ON THE EARLY DEVELOPMENT OF THE PIPE-FISH *SYNGNATHOIDES BIACULEATUS* (BLOCH)

On 6-2-1959 a mature male specimen of *Syngnathoides biaculeatus* (measuring 17.2 cm.) with the brood pouch full of fairly advanced embryos was brought to the aquarium at Mandapam. The development of the embryos was followed during the next three days.

There is very little published information on the development of Indian pipe-fishes. Jones & Menon (1953) described two embryonic stages and a juvenile of *Ichthyocampus carce* (Fam : Syngnathidae) from the Mahanadi estuary and Chilka Lake. Padmanabhan (1961) traced the early development of *Solenostomus cyanopterus* (Blkr) (Fam : Solenostomidae) from Trivandrum. However, Gudger (1906) gave a detailed description of the breeding habits and segmentation of the American syngnathid *Siphostoma floridae*. Duncker (1910) made some observations on the brood pouches of some pipe-fishes from Ceylon. Takai & Mizokami (1959) studied the early development of the Japanese syngnathid, *Syngnathus schlegali*.

Brood pouch and embryo : The brood pouch is abdominal and not covered by cutaneous folds. The embryos are arranged one layer thick with 6 longitudinal and about 24 transverse rows, in open cutaneous cells. But, Duncker (1910) observed that the eggs are arranged in 8 longitudinal and 23-28 transverse rows.

In *Ichthyocampus carce* (Jones & Menon, 1953) the brood pouch is caudal and is formed by the lateral folds immediately behind the anus, with the eggs arranged in

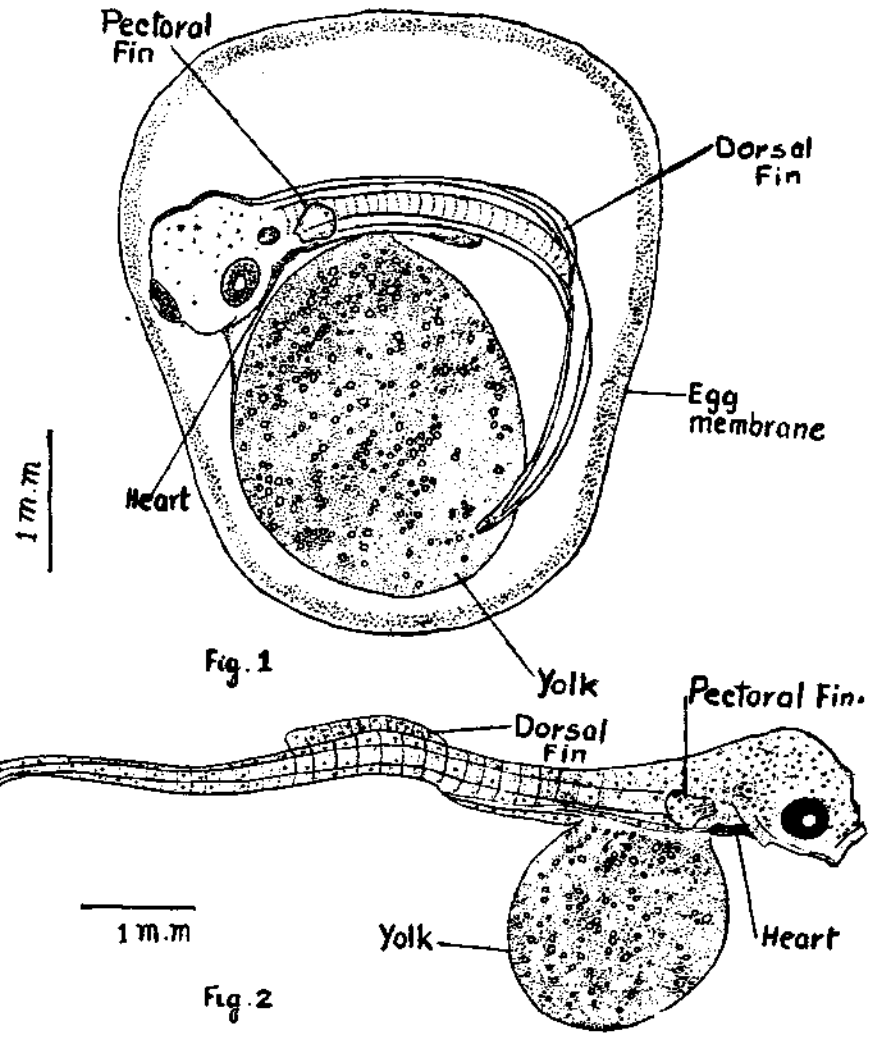

FIG. 1. Embryo inside the egg membrane.
FIG. 2. Newly hatched larva.

three irregular rows. In *Solenostomus cyanopterus* (Padmanabhan, 1961) the female bears the brood pouch which is formed by the pelvic fins and the eggs (over 300 in number) are attached at irregular intervals to the appendages of the filaments which are arranged along the fin rays inside the pouch.

Even at the time of first examination the embryos were in a fairly advanced stage of development and were quite large in size, each measuring 2.92 mm. in the long axis (fig. 1). The dorsal and pectoral fins were clearly differentiated and the tail

portion was free from the opaque yolk mass having numerous tiny and irregular oil globules. The eyes were fairly well developed and already black in colour. The heart was also fully formed and beating rhythmically. The otocysts were clearly visible. Pigment spots could be seen all over the cephalic region and at a few places on the trunk and tail.

Newly hatched larva : The larva hatched out in the afternoon of 9-2-'59 and measured 8.1 mm. (fig. 2). It had already attained the characteristic shape of the adult pipe-fish except that the pipe-shaped snout was extremely short and the yolk mass was still present though very much reduced in size. The dorsal and pectoral fins were well developed with rudiments of rays visible. The whole body (including the fins) was pigmented, with a heavier concentration of spots in the cephalic region. In *Ichthyocampus carce* (Jones & Menon 1953-embryo, stage II) the chromatophores are concentrated more on the trunk than on the head. Rudiments of abdominal and caudal annuli were discernible with seven of the latter under the dorsal fin. The larva, however, did not survive for more than a few hours.

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