

connective tissue part of the mantle, branchial sac, or other organ, and in one species, *Cynthia complanata*, the spicules of the mantle are enclosed in very distinct membranous sheaths (Pl. XVII. figs. 4, 5, and 6), and curiously enough the sheaths of different spicules are connected by continuations of their ends, so that the different spicules are united to form a system of tube-like structures winding through the tissues of the mantle.

As to the function of these calcareous spicules, I am not prepared to make any definite statement. The first idea which presents itself is naturally that they are for the purpose of giving strength and support to the organs in which they are present; and this is probably the correct explanation in the case of *Culeolus*. In that genus, on account of the large meshes, and the want of fine longitudinal bars, the branchial sac is singularly weak and fragile; and the presence of the large branched spicules in the chief vessels (very frequently placed at their points of intersection, so as to extend into several and strengthen their junction) must materially add to the firmness and solidity of the organ.

This, however, cannot apply in the case of *Cynthia*. There the branchial sac is as strong as in most Simple Ascidiæ. And the species in which calcareous spicules have been found seem to require support as little as any of the other species of the genus. Besides, the spicules in *Cynthia* are, as has been pointed out above, very different in their characters from those of *Culeolus*, and do not seem as if they would be nearly so suitable for the purpose of strengthening a delicate organ. Consequently, I think it is probable that they have a different function in this genus.

In the Styelinæ, besides a number of new species belonging to the large genera *Styela* and *Polycarpa*, a specimen from deep water was collected, which has necessitated the formation of the new genus *Bathyoncus*. The chief structural peculiarity of this form, namely, its much modified branchial sac, has already been discussed above in connection with *Fungulus* and *Culeolus*.

Besides *Bathyoncus mirabilis*, the only deep-water Styelinæ are two new species of *Styela*—*Styela bythia* and *Styela squamosa*. The former of these has distinct languets (Pl. XVIII. fig. 8) along the free edge of the dorsal lamina—which is usually a plain membrane in the Styelinæ—and the latter has only two well-marked folds upon each side of the branchial sac; but with the exception of these two points, *Styela bythia* and *Styela squamosa* are fairly typical representatives of the otherwise shallow-water genus *Styela*.

In one of the new species of *Polycarpa*, the inconspicuous *Polycarpa minuta*, small rod-shaped calcareous spicules are present, scattered through the prolongation of the connective tissue of the mantle, which forms the covering of the polycarp (Pl. XXII. fig. 4), but they do not seem to be present in any of the other organs of the body.

In the family Ascidiidæ, out of the four new genera formed for Challenger specimens, three, viz., *Hypobythius*, *Corynascidia*, and *Abyssascidia* are somewhat aberrant; while the fourth, *Pachychlæna*, is closely allied to *Ascidia*. *Corynascidia* is undoubtedly