

"Coloration"

The colour of insect may be grouped into three classes :

- 1- **Pigmentary colours** : these owe to the presence of definite chemical composition , which have the property of absorbing some light waves and reflecting others . such substances mostly are produced of metabolism and in some cases may be of an excretory nature . these colours may
- 2- be classified into :-
 - a- Cuticular .
 - b- Hypodermal.
 - c- Sub Hypodermal.
- 3- **Structure of colours** :- these are due to the changes or destroy by chemical changing in the cuticle such as shrinkage , swelling distortion or permeation with liquids .
- 4- **Combination colours** :- these are produced by combination between physical colours and pigment granules inside the tissues .

The colour are effected by :-

- a- Food .
- b- Light.
- c- Temperature and humidity .
- d- Sex
- e- Season of the year .

" The head "

In most insects the head capsule is a sturdy compartment that houses the brain , a mouth opening , mouth parts and sense organ (including ocelli , compound eyes and antenna).

The sclerites of the head :-

- 1- The epicranium
- 2- vertex
- 3- frons
- 4- clypeus

the sutures are :-

- 1- **Epicranial suture**:- it is **Λ** shaped , the main arm is the **coronal suture** and the two branches are the **frontal sutures**. The Epicranial suture divide the vertex into two sclerites , the suture between the frons and clypeus is called **fronto- clypeal** suture and the suture between clypeus and labrum is **clypeo-labral** suture . From the side of the head we see the gena and beneath it is the mandible .

The ocelli :- these simple eyes are of single unit construction and are found in most adult and larval insects , each consist of a single sight cell , hence, it is thought that these eyes receive only light and dark stimuli.

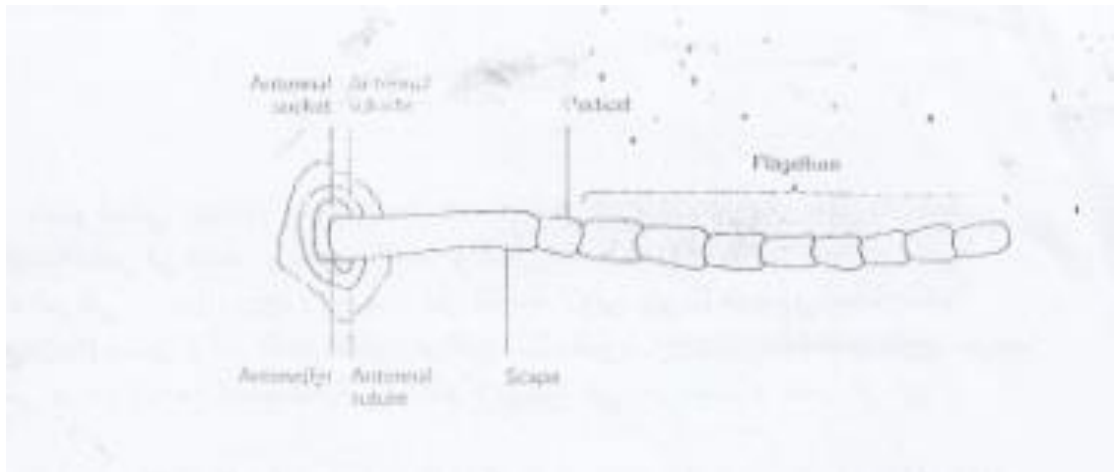
The compound eyes :- present in almost all adult and many immature insects , and found in several different shapes (we will discus it later)

Antennae :- are a pair of semse organ located near the front of an insect head capsule .

Although commonly called feelers , they are much more than just tectile receptors ; so they are alfactory organs or humidity sensors , mosquito detect sound with their antenna . many flies use them to gauge air speed while they are in flight .

Although antenna vary widely in shape and function , all of them can be divided into three basic parts :-

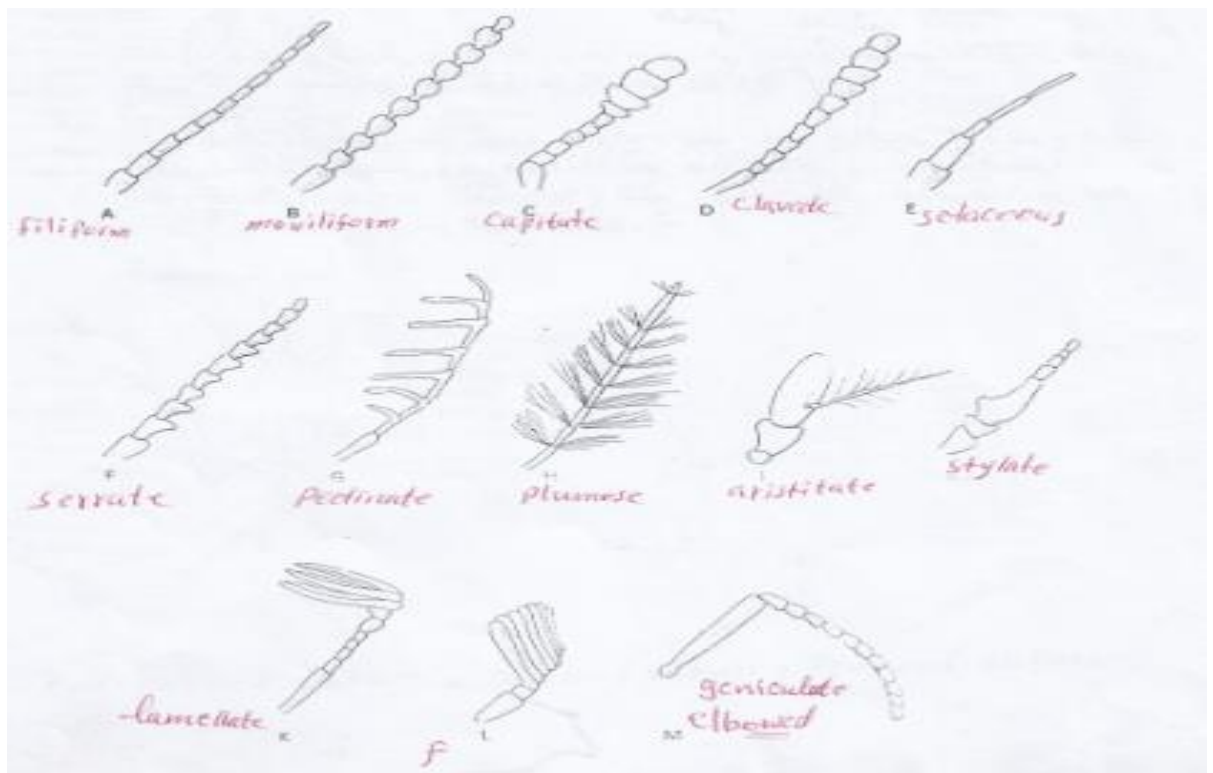
- 1- Scape : is the basal segments .
- 2- Pedicel : is the second antennal segments .
- 3- Flagellum : is all the remaining segments .



Antenna

Types of Antenna

- 1- Setaceous – dragon fly .
- 2- Filiforms – ground beetle.
- 3- Moniliform – termite .
- 4- Serrate – click beetle.
- 5- Clavate – butter fly .
- 6- Capitate – some beetle .
- 7- Lamellate – scarabaeidae.
- 8- Pectinate – moth .
- 9- Bipectinate – moth , ♂ silk moth .
- 10- Plumose – ♂ mosquito.
- 11- Pilose – ♀ mosquito .
- 12- Geniculate – weevils , ants.
- 13- Aristate – house fly.
- 14- Stylate – tabanus .

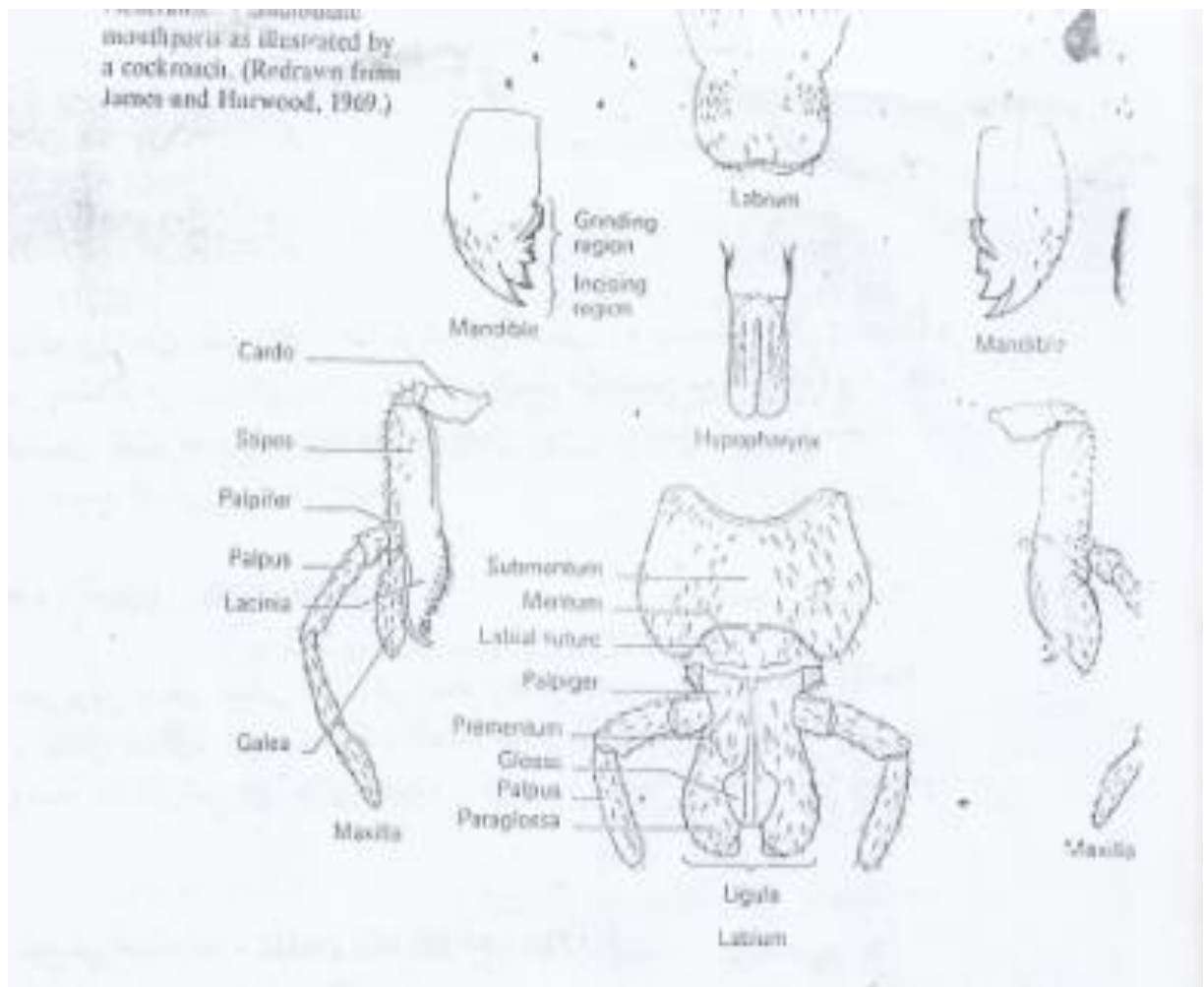


Types of antenna

"Insect mouth parts"

The mouth part are a group of appendages, constitute the mechanical connecting link between the insect and its food supply, because of the variation in mouth parts structure, we will study these appendages in lab... Period, these parts are taken from an insect having a simple relatively unmodified chewing type.

- 1- **The labrum:-** an unpaired , flip like structure hinged to its upper margin to the lower edge of the clypeus .
Serve as an upper lip.
- 2- **The mandibles:-** a pair of hard , horny , unusually non- segmented structure .
- 3- **The maxillae:-** a pair of segmented structure situated immediately behind or below the mandibles .
- 4- **The labium:-** an unpaired structure as a lower lip and closing the oral cavity from below or behind ; it obviously is the fused remains of a pair of segmented structure .
- 5- **Epipharynx:-** a grouping of stout spines on the swollen inner surface of the labium .
- 6- **Hypopharynx :-** is un paired structure , known as the tongue , which occupy a portion of the oral cavity .



Mouth parts of insects

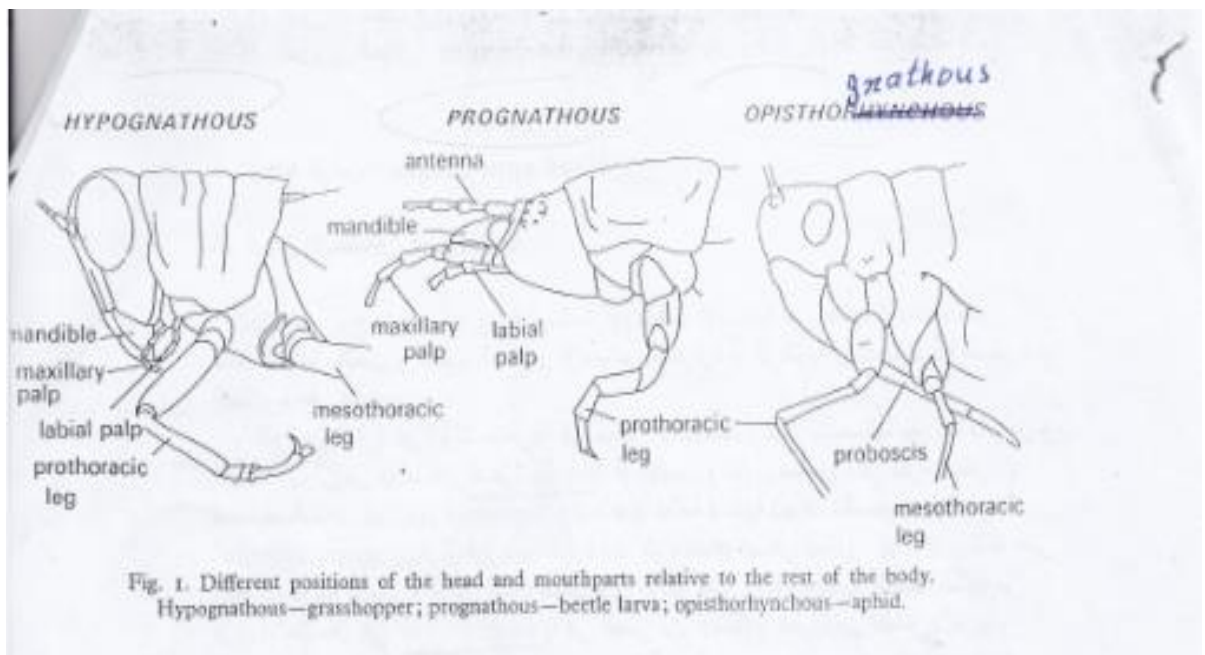
"Types of insect mouth parts"

- 1- Chewing mouth parts – cock roach
- 2- Piercing – sucking mouth parts – Hemiptera – mosquito
- 3- Cutting –lapping mouth parts – horse fly
- 4- Sponging mouth part - horse fly
- 5- Chewing - lapping mouth parts – honey bee
- 6- Cutting - sucking mouth parts – stable fly
- 7- Siphoning mouth parts – butter fly
- 8- Rasping - sucking mouth parts – Thysanoptera

The orientation of the mouth parts on the head

May differ and they may be described as :-

- 1- Prognathous – projecting forward (horizontal)
- 2- Hypognathous – projecting downward
- 3- Opisthognathous – projecting obliquely or posteriorly .



"The thorax "

The thorax is the second region of insect body .

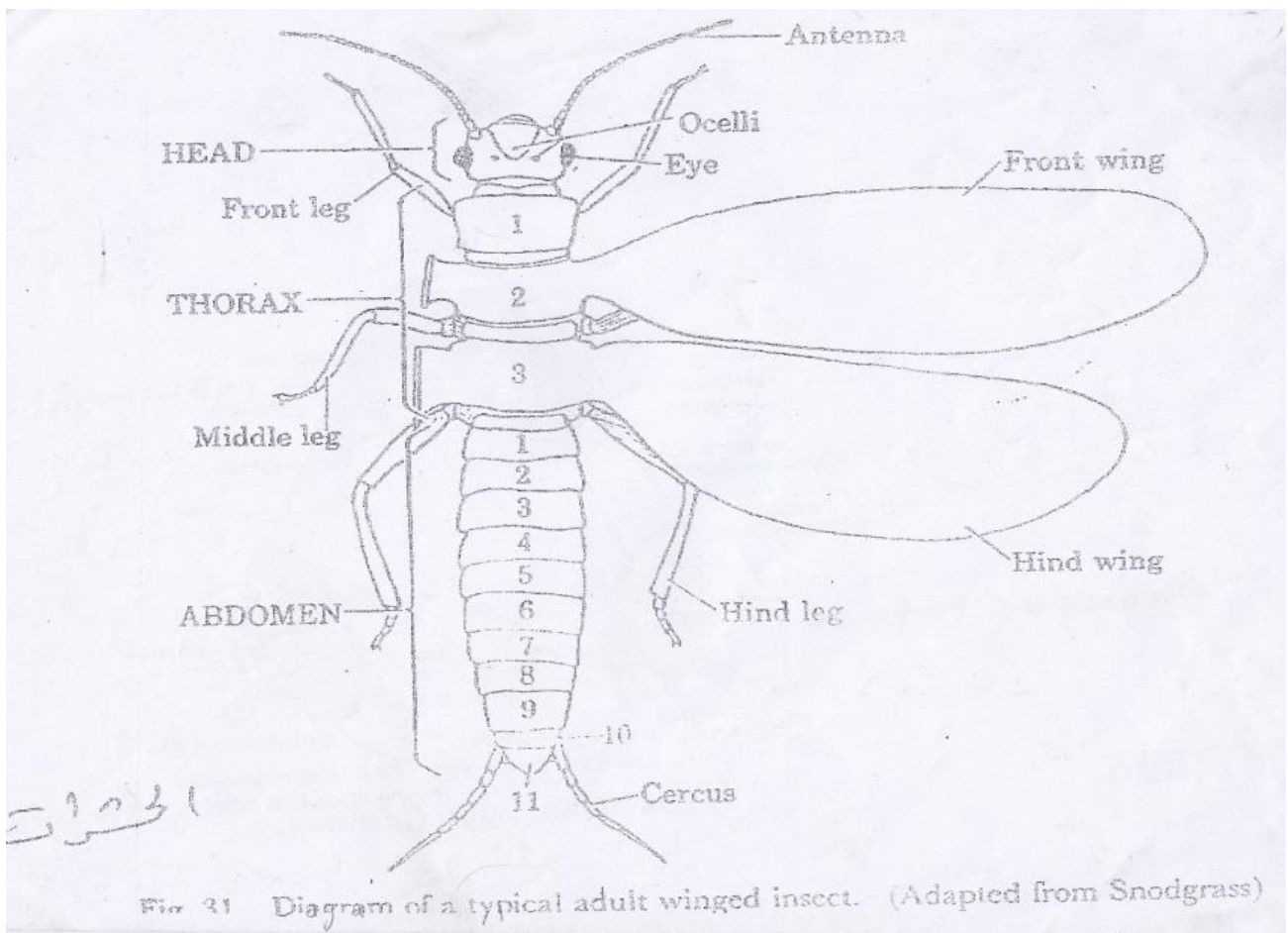
It is the center of the locomotion in the insect and it composed of three segments :-

Prothorax – mesothorax and metathorax

The pro thorax bears the list pair of legs

Mesothorax bears the second pair of legs and the ist pair Of wings.

The metathorax bears the third pair of legs + second pair of wings usually .



Each thoracic segment has a dorsal sclerotized region (tergum or notum) , a ventral region (sternum) and laterally on each side a pleuron .

All jointed together by non- sclerotized membranous cuticle.

The meso and metanotum consist of :-

1- Alinotum , which is divided into :-

a- Prescutum .

b- Scutum .

c- Scutellum .

2- Postnotum

The sternum also divided into many sclerites .

The pleuron is usually divided into two sclerites , an anterior episternum and posterior epimeron between them is the pleural suture .

