A short Examen *of the* Stones *sent the* R. Society *from* Berne, *whereof an account is given in the last* Transaction: *By* Frederick Slare M.D.R.S.Soc.

THose that have made Experiments in *Hydrostaticks*, do find all pure Metals to have Specifick and peculiar Gravities to themselves, and those very differing one from another. From this hint I formerly endeavoured to discover the Nature of the *Calculus Humanus* (which I found to have no attributes that are proper to a real Stone) and bringing them to a *Hydrostatical Test*, I found them very differing in their specifick Gravity, and very remote from an equal proportion to their bulke of common Stone, when weighed in Water. After the same manner in order to the better inquiry into the Nature of this *Helvetian Concretion*, I made it my first attempt to compare it with its Relative *Pondus* to Water, having first of all satisfyed my self that there is a certaine Term of Gravity that all true and genuine Stones (the which are a sort of *Natural Vitrifications*) do meet in or arrive at: That is, that there is a Standard of Gravity so competent to all real Stones, that where they decline from this Standard, we have good reason to question those *Concretions*, whether they are Stones or no. The Standard of Gravity for real Stones I find to be generally about two to one of the common *Fluid*, that is the bulke of the former, to answer double the bulke of the latter, and a little more. In our *Examen* of this *Concretion*, this Stone was very hard and seemingly heavy, but being brought to the *Hydrostatical Tryal*, it was very Spungy, for when it lay under Water, there passed a good while before I could clear it of the lurking bubbles, so that it grew heavyer, from time to time as the bubbles were expeld, and at last arrived near the Standard of a true Stony *Concretion*, or rather somwhat beyond it.

This

This Stone ſent us for thirteen Dramms, muſt either have been *Averdupoiſe*, or elſe is waſted ſomething, for I found it only to weigh

In the *Air* 12 *dr.* — 36 *gr.*
In *Water* 6 *dr.* — 48 *gr.*

The difference betwixt the weight of this Stone ſo called, in the *Air* and in *Water* comes to 5 *dr.* — 48 *gr.*

The proportion betwixt this *Concrete* and Water, proves to be as 756 to 348, or as two and ſomewhat more than a ſixth to one. This extraodinary *Pondus* or Gravity makes the matter of a greater conſideration, and worthy our further Inquiry whether there be not ſome Metallick Ingredient in it.

Whilſt I was making theſe Tryals, I was willing to compare this matter with common *Chalk*, which I found ſpecifically lighter, bearing only the proportion to Water of 521 to 290, conſiderably ſhort of that of 2 to one. Shells and Teſtaceous Bodies do very near agree with this matter; which takes off the former opinion that this Patient, had perhaps devoured Wall, Lime, and ſuch like Teſtaceous Matter, from whence the Stone might receive its original: For this being broken into peices, will not ſo eaſily cement again into ſo compact a Body as it was formerly of, as we ſee in *Whiteing* that is lighter than *Chalk*: Wherefore this being vaſtly heavyer than *Chalk*, can ſcarſe be thought a *Concretion* of ſuch a matter.

I then compared it with petrified Water, being an Icecle that was broken off a *Grotto*, where the petrifying Spring did furniſh enough: This came very near the Gravity of our Rarity, and the uſual weight of ordinary Stones; a peice that weighed five drams out of the Water, diſcovered its weight to beare the proportion of 403 to 184, or 756 to 345 to that of Water. This Anomalous Subſtance being ſo near the weight of our petrifyed Water, would almoſt in-

cline a Man to believe it real Stone, and the rather, becauſe we are informed the Patient Drank much Water. Moreover, the following Experiments upon this matter, do ſeeme to give proof of its being rather of the ordinary Stony Conſtitution, than of that which is proper to Animal *Concretions*. For Inſtance, we firſt of all poured upon it ordinary Vinegar, and it preſently wrought upon it with a hiſſing noiſe, as it did on the petrifyed Water when powder'd. We poured on it *Spirit* of *Vitriol*, and that alſo wrought upon it and diſſolved it, but let it fall again, as *Aqua-fortis* does *Tinn* when it has corroded it; which is agreeable to the Relators Account.

But I do not find he uſed *Spirit* of *Salt*, for this wrought upon it very vigorouſly, and preſently diſſolved it, and kept ſo without any Precipitation.

Theſe Fxperiments do all of them diſtinguiſh this *Concret* (whatever it be) from the ordinary *Animal* Ones, as the *Stone* in the *Bladder*, *Kidney*, the *Tophi*, &c. for theſe will not be diſſolved, or in the leaſt corroded by any of the mentioned *Acids*: Tho' *Spirit* of *Nitre* be a general *Menſtruum*, that diſſolves them all readily.

There are ſome things yet very ſtrange, which make this Caſe peculiar: Namely that thoſe Stones which are generated in the habit of the Body, I mean in the very ſerous part of the Blood, and thoſe that paſſed the *Bladder* have juſt the ſame Nature, with thoſe that are *extra habitum*, even thoſe evacuated *ex Stomacho* and *ex Ano*: for one as well as the other will be preſently corroded, by ſo mild an *Acid* as plaine Vinegar.

The Relator in his *Analyſis* of theſe *Stones*, gives an Account of ſo great a quantity of *Volatile* and *fixt Salt* obtained by his diſtillation, that thoſe *tryals* do neceſſarily make it an *Animal Subſtance*; which Experiment ſo far failed us, that I am not ſatisfyed as to the matter of Fact.

Thus we muſt at preſent leave the Diſcovery imperfect, for according to the Deſcription the Caſe is very Singular; eſpe-

especially as to those *Concretions* generated *extra Habitum* in the Stomack and Guts: That these should abound with *Volatile Salt* is strange, I have tryed the *Bezoar Stone* said to be generated in the Stomacks of some *Animals*, and could obtain no *Volatile Salts* from that Substance; though it herein agree with this Substance, that it is easily wrought on by many *Acids*.

A Short Review.

We need not much doubt, though it be not mentioned, that those cragged and large *Stones*, were ejected *per Anum*, for the *Oesophagus* could not possibly pass them.

The *Stone* in the *Kidney* is often so soft, that it answers the *Cylindrical* Figure of the *Ureter*, but these are much harder, and do not in any measure comply with the Constriction of the *Bowels*.

We may in some measure question that principle, or rather *Hypothesis* of *Acidum*, our Correspondent trusts to, for the *Combination* or *Coagulation* of the Humors in the Body, in order to this *Petrifaction*; it being supposed not proved.

We may also question whether the *fixt* or *Alcalizate Salt*, found in the *Caput Mortuum* after Distillation, were really pre-existent in that forme in the Blood, or other Humors, and not rather a product of the Fire.

It may not be impertinent to inquire after some metallick particles, whether they may not be an *Ingredient* in this ponderous Stone, especially since *Dr. Lister* has found them in much lighter *Concretions*, as those of the *Kidneys* are. For though we find them not in this unprepared stone, yet after Reverberation or a strong Calcination, many bodies have detected an *Iron Contexture*. The *Marchasite* it self, though very pregnant with *Iron*, shews it not, till it has been calcined: which shall be done with some of the remainder, after the Tryall by Distillation.

To deviate a little, though not from a Propoſition made before the *Royal Society*, which was to endeavour what we could, to reduce bodys to ſuch ſetled Standards, as might ſomewhat repreſent their Natures, and free us from falſe and confuſed Conceptions of *Things*, or give us an account of ſome bodies, whoſe Natures we are doubtful of. In a ſmall Treatiſe of the *Calculus Humanus*, I found reaſon to complain of the Impoſition of our Senſes upon our Conceptions in calling that a Stone by its external appearance, when it has no real properties of a Stone. I have alſo, in this, Reaſon to except againſt *Chalke*, (commonly taken for a Stone) for being brought to the *Hydroſtatical Examen*, (if that may be allowed as a Standard) it wants much of the true Conſiſtence of a Stone, as the Calculation mentioned does manifeſt. For it wants much of that weight, which real Stones are proved to have in Water, and it may perhaps be better reckon'd amongſt *Boles* than *Stones*. I found this true, not only in Chalk, but various other bodies taken for granted to be Stones at large: ſome of which are nearer *Earths* than *Stones*, others have nothing but *Earth* and *Sulphur* and *Metall*, and yet muſt be called Stones, (as all *Marchaſites* are.) Of theſe the former, (namely the *Boles*) many of them fall ſhort of our Standard, others are more ponderous and ſo exceed our Standard, whereas true *Stones* though differing much in hardneſs, whether Pebbles, Flints, petrifyed Waters, *&c.* do anſwer the ſame Standard of Specifick gravity that a Diamond does. But that theſe natural bodies ſhould as exactly agree, as Metalls do, when they are by art ſeparated from all *Heterogeneity*, cannot be expected in Compound Bodies, though I doubt not but much uſe may be made of it by thoſe that are more accurate.

A further Tryal of the said Stones by Chymicall distillation. By the same.

WE brought this Stone to a gross powder, and conveyed it into a coated *Retort*, which coated *Retort* was kept for some Houres in a naked Fire, so hot that the Glass melted.

The quantity we put into the retort amounted to half an ounce, twenty Graines. The liquor that came over seems scarce to afford 3 or 4 drops, which looks like Spirit of Hartshorn rectified, and smells much like the same: which plainly discovers it an *Animal substance* though it affords much less than the *Calculus Humanus* does: and by consequence gives us a much larger proportion of *Caput Mortuum* or *Residuum* in the *Retort*: All which is very consentaneous to the nature of the *Stone*, for its Specific Gravity was much heavier than the Stones are, we usually find in the Humane body; and therefore the parts may be supposed more fix'd, or to consist of fewer volatile parts, such as are carryed over by Distillation.

We weigh'd the Remainder in the *Retort* and it came to three Drams and fifty Graines; Ten Graines of which seem'd to hang about the neck of the *Retort* in the form of a dirty hard baked Oyl. The other 20 Graines are partly gone off in Vapour through the Lute, and what we find in the Receiver in a liquid form.

We tryed part of this *Caput mortuum* by applying Mr. *Haaks* strong *Magnet*, to enquire whether it contained any *Iron Particles*, but did not find any would adhere. However there remains yet one Tryal to be made, and that is to give it a much stronger Reverberation in the Fire, and then to see whether some Particles will not prove *Martial*, which may be done at another season.

TWO