

extruded polar body was seen in only one egg. It was spherical and lay between the egg and the fertilisation membrane. Fusion of the sperm and egg nuclei was not seen.

CLEAVAGE

Cleavage was unequal and spiral and appeared to follow the usual pattern. The numerous oil droplets of the unfertilised egg coalesced into four large drops, one in each of the endoderm cells. Two of the drops were larger than the other two, and this was a criterion of normal development as mentioned by Costello *et al.* (1957: 86).

GASTRULATION

Gastrulation was by epiboly producing a trochophore which rotated inside the fertilisation membrane for some time before hatching.

RATE OF DEVELOPMENT

At 7° C. jelly extrusion took 15 minutes, and the maturation divisions started 1 hour after insemination. The first cleavage occurred at 2½ hours, gastrulation began at about 18 hours, the trochophore began to rotate at 25 hours and hatched 30 hours after insemination. Higher temperature increased the rate of development especially during cleavage and gastrulation. At 15° C. cleavage began 2¼ hours after insemination and the trochophores hatched after only 18 hours.

TROCHOPHORES

The trochophores (Text-fig. 4A) were spherical when hatched and did not begin to elongate until 3 days later. The only cilia seen were those of the prototroch. This did not form a complete ring, but the extent of the gap was not established. There was no sign of an apical tuft. The stomodaeum showed as a small indented thickened area just posterior to the prototroch. Pigment was limited to a discontinuous ring of red spots immediately anterior to the prototroch and parallel with it. The trochophores swam randomly in dishes without showing any reaction to light or preference for a particular level in the water.

LARVAE

The trochophores passed rapidly into the two setiger stage (Text-fig. 4B) 4½ days after hatching. No single setiger larvae were seen. The intestine was visible running from the oil droplets to the pygidial plate, which was distinct from the second setiger. The pigment spots of the trochophore had disappeared, and small eyespots were present. A small telotroch had developed. Muscular movements had begun and the compound setae could be spread laterally or folded back against the body. Length of the larvae was 105 microns.

Next day the third setiger had formed and the intestine was developing. On the 7th day the anal cirri were noticed.

The pharynx was forming on the 8th day after hatching and the oil droplets had moved posteriorly into the intestine. An incomplete ring of metatrochal cilia had developed on each setiger just posterior to the setae.

Nine days after hatching the tentacles and the first pair of peristomial cirri were present (see Text-fig. 4C). There were now clearly two pairs of eyespots.

Some larvae began to feed on bacteria growing on the sides of the dishes at 11 days and all were feeding by the 15th day. The larvae (Text-fig. 4C) now had a length of 210 microns. By this time the oil droplets in the intestine were very small and quickly disappeared once feeding began. Peristaltic waves were seen passing along the pharynx and feeding appeared to be by suction. The jaws were first noticed on the 10th day and were quite distinct by the 15th. The setae were arranged in dorsal and ventral rami with a lobe of the parapodium projecting between the two rami.