

I never investigated a more difficult subject, never had to devote so much time to the same point, and never taxed my patience to such an extent as during these investigations. I insist upon these details, and state them at full length, because I know that I have now cleared up this subject, and may perhaps induce some other student to go through the long description I am about to give of it, since he may expect to have the matter settled for him. Let us proceed in this description as we should with a minute description of the ramifications of the bloodvessels of some highly organized animal. The difference which exists between the digestive cavity and the main cavity of the chymiferous system will first engage our attention.

In a front view (Pl. II^a. *Fig.* 23), when the two tentacles appear right and left, and the plane which passes through the longitudinal fissure of the mouth divides the body into halves, we have before us, on our right, one of those halves of the body, which alternates in its contractions with the other half on the left. It is according to this diameter that the antagonism between the two sides is introduced. Seen in this view, the digestive cavity appears throughout like a narrow fissure (*b c*); but as it is much wider in another direction, its outline, as seen in *Fig.* 22, is very broad. The fact is, this cavity is a flattened sac, flat as long as it is not full of food, and the two surfaces of the flattened bag are pressed upon each other: so that when seen in profile, that is to say, facing the diacoeliac diameter of the body, as in *Fig.* 23, it appears like a mere double skin, or a slit lined with a membrane; but when seen from its broadside, that is to say, facing the right or left side of the body, as in *Fig.* 22, it appears like a wide sac. During the process of digestion, when filled with food, it is swollen into a more rounded sac or cylinder. The abactinal extremity of this sac opens into the main cavity of the chymiferous system, terminating there in an oblong fissure, which, at the will of the animal, can be shut or opened; so that, like the stomach of *Actinia*, the digestive cavity of *Pleurobrachia* communicates with the chymiferous cavity, or may be shut by itself. The difference between the two types, however, consists in the limitation of the cavity of the body, which is circumscribed within the centre of the animal in *Pleurobrachia*, and sends off large trunks and tubes, branching diversely into its mass and along its surface; while in *Actinia* the whole body is hollow, and the stomach empties into that one large cavity.

The central chymiferous cavity has two main stems, one extending into the right, and the other into the left, half of the animal (*Fig.* 23 *c c*). It would seem, from *Fig.* 23, as if the digestive sac (*b c*) were hanging loosely into the chymiferous cavity: this is, however, not the case, for the spaces (*r r*) which communicate with the main chymiferous cavity right and left of the digestive sac do not form a continuous cavity encircling the whole digestive sac, but are only two simple but