In the Molgulidæ there is a well-developed glandular mass, usually divided into several lobes, which, in the absence of definite information as to its function, may be called a liver. A similar organ is found coating the stomach in many of the Cynthiidæ, and in other forms, and in some of the Ascidiidæ and some Ascidiæ Compositæ there are thickenings of the wall of the stomach, which are possibly a less developed form of the same organ.

In many other cases, including Simple and Compound Ascidians, and also *Salpa*, *Doliolum*, and *Pyrosoma*, there is present a system of fine tubules ramifying over the stomach and part of the intestine. The tubules in all cases are colourless and highly refracting, branch dichotomously, and unite into one or two larger tubes, which open into the pyloric end of the stomach, or the first portion of the intestine.

This organ has been known since the time of Savigny, and has been considered by some authors as a liver, by some as a system of lacteals, and by others as part of the circulatory apparatus. In some cases (some species of *Salpa*) a simple network of tubules is formed by the dichotomous branching of the main duct, the twigs anastomosing freely. In other cases (*Salpa*, *Pyrosoma*, *Ascidia*) a similar network is formed, but all the twigs terminate in pyriform enlargements or ampullæ, which are scattered over the meshes and give a characteristic appearance to the system. In other forms again (*Ascidia*, *Clavelina*, *Perophora*, and various Compound Ascidians) the tubules do not anastomose, but merely branch freely and finally end in ampullæ. Chandelon (1875) examined this organ minutely in *Perophora*, and found that the walls of the tubules were formed of a single layer of cubical or low columnar cells, placed upon an apparently structureless basement membrane. The cells are distinctly nucleated and sometimes granular, and bear short cilia projecting into the lumen of the tubule. He also found that the terminal ampullæ frequently contain highly refracting rounded concretions.

The function of this system is still rather enigmatical. Chandelon considers that it is neither renal nor hepatic, but that it must be considered as a digestive gland, secreting a clear fluid which flows into the intestine, but the exact action of which is at present unknown.

Renal Organs.

Several different organs have been recognised in the Tunicata as having a renal function. In the Molgulidæ there is a sac-like, usually sausage-shaped organ (Pl. IV. fig. 7, *r.o.*), lying on the inner side of the mantle on the right side of the body, posterior to the genital mass of that side, and separated by the lining membrane from the peri-branchial cavity. It lies alongside the pericardium in its entire extent, and undoubtedly eliminates waste products from the blood. These are not expelled from the body, but are stored up in the form of usually rounded or nodulated concretions which, as was first shown by Kupffer in 1872, contain uric acid. Huxley (Manual of the Invertebrata, 1877)