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XXXIII. Reply to Mr. Horn

Mr. W. Pater

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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, Surry 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

the optic nerve;—but for what purpose it is reflected back to the middle of the vitreous humour; how it is, and why it is, rendered caustic; why it is exhibited there, if it is not to be seen, and what is to see it, if it be not to be understood to be the optic nerve,—he does not attempt to explain.

Mr. Andrew Horn seems, somehow or other, now to be a little ashamed of his newly-discovered idea, that this image painted in the middle of the vitreous humour in caustic, is to be seen by the optic nerve behind; but the words which follow—“and thus the optic impression and position of the tangible object are reconciled,”—if they mean any thing, can have no other interpretation; for, to suppose that light is reflected from the optic nerve to form an image in the middle of the vitreous humour, and that then it is to be reflected back again to the optic nerve, merely for the sake of being sent there and back again, would be sending the light on what some would call a sleeveless errand, but I would call it a *Wycombe hoax*.

Instead of explaining these difficulties, Mr. Andrew Horn passes them unnoticed, and begins an harangue about Sir Isaac Newton's ignorance and his own correcter knowledge, and brings forward a few legerdmain tricks with a prism. Why this? I was not inquiring about Sir I. Newton's ignorance of light and colours, nor about reds, nor blues, nor holes in window-shutters! Why then were these things introduced, if not with the design of drawing the attention from the subject in question, which it did not suit Mr. Horn to reply to, for reasons which perhaps it is not difficult to guess?

However, upon closer inspection, this theory which Mr. Andrew Horn has given of the prismatic spectrum, has some little excuse for its intrusion, as it is evidently own brother by the father's side to caustic reflection, and appears to me to be equally whimsical, unfounded, and unsatisfactory!

Of this theory the hole of the window-shutter is the groundwork or first mover, its edge repels polarized light, which by that means is dispersed; which dispersed rays the prism collects, mixes together, and makes colours of them. Unfortunately for the theory, neither the hole nor the window-shutter is necessary; as the direct parallel rays of the sun, falling upon a side of a prism at a certain angle in *open day*, will be formed into the coloured spectrum, without any crossing of rays, inversion of images, holes, or window-shutters, having any thing to do in the matter.

But as I have no wish to hold any controversy with a man who arrogates to himself the privilege of insulting those who happen not to admit of his caustic reflections, without being convinced of the propriety of them, I shall make no further inquiries;

quiries: for, caustic as his applications are, I find them much more likely to *inflame* than to *cure* my mind of its tendency to consider his theory as absurd.

I am, sir,

Your most obedient servant,

Skeffhaven, Feb. 10, 1817.

W. PATER.

XXXIV. On Mr. HORN'S Theory of Vision.

By A CORRESPONDENT.

To Mr. Tilloch.

SIR, — THE perusal of a paper in your last, from Mr. Horn, upon Vision, induced me by its novelty to refer to his former communication, but without receiving any kind of satisfaction. His theory appeared to me, *primâ facie*, absurd, which I think a very little reflection will prove. He asserts that "light acts upon the optic nerve and excites sensation there, and not upon the retina; that the chief function of vision is assignable to the base of the nerve, and the optic images are formed by caustic reflection in the vitreous humour." I really do not understand his first assertion, that "light acts upon the nerve and not upon the retina," &c. if the retina is, as I have always understood it to be, a delicate membrane formed solely by the expansion of the optic nerve.

How is it possible that light, which is its proper stimulant, should excite sensation in the trunk, and not in the extremities of the nerve? Reasoning from analogy, we should infer the contrary to be the case. The other nerves of the body receive sensation only at their extremities. The depth in which their trunks lie buried, and an every day's occurrence after the loss of a limb, prove that, if the trunk of the nerve, which before the amputation of the limb had ramified upon the toes, be injured, the sensorium refers the pain to its former situation, and the patient does not feel pain at the injured spot, but in that spot where the sensation of the nerve had been usually excited; namely, in his toes. Besides, if the retina does not receive sensation, but is a mere reflecting surface, where is the use of its being composed solely of nerve? A membrane less liable to injury would have answered the purpose much better. The other proposition is, That "the optic images are formed by caustic reflection in the vitreous humour." I deny that the retina does reflect, or very slightly at most; the light of a candle is easily distinguished through it, which I imagine would not be the case if it was reflected. Allowing however, for the sake of argument, that it
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