



LXXI. On vision

Mr. W. Pater

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not yet seen a lamp, excepting the wire-gauze one of Sir H. Davy, which in my opinion deserves the name of a *safety-lamp*; and that this is the decided opinion of persons interested in the coal trade, is evident from the wire-gauze lamp being used in exclusion of every other kind, in almost every colliery in this country, in which fire-damp prevails.

I am, sir,

Your very obedient humble servant,

JOHN HODGSON.

LXXI. On Vision. By Mr. W. PATER.

To Mr. Tilloch.

SIR, — MR. HORN, in his Observations on the Cosmogony of Moses, has been so obliging as to give his ideas on the seat of vision, concluding “that the optic images are formed by caustic reflection and exhibited in the middle of the vitreous humour, and thus the optic impression and position of the tangible object are reconciled.” I will confess I do not exactly understand what is meant by caustic reflection, and therefore shall make no remarks upon it; nor should I have particularly noticed the other part of the opinion, had it not brought to my recollection a correspondence I held with an acquaintance of mine, about five-and-forty years ago, who had formed an idea that the eye sees objects placed before it without any medium being necessary, and that light merely renders bodies visible by diffusion over their surfaces, he having no notion whatever that the light must pass from the surface, or point illuminated, to the eye, to produce vision. Now it appears to me that Mr. Horn’s theory is founded upon some such idea, otherwise where is the necessity of supposing that the rays are reflected from the nerve to form images in the middle of the vitreous humour? because, if images were formed in the vitreous humour, which seems contrary to the nature of transparent fluids, still the rays of light must be reflected *back again* from those images to the optic nerve to produce vision, because *vision* is a *sensation* produced by the *action of light upon a nerve, or nerves*, adapted to receive excitement from light. No part of the body is possessed of sensibility but what has nerves, or is nervous,—the *nerves alone* being *sentient*; consequently were light capable of being collected in the transparent vitreous humour so as to form images in its centre, still, those images could not be perceived there unless the vitreous humour were nervous, which is not the case; and therefore, if these images were formed there, the light must be re-

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flected back again to the optic nerve to produce vision, or sensation, as nothing but nerves is sensible.

It appears to me, then, that Mr. Horn's theory demands two reflections which are neither proved, nor necessary, nor consistent with the nature of transparent fluids; and therefore I feel inclined to retain my old opinion, that *light* acts upon the *optic nerve* and *excites sensation*.

I know the difficulty of getting rid of notions which have become habitual, and therefore I suppose my want of conversion is owing to my having long thought as I do, and to Mr. Horn's reasons and reflections not being sufficiently caustic to reach *my case*, and produce in me a new and juster way of thinking: at the same time I by no means expect that my opinions will produce any change in Mr. Horn's ideas: however, there can be no harm in diversity of opinions on doubtful subjects, if good-humour be president. I am, sir,

Your most obedient servant,

Skiff-haven, Nov. 1, 1816.

W. PATER.

LXXII. *On the Possibility of alloying Iron with Manganese.*

By DAVID MUSHET, Esq. of Coleford, Forest of Dean*.

I HAVE in your last number shown the difficulty of combining, to any material extent, metallic manganese with cast iron, by fusing the latter with the black oxide of manganese and certain proportions of charcoal. I next attempted to form the alloy of the two metals by fusing certain proportions of the ore of each metal in mixture, considering that results obtained under such a mode of operation, would indicate the practicability of working, if necessary or advantageous, ores of manganese along with the ordinary ores of iron smelted in our blast furnaces, either for the production of good bar iron or steel.

I selected a large piece of argillaceous iron ore, which I prepared by roasting and subsequent pulverization; I then passed it through a small wire sieve: the oxide of manganese and charcoal were prepared in a similar way, and the whole kept shut up from access to atmospheric air, to prevent as much as possible any irregularity in the results by the absorption of moisture. The crucibles and lids were accurately ground and fitted to each other, and entirely free (by being previously baked) of any coaly or extraneous matter.

No. 1. Fused of the argillaceous iron ore .. 500 grs.
charcoal 1-5th, or 100

A crystallized metallic button was the result of this fusion,

* Communicated by the Author.

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