from the epithelium of the bile passages. When stagnation occurs from any cause, a bacterial infection is favoured. Should such infection take place, a catarrhal cholangitis and cholecystitis is set up; cholesterin is formed in an abnormal amount, which is afterwards readily deposited on any suitable nucleus, either a minute bilirubin calcium calculus, or a clump of typhoid or colon bacilli. Still it is to be remembered that stasis is the important underlying factor permitting such infection, for with a free flow of the bile we know that bacterial infection tends to disappear rapidly.

Stasis is also an important factor in the formation of the bilirubin calculi. Pure bilirubin is never precipitated (Hunter), but under certain conditions it combines with calcium and is then precipitated as an insoluble compound constituting the gritty particles sometimes met with in the intrahepatic ducts, which may grow to form small calculi, or may form the nucleus of a cholesterin gall stone. Bilirubin and calcium are both normal constituents of the bile, but under ordinary circumstances never combine to form this insoluble compound, even when lime is added directly to the bile in considerable excess; the combination being prevented by the presence of the bile salts. Naunyn found, however, that the addition of a small amount of egg albumin to the bile at once brought about a precipitation of this insoluble salt. He, therefore, considers it highly probable that the albuminous material derived from the desquamation and disintegration of the epithelium of the bile passages in catarrhal conditions is the chief determining cause of the precipitation of these small concretions. This catarrhal condition is dependent to a great extent on stasis in the bile current associated with either a bacterial infection or the excretion of irritating toxines in the bile, so that again we have stasis as the important etiological factor to be considered in our therapeusis.

Recognizing, therefore, the importance in the etiology of the diseases which we are now considering of any retardation in the on-flow of the bile in its ducts, let us briefly enquire into the means at our disposal for modifying the amount and character of this secretion and for favouring its passage through the small ducts till its exit into the intestine.

Placed, as the liver is, upon an efferent vessel of the alimentary canal, its vascular condition must vary with the varying conditions of the gastro-intestinal tract. The mere taking of food in itself produces an increased secretion which becomes marked within an hour and greatly increased after four or five hours have elapsed. Heidenhain (11) has also shown that in dogs, section of the splanchnic nerve, by producing a general dilatation of the portal vessels, causes a marked increase in the flow of bile, while stimulation of that nerve, by inducing a contraction of the same vessels, diminishes the secretion of bile.