

The inner half of the pale lining layer contains numerous small vesicular cells, 0.008 to 0.012 mm. in diameter, with a small spherical nucleus, and very probably surrounded by a protoplasmic envelope, though this cannot be made out in my preparations. The inwardly directed fibrils of the cylindrical and fusiform cells sometimes disappear amidst these vesicular cells, but I have never been able to trace them into connection, sometimes, on the other hand, they continue their course till they reach the fibrous tissue of the cortex. It is also to be noted that strands of fibres from this tissue sometimes enter the pale lining layer of the cloaca and extend up to the investing epithelium.

*Choanosome*.—The mesoderm is a sarcenchyme; numerous deeply stained granule-cells are scattered through it.

The flagellated chambers measure about 0.024 by 0.017 mm. in breadth and length. The pore-sieves (Pl. XXXVIII. figs. 24, 25), open into wide cylindrical chones, which communicate freely by unstricted apertures with wide incurrent canals.

*Pilochrota gigas*, Sollas (Pl. XX. figs. 1–13).

*Pilochrota gigas*, Sollas, Prelim. Account, Sci. Proc. Roy. Dubl. Soc., vol. v. p. 190, 1886.

*Sponge* (Pl. XX. fig. 1) massive, rounded; free, attaching to itself by fibrous bands numerous small stones. Several large oscules on the upper surface, which is incrustated with numerous foreign bodies. The oscular margin strongly membranous, partly concealing the large roomy cloaca into which the excurrent canals open by large mouths, which are overspun by a coarsely-meshed network. The pores in sieve-like areas, irregularly distributed, leading into chones, from which the incurrent canals proceed, sometimes traversing as single tubes the whole thickness of the sponge. Surface uneven, not rough, nor hispid.

*Spicules*.—I. Megascleres. 1. *Oxea* (Pl. XX. fig. 2), isoactinate, stout, fusiform, straight or somewhat curved, not sharply pointed; 1.678 by 0.0387 mm.

2. *Oxea* (Pl. XX. fig. 3), slender, fusiform, anisoactinate; distal thicker than proximal half, which is sometimes attenuated to a filiform extremity; 3.18 mm. by 0.0237 mm.

3. *Orthotriæne* (Pl. XX. fig. 4), rhabdome conical, attenuated to an excessively sharp or filiform extremity; cladi simple, conical, curving outwards and slightly forwards, frequently abruptly reflexed near the end. Rhabdome 1.96 by 0.0387 mm., cladi 0.223 mm. long.

II. Microsclere. 4. *Chiaster* (Pl. XX. figs. 5, 6), centrum very small or absent; actines excessively fine, tylote, somewhat numerous; diameter 0.013 mm.

*Colour*.—Yellowish-white.

*Habitat*.—St. Paul's Rocks, August 29, 1873. Taken with a fishing line from the shore.

*Remarks*.—This fine sponge, 200 mm. in length, 125 mm. in breadth, and 82 mm. in