THE INTRODUCTION OF SANITARY TEACHING INTO PRIMARY EDUCATION, AS AN INDISPENSABLE CONDITION OF EFFICIENT SANITARY REFORM.*

By J. H. BRIDGES, M.B., Bradford.

ALMOST every one who has paid attention to sanitary questions is convinced of the necessity of abandoning to some extent the two principles upon which Parliament has hitherto proceeded—the principles of permissive Bills and of local self-government. It is seen by all disinterested observers that local bodies, whether Boards of Guardians or Town Councils, uninstructed for the most part, and influenced mainly by one motive, that of keeping down the rates, are not likely to avail themselves, and, in fact, do not avail themselves, of the permissive powers entrusted to them by Parliament with anything like the adequate degree of energy. Slowly and cautiously the public mind is feeling its way towards the dreaded, and justly dreaded, principle of centralised state action. The experience of our factory-inspection and school-inspection has shown the most suspicious advocates of voluntarism that the Home Office may safely be entrusted with the power which local selfishness is incompetent or unwilling to exercise; and it is rapidly becoming recognised, that the protection of young children from ignorance or from overwork is not more important and not more attainable by state intervention than the protection of human life from preventable disease.

Still, as the principle of local self-government is not only very valuable in itself, but is so dear to Englishmen that, under any system of sanitary legislation, many important functions must necessarily be entrusted to it, it is worth while to examine the sources from which our objections to it spring, and to see whether some of them do not admit of a permanent remedy. Those sources are two:

- I. The natural selfishness of property-holders;
- II. The ignorance of ratepayers.

We need not discuss the first of these. It is a permanent obstacle; its removal at least is likely to be slow enough, depending as it does upon an improved standard of public morality in a future far distant. But the second is removeable; and as it is, in my opinion, the chief source of all opposition to sanitary work, whether local or central, it is worth our while to look about for the best and speediest means for its removal. For, with the best and most elaborated machinery of state sanitary action that can possibly be devised, the result will be unsatisfactory until we touch the reason and the will of those to whom our machinery is applied. "You may take a horse to the water: you cannot make him drink." This is as true of health as of water, and it is a good deal more true of men than of horses.

Every benevolent landlord who builds model cottages knows well enough how his efforts are frustrated by the ignorance of his tenants. The patent ventilators are choked up with rags; the chimney is boarded up; the window is nailed down; the water-closet has been out of order after the first week, or the dry ashpit has been turned into a moist and festering dunghill; and, worst of all, the weekly wages have been eked out by lodgers. Navvies occupy the second and the third bedrooms; and parents, sons, and daughters are huddled into the first.

Such is the constituency, or such, at least, is a very large portion, if not a majority, of the constituency who elect our existing "nuisance-authorities". Such are the men who elect our town councillors; and to town councillors the British public is at present content to entrust the administration of what, in our present stage of civilisation, is perhaps the most important, and assuredly one of the most difficult, departments of law—the laws which protect the atmosphere from poison. The Town Councils, it must be said to their credit, are in many cases somewhat more enlightened than their constituencies. But, with such constituencies, how can they be expected to spend money freely for preventive medicine?—that is to say, for a purpose which, when it is most perfectly attained, has least to show for itself. I need not enlarge on the other defects and vices of municipal management—the singular jealousy of professional intervention, the tendency to jobbery, to play into one another's hands by voting for expensive and useless alterations, etc. These matters are well known, and beside my present theme, which is, that, of all obstacles to efficient sanitary reform, the most obstructive, but also the most removeable, is not the inefficiency of the Town Council, though that be deplorable, but the ignorance of the ratepayers who elect them. For, be it remembered, no centralised system, however thorough, can attain our object completely, so long as this obstacle exists. I have spoken of our factory system of inspection with strong

approval. Its efficiency is undoubted, and results, as I have said, from its independence of municipal authority. But every certifying surgeon knows the zeal of mothers to pass off children of eight years old for nine, and of twelve for thirteen; and every one conversant with the working of Lancashire and Yorkshire mills knows that many more things go on between the inspector's visits than are dreamt of in his philosophy. And, if efficient factory inspection is difficult, efficient house-to-house sanitary inspection is, and must ever remain, tenfold more difficult. Perhaps in no country in the world will it be so difficult as in this. The Englishman's jealousy of government is excessive, is perhaps morbid; but jealousy is not the word. The word, perhaps, hardly exists in the language strong enough to express his ire at anything which bears the stamp of inquisition into domestic privacy.

But I pass, without further comment, to the remedy—a remedy slow in its operation, but which goes down deep to the root of the disease—a remedy which, so soon as its use is general, will quadruple the efficiency of all sanitary legislation, and which, it may be, is destined, in the ultimate future, to supersede it altogether. The remedy I speak of is the compulsory and official introduction of sanitary teaching into our primary schools. In this way only can we touch, but in this way we shall touch effectually, the ultimate element of our problem. Here alone can we find the *πῶς οὐδ*; but with this *πῶς οὐδ* we can move the sanitary world.

That physiological truth should be in one way or other incorporated into our educational system, is a conviction which is rapidly becoming general. It has even penetrated into the venerable seat of learning in which we are now assembled. Yet, if it were proposed to teach physiology in our national schools, the proposition would be met with disregard or ridicule; and, without discussing whether the ridicule would be rational, I content myself with remarking that this proposal is not what I am now advocating. I am recommending merely that a list of certain very elementary sanitary truths should be inculcated by all certified government teachers on children above eight or nine years of age, with the same universality and strictness that we teach the alphabet or multiplication-table; and that the government system of inspection should provide for this being efficiently done.

I am well aware that the tendency of recent legislation has been to curtail rather than to extend the curriculum for which governmental aid is afforded. It has been argued forcibly and successfully at least, if not rightly, that matters of opinion form no proper subject for governmental intervention; that the state is not bound to afford any but those elementary rudiments of education about which no question can be raised, and the absence of which is dangerous to social well-being. Religious teaching, and all teaching whatsoever beyond reading, writing, and arithmetic, should be left to voluntary agency. Such is the principle of the New Code; and, though there are many signs of a reaction against it, I, for my part, am willing to accept the principle on which that code is based. But I claim for the teaching of these elementary rules of health a very distinct priority over grammar, geography, English history, and all the other subjects which, until recently, have come under the supervision of the inspectors of our national schools. I claim for it precisely that degree of support which is accorded by common consent to instruction in reading, writing, and arithmetic. It rests upon a basis which is unquestionably stronger. If ignorance of the alphabet and of the laws of number is dangerous to the state, ignorance of the laws of health is unquestionably far more dangerous. A man may be a very useful citizen who cannot read; but the man who, in his ignorance, turns his house into a fever-nest, is as destructive as a bandit.

The objection to my view will probably be, not that it is undesirable, but that it is impracticable. To teach children of the age at which our primary schools are deserted for the factory or the farm, anything worth knowing on such a subject, it may be argued, is Utopian. It is quite true that anything like systematical physiological teaching would be absurd to attempt. This is not what I advocate. What I would wish is simply the dogmatic inculcation of a few very simple sanitary precepts. Wise men of every age have seen very clearly that there are many things which may be usefully taught, and which, indeed, must be taught, before they can be thoroughly understood. No religionists, whether Catholic, Anglican, or Presbyterian, suppose it necessary to confine the teaching of their respective catechisms to students of theology. It would not be difficult for our Medical Council, or for a Committee of such an Association as this, to draw up an exceedingly short and simple catechism of health, containing no proposition which should not be as incontrovertible as the multiplication-table, touching upon no disputed question whatsoever, and which, therefore, might be ordered by the Privy Council to be taught in all schools receiving government aid. I insist very strongly upon the entire exclusion, so far as practicable, of any topic on which any controversy might possibly be raised; for it is quite as essential, in my opinion, in science as it is in

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religion, that the sanction of government support should not be given to doctrines the removal of which, supposing them ultimately to be found erroneous, would have political as well as intellectual obstacles to contend with. And as, in the present vexed state of all economical questions, I should regret to see the sanction of the Privy Council given to any elementary treatise containing, for instance, an attack or defence of trade-unions, so, in such a sanitary catechism as I am speaking of, it would obviously be improper to put forward crude assertions on any such doubtful question as that, for instance, of the use of alcoholic drinks. But it would be very easy to pick out a dozen elementary propositions with respect to air and water and the human body, about which no one could raise any dispute, and the practical inferences from which would be obvious and certain. Any child can be made to breathe into lime-water, and can see the difference produced by the air which comes from his lungs and the air which comes from a bellows. Any child can be shown the effect of carbonic acid on a candle, and will readily believe, half rationally, half on trust, that what is incompatible with light is incompatible with life also. Elementary dogmas connected with ventilation will follow in due course; the importance of windows opening at the top; of a free vent through the chimney; of sufficient space in the sitting-room and bedroom; of a through current from front to back, etc.—would naturally follow. Water might be dealt with in the same way; and perhaps some simple facts connected with the skin and the lungs might be added.

But, I will again repeat, the essential matter is neither that the knowledge thus given should be complete, nor that it should be fully and rationally apprehended. The object is to call the universal attention of the ratepaying public to health-questions from the earliest period of life; to implant, if I may be permitted the word, an universal prejudice in favour of health; to place it, in fact, upon the same footing, in the ratepaying mind, as reading, writing, and arithmetic. Anything short of this will not meet the necessities of the case. Desultory popular lectures are useful in their measure; but they are attended, of course, by the more thoughtful of our working classes—that is, by those to whom they are least necessary. What is essential is to touch the unthinking mass; and this can only be done by penetrating them from childhood with an organic instinctive dislike of poisoned air and water, of dirty skins and overcrowded rooms. Thus, and thus only, will you create a public to whom the application of such sanitary measures as may perhaps always be necessary in our complicated civilisation will not be distasteful, will be met halfway, and will, therefore, be tenfold more effectual.

ON THE ADMINISTRATION OF NITROUS OXIDE.*

By J. T. CLOVER, F.R.C.S.Lond.

THE inhalation of nitrous oxide as the means of preventing pain in surgical operations was suggested by Sir Humphry Davy at the close of the last century. We have, however, no record of any serious attempt to introduce the practice. Probably the gas was experimented with, but abandoned from its not uniformly producing anaesthesia. The apparatus at that time would fail to produce satisfactory results, if they were made use of by the most skilful administrator. In 1844, Dr. Colton successfully administered nitrous oxide to Horace Wells, an American dentist, who then had a tooth extracted without feeling pain. Wells tried to introduce the practice of using it in dentistry; but, after the adoption of ether inhalation, by Morton and Jackson, it was rarely used till about five years ago, when Dr. Colton, having improved the means of storing and using it, successfully revived the subject. When lately in London, he said he had records of twenty-eight thousand cases of inhalation without a single fatal result, and the only administration of nitrous oxide, he had heard of, which was followed by death shortly after, was one of extensive phthisis; he had never known a person made so ill by it as to need a carriage to ride home.

Mr. Rymer, a London dentist, published some experiments with the gas, in 1864, but they were not so successful as to induce any one to adopt the practice of giving it. In March last, Dr. Evans, of Paris, assisted by his nephew, administered nitrous oxide to some patients at the Dental Hospital, London, in the presence of several medical men who were invited to witness its effect. He brought with him a large India-rubber bag and an India-rubber tube (without any spiral wire inside it). The tube was connected with a wooden pipe supplied with valves for preventing the re-inhalation of the gas. Dr. Evans obliged the patient to breathe through the pipe by pressing his lips against it, whilst an assistant closed the patient's nostrils. Most of the cases were

so successful as to render it undeniable that the gas, when properly used, afforded complete immunity from pain, and enabled the patients to walk away without any unpleasant effect in a few minutes. But some of the patients struggled a good deal before they were put to sleep, and some appeared to feel the pain during the whole time of the operation. These partial failures were the results either of the supply-tube having collapsed, or from air having been sucked in accidentally. The following modification of an instrument which I have used for the last seven years, for giving four per cent. of the vapour of chloroform, will be found to obviate the objections to the plan previously adopted. The bag is filled with nitrous oxide, and I hang it at my side by means of a loop of ribbon; a non-collapsible tube leads from it to a face-piece which is made of sheet lead, so as to be easily moulded to the face, and edged with India-rubber tubing, so that nose and mouth may be covered with an air-tight cap; two valves prevent the gas from being breathed a second time. This plan supersedes the necessity for pinching the nose; but when a patient breathes in a rapid and forcible manner, it does not always prevent a little air from being drawn in through the beard, or by the cheek falling in, during inspiration. To obviate this I have added a supplemental bag, holding about two hundred inches and connected

The woodcut represents the face-piece applied, with the supplemental bag, M, attached. A. Soft pad of India-rubber. C. The valve opening during expiration. D. The mount upon which the stop-cock, F G, fits; the spindle part of the inspiring-valve is seen projecting. E. Opening in the stop-cock of inhaling-tube, which permits air to be breathed whilst the face-piece is adjusted. When the little knob is turned down to G, the opening, E, is closed, and the supply-tube, H, leading from the bag of gas, is opened. M. The supplemental bag to be used or not by turning the stop-cock, I.

by a three-quarter inch tube and stop-cock with the face-piece; the use of this, in preventing the access of air, and in saving gas, will be seen presently. As patients are apt to wake too soon, I have sometimes prolonged the anaesthesia whilst the mouth is still open, by giving the gas through the nose-cap which I have been in the habit of using with chloroform. Most of the patients to whom I have given it have had no

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