I was a *Student* Abroad, I thought it an easy Matter to pass the *Catheter* into a Man's Bladder, for this *Operation* was the first we were trying to perform every Morning upon dead Bodies, of which there was sometimes *fifteen*, sometimes *twenty*, and seldom less than *ten*, sent up into the *Amphitheatre* for *Dissection* at the *Hotel de Dieu* at *Paris*, during the cold Months; but being at the *Amphitheatre* of *St. Cosme* in that City, where I usually attended their *Anatomical Lectures and Courses of Operations in Surgery*, and standing by the Elbow of that justly celebrated Surgeon *Monf. Petit*, when he was performing the *Operation of Lythotomy* upon a dead Subject, I observed he was sadly puzzl'd in introducing the *Soundè* or *channel'd Catheter*, infomuch, that through the Solemnity of the *Audience*, his Hand begun to tremble, and he was going to desist, for he thought to have performed the Thing with an *Air of Dexterity*, as I observed, but missing his first Flourish, he was forely abash'd; however, as I was known to be one  
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of *Monf. Petit's Pupils*, I took hold of the *Catheter*, and happened to hit upon the right Road without Difficulty.

I speak this for the Benefit of such, who, when they have luckily performed any of the *Operations* in our Way, at the Beginning of their Practice, imagine they can meet with no Rubs afterwards, and to remind them, that a *great many Things go to all Things*; for the Study of *Physic* and *Surgery*, is far more pleasant than the *Practice*, since one can scarce find two *Subjects* alike whereon to Operate. But to return to my Account.

In about *ten Days* this young Man died, and under great Torment no doubt, for I could not make him *Urine* by the Use of Medicines, neither could I pass the *Catheter* into his *Bladder* for his Relief, which I must own was great Trouble to me, because he was young and otherwise healthy, and very desirous to Marry a young *Girl* that attended him in his Illness; and yet I durst not venture out of the *common Practice*, for fear of Censure and Party Malice, the latter of which I have sufficiently felt a few Years past; so that by the Way, it is not Politick in one of our Business to join with any *Party* but rather sit *neuter*; for, as far as I have try'd, there is near a better amongst them, *as the Fellow said by the Fox Cubs*.

The third *Patient* I had of this Kind, was one *Thomas Dallworth* of *Upper-Wyerdale* near *Lancaster*, a Man of about seventy Years of Age, he had the like *Symptoms*, and died in the same Way with the former. After he had suffered the usual Pains of a *Suppression of Urine* for about

eight



*eight or ten Days*, tho' he was in other respects healthful.

The Death of these three Men, who had no Ailment besides a *Suppressio Urinae*, made me resolve, whenever I had an Opportunity, and, when every Thing else had been ineffectually try'd, to perform a *new Operation* and attempt a *Cure* in such Cases; accordingly, about the Middle of *January 1726*, I was called upon for my Advice to Mr. *Bryan Dixon* of *Caton*, near *Lancaster*, who, I found much in the same Case with those already mentioned, only with this Difference (*viz.*) that his *Bladder* was more distended with *Urine* and almost ready to burst.

This Man was about *Forty Years* of Age, healthful and Strong, (excepting the *Suppression* of his *Urine*) nor had he (as he informed me) ever any Impediment in the *retentive* or *expulsive Faculties* before, but on the contrary, made *Water* as well as any Man living. He imagined himself to have brought this Disorder upon him by sitting too long in an *Ale-House* with his *Bon Companions* when he wanted to make *Water*, so that when he came to try, he could not piss one Drop.

I try'd to introduce my *Catheter*, but without effecting it, for all was bush'd up close, and no Way left whereby I could enter the *Bladder* with Safety the common Way; and moreover, I found the Neck of the *Bladder* so tender and spongy, that I was afraid of being too busy with the *Instrument*, lest I should bring on an *Ulcer* in so dangerous a Part; and besides this, I was pretty sure, that tho' I did succeed with the *Catheter*, yet his *Bladder* had been so much on the Stretch, that once or twice, nay many times  
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taking off his *Urine* would not effect a *Cure*, but that it was ten to one he would lose his *Life* as the rest had done, for the *Bladder* was benumb'd and insensible, and consequently would not be *stimulated* sufficiently 'till the *Weight* of *Urine* was too great to remove, and the *Detrusores Urinæ* not able to contract themselves, even with the Assistance of the *Abdominical-Muscles*, for Reasons before observed; however, still very unwilling to venture my *Reputation*, I made repeated attempts to pass the *Catheter* into his *Bladder*, and he was very willing to let me do any Thing I pleas'd with him, for he said he must die he was sure, so I might try what *Experiments* I would upon him.

*In fine*, I sent my Servant for my *Bistories*, which I make Use of in *Cutting for the Stone*, and having armed the broader of the two with narrow *Filleting*, so far as I judg'd necessary, I made an *Incision* just in the middle above the *Os Pubis*, commonly called the *Sheer-Bone*, into the *Body* of the *Bladder*, upon which there came out *five Pints of Urine* and upwards, as several of the *By-standers* yet alive can testify to any that may require it.

This *Operation* is not at all painful, when the *Bladder*, &c. are so much upon the stretch, for the *Parts* are benumb'd and in a Kind of *Palsy*.

When the *Urine* was run off he was very easy and slept well that *Night*, with the help of a very slender *Anodyne*, and next *Day* I dress'd the *Wound* with a very large *Tent* (for it was two *Inches* long) dipt in *Linimentum Arcæi* and *Bals. Peru* warm, with *Empl. Compress* and *Bandage*, but I judg'd as it fell out, *viz.* that the

the *Tent* would not stay in the Wound between the Dressings, so I ordered the *Assistant* to tye a few small Feathers together, and dip the Ends of them in the aforesaid *Liniment* and *Balsam*, equally mixt and warm, and to pass them thro' the *common Integuments* at the Orifice I had made, and so to the *Wound* in the *Bladder*.

We proceeded in this Manner for five Weeks, during which Space of Time not one Drop of *Urine* came the right Way through the *Urethra*, although I now and then passed a *Catheter* as far as I could, in order to keep the Passage open, and rubb'd the *Instrument* over with *Pomatum* or the like, though I think there is no occasion for so doing, because of the small *Glands* on each Side the *Bulb* of the *Urethra*; I say, these with one more Situate upon the Internal Membrane of the *Urethra*, separate a *viscous transparent Liquor*, in order to defend the inside of the *Meatus Urinarius* from the Acrimony of the *Salts* of the *Urine*, and to facilitate the Passage of the *Semen* in the Times of *Coition*; and moreover, I think the *Urethra* or *Meatus Urinarius*, would not grow together any more than one's Lips, or the *Vagina* of Women, by Reason of the thin Skin with which those Parts are covered; yet if this covering was taken off, no doubt but the *Lips*, *Nostrils*, *Eye-Lids*, *Meatus Urinarius*, *Vagina*, *Anus*, &c. might be made to Consolidate or grow together, as in the *Taliocottian Operation*, merrily described by the witty and facetious *Butler* in his *Hudibras*.

I say, for these Reasons I think I had no Occasion to use the *Catheter*, but then I was afraid I might have wounded the *Urethra* near the Entrance of the *Bladder*, by attempting to open the

the Passage; for there came away Drops of Blood in some of the Tryals, therefore I was apprehensive that the *Meatus Urinarius*, might have closed up so far as the Wound spread, and more particularly for this Reason it was, that I made Use of the Instrument in like Manner, as we do when we Cut *in Perineo* for the *Stone*.

During the five Weeks from the *Operation*, I had various Reasonings with myself about the Event of this *new Method of Cure in the Ischury*; for as my *Patient* was very easy and well, only the outward Skin over which the *Urine* flow'd, was now and then a little sore, which we cooled as well as we could, with the common *white Ointment*; I say, it gave me some uneasiness to think how Matters would be, when the *Wound* made into the *Bladder* was near healed, but I was of Opinion, that as the Disorder of the *Bladder* proceeded from a coldness and insensibility of that Bowel, that therefore if I could rouse the *natural beat* of the Part, it might be of Service to the Cure, and this no doubt was done by the *stimulus* of the *Wound*. Add to this, that while the *Urine* was running off through the Orifice in the *Hypogaster*, the *Fibres* of the *Bladder* were in a State of Contraction, and (as it were) striving to restore themselves to their natural *Elasticity*; for it is the Property of a *Fibre* to do this upon every removal of the *distractile Force*, which, in the present Case, was the Weight of *Urine*, that when moved, gave Liberty to the *Fibres*, according as I have mentioned. Farthermore, the *Bladder* in these five Week's Time, must be so contracted, that it would be sensible of a

small Weight of *Urine*, and stimulated to expel it, before it should become too great a Burthen to remove; and this I thought, together with *Fomentations*, &c. used in order to disperse the Swelling about the Neck of *Bladder*, might bid fair for a *Cure*.

About the sixth Week my *Patient* seemed a little uneasy, and had frequent offers to make *Water*, for it was whether for whether with him, as to *Life* or *Death*; yet, and I must say so far for him, he was to all appearance as resigned a Person as ever I had to do with, for he frequently said, that *Death was as welcome as Life*, and that he was satisfied I had done my Endeavour to recover him, so freely submitted to the *Almighty's* Will and Pleasure; but on my going over one Morning to visit him, I was agreeably surprized with *half a Pint* or thereabouts of *Urine*, which he had voided the right Way, and from that Time he continued to part with his *Water* better and better, so that in ten Days more the Wounds were healed, and my *Patient* sound and hearty to this Day: Whereas some of the neighbouring Men, who told me I might do what I would, and try *Experience* (as they called it) as long as I pleased, but the Man was as surely a dead Man as he was then living; I say, several of these are gone off the Stage before my *Patient*, who may yet live to see many Years, for I know no Body more Healthful.

The *second* that I cured in this Manner, was a Boy about a Year old, *viz.* *Henry* the Son of Mr. *William Doldern*, late of *Lancaster*; this

this was in *September* 1727, and he is at this Time living and well; he had no untoward Symptom during the *Cure*.

The *third* was one *Edward Jackson*, of *Bulk*, near *Lancaster*, aged about *seventy Years*, he was cured in like Manner by me, and lived three Years in good Health, as his Age would allow, but died at last of a *Suppressio Urinae*, which I don't wonder at; for the Parts had lost their Vigour, and were not able to assist my Endeavours in any more Tryals for his Recovery, although I was prevailed upon by him to make the Incision into his *Bladder*, in order that he might have a Chance for *Cure*, or otherwise to die with as much Ease as the *Nature of Man* will allow off; and so he did without Complaint or much Pain.

I must own that the make of the Bladder, which is thin and Membranous, deter'd me a little from performing this *Operation*; but then I consider'd this part of the Bladder is Cut through in *the high Operation for the Stone*, which Method happened to be in great Vogue about the Time I performed these *Cures*; and although *Dr. Douglass* cannot be said to be the *first* that used that Method, yet as he was reviving it, it would be some Excuse for me, provided any of my *Patients* which I had Cut for the *Ischury* had miscarried; though I thank *God* that I have no occasion to offer Precedents, since the People all of them recovered; yet I must own it is good to have Precedents to warrants one's *Practice*, since *Prejudice* and *Party Malice* are grown so high, on account of diffe-

rent Opinions in voting for *Members* to serve in *Parliament*; for I was threatened with no less than an Indictment for *Murder*, if a *Patient* under my Care, about three Years ago, had died after I had cut him for the *Stone*; I mean, if he had died in a few Weeks; but how hard would this have been (after I had Cut great Numbers successfully before) I leave you or any reasonable Man to Judge, and besides, the *Operation* at best is one of the most precarious; however, my *Patient* got through the Thing, and so I hope I am safe at present, from such Kind of *Indictments*.

Since the Year 1726, I have had at least ten *Men* and six *Women* Patients, who laboured under a *Suppressio Urinae*, but as they sent for me in the *first Stage* of the *Distemper*, before the Bladder was too much distended with the Weight of *Water*, and the *Fibres* in some Capacity of being restored to their *Elasticity*, without performing my new Operation upon them; I say, for these Reasons they all recovered, after their *Urine* had been taken off by the *Catheter*, for about *ten* or a *dozen* Times; nay, I remember two of the *Women* that could not *Urine* at all, till the *Catheter* had been used twice a Day, for the Space of three Weeks or a Month, in which Time indeed the *Bladder* recovered its *natural Tone* and Power of expelling the *Urine*.

I forgot to mention that when the *Urine* began to flow through the *Urethra*, after my new Method of Cutting for this *Distemper*, there was, for a Week at least, the oddest Kind

Kind of *Sediment* in it I ever saw, for it was large in Quantity, and of the Consistence and Colour of thin *Glue*, or thin stiff *Jelly*; nay, the whole that came that way was nearly such like *gelatinous Matter*, so that I was surprized it did not stop up the Passage a new.

This, the ignorant People took for the Matter which caused the Disorder, though it has no relation to it in the least, for it is no other than the *viscous* and slippery Matter, which I have mentioned a while ago, that is separated by the small *Glands*, and which is designed by *Nature* to lubricate the inside of the *Bladder*, and thereby hinder the Adhesion and Concretion of *Animal Tartar* or *Sabulous Matter*, in the Manner I have before recited; I say, during the Healing of the Wounds, there happens to be a large Collection of such *gelatinous Matter* of a brownish Colour, and Consistence, like *Glue*, that is forced off by the *Urine* through the *Meatus Urinarius*, so soon as that *Recrement* can no longer run off by the Artificial Orifice made through the *common Integuments* in the *Hypogaster*, and so continues to be discharged, till all is consumed, or at least till no more is separated than just enough to defend the Sides of the *Bladder* as aforesaid; which is so inconsiderable in Quantity, that the same serves only as an Addition to what we Term the *Hypostasis* in the bottom of the *Urinal*.

Lastly, I beg leave to mention to you, that after I had in these Cases used all the common Tribe of *Diuretics* and *Stimulants*, such as *Spirit Nitri Dulcis*, *Terebinthinate Medicines*, *Tincture*  
of



of *Cantbarides* and the like, in order to heat the *Urine*, and stimulate the *Bladder* to expel it, before it became too heavy to remove: I say, after all these ineffectual Administrations, I at last hit upon one of *Nature's Preparations*, which has performed wonderfully and to my Satisfaction in provoking *Urine*; but it will not do when the Distemper, I mean the *Ischury* is in its *last Stage*, for in such Cases, I am of Opinion, the *Patient* (if of the Male-Sex) must undergo the *Operation* of Cutting, or else die in exquisite Pain and Torment, as it is possible for Man to conceive; for they generally are in Health and well when they are first afflicted with the Disorder; so that I say, when they die in Strength they must die in most Pain.

The *Diuretic* or *stimulating Drug* which I found so serviceable in these Cases, is what is called by the Sailors, *Chyan Butter* or *Chyan-Pepper*, and brought from *Guinea* and the *West-Indies*; it is a brownish Sort of rough Powder, something like the *Salt of Amber*, when not clear of its Oil, is a little pungent upon the *Tongue*, but exceeding hot and fiery in the *Throat*; with this a *Gentleman* of my Acquaintance, used to play Tricks with his Pot Companions by conveying a little of it into their Cups, which set their *Throats* on Fire, and often gave them the *Strangury*, which is nothing else you know but a Desire of making Water often and in small Quantities; upon which I used it in Cases of the *Ischury* as mentioned, and I am of Opinion it is one of the best *stimulants* to *Urine* that is yet discover'd; I give it from a *Scruple* to a *Drachm*  
in

in Weight, and sometimes more, where the *Constitution* is strong and robust.

If you have any *Queries* to offer upon the Subject of this Letter, I will do my best Endeavours to Answer them; for I am at all Times

S I R,

Lancaster Mar.  
19, 1738-9.

*Your most Obedient Servant,*

HENRY BRACKEN.

F I N I S.

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1738

HENRY BRADEN.

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