

silica of flint nodules, it by no means follows that other kinds of organisms have not assisted. Schulze notices the comparatively rich development of Hexactinellid Sponges in association with Diatomaceous ooze, and I have observed something similar in the case of the Tetractinellida. If the contribution of these organisms and of Radiolaria be taken into account, the time required for the formation of the material of a bed of flints may be still further shortened.

#### 4. ONTOGENY.

Remarkably few instances of early developmental stages have been met with. In *Craniella schmidtii* (?) (p. 39, Pl. XLII. figs. 20, 21) and *Craniella simillima* (p. 33, Pl. II. figs. 18, 19; Pl. XL. fig. 5) planulæ and young sponges were observed within the parent. Very young sponges, evidently having only just completed their embryological development, were observed in the case of *Thenea schmidtii* (p. 69, Pl. VIII. fig. 22) and *Stelletta phrissens* (p. 152, Pl. XVI. figs. 15–20). In sponges not in the Challenger collection I have observed similar very young sponges in the case of *Dragmastra normani* and *Geodia barrettii*; the young examples of the latter furnish valuable evidence bearing on the mode of development of the cortex; this will be found recorded in the revision of the family Geodiidæ. Unfortunately no examples of young sponges were furnished by the Lithistida.

*External Gemmation.*—The only Tetractinellid genus in which external buds have been observed is *Thenea*; Vosmaer was the first to describe them in the case of *Thenea muricata*,<sup>1</sup> they also occur in *Thenea schmidtii* (p. 69, Pl. VIII. fig. 21). So long as the buds remain attached to the parent they do not present any structure by which their true nature can be recognised, and this, therefore, at present is a matter of inference, resting partly on analogy with the structure of the similar buds of *Tethya*. As the external buds of *Tethya* are not further generally alluded to in the Appendix on the Monaxonida a few words must be devoted to them here. They were first discovered by Mr. T. H. Stewart, and described by Bowerbank in *Tethya lyncurium*;<sup>2</sup> in the same sponge they were subsequently investigated by Dezsö,<sup>3</sup> and in an allied species, *Tethya maza* (p. 440), by Selenka;<sup>4</sup> in another also closely allied species, *Tethya seychellensis*, they are described by Perceval Wright;<sup>5</sup> similar buds have been described by Merejkowsky in the Suberite, *Rinalda arctica*.<sup>6</sup> In the Challenger collection they were met with in a new species, *Tethya japonica* (p. 430, Pl. XLIV. figs. 11–13), as well as in *Tethya seychellensis* (p. 427, Pl. XLIV. fig. 1), in neither of these instances was any

<sup>1</sup> *Bijdragen tot de Dierkunde*, vol. xii. p. 6, 1885.

<sup>2</sup> *Mon. Brit. Spong.*, vol. i. p. 149, 1864.

<sup>3</sup> *Archiv f. mikrosk. Anat.*, Bd. xvi. p. 626, pls. xxx.–xxxiii., 1879.

<sup>4</sup> *Zeitschr. f. wiss. Zool.*, Bd. xxxiii., 1879.

<sup>5</sup> *Trans. Roy. Irish Acad.*, vol. xxviii., Science, No. 2, 1881.

<sup>6</sup> *Mem. Acad. Imp. d. Sci. St. Petersb.*, ser. 7, tom. xxvi. No. 7, p. 5, 1878.