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XIII.—On the Sacculi of the Polygastrica

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124. *Pitta brachyura*. I purchased a living specimen of a dealer, which was probably procured at no great distance.

125. *Oriolus Hodsonii* (*Hodgsonii* ?), Swainson; *O. melanocephalus* of India, as distinguished from that of Africa, auctorum. Very common throughout the year.

126. *O. galbula*. I obtained a living specimen of this European species, which I kept for several months in confinement. Its ordinary Indian representative, *O. aureus* (common in the peninsula), I have not yet seen from this part.

[To be continued.]

XIII.—On the *Sacculi of the Polygastrica*. By W. ADDISON, Esq.

To the Editors of the *Annals of Natural History*.

GENTLEMEN,

As Dr. Griffith, in his paper "On the *Sacculi of the Polygastrica*," has coupled my name with a very inaccurate interpretation of the effect of the *liquor potassæ* on the *Paramæcium*, allow me to abstract from my 'Experimental Researches' all that I have published on the subject.

"I had often remarked the very great similitude of size and appearance between several of the smaller forms of the Polygastric animalcules and some of the varieties of pus-corpuscles; so great is this similarity, that in many instances it would have been difficult to distinguish the one from the other, had it not been for the voluntary and very active movement of the animalcules. Now *liquor potassæ* produces upon these animalcules the same effect as it does on the colourless blood- and pus-corpuscles; it penetrates the transparent integument of the animalcule by imbibition, and causes it to burst open and discharge its contents, which have the same appearance as the molecules and granules from the colourless blood- and pus-corpuscles.

"In the larger forms of the polygastric animalcules there are a great number of large vesicles or cells (which have been called stomachs) very visible in their interior; and these are all discharged from the bodies of the creatures in the same way, when they are submitted to the action of *liquor potassæ*. These so-called stomachs may be seen enlarging in the interior of the animalcule prior to the rupture of the external integument; and when they are discharged from the body of the animalcule, numerous minute molecules may be seen within them†." In the former of these paragraphs it is evident that I am speaking of animalcules ten or twenty times less than the *Paramæcium*; and in the latter, when

* In the June Number, p. 438.

† Experimental Researches on Inflammation, and on the origin and nature of Tubercles of the Lungs. Churchill, 1843.

I speak of the vesicles or cells being discharged "in the same way;" it is evident that I refer to the bursting, and not to imbibition.

Now with regard to 'imbibition,' no physical reasoning about the density of fluids can have any weight in determining what living structures can or cannot do; or if it had, it would be, I presume, equally cogent as regards the colourless blood-corpuscles, or the pollen grain, both of which swell and burst when submitted to the action of *liquor potassæ*. If the *Paramæcium aurelia* be subjected to the action of a dilute solution of the alkali, in the proportion of half a drachm (Brandish's alkali) to an ounce and a half or two ounces of water, it immediately commences a laboured, rotatory, wriggling motion through the liquid, and in many of the individuals two remarkable vesicles will be seen tensely distended in the interior of the animalcule, very frequently accompanied with three, four or five perfectly transparent large circular globules, projecting from the body of the creature (Fig. 1.). After a short period the contents of the body may be seen discharging themselves into one or more of these transparent projections, while the body itself, or rather the integument of the body, may be seen to shrivel up, the motionless cilia fringing its circumference remaining very visible (Fig. 2.).

Now the appearance of these transparent globular projections, which can be formed in no other way than by the separation and distension of the thin and outermost portion of the integument (the cuticle as it were), and the persistence of the delicate cilia when immersed in the alkaline liquid, are surely quite incompatible with the idea of a solution of the integument: this must be an 'inaccurate interpretation' of the appearances, the whole of which are indeed well worthy the observation of those who attend to the animalcules.

I remain, Gentlemen, your obedient servant,
WILLIAM ADDISON.

Great Malvern, July 16th, 1813.

Fig. 1.

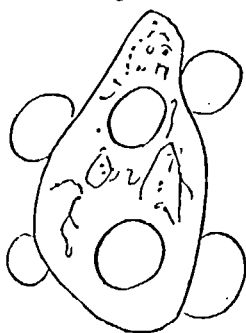


Fig. 2.

