

generally near the inner surface of the membrane which forms the coating of the animalcule, and at times some of them increase to a very considerable circumference, so that the cavity of such a bladder constitutes one-third and one-half of the cavity of the entire animalcule. That these cavities contain a thin and aqueous fluid and are not filled with air is shown by the remarkably small refraction of rays at their borders, and in the larger Infusoria it may be quite distinctly seen that they do *not open exteriorly*. Similar cavities are also formed in the mucus of the cells of plants, especially frequent in *Hypomyces* growing in water.

My botanical researches prevent my working out this subject more fully; these brief notices may, however, suffice to induce a greater number of naturalists to follow up the observations, which it is true require great patience; for the above-mentioned facts are not to be seen immediately in every animalcule; but they are sufficiently important, for already have the Polygastrica passed into all recent works on zoology.

Prof. RYMER JONES on the Digestive Apparatus of Infusoria*.

However imposing, from their completeness, the views of Ehrenberg concerning the digestive system of the Polygastrica may be, and sanctioned as they are by almost general consent, we cannot pass over a subject of so much importance without expressing ourselves as being far from admitting their accuracy in all respects, and we must say that our own observations upon the structure of the Polygastrica have led us to very different conclusions.

The positions of the mouth and anal aperture we are well assured, by frequent examination, to be such as are indicated by the illustrious Professor of Berlin; but with regard to the tube named by him intestine, and the stomachs appended thereto, our most patient and long-continued efforts have failed to detect the arrangement depicted in his drawings. In the first place, as regards the function of the sacculi, which he looks upon as the organs in which digestion is accomplished;

* Extracted from Prof. Rymer Jones's work entitled 'A General Outline of the Animal Kingdom.'

in carnivorous animalcules which devour other species we might expect, were these the stomachs, that the prey would at once be conveyed into one or other of these cavities; yet, setting aside the difficulty which must manifestly occur in lodging large animalcules in these microscopic sacs, and having recourse to the result of actual experience, we have never in a single instance seen an animalcule, when swallowed, placed in such a position, but have repeatedly traced the prey into what seemed a cavity excavated in the general parenchyma of the body.

In the second place, the sacculi have no appearance of being pedunculated, and consequently in a certain degree fixed in definite positions: during the last two hours we have been carefully examining some beautiful specimens of *Paramecium aurelia*, an animalcule which, from its size, is peculiarly adapted to the investigation of these vesicles; and so far from their having any appearance of connexion with a central canal, as represented in the figure copied from Ehrenberg, they are in continual circulation, moving slowly upwards along one side of the body, and in the opposite direction down the other, changing moreover their relative positions with each other, and resembling in every respect the coloured granules which have been described as visible in the gelatinous parenchyma of the *Hydra*.

With respect to the central canal, we have not in any instance been able to detect it, or even any portion of the tube seen in the figures, much less the branches represented as leading from it to the vesicles or stomachs, as they are called. Even the circumstances attending the prehension of food would lead us to imagine a different structure; witness for example the changes of form which *Enchelis pupa* undergoes when taking prey, as shown in fig. 16, 3, where it is represented in the act of devouring a large animalcule, almost equal to itself in bulk, and is seen to assume a perfectly different shape as it dilates its mouth to receive the victim, with which its whole body becomes gradually distended. Such a capability of taking in and digesting a prey so disproportionate, would in itself go far to prove that the minute sacculi were not stomachs; as it evidently cannot be in one of these that digestion is accomplished.