

X. *Some Conjectures concerning Electricity, and the Rise of Vapours, by J. T. Desaguliers, LL. D. F. R. S.*

Read June 24.
1742.

IT is proper first to mention by way of Preliminary, That *Mons. Du Faye's* Assertion of Two Sorts of Electricity is found to be true by Observations and Experiments, *viz.* That Bodies endowed with the Vitreous Electricity repel one another, and attract those that have the Resinous Electricity; on the contrary, those that are endowed with the Resinous Electricity repel one another, but attract those that have the Vitreous Electricity.

I suppose Particles of pure Air to be Electric Bodies always in a State of Electricity, and that Vitreous Electricity.

1st, Because Particles of Air repel one another without touching, as has been deduced from Experiments and Observations.

2^{dly}, Because, when the Air is dry, the Glass Tube rubbed (or only warmed) throws out its *Effluvia*, which the Air drives back to the Tube, from whence they dart out anew, and so move backwards and forwards with a vibratory Motion, which continues their Electricity.

3^{dly}, Because the Feather made electric by the Tube, and darted from it, keeps its Electricity a long time in dry Air; whereas, when the Air is moist, the moist Particles, which are non-electric, being attracted by the Feather, soon make it lose this Electricity, which also happens even to the Tube in a little time.

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From this Consideration it will be easy to account for a famous Experiment of the late Mr. *Hawksbee*, which is this—

Having pumped out all the Air from a Glass Globe, he caused it to turn on its Axis very swiftly, by means of a Rope with a Wheel and Pully; then rubbing the Glass with his Hand during its Motion, there appeared a great deal of Light of a purple Colour within the Globe, without any Light or Attraction observed on the Outside of the Glass, which is observed when the Air has not been pumped out. Then turning the Cock so as to readmit the Air gently into the Globe during its Motion, the Light was broken and interrupted, diminishing gradually, till at last it appeared only on the Outside of the Glass, where it was accompanied with Attraction. Does it not appear to be, that at first the external Air by its Resistance drives back the Electric *Effluvia*, which go then to the Inside of the Globe, where there is the least Resistance? For we observe, that as the Air comes in, it repels the Electric *Effluvia*, that go inwards no longer, when all the Air is come in. If the Fact be so, as the Experiment shews, is not my Conjecture proved, *viz.* that the Air is Electrical?

In the Reverend and Learned Dr. *Hales's Vegetable Statics*, several of his Experiments shew, that Air is absorbed, and loses its Elasticity by the Mixture of sulphureous Vapours, so that Four Quarts of Air in a Glass Vessel will be reduced to Three. Will not this *Phænomenon* be explained by the different Electricity of Sulphur and Air? The *Effluvia* of Sulphur, being electric, repel one another; and the Particles of Air, being also electric, do likewise repel each
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other. But the Air being electrical of a Vitreous Electricity, and Sulphur of a Resinous Electricity, the Particles of Air attract those of Sulphur, and the *Moleculæ* compounded of them, becoming non-electric, lose their repulsive Force.

It has for a great while been thought, that watery Vapours, that rise in Air to form Clouds, used to rise, because the Water which is of itself specifically heavier than Air, (being formed into little hollow Spherules or Bubbles filled with an *Aura*, or thinner Air than the ambient Air) in this new State made a Fluid of little Shells, specifically lighter than the ambient Air in which it must rise. But Philosophers are come off of that Opinion; and such as have implicitly come into it, may find it refuted in the *Philosophical Transactions*, N^o 407.

Now may not this *Phænomenon* of the Rise of Vapours depend upon Electricity in the following manner?

The Air which flows at Top of the Surface of the Waters is electrical, and so much the more as the Weather is hotter. Now in the same manner as small Particles of Water jump towards the electric Tube, may not those Particles jump towards the Particles of Air, which have much more specific Gravity than very small Particles of Water, and adhere to them? Then the Air in Motion having carried off the Particles of Water, and driving them away as soon as it has made them electrical, they repel one another, and also the Particles of Air. This is the Reason that a cubic Inch of Vapour is lighter than a cubic Inch of Air; which would not happen, if the Particles of Vapour were only carried off in the Interstices

terflices of Air, because then a cubic Inch of Air, loaded with Vapour, would be made specifically heavier than an Inch of dry Air; which is contrary to Experiments, which shew us by the Barometer, that Air which is moist, or full of Vapours, is always lighter than dry Air.

XI. *An Account of Margaret Cutting, a young Woman, now living at Wickham Market in Suffolk, who speaks readily and intelligibly, though she has lost her Tongue.*

Read July 1.
1742.

A Brief Account of this young Woman's Case, in a Letter from Mr. *Benjamin Boddington*, of *Ipswich*, *Turkey-Merchant*, to Mr. *Henry Baker*, F. R. S. was communicated to the ROYAL SOCIETY in the Month of *February* last, and appeared so extraordinary, that Mr. *Baker* was desired to make all possible Inquiries into the Reality of the Fact, and lay before the SOCIETY what Information he should receive in relation thereto.

In pursuance of this, he wrote to Mr. *Boddington*, and begged the Favour of him to make the strictest and most critical Inquiry he was able into this Affair, not only by viewing the young Woman's Mouth, and examining her himself, but also by calling to his Assistance some skilful Gentleman in the Physical Way, and any other learned and judicious Person whom he might judge most likely to contribute towards discovering the real Truth, and detecting any Error, Fallacy, or Imposition. He likewise desired they