manner into a continuous framework. This fusion is effected by a process of cementing (soldering), or by means of synapticula.

The *dermal skeleton* is formed of sword-like hypodermal hexacts, of which the prolonged proximal rays penetrate the parenchyma at right angles to the surface, while the shorter distal rays raise the outer skin into a conical point, and either bear on their tips a protruding floricome, or are surrounded by several freely projecting pointed diacts. The four tangential rays of the hypodermalia, which stand at right angles to one another, lie just below the sieve-like perforated skin, and form by regular apposition of the corresponding rays a quadrate network.

The gastral skeleton is similarly formed of hypogastral hexacts or pentacts. The prolonged distal ray enters the parenchyma at right angles to the gastral surface, while the opposite proximal ray, when fully developed, raises the gastral skin in an internal point, and also, in some cases, bears on its end a floricome. By the closely apposed tangential rays of the hypodermalia a quadrate lattice-work is formed for the support of the gastral skin.

In the parenchyma of the body, in addition to simple hexacts and their derivatives with a smaller number of rays, numerous rosettes occur, chiefly oxyhexasters and discohexasters.

The chambers, which lie close to one another in a very much folded single layer, have a simple saccular or beehive form. In their thin walls can be seen the elegant quadrate network formed from the anastomoses of the ciliated cells, and here and there a round chamber pore. The delicate trabecular framework, which extends on the one hand between the outer skin and the chamber layer, and on the other, between the latter and the gastral membrane, is abundantly penetrated by the lacunæ and canal-like apertures of the incurrent and excurrent canal system; but besides this, there extends everywhere, between the openings of the chambers, a thin net-like layer, in which numerous oxyhexasters lie embedded.

According to the presence or absence of parietal gaps, I have established two subfamilies, namely, the Euplectellinæ with, and the Holascinæ without gaps.

Subfamily 1. Euplectellinæ (Pls. I.–VI.; Pl. XIII.; Pl. XIV. figs. 1–5).

Euplectellidæ, in which the lateral wall is perforated either by more or less regularly arranged circular gaps, with a membranous margin and circular muscles, or by irregular angular apertures. The sword-like hexacthypodermalia bear a floricome at the end of their distal rays. The hypogastralia are, as a rule, simple pentacts without a proximal ray, but here and there hexacthypogastralia also occur, with a floricome at the end of the principal ray. The central type and best starting-point for the study of this subfamily is the genus *Euplectella*.