

historical introduction given by Vosmaer.<sup>1</sup> Lendenfeld<sup>2</sup> divides the order Keratosa (Bowerbank) into two suborders (called by him *tribus*<sup>3</sup>), and these into six families, viz.:—

I. Microcameræ, with small spherical ciliated chambers and opaque ground-mass (1. Family Spongidae (= Euspongidae), 2. Family Aplysinidae, 3. Family Hircinidae).

II. Macrocameræ, with large sac-shaped ciliated chambers and soft transparent ground-mass (4. Family Spongelidae, 5. Family Aplysillidae, 6. Family Halisarcidae).

Vosmaer adopts only four families among his Ceratina, viz.:—1. Spongelidae, 2. Spongidae (= Euspongidae), 3. Aplysinidae, 4. Darwinellidae (= Aplysillidae, Lendenfeld). These latter are distinguished by dendritic spongin-fibres not anastomosing, while the branched spongin-fibres in the three former families anastomose and form a reticular skeleton. Among these the Spongelidae possess a soft transparent ground-mass (or maltha), not granular, whilst it is granular and opaque in the Euspongidae and Aplysinidae. These two families differ again in the structure of the anastomosing spongin-fibres, which are homogeneous, with a thin axial thread in the Euspongidae, whereas they are heterogeneous, tubular, with an axial pith-substance in the Aplysinidae.

A single family only of those enumerated is represented among the Deep-sea Keratosa collected by the Challenger. This is the family Spongelidae (with two new genera, *Cerelasma* and *Psammophyllum*). The sandy Keratosa, *Psammopemma* and *Holopsamma*, hitherto united with the Spongelidae, must be separated from them, since they produce no spongin at all; they compose (together with the new genus *Psammina*) our family Psammidae. A new family is formed by the remarkable Stannomidae, the largest and most striking among the Deep-sea Keratosa; their spongin-skeleton is never reticular, but formed by bundles of delicate fibrillæ, which never anastomose; the sandy xenophya are not enclosed by the fibres, but lie between them in the maltha. Not less interesting is a fourth new family, that of the Ammonidae, distinguished from all the others by the simple structure of their canal-system, formed on the *Ascon*-type.

Respecting this latter most important difference, all the Deep-sea Keratosa collected by the Challenger belong to two main groups of very unequal range, and these correspond perfectly to the two orders or main groups of calcareous sponges which Dr. Poléjaeff, in his Report on the Calcareous<sup>4</sup> dredged by H.M.S. Challenger, has distinguished as Homocœla and Heterocœla. The first order (Cannocœla) is represented by only a few, and small, but most interesting Keratosa, constituting our

<sup>1</sup> Vosmaer, Bronn's Klassen und Ordnungen des Thier-Reichs, ed. 2, Bd. ii. (Porifera), pp. 17-109, 1887.

<sup>2</sup> Lendenfeld, On the Systematic Position and Classification of Sponges, *Proc. Zool. Soc. Lond.*, December 21, 1886; Der gegenwärtige Zustand unserer Kenntniss der Spongien, *Zool. Jahrb.*, 1887, p. 511.

<sup>3</sup> The term *tribus* is generally employed for smaller sections of a family, therefore subordinate to the latter term. Compare my *Generelle Morphologie*, Bd. ii. p. 400, Berlin, 1866.

<sup>4</sup> *Zool. Chall. Exp.*, pt. xxiv. p. 35.