

spicular fibres, and in possessing as its only megasclere an exceptional form of spicule, the amphitriæne, which so far as I knew at the time does not occur in any other group of Sponges; while, however, I was debating as to the amount of trust to be reposed in the presence of the sigmaspire, I received from Mr. Carter a fragment of a new species of *Tetilla* (*Tetilla stipitata*, Carter) in which an irregular form of amphitriæne is present, and thus the suggested alliance to the Tetillidæ was confirmed. I now associate the Tetillidæ and the Samidæ (a new family of which *Samus* is the only representative) as a suborder, the Sigmatophora. Outside the Sigmatophora the sigmaspire is not met with in any group of Choristida, but it occurs in the Lithistida, and will be referred to again in the account of that order (p. 316).

The next family of the Choristida is the Theneidæ, which like the Tetillidæ appears to be a very natural one, the chamber-system is eurypylous, and the mesoderm collenchymatous throughout, the megascleres are oxeas and triænes in one genus (*Thenea*), and oxeas, triænes, and calthrops in another (*Pæcillastra*); in *Thenea* these spicules are arranged in radial fibres, but in *Pæcillastra* they form irregular tracts, and the calthrops are associated with the spicules of the interior, *i.e.*, in addition to triænes situated with their cladomes in the ectosome there are calthrops mingled with the oxeas of the choanosome, and that as far from the ectosome as the very middle of the Sponge. Notwithstanding this important difference, which would have removed *Pæcillastra* from the Triænina to the Tetradina, when these groups existed, had their definition been rigidly adhered to,—notwithstanding this, we find that the microscleres are remarkably similar, and so much so as to make any wide separation of the two genera impossible, for not only is the characteristic spiraster present in both, but the equivalent groups of microscleres also; thus in *Thenea*, in addition to the spiraster, which may be modified into the very similar amphiasster, there are usually present metasters, and either plesiasters or euasters, and with the latter as varietal modifications may be associated microxeas; in *Pæcillastra*, in addition to the spiraster, which in the closely allied genus *Characella* is represented by an amphiasster, there is usually present a metastar, sometimes plesiasters, and always and most abundant microxeas, which represent the euaster or plesiaster of *Thenea*. In *Sphinctrella* a similar association of microscleres occurs, and we may sum up the distribution of the microscleres in the Theneidæ in the statement that the spiraster is present in all species or represented by the amphiasster; metasters are generally present; plesiasters or euasters are present in all species of *Thenea*, but in the remaining genera of the family are represented by microxeas, *i.e.*, diactinose asters. Having found that the characters of the spiraster are as constant in the Theneidæ as those of the sigmaspire in the Tetillidæ, and that it possesses the additional recommendation of constancy in presence as well as in form, we shall look upon it as a very promising guide, still, however, to be followed by caution; thus in several genera which I have placed in the Euastrosa—*Stryphnus* for example—amphiassters occur, but these are of