

how these *Effluvia* of Glafs become capable to Act or Perform the Office of a Solid Body, or why ſuch a *Medium* is requir'd in the inward Glafs to produce the Light, I think are worthy the Conſideration of this Society. For I have try'd, that upon letting in a little Air, the Appearance of it dy'd, nor could it then be recover'd in that ſtate altho' diligently endeavour'd.

V. *An Account of an Experiment made before the Royal Society at Gresham College, May 28. 1707. Touching the Difficulty of Separating two Hemispheres, upon the injecting of an Atmosphere of Air on their outward Surfaces, without withdrawing the included Air. By Mr. Fr. Hauksbee, F. R. S.*

Since the greateſt Satisfaction and Demonſtration that can be given for the Credit of any Hypotheſis, is, That the Experiments made to prove the ſame, agree with it in all Reſpects, without force: As in that of Sound, the Air is prov'd the proper Vehicle to communicate it, not only by its leſſening according to the degrees of Rarification; but by its increaſing according to the Degrees of Condensation. Now altho the Preſſure of the Air is evident by a number of Undeniable Experiments made by the Air Pump; Yet the ſeveral Phænomena of which being liable to be accounted for by the *Suctioniſts*, and *Funicularians*, to proceed from ſome (unintelligible) Internal Cauſe; therefore to put the Matter of Fact (I think) paſt all Diſpute, I devis'd the following Experiment.

I took a strong Glass Receiver, open and arm'd with Brass Hoops at top and Bottom: To which parts were apply'd two Brass Plates with wet Leathers between them, but first were included two Brass Hemispheres which joyn'd on a wet Leather, their Diameter was 3 Inches and half. A Mercurial Gage was likewise included. To the upper Hemisphere was screw'd a large Brass Wire, which pass thro' a Box of Leathers that was screw'd on the Upper Plate, and could easily be mov'd up and down without suffering any Air to pass with it. To the upper part of this Slip-Wire was screw'd a Cock, thro' which the Air was to be Injected. In this manner the lower and upper Plate were screw'd strongly to the Receiver; into which, after an Atmosphere of Air had been thrown, (which was easily discoverable by the Gage, the Air in which possessing but half the space it did before,) the Syringe was taken off, and an Iron with an Eye was screw'd on in its Place, by which the whole *Apparatus* was suspended on a Triangle. To this Iron related the Slip-Wire and Upper Hemisphere; All the rest being part of the weight made use of to separate them. Then into the Scale, which hung at its bottom, was put in so much Weight as, with its Aggregate, amounted to full 140 Pound, before the Hemispheres could be parted: The Friction of the Slip-Wire thro' the Box of Leathers was very inconsiderable. Now how those Gentlemen, who account for the Ottogerick Experiment by Suction, or the Funicular Power, how, I say, will their Hypothesis Answer for this, which is only the Reverse of it, (there being no room left to apply either, the Air within the Hemispheres remaining in its natural State) I cannot tell; but think they must abandon their Reason to deny the Doctrine of the Airs Pressure, after so convincing an Experiment as this, which not only most strongly confirms and establishes the same, but leaves no manner of Umbrage for any other Hypothesis to take place in it.

P O S T S C R I P T.

I have since repeated the same Experiment with the like Success as before. And to try how agreeable it would answer all manner of ways, I caus'd the same two Hemispheres to be exhausted of their Air, and then found that the like weight was requir'd for their Separation, as when the additional Atmosphere of Air was thrown on their outward Surfaces without withdrawing the included. And farther to confirm the same, I not only caus'd the inward Air to be withdrawn from the Hemispheres, but then being included within the Receiver, I likewise caus'd the same Quantity of Air to be injected on their outward Surfaces, as in the former *Experiment*, and then found that 280 l. (which was double the weight before requir'd) did not separate them. I was unwilling to add more (tho' I knew a small Addition must have done it) fearing the breaking some of the weaker parts, which I thought were in danger by the fall of such a Weight: The Experiment being apparent and satisfactory without it.
