

the flagellated chamber (Pl. VIII. fig. 20; Pl. XII. fig. 28). Looked at face on this membrane has the appearance of being fenestrated by regularly distributed round or oval openings, which represent the openings of the tubular collars of the choanocytes (Pl. VIII. fig. 20). Sometimes (Pl. XXXIII. fig. 11) a small cell with a distinct nucleus is present in the lumen of one of these fenestræ; this appears to belong to one of the choanocytes, which has been torn from its attachment to the chamber-wall and pulled by the contraction of the collar to a level with the membrane. The physiological meaning of this structure is not obvious; that it is not an artificial product appears from the constancy with which it is present in certain groups and not in others; I have never seen more than doubtful signs of it in the Monaxonids, it certainly does not occur in the Suberitidæ nor in the Tethyidæ, and it may possibly prove to be characteristic of the Tetractinellida only.

Since the fenestrated membrane stretches across the flagellated chamber transversely there must be an aperture or apertures in it for the passage of water from the prosodus to the aphodus, though I have never succeeded in finding any; it is possible that the apertures have the form of pores no larger than the lumen of the choanocytal collars, and in this case they would be very difficult to distinguish. It is also a curious fact that I have never yet seen the flagella of the concretescent choanocytes, though I have never failed to find them in the case of choanocytes which are not concretescent. It might be explained on the supposition that the flagella are retracted in the former case; but that naturally leads to the inquiry as to why they are not retracted in the latter.

The concretescent choanocytes are always restricted to the prosodal face of the flagellated chamber, extending sometimes quite up to the aphodus, sometimes ceasing halfway across the length of the chamber from it, and since they are always directed with the collars pointing towards the aphodal end of the chamber, the fenestrated membrane is constantly concave towards the aphodus and thus it is easy to distinguish the aphodal from the prosodal pole of the chamber, simply by an inspection of the fenestrated membrane. The collars of those choanocytes which lie nearest the aphodus are always shorter than of those which lie further away, a fact already noticed by von Lendenfeld in *Aplysilla violacea*, Lend.<sup>1</sup> This reduction in length of the choanocytes as they approach the prosodal pole renders the fenestrated membrane more concave than it would otherwise be.

Carter, after having rightly described the structure and mechanism of the flagellated chamber, subsequently represented it as consisting of choanocytes with the flagella turned outwards, *i.e.*, in the light of our present knowledge into the mesoderm. This is made the subject of scoff by Professor Haeckel, who is nothing if not logical, and unquestionably the presence of flagella in such a position would be a little surprising,

<sup>1</sup> *Zeitschr. f. wiss. Zool.*, Bd. xxxviii, p. 260, pl. xi. fig. 13.