These are the lice, and this order contains both the sucking lice and the chewing lice. The order name means **lice without wings**. There has been quite a few changes in the classification of these insects, and there still seems quite a bit of disagreement. Old versions of your text book used to recognize two separate orders: the **Mallophaga** (chewing lice) and the **Anoplura** (the sucking lice). These have now been combined to form a single order, the **Phthiraptera**. The sucking lice still seem to form a good cohesive group, and so it is maintained as a suborder. The chewing lice, however, have been divided into 3 suborders.

These are relatively small (usually less than 6.5 mm), and they are usually dorso-ventrally flattened. The mouthparts are usually somewhat withdrawn up into the head, which is called **cryptognathy**. The compound eyes are reduced or lacking; the ocelli are absent. The antennae are short, 3-5-segmented; and they are wingless. The legs are adapted to hang onto its host.

These are ectoparasites of both birds and mammals. As a general rule, those families that feed on mammals usually have a single tarsal claw, while those that feed on birds usually have two tarsal claws. Lice are a source of irritation to poultry, livestock, and man. Blood beeding habits of certain groups can seriously weaken their hosts making them susceptible to disease. Species infesting humans can spread epidemic typhus and relapsing fever.

There are about 1000 North American species. The eggs are called **nits**, and the young are sometimes called **cooties**.

To collect lice, place the freshly killed host in a plastic bag. Later you can comb and pick hosts with forceps.

This order is considered to be relatively closely related to the Psocoptera. Remember that some of the Psocoptera used to live in bird nests. It is not too difficult to imagine that some of these free-living bark lice to have evolved from scavengers on debris in bird nests to creatures living as ectoparasites on the birds themselves.

As I previously mentioned, this order used to be divided into the chewing lice (Mallophaga) and the sucking lice (Anoplura). These were fairly easy to recognize, simply by the shape of the head. In the Mallophaga, the head is triangular, broader than the thorax, while in the Anoplura the head is small, often apically pointed, narrower than the thorax. And as the name suggests the chewing lice have chewing mouthparts, and the Anoplura have sucking mouthparts.

These characters still work to separate the sucking lice (suborder Anoplura) from the other lice. But now, rather than recognizing the Mallophaga as a suborder, it has been divided into 3 suborders: the Rhyncophthirina, the Amblycera, and the Ischnocera. You will only be expected to sight recognize the lice to suborder. Any further identification will be open book.

Suborder Rhyncophthirina have the head produced into a narrow beak which is longer than the rest of the head. There is only one family, the Haematomyzidae, and are only 2 species in the suborder, the elephant louse, which occurs on the Indian elephant, and another species which lives on the warthog in Africa. This suborder is considered to be an intermediate taxon between the Mallophaga and the Anoplura. We have some examples of the elephant louse for you to study.

Suborder Amblycera can be recognized by having the antennae clubbed and concealed in grooves or cavities, and the maxillary palps are present.

1. Family Menoponidae: These can be recognized by the combination of a triangular head, wider than long; antennae concealed in grooves, and two tarsal claws. These are bird lice feeding on skin fragments, feathers, or in some cases blood within feather shafts. This family contains the chicken body louse.

2. Family Laemobothriidae: Have the antennae swollen at the bases and are hidden in cavities. This order does recognize the largest species. These are mainly bird lice.

3. Family Ricinidae: Similar to the last group except that the head is not swollen at the base of the antennae. These are also bird parasites parasitizing many common perching birds and the hummingbirds.

4. Family Gyropidae: These lice have a single tarsal claw and have the antennae in grooves. In North America, they occur only on Guinea pigs.

Suborder Ischnocera can be recognized by the antennae being filiform and not concealed in grooves or cavities; the maxillary palps are lacking, and the head is wider than the thorax.

1. Family Trichodectidae: These have a single tarsal claw, usually 3-segmented antennae, and they occur on mammals. These lice are known from 5 orders of mammals. This is the most economically important family in the order in terms of livestock pests. Some of the economically important pests include the cattle biting louse, the horse biting louse, the sheep biting louse, the goat biting louse, and the Angora goat biting louse. Two species associated with pets include the cat biting louse and the dog biting louse.

2. Family Philopteridae: These lice have two tarsal claws, 5-segmented antennae, and a pterothorax (meso- and metathorax fused). The latter character along with the presence of a pleural suture (in all lice) are indicators of winged ancestors. Most of these species are parasites on birds, except a single genus has been associated with lemurs.

Suborder Anoplura are the sucking lice. They have the head narrower than the prothorax. The antennae are exposed and usually 5-segmented. They have a single-segmented tarsi bearing one apical claw. Together with the opposable tibial spine these two structures form the hold-fast organ. They also have the piercing-sucking mouthparts. The sucking lice occur on mammalian hosts worldwide with most species from Africa.

1. Family Echinophthiridae: Are distinguishable by their enlarged peg-like setae and the presence of scales. Members of this group occur on seals, sealions, walrus, and river otters.

2. Family Haematopinidae: Distinguishable by the presence of ocular points. This is a small family of 22 species in a single genus. Many species are of economic importance. Note that different species may show different distributions upon a given host and that seasonality can also influence distribution upon a host. There are several species which occur on hogs.

3. Family Linognathidae: These lack both eyes and occular points, meso and metathoracic legs are subequal in size. Their hosts include cattle, sheep, goats, deer, reindeer, dogs, coyotes, and foxes. It includes the dog sucking louse.

4. Family Pediculidae: Eyes are present, head is subequal to thorax in length. The body is about twice as long as wide. *Pediculus humanus* occurs in two varieties. *P. H. humanus*, the body louse, and *P. h. capitis*, the head louse. These lice can be vectors of disease through contamination. Epidemic typhus is contracted when an infected louse, or its feces, are scratched through the skin. Endemic relapsing fever is only spread by the louse being scratched through the skin. Note that in neither case is the bite of the louse responsible for disease transmission. Skin irritation caused by the presence of lice, their bites, and their feces is known as pediculosis.

5. Family Pthiridae: These have the abdomen as broad as long. Eyes are present and the head and thorax are subequal in length. Eggs are attached to body hair. These lice mainly infest the pubic area, but may occur in the auxillae or other areas in hairy individuals. Note the vernacular name crabs. There are two species in the family, *Pthiris pubis* and *P. gorillae*. The former occurs only on man, the latter species on both man and gorillas.