

of the shaft are rounded off, and the spines reduced to short stumpy rods or elongated tubercles; the middle of the shaft is usually smooth and free from spines, but sometimes spines are produced from it at a great number of points; the whorls then disappear and a generally tuberculated irregular mass results. The commonest dimensions are 0·0158 by 0·0118 mm. (including the spines); these are sometimes however exceeded, the length sometimes reaching 0·0198 mm.

*Colour*.—A deep puce-black externally, grey within.

*Habitat*.—Off Port Jackson, June 3, 1874; depth, 30 to 35 fathoms.

*Remarks*.—There is a single large specimen of this sponge overgrown by a large *Gelliodes* (*Gelliodes poculum*, Ridley and Dendy). The irregularly winding flattened base is about 150 mm. in length by 80 mm. in width; the wall-like mass of the sponge is about 18 mm. in thickness and 122 mm. in height; the oscules attain a diameter of 3 mm.

*Ectosome*.—This varies in thickness from 1·75 to 3·0 mm. (Pl. XIX. fig. 10). Beneath the outer epithelium (Pl. XIX. fig. 11) is a very thin deeply stained layer, about 0·02 mm. in thickness, crowded with amphiasters and containing numerous fusiform cells tangentially arranged. This passes into the main ectosomal tissue, which consists of collenchyma containing large thin-walled cells in such numbers as to constitute by far the larger part of the tissue. These cells (Pl. XIX. figs. 16–19) are round or oval in outline, and usually about 0·044 by 0·036 mm. in length and breadth; within the thin membranous wall is a finely meshed network of thin protoplasmic films and threads, surrounding a small, more or less central, nucleus, about 0·005 mm. in diameter, which contains a small, deeply stained, spherical nucleolus. The nucleus is supported by protoplasmic threads which radiate from it and extend into the general network (fig. 17). The network varies in character in different cells; sometimes small accumulations of deeply stained protoplasm occur at the nodes, and the whole terminates in a thin peripheral film lining the outer wall. Sometimes the network is contracted into a small central mass surrounding the nucleus at some distance from the outer wall (fig. 18); sometimes, again, small, pale, scarcely visible bodies, of circular outline and about 0·004 mm. in diameter, are thickly scattered through the network.

Associated with these cells are others (Pl. XIX. figs. 11, 20) on which the dark colour of the sponge depends. They are of the same size and shape as the foregoing, and are similarly provided with a thin membranous outer wall, but in place of a protoplasmic network they contain a number of spherical, sepia-coloured bodies, about 0·003 to 0·005 mm. in diameter, which are frequently closely packed together so as to completely fill the cellular envelope. By careful focussing these spherical bodies are resolved into a dark coloured external wall enclosing a clear central space, within which again a small dark, almost black, spherule occurs. In the process of cutting thin slices of the sponge