

it forms the principal thickness of this membrane. Its fibres take a circular course, parallel to the margin of the umbrella.

The manubrium presents the ordinary typical structure of the Hydroid body, its walls being composed of the two cell-layers, ectoderm and endoderm, with an intervening structureless membrane, the mesosarc; on the ectodermal side of the mesosarc lies a layer of longitudinal muscle fibres.

The nervous system attains in the planoblast a stage of development more highly advanced than that presented by this system in the trophosome. In the planoblast it consists in its principal portion of two chords which run round the margin of the umbrella, one on the upper, and the other on the lower, side of the line of insertion of the velum. They are composed of fibres and ganglion cells, and are overlaid by a sense-epithelium whose cells carry sense-hairs. The organs of sense are situated on the margin of the umbrella and are chiefly of two kinds; of these one consists mainly of accumulations of pigment cells. These are placed each at the base of a marginal tentacle, and are entirely confined to the ectoderm. They occasionally enclose a clear refringent spherule. To this form of sense organ the name of *ocellus* has been given. The other consists of transparent vesicles, within which are one or more cells with calcareous concretions or "otolites." They also enclose so-called "auditory cells," whose hairs surround the otolite cells. They are seated in variable number immediately over the marginal nerve-ring, and on the portions of the margin which lie between the bases of the tentacles.¹ They are known as *otocysts*. The *otocysts* like the *ocelli* are entirely ectodermal, and must be regarded as a special differentiation of the epithelium which covers the nerve-ring.

The generative elements are developed either in the walls of the manubrium or along the course of the radiating canals. Those planoblasts in which the generative elements are found in the walls of the manubrium belong to the section *Anthomedusæ* and have the marginal sense organs, when differentiated, in the form of *ocelli*, while those in which the genitalia are borne in some part of the course of the radiating canals belong to the section *Leptomedusæ*, and have the sense organs in the form either of *otocysts* or of *ocelli*.²

¹ In *Obelia* the *otocyst* is in contact with the base of the tentacle, but even here it does not lie in the meridional line of this, but is placed laterally, and thus really lies in the inter-tentacular spaces of the umbrella margin. The *Obelia* planoblast is further exceptional in having its umbrella so shallow as to be almost disc-shaped, in the velum being rudimental, and in the marginal tentacles having their roots plunged into the substance of the gelatinous umbrella, being comparatively rigid, and having their axis occupied by a solid endodermal core. In the characters thus presented by the tentacles *Obelia* shows an obvious approach to the *Trachomedusæ* and *Narcomedusæ*.

² I adopt these names as proposed by Haeckel for the two groups indicated by them, in preference to the names, *Ocellatæ* (= *Anthomedusæ*), and *Vesiculatæ* (= *Leptomedusæ*), by which these groups have also been designated, the characters expressed by the latter names not being always applicable to the *Medusæ* to which they are intended to apply. Haeckel divides the *Craspedotæ* into two primary sections, the *Leptolinæ* and the *Trachylinæ*, the former being further divided into the *Anthomedusæ* and the *Leptomedusæ*, and the latter into the *Trachomedusæ* and the *Narcomedusæ*. The *Anthomedusæ* among the *Leptolinæ*, and the *Narcomedusæ* among the *Trachylinæ*, are distinguished by having their gonads in the walls of the manubrium; the *Leptomedusæ* among the *Leptolinæ*, and the *Trachomedusæ* among the *Trachylinæ*, by having them in the course of the radiating canals.