

ABBREVIATIONS USED IN FIGURES—*a.*—auricle; *a.d.*—anterior digestive gland opening; *a.o.*—anterior oesophagus; *b.v.*—blood vessel; *c.m.*—circular muscle layer; *cn.t.*—connective tissue; *ct.*—ctenidium; *d.gr.*—dorsal groove; *d.g.*—digestive gland; *ep.*—epithelium; *f.*—foot; *i.*—intestine; *k.*—renal organ; *k.o.*—renal opening; *k.s.*—renal sac; *l.g.*—lateral glandular area; *l.m.*—longitudinal muscle; *l.s.g.*—left salivary gland; *m.o.*—mid-oesophagus; *od.*—odontophore; *oes.*—oesophagus; *os.*—osphradium; *pb.*—proboscis; *p.d.*—posterior digestive gland opening; *p.m.*—protractor muscle; *p.o.*—posterior oesophagus; *pr.*—prostate; *r.*—radula; *rh.*—rhynchostome; *r.m.*—retractor muscle; *s.*—siphon; *s.d.*—salivary duct; *st.*—stomach; *t.*—testis; *v.*—ventricle; *v.d.*—vas deferens; *v.l.*—valve of Leiblein.

With the small amount of material available no complete anatomical investigation could be made. The proboscis, oesophagus and salivary glands of *Ratifusus mestayerae* were sectioned and stained with Mallory's triple stain.

Ratifusus mestayerae (Iredale)

- 1855. *Pisania reticulatus* A. Adams Proc. Zool. Soc., 1854: 138.
- 1913. *Pisania reticulatus* A. Adams: Suter Man. N.Z. Moll., 392, Pl. 45, fig. 12.
- 1915. *Fusus mestayerae* Iredale; Trans. N.Z. Inst., 47: 466 (new name for *Fusus reticulatus* A. Adams not of Blainville).
- 1962. *Ratifusus mestayerae* (Iredale) Macpherson and Gabriel, Marine Molluscs of Victoria, 158, fig. 189.

GENERAL APPEARANCE

The short snout, large foot and rather long tentacles are reddish-brown on their upper surfaces, while the rest of the animal is white. The small, yellow operculum (Fig. 8) has a terminal nucleus and would not be fully functional in closing the shell aperture.

The animal removed from its shell (Fig. 1) shows the usual stenoglossan pallial organs. A large, brown osphradium (*os.*) below, and to the left of, the somewhat larger ctenidium (*ct.*) is readily seen through the roof of the mantle cavity. No conspicuous hypobranchial gland is present, though this is probably due to the condition of the material. Behind the large mantle cavity, and on the left, is the white heart (*a. v.*) while on the right is the pale brown renal organ divided into an anterior glandular half (*k.*) and a posterior thin-walled sac (*k.s.*). The conspicuous, long stomach (*st.*) dominates the next portion of the visceral mass. Alongside the stomach, and continuing above it is the brown digestive gland (*d.g.*) which, together with the gonad (*t.*), make up the uppermost portion of the visceral coil.

THE ALIMENTARY CANAL

The reddish-brown proboscis (*pb.*) lies coiled up in the proboscis sac (Fig. 2) when retracted and is visible through the thin roof of the body cavity. It is elongate and tapers only gradually to an almost pointed tip. There is a short, white anterior portion which lies, when retracted, in the narrow, weakly muscular anterior part of the proboscis sac. This is pushed to the right by the left salivary gland (*l.s.g.*). Behind the salivary glands the proboscis sac is spacious and has membranous walls. Only a narrow strip of pigmented, muscular wall surrounding the base of the proboscis could possibly be introverted. Over most of its length (Fig. 5) the proboscis wall is composed of a very loose inner layer of longitudinal fibres (*l.m.*) and a very narrow, elastic, circular muscle layer (*c.m.*) beneath the cuboidal, pigmented epithelium. The proboscis cavity contains the oesophagus (*oes.*), which is not connected to the proboscis wall, a pair of large ventral nerves (*n.*) and, below these, a median artery (*b.v.*) with relatively thick, muscular walls. Near the distal end of the proboscis (Fig. 6) the proboscis cavity contains a mass of connective tissue (*cn.t.*) and, while the outer wall has only a few longitudinal