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Stevens, regarding the effects of some of the neutral salts on the blood, have naturally directed attention to this point, at a time when the failure of all ordinary methods of treatment in Cholera has almost unavoidably led practitioners to inquire, whether there be yet any untried expedient which might by possibility be useful. About a month ago, having procured successive supplies of newly-drawn blood, I mixed it with different substances, obtaining the now well-known general result of rendering the fluid dark and thick by means of strong acids, and of a bright scarlet by means of the neutral salts. The transition from the Modena hue of venous to a vermilion resembling that of arterial blood, is certainly a remarkable phenomenon; and those present agreed, that if any thing was to be hoped for from effecting a similar change in urgent cases of Cholera, it was most rationally to be attempted by direct injection into the veins—a process which Mr. Arnott undertook to perform, should circumstances occur to render the preceding feasible,* &c. &c.

The above letter was written by Dr. Macleod; and it is to be regretted that this proposal was not sooner put into practice, for if it had, there is little doubt that many individuals would have been saved who have since fallen victims to the disease. But, unfortunately, the benefit which has since been derived from the saline treatment was prevented for a time, partly by a circumstance already referred to; for the Editor of the *Medico-Chir.* Review not only denied my statements in the public journals, but he candidly confesses that previously to their publication he had sent a copy of the Trinidad documents to Dr. O'S. for the express purpose, as he says, of preventing this gentleman from leaving to my side.

The proposal for injecting a saline fluid into the veins was first put in practice by Dr. Latta, of Leith. We are not informed at what date it was first tried; but the letter communicating the first information on this subject to the Central Board of Health is dated Leith, May 15th, 1832. The result of Dr. Latta's experiments is well known. It has also been since tried by others. In these also there has been some recoveries*, and several deaths; but I sincerely trust that the failures in future will be less frequent. The Albumen which has been used is altogether unnecessary, for the blood in Cholera has more consistence than the blood in health. The sharp-pointed silver instrument which is generally attached to Read's apparatus is too sharp at the point to be introduced with safety into a vein; and my conviction is, also, that the saline fluid which has been used is too large in quantity and not sufficiently strong; and this, in all probability, has been one chief cause of the many failures. We know it to be a fact, that when animals are killed in a state of exhaustion, or immediately after they have been taking very hard exercise, a very large portion of salt is then required, on purpose to preserve them from the putrefactive process, and when the blood, as in Cholera, is not merely deficient in saline matter, but is also in a diseased condition from other cause. It is then essentially necessary not only to supply the blood with the natural saline ingredients which it

has lost, but to throw into the current a larger proportion than usual, for the purpose of enabling it to resist the destructive effects of the morbid poison.

The injection, however, of saline fluids directly into the blood is as yet only in its infancy. I have no doubt that it will be the means of saving many lives; but it will seldom be required where the patients are seen early in the disease, and properly treated; consequently, where one individual will be preserved from Cholera by this operation, a thousand will be saved by the internal use of the energetic nonpurgative salts. There is one point of view, however, in which I consider Dr. Latta's experiments as possessing an intense value—and that is, inasmuch as they afford the most unequivocal evidence in favor of the opinions with respect to the effects of salts on the blood, which were first publicly communicated to the profession in the paper which was read at the college of Physicians.

When the Cholera is left to itself, or even where it is treated in the beginning with improper remedies it is almost incredible, to those who have not seen it, how rapidly it runs its course to a fatal termination; but it is equally incredible, when the disease is properly treated, how very soon it may often be arrested in its rapid progress. I have seen, in some of the very worst cases, where, when a few doses of the saline mixture could be retained in the system for a sufficient time to enter the circulation, the fatal symptoms were almost immediately arrested; and even when the collapse has commenced, after a short period, the pulse can be felt beginning to creep, animal heat begins to be evolved, and though the patients continue weak for a time, yet they gradually recover from the state of collapse.

In two of the most malignant cases which I have seen, there was no premonitory diarrhoea; and in one of them the bowels had not been open for three days previous to the attack; consequently, Cholera is not merely an excessive diarrhoea, for neither the bowel complaint, the rice-water ejections, vomiting, nor cramps, are essential to this disease; and where these symptoms do exist, they are merely the effects of the poison—for they are merely accidental; but a sudden coldness of the blood, and of course of the whole body, without any obvious cause, is, perhaps, the best characteristic symptom of this pestilential disease.

In the first stage of Cholera, the ejections are, in general, passed with great force; but as the disease advances, the intestines become cold, and frequently so torpid, that even hot saline enemata can be retained with great ease; consequently in such cases, there is no necessity for plugging the rectum, as recommended by Dr. Clanny.

The rice-water ejections, which are generally passed so copiously in the first stage of Cholera, are, like every other secretion in the body, derived entirely from the circulating current; and as the coloring matter of the blood is, perhaps, the only ingredient which is not drained off in this way, it naturally follows that a given quantity of black Cholera blood must be more dense, and contain more coloring matter, and less serum, than is met with in the

† The following is one of the many facts which may be brought forward to prove that the stronger salts are essentially necessary in the treatment of Cholera. I saw one most interesting case of a fine little girl, about nine years of age, where the physicians who attended her had trusted the cure merely to the carbonate of soda combined with laudanum. Under this treatment, the stage of collapse came on so suddenly, and to such a degree, that it was judged necessary to inject a saline fluid into the veins. This was done, and the child recovered.

* See Wilson on the Blood.