TAB. I. *Fig.* 1.

A represents a thin Piece of Sponge, so cut as to contain as large a Superficies as possible. This hangs by a fine Thread of Silk, upon the Beam *B*, and is exactly balanced by another Thread of Silk at *D*, strung with the smallest Lead-Shot, at equal Distances, and so adjusted as to cause the Index *E* to point at *G*, in the Middle of the graduated Arch *F*, *G*, *H*, when the Air is in a middle State between the greatest Moisture and the greatest Dryness.

I. shews a little Table or Shelf, for that Part of the Silk and Shot which is not suspended, to rest upon.

More Words are, I believe, unnecessary; and therefore I only beg you'll believe me,

Yours, &c,

Feb. 15. 1745.

W. Arderon.

II. *A Letter from* ——— *to Mr.* John Ellicot, *F. R. S. of weighing the Strength of Electrical* Effluvia.

SIR,

Read March 6. 1745-6.

AS you were the first, and indeed the only Person who ever shew'd me any electrical Experiments, and have been so kind, according to your wonted Candour, to assist me freely upon this and all other like Occasions; I think it proper to give you this first Account of what I have thought

thought of towards gaining a farther Inſight into the Nature, Power, and Laws of Electricity.

From the Time I ſaw thoſe Experiments at your Houſe about 3 Years ago, I had little or no Opportunity of making any myſelf, until within this Month; when, having got ſome good Utenſils, I repeated or imitated moſt of the Trials I had heard of, with Succeſs. And particularly having heard, that Mr. *Gray* gave an Account of Balls cauſed to move round one another by means of electrical *Effluvia*, I was very deſirous of ſeeing ſo delightful a Sight *. And though I was diſappointed in my Expectation of a circular Motion, yet I found it eaſy to make two Balls act upon each other, in a very entertaining Manner, for a long time; and that with ſuch a Conſtancy and Regularity, as to the Effect, that I apprehend one may thence deduce a Gauge or Standard, whereby to meaſure electrical Powers, and compare the Quantities and Strength of the Virtue infuſed into, or remaining in, non-electrical Bodies after given Times, *&c.*

This, together with a great Deſire to be able to eſtimate and compare the Effects of Experiments with ſome Certainty, and to do ſomething more than amuſe myſelf and Friends with the ſeveral ſurpriſing *Phænomena* which thoſe Experiments produce, led me, about 10 Days ago, to think of a Method, which, for aught I know, is quite new, and ſeems to promiſe fair to afford much new Light: It is to try or weigh

* See *Phil. Tranſ. n.* 441, *p.* 220. *& n.* 444, *p.* 400.

weigh the Strength of the electrical *Effluvia*, Virtue, or Power, by cauſing it to act upon a Balance.

I found, the firſt Day, that this Method anſwered even beyond my Expectation; ſo that ſeveral non-electrical Balls placed ſucceſſively underneath one of the Scales, and then imbued with electrical Virtue the common Way, would preſently cauſe that Scale to deſcend two, three, four, or five Inches, and ſeem to cleave, for 10 or more Seconds of Time to the ſeveral Bodies ſo placed underneath, ſome having much greater Effect than others. Whence it appeared, that there was a ſufficient Latitude for comparing very different Forces, if any ſuch there were. At the next and only Opportunity I have had ſince (my *Apparatus* being made more commodious), I uſed flat inſtead of globular Bodies, and then I found the Effects far more conſiderable; ſome of them, whoſe upper Surface was about 3 Inches ſquare, having attracted and held down one Scale, when there were about 200 Grains Weight in the other.

Though I am tempted to communicate ſome Things, which I have already obſerved by this means, with much Delight, I reſerve them at preſent for a farther Examination; deſiring in the mean time, that you will communicate or divulge this in ſuch manner as you think proper (only concealing my Name), that others, who may have an Inclination, may purſue and improve the Hint. And, for the Eaſe of ſuch, I muſt add, that the Strings of that Scale which is to be acted on, muſt be long, and non-electrical, and, I think, thick; that there may be a ready Paſſage for the electrical Virtue to run off, as faſt as it is received. Inſtead of a braſs Scale-pan, I uſed a flat Piece of Cork, filed very ſmooth and even, eſpecially

on

on the under Surface. The other Scale needs no Alteration, provided the Strings be made of Silk, as uſual, and ſhort enough to keep that Scale out of the Reach of the electric Virtue, which is to act upon the former. If the Beam were three or four Feet long, the Strings of both Scales might be of a Length, which would make it leſs troubleſome to put in and take out Weights.

I mounted the attracting Bodies upon ſmall taper Sticks about two Feet and an half long, whoſe thicker Ends had a Foot which ſtood upon two Cakes of Bees-Wax full 10 Inches thick in all.

I forbear to deſcribe the pretty little ſimple Inſtrument you furniſhed me with at my firſt ſetting out; I leave that to yourſelf; only, as it has no Name, I take the Liberty to call it *An Electrical Needle.* Every body, who delights in ſuch Matters, will thank you for it, if it were only for the Amuſement it will furniſh for ſo many Hours, after being but once well ſeaſoned or tinctured with electrical *Effluvia.*

But, I think, this little Inſtrument, and the Balance together, cannot fail of informing us farther concerning the Properties of Electricity: Such as, how far it agrees and diſagrees with Magnetiſm; whether it paſſes through the Subſtance, or only along the Surface of Bodies; whether it proceeds in any, and what, particular Direction, or has any particular Tendency; in what particular Bodies the moſt of it may be collected and retained; and how long; how far the Figure, Size, Denſity, or Colour of Bodies may be concerned; whether, as theſe *Effluvia* may be felt, heard and ſeen, they may likewiſe be weighed; and many other Matters, which will occur to the diligent Obſerver.

Your humble Servant.