

A New Habitat for *Loxosoma phascolosomatum* Vogt.

By

D. Atkins.

With 4 Figures in the Text.

Loxosoma phascolosomatum was first described under that name by Vogt (6) in 1876 when he discovered it at Roscoff on the posterior extremity of *Phascolosoma elongatum* and *P. margaritaceum*, where it forms a small tuft. It had probably been observed previously by Norman (4), and described by him in 1861 (3) as tentacular appendages of "Strephenterus claviger"; he found it on gephyreans dredged in 1858 from Bantry Bay. Barrois (2, p. 8) mentions that he also saw this species in 1874-75, before the publication of Vogt's paper, at Roscoff, where it was abundant on sipunculids. Since then it has been recorded as occurring on Phascolion by Andersson (1) in East Greenland, and by Norman (5) in East Finmark.

While I was working on *Loxosoma* at Plymouth, in September, 1923, Dr. Orton brought to my notice some organisms attached to the outer surface of the shell of certain minute bivalves, *Lepton clarkia* and *Montacuta bidentata*. These proved on examination to include acinetarians, *Perigonimus* sp., and a species of *Loxosoma*, which is almost certainly *L. phascolosomatum*.

L. clarkia and *M. bidentata* occur associated with *Phascolosoma pellucidum*, being found in their burrows in the mud of the Salcombe Estuary; the former is the more common. These bivalves may occur either free in the burrows, partly embedded in the walls, or loosely attached to the gephyreans (Orton, J. H., "Nature," Vol. 112, Dec. 15, 1923, p. 861). It was found that if the *Lepton clarkia* were placed in a bowl of sea-water with a gephyrean for twelve hours or more some became attached; the attachment was of a slight kind, for when the water was changed the current from the syphon detached the shells. Of thirty-four specimens of *Lepton* and *Montacuta* all but five carried the *Loxosoma*. They were most frequently found round the edge of the shell, where they might be supposed to derive the greatest benefit from the current of water passing between the valves of the mollusc, but in some cases much of the surface of the shell was covered with the polyzoan (Fig. 1).

The large individuals are usually seen lying along the edge of the shell with the long stalk looped or curved (Fig. 2); it is generally the younger forms only in which the stalk is straight, standing out beyond the shell margin (Fig. 3). The chief movement of the *Loxosoma* is twisting or bending from side to side. The stalk is rarely seen extended to its full length; it is usually somewhat contracted when it may be very broad, in some cases nearly as broad as the calyx. Vogt says of his specimens that the lower extremity of the stalk was pointed like the nib of a pen, and there was no special organ of attachment; in his Fig. 1, Pl. I, it is

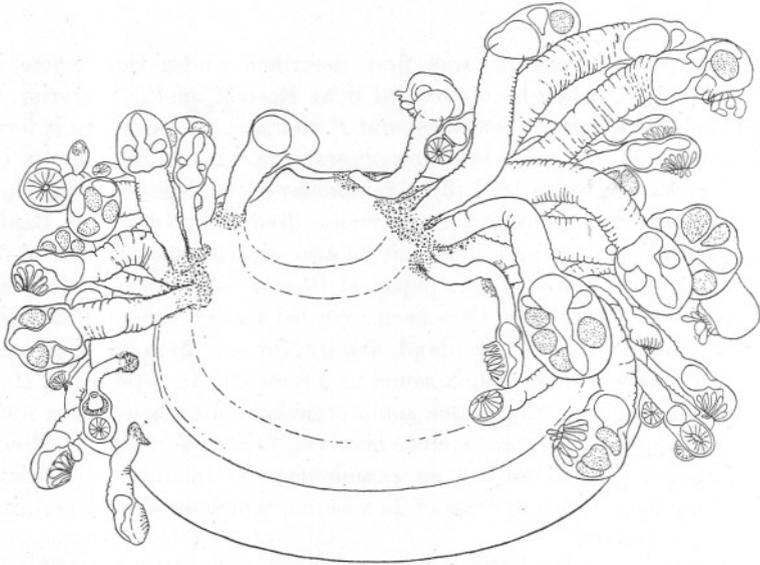


FIG. 1.—Sketch of *Loxosoma phascosomatum* on shell. The individuals are mostly female, some with embryos in the vestibule. They are somewhat contracted, the cuticle of the stalk is ringed. Small particles are seen adhering to the secretion by which the foot is attached to the shell. Alum carmine, oil of winter green. $\times ca. 41\frac{1}{2}$.

shown ending in a curious bisected extremity; in the specimens from Lepton and Montacuta the stalk ends in a small disc of attachment.

It is difficult to obtain measurements of large individuals owing to their generally curved condition; some measurements of rather small living specimens with straight stalk are as follows:—

Total length in mm.	Length of calyx in mm.	Length of stalk in mm.	Breadth of calyx in mm.
.5	.23	.27	.18
.69	.27	.42	.21
.78	.22	.56	
1.01	.29	.72	

The lophophore is large and very oblique. The tentacles are extremely difficult to count, as they are usually more or less retracted, and even when most fully extended are somewhat bent; this peculiarity was noted by Vogt. The number of tentacles in the adult appears to be twelve or more.

On either side of the calyx, slightly above the lower level of the lophophore, are the sense organs, one on either side, which are characteristic of *L. phascolosomatum*. These are often practically invisible, they contract and sink below the surface when their position is only marked by a slight elevation of the cuticle.

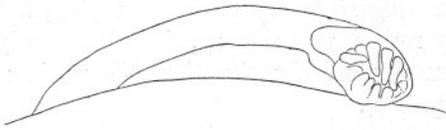


FIG. 2.—Sketch of a specimen lying along the edge of a shell. $\times 63$.

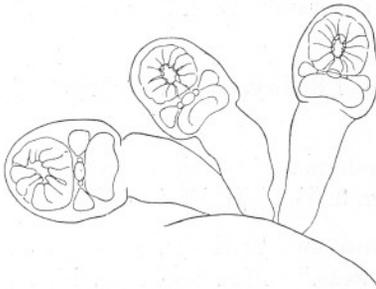


FIG. 3.—Three rather small male individuals attached near the edge of a shell, and standing out beyond the shell-edge. $\times 63$.

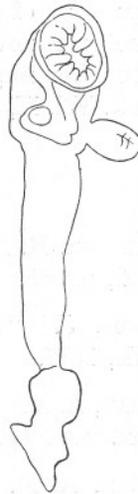


FIG. 4.—A specimen with a bud on either side. The cuticle of the lower part of the stalk is thickened, and was yellowish in colour. $\times 63$.

Ciliary movement was seen near the outer and lower border of the rather conspicuous dumb-bell shaped nerve ganglion, presumably indicating the position of nephridia.

Both male and female individuals were seen; the individuals of a colony are, as observed by Vogt, mostly of one sex (Fig. 1). In the living animal the testes and seminal vesicle of the functionally male individual are very conspicuous, the latter having the appearance of a tangled skein. Many of the females carried a varying number of embryos in the vestibule. The larva is like that figured by Vogt.

Many of the *Loxosomas*, both male and female, had buds (Fig. 4); the number of buds is apparently small, but not restricted to two, as Vogt supposed; the greatest number seen was five—three on one side,

one of which was very small, and two on the other. The buds have a large foot gland and duct or groove (pedal body and pedal gland respectively of Vogt). In the larger buds still attached to the parent that part which is traversed by the groove of the gland is sometimes strongly curved, the bud twisting backwards and forwards.

So far as I have been able to ascertain this is the first *Loxosoma* described as occurring on a mollusc; it is curious that though the gephyreans (*P. pellucidum*) were carefully searched, none were found on them; but Mr. Nunn told me he had sometimes found, when preserving *Phascolosoma pellucidum* at Plymouth, a few stray *Loxosoma* actually on the gephyreans. *L. phascolosomatum* is also, as is well known, found on the caudal extremity of *Phascolosoma vulgaris* in the Salcombe region, but this gephyrean is now apparently rare in the Estuary, though formerly it could be taken in good numbers in particular situations (Journ. Mar. Biol. Assoc., Vol. II, N.S., 1900, p. 164).

LITERATURE.

1. ANDERSSON, K. A. "Bry-Schwed. Exp." Zool. Jahrb. Syst., XVI, 1902, p. 555.
2. BARROIS, J. "Recherches sur l'Embryologie des Bryozoaires." Lille, 1877.
3. NORMAN, A. M. "On an Echinoderm new to science from Ireland." Ann. and Mag. Nat. Hist., Ser. 3, Vol. VII, Pt. ix, 1861, p. 112.
4. NORMAN, A. M. "On *Loxosoma* and *Triticella*, genera of semi-parasitic Polyzoa in British Seas." Ann. and Mag. Nat. Hist. (5) 111, Feb., 1879, p. 133.
5. NORMAN, A. M. "Notes on the Natural History of East Finmark." Ann. and Mag. Nat. Hist., (7) XI, 1903, p. 574.
6. VOGT, C. "Sur le *Loxosome* des *Phascolosomes* (*Loxosoma phascolosomatum*)." Arch de Zool. Exper. et Gen., T. v, 1876, p. 305. Translated by T. Hincks, Q.J.M.S., Vol. XVII, 1877, pp. 353-76.