opposing surface, and in some cases becomes terminated by a tylus, as in the oxytylotes of *Esperia marshalli*, and as was probably the case with the ancestral form of triæne, since these spicules although they commence to develop a tylus while situated in the interior of the sponge do so possibly by precocity. If not, we may suppose that tangential strain in the interior of the sponge leads to a general terminal growth. As the tylus which we suppose to have formed immediately below the skin increases in size, it grows along three lines of least resistance inclined to each other at angles of 120°, and thus the triæne results.

Again, take the case of a simple calcareous sponge: let a scleroblast be situated near the surface of the sponge, as it must be in the Ascones; the surface tension will here also lead to the growth of three actines inclined at angles of 120° to each other, and thus the triradiate spicule so common in the calcareous sponges may have arisen.

Returning to the triæne, the growth of the cladi may continue in a straight line, or bifurcation may take place, and if it does the deuterocladi should, according to theory, make angles of 120° with each other and with the protocladus, or if not, the angles between the protocladus and each of its deuterocladi should be equal. Observation here supports theory, these conditions, one or other of them, being always fulfilled in the case of the dichotriænes.

Several matters of detail remain for discussion; in the first place the form of the protriænes in the Tetillidæ, and of the early forms of orthotriænes in the Stellettidæ and other Tetractinellida, cannot be lightly passed over. The last-named spicules at the time they appear in the choanosome being practically protriænes, are susceptible of the same explanation as seems inevitable in the case of these spicules in the Tetillidæ, *i.e.*, we must suppose that they were evolved under the actions of tensions which are the resultants of the radial and tangential tensions; given that the cladi lie in the direction of the resultant, and it is possible to determine the ratio between the radial and tangential forces which have determined their direction, for in a triangle of forces the length of the sagitta will represent the magnitude of the radial tension, and half the length of the chord that of the tangential tension; in a very young specimen of *Craniella schmidtii*, still enclosed within the body of the parent, I find by measurement that the radial is to the tangential tension as three to two. In the Tetillidæ the protriæne retains its protriæne form throughout life, but in the Stellettidæ and Geodiidæ it subsequently passes into a plagio-, ortho-, or dicho-triæne. This change, in the case of young spicules developing in a fully grown sponge, takes place as they approach the outer epithelial surface, towards which they travel as they grow, and the tangential direction of the cladi is not fully assumed till they lie quite close beneath the skin or the floor of an intercortical cavity, where we may fairly assume that the tangential tensions are at a maximum. This change in the direction of the cladi is frequently very marked, especially in the case of the dichotriænes, in which the protocladi may be directed like