

IV. *An Experiment touching the Weighing of Bodies of the same Species, but of very unequal Surfaces, in Common Water, being of an equal Weight in Common Air.* By Mr. Fr. Hauksbee, F. R. S.

I Took a Piece of Sheet-Brass (which I take to be more close and solid than that which is cast), of an exact Square Inch, weighing just 482 Grains. I then cut as many Square Inches of Brass Tincei, as were equal to the same weight: The Number of these Square Inches were 255. Now these being of an equal weight with the other single piece in Common Air, I concluded from the inequality of their Surfaces, that a considerable disproportion in their Specifick Gravities would ensue, by weighing them in Water; the Water in one touching so many Parts of the Superficies more than in the other: And twas from what is generally asserted, That the smaller Bodies are, so the Disproportions of their Bulks to their Superficies encrease; and that supposing them infinitely small, or as Gold dissolv'd in *Aqua Regis*, or Silver in *Aqua Fortis* must be, then their Superficies being touch'd by so many Parts by the including *Mensstruum*, which is in such a Disproportion to their Diameters or Bulks of Matter, as disposes them to remain suspended in it. This I take to be the General Solution of that Phenomenon; and 'twas these Considerations that gave Birth to this Experiment. Yet when I came to bring it to the Test, I found, to my great surprize, (being prepossess'd on the contrary) but two Grains difference, the single Piece weigh'd in the Water about

422 Grains ; all the other Bodies together, hardly two Grains less : And this upon two or three Tryals succeeded much the same, notwithstanding they were made with all the Caution imaginable. Now since so small an Inequality is the Matter of fact, between Bodies of the same Species weigh'd in Water, whose Disproportions of Surfaces are, as 1 to 255, (for I reckon the Sides of all the Tinsel Bodies to be equal to the Sides of the single Brass piece,) I must conclude, That those Bodies must be infinitely small, whose inequality of their Surfaces to their Bulks does exceed those in this Experiment : For supposing one of these thin Squares should be wrought into the form of a Globe, I am very apt to think, That the Disproportion then of its Surface to its Bulk of Matter, would not be so great as its Present form renders it.

Moreover, That altho the Disproportions of the Surfaces of Bodies, to their bulk of Matter be very great ; yet, that that is the only Reason why a Metallick Body should be suspended in a *Menstruum* specifically lighter than it self, is very doubtful : For certainly if it was so, we might reasonably have expected to have met with a much greater Difference in the Bodies made use of in the newly recited Experiment : For there it should seem necessary, that where we had so great a Difference in point of Superficies, there we should also have had a Difference something proportional in point of weight ; which did not happen. I think therefore that there must be some other Agent, or Quality, not only to assist, but Govern in the Case. And what we call a corroding *Menstruum*, I take to be a Fluid adapt to attract such, or such a Body, (as we find no one of them to operate alike on all ;) but, as I said before, *Aqua Regis* for separating the Parts of Gold, *Aqua Fortis* for Silver : Now this Separation of their Parts by Attraction, seems to proceed from the *Menstruum's* Affection to the Body Im-

mer'd, and the Body reciprocally to the *Menstruum*, and both to act on one another with greater Vigour, than either of their own Particles do upon their contiguous Fellows; by which means a Separation of Parts must (I think) consequently follow. Thus being at liberty, they with the *Menstruum* become as one Body, and remain suspended in any part of it by their Mutual Attraction. And that one *Menstruum* in this Case should affect one Body more than another, is no more than why the Magnet should affect Iron only.

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V *A Letter from the Reverend Mr. W. Derham, F. R. S. to Dr. Hans Sloane, R. S. Secr. giving an Account of some Inundations; Monstrous Births, Appearances in the Heavens, and other Observables he received from Ireland. With his Observations on the Eclipse of the Sun, Sept. 3. and of the Moon, Sept. 18, 1708.*

*Upminster, October 26. 1708.*

S I R,

I Received some time since a Letter from *Maghraselt* in the North of *Ireland*, from a very Intelligent Person there, and great Well-wisher to our *Royal Society*, one Mr. *Neve*; who out of his own good Will had collected some of the *Lough-Neagh* Petrifications, Pieces of the *Giants-Causway*, and other Curiosities, and sent them, he tells me, as far as *Bristol*: But hearing the Society had of them already in their Repository, he took no further care of them.

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