

chamber-system of *Epallax* is scarcely further advanced than that of *Astropeplus*, and it is of great interest to find that the same is true of *Phacellia* as described by Mr. Dendy (Ridley and Dendy, *loc. cit.*, pl. xlix. fig. 3). The Axinellidæ are also nearly related to the Tetractinellida, and the occurrence of microcalthrops described by Carter in *Microciona quadriradiata*¹ and in *Dictyocylindrus vickersii*² becomes intelligible as a case of survival. The spheraster of *Dictyocylindrus stuposus*, Bowerbank, and the aster with dichocladal actines of *Dictyocylindrus fascicularis*, Bowerbank, are readily derived from the simple asters of *Epallax*, so too are the small styles which occur in conjunction with the larger rhabdi of so many Axinellidæ, though the passage of these can perhaps be more exactly traced through the microcalthrops of *Tricentrium*; I have described this spicule as presenting various forms of di-, tri-, and tetractinose forms in *Tricentrium muricatum*, Ehlers,³ and Carter has described a whole series of species in which the selection of one or other of these forms has taken place; thus in *Tricentrium (Dictyocylindrus) vickersii* (Carter), we have asters with from three to five actines present and serving as "echinating" spicules, in *Tricentrium (Microciona) quinqueradiata* (Carter), pentactinose asters are present, in *Tricentrium (Microciona) quadriradiata* (Carter), tetractinose forms (microcalthrops), in *Tricentrium muricatum*, Ehlers, chiefly triactinose forms, in *Tricentrium (Microciona) curvispiculifera* (Carter), diactinose forms, and in *Microciona (?) bulboretorta*, Carter, we reach the style; the smaller "echinating" styles of the Axinellidæ are traceable ultimately to calthrops or asters, and so far afford a justification to Vosmaer's view, by which *Tricentrium* is assigned to the Tetractinellida, but when the whole assemblage of characters is taken into account this view becomes untenable, for the genus *Tricentrium* is evidently an Axinellid and cannot be removed to the Tetractinellida without taking the Axinellidæ along with it.

The Dorypleridæ are readily understood as resulting, so far as the spicules are concerned, from an overgrowth of the oxeads and asters of *Astropeplus*.

The Tethyidæ must be traced backwards towards a Placinid ancestor in order to explain the radiate arrangement of the skeleton, which evidently depends on their mode of growth. If in the case of *Epallax* we regard the vasiform sponge as resulting from the widening of the oscule of the original Rhagon, and a subsequent outward and upward growth of its margin, we shall perceive how the arrangement of spicules which it presents may be brought about, for we have two chief directions of growth,—one from the base along the sides of the cup or radial, this will lead to the over-development of such spicules as happen to be directed along radial lines; the other at right angles to this in the direction of the axes of the chief folds or evaginations of the gastral wall,

¹ *Ann. and Mag. Nat. Hist.*, ser. 5, vol. vi. p. 42, pl. iv. fig. 4, 1880.

² *Op. cit.*, vol. iii. p. 285, pl. xxvi. figs. 1-4, 1879.

³ *Ann. and Mag. Nat. Hist.*, ser. 5, vol. iii. p. 19, pl. vi., 1879.