LIII. Account of some magneto-electrical experiments made with the large magnet at the exhibition room, Adelaide-street

Mr. Sturgeon

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your Magazine has the appearance of a cloudy surface, the separation of the lines being scarcely distinguishable.

If now I employ convex lenses, I find that by using a lens of two inches' focus, I can read your Magazine with perfect ease, the letters appearing black and distinct.

I pretend not to offer any explanation of these phænomena, but as the facts may be relied upon, their statement may possibly tend to promote further inquiry on so interesting a subject. One practical advantage may be drawn from them, viz. that where the power of reading is unhappily lost by amaurosis of both eyes, it may possibly be restored by the use of a convex lens of about two inches' focus.

I may add, that with the diseased eye I am able to perceive the outline, though not the details, of the objects around me.

I am, Gentlemen, yours, &c.

London, Oct. 1834.

K.

LIII. *Account of some Magneto-electrical Experiments made with the large Magnet at the Exhibition Room, Adelaide-street. By Mr. STURGEON.*

To the Editors of the Philosophical Magazine and Journal.
Gentlemen,

HAVING obtained permission of the proprietors of the Exhibition Room, Adelaide-street and Lowther Arcade, to employ their large magnet in any new experiments which I might wish to undertake, I availed myself of that privilege for the first time on Thursday evening the 28th of August last. The following results were produced.

The decomposition of hydriodate of potassa in solution: First, by paper moistened in it placed on a platinum plate attached to the negative side of the circuit; and with a platinum point connected with the positive side, the upper part of the paper was occasionally touched, whilst the magnet was at work. At each touch, however short the interval, iodine was evolved at the positive point.

Second: a solution of the hydriodate and starch was placed in a rectangular glass box, with a gauze partition to separate it into two compartments. A platinum plate, properly connected, was placed in each compartment. In half a minute the positive cell was completely obscured by liberated iodine. A more striking experiment was never exhibited. Platinum wires, properly connected in the circuit, were placed in solu-

tion of acetate of lead :—the metal was revived on the negative wire.

Solution of sulphate of copper was also subjected to the action of the current. Decomposition immediately took place, and the negative wire became completely covered with copper.

Water was also decomposed, the hydrogen and oxygen being collected in separate tubes.

The above experiments were made by changing the connexions and reversing the current ; and the results were exhibited with as much promptitude as they could have been by the employment of a voltaic battery.

Hard steel was also magnetized by being placed in a helical part of the circuit. The poles were reversed at pleasure by changing the connexion.

A soft iron horse-shoe was magnetized to as high a degree as by a voltaic battery.

I have also made a great variety of electro-magnetic rotations, and some other rather novel motions, with electric currents by magnetic excitation, which I intend to publish as soon as opportunity permits.

By publishing the above in the forthcoming Number of your valuable Magazine you will much oblige

Your very obedient servant,

Artillery Place, Woolwich,
Oct. 15, 1834.

W. STURGEON.

P. S. I beg permission thus publicly to acknowledge the obligations under which I am placed for the very handsome manner with which Mr. Payne undertook to procure me the use of the magnet, and for the very able assistance of Mr. Maugham, Chemical Lecturer, whilst carrying on the experiments.

W. S.

LIV. *Apparatus for Freezing Water by the Aid of Sulphuric Acid.* By R. HARE, M.D., Professor of Chemistry in the University of Pennsylvania*.

THE congelation of water by its own vaporization, accelerated by exposure to the absorbing power of sulphuric acid, or other agents, *in vacuo*, has always been a difficult experiment. A distinguished Professor complained to me lately of want of success in his efforts to repeat it. In November 1832, after having three times succeeded in freezing water by the process in question, yet having failed before my class, I was ed to give more than usual attention to the

* Communicated by the Author.