

ON THE BEST MODE OF EMPLOYING
GALVANISM IN DISEASE,
ESPECIALLY IN MALIGNANT CHOLERA.

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I HAVE lost no part of my *enthusiasm* with regard to the subject of electro-therapeutics, but have continued to speculate and experiment, as opportunities have offered.

It has all along been my opinion, that galvanism, properly and timely applied, would be one of the most powerful and successful remedies in that frightful disease the cholera. Many cases which have lately occurred in my practice, induce me still to entertain that opinion; and, I confess, I felt no small degree of gratification, on reading the following. Dr. Thomson, professor of chemistry in the University of Glasgow, in an article published in the *London Philosophical Magazine*, suggests, that "if a current of galvanic electricity were made to pass through the lungs of those who labour under the cholera, it would revive the energy of that organ, and enable it to induce the requisite quantity of blood." Now, as the disease is prevalent in your city, and as all other modes of treatment hitherto adopted have proved unsuccessful in a majority of cases, would it not be well to give galvanism a trial? I presume your hospitals will afford opportunities for extensive and fair experiments; and I feel quite solicitous that they should be made. I regret exceedingly that my situation is such that I cannot, without great inconvenience, make a visit to your city for this express purpose. If, however, you or either of your colleagues, or any of your medical brethren, should think proper to try the experiment (which, to say the least of it, will be safe and harmless, even if it do no good), I will detail the process which I would pursue, were a favourable opportunity to be presented to me.†

In the first place, I think the *construction* of the battery of some importance. I have tried all sizes, from plates of six inches square to those of one inch; and I find that plates two and a half inches square, answer the best for medical purposes. A series of twenty double plates (zinc and copper, well soldered together at the upper edges) of that size, carefully cemented into a mahogany trough constructed on the plan of

Cruikshank's, and mounted according to Dr. Hare's improvement, as described in Mitchell's edition of Faraday's *Chemical Manipulation*, page 484 (note), forms a convenient battery for ordinary use, and will be found sufficiently powerful to be borne by most patients. It would be well, however, to construct the trough for a series of thirty or forty pairs of such plates, as it may be necessary, in some cases, to increase the power to that extent. The space between each pair of plates ought to be at least half an inch, otherwise the acid mixture for charging will be too soon exhausted of its strength. Great care should be taken that the cementing be *perfect*. I have been in the habit of using a cement made of five parts of rosin, four of beeswax, and two of pulverized red ochre, and pouring it, while hot, into the troughs, after the plates have been carefully arranged and fixed in the grooves; so that the sides and bottom of the trough between each pair of plates may be completely covered with the cement, about one line in thickness; thereby securing a perfect insulation of each pair of plates. In each extreme cell, also, the wood should be completely covered with the cement. After the cementing is finished, the troughs should be well varnished with two or three coats of good copal varnish. Small silver wires, three or four feet long, for conductors, may be prepared by attaching a leaden ounce-ball to one end, so that it may readily sink in the cells and keep its place; and the other end may be armed (to insulate it for holding between the fingers) with a tube made of a large goose-quill by cutting off the ends, fitting a piece of cork into each, and then thrusting the wire through them, so that the end will project about one inch; or some of the melted cement may be poured into the quills, to secure the wires in the centre, instead of the corks. Two thin circular plates of silver, about the size of a dollar, with six or eight small holes perforated near the margin for the purpose of sewing on some thick woollen cloth, or a flat piece of sponge, should next be prepared. The battery may then be filled to within half an inch of the tops of the plates, with a mixture of muriatic acid and water, in the proportion of one part of the former to fifteen or twenty of the latter. I have found this mixture preferable to any other for medical purposes.

Thus provided, when called to a patient with the cholera, I would apply one of the silver plates to the nape of the neck, and the other to the pit of the stomach; the cloth or sponge on both plates being previously well moistened with the acid mixture for charging the battery. This moistening of the plates with the acid mixture is very important to be attended to, as an

* Extracted from a letter to Dr. R. La Roche, New York, and originally published in the *Amer. Jour. of the Med. Sciences* for Nov. 1832.

† We cannot find that the proposed trial has been made in America.—ED. L.

action on the skin is thereby produced, which gives a ready passage to the galvanic influence. I would then bring the armed ends of the wires (the other ends being plunged into the cells of the trough, at such distance apart as to produce the desired intensity of action) in contact with the plates, and maintain as strong an application, for eight or ten minutes, as the patient could bear without complaining. Sometimes the positive, and sometimes the negative, wire will produce the most pungent sensation. I would occasionally reverse them, so that the strongest sensation should be felt at the pit of the stomach, or in whatever part the pain might be most severe. If the pain and spasm should extend over the whole region of the abdomen, I would occasionally let one plate remain on the pit of the stomach, and shift the other to various parts of the abdomen, where the pain might be severest; or, perhaps, a large plate fitted to the whole region of the stomach and bowels (lined with cloth or sponge, and well moistened as before directed) might answer the best purpose. In the meantime, the internal administration of *spts. ammoniæ æth. sulph.*, in doses of fifteen or twenty drops of the former, and a teaspoonful of the latter, every half hour, might be a useful auxiliary. This, however, to be left to the judgment of the attending physician.

I feel very desirous that a fair experiment should be made with the galvanic battery, in a decided and well-marked case of cholera; and you will confer a singular favour on me (and perhaps on some patient) by having such an experiment instituted, and letting me hear the result as soon as convenient.

Frankfort, August 15th, 1832.

CASE OF OBSCURE DISEASE OF THE

ABDOMINAL VISCERA.

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G. R., a young lady, aged eighteen years, was, her mother says, about sixteen months ago, suddenly seized with headach, vomiting, and a pain in the belly, which gradually increased in severity, until the muscles of the abdomen were contracted into hard knots. In this state, although she had the assistance of very able medical men, she continued for several days. Her sufferings, according to her mother's account, were dreadful to behold, and her life was despaired of by all who saw her; yet, notwithstanding the fears of her friends, and the gloomy predictions of her physicians, this young lady was not, at that time,

doomed to die. Her disease gradually gave way, and, after some months had elapsed, she appeared in a great measure to have recovered from its effects. She was, however, her friends state, much altered in appearance, and although she complained but little, there was a languor about her, which gave alarm to her anxious mother, and caused her to think that all was not right. Thus far the history of this case rests on the authority of the patient's mother and friends.

In July last I first saw her, ten months after the commencement of the above-mentioned illness. She then complained of headach, of stiffness of the eyes, and of a peculiarly unpleasant sound in the heart, which, she said, she always perceived while speaking. She had a dull, languid look, and walked with a heavy, sluggish step. I, therefore, prescribed tonics, and told her relations, that as her strength increased, I had reason to hope, that the unpleasant symptoms which she had described would vanish. She, however, remained nearly in the same state until the month of October, when she had a slight attack of fever, which lasted for a few days. Soon after recovering from this, she became much emaciated, and as there appeared, at that time, to be a good deal of obscurity about her complaint, I thought it right to take her to London, in order to have the benefit of Dr. Blundell's advice. After a very careful inquiry into the nature of her case, the Doctor said, that he did not think there was any structural disease within the cranium; that it was very difficult to tell upon what the complaint depended, but that he thought it was caused either by functional derangement of some of the abdominal viscera, or by disease of the mesenteric glands. He prescribed tonics and alteratives, which were taken, for some time, without any benefit. On the contrary, her headach became daily more severe, and the emaciation went on with amazing celerity, until the poor girl became, in truth, a living skeleton. About the month of December, she said she felt a weight in her legs, which rendered it difficult for her to walk; but she was not confined to her bed until two days before her death. In the night of the 4th ult., I was suddenly called on to visit her. I went immediately, and found her in a dying state. Her pulse was low and frequent; her breathing laborious and difficult. There was a rattling noise in her throat, and her voice was weak and unnatural. Next day she seemed to be a little better. She breathed with less difficulty, and spoke with a stronger voice; still it was evident that dissolution was fast approaching, and on the morning of the following day, when her friends thought her somewhat better, she suddenly expired without a struggle.