

These facts are highly important with reference to the appreciation of the various kinds of individuals found in the colonies of certain Siphonophoræ, in which a medusoid form is often found combined with the structure of a hydroid.

The spermatie particles.—During the earlier stages the mass of spermatie particles is perfectly hyaline, and, to all appearances, homogeneous; but when the medusoid is two thirds grown (*Fig. 15*), the mass (*c*) is yellow, and composed, in a great measure, of small cells (*Fig. 15^a, b*), each one of which is filled by three or four mutually compressed, rounded angular bodies. As the mass comes to maturity it assumes a dense yellow color, and the cells disappear, while their contents are scattered uniformly throughout the field. By this time these angular bodies have changed and become pear-shaped, and keep up a constant agitation among themselves. If the medusoid is opened and the mass torn, these lively bodies (*Fig. 16, A, B*) run out and swim about the field of the microscope by the help of a very long, slender, thread-like appendage (*b*), which is attached to the narrower end of the pear-shaped head (*a*) of the spermatie particle.

Histology. The adult Hydroid.—The cells, of which the tentacles of the lower row are composed, are remarkably conspicuous, and the walls are so distinct that they may be easily seen under a magnifying power of no more than one hundred diameters. Seen thus, they appear like coarse, polygonal granulations, closely packed together. Under a magnifying power of five hundred diameters their true nature is revealed. Their superficial ends (*Pl. XXIII^a. Fig. 1, c c¹ c² c³*) are irregularly polygonal, with an average diameter of about $\frac{1}{2500}$ of an inch. They appear much darker at this point, at the surface of the tentacle, because, beside the numerous coarse, dark, angular granules, which are distributed throughout the body of the cell, each one has one, two, or three lasso-cells fixed just below the surface of the outer end. The lower side (*Fig. 1, c¹*) of the tentacle is much more thickly beset with lasso-cells than anywhere else. From this point, toward the upper surface, they diminish in numbers; at the sides (*c³*) they are already, comparatively, very few, and above (*c*) they are least numerous. In a profile view these cells at once exhibit a marked difference, according to their position. At the lower side (*Fig. 1, a¹ a²*) they are at least one quarter longer than those on the upper side (*a*), but not broader, whilst those at the sides (*Figs. 1 and 3, c²*) are much shorter than anywhere else. Each cell occupies the whole thickness of the wall (*Figs. 1, 2, and 3, from a¹ to a²*), and is wedge-shaped, with the broader end (*a¹*) outermost. The inner end (*a²*) is quite sharply truncate, and presses closely upon the even surface of the inner layer (*c*). On this account the line of demarcation between the two walls is very sharply defined. The outer ends of the cells are variable in shape; when the tentacle is stretched to its fullest extent they are not in the least protuberant (*Fig. 1, b b¹*), but when the tentacle is less extended,