

1. *Bathydorus fimbriatus*, n. sp. (Pl. LVIII.).

In the North Pacific, at Stations 241 and 248, and from considerable depths, the trawl brought up fragments of a somewhat large, bladder-shaped sponge, which was found to be a Hexactinellid of the very simplest structure.

At Station 248, lat. 37° 41' N., long. 177° 4' W., from a depth of 2900 fathoms and a red clay ground, the somewhat injured, though coherent upper portion of a bladder-shaped sponge was trawled. The loose smooth wall is only 1 to 1.5 mm. in thickness, and becomes gradually thinner towards the sharp oscular margin, which is surrounded by a fringe of long diact marginalia. The diameter of the bag, which is almost cylindrical in its lower region, measured from 4.5 to 5 cm. The lumen is gradually narrowed towards the upper end, measuring only 2.5 cm. in diameter at the superior terminal opening (Pl. LVIII. fig. 1). The almost uniformly smooth external surface exhibits minute, regularly distributed, round holes, of about $\frac{1}{4}$ mm. in diameter. Somewhat larger round openings may be detected on the internal surface of the gastral membrane, which is also almost uniformly smooth.

An inspection of flattened portions of the wall, or better still, an examination of cross sections at right angles through the wall, reveals distinctly the thimble-like form of the ciliated chambers, which are disposed in a very simple and regularly folded layer between the two reticulate limiting membranes, and supported by the external subdermal and internal subgastral trabecular framework. From the larger, lacunar, subdermal spaces, duct-like diverticula pass between the externally arched folds of the chamber layer. The lumen of each of these cupola-like folds is free from the trabecular scaffolding, and opens into the lacunar subgastral spaces; the latter do not, however, open directly into the general gastral cavity, but only into the loose meshwork of the gastral membrane which stretches smoothly over them (Pl. LVIII. fig. 2).

The larger parenchymalia consist of slender diacts which vary in length, and do not exceed 0.08 mm. in thickness. They are rough and rounded off at their ends, and are frequently somewhat club-shaped in consequence of thickening. A central swelling or formation of tubercles, which take the form of four cruciate, or two opposite elevations, is present in many cases and absent in others. Between these long supporting spicules, which are almost always disposed quite, or approximately parallel to the surface, numerous oxyhexasters occur, with a variable number of long terminal rays, which are either straight or gently curved (Pl. LVIII. figs. 4, 7). This curvature of the long terminal rays frequently assumes an S-shaped form, and results in the formation of minute, delicate, three or four-rayed perianth-like whorls at the end of the principal rays (Pl. LVIII. fig. 7).

The dermal skeleton is supported by medium-sized, smooth, hypodermal oxypentacts, in which the four tangential rays, intersecting at right angles, lie close below the dermal membrane, and are opposed to the corresponding tangentials of adjacent pentacts to