

matrix outside the deeply staining ring contains, in addition to the cup-shaped bodies, numerous other objects, such as spicules and a few large cells, which have apparently been enveloped in it accidentally, and which are arranged with none of the constancy or regularity which characterises the former.

It appears to us highly probable that the cup-shaped bodies are aggregations of glandular cells, similar to the glandular cells in the ectosome of other sponges, and that they secrete the tough, jelly-like substance, or, at any rate, that portion of the jelly-like substance outside the deeply staining ring. This is the only hypothesis on which we can explain their constancy in form and arrangement, and it seems to be greatly strengthened by two facts—(1) that they have their mouths turned towards the centre of the globular body, and (2) that the gelatinous-looking substance remains connected with the cup-shaped organ at the mouth when it has shrunk away from it (probably owing to the action of the spirit) in other places. What may be the function of the whole structure is enigmatical in the extreme; we can but describe them as we find them, and suggest, but merely suggest, that they may be phosphorescent, and serve to attract minute organisms upon which the sponge feeds. Unfortunately the specimens, which came from a depth of 1600 fathoms, are in such an unsatisfactory state of preservation that the remainder of the anatomy and histology cannot be worked out at all; the superior preservation of the structures described is probably due to their envelopment in the tough, gelatinous-looking matrix.

III. THE CANAL SYSTEM.

(1) The Pores.

The arrangement and character of the pores are, as might be expected, most intimately correlated with the condition of the dermal skeleton and of the ectosome. The pores themselves, *i.e.*, the actual openings on the surface of the sponge, through which the water enters the sponge, present us with but little variation either in form or size. They are round or oval, and measure about from 0·05 to 0·2 mm. in diameter. We have in the systematic portion of this work given the measurements of the pores in a large number of different species, which it would be superfluous to repeat in this place; the average diameter, both in *Halichondrina* and in *Clavulina*, may be taken as about 0·1 mm.

The pores may be studied to the best advantage in those sponges (*viz.*, the *Halichondrina*) in which there is a separable dermal membrane, which can be removed and examined under the microscope as a transparent object. They then appear as definitely bounded openings, often so closely placed as to reduce the dermal membrane to a mere network (Pl. XLVI. fig. 4). When, however, the sponge is corticate and there