Let us imagine a sponge (*e.g.*, a Sycon) under its usual conditions. The cilia of the flagellated cells are in movement, and the water enters through the pores into the radial tubes in order to make its way to the osculum; let us pursue the direction taken by a particle coming through the pores into the Sponge. If such a particle, having entered the radial tube, be constrained to follow the most rapid course of the water, viz., that in the middle of the tube, it is evident that it will reach the gastric opening of the tube without any contact with the flagellated cells; now, if precipitated by the whirlpool occasioned by the cilium of the next flagellated cell in an oblique direction towards the wall of the tube, the possibility is not excluded that, following this direction, it will reach the comparatively slow current of the water close to the flagellated cells, and be taken in by one of them; but, even though this may happen, such an issue cannot occur very often, for the comparatively slow flowing of the water near the surface of the wall is of a somewhat vortex-like nature, the waves caused by the cilia being, even at this spot, more or less felt; and if, on the other hand, the particle be lifted by the wave of the cilium into its superior part, the particle, passed on from one wave to another, will make its way by fits and starts, but still, like those following the current in the middle of the radial tube, without any contact with the flagellated cells. There are in the radial tube two kinds of motions of the water, the rapid and direct current in the middle, and the vortex-like near its walls, and both are unfit for the purpose of bringing the particles in contact with the flagellated cells. Therefore, though not denying that the flagellated cells may occasionally take in nutritious particles, I cannot admit that this is their chief function—they have besides another task of a motor character.

I find it, however, very doubtful whether the nutritive function must be ascribed, as Dr. v. Lendenfeld does, to the ectodermic pavement-cells exclusively. He states that the flagellated cells take in the particles of carmine in order to push them out forthwith; he states also that the endodermic pavement-cells take in the particles of carmine too, but there is in the paper no suggestion that these latter particles would be pushed out in their turn; and if we reflect upon the fact that (1), from the mechanical point of view, the ecto- and endodermic pavement-cells are exactly under the same conditions, the water advancing calmly and slowly along the outer surface of the sponge, and forming no whirlpools between the gastric openings, these latter being of smaller diameters than those of the radial tubes; that (2) mesodermic amœboid cells, sparsely scattered near the flagellated chambers, are quite as numerous near the layer of pavement-cells of the exhalent canal system as near the subdermal cavities; that (3) the ecto- and endodermic pavement-cells are histologically (at least in Calcarea) quite equivalent; and that (4) there is no room for the supposition that the nutritious particles having entered the sponge organism could all be absorbed by the pavement-cells of the subdermal cavities; if we reflect upon all this, I think we must come to the conclusion that there are no reasons for ascribing different functions to the ectodermic and endodermic pavement-cells.