

and repeatedly clearing from the intestine this highly toxic bile the sum of poison in the body is lessened, for be it remembered, if the bile poured into the intestine be not carried on out of the intestine, it to a great degree becomes reabsorbed, and thus the effort of the liver to free the body of the toxic substances is in a measure rendered nugatory.

In the case of the typhoid toxin Semmola and Gioffredi quote Roger as having demonstrated that it actually is intercepted by the liver.⁷

Clearing out the intestine and maintaining it as free as possible from all forms of bacilli and toxins indirectly assists the depurative function of the liver, for the less the amount of poison carried by the portal system from the intestinal tract, the more effectually will the liver deal with the toxins in the general circulation. This scavenger function of the liver is, however, exercised within certain limits, and if excessive quantities of poison should be carried from the intestine the function may be taxed to the full; and so the liver will be unable to deal with the toxins in the systemic circulation. Or, again, the portal blood may carry so much toxin from the intestine as completely to overwhelm the liver, so that it is able neither to guard the portal entrance nor to intercept toxins coming through the general circulation. The irritation of hepatic tissue in this way would seem to furnish an explanation of the tenderness and enlargement of the liver sometimes noticed during the course of typhoid fever.

Consideration of these facts in hepatic physiology cannot but impress one with the desirability of constantly clearing away the toxic bile and of keeping the intestine as free as possible from bacilli and toxic substances throughout the entire duration of the disease. It also shows the wisdom of employing intestinal antiseptics and of exercising care in the arrangement of the patient's food, so that the least possible residue may escape assimilation and remain in the intestine to undergo decomposition.

The antiseptic substances chosen should, however, be the least harmful, for, if poisonous substances are selected to purify the intestine, they themselves become a tax upon the liver. I have before pointed out that toxic antiseptics—*e.g.*, salol—can be used much more freely if at the same time purgatives are employed frequently.⁸

Elimination of toxins by way of the intestinal canal, although mainly through the medium of bile, occurs to a very considerable extent through the serous exudate from the intestinal wall.

None, I imagine, will question the correctness of this view. In a condition such as typhoid, where the fluids of the body hold in solution excessive quantities of toxic substances, the serous exudate into the intestine in response to purgatives must of necessity bring with it some of the toxins. Purgatives, then, facilitate elimination of poison from the body through the toxic bile, and to a lesser degree perhaps through the toxic serum.