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V. *Second Reply to Mr. DE LUC's Observations on a Paper entitled "Reflections on the Inadequacy of the principal Hypotheses to explain the Phænomena of Electricity."* By M. DONOHAN, Esq.

To Mr. Tillock.

SIR,—IN my former reply to Mr. De Luc, I declared that I had no intention of supporting any electrical hypothesis; on the contrary, I wished to show that we are deceived when we suppose ourselves possessed of any knowledge on the subject beyond facts. I did not intend to affirm that Mr. De Luc's experiment, in which unelectrified pith-balls brought into a positive atmosphere appeared negatively electrified, could be *justly* explained by the hypothesis of Franklin; inasmuch as I conceived this hypothesis to be itself unfounded; but merely that it had as good claims as any other. My intention was to show that even Volta's doctrine is untenable, and that Mr. De Luc's experiment brought forward in support of it, is better explicable on the views of Franklin, even though the Franklinian system is in general erroneous, than on the views of Volta: and therefore, that the experiment in question did not establish the opinions of the latter philosopher. My reasons for supposing this I have stated to be as follows. When the unelectrified balls were brought into a room where a powerful electric machine was dispersing positive electricity, they diverged negatively; and this I conceived might as well be explained by the agency of *electric influences*, as an experiment of mine in which similarly electrified bodies attracted each other, and which Mr. De Luc accounts for by the same influences. I therefore considered that I had an equal claim to suppose the positive atmosphere to have repelled the natural electricity of the balls into their interior substance, and virtually to have left the exterior minus. With this I considered the sequel to correspond. When the balls were removed into the unelectrified room, they lost their divergence, because the cause which induced the minus state in the balls being removed, the quantity natural to the balls might receive its former distribution, and therefore appear in the natural state. But in using the expression *natural state*, I have not made myself understood to Mr. De Luc. I did not mean the natural state as laid down by Franklin. I conceived, even admitting the standard natural state assumed by Volta, that the balls should resume their non-electrified appearance. For admit this standard to be variable, is it probable that there was any variation in so short a period as that occupied by the experiment, when it appears that the balls had not time to absorb any electricity from the positive atmosphere;

mosphere; and not to speak of probability, what proof can be adduced that there was a variation?

As to the theory of electric influences, I am at a loss to understand upon what basis it is founded. It appears to me to be an adaptation of an hypothetical principle supported by facts which admit of a different explanation equally. In short, throughout all the hypotheses of electricity which have come within my limited knowledge, the proofs are derived from the thing to be proved, and have this property, that when the reasonings are pursued in all their evolutions, the inquirer invariably arrives at the place from whence he set out.

The other principal topic on which Mr. De Luc is not satisfied, is my assertion of the permeability of glass; and he states that his explanation of the Leyden phial is founded on a supposition of the contrary. Mr. De Luc also declares himself disinclined at this advanced and infirm period of his life to undertake any new experiments, but suggests one to me for trial. The least possible return that can be made to a philosopher who has employed a long life in labours so creditable to himself and serviceable to the cultivators of science, would be to execute his suggestions, but that the circumstances have rendered it unnecessary. Mr. De Luc will find by referring to my first paper on this subject, that I was aware of the objection, and had provided against it; he will then probably agree with me that glass is permeable to the electric fluid.

I have the honour to be, sir,

Your humble servant,

Dublin, June 24, 1815.

M. DONOVAN.

VI. Destruction of the Viewers and Overmen at Sheriff Hill Colliery. By A CORRESPONDENT.

To Mr. Tilloch.

SIR, — **A**CTUATED by the same motive that prompted me to write you an account of the shocking accidents which befel the workmen in Heaton and Newbottle colliery a short time since, I now transmit the particulars of an explosion at Sheriff Hill; not so destructive of human beings as either of those catastrophes, though highly distressing in its consequences; for on the present occasion all the managing and experienced miners employed in the concern have lost their lives. The mine at Sheriff Hill is situated on the elevated ground forming the southern banks of the vale of Tyne opposite Newcastle, from whence its distance is between two and three miles. Here the low main coal