

tissue acquires increased development at the base of the tentacles, and thus forms a circular ridge which, pushing before it the mesosarc and gastral endoderm, projects into the gastral cavity of the hydranth.

Though the axial tissue of the tentacles is thus separated by a layer of mesosarc from the endoderm which lines the gastral cavity, there is no reason why it should not be regarded as a special modification of the general endoderm of the body, and to speak of it, as Jickeli does, under the name of "mesoderm," as a third body layer appears to me to convey an erroneous view of its fundamental nature.

This obliteration of the tentacular cavity, though almost universal in the hydranth, is far from being so in the marginal tentacles of the Medusa. Here, though in many cases (Trachomedusæ and Narcomedusæ, Haeckel) the endoderm presents the rouleau-like condition, with obliteration of the lumen, in many others (Anthomedusæ and Leptomedusæ, Haeckel) the axis continues pervious, and the endoderm forms a simple lining of the cavity with usually more homogeneous cell contents, but otherwise differing but little from that found in other parts of the body walls.

Though the existence of muscular filaments in the ectoderm of the Hydroida has long been known, it is comparatively lately that evidence has been adduced of their presence in connection with the endoderm. Weismann was the first to point out the existence of these endodermal fibrillæ which he found to occur in *Eudendrium*;¹ while the same have been found by Hamann² and by Jickeli³ in other Hydroids. The fibrillæ of which this musculature consists always run in a circular or transverse direction, thus contrasting with the fibrillæ of the ectoderm which, at least in the trophosome, are always longitudinal. It is in the hypostome that they are most strongly developed, and here only do they occur, according to Hamann, in the Calyptoblastea, while in the Gymnoblasic genera they are found also in the walls of the gastric portion of the hydranth. They have not been detected in the cœnosarc. They would seem to be formed as outrunners from certain cells of the endoderm in a way similar to the formation of the longitudinal muscular fibrillæ in the ectoderm, where, as we shall presently see, the fibrillæ form outrunners from the most superficial cells of this layer.

2. *The Ectoderm.*

The ectoderm, like the endoderm, with which it is exactly co-extensive, and from which it is separated by the mesosarc, is also composed of nucleated cells. These cells are sometimes disposed in a single layer as in the ordinary condition of the endodermal cells, sometimes in several, while very frequently the cell-boundaries

¹ Weismann, Ueber eigenthümliche Organe, bei *Eudendrium*, *Mittheil. aus der Zool. Stat. zu Neapel*, Bd. iii.

² Hamann, *loc. cit.*

³ Carl F. Jickeli, Der Bau der Hydroidpolypen, *Morphol. Jahrb.*, Bd. viii.