

this legion into two orders, Cannocœla (the Ammoconidæ) and Domatocœla (all the other Keratosa).

The Cannocœla, represented by the Ammoconidæ (Pl. VIII.), retain either the primordial Ascon-type, the *Olynthus*-form (*Ammolynthus*, figs. 1, 2), or they form branched tubular bodies, composed of a few or numerous *Olynthus*-tubules; the branches are either free, each possessing a terminal osculum (*Ammosolenia*, fig. 3), or are connected by anastomoses, and form a reticular framework (*Ammoconia*, figs. 4, 5); the wall of the delicate tubules is in all these Ammoconidæ very thin, supported by a delicate mesoderm-lamella (as in the Asconidæ), and is pierced by small simple pores; the sea-water entering by these pores is propelled by the flagellated collar-epithelium, which lines the whole inside of the tubules, and issues finally either by the distal oscula or by other pores. Each branch of the Ammoconidæ, as well as of the similar Asconidæ, is to be regarded as a secondary *Olynthus*, and at the same time homologous to a single flagellated chamber in the second order, the Domatocœla.

The Domatocœla (corresponding to the Hcterocœla in the Calcarea) are represented among the Deep-sea Keratosa by three families, the Psamminidæ (Pl. VII.), the Spongelidæ (Pls. IV.–VI.), and the Stannomidæ (Pls. I.–III.). All the horny sponges hitherto described belong to the Domatocœla. The main mass of their body is formed by a voluminous mesoderm, or a kind of connective tissue, and this is permeated by a complex canal-system. The outer surface of the mesoderm is covered by a delicate pavement-epithelium and pierced by innumerable microscopical pores; the water enters through these pores into ramified canals, and is propelled by the vibratile motion of flagellated entoderm-cells, which line the characteristic "flagellated chambers" disposed in a variable manner along the canals; from these the water issues by canals, which open finally by smaller or larger exhalent openings (oscula). The special structure of this domatocœlous canal-system (as far as it could be recognised in the three families examined) is essentially the same as in the Spongelidæ, with large sac-shaped flagellated chambers (Macrocameræ, Lendenfeld).

SKELETON.

The varied and manifold development of the skeleton, which is the main principle in the classification of the numerous genera and species of sponges, is also in the Deep-sea Keratosa of the greatest importance. It offers, too, here certain remarkable features which are not found in the Keratosa hitherto known, and some peculiarities which are quite new. The causes of this peculiar development may be searched for partly in the peculiar conditions of deep-sea life and the adaptation of the organism to the abyssal bottom, partly in the curious symbiosis, to which the majority of the Deep-sea Keratosa are subject.