

normally septic, infected by direct continuity with the lumen of the bowel. Whether infection of the bile passages by typhoid germs occurs by direct continuity or through the lymphatics or blood, matters little. Musser says, that Cholecystitis mild or severe, may develop in the course of typhoid fever, generally in the third or fourth week, or even during convalescence, and he warns us to be on the lookout, as he says, many so-called relapses are not true typhoid relapses at all, but mild cases of Cholecystitis. These are to be noted as primary attacks, imitating changes leading to gallstone disease which, later, through secondary infection gives rise to septic Cholecystitis or Cholangitis. Thus Rudolph of Edinburgh, says, "typhoid fever frequently appears to produce this condition (cholecystitis), as was first pointed out by Bernheim in 1899, and it is interesting to note that the typhoid bacillus may be in the gall-bladder for years, and the patient will give the Widal reaction, years after the enteric fever has occurred." Hence, in Cholelithiasis, we should remember typhoid as a possible initiating cause. This subject of Cholelithiasis is the most interesting which can be discussed in connexion with infection of intestinal origin. The old theory that gallstones were formed by deposition of cholesterin crystals from a too thick bile, has been exploded, for it cannot be so produced experimentally. It was thought that the gallbladder played the most important part as a settling basin in their formation, but gallstones are found in elephants which have no gallbladder. Naunyn has shown that most of the cholesterin is produced by the action of an inflamed mucous membrane. Mignon, Fournier, Gilbert, Cushing and others have produced gallstones experimentally by injecting attenuated cultures of typhoid or colon bacilli into the gallbladder. Another observer, Mieczkowski, found the bile sterile in every case *not* cholelithiac, but containing bacteria in 18 out of 23 cases of Cholelithiasis. All catarrhal processes are not necessarily caused by bacteria. Stagnation, due to pressure of enlarged glands, tumours, kinking of the ducts from adhesions, and so on, could cause the same predisposing catarrh. But this catarrh predisposes to infection. The French school is very positive about the bacterial origin of gallstones. Gilbert and Fournier divide them into two classes, those due to the colon bacillus and those due to the typhoid germ. Legars of Paris, says, the microbial origin of biliary calculi has been demonstrated, by finding microbes in calculi, by producing calculi experimentally by injections of microbes, and finally certain cases in the human have been observed, where calculi have formed during an acute infectious process. The existence of microbes in the centre of gallstones, in one case out of three found at post-mortems, has been proved; calculi have been found in a boy of 14 a few weeks after an attack of typhoid. In a woman of 53, 17 years after typhoid and after 7 years