distinction between the two. Moreover, the sigmata, which occur in both subfamilies, are such a common and wide spread type of microsclera that their presence cannot be safely relied upon in estimating probable relationships. From their extreme simplicity it appears quite possible that they may have originated independently in several groups.[1] We distinguish three genera in this subfamily, and we have already pointed out the interesting fact, that here, as in the Homorrhaphidæ, there is a very strong tendency towards the development of horny fibre, which asserts itself as soon as the necessary surroundings (viz., moderately warm and shallow seas) are attained.

The Tedaniinæ, which we have placed next in the series, are also a very isolated group. The spiculation is, so far as the megasclera are concerned, identical with that of the genus *Myxilla* amongst the Desmacidonidæ, even down to the relative positions of the two forms of spicules in the sponge. A very wide distinction lies, however, in the fact that the Tedaniinæ have no chelæ, but, in place thereof, simple rhaphides, which are unknown in the genus *Myxilla*. The differentiation of the megasclera into "main" and "dermal" forms, differing fundamently from one another in shape, must be considered as an indication of a high degree of specialisation and alone quite sufficient to necessitate the removal of the Tedaniinæ from amongst the Renierinæ, where they have been placed by previous authors. It seems not unlikely that here, as in the Phlœodictyinæ, the only two described genera will have to be merged into one; for the distinguishing character (*i.e.*, the spination of the styli in *Trachytedania*) can hardly be considered of generic importance (*cf.* the similar spination of the styli in some species of the genera *Iophon* and *Myxilla*).

The Desmacellinæ are not a very satisfactory subfamily, for as yet we know hardly anything about them. There is only a single established genus, viz., Schmidt's *Desmacella*, and they differ from the Gelliinæ only in the replacement of the diactinal megasclera by monactinal forms; it is very possible that these two subfamilies should be united, though we have found it convenient for the present to keep them distinct.

We come now to the last subfamily of the Heterorrhaphidæ, viz., the Hamacanthinæ. In this subfamily we meet with microsclera of a very remarkable and entirely unique form, the diancistra. These spicules seem to be peculiarly constant in shape in the different species. That they have some connection with the ordinary sigmata of other sponges is very probable, but they are always distinguished from these by the presence of a sharp, cutting inner edge with three notches, one in the centre of the shaft and one at each angle where the shaft bends round to form the terminal hooks. The nearest approach which we have found to this spicule in any other genus is the large sigma of *Esperella simonis* (Pl. XV. fig. 13), which differs, however, in the absence of the characters just mentioned, though resembling the diancistra in its unusually large size and in the shape

[1] *Cf.* Ridley, Zool. Coll. H.M.S. "Alert," Brit. Mus., 1884, p. 371.