The growth of a scleroblast, either as a prolate or oblate ellipsoid, is determined by tensions existing in the organism, thus the oblate spheroids in the Tetillidæ are situated with the equator near a free surface and with their equatorial plane parallel to it; here the same surface tension which has given a pinacoid form to the epithelial cells has determined the oblateness of the spheroid; on the other hand, the toxaspires, which suggest a prolate form for the ellipsoid, occur only in the cortex in *Chrotella*, the spires of the choanosome in this sponge retaining the more usual sigmoid form. The cortex in this case exhibits the usual signs (tangentially directed fusiform cells) of tangential growth, which has in all probability led to an elongation of the scleroblast in its own direction.

The spiraster, which must next engage our attention, offers much that is suggestive and much that is difficult of explanation. The spines proceed only from the outer side of the spire, and the inner side which partly surrounds the nucleus is smooth or devoid of spines; this is in correspondence with the general behaviour of the nucleus, and suggests that the region of deposition in the scleroblast is as we have supposed situated near the surface; the production of spines, which may be regarded as due to radial tensions, at first suggests a difficulty, which can only be met by hypothesis; we have to suppose that the scleroblast, at first growing in such a manner as to produce an oblate spheroid, as we should expect from its position near the epithelial surface, subsequently altered its rate of growth in different directions so as to enlarge in every direction at an approximately uniform rate; the sigmaspire, thus becoming immersed in the scleroblast, would grow outwards in a radial direction, and if the tensions were uniform a radial lamella might be expected to result; that the tensions should be uniform, however, is exceedingly unlikely, considering the general want of uniformity in nature, and thus instead of a continuous lamella a discontinuous one, or in other words a series of spines, results. We have here supposed the scleroblast to continue to grow with a more or less spheroidal surface as it certainly does in the sterraster, but it is possible that under the influence of tensions in the organism it may itself assume a radiate form; at any rate the spines once developed very soon betray the influence of such tensions, which lead to the transformation of this spicule first into the metaster, then into the plesiaster, and finally into the aster. Now it is a most important point, and one which we have already indicated, that in the Theneidæ, in which this transformation can be traced through each successive stage, the passage from the spiral to the astral form is accompanied by an increase in size. This association I believe to be in the nature of cause and effect; for as the increase in size takes place the spicule is increasingly brought under the action of the tensions existing in the organism as distinct from those of the cell itself, now these tensions in a mass of collenchyma must always be symmetrically distributed about any given point, and thus when the actines are definite in number we shall find them symmetrically disposed also; if two actines occur they should be directed along the same axis, and thus the preponderance of monaxons among the diactinate forms of aster results; if three are