

anterior right region, on account of which the entire ribbon with the developing embryo inside at this stage had assumed a pale pink colouration. Thorson (1946) observed in *Philine scabra* Muller a similar excretory organ, carmine in embryos and jet black in the pelagic larvae. In general, most of the tectibranch larvae in their free swimming stages possess a large black excretory organ. Several hours later the veligers were liberated from the capsule but they were without eyes. They measured each 105μ along the long axis and their shells presented near the aperture a few parallel striations (Fig. 1, H). Further stages could not be obtained as they were quickly attacked by ciliates.

A detailed systematic study of the present form is being attempted.

Our sincere thanks are due to Dr. S. Jones, Director, for the keen interest he has shown in the preparation of this note, to Shri S. Mahadevan who collected the materials and for having placed them at our disposal and to Shri P. R. S. Tampi of the Central Marine Fisheries Research Institute for taking the photographs.

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THE PEARL WING SHELL, *PTERIA PENGUIN* (RÖDING) FROM THE ANDAMAN ISLANDS, INDIA

During a recent visit to the Andaman Islands in January-February, 1961, the writer obtained two pearl wing shells which were collected by a diver in the waters of about six fathoms depth in the vicinity of the Havelock Island in Ritchie's Archipelago. As these shells are hitherto very little known from the Indian waters, in the following account their conchological characters are described with notes on the taxonomy and distribution of *Pteria penguin* (Röding) to which they have been ascribed under the family Pteriidae of Bivalvia. The shells from the aforesaid locality have also been compared with those of the same species from the pearl pairs of the Gulf of Mannar.

The shells from the Andaman Islands are inequivalve, the left valve in each being larger and deeper than the right valve which fits over the former like a lid. The hinge is fairly long and straight, the anterior and posterior auricles are well developed and the longest axis of the body of the shell is directed backwards forming an acute angle

with the hinge line from the umbonal region. The outer surface of the valves is scaly with the periostracal layer coloured black. It was tinged green when the animals were collected fresh. Oysters barnacles and some calcareous algae were found profusely infesting the shells. The internal surface of the valves is lined by a silvery white nacreous layer with a black non-nacreous border, which is wide in the mid-postero-ventral margin of each valve but gradually becomes narrower in front and behind. In the region of the anterior and posterior auricles the non-nacreous border is extremely narrow. The nacreous region is a little copper coloured along the border and it spreads over to a greater extent in the left valve than in the right valve. The anterior auricle is well developed and more or less triangular in shape, whilst the posterior auricle though equally well formed is narrow. There is a clear impression of the adductor muscle in the mid-postero-dorsal region of each valve. The shells are found attached by strong byssus to dead coral.

The inner views of both the valves of the two shells in Fig. 1 (A & B) and their linear measurements are given in Table 1. As could be seen from them both the



FIG. 1. *Pteria penguin* (Röding). A & B, specimens 1 and 2: l.v., left valves; r.v., right valves.

auricles, proportionately to the long axis of the body, are of greater size in the smaller shell than in the larger one. Apparently in these shells as growth takes place there is a greater increase along the long axis of the body than along the axis on the hinge line.

The genus *Pteria* Scopoli 1777, according to Jameson (1901) is divisible into three

sub-genera viz., (1) *Pteria* s.s. in which the hinge is large, the anterior and posterior auricles are well developed and the longest axis of the body of the shell is directed backwards at an acute angle from the hinge line, (2) *Margaritifera* (Synonymous with *Pinctada* Röding, vide Prasad and Bhaduri, 1933) where the hinge is of moderate length, the anterior auricle is well formed, the posterior auricle when present is poorly developed and the longest body axis is at right angles to the hinge line and (3) *Electroma* Stoliczka in which the hinge is short, the posterior auricle absent and the longest axis is as in *Pteria* s.s. directed backwards. It may be seen that the shells described here are referable to the subgenus *Pteria* s.s.

TABLE I

Linear dimensions in millimeters of *Pteria penguin* (Röding).

Particulars of dimensions	Specimen 1 (From Havelock Is.)		Specimen 2 (From Havelock Is.)		Specimen 3 (From Gulf of Mannar)	
	Right valve	Left valve	Right valve	Left valve	Right valve	Left valve
Hinge length	148	148	114*	115*	94	94
Umbo to anterior extremity of the hinge	24	25	25	25	34	32
Umbo to ventral extremity along the longest axis	186	185	124	123	156†	154†
Umbo to nacreous margin along the longest axis	127	152	85	106	116	150
Middle of byssal notch to anterior end of hinge	54	45	46	40	56	47
Length below the level of byssal notch	107	111	78	80	—	—
Thickness of the valve	20	32	16	22	34	32

* Tip of posterior auricle broken.

† Free borders broken.

The genus *Avicula* described by Reeve 1857 is synonymous with *Pteria* s.s. of Jameson. Two of the species figured by Reeve (1858) viz., *A. macroptera* and *A. lotorium* are of importance in assigning the systematic position of the Andaman shells. Most Conchologists are of the opinion that these two species are identical. Of the two species, *A. macroptera* has priority over *A. lotorium*. *Pinctada penguin* Röding 1798 having a priority over *A. macroptera* (Lamarck) and as the generic names *Pinctada* and *Avicula* are to be replaced by *Pteria*, the form should be named *Pteria penguin* (vide Prasad, 1932).

Some pearl wing shells from the pearl pairs of the Gulf of Mannar off Tuticorin coast have also been examined and the dimensions of one of the shells are given in Table 1. As compared with the shells of the Andaman sea those of the Tuticorin coast are much thicker in texture, the anterior auricles in both the valves are well developed and the posterior auricles are much reduced. The general contour is the same in shells from both the localities. A pearl wing shell from the Gulf of Mannar has been described as *Pteria lotorium* (Lamarck) by Satyamurti (1959), the identification of the shell having been based upon the smallness of the anterior auricle, which with a truncated edge as shown in his text figure 2 on page 75 is apparently broken,

Prashad (1932) is of opinion that the Lamarckian species, *P. lotorium* is based on slightly different shells of his earlier species, *P. macroptera* and that these two species are therefore synonymous. The configuration of the auricles alone, which is subject to variation according to size as revealed by the examination of shells from the Andamans, is of little significance in determining the species. The shells from the Andaman sea and from the Gulf of Mannar are referable to *Pteria penguin* (Röding).

P. penguin is a widespread species and the extent of its distribution is from 'Australia to Madagascar' (Prashad 1932). The species is common throughout the Indo-Pacific region. It abounds off the coasts of Japan and nearby islands where it is successfully employed by the Japanese technicians for culturing large sized hemispherical pearls.

The writer has great pleasure in offering his thanks to Dr. S. Jones for the interest he has shown in the preparation of this note and to Shri K. G. Nambiar for taking the photographs of the shells.

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A NOTE ON THE OCCURRENCE OF THE BLUE GREEN ALGA *APHANOCAPSA LITTORALIS* HANSG. VAR. *MACROCOCCA* HANSG. CAUSING COLOURATION OF THE SAND AND ITS RELATION WITH THE TIDES

Though there are many reports, from various parts of the world, about organisms inhabiting intertidal sands causing colouration and the tidal rhythm of the causative organisms, little attention seems to have been paid to these in India. Dixit (1936) reported the occurrence of *Aphanocapsa littoralis* var. *macrococca* on the Chowpathy sea-shore in Bombay but no information has been given about its relation with the tide. Recently, Ganapati, Rao and Rao (1959) reported the tidal rhythms of some diatoms and dinoflagellates inhabiting the intertidal sands of the Visakhapatnam Beach. The present note is based on the occurrence of a blue-green alga causing a green colouration of the sand at Karwar Beach in the North Kanara Coast.