

*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 bulk 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 satisfied my self that there is a certain 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 bulk of the former, to answer double the bulk 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 heavier, from time to time as the bubbles were expell'd, and at last arrived near the Standard of a true Stony *Concretion*, or rather somewhat beyond it.

This

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

In the *Air* 12 dr.---36 gr.

In *Water* 6 dr.---43 gr.

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

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 extraordinary *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 pieces, will not 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 heavier than *Chalk*, can scarce 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 piece that weighed five drams out of the *Water*, discovered its weight to bear the proportion of 403 to 184, or 756 to 345 to that of *Water*. This Anomalous Substance being so near the weight of our petrified *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 seem 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 petrify'd Water when powder'd. We power'd on it *Spirit of Vitriol*, and that also wrought upon it and dissolved it, but let it fall again, as *Aqua-fortis* does *Tin* when it has corroded it; which is agreeable to the Relator's 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 Experiments do all of them distinguish this *Concret* (whatever it be) from the ordinary *Animal* Ones, as the *Stone* in the *Bladder*, *Kidney*, and the *Topbi*, &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 *Mens-truum*, 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 ferious part of the Blood, and those that pass'd 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 plain Vinegar.

The Relator in his *Analysis* of these *Stones*, gives an Account of so great a quantity of *Volatile* and *fixt Salt* obtain'd by his distillation, that those *tryals* do necessarily make it an *Animal Substance*; which Experiment so far failed us, that I am not satisfied 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 Stomach and Guts: that these should abound with *Volatile Salt* is strange, I have tryed the *Bezoar Stone*, said to be generated in the Stomachs 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 Humours in the Body, in order to this *Petresfaction*; 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 Humours, and not rather a product of the Fire.

It may not be impertinent to inquire after some metallic 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 Contecture*. The *Marchasite* itself, though very pregnant with *Iron*, shews it not, till it has been calcined: which shall be done with some of the remainder, after the Tryal 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 bodies to such settled 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 *Chalk*, (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, petrified Waters, &c. do answer the same Standard of Specifick gravity that a Diamond does. But that these natural bodies should as exactly agree, as Metals 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 convey-  
ed it into a coated *Retort*, which coated *Retort* was  
kept for some Hours 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 Harts-  
horn rectified, and smells much like the same: which plain-  
ly 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 con-  
sist of fewer volatile parts, such as are carried 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 Oil. The other 20 Grains are partly  
gone off in Vapour thro' the Lute, and what we find in  
the Receiver in a liquid form.

We try'd part of this *Caput mortuum* by applying Mr.  
*Haak's* strong *Magnet*, to enquire whether it contained any  
*Iron Particles*, but did not find any would adhere. How-  
ever 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.