FREKE JOHN

AN ESSAY TO SHEW THE CAUSE OF ELECTRICITY

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An Essay to Shew the Cause of Electricity / and Why Some Things are Non-Electricable

SIR,

Those who have the Honour of your Acquaintance, and thence know your many excellent Qualifications, must applaud my Choice in dedicating this small Piece to you; whose Name, if there be any Merit in the Performance, will, before any other, add a Lustre to it. I am, with the highest Esteem,

Your most Obliged,

Humble Servant,
John Freke.

The PREFACE

When I first enter'd on this Subject of Electricity*, I intended only to put some Thoughts in Writing concerning it, that I might the more easily convey them to the Understandings of such as I hoped would be more likely than I should be to go farther with it. And as nobody, either here or abroad, had published any thing touching the Cause from which it was produc'd, I chose to shew the Beginning I had made to some Friends, whose Opinion concerning Natural Knowlege I had a great Reliance on. I told them, I thought my Difficulty would be to convey what I had to propound on this new Subject to them with the necessary Clearness, as my Intention was to observe the utmost Brevity in it.*

After I had read it to them, they assured me that what I had written was perfectly intelligible; and that it gave them many new Ideas respecting this Phænomenon*; and were very earnest with me to print it, for the sake of the Publick.*

I was not, however, inclined to comply with their Requests, till I had shewn it to a Person who is most justly distinguish'd for his great Candor, and superlative Understanding in all Natural Knowlege; and he likewise having express'd his Wishes to see it in Print, I could not but look on his Desire as a Command.

If what I have here undertaken to shew should enlighten the Minds of any of my Readers, or if it should so far awaken the Attention of others, as to make them give better Reasons for the Operation of this Power of Electricity than I have done, I shall not account the Time ill spent, which I have employ'd on this interesting Subject: A Subject which can, with more Nobleness and Dignity employ the Mind of Man, than any I can think of relating to the sublunary Part of this World. For by it you may be acquainted with the immediate Officer of God Almighty*, which he seems to send to all Things living. Nay, this Power, according to my Conception, seems to be the Cause, under* HIM*, both of Life and Death. And when it may be more fully understood, it may afford us Means whereby we may be better enabled to reason more intelligibly than now we can, concerning various Operations in Nature.*

I am very sensible what Tribute a new Author is liable to pay to Criticks: I know it is too common to find much too large a Part of them inclin'd to look into a Book for its Faults, rather than for its Use; and are more ready to pull down, than they have Abilities to put any thing in its Place. But as I am not writing this for any Gain to myself, but the Pleasure of informing, if I can, the Minds of such as may be informed by it, I chuse rather to stand their Censure, than deny the Publick what may possibly be the Beginning of much Good.

It is very probable, that those who pretend to know every thing, will be so good as to say, if they like what I have advanc'd, that it squares exactly with what they thought before concerning it: And those who set up for Criticks will try their Hands at this Performance, and, if they can, will condemn it.

It would be a great Wonder, indeed, if this should escape the Censure of some, when the great Dr. Harvey *had his implacable Adversaries to his Account of the Circulation of the Blood; and even Sir* Isaac Newton *met with Opponents to several of his Theorys. What I have said opposes no one's Scheme, that I know of; it offers no Sentiments which can hurt any Man.*

I have advanc'd only Conjectures for the clearing those Truths I would establish; and if, after all, what appears reasonable to me should not appear so to others, I cannot help it: For it is impossible for all Men to see the same Thing in one and the same Light, even though they were Men of the best Erudition. I would hope, that what I have undertaken to shew, is what all sensible Men would be glad to have shewn.

Kind Sir,

When I reflect on the great Ingenuity you have shewn, in your *Apparatus* for the Improvement of the Knowlege of Electricity, and how industrious and kind you have been in communicating the many Experiments you have made to your Friends and Acquaintance relating thereto, I was in hopes, from you or some of them, an Essay would be made ere this, not only to go farther with these Experiments, but to give some tolerable Conjecture from whence this Fire, and astonishing Effect, is produced.

I was going to give you my Thoughts concerning it, when I last saw you at *Child*'s Coffee-house; but, on Reflection, I chose rather to do it in Writing: For, in all Novelty, till the Relater is quite understood, Words are forgotten easily; but Things of this sort in Writing may again and again be consider'd.

To begin then: In order to shew whence this electrical Fire and Force is produc'd, I will first endeavour to prove, that it arises not from any of the *Apparatus* itself; not either from the glass Ball, nor the Leather, nor from the Tube, or Hand that rubs it: Because nothing we know of can send out of it a Quantity of Matter, but there must be less of that Matter remaining, after it has been so discharged; whereas it cannot be shewn, but that the Ball of Glass, after ever so many Times using, remains as fit for the same Use as at first.

Having, from Probability, I think, shewn, that the Fire and Force, here treated of, come not from the *Apparatus*, it is natural for me to suppose they are produced from the Air they are mov'd in. And I believe this Notion will not appear trifling, when we consider, that the most ancient and ablest Philosophers have look'd upon the Animal and Vegetable World as actuated by Fire; and that they are nourish'd by Water, and what it contains. If this be allow'd, then the Air, which is esteem'd the *Pabulum Vitæ*, from its rubefying the Blood of all Animals in Respiration, seems to be universally impregnated with this Fire. And tho' there is not enough of it so dispersed as to hurt the Animals in Respiration, yet I can suppose it as universally dispersed, as I can a small Quantity of any Liquor dropp'd in Water, which, when so dispersed, is of no Harm to a Patient, though a few Drops of it by themselves would have been certain Death. And yet, if you farther consider it so dispersed, you cannot consider one Particle of the Water without a Particle of the Medicine: Just so it may be with the Fire of this lower Region, or, what I chuse rather to call it, this *Flamma Vitalis*.

I proceed now to consider, how this Fire, so dispersed, may be collected; and have given to it, in electrical Experiments, a Force equal to, and of the same Nature with, Lightning.

To make this Conjecture the more easily apprehended, I will suppose, that the Nature of Fire is as similar to its Parts, and they have as great a Propensity to adhere to one another, as we find the different Arrangements in all natural Bodies have; as may be seen in Gems, in Water, and in the various *Strata* of the Earth, and the like. Do but force or invite these fiery Particles to a closer Contact than they have been supposed to be in, when uniformly dispersed through all Nature, and they are Lightning, or a Fire of less Force, as more or less Parts of that Fire are got together.

To illustrate this, wax a small Thread, or slide a Rope swiftly thro' your Fingers, and you are liable to burn them: Which probably arises from their grinding in, betwixt your Fingers and the Rope, so many more Particles of Fire than naturally come together when left to float in the Air.

If this Reasoning be allow'd to be just (which it must be, till it is overturn'd by stronger Reasoning), then it follows, that the Air, which is violently ground or rubb'd betwixt your Hand and a glass Tube, or betwixt a glass Ball whirl'd briskly, and rubb'd with a Piece of Leather, as they are used in electrical Experiments, I say, the Air, so rubb'd, may leave behind it that Quantity of agitated Fire which causes Electricity.

For, suppose the Ball or Tube inveloped with a Quantity of this Fire moving spirally round them, with the utmost Velocity; and it can no more depart from its Company than you find Sparks of Fire which fly from Steel on a Knife-grinder's Wheel are liable to do. Every body almost can remember to have seen them adhere to the Wheel, and frequently pursue each other quite round it.

Those who try these Experiments, find, that in moist Weather this Power is less attainable than in a more clear Day; and therefore some may be liable to attribute that to the *Apparatus*, which may be better accounted for by the watry Particles in the Air; which may be liable to hinder the lambent Flame, by me supposed to be universally scatter'd, from uniting, by the Friction before-mention'd.

As I have mention'd Friction, I cannot help observing how unphilosophical and unmeaning it is, for any one to advance, that Fire is caused by Friction; when I think he may as well say, that Water is caused by Pumping.

We know, that a Cart or Coach-Wheel, for Want of Grease, by Friction will be set on Fire; and Fire-Canes, rubbed together smartly, will take Fire; but neither of these, I believe, nor any thing else, will beget or generate the Element of Fire. They must either collect it out of the Air, or else it must be lodged within them, as we find it to be in Steel in an eminent Degree: For, if you drop the Filings of Steel through the Flame of a Candle, it sends out the most fierce Fire of any thing in Nature.

The Reason to be given why a greater Quantity of Fire is produced from Steel-Filings, than from any other Thing, I take to be owing to a larger Share of that Element which is impacted in it from its being made out of Iron long impregnated with Fire.

Many other Bodies have actual Fire impacted in them, as Flints, and many other hard Stones and Metals; but whenever you produce Fire from Steel-Filings, you find that Steel melted: So when Fire is produced from Stones, and the like, each Spark is Part of that Stone burnt to a *Calx*.

Now, as I am endeavouring to shew to you the natural Cohesion of Fire, and the Propensity there is in it to extend itself, I shall offer to your Consideration a very familiar Instance to prove it; which is that of the Snuff of a Candle just blown out. You cannot but have observ'd at how great a Distance from the Snuff the Flame will descend down the Smoke, and light it.

I shall further take the Liberty to observe to you another Proof of this; which, I think, will not only shew a Propensity in Fire to cohere, but will greatly strengthen my Conjecture, that this Fire, produced in Electricity, is extracted from that I have supposed to be universally dispersed.

A Person, who liv'd in the Town of *Warham* in *Dorsetshire*, in the Year 1703, informed me, that in the Night of the great Hurricane and high Wind, in the strongest Part of the Tempest, he saw from his Window, on the neighbouring Hills, great Bodies of Fire, swiftly passing over them on the Ground. – Now whence arose that Fire, if it came not from the Air impelling it into those Flakes? And its subsisting together in that Hurricane shews, I think, very plainly, that if its Cohesion had not been natural, the Wind would then have scatter'd it.

Though I apprehend that the Four Elements of Fire, Water, Earth, and Air, may never have been increased or diminished, since the Great God of Order created them, yet I can also apprehend each of them unequally dispers'd in the Universe by various Causes and Events: And when this happens, those which were intended, when in their due Order, to make every thing happy and easy, in their disordered State will create nothing but Confusion.

For Instance, the chief Use of Water seems intended, when descending in warm and gentle Showers, or flowing in kind and easy Streams, to chear and nourish all Kinds of Vegetation, as well in Trees and Plants, as in Herbs and Flowers: But suppose, by the Contrivance of Man, or by the Accidents of Nature, a large Quantity of it lodged on the Tops of high Hills, if it breaks its Bank, it will never stop, till it finds a natural resting Place; and in its Torrent it will overwhelm and destroy those Trees and Plants, with the Herbs and Flowers, it was intended to nourish.

Конец ознакомительного фрагмента.