

the actual data, viz., to the differences in structure distinguishing the horny sponges from other Silicea. The usual and natural characteristic of the Keratosa is the following:—Porifera with horny skeleton devoid of proper (siliceous) spicules. This diagnosis alludes to this, that there must exist amongst Silicea, sponges although provided with a true horny skeleton, yet characterised by the possession of spicules produced by the sponge itself. This allusion concerns the groups of Silicea known under the name of Chalinidæ, whose main systematic character consists in the possession of a horny skeleton recalling as to its external structure that of true Keratosa, but rich in horny substance as it is, yet containing within its fibres proper spicules enclosed. Now through the genus *Chalinula*, O. Schmidt, the Chalinidæ are most closely allied to typical Monactinellida. There are accordingly between a typical horny sponge and a typical Monactinellid long series of intermediate connecting stages, and their existence proves that the Keratosa and Monactinellida must have had the same phylogenetic origin. This has never been disputed; and, on the whole, it is in thorough harmony with embryological data also. The larvæ of Keratosa as described by Barrois¹ (*Verongia* [*Aplysilla*?] *rosea*) and F. E. Schulze (*Euspongia officinalis*,² *Spongelia pallescens*,³ *Aplysilla sulphurea*⁴) and those of *Chalinula fertilis* and *Reniera filigrana* as described by Keller⁵ and Marshall,⁶ as well as their previous and probably further development, admit of no absolute distinctions. Indeed, while the usual mode of division of the ovum is equal, that of the ova of *Chalinula* is, according to Keller, unequal. But, firstly, this difference is of a very subordinate nature, and, secondly, it is still questionable whether this statement of Keller is more reliable than his suggestion as to the sexual dimorphism of the species in question. There can be, I repeat, no doubt as to the Keratosa and Monactinellida having had the same origin. But the matter, indisputable as it is, can be interpreted differently. The genealogical tree accompanying the paper of Prof. Schmidt on the sponges of Algeria (*loc. cit.*, p. 35) shows that this naturalist considers the Keratosa to be an older group than the Monactinellida, to represent, namely, a group from which the true Silicea have originated. If this be true, the systematic proceeding of Hyatt I have spoken of a couple of pages before would receive a thorough sanction, and the class of Non-calcareæ, Vosmaer (for in such a case the designation of Silicea applied to the group by Gray would be no longer admissible), would require to be subdivided into two orders, Keratosa and Silicea. This suggestion is, however, far from being reliable, and a short deliberation renders it obvious. I ask what appears more easily and naturally realisable, the transformation of a Siliceous into a Keratose sponge, or *vice versa* of a Keratose sponge into a Monactinellid. I think there can be no doubt as to the answer. In the species *Chalina limbata*, Bk., we have to do with a sponge whose skeletal fibres are extremely poor in proper spicules; an insignificant

¹ *Ann. d. Sci. Nat. (Zool.)*, sér. 6, t. iii., 1876, p. 56.

³ *Ibid.*, Bd. xxxii. p. 144.

⁶ *Ibid.*, Bd. xxxiii. p. 317.

² *Zeitschr. f. wiss. Zool.*, Bd. xxxii. p. 642.

⁴ *Ibid.*, Bd. xxx. p. 414.

⁵ *Ibid.*, Bd. xxxvii. p. 221.