

ectosome, and (2) the *Main skeleton* (Pl. XLVII. fig. 3, *m.s.*), which forms the main mass of the skeleton, supporting the canal system, &c., in the interior of the sponge. The dermal skeleton is very frequently distinguished from the main skeleton by a different arrangement of the component parts, which is often very striking. It may be either reticulate, composed of more or less definite fibres, or of scattered spicules laid horizontally, or radiate, composed of spicules arranged vertically to the surface with their apices projecting outwards. Thus in *Plumohalichondria mammillata*, the dermal skeleton is a very compact and regular, polygonally meshed reticulation of spiculo-fibre (Pl. XLVII. fig. 4), while the main skeleton is radiately arranged, consisting of ascending columns of plumose fibres (Pl. XLVII. fig. 4a, *p.c.*) running vertically to the surface; this is an excellent example of a reticulate dermal skeleton combined with a radiate main skeleton. In *Myxilla rosacea*, var. *japonica*, on the other hand, we have a radiate dermal skeleton combined with a reticulate main skeleton (*vide* Pl. XLVII. fig. 3). A radiate dermal skeleton and a radiate main skeleton, however, generally occur together. Thus in the genera *Suberites* and *Stylocordyla* (woodcut, Fig. VIII.) the dermal skeleton is composed of brushes of small, outwardly projecting spicules, often so closely packed together as to form a dense, velvet-like pile.

Very commonly, also, the individual spicules of the dermal skeleton differ from those of the main skeleton. This difference may concern merely the size, as is the case in most Suberitidæ, or it may concern the shape of the spicules. In *Tedania*, and again in *Myxilla*, we always find a diactinal dermal spicule (oxeote, tornote or tylote) combined with a monactinal main skeleton spicule (stylote), and in the Spirastrellidæ (*Spirastrella* and *Latrunculia*) there is usually a special dermal crust of quite peculiar spicules (spirulæ and discastra) which we here consider as belonging to the category of microsclera.

In two genera (both new) of deep-sea Desmacidonidæ, we have discovered very extraordinary special dermal spicules in addition to the ordinary spicular complement of the group to which they belong. In the one case, *Axoniderma*, the spiculation would be that of the genus *Cladorhiza*, were it not for the existence of a dense external armature composed of a thick layer of large amphiasters; and in the other case, *Meliiderma*, we have a stipitate sponge agreeing in spiculation with the genus *Chondrocladia*, except for the presence of a layer of quite peculiar spicules (woodcut, Fig. IX.) which encrust the stem. In both cases there can be little doubt that the extra spicules have been acquired in order to guard against the attacks of enemies, a purpose for which they are admirably adapted.

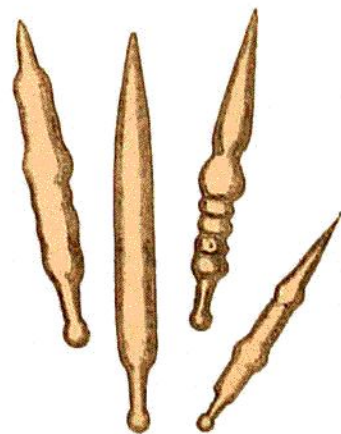


FIG. IX.—*Meliiderma stipitatum*.
Spicules encrusting the stem.
× 400.

Not infrequently the true dermal skeleton is replaced, more or less entirely, by foreign bodies, such as grains of sand, sponge-spicules, &c. These foreign bodies may be