

according to the food or the circumstances under which they live. Those species which feed on animal food or under bark, have shorter and thicker beaks than those which derive their nourishment from vegetation, and as the former are for the most part beneficial and feed on other insects, this is a very important distinction for everyone to become familiar with. The beak consists of the labium, which is so modified as to form a hollow sheath, by having its two sides turned up, so that a deep groove is left in the middle of its upper surface, which acts both as a canal up which the juices on which the insect feeds flow, and also as a sheath for four delicate sharply pointed *setæ* or bristles which are actually the jaws and maxillæ modified for a special use. It is with these instruments that the insect punctures the plant or animal from which it derives its food.

The insects comprised in this order are of the most anomalous shapes, and there are embraced within its limits some of the most curious and wonderful forms of insect life. Their geographical range is very wide, for there is hardly any part of the globe of which the land and water do not produce their own peculiar forms. The number of species classed within this order is said to reach nearly 10,500, which are about equally divided between the two sub-orders into which the Hemiptera are divided. These two sub-orders are called Hemiptera-heteroptera and Hemiptera-homoptera, which again are divided into divisions and sub-divisions, and the latter of these are distributed into families which contain the various genera and species.

It was Latreille who divided the Hemiptera into these two divisions: "The Homoptera are the higher in rank, as the body is more cephalized, the parts of the body more specialized, and in the Aphidæ which top the series, we have a greater sexual differentiation, the females being both sexual and asexual, the latter by a budding process, and without the interposition of the male, producing immense numbers of young which feed in colonies. The Heteroptera, on the other hand, have the body less compactly put together, the abdomen and thorax are elongated, the head is small compared with the rest of the body, and the species are large (a sign of degradation among insects) and several families are aquatic, indicating a lower grade of development, while representatives of these were the first to appear in geological times. Their affinities are with the Orthoptera and Neuroptera, while the Homoptera whose bodies are more cylindrical ally themselves with the first and higher series of sub-orders."—(Packard).

For convenience sake we will take a short glance at the Heteroptera first, and then pass on to the Homoptera.

In the Hemiptera-heteroptera (*ἕτερος* = various, *πτερά* = wings) the hemelytra are thick and opaque at the base, but membranous and translucent at the tips; they lie horizontally on the top of the back and cross each other obliquely so that the translucent part of one overlaps the same part of the other. The underwings which these cover are entirely membranous; the head is horizontal and bears on its front part the articulated promuscis or beak which is bent down and carried underneath the breast. Between the wings there is a scutellum which is generally triangular, but which is sometimes so large as to cover the

whole of the upper side of the body, leaving only the margins of the fore-wings visible. (See figure 83). The modes of life among these bugs are very varied; animals, birds, insects and plants are all liable to their attacks, and they are sometimes exceedingly destructive. For the most part they are found upon the plants on which they subsist; but others again feed on weaker insects found in similar situations. They continue active and require food during all their stages. The larvæ are distinguished by the total want of any appearance of wings; whilst in the pupæ the rudiments of these limbs appear on the back of the thorax. All of these insects have ocelli or

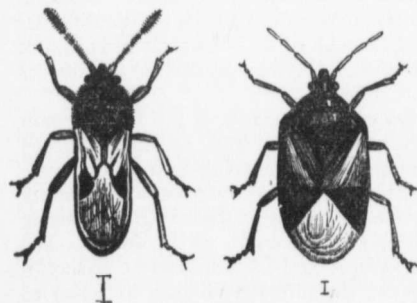


Fig. 83.

simple eyes on the front of the head between the two large compound eyes, but these, like the wings, are only developed in the perfect state.

The great green bug which he applied to Westwood, he called *Aurocorisa*, or *Aurocoris*, and it should be included in the water, although by Latreille in his system was as

(1.) Hyd

(2.) Aur

1. *Hydr*

appearance, but the eyes, their short and fold their prey; they with stiff bristles and so act as to water easily. of a dull inconspicuous to obtain a su different ways hemelytra and of hairs. It is

2. *Aurocor* length of the antennae swimming. G. and Chinch Bug. This, to creature, the be cannibal insects and which families

The other *πτερά* = wings), similar characters, upper larger than repose as is the over the back like than depressed, not in use. Wings is either vertical three joints, two the under surface they all feed on

Within the forms, and some examination can Musical Cicada, hoppers and Lea the destructive and extraordinary Cicada excrecences than

None of the considered this such as into three sections

1. Trimer.

2. Dimer.

3. Monomer.