

## CHAPTER IV

### THE ANOPLURA, OR SUCKING LICE

THE sucking lice constitute the order Anoplura, one of the smallest of the orders of insects, but one that contains many species that are of biological interest or economic importance. In the last catalogue of the group (Ferris, 1916) one hundred and twenty species were listed from the world. The number of species described since then would bring the total nearly to two hundred. Sucking lice are confined entirely to mammals and are particularly abundant on such rodents as rats and mice and on many ungulates and most of the primates. Upon insectivores but few species are found; while marsupials, bats and a few other groups are not known to harbor them.

#### EXTERNAL ANATOMY

Sucking lice are very similar in size and general appearances to the biting lice, but they differ from the biting lice in a number of fundamental ways. Their mouth-parts are entirely of the sucking type, instead of the biting type; the thorax is unsegmented in all genera (unless it be in the highly specialized genus *Haematomyzus*), instead of being two or three segmented, and the first pair of abdominal spiracles is situated on the third instead of the second visible abdominal segment.

The mouth-parts of a sucking louse lie in a long tubular invagination of the floor of the

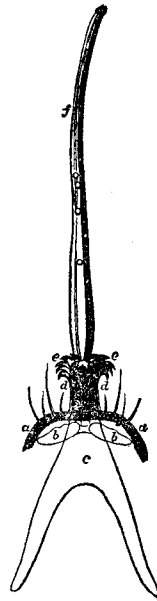


Figure 71. Mouth-parts of a sucking louse; a, a, head margin; b, b, chitinous band; c, hind part of lower lip; d, d, protruding part of haustellum; e, e, hooks turned outward; f, inner suction tube. (Schioedte)

buccal cavity, called the piercer-sheath, which extends backward for most of the length of the head. They are composed of four elements. The most dorsal of these, the dorsal-piercer, is a slender, flattened, stylet which is attached posteriorly to two muscles arising from the posterior wall of the head capsule. Just beneath the dorsal-piercer and adhering to it at the base is a minute, chitinous tube of unknown function. Below this tube is the ventral piercer which is similar to the dorsal one. It too is attached to two muscles which originate from the head capsule. Finally there is the most ventral structure which consists of a divided chitinous plate embedded in the floor of the piercer-sheath. It has been regarded as the mentum and submentum. The regions of the head have the same names as in the biting lice; while some of the head structures of the latter are wanting.

The thorax (Fig. 72) of a sucking louse is broad and flat and is consolidated into a single segment except possibly in one genus. It bears dorsally a single pair of large spiracles, and ventrally but a single body plate as a rule. This is the sternal plate which is usually entire, but is divided in a few genera.

The abdomen (Fig. 72) is nine segmented in the more primitive genera, but in many of the others the first two abdominal segments have been fused, while in a single genus, *Phthirus*, no less than the first five segments have been fused, although in this instance the first and second pairs of spiracles have been retained. In most of the genera some or all of the pleural plates have been retained, while only a few possess well developed tergal or sternal plates. The genital armature of the male has the same general structure as in the biting lice, and the more important parts are similarly named.

The legs are short and stout, and some of them usually modified so as to clasp hairs. The clasping apparatus is

formed by the enlarging and flattening of the tarsal claw and the developing of a distal, spined thumb on the tibia which is placed in apposition to the tarsal claw. In many

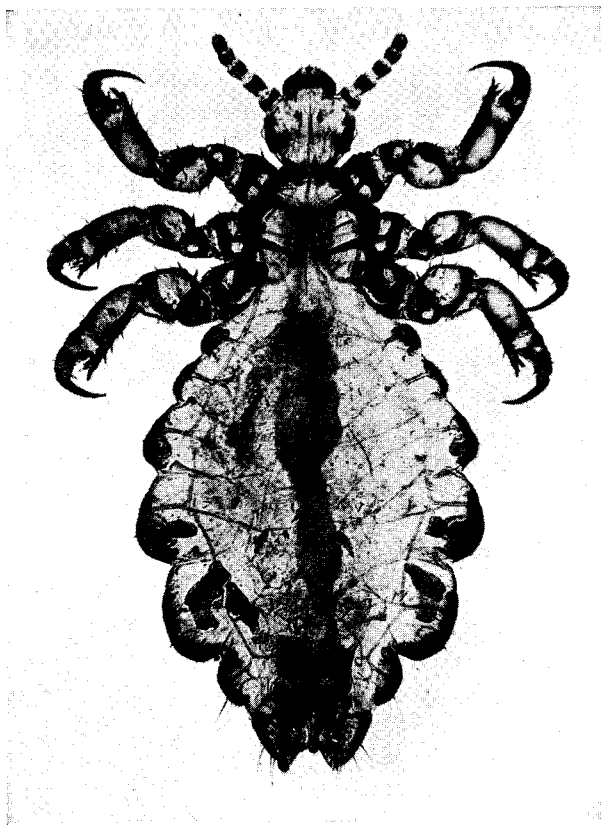


Figure 72. A monkey louse, *Pediculus consobrinus*; female from above. (Ewing)

of the genera the first pair of legs is smaller than the rest and in such instances is usually not modified for hair claspings.

#### LIFE HISTORY AND HABITS

The sucking lice have a development and habits quite parallel to those of the biting lice already described, except

that they suck blood. The eggs, or nits, are laid attached to the hairs of the host, and the young hatching from the eggs begin and lead a life on the same host individual as the later nymphs and adults.

Blood of mammals constitutes practically the exclusive diet of the sucking lice. And it is largely because of this habit that such diseases of man as typhus, relapsing fever and trench fever are transmitted by these parasites. When the louse feeds it breaks the skin and sets up an irritation. This irritation causes scratching, and the scratching crushes the lice, and rubs into the wound the infective contents of the louse's body. The biology of *Pediculus humanus* has been studied by several workers, but particularly by Nuttall (1917).

#### ORIGIN AND RELATIONSHIPS

The origin of the sucking lice is yet an unsolved mystery. Formerly, and even recently, it has been held that they are very closely related to, and have apparently originated from the biting lice. Yet although genus after genus has been added to both the Anoplura and the Mallophaga from the four corners of the earth and from the most diverse and peculiar and primitive hosts, yet in the nature of the mouth parts and in the composition of the thorax there is a sharp and fundamental break between these two groups.

The mouth-parts would seem to be more easily homologized with those of the true bugs or Hemiptera as has been claimed by Enderlein (1904), yet there are difficulties in doing so according to Harrison and others.

#### TAXONOMY

Dalla Torre (1908) in his synopsis of the Anoplura recognized four families. These four have been generally recognized by others. They are; the Pediculidae, for those lice with eyes which infest primates; the Haematomyzidae,

for those with a tubular head and occurring on elephants; the Echinophthiriidae, for the short, spined lice of marine mammals; and the Haematopinidae, for the remaining blind forms that are found chiefly on rodents and ungulates.

In the classification here given the weight accorded to the different characters is intended to be in proportion to the fundamental nature of those characters. Those considered of most importance, hence to be used chiefly for defining the families and subfamilies are: The fusion of abdominal segments; the number and position of the abdominal spiracles; the type of setae clothing the body; the general shape of the head and the type of legs composing each pair. Two new families are suggested, one for the peculiar genus *Haematopinoides* described by Osborn and one for the inguinal, or crab, louse of man.

#### KEY TO THE FAMILIES OF SUCKING LICE

1. Head not drawn out into any tubular process; tibiae of at least one pair of legs broadened distally and forming a spine-like or thumblike process appposable to tarsal claws. . . . . 2  
 Head produced into a tubular beak which is much longer than the head proper; tibiae of all the legs not broadened distally or formed into any process appposable to tarsal claw. On elephants. . . . . HAEMATOMYZIDAE
2. Body sparsely clothed with setae the most of which are in definite rows, scales usually wanting. Parasitic on land mammals. . . . . 3  
 Body thickly studded with short stout spines and in some cases with setae or scales in addition. Parasitic on marine carnivores. . . . . ECHINOPHTHIRIIDAE
3. Eyes wanting; pleural plates sometimes vestigial or wanting 4  
 Eyes or eye tubercles present; pleural plates usually well developed. On primates. . . . . 5
4. Antennae five segmented. . . . . HAEMATOPINIDAE  
 Antennae three segmented. . . . . HAEMATOPINOIDIDAE, new family
5. First pair of legs similar to the others in structure but sometimes smaller; segmentation of the abdomen typical of the order; first and second pairs of abdominal spiracles lateral in position; abdominal tubercles wanting. . . . . PEDICULIDAE

First pair of legs much more slender than the others; abdominal segments III–V fused; first and second pairs of abdominal spiracles dorsal in position; lateral abdominal tubercles present. . . . . PHTHIRIDAE, new family

### Family HAEMATOPINIDAE

This family is by far the largest of those in the order Anoplura. In it are included twenty-nine genera and more than half of the species of sucking lice. These lice are confined largely to rodents, insectivores and ungulates. Enderlein (1904) divided the family into three subfamilies; Haematopininae, Trichaulinae and Euhaematopininae. Ferris (1916) accepts these three divisions, but reduces the genus *Trichaulus* to the synonymy of *Linognathus* thus changing the subfamily name Trichaulinae to Linognathinae.

In the classification here given, the genus *Euhaematopinus* Osborn is reduced to the synonymy of *Haematopinoides* Osborn and taken out of the Haematopinidae and placed in a family of its own, the Haematopinoididae. The genus *Acanthophthirus* Perkins, established for an immature specimen from a bat, needs further study as its status is very uncertain. The number of subfamilies recognized is increased to six. The characters used for their differentiation as well as for their genera are made evident in the following key:

#### KEY TO THE SUBFAMILIES AND GENERA OF HAEMATOPINIDAE

1. First pair of legs smaller than one or both of the other pairs    2  
    Legs all subequal, the tarsus and tibia of each forming a hair-clasping apparatus. On ungulates . . . HAEMATOPININAE    6
2. First pair of legs smaller than either the second or third pair    3  
    First two pairs of legs of the same size and much smaller than the last pair. On rodents  
    ENDERLEINELLINAE, new subfamily    7
3. Abdomen provided with distinct pleural plates on some of its segments . . . . . 4  
    Abdomen without pleural plates, or with only slight rudiments of the same. . . . . 5

4. Tarsus I with 2 claws and apparently 2-segmented; third antennal segment longest  
     HYBOPHTHIRINAE, new subfamily 13  
   Tarsus I with but 1 claw and unsegmented; second antennal segment usually longest  
     HOPLOPLEURINAE, new subfamily 14
5. Six pairs of abdominal spiracles present; abdomen clothed with normal setae.....LINOGNATHINAE 29  
   Only one pair of abdominal spiracles present; abdomen studded with short setae and pointed scales  
     NEOLINOGNATHINAE, new subfamily 34
6. Only one genus.....*Haematopinus* Leach
7. Antennae bearing several toothlike processes; abdomen elongate.....*Microphthirus* Ferris  
   Antennae without toothlike processes; abdomen very broad usually subcircular..... 8
8. Tibiae and tarsi of legs I & II of about the same width throughout; tarsal claws I & II each provided with a conspicuous tooth on its inside near the tip...*Hoplophthirus*, new genus  
   Tibiae I & II broadened at their distal ends and tarsi I & II at their proximal ends, and forming with tarsal claws clasping structures; claws of tarsi I & II with or without tooth 9
9. Second abdominal segment without any ventral plates, or discs; 7 distinct pairs of abdominal pleural plates present  
     *Proenderleinellus* Ewing  
   Second abdominal segment provided ventrally with a pair of tubercle-bearing plates; less than 7 distinct pairs of abdominal pleural plates present..... 10
10. Tubercle-bearing plates of second abdominal segment subcircular and disclike and each tubercle cylindrical and setigerous..... 11  
   Tubercle-bearing plates of second abdominal segment not subcircular and disclike and tubercles themselves not cylindrical; abdomen subcircular; tarsal claws I & II each with a tooth.....*Cyclophthirus*, new genus
11. Pleural plates present either on abdominal segment V or VI or on both these segments.....*Enderleinellus* Fahrenholz  
   Pleural plates absent on both abdominal segment V & VI. 12
12. Tarsal claws I & II bifurcate at their tips; forehead longer than broad, coneshaped, with lateral margins about straight  
     *Rhinophthirus*, new genus  
   Tarsal claws I & II simple; forehead broader than long, dome-shaped, with lateral margins rounded  
     *Euenderleinellus*, new genus





22. Transverse rows of abdominal setae of two types, the posterior, marginal row being made up of foliaceous setae while the interposed row or rows are of normal setae; abdomen with six pairs of spiracles. . . . . *Ctenophthirus* Ferris  
Transverse rows of abdominal setae not so constituted. . . . . 23
23. Sternal plate of second abdominal segment greatly enlarged, overlapping most of the third segment and divided at the median line; six pairs of abdominal spiracles present  
*Schizophthirus* Ferris  
Sternal plate of second abdominal segment differently constituted; last, or sixth, pair of abdominal spiracles usually reduced in size, rarely vestigial or wanting. . . . . 24
24. Second pair of pleural plates not lobed, but greatly enlarged and winglike and each bearing the pleural setae near the dorsal margin. . . . . *Pterophthirus* Ewing  
Second pair of pleural plates bilobed posteriorly and each bearing on its posterior margin between the lobes a pair of setae. . . . . 25
25. Third abdominal sternite without spines; typical pleural plates with two posterior lobes. . . . . *Ferrisella*, new genus  
Third abdominal sternite with at least one pair of spines. 26
26. Third abdominal sternite with only one spine on each side of the median plane; tergites of male very large and touching or overlapping each other; posterior margin of abdomen of female with a comb of seta-bearing tubercles  
*Ctenura*, new genus  
Third abdominal sternite with more than one spine on each side; tergites of male not touching; posterior margin of abdomen of female without comb of seta-bearing tubercles 27
27. Third abdominal sternite with only 2 divergent spines on each side of the median line. . . . . *Hoplopleura* Enderlein  
Third abdominal sternite with 3 divergent spines on each side of median line. . . . . 28
28. Typical pleural plates with only 2 posterior lobes; pseudopenis of male genital armature articulating with the ends of parameres. On Petauristid rodents *Euhoplopleura*, new genus  
Typical pleural plates with four posterior lobes; pseudopenis does not articulate with ends of parameres  
*Ctenopleura*, new genus
29. Typical abdominal segments never with more than a single transverse row of setae. . . . . 30  
Typical abdominal segments with more than a single transverse row of setae; six pairs of abdominal spiracles present  
33

30. Abdominal spiracles situated in tubercles. On cattle  
*Solenopotes* Enderlein  
 Abdominal spiracles not situated in tubercles. . . . . 31
31. Last two segments of antennae fused together; dorsal and ventral abdominal setae arranged into two dorsal longitudinal and two ventral longitudinal rows. On Procaviidae  
*Prolinognathus*, new genus  
 Last two segments of antennae distinct; abdominal setae not so arranged. . . . . 32
32. Temples not swollen and with postero-lateral angles; no vestiges of pleural plates present. On deers  
*Cervophthirus* Mjöberg  
 Temples more or less swollen and without postero-lateral angles; vestiges of pleural plates present. On hares and rabbits. . . . . *Haemodipsus* Enderlein
33. Head at least three times as long as thorax, the latter very short and apparently composed of only two segments  
*Microthoracius* Fahrenholz  
 Head not over twice as long as the thorax, the latter normal  
*Linognathus* Enderlein
34. Only one genus included. . . . . *Neolinognathus* Bedford

#### GENERIC SYNONYMS IN HAEMATOPINIDAE

*Neumannellus* Fahrenholz, 1916 = *Scipio* Cummings, 1913  
*Lutegus* Fahrenholz, 1916 = *Linognathoides* Cummings, 1914.  
*Acanthopinus* Mjöberg, 1910 = *Neohaematopinus* Mjöberg, 1910.  
*Eremophthirius* Glinkiewicz, 1907 = *Polyplax* Enderlein, 1904.  
*Trichaulus* Enderlein, 1904 = *Linognathus* Enderlein, 1905.

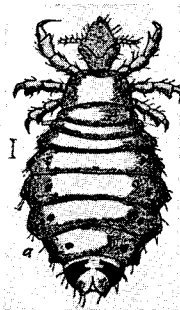


Figure 73. Short-nosed ox louse, *Haematopinus eurysternus*. (Osborn)

#### Genus HAEMATOPINUS Leach

This, the type genus of the family Haematopinidae, is the only included genus in the subfamily Haematopininae. It is a large genus of large lice occurring exclusively on ungulates. In it are included several species that parasitize domestic animals, some of which are of considerable economic importance.

The Sucking Louse of the Horse, *Haematopinus asini* (Linnaeus), occurs on horses, asses and donkeys. It is seldom

found in the United States except on range animals. This is a large louse, but not so large as the sucking louse of swine.

The Short-nosed Ox Louse, *Haematopinus eurysternus* (Nitzsch) (Fig. 73), is similar in appearance to *H. asini*. A very similar species is found on the bison. This louse is not the one most encountered on cattle in America.

The Hog Louse, *Haematopinus suis* (Linnaeus) (Fig. 74), is one of the largest of all the sucking lice being about six millimeters long. It probably has been studied more than any other louse on domestic animals, being admirably adapted for morphological research on account of its large size (Florence, 1921). In this species there is a strong, black marginal band which passes around the body. This louse is very common in many parts of the world, but in the United States is of more or less local occurrence.

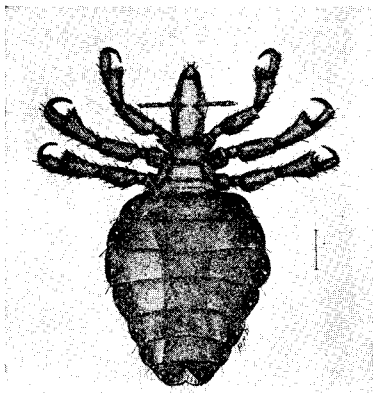


Figure 74. Hog louse, *Haematopinus suis*. (Lugger)

### Genus POLYPLAX Enderlein

The genus *Polyplax* belongs to that group of the genera of the subfamily Hoplopleurinae in which there are not more than two transverse rows of setae to a single abdominal segment. There are tergal and sternal plates present in both sexes, but the antennae are different in the two sexes. The third antennal segment of the male is either modified or is provided with one or more, short, stout spines.

The Common Sucking Louse of Rats, *Polyplax spinulosa* (Burmeister), is the type species of the genus. This louse occurs on all of the domestic rats and is of almost worldwide distribution.

The Old World Mouse Louse, *Polyplax serrata* (Burmeister), has been found on the house mouse in the United States only on laboratory animals. It is a common parasite of the house mouse in Europe.

### Genus LINOGNATHUS Enderlein

*Linognathus* species may be distinguished from those of the other genera of Linognathinae by the fact that the typical abdominal segments have more than a single transverse row of setae. The genus is restricted to ungulates and the domestic dog. Since only one species occurs on dogs and several species on ungulate hosts it would appear that the latter were the original natural hosts, and that dogs had acquired their species because of the predatory habits of their wolflike ancestors.

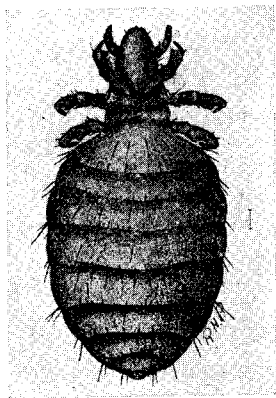


Figure 75. Sucking louse of the dog, *Linognathus piliferus*. (Lugger)

The Long-nosed Ox Louse, *Linognathus vituli* (Linnaeus), is a rather small slender species, being much smaller than *Haematopinus eurysternus*. It is widely distributed in the United States and occurs in many other countries.

The Foot Louse of Sheep, *Linognathus pedalis* (Osborn), occurs almost exclusively on the legs and feet of the host. Such a habit should make it easy to control the pest by driving the infested sheep into a dipping vat with enough insecticide solution to cover the legs.

The Sucking Louse of the Goat, *Linognathus stenopsis*

(Burmeister), has a wedge-shaped head, short antennae and a squarish thorax. It is common in the Old World and in America.

The Sucking Louse of the Dog, *Linognathus piliferus* (Burmeister) (Fig. 75), the type species of the genus, is not only a parasite of the dog but also of the fox, the coyote and the ferret. Dogs in the United States are seldom found infested with this louse.

#### Genus SOLENOPOTES Enderlein

*Solenopotes* may be distinguished from all other genera in its family by having its six pairs of abdominal spiracles opening through tubular processes on the sides of the body. This genus was established in 1904 for a new species found on cattle.

The Tubercle-bearing Louse of Cattle, *Solenopotes capillatus* Enderlein (Fig. 76), known for many years only by a single record from Germany, was reported by Bishopp (1921) to be common in the United States and has since been found by Pillers in England. Female specimens are about one and a half millimeters long. Both sexes have the prominent lateral, spiracle-bearing tubercles.

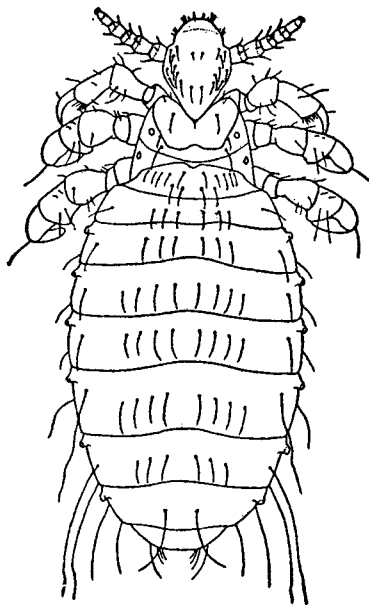


Figure 76. *Solenopotes capillatus*; dorsal view of female,  $\times 40$ . (Bishopp)

#### Genus HAEMODIPSUS Enderlein

In *Haemodipsus* there is but a single transverse row of setae to one abdominal segment, the abdominal spiracles

are not situated on tubercles, the last two antennal segments are distinctly separated, the temples are more or less swollen and vestiges of pleural plates are present. The genus is confined entirely to hares and rabbits.

There are but three species in the genus. *H. lyriocephalus* (Burmeister), the type species of the genus, is known only from Europe where it has been reported from two species of *Lepus*. *H. ventricosus* (Denny) is reported from a number of species of Leporidae and is found in Europe and North America. *H. setoni* Ewing was only recently (1924) described from jack rabbits in Western United States.

### Family HAEMATOPINOIDIDAE

This family is erected to include two peculiar but not closely related genera in which the antennae are three segmented. One of these genera, *Haematopinoides* Osborn, is North American; the other, *Hamophthirius* Mjöberg, contains but a single species, *H. galeopitheci* Mjöberg, which was taken from a *Galeopithecus* species in Borneo.

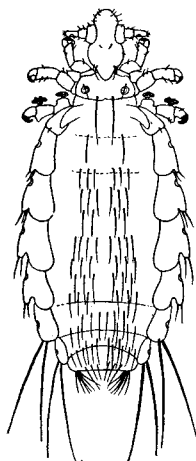


Figure 77. *Haematopinoides squamosus*; female from above,  $\times 25$ . Drawing made from a type specimen. (Original)

The subfamily Euhaematopininae proposed by Enderlein (1904) included two genera, *Haematopinoides* Osborn and *Euhaematopinus* Osborn. It was suggested some years ago by Kellogg and Ferris that the genus *Euhaematopinus* should possibly be considered as a synonym of *Haematopinoides*. Recently the writer has studied the type specimens of the type species of *Haematopinoides*, *H. squamosus* Osborn (Fig. 77), and has found that these specimens show the peculiar, pedicellate structures on the hind legs so characteristic of *Euhaematopinus*, hence this later estab-

lished genus should fall into the synonymy of *Haematopinoidea*. It has been claimed (Ferris, 1922) that in *H. abnormis* (Osborn) the antennae are four segmented. In this opinion the writer can hardly concur. It is true that the last antennal segment shows double incrassations on the posterior border and sometimes also on the anterior border, but there is no transverse groove or suture present.

Both genera contained in this family are peculiar and rather markedly adapted in certain respects. Further study may show that they have not sufficient in common to be placed in the same family. Although they are both placed in the newly erected family *Haematopinoididae*, they are placed in different subfamilies.

#### KEY TO THE SUBFAMILIES AND GENERA OF HAEMATOPINOIDIDAE

1. Forehead of usual shape; first antennal segment but slightly larger than the others; posterior femora and tibiae each bearing a lateral pedicellate appendage

HAEMATOPINOIDINAE, new subfamily 2

Forehead strongly constricted and bearing a chitinous hook on each side; first antennal segment enormous and with posterior hook; posterior femora and tibiae without lateral appendages. . . . . HAMOPHTHIRIINAE, new subfamily 3

2. Contains but a single genus. . . . . *Haematopinoidea* Osborn

3. Contains but a single genus. . . . . *Hamophtirius* Mjöberg

#### GENERIC SYNONYM IN HAEMATOPINOIDIDAE

*Euhaematopinus* Osborn, 1896 = *Haematopinoidea*

Osborn 1891

#### Family PEDICULIDAE

The members of the family *Pediculidae* (Fig. 78) are provided with eyes except in a single genus, the antennae are five segmented but in some of the genera indistinctly so, the body is clothed with normal setae, and the head is not drawn out into any tubular process. This family apparently is most nearly related to the *Haematopinidae*, the genus





3. Eyes present though much reduced; thorax broad and with conspicuous spiracles; six pairs of pleural plates present

*Phthirpediculus* Ewing

Eyes wanting; thorax slender and without spiracles; with but a single pair of pleural plates which are situated on the second abdominal segment. . . . . *Lemurphthirus* Bedford

4. Subfamily includes but a single genus. . . . *Pediculus* Linnaeus

5. All legs provided with subequal, slender and sharp claws

*Pedicinus* Gervais

Second and third pairs of legs with broader and stouter claws than those of the first pair. . . . . 6

6. Abdomen with three pairs of pleural plates

*Neopedicinus* Fahrenholz

Abdomen with only two pairs of pleural plates

*Phthirpedicinus* Fahrenholz

### Genus *PEDICULUS* Linnaeus

This, the type genus of the family Pediculidae, is the oldest of all of the genera of Anoplura and is the only one contained in the subfamily Pediculinae. It is distinguished from all of the other genera in its family by having the legs subequal and the antennae distinctly five segmented. The species of the genus are found on man, apes and monkeys. Those occurring in the New World have recently been revised (Ewing, 1926). Those occurring on New World monkeys have the typical pleural plates with lateral lobes and are placed in the subgenus *Parapediculus* Ewing.

Much controversy has raged over the question as to whether or not each of the primary races of mankind has harbored a distinct race or subspecies of *Pediculus*. The writer has already stated (Ewing, 1926) that it is his belief that each primary race did originally harbor a distinctive variety of *Pediculus*. This opinion was only arrived at after

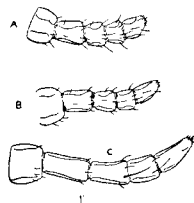


Figure 79. Antennae of female of; A, *Pediculus humanus humanus*; B, *P. h. americanus*; C, *P. h. nigritarum*; all drawn to the same scale. (Ewing)

a study of the lice infesting mummies. Undoubtedly much mixing of louse types has taken place following the intermingling of the primitive races during the civilized period of human history.

The Head Louse of the White Race of Man, *Pediculus humanus humanus* Linnaeus (Fig. 78), is to be considered the typical form of the species. The head louse of Europeans and others of the white race originally differed from those found on American Indian mummies, and on African negroes and on the yellow race by having the body setae more peg-like, and in having scarcely half of them in distinct rows, and in having larger spiracular bulbs, these being over one-tenth of a millimeter in diameter.

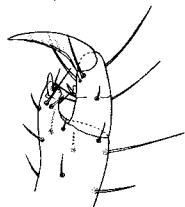


Figure 80. Ventral view of end of left anterior leg of male of *Pediculus humanus humanus*. (Ewing)

The so called head louse of man in Europe and to a lesser degree in the United States is usually what appears to be a hybrid of this variety. In central European and north European countries it is more nearly typical of those specimens collected half a century ago.

The Head Louse of African Negroes, *Pediculus humanus nigritarum* Fabricius, may have been the only form originally found in Ethiopia, but this point will be hard to settle now. Undoubtedly a number of types of lice are found today on African Negroes. One of the types which probably represents the *nigritarum* of Fabricius is a large louse with long antennae, every segment of which, except for the first, is longer than broad. This variety of *humanus* is very near and undoubtedly in some instances identical with some of the types of body lice found in United States and in certain other countries.

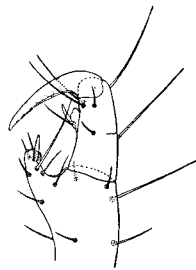


Figure 81. Ventral view of end of left anterior leg of male of *Pediculus humanus nigritarum*. (Ewing)

The Head Louse of American Indians, *Pediculus humanus americanus* Ewing, was described (1926) from lice taken on the scalps of Indian mummies. All of these specimens were larger than the European head louse, the segments of the antennae were longer in proportion to their width, the

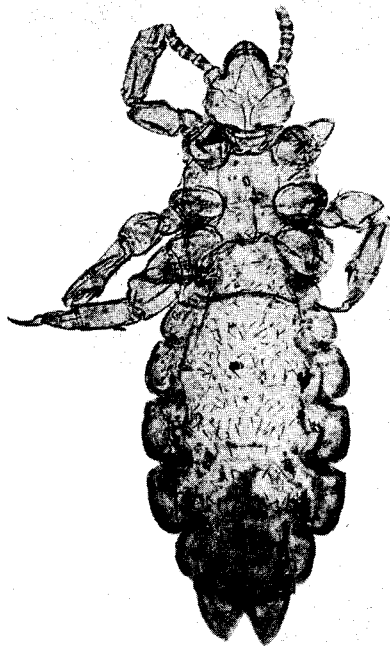


Figure 82. *Pediculus humanus americanus*, from scalp of prehistoric American Indian mummy. (Ewing)

body setae were less peglike, and there were a number of other differences. The same type of louse as was taken from Indian mummies has been taken also from heads of living Indians. Living Indians, however, have been found harboring also the European head louse.

The Head Louse of the Yellow Race of Man, *Pediculus humanus angustus* Fahrenholz, is very near that of the American Indian. Attempts to divide the head lice of the yellow race into more than one variety hardly appears to be justified.

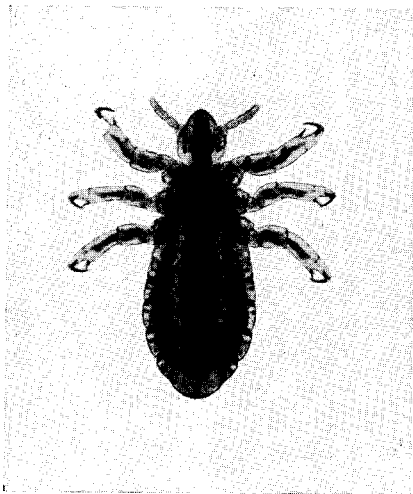


Figure 83. The body louse, *Pediculus humanus corporis*; nymph greatly enlarged. (Original)

The Body Louse, *Pediculus humanus corporis* Deeger, is a term applied to forms of *Pediculus* occurring on man which infest by preference the body and which lay most of their eggs on the clothing. Such forms are exceedingly variable in their morphological characters, as they are in their egg-laying habits. It may be that a clothes-infesting variety of the European head louse developed as the habit of wearing clothes became

established among Caucasians, or it may be that the clothes louse was originally only the African head louse which found the animal skins and woolen garments worn by man somewhat similar in their fibrous structure to the woolly hair of the negro race. Body lice of today appear to be chiefly hybrids.

The body louse, or clothes louse, is an important disease transmitter being responsible for the transmission of typhus and relapsing fevers and also trench fever. In civilized countries during peace times this louse is usually prevalent only among the shiftless and the very poor, but during times of stress where large numbers of the population are denied

the common practices of laundering it may become very abundant. As a wartime pest the clothes louse is probably of greatest importance. Methods for its control are considered at the end of the chapter on the Anoplura.

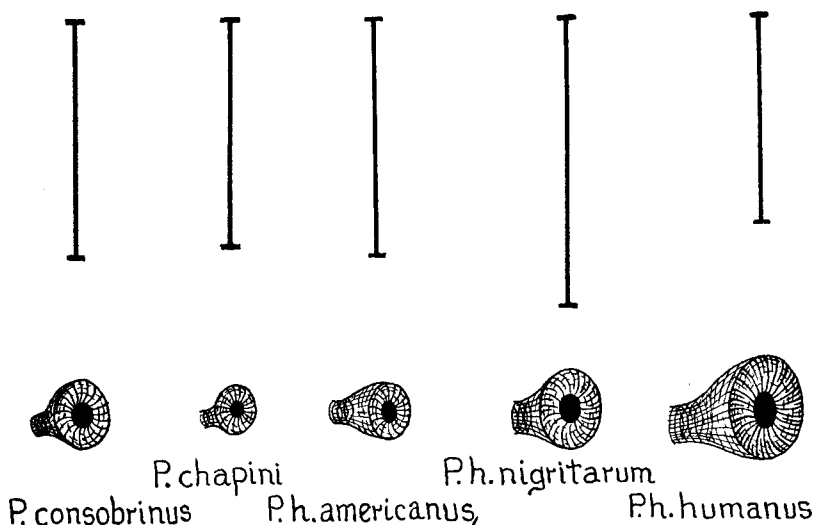


Figure 84. Drawings of the right thoracic spiracle of a female louse of five different kinds of *Pediculi*, all enlarged,  $\times 100$ . The line above drawing of each spiracle represents the length of the louse,  $\times 10$ .

### Family PHTHIRIDAE

Although the crab louse, *Phthirus pubis* (Linnaeus), has been recognized as being generically distinct from the other lice infesting man for over a century, evidently the importance of the generic characters of the genus *Phthirus* have not been fully recognized in the past. This has doubtless been due in part to the fact that the lice of primates in general have been only recently studied to any extent. The genus *Phthirus* differs from all other genera of sucking lice in having the first five segments of the abdomen fused and reduced to one, also in this genus only are the abdominal segments produced laterally into large tuberclelike lobes.



5. Body long; abdomen much longer than broad and clothed with both short spines and long setae; anterior legs greatly reduced in size and with tibial thumb obsolete; sternum wanting.....*Proechinophthirus* Ewing  
 Body short, stout; abdomen subcircular, clothed with spines only; anterior legs similar to the others and almost as large; sternum present.....*Echinophthirus* Enderlein

#### GENERIC SYNONYM IN ECHINOPHTHIRIIDAE

*Arctophthirus* Mjöberg, 1910 = *Antarctophthirus* Enderlein, 1906.

#### Family HAEMATOMYZIDAE

There is included in this family but a single genus and species. This species is quite remarkable in its structure, from which the following family characters are enumerated: Head produced anteriorly into a beaklike, proboscis; antennae five segmented. Legs of nearly the same size, slender and without tibial, thumblike process apposible to the tarsal claw. In the only species of this family the prothorax is separated off from the rest of the thorax, a condition not found elsewhere in the order.

The single genus, *Haematomyzus* Piaget, was established for the sucking louse of the African elephant, *Haematomyzus elephantis* Piaget. A variety of this species *H. e. sumatranus* was described from an Asiatic elephant by Fahrenholz. Two generic names come under the synonymy of *Haematomyzus*, *Idolocoris* Walker & Richter and *Phantasmocoris* White, both established in 1871.

#### THE CONTROL OF SUCKING LICE ON MAN

In this work only a few suggestions are given in regard to the control of lice. Those who are particularly interested in the control of human lice are referred to a large article by Nuttall (1918) and another by Moore and Hirschfelder (1919), which are listed in the bibliography at the end of this chapter.

Head lice may be effectively destroyed by first clipping

the hair close to the head and then applying an insecticide to the scalp. A hot solution of two percent lysol or a two percent solution of carbolic acid may be used. A moist towel should be wrapped about the head making a turban and the solution allowed to act for some time.

Body lice may be suppressed at times by applying proper laundrying methods to the clothing. Louse powders may be used against them, the following formula being one fre-

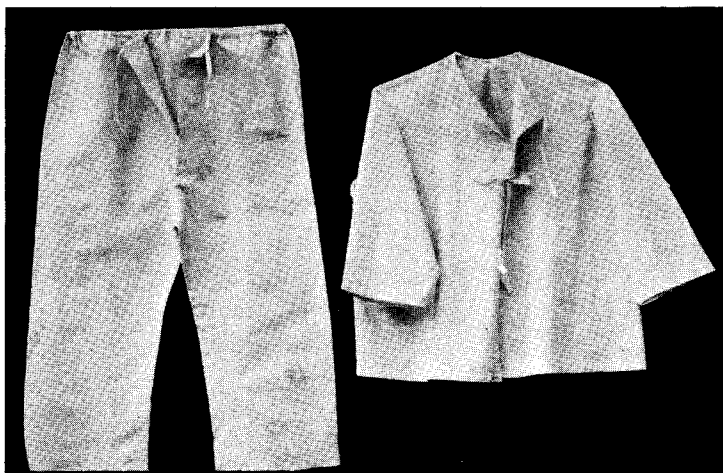


Figure 85. "Cootie clothing." A large unit of the American Expeditionary Force was supplied with these "cootie" suits.

quently employed: Naphthaline, 96 per cent; creosote, 2 per cent; iodoform, 2 per cent. Powders have been applied by means of sachets worn on the legs. The impregnation of underwear was tried during the World War with varying success. One American division was supplied with specially made underwear (Fig. 85) impregnated with a solution of naphthaline and sulphur dissolved in gasoline.

Crab lice at times become abundant in gymnasiums or in lodging houses. They are scattered about on towels or laundry and by means of the eggs on hairs detached because



of scratching. Not only is it frequently necessary to destroy the eggs and lice on the bodies of the infested persons, but extra precautions must be taken in regard to the use of towels and the cleaning of the floors. Crab lice will frequently spread to the hairs of the armpits, or on some persons to the hairy patches on the chest or even on the back. Such patches of hair should not be overlooked during the employment of clean up measures.

#### THE CONTROL OF SUCKING LICE ON ANIMALS

Sucking lice are confined entirely to mammals hence are not found on poultry. On domesticated mammals they may be destroyed in the same manner as the biting lice, *i.e.*, by the local application of an insecticide where there is a mild infestation, or by dipping the whole animal where the infestation is serious. Insecticides, particularly oil emulsions may be applied by a spray pump to advantage on warm days.

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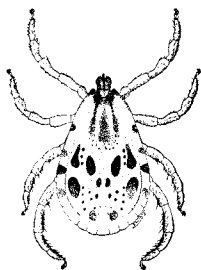
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UNITED STATES BUREAU OF ENTOMOLOGY



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