

## THE DIAGNOSIS OF DISEASES OF THE GALL BLADDER AND BILE DUCTS.\*

By ALEXANDER MCPHEDRAN, M.B.,

Professor of Medicine and Clinical Medicine, University of Toronto.

THE bile ducts are but passages for the conveyance of bile from the liver cells to be cast out into the intestines, and the gall bladder is a diverticulum that acts as a temporary reservoir to receive the excess of bile when the discharge is less rapid than the secretion, as it probably often is in sleep and rest, at which time the flow lacks the stimulus of the active movements of the diaphragm and the abdominal muscles.

The outlet of the common bile duct into the intestine is considerably narrower than the calibre of the duct, and the pressure of the bile in the ducts is very low, a very slight impediment therefore suffices to interfere with its proper discharge and cause a damming back of the bile in the bile capillaries, when it begins at once to be absorbed by the lymphatics of the liver and is discharged into the blood by way of the thoracic duct. The flow of bile may be impeded, or wholly obstructed, (1) by inflammatory swelling of the lining membrane of the ducts; (2) by gall stones, or foreign bodies in the ducts; (3) by pressure from without by tumours, glands, etc. It is from obstruction that most of the symptoms of disease of the bile passages arise.

It is further more to be noted that the bile ducts, opening as they do into the small intestine, are peculiarly exposed to infection by the micro-organisms of the intestinal tract, especially the *bacillus coli communis*. As the bile may contain bacteria excreted from the blood direct infection may also take place, as occurs, for example, in typhoid fever, but the danger is much less than that of infection from the intestine. Not only the inflammatory affections of the biliary passages, but gall-stones also are due to bacterial infection. The infection causes some catarrhal inflammation of the gall bladder. Increased secretion of mucus results and this leads to a precipitation of calcium salts, cholesterine and bile pigment of which the stones are composed. Clumps of bacteria may constitute the nucleus of a stone. Further it is at least possible that malignant diseases are caused by infection. In the bile passages, with few, if any exceptions, the development of malignant disease is preceded by gall-stones, from which we can fairly infer that the irritation produced by gall-stones offers a favorable condition for malignant infection, if there be such, hence the much greater frequency of malignant disease of the gall-bladder than of the bile ducts.

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