

was extinct in the cretaceous period, possessed a similar fibrous horny skeleton as in many Halichondriæ.

Greater difficulties still arise against the modern views on the phylogeny of sponges when we consider the different forms of the canal-system. The two main forms of it, as now generally considered, are the tubular form of the Asconal-type (Asconidæ) and the vesicular form of the Leuconal-type (and the allied Syconal and Aplysinal types). The latter, being the more complex, must have originally risen from the former, in which is found the simplest archetype of all, the *Olynthus*, closely allied to the *Gastræa*. The great phylogenetical importance of this archisponge, first pointed out in my Monograph of the Calcispongiæ, is now generally accepted. But the *Olynthus* there described, and the allied Asconidæ, possess a calcareous skeleton; they must have been derived from an older simple sponge of the same type, which was as yet skeletonless. A slight modification of this hypothetical *Archolyntus* seems to be our interesting *Ammolyntus*. This typical form and the other closely-allied Ammoconidæ (*Ammosolenia*, *Ammoconia*) supply a new and strong argument in favour of the opinion that the vesicular sponges (with flagellated chambers) originally descended from tubular sponges (with tubular flagellated epithelium); we may call the latter (with canal-system of the Asconal-type) Protospongiæ, the former (with canal-system of the Leuconal-type) Metaspongiæ. Starting from this point of view, we may arrive at the following classification of the sponges:—

First Class. PROTOSPONGIÆ,

With tubular canal-system (Asconal-type).

Order I. AMMOCONIDÆ (Malthosa) = CANNOCÆLA.

Order II. ASCONIDÆ (Calcarosa) = HOMOCÆLA.

Second Class. METASPONGIÆ,

With vesicular canal-system (Leuconal, Syconal, or Aplysinal type).

Order III. MALTHOSPONGIÆ (originally skeletonless Keratosa) = DOMATOCÆLA (Psammimidæ, and perhaps many Ceratinæ).

Order IV. DEMOSPONGIÆ (Sollas, Zool. Chall. Exp., pt. lxiii. p. xcviij).

Order V. HYALOSPONGIÆ (Hexactinellidæ).

Order VI. CALCISPONGIÆ (Syconidæ, Leuconidæ, Tichonidæ, Pharetronidæ, excluding Asconidæ) = HETEROCÆLA.