9.ARTHROPODA

General Characters:

- Arthropods are segmented animals with jointed legs and whitinous exoskeleton. It is the largest phylum comprising about 80% of the known species. This phylum is characterised by the following salient features.All arthropods are *bilaterally symmetrical* animals. The body wall is *triploblastic* consisting of three layers, namely the *ectoderm*, **the** ***endoderm*** and the *mesoderm.*

- Coelom is *a* ***haemocoel*** filled with a blood-like *haeinocoelic fluid*. *T*rue coelom is reduced to small cavities around the gonads.

- The body is segmented (metamerisin). Arthropods exhibit ***tagmatization***. **T**agmatization means that the segments are functionally modified and grouped into two or three divisions called ***tagmata.***

- A distinct *head* is present. The body is covered by an exoskeleton formed of *chitin.*

- The body bears paired *jointed appendages.* 9. They have the ***organ system grade*** *o*f organization. Respiration is by *gills or trachea or book lungs.*

- The circulatory system is of an *open type.*An *endocrine system* is developed. Excretion is by *green glands or malphigian tubules.*

- They have ***compound eyes***..Sexes are separate in their case. Gonads have *gonoducts*., Development is *direct or* ***indirect***.

CLASSIFICATION:

- The phylum *Arthropoda is* classified into 7 sub .They are the following:
  - *Onychophora*
  - *Tardigrada*
  - *Pentastomida (Linguatulida)*
  - *Trilobitomorpha*
  - *Chelicerata*
  - *Pycnogonida*

DETAILED STUDY OF TYPES:

❖ Prawn (Penaeus)

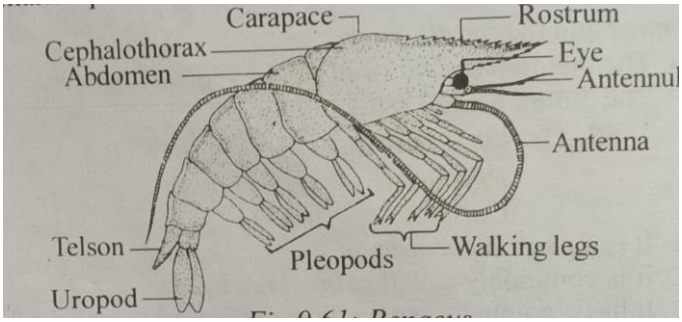
Phylum : Arthropoda
Class : Crustacea
Order : Decapoda

- Prawn is a crustacean included in the *Phylum Arthropoda.* It is aquatic, segmented and gill-breathing animal with jointed appendages..

- *Decapoda* Prawn is a crustacean included in the *Phylum Arthropoda.* It is aquatic, segmented and gill-breathing animal with jointed appendages. *Penaeus* is a common marine prawn. *Palaemon* is a common freshwater prawn.
- Prawn has an elongated and spindle-shaped body. The body is segmented and it is formed of 19 segments. It has two main regions, namely the anterior *cephalothorax* and the posterior *abdomen.* The cephalothorax is formed of 13 segments and the abdomen is formed of 6 segments. The segments in cephalothorax are fused together but in the abdomen the segments are free and distinct.
- The cephalothorax is formed by the fusion of two regions, namely the *head* and the *thorax.* The head is formed of 5 segments and the thorax is formed of 8 segments.
- The body and the appendages are covered by chitin. The chitin is very hard and it forms a well developed ***exoskeleton***. It protects the body. In each segment the exoskeleton has a dorsal piece called ***tergum*** and a ventral piece called *sternum.* The cephalothorax is covered by a broad

plate called *carapace or dorsal shield.* Anteriorly the carapace is produced into a median spine called ***rostrum.***

- The carapace is attached to the body on the dorsal side, but it is free on the lateral sides. Thus on either side of the thorax, the carapace hangs down as a flap called *branchiostegite or gill-cover*. The space lying between the branchiostegite and the body is called ***gill chamber* or *branchial chamber.***
- These membranes facilitate movements between the segments. Ventrally the tergum extends downwards on either side as a membrane called ***pleuron.*** The appendage of each segment is connected with the pleuron by a small plate called *epimeron.*
- Each appendage is formed of many segments called *podomeres.* The appendages do various functions like the sensory function, feeding, locomotion, respiration, copulation, etc. Each appendage is specialized to do a particular function. The appendages are variously modified according to their functions. Even though the appendages do different functions, they are all constructed on a similar fundamental pattern..



A TYPICAL APPENDAGE

- An abdominal appendage can be taken as a model in studying the structures of the appendages of prawn.
- It consists of a basal region, called *protopodite m*ade up of two segments or *podomeres*, namely *coxa a*nd *basis.* The segment by which the appendage is attached to the body is called *coxa* and the distal segment is known as ***basis.***
- The basis bears two finger-like processes. They are the ***exopodite* and the *endopodite*.** The exopodite is larger than the endopodite and it lies outwardly. The endopodite is smaller in size and lies internal to the exopodite. This type

of appendage is called *biramous,* because it is formed of two finger-like processes.

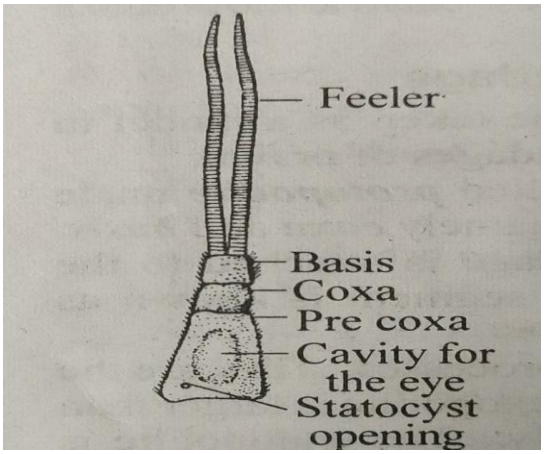
CEPHALIC APPENDAGES

- There are five pairs of cephalic appendages. They are :
- *I antennae (*Antennules)
- *II antennae (*Antennae *Mandibles, I Maxillae and II Maxillae*

I antennae (Antennules)

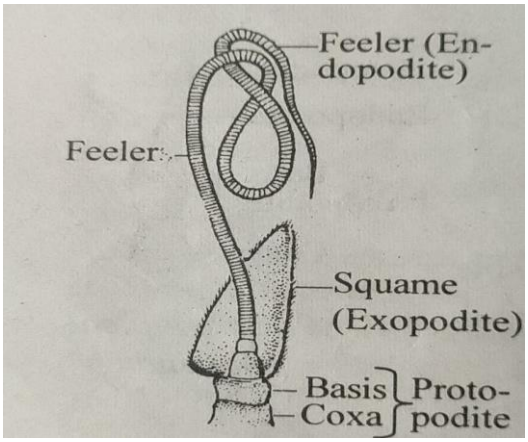
- First antennae are the first pair of appendages of prawn. They are the *cephalic* appendages They are *biramous.* They lie below the eye stalks. Each I antenna has a *protopodite* made up of three podomeres, namely *precoxa, coxa* and *basis.*

- The precoxa is hollow and it Basic contains a cavity for the eye andCoxa an opening for the statocyst. The antennules are ***sensory*** **in** function serving **as *tactile organs.***



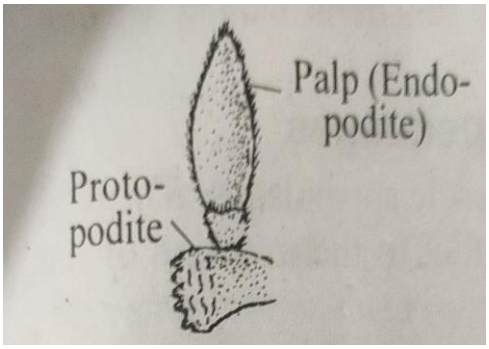
II antennae (Antennae)

- Second antennae are the II *cephalic* appendages.They are biramous.They are situated behind the antennules. The protopodite of the antenna has two segments,namely **coxa** and **basis.**
- The **exopodite** is a broad plate called **squame**.The antennae serve as **tactile organs.**



Mandibles

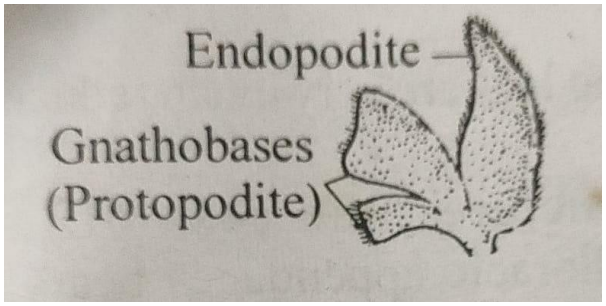
- Mandibles are the III *cephalic* appendages. They are located in the III segment. They lie on either side of the mouth. Each mandible has a pro-topodite and it has calcified **teeth.**
- The endopodite is a double segmented process known as **palp.**There is no exopodite.The mandibles move from side to side and not up and down.



I maxillae or maxillulae

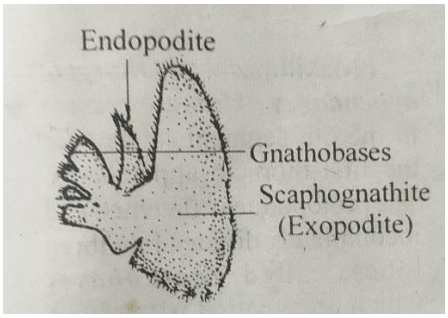
- First maxillae are *cephalic appendages.* They are present in the 4th segment. These are small appendages. Each maxilla consists of *a protopodite* of two flattened leaf like

lobes, called **gnathobases(**Gnathos=jaws**).** The first maxilla is used to pass food to the mouth.



➢ II maxillae

- Second maxilla is a *cephalic appendage.* It is present on the 5th segment.the **protopodite** of the second maxilla is flat and cut into four leaf-like lobes.
- The leaf like lobes point towards the mouth, forming the **gnathobases** or **jaws.**the **exopodite** is modified into an ear-lobe like structure called **scaphognathite.**



THORACIC APPENDAGES

- There are eight pairs of thoracic appendages. The first three pairs of thoracic appendages take part in feeding and are known as *maxillipedes.* The remaining five pairs of appendages are used for walking. These are known as *walking legs* or *peraeopods.*
- The endopodite is made up of five segments. They are named from the base as *i**schium, merus, carpus, propodus*** and *dactylus.* The exopodite of the walking legs are very much reduced into filaments.
- In addition to these structures, the coxa of the protopodite of the first five thoracic appendages bears a small process known as *epipodite,*

which is used in ***respiration.*** The epipodites of the first maxillipedes are flattened lobes, while in the remaining appendages the epipodites are Y-shaped.

- # I Maxillipedes

- I Maxillipedes a*re thoracic* Endopodite *appendages.* They are present in the 6th segment.They are the first thoracic appendages. The protopodite is flattened and incompletely divided into three lobes,called **gnathobases** which are covered with setose hairs.
- The exopodite is a flattened lobe. The endopodite is made up of five podomeres, namely ***ischium, merus***, c*arpus, propodus* and ***dactylus*.** The *epipodite* is conical in shape.

- # II Maxillipedes

- The II Maxillipedes are the s*econd thoracic* appendages. They *are biramous.* The *protopodite* is formed of *coxa* and *basis*. The *endopodite* is segmented and curved like a *question mark.* Epipodites are 'Y' shaped. They are used for feeding.
- *I t is made up of five podomeres namely,*
    1. **ischium**
    2. **merus**
    3. **carpus**
    4. **propodus**
    5. **dactylus.**

- # III Maxillipedes

- The III maxillipedes are the third pair of *thoracic appendages*. They a*re* ***biramous.*** The protopodite is formed of ***coxa* and *basis.*** The *endopodite* is formed of five segments, namely
    1. *ischium*
    2. ***merus***
    3. *carpus*
    4. *propodus*
    5. ***dactylus.***

- # Walking legs

- The last five pairs of thoracic appendages are *walking legs* on*Maxillipede. peraeopods.* They are **biramous** consisting of a **protopodite,**an **exopodite** and **endopodite.**They are of two types , namely **chelate legs** and **non-chelate legs.**

• Chelate legs

- The first 3 pairs of walking legs are chelate legs. They are the thoracic appendages. They are biramous. The protopodite is made up of two segments, namely.coxa and basis.
- The endopodite is made up of five segments namely,
    1. **ischium**
    2. **merus**
    3. **carpus**
    4. **propodus**
    5. **dactylus**
- The epipodites are present in all the 3 chelate legs and are 'Y'-shaped. They are used for ***respiration.***

• Non-chelate legs

- The last two pairs of walking legs are non-chelate legs. They are the last two pairs of thoracic legs. They are **biramou**s. The protopodite is formed of a coxa and a basis**.**
- The endopodite is made up of five podomeres namely,
    1. **ischium**
    2. **merus**
    3. **carpus**
    4. **propodus**
    5. **dactylus**

ABDOMINAL APPENDAGES

- The abdomen bears six pairs of abdominal appendages.They are called *pleopods* or swimmerters*.* They are used for swimming. The appendages fr**om** the second to the fifth abdominal segments are like the typical appendage. They are **bimarous.**
- The abdominal appendage consists of a *protopodite,* an *provodite* and an *endopodite*. The protopodite is formed of a *coxa* and *basis.* The appendages of the sixth segment are broad and flat and are called *uropods.* Each uropod has a protopodite of a single segment. The endopodite and the exopodite are flat and broad. They are used for *bac**kward motion.***
- *Penaeus: Abdominal appendages.* The first pair of pleopods differ in the two sexes. In the female the endopodites are reduced. In the male they are membranous. The endopodites of the two sides unite to form a copulatory organ called *pe**tasma.*** In the female there is an outgrowth from the sternum of the last thoracic segment called *thelycum.* It encloses a cavity into which the male deposits the spermatophores (bundles of sperms).

BODY CAVITY

- The space between the body wall and the alimentary. canal is not a true coelom, because it lacks coelomic epithelium. This cavity is called *haemocoel,* because it is Tilled with a blood-like fluid called *haemocoelic fluid.*
- *It* contains corpuscles like those in blood. The haemocoeli derived from the embryonic blastocoel. *The true coelom is re*presented by small cavities locan around the gonads

CIRCULATORY SYSTEM

- The circulatory system is the *open type.* It has n. capillaries. Hence the blood flows out of the blood vessel and collects in open spaces called *s**inuses.*** The circulatory system consists of the following components:
  - Blood
  - Heart

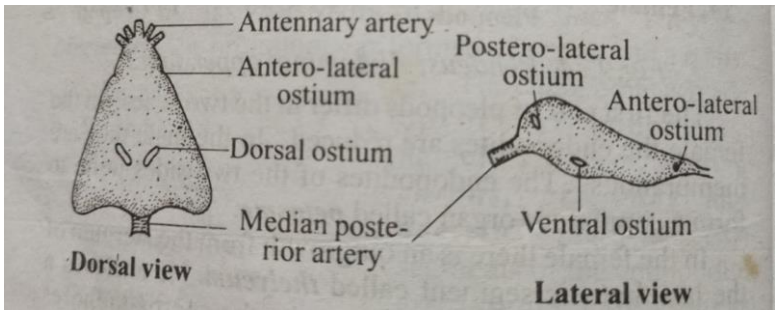
- ❖ Pericardium
- ❖ Arteries
- ❖ Blood sinuses
- ❖ Blood channels

- **Blood**

➢ The blood of prawn is in **blue** colour.It is a liquid tissue. It consists of **plasma** and **corpuscles.**The plasma contains a blue pigment called **haemocyanin.**The corpuscles and colourless.

- **Heart**

➢ The heart is a **muscular pumpin**g organ located in the thorax. It is triangular in shape. The apex is directed forwards. The heart is held in position by three fibrous tissue **strands.**

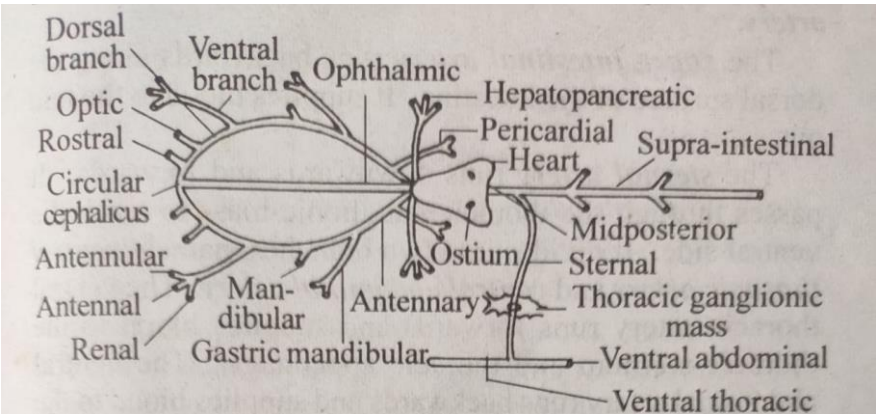


- **Pericardium**

➢ The heart is surrounded by a spacious cavity called pericardium or **dorsal sinus.** It is filled with blood. This biood flows into the heart through the ostia. The pericardial sinus receives blood through six pairs of efferent branchial channels.

- **Arteries**

➢ The arteries carry blood from the heart to the various parts of the body organs. In the organs, they branch into small vessels which open into the sinuses.The following arteries arise from the heart.



❖ Ophthalmic Artery:

It starts from the apex of the heart anteriorly. It runs forwards towards the head and joins with the circum wcephalicus artery.

❖ Antennary Arteries:

- **Two** antennary arteries arise from the apex of the heart one on either side of the ophthalmic artery. At the anterior end of the head, each antennary artery divides into two branches, namely *a dorsal branch* and a ***ventral branch***.
- The dorsal branch of the two antennary arteries meet anteriorly to form *a circum Cephalicus **artery***. The circum cephalicus receives the ophthalmic artery and gives out a pair of *optic arteries* and a pair of *rostral arteries* anteriorly.
- The ventral branch further divides into three arteries, namely *an **antennular artery*** to the antennule, *an **antennal** artery* to the antenna and a *renal artery* to the renal organ.

❖ Hepatic Arteries:

- A pair of *hepatic arteries* arise from the anterior end of heart. They are situated on either side of antennary arteries. They supply the hepatopancreas.

❖ Sterno-intestinal Artery

- It originates from the posterior end of the heart. It immediately divides into two branches, namely a supra intestinal artery and a sternal **artery.** The supra intestinal artery runs backwards along the dorsal surface of the intestine. It supplies blood to the mid gut.

❖ Blood Sinuses

- The arteries divide and redivide into small branches and finally they open into spaces called **blood sinus**es. The small sinuses join to form large sinuses. There are two large sinuses located on the ventral side. They are called ventral **or sternal sinu**ses. They are located in the thorax just below the hepatopancreas. They are inter-connected.

❖ Blood Channels

- Six afferent br**anchial channels** carry venous blood from each ventral sinus to the gills of that side. In the gills the blood is aerated. The aerated blood is transported from the gills of each side to the pericardium through another six efferent branchial **channels.**

COURSE OF BLOOD CIRCULATION

- The heart pumps the blood by its rhythmic contraction. The blood enters the arteries and supplies the various organs. From the ventral sinuses the blood is carried by the afferent branchial channels to the gills for aeration. The aerated blood is carried to the pericardium through the efferent branchial channels. From the pericardium, the blood flows into the heart through the **ostia.**

RESPIRATORY SYSTEM

- In prawn respiration is aquatic. It is carried out by the following organs:

  - ✓ Branchiostegite

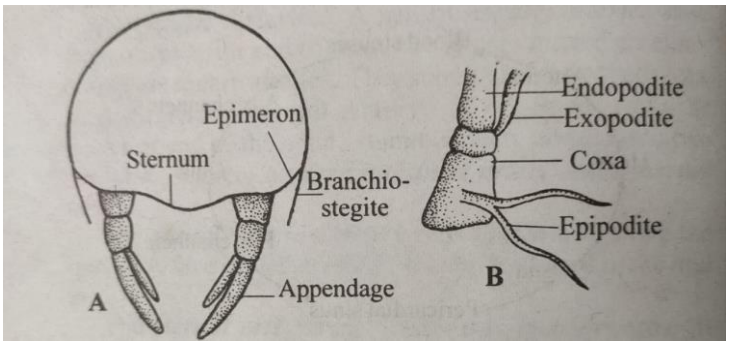
- ✓ Epipodites
- ✓ Gills

❖ Branchiostegite

- The branchiostegite is the *gill-cover*. It is the lateral extension of the carapace. It encloses a cavity between self and the body. This cavity is called *gill chamber.* The inner lining of the branchiostegite is richly supplied with vd. It is constantly bathed by the water current. *Hen*ce vachange of gases occurs between the water and the blood.

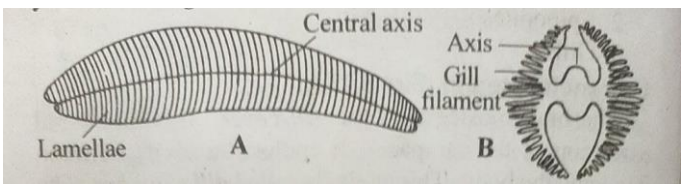
❖ Epipodites

- These are membranous outgrowths of the integument arising from the coxa of the thoracic appendages.Penaeus has 6 pairs of epipodites. They are located on the first 6 pairs of thoracic appendages. The first pair of epipodites are conical in shape. The remaining five pairs are Y-shaped. They are highly vascular and they exchange gases between the blood and the water.

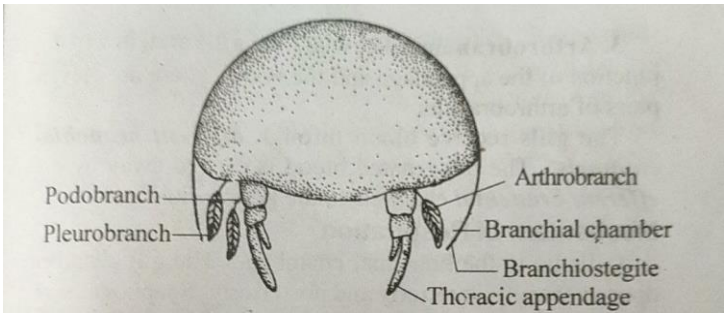


❖ Gills

- The gills are delicate feather-like outgrowths of the thoracic appendages. The gills are located inside the **gill chamber.**



- The gill chamber is located on the sides of the thorax. It is covered **by branchiostegite.** The number and arrangement of gills in prawn are given in the form of a formula called branchial formula.



⇨ Podobranchs:

- ❖ These are the gills attached to the coxa of the appendages, Penaeus has one pair of podobranchs attached to II maxillipedes.

⇨ Pleurobranchs:

- ❖ These are the gills attached to the lateral wall of the thorax. There are six pairs of pleurobranchs attached near the last six pairs of thoracic appendages.

⇨ Arthrobranchs:

- ❖ These are the gills attached to the junction of the appendage and the body. There are eleven pairs of arthrobranchs. The gills receive blood through *afferent* **branchial channels**. The oxygenated blood is carried away by the **efferent branchial** *c*hannels to the pericardial sinus.

• Mechanism of Respiration

- ❖ Gills lie in the branchial chambers. The gill chamber opens ventrally, anteriorly and posteriorly. Scaphognathite of II maxilla lies at the anterior entrance of the gill chamber. By its movements, it sends out water from the gill chamber through the anterior end. To make up the loss of water, water flows in through the posterior entrance of the gill chamber. So water flows in and out of the gill chamber freely.

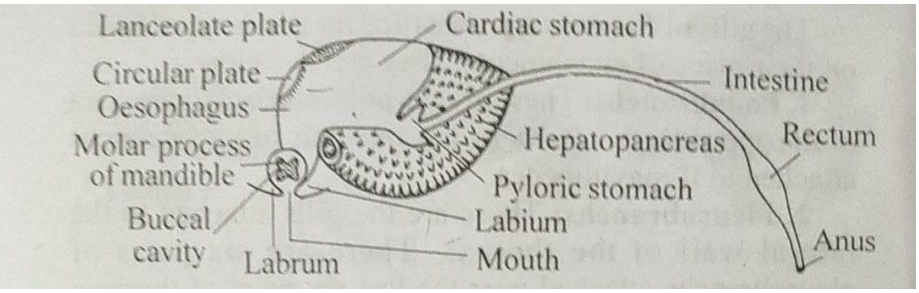
- The gills are always immersed inside the water. Exchange of gases takes place between the water and the blood. The setose hairs present at the entrance of the branchial chamber prevent the entry of foreign particles.

DIGESTIVE SYSTEM

- The digestive system consists ofthe alimentary canal and the associated digestive glands.

• Alimentary Canal

- The alimentary canal is formed of the foregut, the midgut and the hind gut. The foregut is formed of mouth, the buccal cavity, the oesophagus and the stomach. The foregut and the hind gut are lined with chitin.
- The mouth lies in between the mandibles. It leads into buccal cavity.The buccal cavity is followed by the nhaulls which is short and runs vertically from the buccal cavity to the stomach.
- The stomach consists of an anterior large cardiac stomach and a posterior small pyloric stomach. The floor of the cardiac stomach has many folds. They bear a setae and spicules.
- The roof of the cardiac stomach has many calcareous, stout denticles which constitute the gastric mill or gastric armature. The denticles are called gastric mill because they are used in grinding food.
- The pyloric stomach mill because they are used in grinding food. The pyloric stomach has a narrow lumen and is followed by the midgut. The midgut extends as a straight tube up to the sixth abdominal segment. The chitinous lining of the pyloric stomach is produced into the midgut as four lappets or valvulae.The hind gut or rectum follows the midgut. The hind gut is very short. It opens to the exterior by the anus.



- **Digestive glands:**

  - The stomach is surrounded by a large gland called hepatopancreas. It is formed of numerous tubules. The tubules join to form two large ducts called hepatopancreatic ducts. They open into the pyloric stomach.

  - The hepatopancreas has three functions:

  - ✓ It secretes digestive enzymes like the pancreas of vertebrates
  - ✓ It stores glycogen,fat and calcium.
  - ✓ It exhibits intracellular digestion by absorbing food from the stomach.

- **Feeding:**

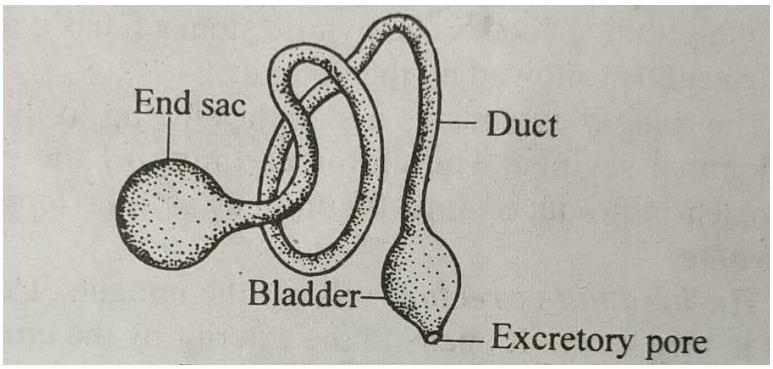
- Ponaeus is an omnivorous animal. The chelate legs and third maxillipedes capture and convey the food to the mouth. The mandibles cut it into smaller pieces. The food is further ground in the gastric mill and digested in the stomach. The digested food is absorbed in the midgut. The undigested food materials are passed out through the anus.

EXCRETORY SYSTEM

- The excretory system is formed of a pair o**f antennary** glands or green glands. They are located in the coxa of antenna and hence their name antennary glands. They are green in colour and hence called green glands. Each green gland has a coiled excretory duct with an end sac at one end and a bladder at the other end. The

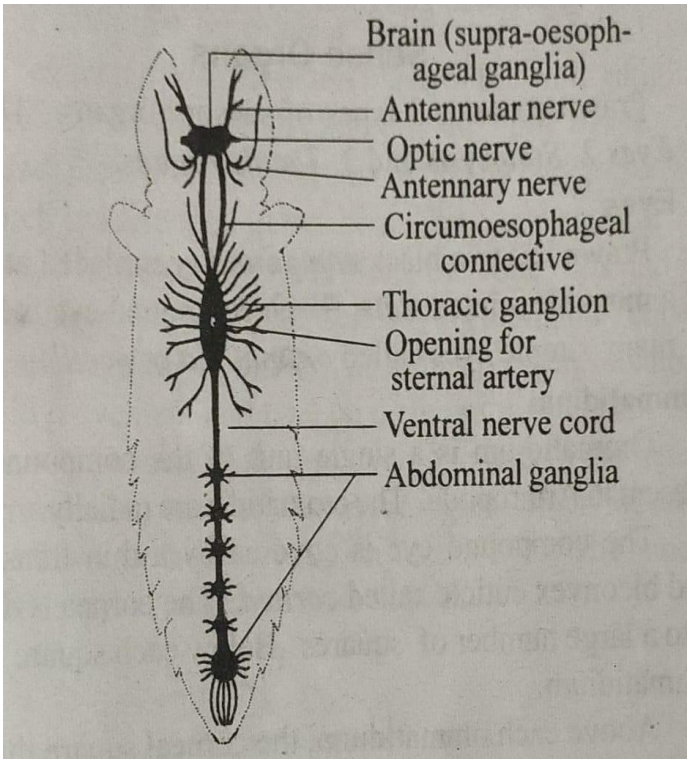
bladder opens outside by the excretory pore. The entire gland is kept inside the coxa of the antenna.

- The nitrogenous waste is collected by the end sac. The excretory fluid passes through the coiled duct from the end sac and accumulates in the bladder. In the coiled duct the useful materials are absorbed into the blood. The fluid collected in the bladder is called *urine* and it is expelled out through the excretory pore.The green gland also do the function of *osmo regulation.* It pumps out the excess of water from the body.



NERVOUS SYSTEM

- The nervous system consists of a **brain**, a pair of **circumoesophageal connectives**, **a thoracic gan**glion, a ventral nerve cord and 6 **abdominal ganglia**. **Brain.**The brain is located at the base of the rostrum. It is a bilobed structure. It is formed by the fusion of two ganglia.



❖ Thoracic ganglia:

➢ . The cephalothorax has a large ganglion called thoracic ganglion. It is formed by the fusion of 11 pairs of ganglia. These ganglia belongs to the 11 posterior segments of cephalothorax. It gives out 11 pairs of nerves laterally. Of these, the first three nerves are the ce**phalic nerves** supplying mandibles and I and II maxillae. The remaining o pairs of nerves are called thorac**ic nerves s**upplying the 8 pairs of thoracic appendages**.**

SENSE ORGANS

➢ Prawn contains 3 types of sensory organs. They are

❖ *Eyes*
❖ *Statocysts*
❖ *Tactile org**ans.***

- **Eyes:**

- Prawn has two black **compound** eyes placed at the tip of a movable jointed stalk. Each compound eye is formed of many simple eyes calle**d ommatidia** or ocelli.

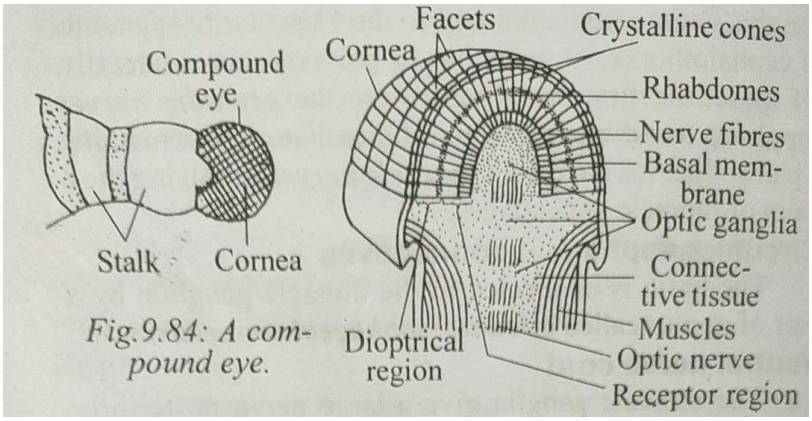
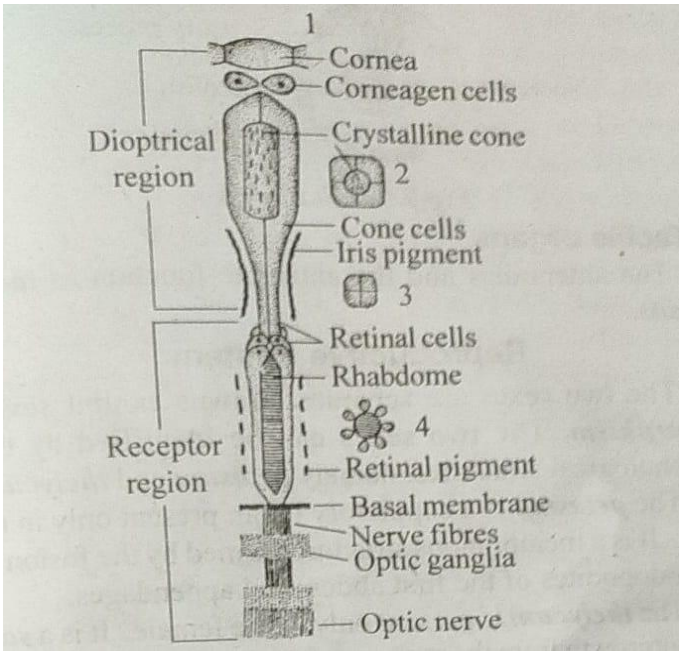


Fig.9.84: A compound eye.

⇨ Ommatidium:

- Ommatidium is a single unit of the compound eyes present in Arthropoda. The ommatidia are radially arranged.The compound eye is covered by a thin transparent and biconvex cuticle called cornea. The cornea is divided into a large number of squares. Below each square lies an ommatidium. Above each ommatidium, the corneal square thickens to form a lens. Two corneagen cells lie beneath the lens. These cells secrete new cornea when the old one is cast off in moulting. Four cone cells are present below the corneagen cells. These cells surround a cr**ystallin**e cone.
- The cone cells rest on a spindle-shaped rod called dome. The rhabdome is secreted and surrounded by seven retinal cells.These cells rest on a basal **membrane**. The retinal wils are connected with the nerve fibres of the optic ganglia which are connected with the brain by the optic nerve.
- The adjacent ommatidia are separated by dark pig**ment** cells which are arranged in two series, an outer one and an inner one. The outer series lies along the cone cells and is called iris **pigment**. The inner series lying along the retinal cells is called re**tinal pigment**. The retinal pigments exhibit amoeboid movement and take up different positions.
- The outer region of the eye, from the lens to the inner ends of cone cells, is called dioptrical region which focuses the light towards the inner region of the eye. The inner region of the eye is called receptor region.

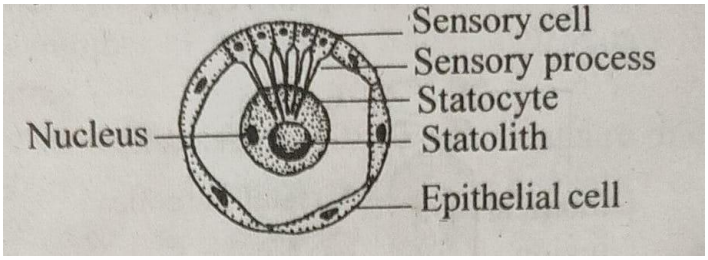


❖ Vision:

- Each ommatidium is able to produce a separate image of a small part of the object seen. As there are several ommatidia the image of the object consists of several pieces. Thus the image appears like a mosaic pattern. This type of vision is called mosaic vision. This type of vision is peculiar, to all arthropods provided with compound eyes.

• Statocysts :

- Prawn has a pair of *statocyst*s. They are located inside the precoxa of the antennules. Each statocysts is in the form of a spherical hollow sac. It is covered by *cuticle.* It opens to the outside by *a* ***statocystic apertur****e.* The cavity of the statocyst contains a few sand grains. The sand grains are surrounded by a set of ***sensory setae .*** The setae are innervated by the statocystic nerves arising from the brain. The statocysts function as an organ of equilibrium.



• Tactile organs :

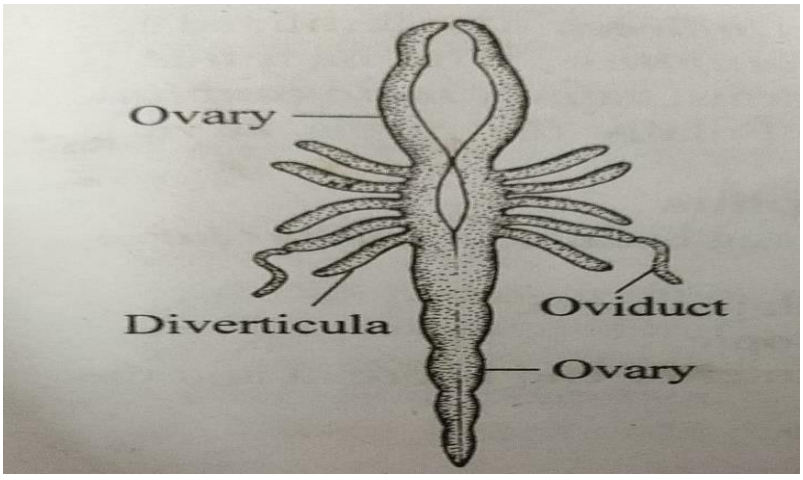
- The antennules and the antennae function as tactile **organs.**

REPRODUCTIVE SYSTEM

- The two sexes are separate. Prawns exhibit sexual **dimorphis**m. The two sexes can be identified by two morphological structures, name**ly petasma** and thelycum.
- The petasma is a copulatory organ present only in the male. It is a membranous structure formed by the fusion on the endopodites of the first abdominal appendages.
- The thelycum is present only in the female. It is a sac like outgrowth from the sternum of the last thoracic segment**.**

• Female Reproductive system :

- The female has a pair of long ovaries extending the whole length of the thorax and the abdomen along the median line.The two ovaries are fused together posteriorly,but free anteriorly.
- Near the anterior end the ovaries produce finger-like outgrowths called **diverticula.**From each ovaryarises an **oviduct.**

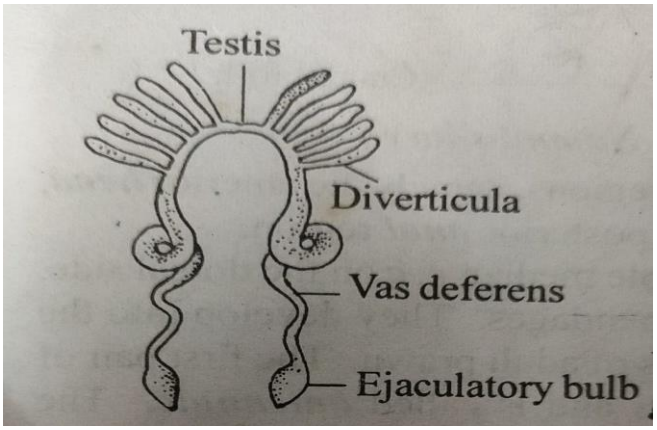


• Male Reproductive system :

- The male has a pair of tubular **testes** located in the thorax on either side.The two testes are ductive system. Fused together

anteriorly. Each testis has many finger-like outgrowths called caecal **Testis** diverticula.

- Posteriorly, the testis leads into a **vas** deferens. The terminal end of the vas deferens Diverticula becomes dilated into an ejaculatory bulb. The F Vas deferens ejaculatory bulb open the outside by the male O Ejaculatory bulb genital pore at the base of the last walking leg.



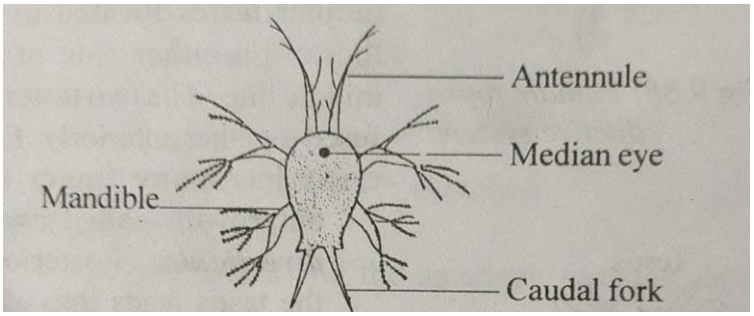
LIFE HISTORY

The male deposits the spermatophores (bundles of sperms) in the thelycum of the female. As the egg passes out from the female, it is fertilized; hence fertilization is **external.** In Penaeus development is indirect. The fertilized egg hatches into a larva called nauplius. The nauplius is followed by a series of larval forms, namely **metanauplius**, protozoea, zoea and mysis. Finally the mysis larva is transformed into a prawn**.**

❖ Nauplius:

- The larva hatched from the egg is called nauplius larva. It has the following features:
- It is a free swimming pelagic larva.It is minute and microscopic. It is oval in shape; the anterior end is broad and the posterior end is narrow.
- The body has three regions, namely the anterior head, the middle trunk and the posterior anal region. The head has a simple median eye on the dorsal side. It has 3 pairs of appendages.
- They develop into the first 3 pairs of appendages of adult prawn. The first pair of appendages is **uniramous** and is called antennule.

The second and third pairs of appendages are biramous and are called antenna and mandible. The mandible has no teeth.

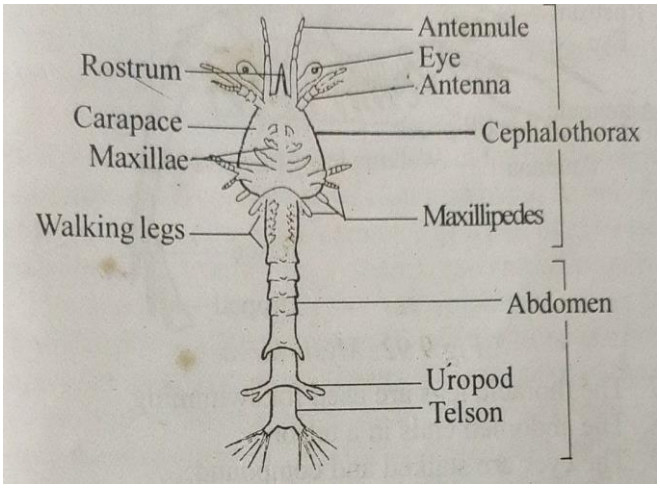


❖ Metanauplius:

- It is the second larva of Penaeus. It develops from the Quplius. The body has an anterior cephalothorax and a posterior abdomen. The abdomen ends in a caudal fork.
- The anterior end has a pair of frontal sense organs. The Jarva has three pairs of appendages as in nauplius and the next four appendages develop as buds.

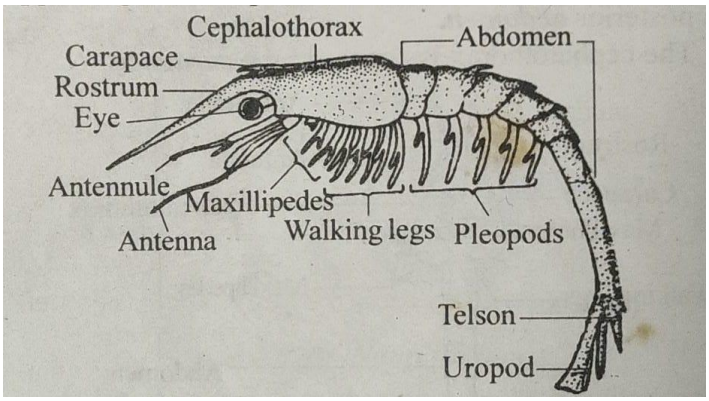
❖ Zoea:

- Zoea develops from the metanauplius. It has the following features:
  - It is a free swimming pelagic larva. It is minute and microscopic. The body is divisible into an anterior cephalothorax and a posterior abdomen.
  - The cephalothorax is covered by a carapace. Anteriorly the carapace is produced into a median spine called rostrum. It has a pair of stalked compound eyes.
  - All the cephalic appendages are well developed. In the thorax the 3 pairs of maxillipedes are slightly developed and the remaining 5 pairs of walking legs are in the form of buds. The abdomen has 6 segments. The last segment ends in a forked telson. The abdomen is without appendages.



❖ Mysis:

- The mysis larva develops from zoca larva. It is elongated, laterally compressed and transparent. The body is divisible into a cephalothorax and an **abdomen.** The cephalothorax is covered by a carapace.
- Anteriorly the carapace is produced into a spine called **rostrum.** All the appendages are developed. They include 5 pairs of cephalic appendages, 8 pairs of thoracic.



- The thoracic legs are used for swimming. 8. The abdomen ends in a telson. 9. The eyes are stalked and compound. 10. The mysis larva looks like the adult Mysis and hence the name. The larval mysis differs from the adult Mysis in the absence of a brood pouch beneath the thorax and a pair **of statocysts.**