they are converted into centrotylote microxeas. While a rhabdal form is thus produced in both sterraster and euaster, it is of interest to note in passing that the modification is accomplished in two different ways,—in the euaster by the reduction in the number of the actines, in the sterraster by a shortening in the length of those which in the euaster would be suppressed.

The chief forms of microscleres have now been discussed, and the megascleres may next engage our attention; these are clearly derivable from the microscleres by increased growth, and that such has been their origin there can in my mind be no doubt.

We have already seen that as the microscleres increase in size they become increasingly subject to the influence of strains in the organism, while the intracellular tensions become less and less effectual, on passing to the still larger megascleres we should naturally expect to find this tendency still more marked, as indeed we do; the tensions of the organism are in this case paramount, and the intracellular tensions may for the future be disregarded.

The tensions existing in the sponge as a whole offer such a complicated problem for study that we can only attempt to treat it in a most general way; it will, however, be clear that the growth of the sponge leading to an increase in surface and thickness may be regarded as taking place along radial lines and a superficial plane, the radial lines will furnish one direction of least resistance, the superficial plane others, the precise distribution of which will be considered when we come to treat of the triænes; for the present we may simply regard them as transverse to the radial lines of growth. The mode of growth of the choanosomal folds will be influenced by the relations between the increase of surface compared with the increase in thickness of the sponge, and thus some of the folds will increase radially and others transversely, concrescence between the longitudinal folds will give rise to radial tracts of mesoderm, between the transverse folds to transverse tracts, and along these tracts lines of least resistance will exist, probably lines of tension; their existence is indicated by the fusiform elongation of the collencytes when the tissue of the tracts, as is usually the case, consists of collenchyma. The direction of tension along any tract will probably undergo more or less change as it is traced from point to point, but the spicules are as a rule so short compared with the diameter of the sponge that in most cases, but not all, this may be disregarded, and the tension may be assumed for all practical purposes to act along a straight line. If now we take the case of the Tetillidæ in which the megascleres are supposed to have been derived from sigmaspires, and consider one of these spicules to undergo a vast increase of growth within the radial tracts of collenchyma, it will evidently be exposed to the action of a couple acting at its ends, and we should expect it to be elongated into a rhabdal form lying with its axis in the line of tension, *i.e.*, radially, and this is the position which, as a matter of fact, the spicules of these tracts invariably assume. The transverse tension has next to be satisfied, and in the lower forms of the Tetillidæ we find oxeas scattered transversely to the radial spicular fibres, which the radially directed