

much in the same way as the kidneys do in the general circulation; and in doing so it protects the system against the entrance of toxic drugs and the crude and irritating products of faulty digestion. The products of normal digestion carried to the liver and excreted in the bile are non-irritant. It is otherwise in certain disorders of the gastro-intestinal tract associated with the formation of irritating toxins, which toxins, when absorbed into the portal system, are arrested and excreted by the liver cells into the bile, altering its non-irritant character. If this bile were poured directly into the intestines, little or no disturbance might arise, but, instead of this, it is passed at a very low pressure along a system of minute canals lined with epithelium which is itself excretory. This epithelium under normal conditions appears to secrete a considerable quantity of watery fluid into the bile, rendering its consistence thin and its flow easy. Under the influence, however, of irritating properties in the bile the secretion of this lining epithelium is increased in quantity, and becomes mucus and viscid in character, thus checking the onward flow of the bile, and, in the more severe cases, producing such a rise of pressure in the ducts as to lead to some re-absorption by the lymphatics.

The results obtained by Stadelmann (2) in his experiments with toluy endiamin afford us a curious illustration of this condition in an extreme degree. When this drug was administered to dogs, it promptly produced an attack of jaundice, which could be attributed only to the marked increase in the viscosity of the bile, resulting not from changes in the bile as secreted by the liver cells, but from a greatly increased secretion of mucus by the walls of the bile ducts. This increase of viscosity, associated with an inflammatory swelling of the epithelial lining of the ducts, brought about a stasis in the bile current leading to re-absorption of the bile through the lymphatics into the general circulation, and thus gave rise to the symptoms of icterus. The jaundice in this case had nothing to do with the duodenum, for it occurred even when the common bile duct had been ligatured and a biliary fistula established.

Fortunately few toxins or drugs possess properties so irritating to the mucous membrane of the bile ducts as this toluy endiamin, but Hunter (3) considers the icterus of epidemic jaundice, of febrile jaundice, of the jaundice of Weil's disease, of acute yellow atrophy, of the various specific fevers, such as yellow, relapsing, and malarial, and of pyæmia, to be of a similar nature.

He is also of the opinion that some retardation of the flow of the bile associated with a slight degree of catarrh of the bile ducts frequently underlies the ailments included under the term lithæmia, and popularly