

**EXPERIMENTS AND
OBSERVATIONS TENDING TO
ILLUSTRATE THE NATURE AND
PROPERTIES OF ELECTRICITY**

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Experiments and Observations Tending to Illustrate the Nature and Properties of Electricity by
William Watson

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WILLIAM WATSON

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N A T U R E
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P R O P E R T I E S
O F
ELECTRICITY.

In one LETTER to *Martin Folkes, Esq;* President,
and Two to the *Royal Society*.

By *WILLIAM WATSON, F. R. S.*

L O N D O N :

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T H E
P R E F A C E.

THE following Sheets were not intended to be made publick, but as part of the Philosophical Transactions. As those Works are printed in the order of Time they are read; these Observations, communicated to the ROYAL SOCIETY at different Meetings, would, upon that Account, have been publish'd separate in different Numbers of those Transactions. To satisfy therefore the Impatience of several learned and very valuable Friends, to whose Importunities I have neither Will, nor Inclination to deny any thing in my Power to grant, I caused a few Copies to be print-

ed, that the whole might be seen together, and then broke up the Press. This has excited the Curiosity of the Publick, and raised a Demand for these Experiments much beyond what I had reason to expect. I therefore found it necessary to send them to the Press a second Time, lest some of those over-officious Gentlemen, who are always ready on these Occasions, should do it for me; so that whoever has an Inclination, may now be made acquainted, by what Means the several surprizing Phenomena of Electricity have been brought about.

I chose to lay these Papers before the Publick in the same Dress wherein they appeared before the very honourable and learned Body, to whom, as the various Effects of Electricity presented themselves, they were regularly communicated, and from whom they met with a very favourable Reception. Many Members of the ROYAL SOCIETY, as well as several other Persons of great Rank

Rank and Quality, have been repeated Witnesses of the Facts which are here laid before the World; particularly the present worthy President, MARTIN FOLKES, Esq; whose extensive Abilities and great Knowledge in every Branch of useful Literature are exceeded only by his Candour and Zeal in promoting Science. The Advice and Assistance of this Gentleman, whose Friendship I shall always esteem as one of the greatest Happinesses of my Life, has been of great Moment in the Prosecution of these Discoveries. I therefore take this publick Manner of testifying my sincerest Obligations as well to him, as to Sir HANS SLOANE, Bart. who, although retired from Business, is nevertheless attentive to whatever tends to the Advancement of Philosophy. Upon a Report made to him of these Experiments and Observations, he, as surviving Executor of Sir GODFREY COPLEY, was pleased to appoint me last Year, to receive the annual

annual Prize-medal of Gold, given by the ROYAL SOCIETY in consequence of Sir GODFREY'S Benefaction. The Honour of being so particularly taken notice of by Gentlemen of such distinguished Merit, as it cannot but give me the highest Pleasure, so shall it ever continue to raise in me Sentiments of the truest Gratitude, and most profound Respect.

If it should be asked, to what useful Purposes the Effects of Electricity can be applied, it may be answered, that we are not as yet so far advanced in these Discoveries as to render them conducive to the Service of Mankind. Perfection in any Branch of Philosophy is to be attained but by slow Gradations. It is our Duty to be still going forward; the rest we must leave to the Direction of that Providence, which we know assuredly, has created nothing in vain. But I make no Scruple to assert, that notwithstanding the great Advances, which have been made in this
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part of natural Philosophy within these few Years, many and great Properties remain still undiscover'd. Future Philosophers (some perhaps even of the present Age) may deduce from electrical Experiments, Uses extremely beneficial to Society in general.

NO present Advantage accrued to those Persons, or to that Age, which first discover'd the Properties of the Magnet. Many hundreds of Years intervened, before they were applied to the great Uses of Navigation. Had these remain'd a secret till now, what other Methods could have been substituted in their Place, by which we could securely traverse the vast Ocean? All the Advantages we receive from distant Commerce, we must still have been Strangers to, but for this fortunate Application of the magnetical Power. And even the Discoveries thus far had been very imperfect, without the Knowledge of the Variation of the Compass. But the present

*sent Age, and even this Nation, boasts of a Gentleman**, who seems to be entrusted with the magnetical Powers themselves. He makes artificial Magnets, increases in a few Minutes the Powers of real ones to a surprizing Degree, changes at Pleasure their Poles, and makes that newly acquired Polarity, permanent. The World, I hope, will not long be deprived of the Manner, by which these extraordinary Changes are produced, which as yet this Gentleman thinks proper to conceal. As Electricity has some Properties in common with Magnetism, as will be shewn in the Course of these Observations; some new Lights probably may be thrown upon both. But to return; admitting even, that no substantial Advantages could arise from the Inquiries before us, (which, however, we can by no means grant, upon our considering the Effects we already perceive of its Operations upon human Bodies) whatever

* Dr. Gowin Knight, F. R. S.