

collected and cemented together into definite fibres as in *Desmacidon reptans*, nobis, or they may be glued on to the surface of the sponge without any definite arrangement, as in *Polymastia agglutinans*, nobis (Pl. XLI. fig. 6; Pl. XLII. fig. 1). (The main skeleton also may be replaced to a greater or less extent by foreign bodies, but this subject will be treated of more fully in our discussion of the so-called "*Phoriospongiæ*." )

We ought not to leave this part of our subject without a few words as to the arrangement of the microsclera. These, as we have already pointed out, do not, as a rule, take part in the formation of the skeleton proper, and their function is in most cases extremely difficult to determine. Occasionally, however, it is sufficiently obvious, and in such cases it nearly always appears to be protective.<sup>1</sup> Thus we know of several instances in which hooked microsclera are arranged around the walls of the canals, with one end embedded in the wall and the other projecting freely into the lumen of the canal. In *Esperella murrayi*, nobis, the inhalent, and apparently some of the exhalent canals also, are plentifully armed with sigmata, each with one hook projecting into the canal (Pl. XLVIII. figs. 2, 2c), and in *Iophon chelifer*, nobis, we have observed the very peculiar bipocilli of that species arranged in a similar manner. In these cases there can be little doubt that the microsclera in question serve to protect the sponge from the ingress of noxious parasites, such as minute Crustacea, to whose attacks sponges seem to be peculiarly subject, by way of the canal system; just as the dermal skeleton serves to hinder these creatures from boring their way into the sponge at any part of the surface, which is a common occurrence in cases where the dermal skeleton is not sufficiently strongly developed. The arrangement of special microsclera (e.g., amphiastra in *Axoniderma*, discastra in *Latrunculia*, spirulæ in *Spirastrella*) to form a dermal armour, has already been referred to and needs no further comment.

More difficult to understand are certain cases in which the microsclera are attached to the fibre of the proper skeleton. This arrangement has been described by Bowerbank<sup>2</sup> in the case of the diancistra of *Hamacantha johnsoni*, and the diancistra of our *Vomerula esperioides* are arranged in a similar manner, each being cemented on to the spiculo-fibre by the back of the shaft, while the sharp, cutting teeth project outwards. Moreover we have observed a similar arrangement of the large anisochelæ of *Esperella simonis*, nobis, the spicules being attached to the skeleton fibre in groups by their small ends. Probably in these cases also the spicules in question are really defensive.

It is much more common, however, for the microsclera to occur simply scattered irregularly through the mesoderm or in the limiting membranes without any pretence of arrangement, and they are often so minute and insignificant that we cannot believe that they now fulfil any function whatever.

<sup>1</sup> We have, however, suggested elsewhere (p. xxxi) a different function for the trichodragmata, viz., that they serve, like straw in mortar, to bind together the soft gelatinous tissues in which they lie.

<sup>2</sup> Mon. Brit. Spong., vol. i. p. 35.