severe inflammation by its puncturing. Dr. E. S. Hull, of Alton, Ill., was once, as he tells us, bitten in three places in the arm by one of these creatures, and the arm became so inflamed in consequence that for three days afterwards he almost lost the use of it. In the northerly parts of the United States, so far as we are aware, it does not occur. Like many of its allies it passes the winter in the perfect state, for we have ourselves captured it in south Illinois under loose bark in November, in company with its pupa (fig. 93, b).

![Fig. 93.—Conorhinus sanguinola: a, pupa; b, adult (from Amer. Entom.).](image)

All the species of this genus, most of which are South American, fly into houses by night, according to Burmeister, and live upon the blood of mammals, the puncture of their beaks causing great pain. In the larval and pupal states they probably suck the juices of insects; for being wingless in those states they would have no means of reaching the larger animals. The single pupa that we found under bark in winter time occurred in a place that was about half a mile from the nearest house; so that at all events it certainly could have had no chance there to suck human blood.

**SUBORDER PARASITA.**

This group includes the suctorium lice, confined to mammals; they are strictly parasitic insects, being confined to their hosts constantly and deriving all their nourishment from them. They are wingless, and the mouth parts consist of a tubular suctorial organ.

This suborder contains but two families, the first of which, the Polyctenidae, contains, so far as known, but two species, both of which are confined to bats, one in Jamaica and the other in China. These do not properly fall within the province of this paper, and it will not be necessary to give them further consideration.

**Family PEDICULIDÆ.**

*(The Suctorium Lice.)*

This family includes nearly all the species of the suborder and all that come within the limits of this paper.

We need only add to the character above given the short rostrum without joint and the tarsi adapted to clasping and holding to hairs.
HEMIPTERA.

The eggs—‘nits’—are attached to hairs by a glue-like substance, and the young lice when hatched resemble the adults except in size. As the entire life of the parasite is passed upon the same animal or on another animal of the same kind, its range of habit is easily stated.

But very few of the species are ever found upon any other species of animal than that which they normally infest, and if so always upon very nearly related species. Whether this is due to differences in the thickness of the skin, of temperature, of the size of the hair to which they must adhere and to which their feet are adapted, or to some subtle difference in the odor or taste peculiar to their particular host which leads them to discard all others, we are unable to say.

The mouth parts are necessarily capable of great extension in order to reach the blood of their hosts. Uhler says (Standard Nat. Hist., Vol. II, p. 209): “A fleshy unjointed rostrum, capable of great extension by being rolled inside out, this action serving to bring forward a chaplet of barbs which embed themselves in the skin to give a firm hold for the penetrating bristles, arranged as chitinous strips in a long, slender, flexible tube, terminated by four very minute lobes, which probe to the capillary vessels of a sweat pore. The blood being once reached a current is maintained by the pulsations of the pumping ventricle and the peristaltic movements of the stomach.”

The species infesting man are so nearly related to the others that we can not well pass them by without notice.

THE CRAB LOUSE.

(*Phthirius inguinalis* Leach.)

If we may depend upon ancient writers, this species has long been a companion of man. According to Denny it is recorded by Herodotus, and according to Piaget was referred to in the writings of Aristotle. Some of the ancient accounts treat of it as occurring in the most prodigious numbers and causing most serious ailments to the infested parties. The disease produced gained the name of Phthiriasis, though doubtless this term has been applied also to the attacks of the other species of parasites infesting man.

Its attacks are said to be more severe than those of the other forms of lice, although it is quite probable that in the worst cases reported the
different species have been present, since the conditions favoring the increase of one will also favor the others. The reports, especially of the earlier writers, have many of them doubtless been subject to great exaggeration, for while the normal rate of increase will account for the sudden appearance and rapid multiplication of the lice under certain conditions, it is not equal to the marvelous stories which are to be met with even in some works that lay claim to accuracy.

The crab louse infests particularly the pubic regions, but occurs also among the stiff hairs under the arms, in the beard, and it is said also among the hairs of the eyebrows. It does not live in the fine hair of the head.

It is very distinct from the other species, the body being nearly as wide as long, while the strong legs spreading out laterally very greatly increase its apparent width and give it the form of a crab in miniature, thus winning for it the name of crab louse. It is of a whitish color, with a dusky patch on each shoulder, and with the legs slightly tinged with reddish, the claws having this color more pronounced. It is nearly one-tenth of an inch in length.

The remedies adopted for the head louse are applicable to this species, although it is said they are less effectual and must be persisted in more vigorously. Red precipitate is probably most frequently used.

**The Head Louse.**

(\textit{Pediculus capitis} DeGeer.)

This louse has been recognized under one name or another as far back as we have history. While very generally confused with the following species, it is probably the one most commonly known, though perhaps not the one which has caused the greatest amount of annoyance or that has occurred in the greatest numbers. The two species were not clearly defined till comparatively recent times.

Elaborate writings upon the louse were given by Swammerdam, Lecuwenhoek (1693), and descriptions of it by Redi, DeGeer, Linnæus, Geoffroy, Burmeister, Leach, and others, besides innumerable brief mentions and a goodly number of elaborate memoirs upon its embryology, etc. In later days, while a most annoying pest, it does not appear to have caused such serious results as the body louse or the crab louse.

It is confined to the fine hair of the head, rarely occurring on other parts of the body.

The eggs (nits) are white and glued to the hair at some distance
from the head, and are most abundant, we have observed, back of the ears. When numerous they form quite conspicuous objects. The young, upon hatching from these, resemble the adults, except in size and in being less distinctly marked. The proportions of the body are also somewhat different, the abdomen being smaller than after it has become enlarged by a steady diet upon human blood. The full-grown lice are whitish, with faint, dark markings at the sides of the thorax and abdomen. The last segment of the abdomen in the female is bilobed.

Murray has shown that the different races of man harbor different varieties of this species of louse, the difference in the varieties being particularly in color and in the form of the claws. In color they differ from the nearly white infesting the Caucasians to the black infesting the African. The claws differ somewhat in proportions, and Murray thinks these differences constant, but they can at most be considered only as varietal differences.

Remedies are white precipitate, sulphur ointment, and especially cleanliness.

THE BODY LOUSE.

(Pediculus vestimenti Leach.)

As with the preceding species, the history of this parasite is lost in antiquity, and most of the early accounts failed to indicate any difference in the two forms. In the works of DeGeer, Leach, Denny, and others they are distinguished and well characterized.

This form is most common where opportunities for good sanitation are wanting, as in armies, prisons, and all places where attention to bodily cleanliness from choice or necessity is neglected.

It is not known to infest animals, though we have seen specimens that were said to have been taken from cattle.

Until fully grown there is not much difference to be noted in the appearance of this and the preceding species, though the markings at the sides are less distinct. In the adult form, however, the dorsal surface is marked with dark transverse bands.

The insect secretes itself in the folds of the clothing, only penetrating the skin when in want of food. The long, slender sucking tube, by means of which it reaches the small blood vessels near the surface, is shown fully extended in figure 94.
The eggs are deposited in folds of the clothing, and, according to the
estimates of Leenwenhoek, a single adult female may have a progeny
of 5,000 in eight weeks, and he adds that in the heat of summer this
estimate might be very greatly exceeded. This will readily account
for all the authentic reports of sudden and numerous appearances of
this pest.

A ready means of combating this pest is to thoroughly bake the
clothing infested with it, or, to be fully as effectual with less heat, this
might be accompanied by fumigation with sulphur or tobacco smoke.
A repetition of this process two or three times at intervals of a few
days, along with strict personal cleanliness, should overcome the most
serious attack.

Alt described, under the name of Pediculus tabescentium, the louse
which he considered as the cause of phthiriasis, but later authorities
consider this as simply the vestimenti present in aggravated numbers.
Properly speaking, this affection should be termed pediculosis, and the
term phthiriasis reserved for the attacks of Phthirus inguinalis.

Louse of the Ape.

(Pediculus consobrinus Piaget.)

Closely related to the human lice is a species described by Piaget
occurring upon the Ateles ape (Ateles pentadactylus). It resembles
especially the Pediculus capitis, but presents some differences in form of
head and structure of abdominal appendages which have led this author
to establish the separate species. It appears to differ less, in general
appearance, from typical capitis than the varieties of capitis occurring
on different races differ among themselves.

Though there is considerable difference in the drawings, this is prob-
ably the same species that is figured by Murray (Economic Entomology,
p. 389) under the name of Pediculus quadrumanus and said to be taken
from the Ateles ape.

Lice Infesting the Monkey.

(Pedicinus spp.)

Three species of lice are found upon monkeys, all being generically
distinct from those infesting other animals. They form the genus Pedic-
inus, the most essential character of which is the presence of but three
joints in the antenna.

The species are the Pedicinus eurygaster Gervais, which occurs upon
the macaques, Macacus nemestrinus, cynomolagus, and radiatus, accord-
ing to Piaget, and Macacus sinicus, according to Giebel; the Pedicinus
longiceps Piaget occurring, according to its author, upon the Macacus
cynomolagus and the Semnopithecus pruninosus; and the Pedicinus breviceps
Piaget infesting the Cercopithecus monas.
Aside from these species of Pedicinus, Gervais describes a species of Hematopinus, *H. obtusus*, from the *Semnopithecus maurus*.

The abundance of these vermin upon monkeys can be attested by all visitors of zoological gardens or menageries, and the ready means adopted by the hosts for their subjugation are equally familiar—a method of destruction which, by the way, is said to be adopted by many tribes of inferior races belonging to the human species.

THE SUCKING DOG LOUSE.

(*Hematopinus piliferus* Burm.)

Although the dog has been the closest companion of man among the domestic animals from very early times, and consequently this parasite, in all probability, was well known to keepers of dogs, it was not technically described until about the year 1838.

It does not appear to have been a very numerous or injurious parasite, apparently much less so than the *Trichodectes latus* infesting the same animal, and less annoying than either ticks or fleas. Denny says (Monog. Anop. Brit., p. 29): “I have found it upon dogs two or three times, but it is by no means of common occurrence.” We have examined many dogs in quest of it, but only a single specimen so far has been our reward. Denny says (loc. cit.): “I also received specimens from the ferret.” It can hardly be inferred, however, that this animal is consequently a normal host for the species, as such an instance might occur entirely from accident, the louse having been transferred from some dog to a ferret associated with it.

This species is somewhat smaller than the lice infesting most of the larger mammals, the full-grown individuals being nearly one-tenth of an inch long. It is described generally as of a light-red or ashy flesh color, but evidently varies as the other species, according to the condition of the body as well as the age of specimens. In preserved specimens these colors become lighter, assuming a yellowish hue, the abdomen, except where darkened by the intestine and its contents, appearing a shade lighter than the front part of the body. The abdomen is thickly covered with fine hairs and minute warty eminences, these latter when magnified about 300 diameters appearing like the scales of a lizard or fish.

Specimens from different breeds of dogs do not appear to have been noticed as different, although a form described as *H. bicolor* by Lucas may perhaps be found to present race characteristics.
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THE LOUSE OF THE CAMEL.

(Hamatopinus cameli Redi.)

We follow Giebel and Piaget in admitting this species, although it does not appear to have been observed by any modern naturalist.

Piaget says (Les Pédic., p. 644): "La figure que donne Redi, le seul qui ait observé cette espèce, se rapproche beaucoup de celle de Fürius."

LICE INFEesting THE GIRAFFE, DEER, AND ANTELOPE.

(Hematopinus spp.)

Closely related to the lice infesting the other hoofed quadrupeds are those infesting respectively the giraffe, deer, and antelope. The species infesting the giraffe (Camelopardalis giraffa) was described by Giebel under the name Hematopinus brevicornis; that infesting the deer was first mentioned by Redi and described and named by Nitzsch as Hematopinus crassicornis; it is recorded from the red deer (Cervus elaphus). The Hematopinus tibialis Piaget, from Antilopa maori, is, according to its author, represented by varieties on the Antilopa sp. and the Antilopa subeuitroosa, and he considers it possible that the H. cervicapra Lucas, from Antilopa cervicapra, is also a variety of this same species.

THE SUCKING LOUSE OF THE GOAT.

(Hematopinus stenopsis Burm.)

We have no record of this species having been observed in this country, and judging by the references to it in standard works it must be of rather rare occurrence in countries where these animals are kept in greater abundance than here.

The species is not, so far as at present known, transmissible to any other domestic animal, and if ever becoming abundant, will doubtless yield to the treatment used for the other species, though the long hair would make some of them more difficult of application. On this account pyrethrum would seem to be most practicable.

THE SHEEP FOOT LOUSE.

(Hematopinus pedalis n. sp.)

We would hardly expect to find an entirely new form of louse on so common a domestic animal as the sheep at this late period of investigation of animal parasites. I am able to announce, however, a species which seems to have entirely escaped observation heretofore, and, moreover, to describe a habit of distribution of the parasite on its host which has, so far as I know, no parallel among the related species. This suckorial louse of the sheep occurs only, as all examinations so far indicate, upon the legs and feet below where the long wool is found. It is
especially common to the region of the "dew claws," where the eggs appear to be most commonly deposited.

It is of about the same general shape as the short-nosed ox louse, though scarcely so broad and rather smaller. The dark, chitinous portions of the body are much restricted, so that it has a more immature look than the corysternus. Its maturity, however, is fully shown by the development of the genital organs.

It no doubt passes through its various stages of development just as the related species, and so far nothing can be said as to the exact time required in reaching maturity. Eggs and adults were collected in January, but eggs carried in a vest pocket in a small vial so as to be kept warm did not hatch. The figure will show the characteristic form and structure.

The fact that this species is confined to the lower part of the legs and does not occur on the parts of the body covered by long wool is a very important one, and one which makes it an easy matter to treat the pest at any season of the year. The feet and legs can be washed with any of the effective dipping solutions, or the sheep may be driven into a shallow vat of the solution with enough of the solution to reach up to the body without wetting the wool. Dipping at shearing time for ticks and biting lice will destroy these also, so that if the practice of an annual dip is followed there should be no trouble from this new pest.

_Hematopinus pedalis_ n. sp. Female: Head and thorax comparatively small; abdomen fusiform, tapering. Length, 2.20 mm.; width of abdomen, 1 mm.
Head short, as wide as long, bluntly contracted in front of the antennæ, with few hairs. Antennæ large, annulate with reddish-brown, terminal joint with three or four bristles. Occiput merging into thorax, with prominent reddish oblique bands either side, becoming approximate on the thorax. Thorax wider than long, with anterior faint and posterior distinct band not meeting on median line of dorsum. Legs not differing markedly in size, but anterior smallest and posterior largest; middle and posterior tibiae with very prominent, spoon-shaped process opposed to tarsal claw, marked with red-brown bands.

Abdomen oval, fusiform, thick, rising high above the thorax, sparsely set at base with irregularly scattered small hairs, those at margin a little longer and more regularly placed; spiracles inconspicuous, pleural, not marked by chitinous tubercles; brush organs on seventh segment rather small, L-shaped, the bristles on the end very small; terminal segment set with a cluster of small spines either side, ventrally.

Male: Broader and flatter than the female. Two brownish lines on posterior ventral segments, converging to tip of abdomen; forked genitalia, showing through the transparent body wall.

Eggs attached on hair of lower leg and foot a short distance from the skin, of about the usual form, rather long, surface shining, minutely punctured.

Collected at Ames, Iowa, from domestic sheep (Ovis aries). These sheep had been recently imported from Canada. The lice did not occur on more than a few animals.

**The Short-nosed Ox Louse.**

*Hematopinus eurysternus* Nitzsch.

This is probably the species that has been familiar from early time as the louse infesting cattle, though since this species and the following one have been generally confused, it is impossible to say which has been most common. It was first accurately described by Nitzsch under the name of *Pediculus eurysternus* in 1818 (Germain’s Mag., Vol. III, p. 305), and has received mention in every important treatise on parasites since that date, as well as innumerable notices under the head of animal parasites, cattle lice, etc. As with other species, the disease produced has been termed phthiriasis, and as treated by Kollar and other writers, it has been recognized as a most serious pest and numerous remedies tried for its suppression.

Since it has been very generally confused with the following species, we shall give more particular description and show as clearly as possible how to distinguish them. The following quotation from Mr. C. W. Tenney (in Iowa Homestead for August 18, 1882) will show that this difference is not without interest or value as viewed by a practical breeder: “Then there is a blue slate-colored louse and a larger one of the same color that vary somewhat in their habits, and the last mentioned is the hardest to dislodge.” Evidently it is the species under discussion to which Mr. Tenney refers as the “larger one.” It infests particularly the neck and shoulders, and these parts are frequently worn bare by the efforts of the animal to rid itself of the irritation produced by these unwelcome visitors. Still, some cattlemen say that these parasites are of no consequence, and that they never pay any attention to them.

The full-grown females are about one-eighth to one-fifth of an inch
long, and fully half that in width, while the males are a little smaller and proportionately a little narrower. Aside from the difference in size the sexes differ very decidedly in the markings and structural features upon the under side of the body. The males have a broad black stripe running forward from the end of the body to near the middle of the abdomen, as shown in figure 100, \( c \).

The females have no indications of this stripe, but the black, broken band of the upper side of the terminal segment extends slightly around on the under side. The most important character, however, is the presence of two little brush-like organs on the next to the last segment, as shown in figure 100, \( d \).

The head is bluntly rounded in front, nearly as broad as long, and with the antennae situated at the sides midway from the posterior to the anterior borders; behind these are located slight eminences upon which may be found the small eyes, which are seen with considerable difficulty. At the front of the head may be seen the small rostrum or beak, the end of which is usually at or near the surface, but which is capable of extension and retraction. The end of this beak is armed with a double row of recurved hooks (see fig. 100, \( b \)). The function of these hooks is doubtless to fasten the beak firmly into the skin of the host, while the true pumping organ must consist, as in the Pediculi, of a slender piercing tube, though we can see only slight indications of this tube within the head, and we have not seen it nor do we find any record of its having been seen fully extended in this species. Professor Harker says the rostrum can be pushed out, but his figure shows only the basal portion with the crown of hooks and nothing of the tubular parts inclosed within.

The thorax is wider than long and widest at the posterior margin where it joins the abdomen. The legs project from the side, are long and stout, and especially adapted to clasping and clinging to the hair.
An extra provision for this purpose consists of a double plate having fine transverse ridges in the basal joint of the tarsus. This structure appears to have been first described by Professor Harker (Agricultural Students' Gazette, Vol. I, p. 162). The abdomen differs greatly in form and size, according to the degree of distention, which accounts for the discrepancies in the different figures of this species. It may be called flask-shaped and more or less flattened according to the amount of matter contained in it. There is a row of hornv tubercles along each side and a row of chitinuous plates along each side of the upper surface of the abdomen. The spiracles are located in the tubercles at the sides, and there is one to each of the last six segments, omitting the terminal one. In color there is some variation, as would be surmised from a comparison of descriptions by different authors. The general color of the head and thorax is a light brown approaching to yellowish, with touches of bright chestnut on the head and legs and margins of the thorax, also touches of dark brown on these parts, more particularly on the dorsal portion of the thorax. The abdomen in fresh specimens has a general bluish aspect, not so noticeable in preserved specimens, besides its color depends evidently in large degree upon its contents. Denny says "grayish-white or ochraceous gray," which would apply well to preserved specimens, but his plate shows it a bluish-gray. Harker says brownish gray. It appears to us that the term used by Mr. Tenney, blue slate-colored, comes quite as near describing the average appearance as any that we have seen. The tubercles at the side of the abdomen and the chitinuous plates are chestnut-colored, while the most of the upper surface of the terminal segment in the female and the ventral stripe in the male are black.

The females deposit their eggs on the hair, attaching them very near the skin. Figure 100, e represents one of the eggs, showing its attachment to the hair and the distance from the root of the hair in the specimen drawn. The adhesive substance evidently invests the egg during oviposition and is touched to the hair, the egg then slightly drawn along so as to leave the glue-like mass to form a firm union around the hair and to the egg. The egg is elongate-oval, tapering at the lower end, and having a cap-like covering at the upper end. The surface is set with very minute points just visible under an inch objective, but showing clearly with a power of 300 diameters. At the surface no connection is to be seen between different points, but focusing a little below the surface brings into view what appear to be minute threads or channels running from point to point and giving a reticulate appearance to the eggshell. The points can not correspond to the circular bodies represented in Denny's figure (E, Pl. XXV, Monog. Anop. Brit.), which have much more the appearance of protoplasmic granules of the egg contents. The shape of the egg in his figure is also entirely different from that of the specimen from which our figure is drawn.

The young louse escapes from the outer or unattached end, whether
HEMIPTERA.

by pushing off the cap-like portion or by simply pushing through this portion, which appears to be thinner than the rest and may be simply membranous, is not, so far as we know, determined. No marked changes, except in size and the development of the chitinous patches, occur from hatching to maturity.

This is one of the most difficult parasites to destroy, and once settled upon an animal should receive prompt and thorough treatment. The main reliance of veterinarians seems to be stavesacre, and this can doubtless be depended upon to accomplish the desired end. Mr. Tenney recommends the seed of common larkspur steeped, and the animal thoroughly washed with the liquid. He says: "I have known one application to destroy every insect and egg; two will suffice if done thoroughly." Of course this and the stavesacre are nearly identical, both plants belonging to the genus Delphinium. Washes of carbolic-acid soap or of tobacco infusion are also effectual, but washes of any kind are of course illy adapted to use in midwinter, the time when there is frequently most necessity for treatment. Mercurial ointment, sulphur, or tobacco smoke, kerosene and lard, or kerosene emulsion, road dust, ashes, etc., may be resorted to, according to the circumstances. Infested animals should, if possible, be placed apart from the others, and much trouble may be saved by this precaution.

Experiments with fumigation have shown this to be a method available when other plans are undesirable, though from the equipment necessary, and the fact that it requires some time in application, it may not prove of as general service as the washes.

The method may be said in brief to consist of a tight box stall just large enough to admit the largest animals to be treated, one end having a close-fitting door to admit the animal, the opposite end a stanchion in which the animal is fastened, and covering the open part of this end, and made to fit tightly around the head just in front of the horns, is a canvas sack open at both ends, the inner one nailed to the stall and the outer with a running cord to draw it down to the animal's head, thus leaving the eyes and nose in open air. An opening at the bottom of one side admits the fumigating substance, sulphur or tobacco, the latter apparently the most effective. In burning this we used a wire screen to spread the tobacco, placing this over a tin trough containing a small quantity of alcohol. It should be burned, however, with coals or by using a small quantity of kerosene. The time of exposure necessary will vary some with the strength of fumes, but 1 to 2 onces of tobacco and exposure of twenty to thirty minutes was found effective. Pyre. thrum might be better even than tobacco.

This species has been said to occur also on horses; but if this is the case it must be in rare instances, and there need be little apprehension of horses becoming infested with it by transmission from cattle with which they may be associated.
THE LONG-NOSED OX LOUSE.

(Hematopinus vituli Linn.)

In connection with the preceding species this louse, as already stated, has long been familiar to cattlemen; it has also been known to entomologists for a considerable time, but its history from the entomological side is not entirely clear. It seems to have been first technically described by Linnaeus under the name of Pediculus vituli, which name has been followed by Fabricius, Berkenhout, Stuart, and Turton, and, with the exception of the change in the generic name, by Stephens, Denny, and English and American authors generally. Nitzsch described it under the name of Pediculus oxyrhynchus, which name was Latinized by Burmeister to tenuirostris. This designation has been followed by Giebel and Piaget, but why the earlier name of Linnaeus was dropped we fail to discover. It seems more proper to retain the name given by Linnaeus.

Denny describes and figures the species and says that it has been found only on the calf. Giebel also figures and describes it, giving a very characteristic figure, though deficient in some details. Piaget admits the species provisionally, but questions it being separable from eurysternus from the fact that descriptions have been based only on female specimens or on those in which the sex was not distinguished, and he seems to think it probable that immature specimens of eurysternus may have furnished the basis for this form.¹

From material in hand there can be no question whatever as to there being a distinct form corresponding with the descriptions above cited, and, while there are some details still to be cleared up, we propose to show as fully as possible the differences. While our material² does not include any specimen that can be recognized as a male, it does include enough specimens of the early stages and females of both this species and the eurysternus to entirely set at rest any question as to immature forms of eurysternus having been described as vituli or tenuirostris.

In this species the body is about one-eighth of an inch long and not more than one-third of that in width (see fig. 101). The head is long and slender, the antennae set near the middle each side; there is but a very slight protuberance behind the antennae and no eyes visible. The head sets well back into the thorax, forming an acute angle behind; the thorax is longer than wide, and has a distinctly visible spiracle above the second pair of legs; the abdomen is elongate, without ctitih-

¹ Since the preparation of this section and the figures illustrating the species I have seen the supplement to Piaget's Les Pédiculines and find that he now admits this as a good species and gives a figure of the female, without, however, any special details of structure.

² A series of parasites kindly loaned to me by Dr. A. W. Bitting, of Purdue University, Indiana, contains a set of vituli among which I find a male. It agrees with females in general shape and external characters, except brushes, but is considerably smaller. Length, 1.75 mm.; width, 0.50 mm.
Hemiptera.

Nours plates and devoid of any tubercles along the sides; the terminal segment is also devoid of a black hornly band; the brush-like organ on the under side of the abdomen (see fig. 101) is slender, while the terminal segment is set with numerous rather long hairs.

In all of these points it will be observed there is a distinct difference from eurysternus. The brush-like organ on under surface of the abdomen, common to the adult females of related species and which is wanting in young specimens of all species, must be taken as distinct evidence of the maturity of the specimens. If, however, there were any doubt on this point a study of the young of eurysternus gives equally conclusive testimony. In the very youngest eurysternus, the chitinous tubercles along the sides of the abdomen inclosing the spiracles are distinctly to be seen, while the head, though longer proportionately than in adults, is by no means equal in length to that of adult vituli. A young vituli, found, it is true, associated with eurysternus, shows this elongation of the head still more markedly. In color there is little difference in the two forms, this species having rather duller colors upon the head and thorax. The abdomen of young specimens, when full of blood, appears dark red, but the bluish-gray hue is more prominent in adults. The eggs of this species have not been described, and we have not had the good fortune to discover them. The young are even more slender than the adults.

The remedies that are available for the preceding species will prove effectual for this, and it is evidently less difficult to subjugate than that form.

**The Buffalo Louse.**

(Homotopinus tuberculatus Burm.)

This species was described by Burmeister (Gen. Ins.) under the name of Pediculus tuberculatus.

It is described in Giebel's Epizoâ, page 46, and described and figured by Piaget (Les Pédic., p. 650, pl. 53, fig. 2). It is compared by Giebel with the hog louse and by Piaget with the H. eurysternus, which from his figure it seems most nearly to resemble. According to Piaget, this species is probably identical with the Pediculus (H.) pthirioptis of Gervais (Aptères, III, 306) from the Bos cafer and with the Pediculus (H.) buffali of DeGeer (Mem., VII, 68), in which case the name given by DeGeer should be adopted for the species. Rudow (Zeits. f. d. ges. Naturw., XXXIV, 167) describes a species under the name of Homotopinus punctatus, from the Bos grunniens, which possibly will be found referable to this same species.

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INSECTS AFFECTING DOMESTIC ANIMALS.

Whether the same species occurs on our American bison is not known, but the unfortunate extermination of this animal renders the question, from a practical standpoint, of little importance. Lucas describes and figures the species in the Annales de la Société Entom. de France (1852, ser. 2, tom. X, p. 531, pl. 11, No. II), referring it to the species described by Burmeister in 1838 in the "Genera Insectorum." Specimens, he says, occurred in immense numbers on a Bos bubalus in the Museum of Natural History.

THE HOG LOUSE.

(Hamatopus urius Nitzsch.)

Occasionally this species appears in formidable numbers, since we often hear of swine badly affected with lice, and no other species is known to attack this animal.

Giebel credits this species to Mouflon, citing the Theatrum Insector (1634, 266), while Piaget states that it is cited by Mouflon on the authority of Albertus (IV, C. 205), which would carry its recognition back to the thirteenth century. Linnaeus described it under the name of Pediculus suis, which name has been most commonly followed, but Nitzsch revived the name of urius and this name has been followed by Giebel and Piaget. Along with other parasites it received frequent mention by both early and modern writers. Denny speaks of it as rare in England, but common in Ireland. He says (Monog. Anop. Brit., p. 35):

This species is found in great numbers on swine, but it does not appear so generally spread as might be expected from the dirty habits of the animals. It most frequently occurs on those fresh imported from the sister isle. It was many months before I could obtain a single example. I had applied to both farmers and pig butchers, neither of whom seemed to approve of the idea which I had conceived, that of their pigs being lousy, but referred me to those of the Emerald Isle as being sure to gratify my wishes (forgetting, I suspect, that the Irish pigs come to this market to meet English buyers). I accordingly visited a colony just arrived, where I most certainly met with a ready supply; but here they were confined almost entirely to lean animals, and wherever I found a pig fat or healthy no game were to be seen.

Most stock breeders have probably seen instances of its abundance, and from the frequent mention of it in the agricultural papers it would seem to be quite common throughout the country, and while, perhaps, less generally distributed than the ox louse, to multiply sometimes so as to cause much more apparent damage to its host. The fact that they are more commonly found on poor or runty animals should not be taken as evidence that they have a preference for such animals, but rather that the animals upon which they have multiplied rapidly have, in consequence, become emaciated and unhealthy. That they do not increase more rapidly and become a much greater nuisance may be in part because the majority of hogs are sold and slaughtered at a comparatively early age, and with each one slaughtered must perish the parasites which have been supported by it, unless, perchance, an occasional
one escape the scalding trough and succeed in finding another host. Of the vast number of hogs shipped to market and slaughtered at the great packing houses, none can bequeath the insects they have nurtured to their followers. The amount of injury and the consequent need of precautionary measures are therefore much less for this species than for many others.

This is one of the largest species of the family, full grown individuals measuring a fourth of an inch or more in length. It is of a gray color, with the margins of the head and thorax and most of the abdomen dark. The head is quite long, the sides nearly parallel, with strong eminences just back of the antennae, which are set on the sides of the head, midway from rostrum to occiput; the legs are lighter, with dark bands at the joints; the spiracles are inclosed by a black chitinous eminence, and there is a broad black band on the last segment, broken near the middle. (See fig. 102.)

The male has the abdomen marked beneath with a large black area extending forward from the end of the terminal segment, so as to occupy the central portion of the last three segments.

There is a curious provision in the feet for strengthening the hold upon the hair, which does not seem to have been hitherto described. It consists of a circular pad-like organ or disk in the outer portion of the tibia, which is received in a conical cavity in the end of the tibia, and which can be forced out so as to press upon the hair held between the claw of the tarsus and the end of the tibia. Ordinarily, and always
in the dead specimens, this is withdrawn so as to appear simply as a part of the end of the tibia, and the spines located on its margin appear to belong to the tibial rim, but if examined with sufficient magnification when the louse is alive it is easy to observe the extrusion of the organ.

Whether similar organs exist in related species is yet undetermined, but it seems quite probable that they should, since in the specimens examined microscopically we have usually to deal with dead and preserved individuals in which this structure would almost certainly escape notice.

The eggs are one millimeter and a half in length (0.06 inch) by three-fourths of a millimeter in width (0.03 inch). They are light yellow or dusky whitish in color, and taper slightly to the point of attachment. The circular lid-like portion is large, occupying nearly all the surface of the free end of the egg. They are attached usually near the base of the hairs.

On account of the thinness of the hair the application of remedies, where necessary, is quite easy. Washes of tobacco water or dilute carbolic acid, and the application of kerosene in lard, or kerosene emulsion by means of a force pump, sulphur, ointment, etc., are recommended. The application of fine dust may be provided for naturally by allowing the hogs a chance to roll in a roadway or any place well supplied with fine dust. Where this is impracticable the dust, ashes, or powdered charcoal may be applied directly to the neck and back of the infested animal. The species is not known to attack any other of the domestic animals, and hence no precautionary measures in this direction are necessary.

THE SUCKING HORSE LOUSE.

(Hematopinus asini Linn. = macrocephalus Burm.)

Notwithstanding the probable frequent occurrence of this species, we have as yet failed to meet with it in any abundance. The biting lice from horses have been secured in great numbers, but we have searched in vain for this one, and but few have come to hand.

It is figured by Redi (Exp., Pl. XXII, fig. 1), and was described by Linnaeus under the name of Pediculus asini; presumably his specimens were taken from the ass. Later Burmeister described specimens from the horse under the name of Pediculus macrocephalus. Denny retains the name given by Linnaeus and states that it is common upon the ass, and that he also had specimens from the horse, from which circumstance he suspected Burmeister's macrocephalus to be the same Giebel and Piaget both follow the name of Burmeister, and Piaget separates as a variety the form occurring on the ass, and gives it the name of colorata.
It seems hardly probable that it occurs in this country in sufficient numbers to cause much trouble on horses. Possibly examination of mules, asses, or donkeys would show greater abundance from the fact that horses in general are more carefully groomed than their somewhat despised relatives. The size is about the same as that of the ox louse, but it differs very decidedly in the form of the head, which is long, slender, and the sides of the head nearly parallel, as shown in the figure (fig. 103), taken from Comstock's Introduction to Entomology.

Careful grooming may be looked upon as at least favorable to the reduction of numbers in this species. In case they become too numerous, the application of a little kerosene to the card or currycomb used in grooming the animals will be found of value. Where more vigorous treatment is necessary, the measures recommended for the ox louse may be adopted.

Sucking Lice of Rodents.

(*Hematopinus* spp).

Belonging to the same genus of suctorial lice as those previously mentioned, we have a number of species common to the smaller mammals, particularly those of the group of gnawing mammals, the Rodentia.

These smaller mammals, though perhaps never strictly domesticated, save the rabbit, are very often kept in a semidomesticated state, either as pets in zoological gardens, or, in case of rats and mice, quite involuntarily because of our inability to entirely rid ourselves of them. A few notes on the lice infesting them will therefore be of interest here. It is desirable to be able to identify them in case of their accidental occurrence on other mammals, and thus be able to determine whether, in such cases, we have to deal with a species likely to prove troublesome.

Louse of the Rat.

The common rat (*Mus decumanus*) supports a species, *Hematopinus spinulosus*, which, with its host, must be distributed over most of the world. It has been taken at Ames, Iowa, though in small numbers, and it seems to be rather scarce.

It is a small species of a light-yellow color, the head projecting very little in front of the antennae and the thorax very short. The mice are said to harbor a distinct species, but there seems to be some doubt as to its being a genuine species.

Louse of the Field Mouse.

(*Hematopinus acanthopus* Burm.)

Apparently common on our species of Arvicola, and does not appear to vary in any important particular from the descriptions of European specimens.

It has been taken at Ames from a species of Arvicola. It resembles the preceding in color and form, but is somewhat larger. The sternal
plate is kite-shaped, the anterior and posterior angles acute, the lateral angles rounded. The body is quite elongate, the posterior legs much larger than the anterior or middle ones. (Fig. 104.)

The egg in this species, unlike those of other forms we have met, is attached to a bundle of hairs instead of to one, our specimen thus having attachment to four hairs, as shown in fig. 104. This would seem to be an excellent provision where the hair is so fine as in these animals.

The egg is elongate oval, broad, and somewhat truncate at the attached end; the surface is roughened, rugulose, or foveolate, appearing squamos in places, and in section showing rounded pits on the surface; the investing substance at base is slightly corrugated. (See fig. 104, e.)

The larva is much shorter and thicker in proportion than the adult, the spiny hairs of the abdomen wanting, but with one or two long, slender hairs extending back from the terminal portion.

LOUSE OF THE RABBIT AND HARE.

(Haematoxopus ventricosus Denny.)

In this chapter, first published in Bulletin 7, it was stated that the rabbit louse had not been observed in this country; but shortly after specimens were received from Mr. A. Hassall, of Baltimore, and I have since taken the species on the prairie hare (Lepus campestris), and it most likely occurs on the various species of rabbits native to America.

It is a thick-bodied species, the abdomen almost globular, the legs quite short. It is not known from any other animals.

LOUSE OF THE FLYING SQUIRREL.

(Haematoxopus sciuropteri Osb.)

Body slender, light yellow, head as broad as long, expanding laterally at the posterior border above and with an acute angle behind; beneath triangular and running back to a sharp angle between the anterior legs, the front projecting very slightly beyond the antennae, very slightly convex, the rostrum located back of the anterior border; the trophi plainly visible, passing back into the prothorax; the antennae very large and strong, first joint much the largest, occupying in its attachment half the lateral margin of the head; second joint ordinary, third joint very short, but the anterior portion extending to more than usual length and appearing like a process and bearing a stiff hair and two or three tooth-like spines; the fourth joint attached apparently very near the base of the third on posterior side and of usual length; the fifth joint short, the terminal pit with two or three short hairs; the postero-lateral angles of the head armed with a long, stiff hair.

Thorax widening from before backward, longer than its greatest width, lateral borders irregular, the posterior border concave; the sternal plate is very large, emarginate in front and a large emargination corresponding to each leg, deeply
hemiptera. 183

bilobed posteriorly; anterior legs not half the size of the others, claws weak; posterior legs largest. These and second ones provided with strong clamping claws, or terminal joint of tarsus, opposing basal joint of tarsus, which is provided with corrugated plate; tibia at apex internally provided with a short toothed spine.

Abdomen of eight segments, elongate, each segment sparsely set with short, very stiff hairs, those at lateral angles spine-like; penis distinct, of ordinary form. (See fig. 105.)

Egg elongate ovate, attenuated toward the attachment, the surface with faint reticulations having form of scales; the basal half of the egg has the walls beautifully corrugated. (See fig. 105, f.)

Length, 1.20; head, 0.27; thorax, 0.27; abdomen, 0.73; antennae, 0.16 mm. Width, 0.33; head, 0.26; thorax, 0.30; abdomen, 0.33 mm.

Posterior femur, length, 0.10. Posterior tibia, length, 0.10. Egg: Length, 0.80; width, 0.18 mm.

This species, in the form of the head and the character of the antennae, differs very decidedly from most of the other members of the genus and is readily distinguished by these characters, as also by the form of the sternal plate.

One specimen male and one egg taken from different specimens of the flying squirrel, Sciuropterus velucella, but undoubtedly belonging to the same species.

Collected at Ames, Iowa; also represented in the Burnett collection of the Boston Society of Natural History from the same host.

Louse of the Fox Squirrel.

(Hematopinus antennatus Oeb.)

Body long and slender, the abdomen proportionately large.

Female.—Head narrow and rounded in front, widening decidedly behind the antenna, deeply hollowed beneath the lateral margin, the postero-lateral margin subacute, bearing a short spine-like hair and a long stiff hair, the posterior border with an acute angle behind; beneath broadly keeled, keel behind narrow, expanding in front to width of head between the antennae. Antennae very different from other members of the genus; the first joint large with a short process on the posterior border bearing a sharp inwardly curved tooth; other joints ordinary, second joint longest. Thorax short, widest behind, sternal plate ovate, broadest in front, legs

Fig. 105.—Hematopinus sciuroperti: a, male, dorsal view; b, head, ventral view; c, antennae; d, leg; e, terminal segments; f, egg—all enlarged (author's illustration).

Fig. 106.—Hematopinus antennatus: a, dorsal view; b, head, ventral view; c, antennae; d, leg; e, sternal plate; f, egg—all enlarged (author's illustration).
as with allied forms, the posterior pair strongest. Abdomen long, lateral angles produced, bearing a short spine or tooth, a short stiff hair and a long hair; a tuft of hairs on lateral angles of the eighth segment. Egg elongate ovate, surface smooth throughout except at the cap, which is strongly convex; and has a row of perforations near the attachment to the body of the shell.

Length, 1.55 and 1.65; head, 0.35; thorax, 0.13; abdomen, 1.20; antenna, 0.20 mm. Width, 0.50; head, 0.20; thorax, 0.22; abdomen, 0.50 mm.

Egg: Length, 0.73; width, 0.28 mm.

This species is at once distinguished from all others known by the peculiar structure of the antennæ, no other species described possessing the process and curved tooth of the basal joint. In form of head it approaches acanthopus, but is larger than that species and has the sternal plate of different form. The egg is longer, more attenuated at the base, and devoid of the surface markings characteristic of that species. Collected from a fox squirrel, Sciurus cinereus var. ludovicianus, at Ames, Iowa.

LOUSE OF THE GRAY SQUIRREL.

(*Hematopinus montanus* n. sp.)

Head rounded in front, projecting well in front of antennæ; antennæ strong, basal joint without hooked tooth, a bristle at each side behind. Sternal plate very broad in front, contracted behind for half its length, almost fungiform. Abdomen broad; hairs long, those on dorsum slightly irregular, mostly longer than length of segment, those at lateral angles longer. Length, 1.40 to 1.50 mm.

On Western Gray Squirrel, Fort Collins, Colo. (Baker).

I have still another form sent me by Dr. A. Hassall, of Baltimore, which seems to differ from both this and the antennatus and to approach the lyriocepalus of Europe, but I have not been able to satisfy myself with regard to its relationship.

LOUSE OF THE WHITE-FOOTED MOUSE.

(*Hematopinus hesperomydis* Osborn.)

Body elongate, general color golden yellow.

Female.—Head subquadrate, rounded in front, a concavity for the rostrum, obtusely angulated on the posterior border; antennæ set near the front; first joint large, short; second longest, the rest nearly equal; fourth with a small tooth on the posterior border, terminal pit with several short hairs. Thorax shorter than the head, small, sternal plate cuneiform, obtusely angular, irregularly or obliquely truncate in front and sharply pointed behind; anterior legs small and weak, the middle ones somewhat larger, the posterior pair much the largest, flattened; terminal joint of tarsus very broad and curved, opposing basal joint of tarsus and meeting tibial spur in such manner that the three form almost a complete cylinder; abdomen oval elon-
gate, sparsely set with short spiny hairs, one or two long hairs at lateral angles of sixth and seventh segments.

Male, more slender, head longer and tapering somewhat toward the front. (See fig. 108.)

Egg, as seen in the body of adult female specimen, is elongate oval.

Length, 0.75 to 0.90; head, 0.13 to 0.16; thorax, 0.10; abdomen, 0.50 to 0.60 mm. Width, 0.28 to 0.33; head, 0.10; thorax, 0.13 to 0.15; abdomen, 0.28 to 0.33 mm.

This species approaches the *acanthopus*, resembling it in the form of the sternal plate, the character of the legs, and the general form of the body. It differs, however, in having the sternal plate less narrowed posteriorly, more obtuse, or even truncated in front; more decidedly still in the form of the head, which is longer and less excavated for the insertion of the antennæ. It is also smaller, and the egg, if we may judge by what we can see through the walls of the female, is more elongated.

It has been collected from the white-footed or deer mouse (*Hesperomys leucopus*) at Ames, Iowa.

**LOUSE OF THE GROUND SQUIRRELS AND CHIMPMUNK.**

(*Hematopinus sutorialis* Osborn.)

Body short, broad; color, golden yellow.

Head oval, rounded and deflected in front; a large chitinous ring inclosing the base of the rostrum; a very distinct transverse suture behind the antennæ; sides slightly convex; lateral angles obtuse, without hairs; posterior angle acute, and passing well back upon the thorax; antennæ simple, located anterior to the middle of the sides; joints nearly equal in size. Thorax short, convex at sides, widest behind, sternal plate nearly circular, surface roughened; anterior and middle legs slender and nearly equal in size; claws slender and sharp; posterior legs very thick, claw strong and broad. Abdomen short, ovate, broadest near the front, sutures inconspicuous, hairs long; some of those on sides and posteriorly very long. Males and females are very similar, and distinguishable only by genital armature of male.

Length, 0.75 to 0.80; head, 0.27; thorax, 0.13; abdomen, 0.45 to 0.48 mm. Width, 0.35 to 0.40; head, 0.13; thorax, 0.18; abdomen, 0.35 to 0.40 mm.

This species is particularly well marked by the general form of the body and especially by the conspicuous transverse suture back of the antennæ. It differs further from most of the species in the genus in having both the anterior and middle legs slender and of nearly the same size, while the posterior legs alone are especially modified as claspers organs.
Although we have not seen Middendorff's description and figure of \( H. lariousculus \) from \( Spermophilus \) \( eversmanni \), there can be scarcely a possibility of this being identical with it, since this differs in almost every particular as compared with the diagnoses of that species given by Giebel and by Piaget. We therefore describe it without hesitation as a new species.

It has been found plentiful on \( Spermophilus \) \( franklini \) and \( S. 13-lineatus \) at Ames, Iowa. An immature specimen from \( Tamias striatus \) presents the characters of the species so plainly that there can be little doubt that it is identical.

\( \text{Haematominus erraticus n. sp.} \)

Approaches \( Haematominus hesperomydis \). Abdomen broad, middle and hind legs larger than front. Sternal plate circular incised at sides behind and produced medially. Head nearly as broad as long, rostrum slightly produced. Antennæ large, first joint thick, second longest. Fore legs rather small, middle legs considerably larger, hind legs largest. All tibiae widened, front tarsal claw sharp, middle and hind claws broad, flat. Sternal plate rather wide, circular in front, slightly sinuate at sides, excised behind for insertion of posterior coxae. Median portion produced, subtruncate, reaching about halfway between hind coxae. Abdomen broad, lateral margins rather broadly conicous, disk with stiff hairs.

From "Larus bonapartii" in the Burnett collection. This reference seems very doubtful as the actual host of the species, and I suspect that it was taken from the gull after contact with some other animal in a game bag or otherwise. It seems to come most nearly to the type infesting rodents and family Muridæ, and I would predict that the species will be found on some mammal, probably a rodent. If actually parasitic on Larus it is a remarkable exception to the rule for Pediculidæ and should be regarded, I think, as a form, but recently established on an avian host and derived from a mammal-infesting species.¹

A REMARKABLE PEDICULID PARASITE OF THE MOLE.

While these pages have been passing through the press, I have encountered upon a mole, \( Scalops argentatus \), collected at Ames, Iowa, a very peculiar species of pediculid, and in order to bring it to notice in connection with the other species described here, I give a brief diagnosis of its distinctive features. It differs so decidedly from typical species of \( \text{Haematominus} \) in characters given generic value that it will have to be placed in a new genus or else form a subgenus and the characters of \( \text{Haematominus} \) be enlarged. I will call it \( \text{Euhaematominus} \) nov. gen.

Antennæ three-jointed; posterior pair of legs greatly modified and bearing on the femora and tibiae stalked, disc-shaped appendages, projecting at right angles from these parts.

¹After the above paragraph was written I found slides of the same species from \( Pteromys volans \), where it was mounted with one female specimen of \( H. securioperi \), and also specimens from \( Arvicola pennsylvaniae \) and \( Sciurus striatus \).
Euhomematopus abnormis n. sp.

Head nearly twice as long as broad, the anterior portion narrowing to a blunt point and the posterior portion scarcely longer than wide—nearly quadrate, slightly narrowing behind. Antennae three-jointed, the first joint large, articulate with anterior half of head; second and third joints equal in size; the third as long as first and nearly twice as long as second, and having on its apical end a slight constriction, which in some specimens appears almost like an indistinct joint.

Thorax wider than long, broadened behind; sternal plate rounded in front, excised slightly at sides and produced behind into a strong spur, ending in a sharp point, which rests between the hind pair of coxae. Anterior and middle legs of the usual type; the middle a trifle larger than the front; the posterior pair greatly modified, shortened, thickened, and incurved apparently incapable of being fully extended and hidden from above by the margin of the abdomen, so that the insect appears to have but four legs instead of six. The femur and tibia are each provided with a stalked appendage which extends at right angles from the exterior margin and consists of a short stalk bearing a flattened, circular, disc-like structure. These discs may evidently be opposed to the abdomen or to the tibiae of middle legs and serve as clasping organs.

Body much depressed, sides of abdomen subparallel. Length 1.40 mm., width of abdomen 0.65 mm.

Hematopinoides Osborn.

Antennae composed of three joints, terminal joint deeply excavated on the posterior side; abdominal segments at lateral margins broadly chitinous, with a strong tubercle and a semicircular plate above and below lapping over the chitinous portion of the succeeding segment.

SUCKING LOUSE OF THE POCKET GOPHER.

(Hematopinoides squamosus Osb.)

Body oblong, broadly flattened; general color, dark yellowish. Head small, longer than broad, narrowly rounded in front, widening behind the antennae; lateral angles rounded, posterior margin acutely pointed beneath, with two large hairs set between the bases of the antennae and directed outward; antennae composed of but three joints, these being nearly equal in size, the first short, stout; the third longest and with a deep excavation on the posterior side. Thorax small, broader than long, margin irregular, sternal plate obtrusely angled in front; lateral margins parallel, passing by obtuse angles into an acutely angled posterior extremity; immediately back of the sternal plate are two irregularly triangular chitinous plates, occupying the region of the metathorax and extending each side so that their bases reach to the bases of the coxae. Anterior and middle legs of nearly the same size; hind legs larger, stouter, and better fitted for clasping. Abdomen large, oblong or elliptical, broadening very rapidly at base and terminating abruptly; lateral margins of segments broadly chitinous, a strong tubercle directed posteriorly and a semicircular plate above and below lapping over the chitinous portion of the succeeding segment, spiracle located at middle of lateral margin; median portion membranous, appearing minutely squamosus. The
sutures of the segments faintly indicated, a few long hairs scattered over the median portion of the dorsal surface, two hairs on each lateral tubercle, these much elongated on segments 6 and 7; the eighth with a tuft of hairs.

Length, 1.20; head, 0.27; thorax, 0.13; abdomen, 0.87; antennae, 0.10 mm. Width, 0.50; head, 0.13; thorax, 0.20; abdomen, 0.50 mm.

This species departs so remarkably from others of the group that it seems necessary to erect for it a new genus. The most important characters and those which seem of generic value are the three-jointed antennae and the semicircular plates on margins of the abdomen. The sternal structure is also different. In general aspect, however, it approaches the genus Hæmatopinus.

Two specimens, both females, collected from the pocket or pouched gopher, Geomys bursarius, at Ames, Iowa.

**The Elephant Louse.**

*(Hæmatomyzus proboscideus Piaget.)*

This louse, infesting the elephant, is about as exceptional in its way as the animal which harbors it. It appears to be of quite recent notice, though it is not unlikely that it has been known in countries where the elephant has been domesticated for an indefinite length of time.

It was described by Piaget (Tijdschr. voor Ent., 2d series, IV, 254) in 1869, under the name of *Hæmatomyzus elephantis*. The same author, however, in his elaborate monograph, *Les Pédiculines*, changes the name to *H. proboscideus*. This louse differs from the others of the family in having a slender prolonged snout extending in front of the head. The antennae are located at the base of this snout, and, according to Murray, are lenticular in form. In Piaget's figure, however, they appear of nearly equal thickness. "Color reddish, madder brown, smooth, shining, impunctate" (Murray).

**The Louse of the Harbor Seal.**

*(Echinophthirius setosus Lucas.)*

This louse was collected in considerable numbers from a seal in the aquarium at New York last year (1895). Specimens forwarded to me by Professor Bean were accompanied by the statement that they were infesting the harbor seals there and it was feared they would prove troublesome. Later it was stated that they almost entirely disappeared during the molting of the animals.

The species is distinguished by having the body covered with numerous small spines, and the antennae are but four jointed.
INSECTS AFFECTING DOMESTIC ANIMALS:

AN ACCOUNT OF THE SPECIES OF IMPORTANCE IN NORTH AMERICA,

WITH

MENTION OF RELATED FORMS OCCURRING ON OTHER ANIMALS.

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