

is very similar to what has been observed in the Chara and other plants, in the Sertularia; and recently Mr Lister has confirmed this discovery, and ascertained the existence of the same phenomenon in almost all the genera of the order. The result of his curious observations is thus summed up by Dr Roget. "In a specimen of the Tubularia indivisa, when magnified one hundred times, a current of particles was seen within the tubular stem of the polype, strikingly resembling, in the steadiness and continuity of its stream, the vegetable circulation in the Chara. Its general course was parallel to the slightly spiral lines of irregular spots on the surface of the tube, ascending on the one side, and descending on the other; each of the opposite currents occupying one-half of the circumference of the cylindrical cavity. At the knots, or contracted parts of the tube, slight eddies were noticed in the currents; and at each end of the tube the particles were seen to turn round, and pass over to the other side. In various species of Sertulariæ, the stream does not flow in the same constant direction; but, after a time, its velocity is retarded, and it then either stops, or exhibits irregular eddies, previous to its return in an opposite course; and so on alternately, like the ebb and flow of the tide. If the currents be designedly obstructed in any part of the stem, those in the branches go on without interruption, and independently of the rest. The most remarkable circumstance attending these streams of fluid is, that they appear to traverse the cavity of the stomach itself, flowing from the axis of the stem into that organ, and returning into the stem, without any visible cause determining these movements." *

The power which sets in motion and maintains this current is yet undiscovered. Professor Grant asserts that it depends on the action of minute vibratile cilia,—“the common agents of all analogous movements in the lowest tribe of animals,”†—but no direct observation has confirmed this explanation, which, it will be observed, is founded on analogy only, and it has this in opposition—that the non-existence of cilia in the external organs of the zoophytes in question has been distinctly proved.

* Bridgew. Treat. Vol. ii. p. 233. See also Tiedemann's Comp. Physiol. p. 150, Ent. Mag. Vol. iii. p. 174: and Grant's Outlines of Comp. Anat. p. 429-30.

† Outlines of Comp. Anat. p. 430.