OBSERVATIONS ON GALLSTONES.*

By J. J. Fitzsimons.

In recent years there have been so many brilliant advances in the sphere of medicine and surgery that unless one is exploring unknown or at least rarely visited areas, progress may seem to be wanting, but such progress may be more apparent than real.

It is well to consider occasionally equally important, but less exciting, fields of our activities. With this view in mind I have chosen to look into the findings and results of my last one hundred cases of disease of the gallbladder and bile-ducts.

The fact that the condition is so common adds, in my opinion, to its importance. The rarer cases may be of great academic interest, but their importance to the community will be in direct ratio to their frequency.

Historical.

We have reason to believe that mankind has suffered from cholelithiasis from time immemorial, as is well illustrated by the discovery of gallstones in Egyptian mummies which can be seen in the museum of the Royal College of Surgeons of England. It is humbling to think of the terrible pain and suffering which gallstones have caused throughout the ages. Medicine has little to offer beyond the imperfect relief of pain by sedatives. So recently as 1890 a distinguished physician seriously advocated massage as a means of expelling stones through the bile-duct into the duodenum. Nature does occasionally succeed in thus getting rid of stones after long suffering and with a high mortality, but while Nature is a great ally, she is a poor substitute for modern surgery.

Although Petit had suggested cholecystotomy in 1733, the operation was not actually performed until 1868, by Bobbs, of Indianapolis. In the preceding year Lister published his epoch-making discoveries, which gave birth to modern surgery, and made him the greatest benefactor of the human race. Before his time surgery could not safely interfere with biliary disease beyond opening abscesses or slitting sinuses for the extraction of stray stones. A little more than seventy years ago a few surgeons (Koehler, Marion Sims, Lawson Tait) adopted Lister's methods and ventured to embark upon pioneer work in the upper abdomen, but for a long time few dared to trespass beyond the gallbladder, from which they were content to remove stones with or without drainage—cholecystostomy.

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or cholecystotomy. In 1882 Langenbuch performed the first successful cholecystectomy, but by 1890 only forty-seven cholecystectomies had been recorded.

The surgery of the bile-ducts was naturally of slower development: choledochotomy was first successfully performed in 1889 by Knowsley Thornton.

**Physiology.**

It is essential to have some knowledge of the normal working of an organ before we can discuss its pathology intelligently. The liver has so many functions that to mention them all would be tiresome and irrelevant. Some, however, are of paramount importance to the subject under review.

Bile is manufactured in the liver and contains bile salts in the forms of taurocholate and glycocholate of soda, pigment, bilirubin and biliverdin derived from haemoglobin, and cholesterin, which is of considerable importance to our subject, while bacteria and toxins are commonly excreted by the liver in the bile, of which there are about 500 c.c.s. excreted per day and which is an important factor in the digestion of fatty foods. The human has, as a rule, for it is occasionally absent, a pear-shaped receptacle, the gallbladder, into which bile flows during the intervals between meals. What precisely happens to this bile is, in legal parlance, still *sub judice*. Some authorities say that none of the bile which has entered the gallbladder leaves it again through the cystic duct, but it is generally agreed that it is markedly concentrated, to at least one-fifth of its original volume. The lining of the gallbladder consists of a honeycombed mucous membrane obviously intended for absorption. A large percentage of the bile appears to go back to the liver, there helping to stimulate a further flow. As a result any bile that may leave by the cystic duct will be very concentrated, and if the duct is kinked, as it often is, or its mucous membrane swollen, as the result of irritation from the bowel, it may be difficult for the gallbladder to empty itself.

If a meal causes emptying of the gallbladder and food is taken at short intervals, then concentration of the bile should be less marked; such does not necessarily appear to be the case.

We know that a fatty meal given after the gallbladder has been visualised by x-ray produces contraction and emptying of the normal viscus. A most important observation was made by Westphal, who stated that during pregnancy and lactation the gallbladder does not respond to the food stimulus; this failure to do so he attributed to spasm of the neck of the gallbladder and of the sphincter of Oddi under the influence of the vagus nerve. If there is an increase of cholesterin or any decrease of bile acids, which keep the cholesterin in solution, there will be a likelihood of deposits of cholesterin. In pregnancy and lactation there is a considerable increase in the cholesterin content of the blood and bile. It is acknowledged that the gallbladder is the only considerable factory for the formation of gallstones, which rarely form elsewhere. Moynihan has said that “a gall stone is a monument to the “bacteria that lie dead within it”.” Though a brilliant epigram, it may well be that its brilliance has overshadowed its truth. It may be true