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### On the mode in which certain Rotatoria introduce food into their mouths

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## MISCELLANEOUS.

*On the Gingee Squirrel of Sonnerat.*

SONNERAT, in his 'Voyage' (vol. ii. p. 140), very shortly describes a Squirrel, under the name of *l'Ecureuil de Gingi*, thus:—

"Rather larger than *Sciurus vulgaris*; fur entirely earthy grey, paler on the belly, legs, and feet; on each side of the belly is a white streak extending from the armpits to the thighs; eyes surrounded with white; tail entirely black, with some white hairs." The following names have been given to the subject of this notice:—

*Sciurus dschinschicus*, Gmelin, S. N. i. p. 151.

*S. gingianus*, Shaw, Zool. ii. p. 147; Kuhl, Beitr. 67.

*S. albobittatus*, Desm. Mam. 358; Horsf. Zool. Java.

*S. albobittatus*, var. *dschinschicus*, Fischer, Syn.

*Macroxus albobittatus*, Lesson.

Gingee is in the Carnatic, near Pondicherry. Sonnerat's description has been considered to indicate a variety of *Xerus setosus* of Africa, which has spiny fur; but in that animal the streak is on each side of the back, and not on the sides of the belly. There is not a word in the short description to lead one to believe it was a spiny Squirrel, or lived on the ground; and I have never seen a *Xerus* from India. Sonnerat's animal either belongs to a species not in European museums and not noticed by recent Indian naturalists, probably allied to *S. platani* of Java, or it may be a variety of the *Macroxus bicolor*, which is found in various parts of India and the Malay peninsula. It would be very interesting to receive a specimen, agreeing with Sonnerat's description, from the Carnatic.—J. E. GRAY.

*On the Mode in which certain Rotatoria introduce Food into their Mouths.* By E. CLAPARÈDE.

In the *Zygotrocha* of Ehrenberg the vibratile apparatus may be regarded as double. The movement of the cilia is always in the same direction and opposite to that of the hands of a watch; hence it is directed towards the mouth in the right wheel and from it in the left one. But observation proves that food passes to the mouth both from right and left, which is incompatible with the received notion that the currents conveying the food are produced by the vibratile apparatus. The examination of such Rotatoria as the *Meliceræ* and *Lacinulariæ* leads to the same result.

In *Meliceræ ringens*, on the lower surface of the membranous vibratile organ and parallel to its margin, M. Claparède finds a sort of crest, between which and the margin there is a deep furrow. The extreme margin bears the well-known large cilia: the crest also

bears cilia ; but these are long and delicate, and their movement is opposite in the two halves of the apparatus. By their means foreign bodies which get into the channel between the two ciliated crests are pushed gently along and conveyed to the mouth, being retained in their position by the inferior range of cilia.

The action of the whole apparatus is explained as follows by M. Claparède :—The superior range of cilia when in action produces currents tangential to the vibratile organ and perpendicular to its plane. These currents are closed and appear to be nearly of an elliptical form ; particles involved in them pass repeatedly over the same course, and if they are thus brought in contact with the extremities of the inferior cilia, which reach a little above the base of the superior range, they pass into the channel above mentioned and are pushed along in it towards the mouth. The author remarks that the *apparent* movement of the inferior cilia is from the mouth ; but this is illusory and due to the circumstance that the slow elevation of each cilium preparatory to its stroke produces a greater effect upon the eye than the more rapid stroke itself. This double row of cilia in *Melicerta* and *Lacinularia* has been observed and described in this country by Huxley and Williamson, and in Germany by Leydig ; but its existence seems to have escaped the notice of subsequent observers.

Professor Huxley has also observed this second row of cilia in *Philodina*, a genus belonging to the Rotatoria Zygotrocha. M. Claparède here describes and figures it in *Rotifer inflatus* (Duj.), in which the inferior cilia are borne upon a crest which is oblique relatively to the plane of the vibratile wheel ; in all other respects the arrangement and action of these inferior cilia are the same as in *Melicerta*. The same characters have been observed in *Rotifer vulgaris* (Ehr.).

M. Claparède appends to this paper a note confirming Mr. Gosse's account of the mode in which *Melicerta ringens* builds up its tube, and remarks that this does not appear to have attracted attention on the continent.—*Annales des Sciences Naturelles*, série 5, tome viii. pp. 5-12.

#### *Habits of Volutes.* By Dr. J. E. GRAY, F.R.S. &c.

Volutes are rarely collected with their animals, except when they are accidentally thrown ashore after a storm. They have therefore been said to be animals which lived in the depths of the sea. The reason they are not found is that, like the *Natica*, they bury themselves in the sand as soon as the water falls and the sand is left dry by the tide ; they are only to be procured by digging for them, or when the storm has been sufficient to disturb the sand and throw them on the beach. Mr. Cutter informs me that he has walked for miles along a sandy beach in Australia without finding a specimen ; but on talking to a fisherman about the shells, he told him the sand abounded with them ; and taking him back to the sand which he had traversed, on digging up a spot on the sands which was drier