

IV. *An Account of an Experiment, confirming one lately made, touching the Production of Light, by the Effluvia of one Glass falling on another in Motion.*
By Mr. Fr. Hauksbee, F. R. S.

HAVING observ'd that the *Effluvia* of Glasses were capable of Exhibiting a *Phænomenon* falling on an Exhausted Glass in Motion, as if rub'd by a visible Solid Body, (as I lately shew'd before this *Honourable Society*;) I thought a farther Confirmation of the same, would not be unacceptable. In order thereunto, I devis'd the following Experiment.

I took a large Receiver in form of *Fig. 2. a. a. a. a.* Within the Body of which, I fixt another in manner and likeness of *b. b. b. b.* their *Axis* lying parallel to the Horizon, and were fixt one within another at *c. c.* The outward surface of the inward Glass was at least an Inch distant from the inward surface of the outward one; and were turn'd by two large Wheels, whose Bands related to the small Wheels *d. d. d. d.* fix'd on their *Axis*. The inward Glass was first Exhausted of its Air; then being fixt, as before describ'd, I order'd that Wheel only to be mov'd, which gave Motion to the great Glass; thinking that when the *Effluvia* of that Glass, by the Application of my Hand upon it, should reach the other, notwithstanding it was at rest, it would nevertheless be affected by it and give a Light; which accordingly fell out as I expected, spreading its self in flying Branches all over. Then causing the other Wheel to be turn'd, the

Light became more considerable ; and, I think, the greatest as yet that has been produc'd in any Experiment made on this Subject ; and doubt not, but would have been more so, had the inward Glass fitted nearly to touch the inward Surface of the outward one ; the *Effluvia* of which, (as it seems to me) would then be capable to act with more Vigour on the Exhausted moving Receiver. But to return : I caus'd both the great Wheels to give Motion to the Glasses one and the same way, with as equal a Velocity as they could ; yet I did not discover but the Light was then as strong, and continuing, as when their Motions were made Reverse : So that I do not perceive that a Disenting Motion from each other does any way contribute to the *Phenomenon* ; but Motion it self, without being prescrib'd by Rules, (as this Experiment seems to insinuate) is found absolutely necessary, as indeed the whole Course of Experiments on this Head abundantly confirm. I farther observe, that notwithstanding the *Effluvia* seem'd to be equally distributed on the outward Surface of the inward moving Glass, yet the Light was most vigorously apparent on that side of it nearest the Attrition : And when the Motion of the outward Glass was ceas'd, or the inward one, and the other in Motion, (for upon trial I found very little Difference either way,) the Light would continue to appear a considerable time within the Exhausted Glass, till the *Effluvia* of the other, were no longer capable to act with so much strength, as to lay hold or affect the inward one. I likewise observ'd, that after both Glasses had been in motion for some time, and the Hand apply'd all the while on the outward one, that then the Motions ceasing, and no Light appearing, it was but approaching my Hand near the Surface of the outward Glass to produce Flashes of Light like Lightning in the inward one, the *Effluvia* seeming then to be more vigorously pusht upon it by the approaching Hand. Now
how

how these *Effluvia* of Glass become capable to Act or Perform the Office of a Solid Body, or why such a *Medium* is requir'd in the inward Glass 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.

Fig: i-

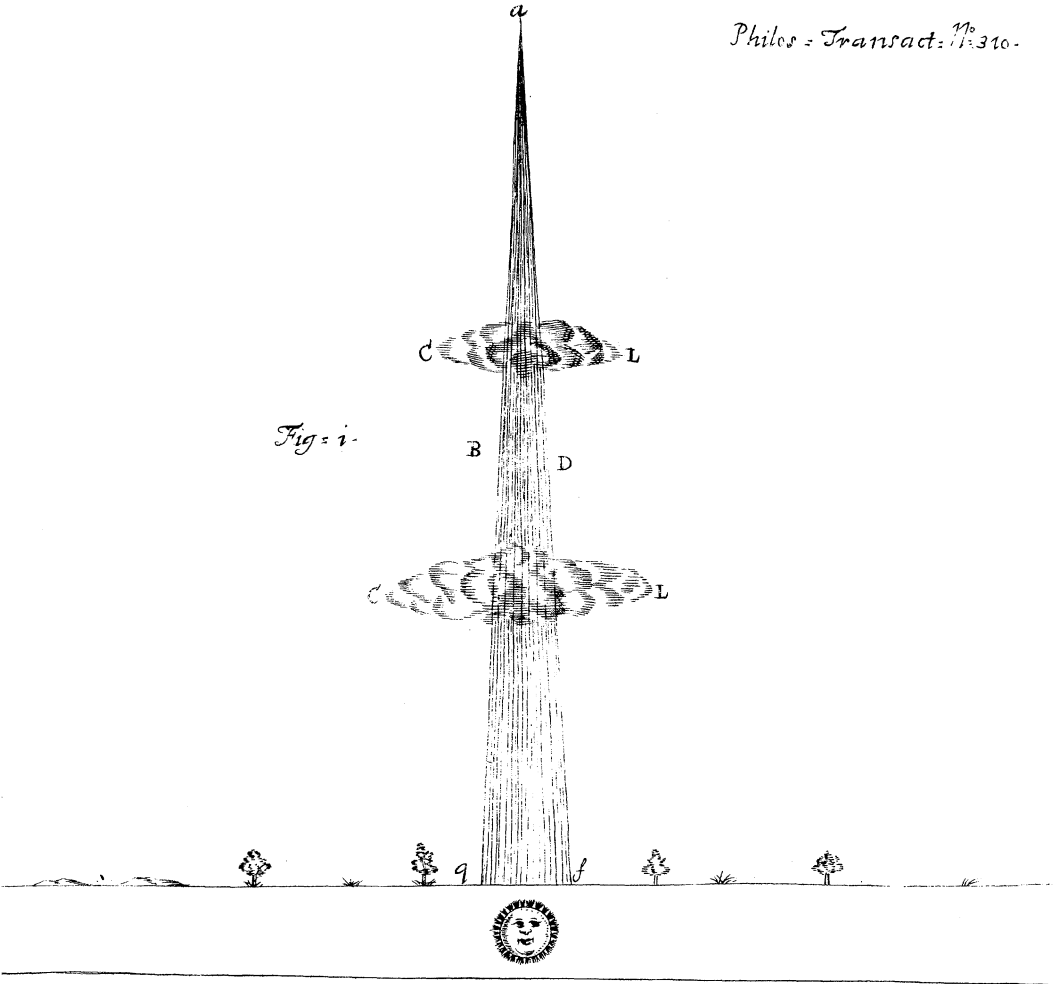


Fig: 2.

