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XXII. Observations on the advantages arising from the use of the wire-gauze safety-lamp, commonly called the Davy

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though he has the most sincere regard for individuals of the medical profession, and a high opinion of their skill, is not at all inclined to tamper with his constitution.

There is another symptom attendant upon this disease, which must be mentioned. Ever since his recovery from the *hernia humoralis*, three years ago, his urine has never returned to its natural colour, but has constantly been of a wheyish appearance, yet without flocculi or gluten. It has been voided in usual quantities in the day time, but with unusual frequency in the night. At times the urinary secretion has been affected by a strange propulsion of wind from the urethra, attended with a considerable hissing or explosive noise, and ejecting a white fluid that has the exact appearance of *cuckoo-spittle*; but which, on being touched, appears to be nothing but common urine mixed with air, without any gelatinous consistence. This symptom is always attended with a slight distension of the rectum, so that the patient cannot determine the source from whence this gas is evolved; but this affection is not attended with any pain or inconvenience.

The pulse has usually been regular, beating from 72 to 86 in a minute; at times however it has intermitted, and totally stopt for some seconds; but this irregularity has of late been less frequent.

At the beginning of dinner, a spoonful or two of soup, or the first morsel he eats, particularly if salt or spiced, produces a profuse perspiration on the head, though at other times neither heat nor exercise produces perspiration.

No prescription or advice will be attended to, the materials or rationale of which are concealed. Z.

* * * I have to state that the preceding premium is offered by a gentleman of honour, and that I will take care to forward to his address any communications which medical gentlemen may wish to send to him. Let them be sent *sealed*, and without expense, in an envelope, stating that the inclosure relates to this premium.—A. T.

XXII. *Observations on the Advantages arising from the Use of the Wire-gauze Safety-lamp, commonly called The Davy.*
By Mr. JOHN BUDDLE.

HAVING observed in some of the periodical publications certain remarks on Sir H. Davy's lamp, which in my mind appear to have originated in motives unconnected with truth and the improvement of science, I feel myself called upon to do an act of justice

justice to the merit of the invention, in a public statement of its great utility and extensive use in the coal-mines of this country.

It is not to be expected that any great discovery should be brought to light without subjecting its author to the envy and insult of dabblers in science. Enough of rancour and spleen have certainly been shown in this case. But I shall not take up my time with enumerating the names and the misrepresentations of those officious and mischievous persons, who have endeavoured to persuade the world that there is little either of merit or utility in this invention: their motives are too apparent not to be distinctly seen through, by all observing and liberal-minded men. I must, however, in justice to myself, most positively contradict a calumny which has been industriously circulated, and I feel the greatest reluctance in noticing this vile report, because it is a libel upon the honour and integrity of Sir H. Davy, as well as myself. It has been reported that I had clandestinely communicated certain ideas of Mr. Geo. Stevenson on a safety-lamp, to Sir H. Davy,—than which there never was a more gross, a more unfounded, or more *malignant* statement circulated. I think it right to notice this in the strongest terms, lest the falsehood should finally pass for a truth. It should have been contradicted sooner, had I not thought it of a nature too ridiculous to be received with credit: even at present I could not have been induced to notice so contemptible a slander, were I not assured that it still continues to be propagated.

The wire gauze lamp, however, is in use, and the benefits that it offers to mankind must in time subdue the uneasy sensations of envy and ingratitude that it has excited. During the last ten months it has been extensively employed in all the collieries under my inspection; and it gives me the highest pleasure to be able to state, that during that time not the slightest accident by fire has occurred from its use, though several hundreds of lamps are daily employed.

In the parts of mines where fire-damp prevails, the surveys and inspections are now carried on by the light of the lamp without apprehension of danger from explosion; for experience has shown us, that, with the caution of keeping it in proper repair, it is absolutely safe; and for the truth of this, I appeal to all my professional brethren who have had occasion to use it, without fear of contradiction.

The colliers never hesitate a moment to take it into any respirable part of a mine, however much it may be charged with fire-damp; for, whenever it appears that the air, either from discharges of gas, or from casual interruptions of the circulating current, becomes explosive,—only give the collier his *Davy*, and he goes to his occupation with the same confidence in this impure

pure atmosphere, that he would do in any other situation with a candle.

There has been much quibbling about the *perfect* safety of the wire-gauze lamp. I scarcely know how the words perfect safety can apply to any invention for the preservation of human life; but when we have seen some hundreds of the wire-gauze lamps in daily use for several months past, in all varieties of explosive mixture, in the most dangerous mines of this country, without the slightest accident occurring, it seems only reasonable to infer, that they approximate as nearly to perfect safety as any thing of human contrivance or manufacture can be expected to do.

It would, however, be quite unreasonable to expect that accidents are never to happen, where the wire-gauze lamps are used; for it must always be remembered, that, setting aside the chance of their being damaged by some of the casualties incidental to coal mining, they are to be intrusted to the management of a body of men amongst whom negligent individuals will be found, who may use damaged lamps, or expose the naked flame to the fire-damp, in spite of the utmost vigilance of the overmen and inspectors of the mines. Instances of great negligence have occurred, fortunately without any ill consequences—always with the dismissal of the offender from his employment; but it would be absurd to condemn the lamp, or even to quibble upon its want of safety, on this account.

Independent of the principle of safety from explosion, which the wire-gauze affords, I do not hesitate to assert its superiority over every other medium which has yet been contrived for emitting light in safety-lamps, inasmuch as its flexibility enables it to sustain very great violence. This I say of the common gauze, which has hitherto been used. The twilled gauze, which Sir H. has lately adopted, is of such strength as in a great measure to obviate every objection on the score of weakness, or liability to be damaged. It is a substance which unites the great advantages of durability, and transmitting sufficient light. Of the wire-gauze lamp, therefore, whether with plain or twilled gauze, my decided opinion is, that it so greatly excels all other lamps which I have hitherto seen, with respect to safety, convenience, and light, that I should not think myself justified in using any of them while I possess the highly superior advantages of it. I do not wish to speak invidiously of the labours of other men; but would have it understood, that I have been influenced in my conduct in this affair by rational and disinterested motives; and (when the responsibility I am under is duly considered) no one can certainly disbelieve me when I say, by conscientious and moral considerations.

Both safety apertures and tubes occurred to Sir H. Davy, in the

the very outset of his inquiries; but besides the complexity of tubes, and the difficulty of admitting sufficient air to feed the flame by apertures, glass, or some other transparent substance, had to be employed, as a medium for the transmission of light, and these are imminently liable to accident. He therefore relinquished these discoveries, and adopted cylinders of wire-gauze, on account of their combining the advantages of transparent substances without being liable to their inconveniences*; and the same reasons, I have no doubt, have decided others in the choice of the wire-gauze lamp.

Great pains have been taken to impress the public mind, that certain viewers of this neighbourhood bruited about the excellence of Sir H. Davy's lamp, and brought it into use in preference to others of some pretended superior merit. The falsehood of this calumny is only equalled by its absurdity. Is it likely, in the name of common sense, that those to whose care the lives of so many of their fellow-creatures are intrusted, and who also risk their own existence daily on the wire-gauze lamp, should have adopted it from any other consideration than that of a thorough conviction of its exceeding every other description of lamp, in safety, simplicity, and utility? It would certainly be expecting too much of human nature to suppose that such a compliment could be paid to any one, let his rank in society or his eminence in science be what they may. Such an idea could only have sprung from the conceited opinions of those closet and fireside viewers, who know little more of a coal-mine than its name, and who cannot be supposed to be competent to sit in judgement on matters in which they are wholly devoid of experience: and it is only from such, that we have ever heard of any objections to the wire-gauze lamp.

No one that has actually the charge of a fiery colliery has hitherto denied the safety of this lamp, or set it on a level with any that have been constructed on modifications of its principles. It can scarcely happen that unprejudiced and practical men can have any doubts on the subject; and though much abuse has been bestowed on our profession, for ignorance, stupidity, aversion to improvement, and the like, I am, however, enabled to state, that, at least in the present instance, the viewers of this country have readily adopted a great improvement in the science of mining. The schemes of visionaries and theorists may have been treated with indifference; but real improvements have always, I believe, been readily patronized by the coal owners of this country.

Walsend Colliery, January 13, 1817.

JOHN BUDDLE.

* See Sir H. Davy's communications on the subject to the Royal Society.