

“ fibres lax, and the vessels about it immoderately  
“ distended.”

Aristotle (10) expressly says, that timid people, and those of cold constitutions, have large hearts; on the contrary, that the bold, and those of a warm temperament, have small ones. Nor does this opinion of that excellent philosopher seem ill founded; as women, children, and weakly men, from whom much courage is not looked for, are lax-fibred, and, consequently, more liable to an enlargement of this organ, than those of the human species, who are robust and tense fibred, from whom a manly exertion of courage is more to be expected.

LV. *An Account of several Experiments in Electricity: In a Letter to Mr. Benjamin Wilfon, F. R. S. By Edward Delaval, Esq; F. R. S.*

S I R, Old Palace-yard, June 8, 1761.

Read Dec. 17, 1761. **I**T appears by the experiments mentioned in my letter to you, published in the fifty-first volume of the Philosophical Transactions, that stones, and other earthy substances, are convertible by several methods, and particularly by different degrees of heat, from non-electrics into electrics.

(10) Lib. iii. De Partib. Animal. cap. iv.

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Since that time, I find it has been the opinion of some persons, that this change does not *immediately* depend on the heat, but only *consequently*, by evaporating the moisture, which, they suppose, returns again on the bodies cooling.

This supposition will naturally, at first view, present itself to every one, who considers the *beginning only* of those experiments; but I did not think any careful observer, who had repeated them, or considered all the circumstances of them, would have been misled by it.

That you may judge the better of this, I shall mention the circumstances of one of those experiments particularly. When a common tobacco-pipe, or any other slender body of the like kind, is heated red-hot, it conducts the electric fluid as perfectly as when cold: on cooling, it gradually arrives at its most perfect electric state in two minutes; and, in less than two minutes more, it entirely loses its electric property again, though at that time it is not cold: it cannot, therefore, in that interval, have imbibed a moisture sufficient to have destroyed its electricity. Nor are any of the substances, employed in the experiment, of that kind of bodies, which are apt suddenly to draw moisture from the air.

In confirmation of particular bodies requiring particular degrees of heat, to render them electric or non-electric, independent of moisture, I shall acquaint you with a substance, which is affected by heat in an opposite manner to the former instances; for the degree of heat necessary to render the *other* substances electric, makes *this* non-electric.

The substance I am speaking of is *island crystal*, (which is well known for its singular property of a double refraction) on a piece of which, I have made the following observations. 1<sup>st</sup>, After this piece of crystal has been rubbed, when the heat of the air is moderate, it shews signs of electricity, though not very strong ones: 2<sup>d</sup> obs. If the heat is increased, so as to be a little greater than that of the hand, it destroys its electric power entirely: 3<sup>d</sup> obs. By cooling the stone again, the electric power is restored.

I immersed *this* piece of crystal into a vessel filled with quicksilver, and surrounded by ice, where it remained near two hours, when the weather was very cold: upon taking it out with a pair of tongs, (that it might not be altered by the heat of my hands) and rubbing it again, it was more strongly electric than I had at any other time experienced; but, on placing it for a few minutes on the hearth, at some distance from the fire, its electric property was again destroyed, for rubbing would not occasion any signs thereof.

Thus we see two different kinds of *fixed* bodies, the one of which acquires an electric property, with the same heat, with which another loses it; while a third set of substances, as glass, &c. retain their electricity, through both the degrees of heat, necessary to the other two.

Some pieces of island crystal, which I have procured from different places, *have not the property of losing their electricity by a moderate heat*. I have, in particular, a piece of that crystal, one part whereof, when gently heated, becomes non-electric, while the other part with the same heat (or even with a much greater one) remains perfectly electric.

There are several other earthy substances, I find, whose electricity is destroyed by very different degrees of heat.

From considering, that the degree of heat, at which the island crystal, first mentioned in this letter, is in its most perfect electric state, is less than the usual heat of the air; and that a small increase of that heat renders it non-electric; I do not think it improbable, that many substances, which are not known to be electric, may prove so, if exposed to a greater degree of cold than they have hitherto been examined in.

I am,

S I R,

Your most humble servant,

E. Delaval.