

*Gonocytes* (Eggs and Sperm).—It was very important to demonstrate that our Deep-sea Keratosa develop eggs in the mesoderm, in order to show that they are true sponges, and not large-sized Rhizopods. At first I vainly searched for them for a long time; but finally I succeeded in finding eggs in single specimens of all four families—in *Ammolynthus prototypus* among the Ammoconidæ (Pl. VIII. fig. 1C, e), in *Psammina plakina* among the Psamminidæ (Pl. VII. fig. 1D, e), in *Psammophyllum flustraceum* among the Spongelidæ (Pl. V. fig. 5, e), and in *Stannophyllum globigerinum* among the Stannomidæ. The eggs were in all these cases of the same indefinite form and size as in the other Keratosa, where they are described so well by F. E. Schulze and others. They lie scattered in the maltha of the mesoderm, and exhibit always the large, clear, subspherical nucleus, with a dark nucleolus, surrounded by the granular protoplasm. The earliest stages of the eggs could not be distinguished from amœbocytes.

It was not possible to distinguish spermatoblasts or ripe sperm in any of the Deep-sea Keratosa, but considering the difficulties in showing their presence even in living and well-preserved sponges, it is easy to conceive that they were not recognisable in our insufficiently preserved spirit-specimens.

#### CANAL-SYSTEM.

The characteristic gastrocanal-system of the sponges exhibits, as is well known, a great many modifications, which may be disposed in a few main forms or types. In my Monograph of the Calcisponges (1872) I had distinguished three such types, viz.:—1. The Asconal-type (*Ascon*, *Leucosolenia*); 2. The Syconal-type (*Sycon*, *Sycandra*); 3. The Leuconal-type (*Leuconia*, *Leucandra*). Vosmaer, in his recent work on the Sponges (Bronn, 1887), has adopted these three types, and added a fourth type, represented by *Aplysina*, the common sponge, *Euspongia officinalis*, &c. (*loc. cit.*, p. 144); this may be called shortly the Aplysinal-type.

Two of these four principal types are represented among the Keratosa of the deep sea. The canal-system of the new family Ammoconidæ (Pl. VIII.) is constructed on the Asconal-type; that of the three other families (Psamminidæ, Spongelidæ, Stannomidæ) follows the common Leuconal-type. The two peculiar types of canal-system which we call the Syconal-type and the Aplysinal-type, do not occur among the Keratosa here described.

The difference between the simple Asconal-type of the Asconidæ and the complex Leuconal-type of the Leuconidæ (and of the majority of all sponges) is so important that many recent authors have adopted the separation of Poléjacff, who divides the Calcarea into two orders, Homocœla (Asconidæ) and Heterocœla (all the other Calcispongiæ). Employing the same principle in the Keratosa, we should divide