Locomotion of Leech

There are two principal methods of locomotion:
(1) Swimming. (2) Crawling or Looping movement.

(1) Swimming

The leech swims gracefully through water by undulating its body in a snake-like fashion. During swimming the dorsoventral muscles are tonically constricted, circular muscles are relaxed, whilst waves of contraction pass along the longitudinal muscles at the two sides of the body alternately.

(2) Crawling or Looping movement

Crawling on a substratum is comparable to that of a looping caterpillar. The suckers play their part alternately as the organs for adhesion. Actual locomotion is effected by changing the length of the body. At first the posterior sucker is attached to the substratum. This produces a wave of contraction to pass forwards along the circular muscles, whilst the longitudinal muscles are kept in a relaxed state.

The result is the extension of the body forwards to its greatest length. The animal now fixes its anterior sucker upon the substratum. This produces contraction of the longitudinal muscles and simultaneous relaxation of the circular muscles.

The posterior sucker is released from the substratum and the contracting longitudinal muscles drag the posterior sucker forwards, whereby the body becomes arched and assumes the shape of a loop. The posterior sucker is then fixed to its new position just behind the anterior sucker and the whole process is repeated over and over till the animal reaches its destination.

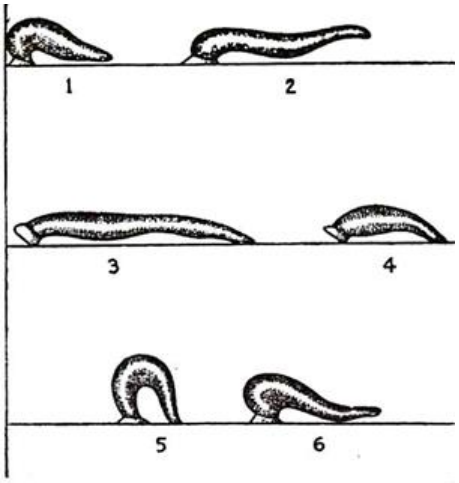
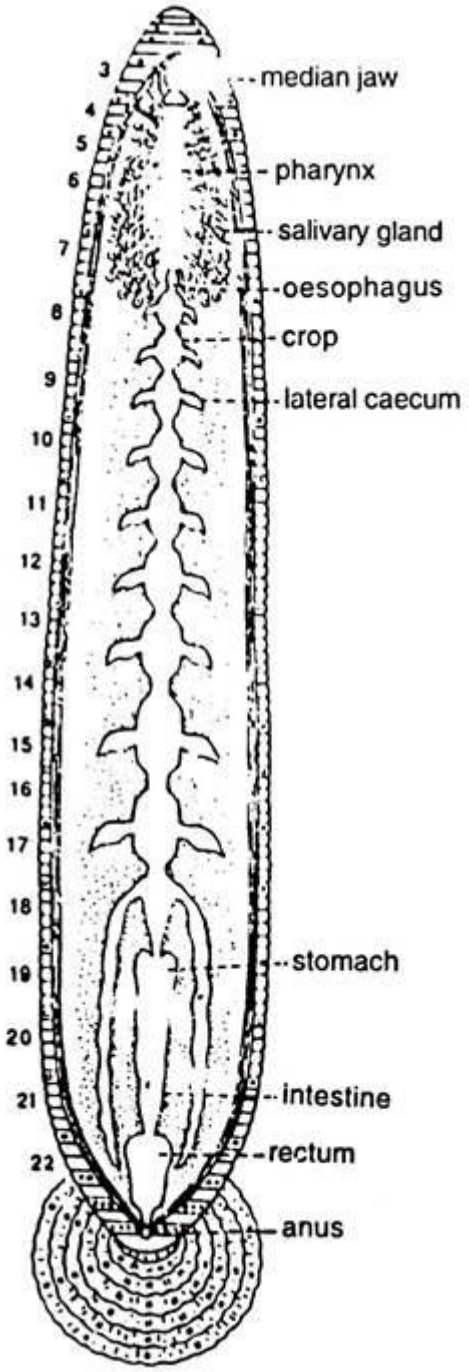


Fig. 78. Successive stages illustrating the crawling movement of a leech.

Digestive System of Leech (Hirudinaria)

The alimentary canal is a straight tube, beginning in the anterior ventral mouth and ending in a posterior dorsomedian anus.



Mouth

A triradiate opening at the base of the preoral chamber in the anterior sucker and guarded by the velum.

Buccal cavity

A small chamber behind the mouth, opening in the pharynx. Three jaws—one dorsomedian and two ventrolaterals are present on the walls of the buccal cavity.

Jaw

It is a compressed muscular cushion, with a sharp, evenly curved free edge, covered with chitin, produced into numerous striations or teeth. Each jaw can be moved forward and backward through a certain arc, and the three acting together produce the typical triradiate wound in the skin of the prey.

The jaws bear papillae on both sides, bearing the openings of the unicellular salivary glands.

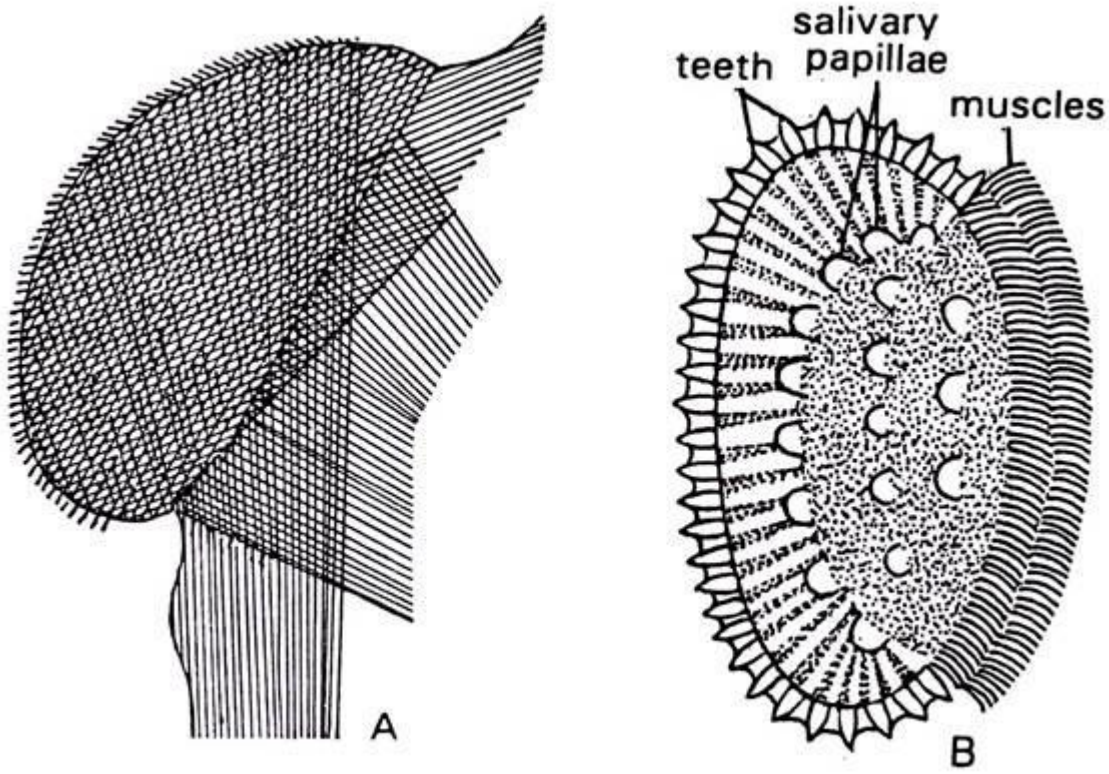


Fig. 24.30. Hirudinaria sp. Jaw. A. Frontal view, B. Lateral view

Pharynx

A small, muscular chamber between the buccal cavity and the oesophagus. Numerous unicellular salivary glands are lodged in the space between the

pharyngeal wall and body wall. Their secretion is discharged close to the mouth. Radial muscles run from the pharyngeal wall to the body wall.

Oesophagus
Small and joins the pharynx with the crop.

Crop

It is the largest part of the alimentary canal. The crop is thin-walled and extends from 8 to 18 segments and produced into eleven pairs of lateral, blind pouches or caeca. The first ten pairs are laterally directed, corresponding to each segment, while the last pair runs backwards as far as the 24 segments.

a. The lumen of the crop is divided between the pairs of pouches, corresponding to each segment by a transverse septum with an opening, controlled by sphincter.

b. The crop is capable of great dilatation and communicates with the stomach by a minute aperture.

Stomach:
A small, thin-walled chamber in the 19 segment, broad anteriorly and narrowing posteriorly, ending in the intestine. The wall bears transverse folds. Intestine. It is a continuation of the stomach, located in 20 to 22 segments. The intestine is narrow, thin-walled and bears longitudinal and transverse folds. It narrows posteriorly and opens in the rectum.

Rectum:
Thin-walled, extends from 22 to 26 segments and opens through the anus on the dorsal surface of the 26 segment in the last annulus.

Feeding in Leech (Hirudinaria)
The leech is a sanguinivorous animal, feeding on the blood of vertebrates. A crop- full of blood provides nourishment for several months.

i. The leech attaches itself to the victim’s body with the posterior sucker.

ii. The cup-shaped anterior sucker is pressed against victim’s skin; the jaws are protruded and the serrated margins of the jaw come in contact with the skin.

iii. With the operation of the muscles, the jaws move to and fro; a triradiate wound is
made in the skin and blood starts flowing out.

iv. Alternate contraction and expansion of pharynx due to the action of the radiating pharyngeal muscles, create a suction force and blood is sucked into the pharynx.

v. Secretion of the salivary glands containing hirudin, an anticoagulant, mixes with the blood, coagulation is prevented and the steady outflow of blood continues.

vi. Blood is stored in crop and its caeca; haemolysed and transformed into a jelly-like mass.

Digestion in Leech (Hirudinaria)

1. The sphincter between the last crop and the stomach controls blood flow and a small amount passes at a time from the crop to the stomach. The colour of the blood turns green from red.

2. The proteolytic enzymes secreted in the stomach digest blood.

3. Absorption takes place in the intestine and the residue is egested through the anus.