arranged trichodal protriænes, the cladomes of which project beyond the aperture, as though for defence. The surface of the sponge is irregularly reticulate with numerous low anastomosing ridges, surrounding oval depressions, in which the pores are situated. These are round or oval openings, about 0·044 mm. in diameter; they lead directly into wide incurrent canals, which are crossed by numerous vela (Pl. I. figs. 12, 14). The excurrent canal divides into branches, which are comparatively of large diameter up to their ultimate ramifications, and are not provided with vela.

Fragments of pumice and other foreign bodies are abundant in the incurrent canals, and food residues occupy the ultimate branches of the excurrent canals.

Ectosome (Pl. I. fig. 15).—The ectosome varies considerably in thickness, from about 0·06 to 0·118 mm.; it consists of somewhat modified collenchyma, many of the collencytes being elongated into fusiform fibre-cells, which run chiefly more or less parallel with the surface; others in some parts acquire a vesicular character, and together with the fusiform fibres produce a fibrous vesicular tissue. Some of the collencytes appear to have lost nearly all the protoplasm of the cell-body, and to have become reduced to mere nuclei with their nucleoli; others are of the ordinary stellate branching form, and some of these where they lie near the ectoderm of the outer surface send a slender process to it, and give off on the opposite side two other similar processes, which descend into the interior; whether these become connected with other cells or not is an open question. It will be seen from this description that the ectosome of *Tetilla leptoderma* is more highly developed than that of *Tetilla sandalina;* in succeeding species of the genus we shall find this development carried further, foreshadowing the corticate type.

Choanosome (Pl. I. fig. 13).—The mesoderm is remarkably poorly developed; it consists of collenchyma, in which, besides collencytes, numerous deeply stained more or less oval cells occur, which appear to be contracted amœboid cells. In some cases the flagellated chambers appear to be flattened against one another or against the epithelium of the canals, with scarcely a discernible trace of mesoderm between them.

The flagellated chambers are more or less spherical or ellipsoidal pouches, sometimes approaching the form of cylindrical sacs—on an average they measure 0·06 by 0·05 mm. but are sometimes larger, in one case an oval section gave 0·081 and 0·067 mm. for the two diameters. They communicate abruptly by a wide mouth, 0·032 mm. in diameter, with the excurrent canal; and by a single large prosopyle with the incurrent canal.

The spicular fibres of the body consist of the fusiform oxeas (1), protriænes (3), and somal anatriænes (5), and near the surface chiefly of the latter, which form a diverging sheaf extending beneath the ectosome and through it to the exterior (Pl. I. fig. 15). The smaller oxeas (2) are not aggregated into fibre, but are loosely scattered throughout the sponge, with a kind of "criss-cross" arrangement, between the radiating fibres. At the surface their points project slightly, raising the ectoderm into