

numerous, and the disk rises and assumes a convex form on the side pointing towards the yolk. After segmentation is completed, the disk sinks down and assumes a concave form, and is then termed the segmentation cavity, or embryonic disk or sack.

On the seventh day, the first indication of the embryo is defined in a thickened rim of the blastoderm, on the right-hand portion of the embryonic disk. On the eighth day the neural plate becomes visible, appearing like a cord lying across the egg, when viewed from below, and the embryonic sack has become more elongated.

On the ninth day the head of the embryo is defined and appears like a thickening mass on the lower part of the ovum; and the cerebral, with indications of the optic vesicles, can also be seen forming at the sides of the head.

On the eleventh day the first segment of the muscular system has appeared on each side of the neural canal, and the dorsal cord (notochord) can be seen below it. On the twelfth day the optic vesicles are seen more defined, while the muscular system and the notochord are more distinct.

When the embryo is fourteen days old the rudiments of the heart, pectoral fold, auditory canal and intestines can be seen. The stellated pigment cells are now also making their appearance.

On the fifteenth day the heart appears like a spherical cavity surrounded with a wall of connected cells; the fore-brain is further developed, and the optic system more advanced. The primitive lateral fin-folds can now be observed. The embryo has grown considerably and is lying near the membrane of the egg in the shape of a half moon.

On the sixteenth day the tail of the embryo cod becomes free and is twisted over to one side; the vent is also defined.

On the eighteenth day the heart is so well developed that it is seen to pulsate regularly, and the eyes are beginning to receive their colour. The pigment cells are also increasing in number, and the tail is now so well developed that it begins to straighten and move.

In water having a temperature of 40 degrees Fahr. the embryo cod will hatch, or break through the egg, in twenty or twenty-one days after impregnation. It escapes by bursting its enveloping membrane with vigorous strokes of the tail. For a day or two previous, the imprisoned embryo has been showing by its constant movements that it was eager to enter on its new and freer life in the great world of waters. The tail is the weapon by which it effects its freedom and is usually pushed out first through the gaping opening. The body, with a yolk-sack hanging to its under side follows. The mouth and digestive organs are not yet formed; but the yolk-sack, which has been formed from the egg, and is large in proportion to the fish, contains deutoplasm, an albuminous substance, which furnishes its nutriment for the first ten or twelve days, until the mouth and digestive organs are developed and the young fish can seek food for itself.

The baby cod, thus liberated, at once makes attempts to swim; but its tail, for the first day after birth, remains covered, and in consequence its movements are circular, and it spins round in spiral fashion. Soon, however, the tail straightens and it is able to swim right ahead, and is seen gamboling through the water, evidently in a state of enjoyment. Its sack of food, however, greatly interferes with its movements, and it is not till this is absorbed that it can swim swiftly. During this period the cod nurslings are kept