

ON THE BREEDING HABITS OF THE
COWRY *ERRONEA ERRONES* (LINNÉ)*

COWRIES are fairly common in the shallow areas of Palk Bay and Gulf of Mannar. The species commonly found in the area between Mandapam Camp and Mandapam has been identified as *Erronea erronea* (Linné). Satyamurti¹ records it as also occurring in Pamban, Krusadai and Shingle Islands. Schilder and Schilder² have differentiated this species into four geographical races. The species around this region seems to belong to the race *bimaculata* distinguished by features of the aperture of the shell which is narrow behind

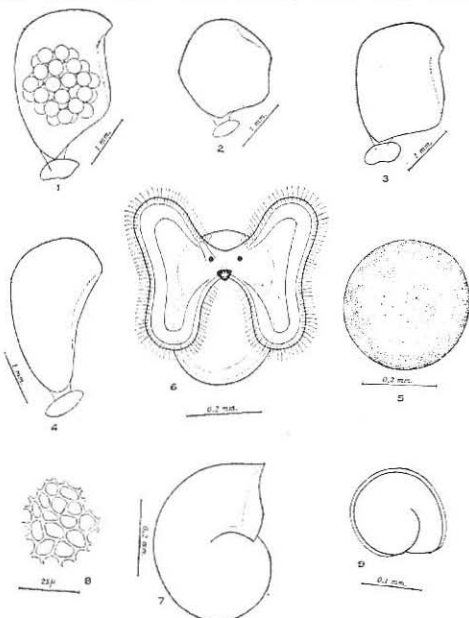
and much dilated in front. Ray³ gives an account of the systematics, habits and habitats, transformation, use, etc., of cowries. Hornell^{4,5} and Gravelly⁶ do not make any mention of the egg mass of cowries and no information is available on the reproduction of Indian cowries.

Lo Bianco⁷ was probably the first to describe the egg mass and brood-protecting habit in the genus *Cypræa*. Vayssière^{8,9} besides describing the egg masses of a few species of cowries, gives a small account of a preserved egg mass of *Cypræa erronea* of New Caledonia. The few details given by him differ from the present account.

The cowries were found upon the under-surface of the boulders or stones perching over the egg masses with the foot completely extended and covering the egg masses. The animal is quite restless when disturbed while brooding the egg mass. In one instance it was observed that when the adult specimen was completely removed from the egg mass and kept at about 4" away from it, it crept slowly back to its original position. Breeding was observed from September to April. According to Vayssière, the egg mass of the New Caledonian form is oblong, 11 mm. in length, 8 mm. in breadth and 2-5 mm. in thickness. It is found, however, that in the case of the Indian form the egg mass is nearly circular about 23-26 mm. across, and 8-10 mm. in height at the centre. It was observed that the capsules of these egg masses are deposited in 5-6 layers superimposed upon one another in the form of a cone, the lowest layer being the widest in diameter. The newly laid egg mass is yellowish in colour. It turns gradually brown and ultimately dull purple with the development of the larvæ. The four egg masses examined contained 481, 501, 507 and 517 capsules respectively. According to Vayssière, the capsule of the New Caledonian form contained 20-25 eggs. The number of eggs varies from 30-70 per capsule in the present species. On an average the number of eggs per egg mass will be about 24,500. All of them are potential embryos without nurse eggs.

The capsules are pouch-like and of different sizes and shapes (Figs. 1-4). Each one is provided with a base. Of the 25 capsules examined from different egg masses the length and breadth vary from 1.85-3.25 mm. and 1.35-1.85 mm. respectively. They are horny, glossy and transparent but of pale yellow colour. The larvæ escape through the distal end of the capsule. The eggs are yellowish brown. Vayssière does not give dimensions of the egg

of the New Caledonian species except that the eggs are 14 times bigger than that of *Cypraea staphylaea*. The newly laid unsegmented egg of the Indian form measures about 0.363-0.367 mm. across (Fig. 5). The newly-laid egg masses



FIGS. (1-4). The egg capsules of different sizes and shapes. FIG. 5. The egg. FIG. 6. The newly hatched Veliger. FIG. 7. The larval shell. FIG. 8. The sculpture of the larval shell. FIG. 9. The Operculum.

kept at the laboratory for observation either show abnormal development or no development at all and hence the exact date of development from the egg to the formation of veligers could not be given. Probably the eggs require the brooding care of the adult specimen until a certain stage of development. An attempt has been made to keep the adult brood-caring specimens at the laboratory in large glass troughs. The animal leaves the egg mass in a day or two at the most. But in the natural habitat the animal continues the brooding till veligers are about to hatch out from the capsules. However, in the egg mass of fairly advanced stages kept at the laboratory the further development was normal and the veligers are formed. Such an egg mass kept at the laboratory on 3rd September 1952 liberated the veligers after 11 days.

The newly hatched veligers measure 0.435-0.473 mm. across the shell (Figs. 6 and 7). The latter is pale brownish in colour with reticulate markings upon it (Fig. 8). The reticulation is only visible under high power and more

or less like that of the larval shell of *Simnia patula* described by Lebour.¹⁰ The extreme tip of the outer lip of the shell is pointed and provides support to the velum. The velum is bilobed and colourless with long cilia bordering the margin. There is a distinct subvelum with short cilia which lead the food currents towards the mouth. The eyes are distinct but only the right tentacle is present and the left one is not yet developed. The statocysts are not clear in the swimming posture of the larva. The foot is very well developed, bears cilia all over it and shows diffuse, black colouration. The operculum (Fig. 9) is colourless and distinct. While swimming the larval shell is either partly or fully surrounded by the mantle. The mouth, oesophagus, stomach and intestine are dark purplish in colour and are distinctly seen through the shell. The heart beat is clearly visible. The liver is yellowish and appears pressed against the stomach.

The larva has been kept alive at the laboratory for about 5 days. No visible changes were noticed during the time and it is probable that the larval period is of long duration. The larva at this stage of development is quite common in plankton collections from Palk Bay between September and April.

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1. Satyamurti, S. T., *Bull. Madras Govt. Museum, New Series. Natural History Section*, 1952, **1**.
2. Schilder, F. A. and Schilder, M., *Proc. Malac. Soc. London*, 1939, **23**, 119.
3. Ray, H. C., *Jour. Bom. Nat. Hist. Soc.*, 1951, **49**, 663.
4. Hornell, J., *Madras Fisheries Bulletin*, 1922, **14**, 97.
5. —, *Jour. Bom. Nat. Hist. Soc.*, 1949, **48**, Pts. 1, 2 and 3.
6. Gravelly, F. H., *Bull. Madras Govt. Museum, New Series. Natural History Section*, 1942, **5**.
7. Lo Bianco, S., *Mitt. Zool. Stat. Neapel*, 1899, **13**, 448.
8. Vayssiére, A., *Ann. Mus. Hist. Nat. Marseille Zool.*, 1923, **18**, 1-120.
9. —, *Ibid.*, 1927, **21**, 133-84.
10. Lebour, M. V., *Jour. Mar. Biol. Assoc.*, 1932, **17**, 107.