XXXII. Brief notice of a discovery by which Sir H. Davy's safe-lamp may be made to re-light itself when extinguished in the mine

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Much remains to be ascertained in relation to different latitudes, and the effects produced in different parts of the day. I am unwilling to attempt to crowd your pages with too many of my own remarks, and hope that some of your correspondents will favour us with their observations.

Yours respectfully,

Gray Friars Priory, Norwich,
Jan. 9, 1817.

T. DRUMMOND.

XXXII. *Brief Notice of a Discovery by which Sir H. DAVY'S Safe-lamp may be made to re-light itself when extinguished in the Mine.* By J. MURRAY, Esq.

To Mr. Tilloch.

SIR, — IT gives me much pleasure to announce to you the following important fact:—a method by which Sir Humphry Davy's safe-lamp may be made to RELIGHT ITSELF when extinguished by an inflammable medium. The experiment was repeated eight times with uniform and unerring success in the laboratory of this Institution, on the evening of the third instant, before a number of gentlemen; and it was also proved that, independent of such a provision, the lamp must have been extinguished—a fact, indeed, that even the tyro of chemistry is well aware of; namely, the extinction of an ignited body when enveloped by an inflammable medium. For this purpose a metallic wire (platinum, steel, and copper were the metals employed) coiled up in a spiral form was exposed to the flame, close to the wick: the instrument was lighted, and, after some time, the wire, having become intensely red hot, was plunged into a vessel containing coal gas. At each sudden immersion the lamp was extinguished; but on the expenditure of the gas, instantaneously rekindled.

On the fourth instant, a number of similar experiments were repeated, and with results equally satisfactory. Different methods of keeping the wire in the flame were tried in these experiments. That represented in fig. A (Plate II.) was found to be a very convenient arrangement. The wire was from 1-25th to 1-30th of an inch in diameter; the diameter of the spiral about 1-3d of an inch; the number of revolutions in the spiral coil 7, and these about 1-30th of an inch apart.

When the lamp is kept well trimmed and supplied with spermaceti oil, the wire will be preserved of a temperature sufficiently exalted to rekindle the lamp on its extinction, so that all the

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 8.

Fig. 5.

Fig. 6.

Fig. 11.

Fig. 7.

M^{rs} Ibbetson's Anatomy of Vegetables No 5.

Fig. A.

Fig. 9.

Fig. 10.

Fig. 12.

S. Porter. sc.

the miner will now have to do, is simply to depress the lamp into the lower strata of the atmosphere of the mine, and it will relight itself; and when exploring an extensive magazine of fire-damp, platinum wire, on Sir H. Davy's late interesting discovery, will be the preferable metal. The miner will not have to complain of "*being long in the dark.*"

This instrument is now one of the most curious and interesting that can possibly be contemplated—an envelope, *open*, yet *impervious to flame*—possessing within itself when *extinguished*, the property of exhibiting a *light unconnected with flame*, sufficient to guide the miner through the dark abysses of the earth, in an inflammable and explosive atmosphere; and the means of *relighting itself* on passing from an inflammable medium, which exceeds the explosive, into the free atmosphere. This mode of applying the platinum wire, you will at once perceive, is more important than suspending it in the top of the instrument, and it will not only not *intercept* light, but exhibit a *more brilliant* flame.

I am respectfully, sir,
Yours most obediently,

London, Surrey Institution, Feb. 5, 1817.

J. MURRAY.

P. S.—I rejoice in the near prospect I have of proving this in the mine itself.

J. M.

XXXIII. Reply to Mr. HORN. By Mr. W. PATER.

To Mr. Tilloch.

SIR, — **I**N the last number of your Philosophical Magazine, Mr. Andrew Horn has condescended to notice some remarks I made upon his Theory of Vision in a former number; and with that suavity of manners and in that free and easy way so peculiarly his own, without a preamble he charges me with *ignorance and inconsistency*; and I think myself obliged to him that he confined himself to merely making the charges without attempting to prove them: perhaps it would have been better had he given the proofs and spared the insult.

In his answer to my remarks there is one trifling oversight;—he has totally forgotten to explain the difficulties, or to reply to the objections!

There is also a little unfairness which I have to complain of, which in Mr. Horn is perhaps not strictly honourable: in my attack I made use of *reason*, but he has defended himself with *insolence*.

Mr. Horn allows that light excites sensation by acting upon the