

since the destructive effect of the poison is increased in proportion to its concentration (Wood head). This practice of dilution is inseparably connected with the practice of free and continuous elimination by purgation.

As to the other factor in the treatment, *i.e.*, the use of antiseptics, I hold it in light esteem when compared with elimination and dilution. Yet in all my cases I have used intestinal antiseptics, and I believe with a great deal of benefit. It seems to me that, if one can completely deodorize the intestinal contents by the use of salol, it must do this through its destructive action on the ordinary intestinal bacteria, and very likely will act in the same way on the germs of typhoid, if occupying the intestine. In this connection I should like to point out that much larger quantities of antiseptics can be used, if associated with free purgation, without their toxic effects arising, than if given alone.

Keeping in mind the pathology of the disease, let us first notice the question of perforation. This, of course, presupposes deep ulceration, a condition the occurrence of which in cases seen early, and where free elimination has been secured throughout, is directly opposed to the inferences of pathology. In cases seen early, and where elimination has been properly secured, we are not even confronted with this difficulty, and may proceed to purge as freely at a late as at an early stage of the disease in so far as the danger of perforation is concerned.

In dealing with this question I may be permitted to quote from my former paper: "Suppose the ulceration to be deep at the time the patient comes under observation, are we then to allow the caustic to continue in its work of cell destruction, or are we to attenuate and remove it in the way indicated? Certainly the latter plan seems the reasonable one to adopt. It is, however, objected that ulceration is, perhaps, so deep that any increase of movement, consequent on purgation, may cause rupture. Let us here notice what follows on the administration of a purgative medicine. There is increase of peristaltic movement, but here we must remember that we have made no radical change, but have simply increased the rate of existing movement. Also, at that portion of the intestine, purgatives act chiefly by virtue of their power to produce free

secretion. Consequently the process partakes largely of the nature of a flushing out. Not only does purgation not increase, but it can be proven that it actually diminishes the danger of perforation. It is obvious that the more the intestine is distended, the thinner those structures which form the floor of the ulcer become. Now this condition of distention is common in typhoid, and depends on paralysis of the intestinal muscles resulting from the action of the toxine on the nerve-centres. Hence, if by purgation the cause of the paralysis be got rid of, there is a return of muscular tone, which is the condition least favourable to the occurrence of perforation. Let us now turn to the question of hæmorrhage. Hæmorrhage can, of course, only occur from a vessel laid bare by the process of ulceration. At the outset, I should like to draw attention to two facts touching arterial hæmorrhage. Gowers, speaking of the pathology of cerebral hæmorrhage, says: 'The force that ruptures an artery is the pressure of the blood within it.' And again, 'healthy veins may give way under extreme pressure, but arteries do so seldom, perhaps never.' Accepting these statements, then, and applying them to typhoid fever, we have the two factors in the production of hæmorrhage—the toxine corrodes the arterial wall, the blood-pressure ruptures it. If we remove the toxine from contact with the vessel, and diminish the intensity of its action, we certainly, as in the case of the intestinal follicle, limit the extent of damage to the vessel wall. But it is claimed that increase of movement in the intestinal wall may cause laceration of the exposed artery. In other words, we are asked to believe that a vessel whose wall is so fragile that it may be broken by the slight increase of vibratory movement in the membrane in which it is lodged, is at the same time, if freed from this extra movement, capable of sustaining the blood pressure. Then, again, is it really a fact that increase of movement in the intestine involves strain upon the vessel which ramifies in its wall?"

In connection with the application of the principle of elimination there are several minor questions. First, in the event of the presence of diarrhoea, are purgatives indicated? The occurrence of diarrhoea must be a response to some irritant, and, if it continues, and is associated with evidence of toxæmia, we cannot infer that there is