

from the earliest stages; but this is a very difficult matter to decide upon, because they have a great degree of contractility and expansibility, and moreover they can change their shape, at least after the walls have become defined.

In the earliest stages after segmentation, when the embryo has a perfectly globular form (*Fig. 25*), it swims about with a rolling motion, ever changing its axis of rotation, and proceeds in a zigzag direction hither and thither, now and then shooting off, for a short distance, in a straight line. In order to reach the pouches of the proboscis, they must of necessity swim in a more definite direction than this, and so we find that the majority of those which have arrived there are more or less elongated in form: these swim very swiftly, and in a direct course, with one end forward, and roll upon the longer axis. Not only are the young ciliated before they leave the ovary, but also the outer and inner walls are apparent (*Figs. 26, 27, and 28 a b*), and the digestive cavity (*d*) has begun to form; and others have become oval (*Figs. 30, 31, and 32*), and the incipient formation of the mouth (*Fig. 30 c*) may be recognized by a depression at one end. A few ciliated globular embryos reach the pouches; but, when compared with the elongated forms, they may be considered as exceptional cases.

After segmentation has thoroughly done its office, the embryo is endued with a covering of vibratile cilia (Pl. X^a. *Fig. 25*). These cilia are very short, and so exceedingly delicate that they might readily escape the eye of the observer; and in numbers they are fully equal to the cells of the outer wall. Whether each cell is furnished with a single cilium, or not, we cannot say. Notwithstanding that the embryo at this age swims, revolving on a changeable axis, we may see, by the decided and appropriate motions of the cilia, varying according to the direction in which the body proceeds, that volition has to do with every turn the sphere makes. At one moment these cilia are all bent in one direction, and at the next they stop their vibrations and throw themselves, as if by preconcerted signal, to an opposite side; and then, the body assuming a new axis of revolution, they go on with their vibrations until a new course is adopted. It can hardly be said, that the embryo, whilst in this, the globular state, pursues any particular course; but rather that it progresses along a zigzag, or an irregular spiral path, and rarely darts off in a straight line. Now and then one is seen to go for a considerable distance in one direction; but this happens when it is in the midst of the older oval forms, which sweep it along in the current. In this way sometimes, but very rarely, the youngest globular embryos reach the pouches.

at page 21, he would seem to show that these were not in the egg state proper, for he remarks that after they reach this place he "could not find the

germinal vesicle nor the germinal spot." At the same time, however, he describes the segmentation of the yolk as taking place in the pouches.