

Before going on to the discussion of the pathological findings along with the microscopical examination of these cases it might be well to briefly run over the histology of the bile papilla as we normally find it.

*Normal Histology.*—The bile papilla represents the puckered up mucous membrane of the duodenum, where the bile duct opens in common with the pancreatic duct into the lumen of the intestine. It is situated on the left side, about the middle of the second portion of the duodenum, and projects slightly above the surface of the mucosa. Frequently on opening the duodenum, it escapes detection and is found only by passing a probe through it from the common bile duct. Normally the papilla is soft and is not unlike one of the valvulae conniventes from which it cannot be distinguished by the feel of the finger. However, when it becomes involved in a new growth, or its lumen is occluded by a gall stone, it stands out as a hard mass into the lumen of the bowel.

The structure of the papilla is essentially that of the duodenum with the ampulla of Vater passing through its centre. The duodenal surface is covered by an epithelial layer continuous with that of the intestine. Villi are present, as are also the crypts of Lieberkühn, both of which are lined with columnar cells. The columnar epithelium on the villi does not differ from that found in the crypts, the object of both being to increase the surface area of the intestine. The muscularis mucosae surrounds the papilla like an orbicularis muscle, and in a similar manner also surrounds the ducts of Brunner's glands, controlling their orifices with a valve-like action. The submucosa consists of firm connective tissue with glands which are found only in the duodenum. These duodenal, or Brunner's glands as they are called, are tubular racemose glands, whose branchings are coiled in the uppermost layer of the submucosa, while their ducts pass through the muscularis mucosae to reach the intestinal surface between the villi. The ducts may or may not open into Lieberkühn's crypts. The lining cells of these glands are cylindrical, merging into a more cubical character as the duct passes through the muscularis mucosae.

Brunner's glands are described as being present only in the upper part of the duodenum. I have found them present in and about the bile papilla in all of four cases I have examined. The muscularis and serosa of the duodenum do not differ from those found in the remaining part of the small intestine.

The ampulla of Vater, the small recess in the papilla, into which open the common bile duct and the pancreatic duct, measures 0.5 c.m. in length. The lining of the ampulla is continuous with, and does not differ from that of the bile duct, both being columnar celled.