ON THE VALUE OF NITROUS ACID IN THE
TREATMENT OF CHOLERA AND CHOLERAIC DIARRHEA.

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Now that cholera has again invaded us, and members of the profession are everywhere considering the best tactics to be adopted to successfully grapple with the disease, it is impossible to value too highly any therapeutic measure that can be proved in the least degree serviceable in arresting the more formidable symptoms. In the valuable and interesting paper by Dr. Cormack, lately read before the Medical Society of London, and subsequently published in the "Account of the disease," there occurs the following remark:—"Mr. Whiteman, of Putney, informs me he finds nitrous acid so prompt and so satisfactory a remedy in epidemic diarrhoea, that he trusts to its preference to any other medicine." The following observations are intended to convey a somewhat more detailed account of my experience of a medicine, which I have now exhibited with the greatest possible success to many hundreds of persons, suffering under all stages of the choleraic disease.

The way in which I became possessed of my knowledge of the remedy in question, is soon told. Upwards of twenty years ago, at the outbreak of cholera in 1832, my opinion was asked concerning the probable efficacy of an original prescription, which bore the signature of Mr. Thomas Hope, at that period a medical officer on board His Majesty's Ship Canada. I was then in my novitiate, and thinking the chief ingredient in the formula a somewhat extraordinary remedy for a disease which I had been taught to regard as one frequently preceded by an excess of acid in the prae- vious, I set at once pronounced against it; but was, from the strong representations of its value, and notwithstanding my prejudices, induced to copy the prescription. Shortly after, a very severe and stubborn case of diarrhoea happening to fall under my care, I determined to give the remedy I had noted a trial. The result of its administration to my sinking patient was strikingly favourable—so favourable indeed as to induce me ever after to rely upon it for the arrest of the earlier symptoms of the epidemic, to the exclusion of almost every other medicine.

I may here observe, that both the formula of Mr. Hope, and the directions with which it was accompanied, are identically the same as those at present used by myself, and of which I shall have occasion to speak more in detail in the course of this paper.

My own experience of nitrous acid, which, as I have shown, is no more than that of yesterday, fully bears out the character given it by its originator; viz., that when exhibited before the stage of collapse has completely set in, it has seldom or ever failed to check the progress of the disease; and that even when collapse has existed for some time, reaction has been established through its agency in a large number of cases, in which it has been administered along with the external application of warmth, and other auxiliaries.

In the summer and autumn of 1849, apart from the cases which occurred in my private practice, I returned to the Board of Guardians, as well as the public hospitals in the district, as many as 341 patients who had suffered more or less from the then prevalent epidemic. My belief is, that none of the cases so returned were other than fully developed cholera—children or adults, diarrhoea or a decided choleric character; for I quite agree with Dr. Cormack in thinking that, during the height of the epidemic, the choleric type is impressed upon most diseases, certainly upon all those in which diarrhoea is more or less an urgent symptom.

In quite 530 cases of the 541 returned in the Union books, nitrous acid was prescribed. A great many slight cases among the poor and others were administered to at the temporary Dispensary, of which no account was kept; but out of this large number of persons, I had the singular good fortune to lose but dozen, or about one in fifty of those attacked.

It is not been for the assistant, granted me by the Board of Guardians, coming to me with a most decided preselection for the calomel treatment, I believe that many more patients than I have named above would have been placed under the influence of my cherished remedy. Desiring, however, an opportunity of judging of the comparative merits of the several popular modes of treatment that were then being employed, I made no objection to a few cases being fairly submitted to the medicine so warmly advocated by Dr. Ayre; but I cannot say that the general result was at all satisfactory to my mind. The prolonged convalescence of the very few who, in my hands, called for or desired a better mode of treatment, certainly afforded me an encouragement for its adoption in preference to the stimulating, saline, or any other of the many plans then in use.

In the present state of our knowledge of this disease, I have ever held it to be of the first importance to commence the treatment, if possible, by the very earliest stage of collapse. If, then, there belonged to nitrous acid but the one property of arresting in the most prompt manner the discharge from the bowels in that stage, I should not be easily persuaded to abandon the remedy for any of those in common use. The acid appears to me to possess, besides its astrigent power, the properties of a stimulant in a remarkable degree; and it is a question whether, in addition to the peculiar action which I know it has of quieting the stomach, and of putting a stop to the violent retching, it does not also exert some influence upon the palsied pneumogastrium, and by that influence tend in many cases to give the first impulse to reaction. I have recorded in my note-book a recent case of choleric diarrhoea, in which the stage of collapse had set in some time before I was called upon to see the patient, but in which the administration of but two or three doses of acid seemed food sufficient to restore the natural warmth to the surface. Did space permit, I could transcribe from my notes very many cases of this kind, all tending to show in the clearest possible manner that the acid has some specific influence upon the system in causing an evolution of internal heat.

Whether the action of the mineral acids upon the eco-
nemy be of a chemical nature, or whether their effects in cholera are due to mechanical causes alone, I must leave to those to determine who have more leisure, and are better qualified than myself, to institute the necessary experiments. It is possible, may, exceedingly probable, as Mr. W. J. Anderson has most ably shown (Association Journ., Nov. 4th, 1850), that the introduction of a caustic or astringent acid into the system may supply a most important aliment (oxygen) to the impure blood in cholera; but I apprehend the astringent properties of such an agent must be referred, in part at least, to other than chemical changes. All sorts of purely speculative opinions as to the cause of cholera are beyond the present time, which it would be worse than useless to discuss; but with reference to those theories which ascribe the disease to certain electrical conditions favourable to its propagation, or to an excess or deficiency of ozone in the atmosphere, all must allow that these are views of incomparable importance, and that the immediate cause of the inordinate and abnormal discharge from the bowels may be the irritation of any fungoid growth, or animalcule deposit, upon the mucous surfaces of the alimentary canal. Believing, then, the fungus theory, as advocated by Mr. Grove, to be as tenable as any other which we have yet heard made acquainted, I cannot help entertaining a rather strong impression that, like sulphur, the nitrous acid may possess a powerful detergent action, and by its caustic power tend to the destruction of the fungoid germ in the primary state. Whether this be so or not, it is clear that the effects of the action on the bowels are in the most prompt and efficient manner, and that too with much less detriment to the subsequent health of the patient than when caustic powders, catechu, or opium, have been largely given with the same intention.

It may be noted, that I was called upon in 1849, to hasten convalescence by the after exhibition of tonics or other medicines; and this I consider one of the greatest recommendations of the acid treatment.

It is an interesting question whether or not the treatment of diarrhoea by acids was known to the ancients. The great father of physic in one of his aphorisms, has said, that "Acid belchings supervening upon lieuteries, where they were not before, are a sign of mending." And again: "Whether this symptom came spontaneously, or be procured by art, it equally cures the distemper." An old author, who wrote at the latter part of the seventeenth century, in much the same manner, remarks: "From hence it may be inferred that Hippocrates supposed acids to contribute to the cure of loosenesses, because those signs of acidity in the stomach, whether they come spontaneously, or are artificially superinduced, generally signify, according to him, a solvent that dissolves all the accumulations of flatulent excrescences." Other old authors have noticed a similar mode of treatment; and I believe the vegetable acids, such as the acetic and citric, have found a prominent place in the prescriptions of some of the ancient followers of the great philosopher of Cos.

Notwithstanding the successful issue of most of my cases in 1849, that were treated with nitrous acid, I do not pretend to say that this medicine is a specific against all kinds of choleraic disease; nor do I imagine that it will prove efficacious in every case. Unquestionably, in both threatened and actual collapse, external warmth, stimulant cataplasms, enemas of acetate of lead, and other such auxiliaries, will be found most valuable in the majority of cases. Employed in this way, I think I am authorised by facts in viewing the nitrous acid as one of the most valuable remedial agents that the profession possesses; and I am the more confirmed in this opinion, since a number of patients treated by stimulating, calomel, calomel, aqua, opium, and other popular medicines, either died, or experienced a most protracted convalescence in my hands; whilst those who were submitted to the influence of the nitrous acid, with but one or two exceptions only, recovered; and that, too, without the slightest apparent detriment to the general health.

In ordinary diarrhoea, or diarrhoea unaccompanied by any of those symptoms which indicate great prostration of the vital powers, I usually precede the acid mixture by a dose of calomel and rhubarb, with the view of removing any ascyma that may be retained in the colon.

The acid I have been in the habit of using is of a reddish brown, fuming, and of the spec. gr. 1·212. The manner in which I generally administer it is in the form of a mixture, containing, according to the severity of the symptoms, from 34s. to 34s. of the undiluted acid, in from 34s. to 34s. of any of the aromatic waters; and to this I sometimes add, when there is much restlessness and pain, equal mixtures of opium and codeine, but I habitually give the acid without the laudanum as with it. The dose of this mixture for an adult is a quarter part for every two, three, or four hours, according to the degree and urgency of the purging and vomiting. Should the first dose be rejected, as it sometimes will be, in spite of all the efforts to retain it, another must be given in about ten minutes after; and in this way it must be persevered in until it remains on the stomach, and the diarrhoea is restrained.

The best vehicle for its administration is a cup of thin gruel, suffered to become almost cold. It is always advisable to the patient to abstain from eating either liquids or solids for at least half an hour after each dose of the mixture; at the expiration of that time, however, constant and small sippings of gruel or tapioca may be ordered with much advantage. Should there be excessive thirst, a grateful draught may be administered by adding a few drops of the sweetened syrup of tonics or small tumbler of cold water. Experience has also taught me to look upon a dose of the mixture taken fasting every other day, as a most valuable prophylactic measure, by no means to be despised by those who may be constantly or only occasionally in attendance on the sick.

Hitherto I have contented myself with communicating my experience of this remedy to my professional friends; and I have much satisfaction in stating, that every one who has been induced to make use of the medicine has reported to me most favourably of it. My Union colleague, Mr. H. Burney, of Wandsworth, has, amongst others, forwarded to me that he has given it in a number of cases with the most satisfactory results, and adds, that in the choleraic diarrhoea of children he has found it extremely effective.

In concluding this communication, I must confess that the fear of sharing the discredit which deservingly attaches to the patient to abstain from eating either liquids or solids for at least half an hour after each dose of the mixture; at the expiration of that time, however, constant and small sippings of gruel or tapioca may be ordered with much advantage. Should there be excessive thirst, a grateful draught may be administered by adding a few drops of the sweetened syrup of tonics or small tumbler of cold water. Experience has also taught me to look upon a dose of the mixture taken fasting every other day, as a most valuable prophylactic measure, by no means to be despised by those who may be constantly or only occasionally in attendance on the sick.

Whilst I fully concur in the opinion of Dr. Carnack, that the advocacy of uniform and empirical methods of treatment may tend to obstruct, to a certain extent, the progress of rational inquiry, I am nevertheless quite content, in the present state of our knowledge of the disease, to have my cherished remedy placed in the category of empirical medicines, if by its agency I can continue to successfully combat the epidemic diarrhoea in almost every case brought under my notice. Let a case assume ever so formidable a character, I consider, that to be able promptly to arrest the serious discharge from the bowels is to gain almost the haven of a successful issue; and, I cannot help thinking, that if practitioners generally would avail themselves of the opportunity of imposing upon those, who are likely to become their patients, the danger there is in procrastination, and in neglecting to seek medical advice, whilst the disease is readily amenable to treatment, the greatest good would result, and many a valuable life be saved.

In the more advanced stages of the diarrhoea disease, and in cases in which collapse has long set in before medical aid is sought, I am free to confess, that the acid treatment is as
likely as any other to fail in causing reaction. Having no faith whatever in the existence of specific in medicine, it would be impractical in me indeed to extol this remedy as a never-failing one in choler. I have nevertheless just that faith in it to believe, that none will be found to repent having put it to the test when once they have been induced to employ it in the earlier stages of the complaint, and may thus be saved from a limb, or at least from a malady—nothing can be more common, which has in many districts numberless its victims, not as in this and other favoured places, by mere tens and dozens, but by appalling hundreds and thousands.

Putney, Nov. 21, 1853.

BIBLIOGRAPHICAL NOTICES.

THE SCIENCE AND ART OF SURGERY: being a Treatise on Surgical Injuries, Diseases, and Operations. By John ERICKSEN, Professor of Surgery in University College, and Surgeon to University College Hospital. pp. 944.

London: 1853.

Mr. ERICKSEN holds the position at University College which has been held in succession by Sir Charles Bell, Mr. Samuel Cooper, and Mr. Liston; and his present work shows him to be not an unworthy successor of these distinguished surgeons. The last work which we recollect as embracing in a short compass the science and the practice of surgery, was that entitled The Principles of Surgery, by the late Samuel Cooper; a work from which many surgeons of the present day have derived the soundest information, and which is still the text-book of numerous practitioners. The later works on surgery, written by English authors, have been chiefly monographs on some special department, or have been confined to the purely operative part of the subject, or have been abstracts of the existing knowledge of the science. A place was undoubtedly open for the publication of a comprehensive work on the theory and practice of surgery, written by a practical surgeon, who, deriving his preliminary information from such teachers as Liston, Samuel Cooper, Sydenham, and Quain, could illustrate his own views by the experience afforded at a metropolitan hospital. This vacancy, we think, has been satisfactorily filled by the work of Mr. ERICKSEN now before us; which will not only increase his own well earned reputation as an author and a practitioner, but will reflect credit upon the chair which he would well fill.

The work is divided into three parts. The first division contains a treatise upon the first principles of surgery, including inflammation, and the general rules connected with operations. The second division contains the special history and treatment of surgical injuries, and their effects; such as traumatic delirium, gangrene, gunshot wounds, punctured and poisoned wounds, wounds of veins, injuries to arteries, of muscles and tendons, and of bones and joints; injuries of the head, of the spine, of the lungs, and of the abdomen; burns, scalds, and frost-bites. The third division includes the various surgical diseases, such as abscesses, ulcers, mortifications, erysipelas, pyemia, tumours, scrofula, syphilis, phlebitis, diseases of arteries, of nerves, of bones, of joints, distortions and other diseases of the spine, diseases of the bursae, of the head and neck, of the jaws, of the throat, and of the breast, hernia, piles, diseases of the urinary organs, as stricture and calculi, and diseases of the male and female generative organs.

The first chapter is devoted to the consideration of increased vascular action as evinced in determination of blood, and in inflammation, with its consequences, suppuration, ulceration, and gangrene; but these subjects, though well described, offer no opportunity for special remark. In the second chapter, the author takes a practical view of operations; and many of his remarks are characterised by sound knowledge and good sense. The following passage is particularly worthy of commendation—:

"Manual skill and dexterity are necessarily of the first advan-
tage to a surgeon, and he should diligently endeavour to acquire the art of using his instruments with neatness, with rapidity, and with certainty: but, as desirable as it doubtless may be to be able to remove a limb, or to cure a malady—nothing can be more common, which has in many districts numberless its victims, not as in this and other favoured places, by mere tens and dozens, but by appalling hundreds and thousands."

1853.

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