

such irregular form that they may be of different origin to those of the Theneidæ, and so for the present I leave the genus with what appear to be its more natural associates.

As an instance of the application of the character, I may select the new genus *Triptolemus*, first known to me, like *Samus*, by a single exceptional form of spicule, the centrotriæne, which is confined to this genus; a slide showing all the spicules, however, was given me by Mr. Carter, and the presence of microxeas and spirasters showed at once its relationship, which appears natural enough directly it is pointed out.

The family Pachastrellidæ which will next engage our attention is of great interest in this inquiry. The typical species, *Pachastrella abyssi*, like all the species of the family, is characterised by a sarcenchymatous mesoderm, aphodal chamber-system, and choanosomal calthrops; in the two former characters it differs from the Theneidæ, in the latter it resembles the Theneid genus *Pæcillastra*, but its resemblance to *Pæcillastra* is still further increased by the complement of microscleres, for these are spirasters, microxeas, and microstrongyles, all but the last named being evidently correspondent to those of *Pæcillastra*, while the microstrongyle is readily explicable as a reduced aster. *Pachastrella abyssi* may be regarded as a *Pæcillastra* which has attained a higher plane as regards the chamber-system and the mesoderm, and in which some of the microxeas have become shortened into microstrongyles. If now we pass to the other genera of Pachastrellids we shall find our caution as to the treacherous nature of single characters is no libel; so far as the spicules are concerned the only constant form is the calthrops; the microscleres vary unintelligibly, spirasters may be replaced by euasters (*Calthropella*), the microxeas disappearing, or instead of any astrose form, toxas and microrabds may be present (*Dercitus*), and in this genus the oxea of the megascleres also vanishes. With these wide differences to explain, we may suppose (1) that great variation occurred within the group after its separation from the Theneidæ, or (2) that it is of polyphyletic origin, *i.e.*, not a natural family; if we trust to the characters of the mesoderm, of the chamber-system, and to the presence of the calthrops, we shall incline to the first alternative, if to the microscleres to the second; I am myself in favour of the first, the strongest objection to it being furnished by the microscleres of *Dercitus*, for as regards the aster of *Calthropella*, that may well be derived from a spiraster, but the toxas and spinose microrabds of *Dercitus* are less readily explained, and instead of speculating upon them, it may be as well to wait for information as to their embryological development, which ought not to be difficult to study in the case of a not very uncommon British Sponge. That they do not offer an insuperable objection, however, I feel convinced, since there are several possible ways in which the microscleres of *Pachastrella abyssi* may have produced them.

Considering the two families—Theneidæ and Pachastrellidæ—together, we conclude that the spiraster is present in most of their genera, they may therefore be united as a