In addition to the fishes a pair of the shrimps, *Pereclimenes brevicarpalis* (Schenekel) of unequal size, were found moving close to the mouth of the anemone. They escaped readily into it when disturbed and emerged unharmed after the anemone expanded out. A pair of the porcellanid crab, *Petrolisthes ohshimai* (Miyake) were also seen creeping along the margin of the anemone. It was seen that all the above animals were using the anemone for shelter and protection.

Yet another species of large, proliferating, irregular shaped anemone, the identity of which it was not possible to determine, also harboured *Amphiprion sebae*. The anemone exclusive to flat rock zone held on to the substratum by means of its short, broad, violetish base and measured about 200 cm. in width possessing hundreds of long (4 cm.), pointed, closely set, brownish tentacles. The anemone was flush with the base but for the tentacles and the thin disc. Its periphery was thrown into wavy flaps, swaying in the current. The fish *A. sebae* moved in and out of the lower side of the flaps hiding inside when disturbed. It was difficult to trace the fish underneath as they entered in one place and emerged from another flap, quickly moving under the cover of the anemone. The chances of the fish to ward off danger were greater than in the case of *Stoichactis giganteum*. Hence it may be that *A. sebae* have taken to this anemone in greater numbers as evidenced by the fact that more than a pair of these fish were seen with this anemone always. *Dascyllus* sp. were not seen with this anemone.

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K. NAGAPPAN NAYAR
S. MAHADEVAN

ON THE SEASONAL APPEARANCE OF FIN RAYS AND THEIR BEARING ON THE REPRODUCTIVE CYCLE OF *BRANCHIOSTOMA LANCEOLATUM*

In all systematic accounts on lancelets fin ray chambers of the dorsal and ventral fins are mentioned. These chambers contain the fin rays which do not correspond to the skeletal supports of the fin. In a lateral view, under low power, the fin ray chambers appear as rectangular spaces. These are filled fully for about 2/3 of each chamber by some substance or tissue of an opaque appearance. This mass is called a fin ray (Fig. 1.)

In the present study dredge collections of *Branchiostoma lanceolatum* were made regularly from the inshore area of Madras and were subjected to careful study.

Breeding season and gonadial development : Collections made during July to August and between December to February 1960-62 consisted of lancelets heavy with gonads. Therefore, it may be inferred that this species breeds twice a year. 9 out of 210 lancelets collected on 2nd April, 1962 had fully developed gonads. The rest appeared to have reproduced and the gonadial epithelium was shrunk. Thus it is possible that the breeding season may be prolonged from December even upto April.

Starting from the lancelets of 13.5 mm. length, the gonads appear. The gonads are formed in the mature forms usually about the month of July and December. The gonads develop in the ventral region of the myotomal edge and cause prominence on the body. Usually about 24 to 29 gonads appear in each

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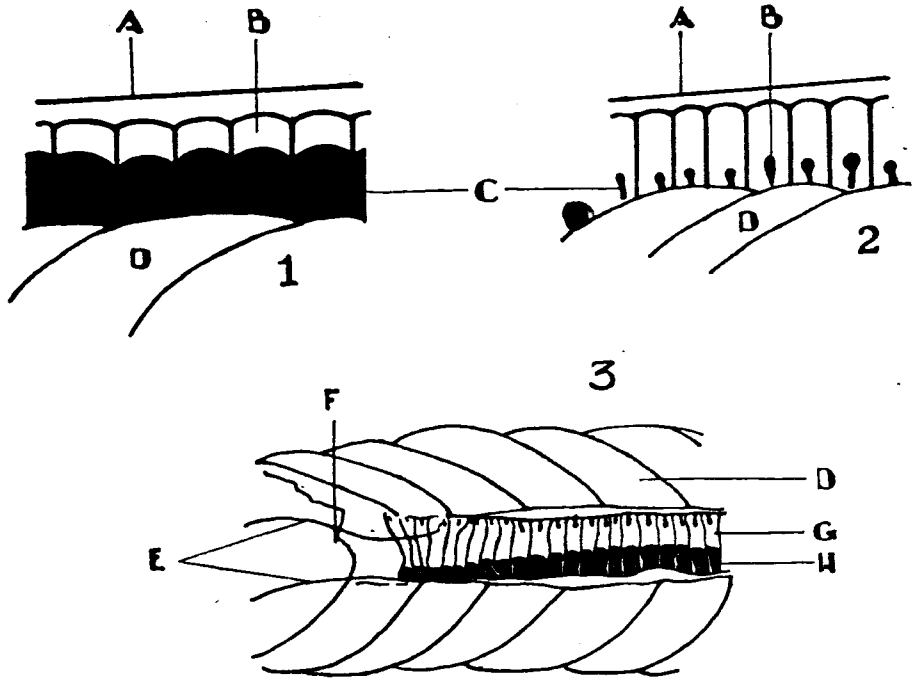
lancelet on each side. The number on one side may not correspond with the other side which may be less or more. Though the gonadial epithelium is formed in all the gonads of one lancelet, the development of gonadial cells and the maturity of the gonads begin from the middle of the gonadial series of each side. Later they develop in the myotomes in front and behind. Hence, when fully ripe, the middle ones appear far larger than the rest. The ripe gonadial cells are shed in the atrial cavity. The testes are white in colour and external swelling appears less defined in outline, whereas in the females the ovary is slightly yellowish in colour and when seen from outside, it has a well defined gonadial cell outline.



FIGS. 1 & 2. Seasonal variation of fin rays in dorsal fin. A. Dorsal crest. B. Dorsal fin ray chamber. C. Dorsal fin ray. D. Myotome.

FIG. 3. Seasonal variation of fin rays in ventral fin. E. Metapleural folds. F. Atriopore. G. Ventral fin ray chamber. H. Ventral fin ray. Other lettering as in Fig. 1.

Appearance and development of fin rays : In the present forms the fin rays are found only in the older matured ones, especially before the breeding season and at the breeding season they appear emaciated and stumpy in the middle of the chamber (Fig. 2). In the spent lancelets they are not in evidence leaving the fin chambers transparent. These fin rays appear again before the next breeding season.

The dorsal fin rays develop on the ventral side of the fin ray chamber flanked on either side by the free edges of the myotome. Like the gonadial development, the fin rays first appear from the middle region of the dorsal fin. Later they develop in the fin ray chambers in front and behind. Hence, in a fully developed condition the middle ones appear either far larger than the rest or completely filling the chamber. However, the ventral fin rays differ from the dorsal fin rays in that they are paired and develop almost equally at the same time in each chamber.

The utilization of one set of fin rays in the ventral fin may precede that of the other (Fig. 3). Sometimes the development of fin rays does not conform to the above pattern and may have irregular development.

The fin rays in their early developmental stages are pale yellowish in colour and turn into golden yellow colour in the process of time. These differences in colour must be related to the chemical composition of the tissue. Preliminary histochemical studies indicate that the fin rays are strongly sudanophil. It is very probable that these fin rays are deposits of reserve food to be used up by the lancelets during breeding season and the fin ray chambers are storage chambers. A detailed histochemical study is in progress.

I am thankful to Prof. C. P. Gnanamuthu for guidance and to Prof. G. Krishnan for his interest in the work.

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A NEW RECORD OF *PANULIRUS LONGIPES* (MILNE EDWARDS) FROM THE SOUTHWEST COAST OF INDIA

The lobster fishery of the southwest coast of India, in the rocky coast, south of Trivandrum, mostly contributed by the species *Panulirus homarus* (Linnaeus) has gained considerable importance due to the increasing demands for frozen lobster tails for export. During a regular sampling of this species for biological studies, on 12-12-1963, a specimen which was found to differ in several characteristics from *P. homarus* was obtained and identified as *Panulirus longipes* (Milne Edwards).

Although several species of *Panulirus* have been recorded as occurring along the Indian coasts by various authors, Alcock (1901), Gravely (1927), Rai (1933), Chopra (1939 & 1943), Prasad and Tampi (1957 & 1959), Miyamoto and Shariff (1961), Balasubramanyan *et al.* (1960 & 1961), Satyanarayana (1961) and George (1965), *P. longipes* has never been recorded before from this area. This species has a distribution in the Indian Ocean reef areas, being recorded from Zanzibar, Mauritius and Western Australia. Recently De Bruin (1960 & 1962) recorded this species in Ceylon (as *P. japonicus*). A great deal of confusion exists at present regarding the *P. japonicus—P. longipes* complex of Palinuridae, a revision of which is needed, as expressed by George (1962). Such a revision is being published by Dr. L. B. Holthuis and R. W. George in collaboration (personal communication). Meanwhile, the present specimen is found to agree with *P. longipes* in all diagnostic features in comparison to *P. japonicus* (Van Seibold) and *P. cygnus* George and hence reported as a new record from the area.

Material : 1 female specimen in total length 185 mm. and carapace length 64 mm. collected from a lobster trap catch off Muttom on the southwest coast of India from a depth of 10 m. (Lat. 8° 10'N., Long. 77°11'E.).

The antennular plate has 8 spines, four on each side, posterior to the principal pair of spines. A few smaller spines and tufts of setae are also present on this plate. The two sharp spines on the posterior margin of the thoracic sternum pre-