

fibres, the circular layer is unchanged. The tiny odontophore, with a single thickness of cartilage cells on each side, is surrounded by a thin muscular sheath. The minute radula, no longer than the odontophore protrudes into the oral cavity which is barely distinguishable from the rest of the oesophagus. A radular protractor muscle lies in front of the odontophore and a retractor behind. The salivary ducts, lying in the wall of the oesophagus, become swollen and slightly convolute just before they terminate in front of the odontophoral aperture.

The radula (Fig. 7) is very minute, being only 0.3mm in length, but is of the typical rachiglossan pattern. The radula mounted had four cusps on one lateral and three on the other. The broad central tooth is 10μ in width and has a pair of basal flanges and seven cusps of nearly even height, the median one slightly larger.

The proboscis sac opens at a slit-like rhynchostome (rh.) situated on a short snout. The rhynchostome is surrounded by a sphincter muscle and is longitudinally ridged internally. Immediately behind the sphincter there are thick annular folds but these terminate just behind the eyes where the proboscis sac wall becomes thinner. A pair of powerful retractor muscles (r.m.) is situated at the base of the proboscis sac just above the end of the introvert. A few, weak, protractor muscle (p.m.) strands lie along the sides of the proboscis sac, but they can be of little functional significance apart from attaching it to the body wall against which it is closely applied on both sides.

The left salivary gland lies above the proboscis sac and the right is below. The glands are compact, white bodies in which islands of purple staining cells lie in an otherwise uniform mass of weakly staining cells; both types having granular contents. The salivary ducts (s.d.) are very narrow, ciliated, a short portion being free before they enter the wall of the anterior oesophagus in front of the nerve ring. The anterior oesophagus (a.o.) is a transparent tube with a pair of lateral internal ridges containing the salivary ducts. These ridges (the dorsal folds) are covered with a non-ciliated pavement epithelium unlike the short columnar cells lining the rest of the oesophageal wall. A very thin circular muscle coat surrounds the oesophagus externally. Immediately behind the point of entry of the salivary ducts a slight swelling with a transverse band of columnar gland cells indicates the valve of Leiblein (Fig. 3, v.l.) and marks the beginning of the mid-oesophagus. The very narrow portion of the mid-oesophagus which passes through the nerve ring is internally ridged and slightly glandular but it expands behind into a wide, somewhat flattened, white, glandular structure (m.o.). A minute caecum-like portion of this glandular section is cut off where the visceral nerve passes over the oesophagus. In section (Fig. 4) the glandular portion of the mid-oesophagus is almost oval, flattened on the inner side, and has a dorsal, non-glandular groove (d.gr.) lined with a non-ciliated cuboidal epithelium. This groove is bordered by a pair of inconspicuous ridges, the remnants of the dorsal folds. At the point where the glandular region commences the dorsal groove appears to be ventral in position, but it swings dorsally a little further posteriorly where it remains through the remainder of the mid-oesophagus. However, it is not possible to be entirely certain of this observation as some of the sectioned material was cut obliquely. There is in addition a broad, ciliated, mostly non-glandular channel ventrally. The lateral walls (l.g.) are lined with irregular folds and these bear short, red staining and mucoid gland cells and ciliated cells. There is no trace of a gland of Leiblein. The anterior portion of the glandular part of the mid-oesophagus lies beneath the proboscis sac but it is displaced to the left by the right salivary gland. It then curves to the right and emerges behind the proboscis sac where it passes dorsally to the left side. At this point the longitudinally ridged, non-glandular posterior oesophagus (p.o.) begins. This section of the oesophagus is broad and short and connects with the left side of the anterior end of the stomach.