Notes on Suctoria.

By

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1. Preliminary note on the „Acineta ferrum-equinum" of Zenker.

Zenker described under the above name (in Vol. II of the Archiv für Mikroskopische Anatomie 1866) a Suctorian epizoic on Cyclops, characterised by tentacles which were of exceptional calibre, up to 20 μ in diameter with a lumen of as much as 7 μ, expanding at the apex into open funnels of five times their width. His figures show clearly that it is widely different from the short and thick-stemmed species called by that name by Ehrenberg, and figured by Claparède and Lachmann from specimens which had been certified as true by him. Bütschli removed Zenker's form from Ehrenberg's species but unfortunately transferred it to Acineta cothurnata Weisse which has a short ovoid pedicel, while Zenker's has a long cylindrical one expanded at either end into a disc. I found the same form in the same habitat as Zenker in 1881; and described it in ignorance of his work as a new species, which I referred doubtfully to Podophrya (to which the two preceding species had been transferred) under the name of P. (?) infundibulifera (in Proc. Lit. Phil. Soc. Manch. Vol. 19). It occurs on or about the mouthparts of several species of Cyclops, and only expands its funnels when there is the debris of fresh-killed animals in the neighbourhood, as by the Cyclops dismembering its prey, or by the observer crushing the Cyclops, or dissecting it, as Zenker evidently did: I was able to see in the unstimulated Protist that the tentacles are obtusely truncate with a constriction a little below the apex, and that the nucleus is

spheroidal, while Z. describes it erroneously (without figuring it) as horseshoe-shaped.

Z. saw the escape of the internal gemmule, which he describes and figures as ciliated all over; and also the nipple-shaped opening (or 'birth-pore') that persists for some time after its escape.

I have recently made a careful study of this species (both alive, and cut into serial sections and stained) which is still incomplete: but I think that the following facts which I have ascertained deserve early publication. The tentacles were seen by Z., to be spirally constricted: the screw so formed is, double-threaded. I think, the constrictions are continued along the internal prolongation of the tentacle into the body: as it is inconceivable that such a structure should lie free in the endosarc, it would seem that in this species, where the structure is obvious, the tentacle must arise from the deep invagination of the external pellicle, which is prolonged into the cell to form a sheath, and closely applied therein to its own reflection upward along the whole length of the tentacle, and, moreover, as is easily seen, lining its lumen. So that here at least, neither do the tentacles pierce the pellicle, as asserted by R. HERTWIG, nor is the extension into the endoplasm a mere prolongation of the lumen, as suggested by BÜTSCHLI. It is probable that the structure is the same in every Suctorian where the tentacle is traceable within the cell. Again, there is no torsion of the tentacle in extension and retraction: this is easily seen when debris or bacteria adhere to the outside of the tube: they move merely backwards and forwards. Probably this too applies all through this order.

The embryo is ovoid with a median transverse constriction and bears four transverse bands of long fine cilia (or perhaps a continuous spiral of 4 turns?). In the brood-cavity they appear to cover nearly the whole body, except the poles, on account of their great length, and the little room for their free play; as was correctly figured, but wrongly interpreted, by Z.

As the character of the tentacles has been utilised for the distinction of such a genus as Ephelota Streth. Wright, we must erect this into a new genus, to which I give the name of Choanophrya, from the wide funnels of the ends of the tentacles when active.

Careful examination shows that food particles are sucked into the open funnel from a short distance away; the sucking action in probably a diffusion current due to the secretion within the cell of substances of high osmotic value. Possibly this hold good for all Suctoria except the aberrant Podophrya Trold.

2. On the Reproduction of *Rhyncheta* Zenker.

This genus was founded by Zenker on a single species, named R. Cyclopum from its occuring on Cyclops coronatus, and was described by him in the same paper as the preceding species. It is distinguished by possessing a very long single tentacle dilated at the tip, capable of as free a movement as an elephant's trunk, or indeed a much freer one, as it is so much more slender in proportion. I repeatedly found it on C. gigas in Manchester, in the same position as Zenker describes, on the couplers („Bauchwirbel" of Z.) of the swimming feet. It would appear not to have been noted or described by any subsequent observer; for neither Bütschli, Savile Kent, nor René Sand do more than quote Zenker. A few weeks ago I found a specimen on C. gigas, which, from its different position and shape, may possibly be a distinct second species, and which was in the act of parturition. The Protist was on the fourth thoracic sternum, just within the pleural fold. The gemmule was internal, oval, and contained a contractile vacuole. While I was looking at it and making a sketch, the little larva forced its way out through a circular birth-pore before my eyes, and swam off, before I could note its characters. But I am nearly sure that it was peritrichous like that of Podophrya and Choanophrya. The mother was apparently obconical, with the tentacle proceeding from the base near one of the two blunt angles of the optical section, while the birth-pore was just at the other angle: the apex of the cone was the seat of the insertion of the pedicel. Zenker's species was oblong-conical, sessile, attached by the wide base, and tapering to the attachment of the single distal tentacle. If this should prove to be a new species, I propose the name R. obconica, defining it by its position on the host, its tapering base, and its broad anterior face.