Contributions Toward a Monograph of the Sucking Lice

PART VII

By

GORDON FLOYD FERRIS

Associate Professor of Zoology

STANFORD UNIVERSITY PRESS
STANFORD UNIVERSITY, CALIFORNIA

1934
## CONTENTS

<table>
<thead>
<tr>
<th>Genus Echinophthirius</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echinophthirius horridus (Ofers)</td>
<td>475</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genus Proechinophthirius</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proechinophthirius fluctus (Ferris)</td>
<td>481</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genus Antarctophthirius</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antarctophthirius ogmorhini Enderlein</td>
<td>486</td>
</tr>
<tr>
<td>Antarctophthirius lobodontis Enderlein</td>
<td>488</td>
</tr>
<tr>
<td>Antarctophthirius microchir (Trouessart and Neumann)</td>
<td>489</td>
</tr>
<tr>
<td>Antarctophthirius trichechi (Bohemann)</td>
<td>492</td>
</tr>
<tr>
<td>Antarctophthirius callorhini (Osborn)</td>
<td>495</td>
</tr>
<tr>
<td>Antarctophthirius sp.</td>
<td>498</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genus Lepidophthirius</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lepidophthirius macrorhini Enderlein</td>
<td>499</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genus Pedicinus</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedicinus longiceps Piaget</td>
<td>502</td>
</tr>
<tr>
<td>Pedicinus albidus (Rudow)</td>
<td>505</td>
</tr>
<tr>
<td>Pedicinus hamadryas Mjöberg</td>
<td>511</td>
</tr>
<tr>
<td>Pedicinus patas (Fahrenholz)</td>
<td>513</td>
</tr>
<tr>
<td>Pedicinus ancoratus n. sp.</td>
<td>515</td>
</tr>
<tr>
<td>Pedicinus pictus n. sp.</td>
<td>516</td>
</tr>
<tr>
<td>Pedicinus eurygaster (Burmeister)</td>
<td>518</td>
</tr>
<tr>
<td>Pedicinus obtusus (Rudow)</td>
<td>521</td>
</tr>
</tbody>
</table>
SYSTEMATIC TREATMENT (Cont.)

Genus ECHINOPHTHIRIUS Giebel

1874. Giebel, Insecta Epizooi, p. 43.
1906. Enderlein, ibid., 29: 661.

Anoplura without eyes; with four-segmented antennae, which are not sexually dimorphic; with the legs all of essentially the same size and structure, very large and stout, the claw with a basal lobe; thorax with the notum reduced to at the most a slight median furrow and a median pit which is inclosed within the mesothoracic phragma, the sternum with an irregular, sclerotic but not free plate; abdomen entirely membranous in both sexes except for the ninth tergum and genital areas; paratergal plates entirely lacking; gonopophyses lacking; entire body thickly beset with setae which are for the most part short, stout, and thorn-like but are never modified into scales; spiracles present on the mesothorax and the third to eighth abdominal segments, rather small and provided with a specialized closing apparatus.

Hosts. Known only from the family Phocidae of the order Pinnipedia.

Type of the Genus. Pediculus setosus Burmeister, which is considered to be a synonym of Pediculus horridus Olfers.

SYNONYMICAL LIST OF NAMES PREVIOUSLY USED IN THE GENUS

Note.—Names in italics are synonyms of the name with which they are coupled.

fluctus Ferris.
Proechinophthirus fluctus (Ferris).
groenlandicus Becher.
Echinophthirus horridus (Olfers).
Echinophthirius groenlandicus Becher.
Echinophthirius phoece (Lucas).
Echinophthirius sericans Meinert.
Echinophthirius (misspelling of seriicans).
Echinophthirius zetosus (Burmeister) (sometimes erroneously credited to Denny).
Haematopinus annulatus Schilling.
Haematopinus zetosus (Burmeister) (sometimes erroneously credited to Denny).
Pediculus horridus Offers.
Pediculus phoece Lucas.
Pediculus zetosus Burmeister (not of Offers).

microchir Trouessart and Neumann.

Antarcophthirius microchir (Trouessart and Neumann).

phoece (Lucas).

Echinophthirius horridus (Offers).

sericus Meinert.

Echinophthirius horridus (Offers).

sericus Meinert (misspelling of seriicans).

Echinophthirius horridus (Offers).

zetosus (Burmeister).

Echinophthirius horridus (Offers).

Notes.—Apparently but one species may definitely be referred to this genus. The genus has been utilized as the type of a family, the Echinophthiridae, which includes all the species occurring on the Pinnipedia. The status of this family will be discussed in the final paper of this series.

There has been some difference of opinion concerning the characteristics of this genus, Enderlein (1909) assigning to it characters which are definitive rather of Proechinophthirius, stating that it has the "Vorderbeine und ihre Klauen viel kleiner und zierlicher als die übrigen." No basis appears for such a statement and the genus was certainly founded upon the species which is here recorded and described, whether that species be actually the Pediculus horridus of Offers and the Pediculus phoece of Lucas or not.

The specialized closing apparatus of the spiracles will be considered in connection with the morphological section of this series.

1. Echinophthirius horridus (Offers)\(^1\)

Figs. 277, 278

1816. Pediculus horridus Offers, De vegetativis et animatis corporibus in corporibus animalis reperiundis commentarius, Part I, p. 84.

1834. Pediculus phoece Lucas, Guerin's Magasin de Zoologie, 4; Cit. IX; pl. 121, fig. 12.

1838. Pediculus setosus Burmeister, Genera Insectorum, Rhynchotha, Genus Pediculus, Species 12.

\(^1\) Owing to the rather close similarity of male and female in this and the other Pinnipedia-infesting species and to the excessive labor involved in preparing the figures of such elaborately spined and scaled forms, only one sex is figured completely in the case of all these species.

---

1842. Haematopinus setosus (Burmeister), Denny, Monographia Anopluraorum Brittanicos, p. 36.
1871. Echinophthirius setosus (Denny) [sic], Giebel, Zeitschrift für die gesammten Naturwissenschaften (2), 3: 177.
1874. Haematopinus (Proechinophthirius) setosus (Denny) [sic], Giebel, Insecta Epizoa, p. 42.
1880. Echinophthirius setosus (Lucas) [sic], Piaget, Les Pediculines, p. 656; pl. 54, fig. 1.
1890. Echinophthirius setosus (Lucas) [sic], Osborn, United States Department of Agriculture, Division of Entomology, Bulletin (new series), 5: 185.
1901. Echinophthirius setosus (Burmeister), Breddin, Fauna Arctic, 2: 557.
1906. Echinophthirius phoece (Lucas), Enderlein, ibid, 29: 661.
1909. Echinophthirius phoece (Lucas), Dalla Torre, ibid., p. 17.
1909. Echinophthirius seriicans Meinert [sic], Dalla Torre, ibid., p. 18. (Misspelling of seriicans.)
1916. Echinophthirius phoece (Lucas), Ferris, ibid., p. 181.
1916. Echinophthirius horridus (Offers), Ferris, ibid., p. 205. (Fide Cummings.)
1919. Echinophthirius horribus (Offers), Mathena, Jahresbericht des Nierersächsischem zoologischen Vereins zu Hammer, 2: 10; 22.
1919. Echinophthirius horridus (Offers), Ferris, Report Canadian Arctic Expedition, 3: D: 11.
1928. Echinophthirius groenlandicus Becher, Freund, ibid., p. 16.
1928. Echinophthirius seriicans Meinert, Freund, ibid., p. 17.

---

Previous Records. Many times recorded from Phoca vitulina on the coasts of Europe; Phoca groenlandica and Halichoerus grpyhus, Greenland; Phoca variegata, without indication of origin; Phoca hispida, Beaufort Sea, Alaska.

Specimens Examined. From Phoca vitulina, Shetland Islands, Waterston (British Museum and Stanford University), Edinburgh, Scot-

---
land, Evans (British Museum), Hamburg Zoological Garden (Hamburg Museum); Phoca hispida, Beaufort Sea, Alaska (Stanford University); Phoca richardii geronimensis, Pacific Grove, California (Stanford University); “Greenland seal,” without indication of origin (Stanford University).

**Fig. 277.** Echinophthirius horridus (Ollers), female. From specimen from Phoca vitulina.

**Female** (Fig. 277). Length attaining 3.5 mm. Head short and broad, with prominent post-antennal angles and with the occipital region constricted into a relatively slender neck. Dorsum beset with numerous short, blunt setae and marked with a conspicuous sclerotic pattern; posterior-lateral angles with two or more long, stout setae. **Antennae** (Fig. 278).

**Fig. 278.** Echinophthirius horridus (Ollers): A, dorsum of thorax; B, sternum of thorax; C, types of setae; D, antenna; E, F, anterior tibio-tarsus; G, genital region of female; H, genital plate of male; I, genitalia of male.

**Thorax** (Fig. 278 A) with the phragmata strongly sclerotic and with heavy longitudinal bands connecting the coxal condyles; dorsum with numerous blunt setae; sternum (Fig. 278 B) with an irregular and some-
what variable, branching, sclerotic area and numerous short, stout setae. Mesothoracic spiracle (Fig. 278 A, *p*) small, but apparently functional. Legs all of the same type, the anterior pair but very slightly smaller than the others; tibia and tarsus (Fig. 278 E, *F*) entirely fused and the claw with a pronounced basal lobe.

Abdomen thickly beset with continuous segmental bands of short, blunt, flattened setae of various sizes (Fig. 278 C), which become more slender toward the posterior end of the body; each segment, both dorsally and ventrally, with a rather definite row of longer setae along the posterior margin; apex of the abdomen almost or quite bare; ninth tergite with a quite distinct, sclerotic hand. Genital region (Fig. 278 G) with a pair of indistinct sclerotic plates, which are probably in the wall of the vagina; vulva bearing a number of small setae; gonopophyses entirely lacking; ninth sternite with two longitudinal areas of long, crowded setae. Spiracles very small, provided with a specialized closing apparatus.

**Male.** Length attaining 3.00 mm. In all respects essentially like the female but with the abdomen more pointed. Genital plate (Fig. 278 H) somewhat lyriform, small. Genitalia (Fig. 278 I) with a long and rather broad basal plate (*b*); parameres (*p*), simple, curved, enclosing between their apices the broadly V-shaped pseudopenis (*p*); a flat, median structure lying between the parameres and partially overlapping the pseudopenis may be regarded as the statumen penis; the penis (*p*) lies between the bases of the parameres.

**Notes.**—All the specimens at hand adhere very closely to a common pattern, the specimens from *Phoca richardi gerronemus* being only slightly smaller and slightly more hairy than those from the Atlantic area. They afford no basis for specific separation. Authentic specimens of *E. greelandicus* Becher and *E. sericana* Meinert have not been available, although a specimen from "Greenland seal" is at hand. However, the differences which are supposed to distinguish these species are so extremely trivial and in part come so evidently within the range of observed normal variation that they can hardly be taken seriously. There seems no good reason for continuing to carry these names along in the literature.

**Genus PROECHINOPHTHIRUS** Ewing


Anoplura without eyes; with four-segmented antennae, which are not sexually dimorphic; anterior legs very small, with slender claw, middle and posterior legs very large and stout, with stout claw and with tibia and tarsus completely fused; thorax with the notum reduced to a median furrow and a median pit which is entirely inclosed within the mesothoracic phragma, sternum entirely lacking; abdomen membranous throughout, with the exception of small genital areas; paratergal plates entirely lacking; spiracles provided with a specialized closing mechanism; abdominal setae abundant, of varying forms and sizes, but none scale-like, for the most part irregularly arranged; gonopophyses entirely lacking.

**Hosts.** From members of the family Otaridae of the order Pinnipedia.

**Type of the Genus.** *Echinophthirus flactus* Ferris, the only included species.

**Notes.**—Following the suggestion made by the writer in connection with the original description of *Echinophthirus flactus*, Ewing has separated this species into a genus by itself. While further discoveries may possibly serve to bridge the gap between this genus and *Echinophthirus*, the two appear at present to be quite distinct. Possibly the common possession of four-segmented antennae is not especially significant, since such a character has undoubtedly arisen quite independently at least three times in the Anoplura.

1. Proechinophthirus flactus (Ferris)

**Figs. 279, 280, 281**


**Previous Records.** Originally described from specimens taken from a stuffed skin in the Museum of Stanford University, this skin bearing no data but identified by Dr. David Starr Jordan as that of a Steller sea lion, *Eumetopias jubata*, which is a native of the west coast of North America. Later recorded by McAtee and by Ewing from fur seal, *Callorhinus ursinus*, St. Paul and Pribilof Islands, Alaska. It is possible that the host was misidentified in connection with the original record.

**Specimens Examined.** The types; one female from *Callorhinus ursinus*, Alaska, 1919, G. D. Hanna; one female from the same host, Pribilof Islands, 1918, H. Heath (all in the Stanford University Collection).

**Male** (Fig. 279). Length 2.5 mm. A comparatively slender and delicate species. Head relatively very large, with prominent post-antennal angles and with the occipital region slightly constricted; ventral side with a slightly raised gular region bearing a fringe of long setae; antennae...
(Fig. 280 B) as described for the genus; lateral margins of hind head with a pair of long setae. Thorax (Fig. 280 A) about as long and scarcely wider than the head, the sides nearly parallel, the mesothoracic pilferma continuous across the notum, not enclosing the notal pit; coxal condyles connected by a continuous sclerotic band; sternum membranous except for a sclerotic bar on each side between the fore and middle coxae; spiracle very small. Anterior legs small and weak, the tibia and tarsus distinctly separated, the claws slender (Fig. 280 F); middle and posterior legs large and stout, the tibia and tarsus closely fused, the claw broad, with a basal lobe.

Abdomen broadly oval, entirely membranous except for the almost vestigial genital plate, thickly beset with setae of various shapes and lengths, the first two apparent segments each with a fairly well-defined row of long setae, both dorsally and ventrally, and the marginal area of the anterior half of the abdomen dorsally and the median area ventrally with numerous thorn-like setae, the remaining setae slender. Spiracles (Fig. 280 C) provided with a specialized closing apparatus, the spiracular opening very small, present on the third to eighth segments. Genitalia (Fig. 280 G) with the basal plate (bp) quite small, scarcely longer than the flattened parameres (par), to the bases of which the elongate V-shaped pseudopenis (pp) articulates; a rather vaguely defined endomeral piece (e) is present.

**Female.** Length 2.75 mm. In general very closely resembling the male. Genital region (Fig. 280 E) with the vulva fringed with setae and with a crowded cluster of long setae on each side of the ninth sternite.
Immature Stages. Specimens representing apparently two immature stages are available. One of the stages is the penultimate, certain individuals containing the developing adult. The two stages are essentially identical, differing only in size and in the older stage being somewhat more hairy.

In these (Fig. 281) the antennae are four-segmented as in the adult. The sclerotic areas of head and thorax are heavily pigmented and both head and thoracic dorsum are beset with numerous stout setae. The legs are substantially as in the adult. The abdomen is rather sparsely beset with small setae, some of which, toward the posterior end of the body, are flattened and more or less scale-like.

Genus **ANTARCTOPHTHIRUS** Enderlein


Anoplura without eyes; with five-segmented antennae, which are not sexually dimorphic; with the anterior legs small and weak, with slender claw and with the tibia and tarsus separated; middle and posterior legs very large and stout, the claw with a more or less well-defined basal lobe, the tibia and tarsus entirely fused; thorax with the notum reduced to at least the slight median furrow and a pit which is inclosed by the mesothoracic pteropleurae, the sternum without a sclerotized area; abdomen entirely membranous in both sexes; paratergal plates entirely lacking; gonopophyses lacking; entire body more or less thickly beset with stout, flattened setae and with scales; spiracles present on the mesothorax, but tending to be very much reduced, those of the abdomen present on the third to eighth segments and provided with a specialized closing apparatus.

Hosts. From members of the families Otariidae, Odobenidae, and Phocidae, of the order Pinnipedia.

**Type of the Genus.** *Antarctophthirus ogmorhini* Enderlein.

**Synonymical List of Names Previously Used in the Genus**

Note.—Names in italics are synonyms of the names with which they are coupled.

callorhini (Osborn).

*Haematopinus callorhini* Osborn.

*Antarctophthirus monachus* Kellogg and Ferris.

*Antarctophthirus ogmorhini* Enderlein. (Part; misidentification.)

*Echinophthirus microcirs* Trouessart and Neumann.

*Echinophthirus ogmorhini* Enderlein. (Part; misidentification.)

*Antarctophthirus callorhini* (Osborn).

*Arctophthirus ogmorhini* Enderlein.

*Echinophthirus setosus* (Burmeister). (Misidentification.)

*ogmorhini* Enderlein, (Part; misidentification.)

*Arctophthirus loboconus* Enderlein.

trichechi (Bohemann).

*Haematopinus trichechi* Bohemann.

*Arctophthirus trichechi* Bohemann.
Notes.—While there is a certain diversity among the members of this genus, it constitutes—in the opinion here adopted—a quite natural group, and there appears to be no reason for the recognition of the genus *Arctophthirius* Mjöberg once proposed with *A. trichechi* (Bohemann) as type. Representatives of four out of the five included species have been available to the writer.

1. *Antarctophthirius ogmornhini* Enderlein

Figs. 282, 283


1909. *Antarctophthirius ogmornhini* Enderlein, Enderlein, Deutsche Südpolar Expedition, 10: 599; figs. 174, 175, 181, 182.


Previous Records. From *Ogmornhirus leptonyx*, Victoria Land and Booth Wandel Island, Antarctic.

Specimens Examined. The types, in the British Museum.

Female (Fig. 282). Length 3.25 mm. A very plump, stout-bodied species. Head relatively small, with very prominent post-antennal angles and with the occipital region constricted into a distinct neck; dorsum with numerous, small, flattened, oval setae and with a definite sclerotic pattern; margins of hind head with several long, stout setae; ventral side of the head with small, oval setae only. Antennae presenting no unusual features.

![Antarctophthirius ogmornhini](image)

Fig. 283.—*Antarctophthirius ogmornhini* Enderlein: A, B, types of scales; C, genitalia of male.

Thorax slightly longer than the head and much broader, trapezoidal in form, both dorsum and venter beset with many small, oval, flattened setae and numerous scales. Legs with the basal lobe of the middle and posterior claws very much reduced; tibio-tarsal articulation entirely obsolete; the thumb on the middle and posterior legs without stout, modified setae. Mesothoracic spiracle very minute.

Abdomen subcircular, sparingly beset above on the lateral third of the first to sixth segments with small, oval, flattened setae; remainder of...
the dorsum thickly and uniformly beset with small, slightly pigmented scales which are of a very uniform subcircular shape. Venter rather sparsely beset throughout with flattened setae, those near the lateral margins being larger and stouter than the others; scales (Fig. 283 A, B) much fewer than on the dorsum, some of those along the posterior borders of the segments being slightly larger and longer than the others. Gonopophyses lacking; ninth sternite with two clusters of crowded setae.

**Male.** Length 2.75 mm. Differing from the female chiefly in having the abdomen more pointed and the abdominal setae slightly larger and perhaps slightly more numerous. Genitalia (Fig. 283 C) distorted in the specimen examined; in this the parameres do not show and the V-shaped pseudopenis is turned back; it incloses a small sclerotic piece (sp), which may be regarded as the statumen penis.

**Notes.**—Unfortunately not as many details as might be desirable were figured by the writer when the types were examined at the British Museum, no figure being made of the genital region of the female. The species should be easily recognizable, however.

2. **Antarctophthirus lobodontis** Enderlein

![Image](Fig. 284)


![Image](Fig. 284. **Antarctophthirus lobodontis** Enderlein: A, dorsal aspect of head; B, ventral aspect of head; C, thoracic sternum; D, types of scales from abdomen. After Enderlein.)

**MONOGRAPH OF THE SUCKING LICE**

1909. **Antarctophthirus lobodontis** Enderlein, *Deutsche Südpolar Expedition*, 10: 510; t.f. KK-NN.


**Previous Records.** From *Lobodon carcinophagus*, Booth Wandel Island, Antarctic.

**Specimens Examined.** Not seen by the writer.

**Notes.**—It is possible here only to quote the original description and reproduce its accompanying figures. According to Enderlein the species differs from *A. ogmo- rhini*, with which it was at first confused, in the following particulars:

"Unterseite des Kopfes [Fig. 284 B] mit weniger Dornen, im wesentlichen nur 2 einander nahe gerückte Längsinien der kurzen Dornen; am vorderen Ende 2 Haare; hinten jederseits 4 Borsten. Kopfseite [Fig. 284 A] in der mitte mit 7 langen Borsten im gegensatz zu 2-3. Der Hauptunterschied ist der, dass die Dornen des Hinterrandes des Thorakalsternum (Fig. 284 C) sich sehr lang und spitz ausgezogen haben. Die Schuppen der Ober- und Unterseite des Thorax und Abdomen sind verhältnismässig lang und weniger verbreitert; Textfig. [284 D] zeigt Schuppen von der Ventralseite des Abdomen an der Grenze zwischen Sternitt 2 und Sternit 3. Textfig. [284 C] solche vom Sternum des Thorax. Auf der Oberseite des Thorax fehlen die Dornen nahe der Mittellinie und sind durch Schuppen ersetzt."

Length of the female 2.5 mm.

3. **Antarctophthirus microchir** (Trouessart and Neumann)

![Image](Figs. 285, 286)


1909. **Antarctophthirus microchir** (Trouessart and Neumann), Enderlein, *Deutsche Südpolar Expedition*, 10: 511; figs. 176, 177, 183, 184.


PREVIOUS RECORDS. Recorded by Trouessart and Neumann from Phocarctos hookeri, Aukland Island, and by Ferris from Zalophus californianus, California.

SPECIMENS EXAMINED. Those upon which the record by Ferris was based and others from the Steller sea lion, Eumetopias jubata, Año Nuevo Island (Stanford University).

FEMALE (Fig. 285). Length 3.00 mm. A stout-bodied and moderately pigmented form. Head with prominent post-antennal angles, but the hind head only slightly constricted and thus without a distinct neck; both dorsum and venter with numerous short, thorn-like setae and with a posterior fringe of long setae; antennae presenting no distinctive features.

Thorax slightly longer than the head and considerably broader, somewhat trapezoidal, the sclerotic areas large, both mesothorax and metathorax dorsally with numerous stout setae laterally and with scales medially; sternal area with numerous stout setae and scales intermingled; legs of the generic type. Mesothoracic spiracle very small.

Abdomen subcircular or very broadly oval, the derm somewhat pigmented, the dorsum very thickly and quite uniformly beset with scales, which toward the lateral margins on the anterior portion of the abdomen are intermingled with flattened, pointed, stout setae. On the ventral side the scales are less numerous and the setae more abundant and

Fig. 285.—Antarctophthirus microchir (Trouessart and Neumann), female. From specimen from Zalophus californianus, California.

Fig. 286.—Antarctophthirus microchir (Trouessart and Neumann): A, genital region of female; B, types of scales; C, middle tibio-tarsus and claw; D, abdominal spiracle; E, genitalia of male.
larger, the latter forming a longitudinal band along each lateral margin and there intermingled with but few scales. The scales are quite uniform in size and shape, being slightly elongate-oval and narrowly rounded at the apex, some of those on the abdomen being longer and more pointed (Fig. 286 B).

**Genital region** (Fig. 286 A) with a tuft of long setae at each side of the genital opening.

**Male.** Length 2.5 mm. In general closely resembling the female, but with the abdomen more pointed. Genitalia (Fig. 286 E) with a relatively very large basal plate (*bp*); parameres (*pr*), short, not reaching to the apex of the very large pseudopenis, the arms of which articulate with the bases of the parameres; inclosed within the arms of the pseudopenis is a quite large structure that may be regarded as the statumen penis (*sp*).

**Notes.**—The figures given by Enderlein, which were made from specimens from the type lot, are very precise and complete, making the identification of the species certain. The specimens from the two species of California sea lions agree very closely with these figures and with each other.

This species is very similar to *A. omoorphi* from which it differs in the form of the scales and in not having the occiput constricted into a neck.

4. **Antarctophthirus trichechi** (Bohemann)

*Figs. 287, 288*


**Previous Records.** Recorded by various writers from *Odobenus (= Odobenus = Trichechus) rosmarus* from Greenland, Spitzbergen, and adjacent regions, and by Kellogg and Ferris from *O. obesus*, “northeast of Siberia.”

Specimens Examined. Those upon which the foregoing record by Kellogg and Ferris was based and others from “walrus,” caught in the Kara Sea (Hamburg Museum).

**Male** (Fig. 287). Length 2.75 mm. A deeply pigmented species. *Head* relatively large, with prominent post-antennal angles and with the occipital region slightly constricted; anterior margin bordered by a conspicuous sclerotic band and the ventral side with a longitudinal band extending from the anterior margin around the base of the antenna to the occipital border;
dorsum with numerous, short, acute setae and with a cluster of long setae along the lateral margin of the hind head; ventral side with short setae and with a gular fringe of long setae. Proboscis (Fig. 288 D) unusually prominent and with unusually large hooks.

Fig. 288. *Antarctophthirus tricuschi* (Bohemann): A, genital region of female; B, genitalia of male; C, scales; D, rostrum; E, abdominal spiracle.

Thorax about as long as the head and about one and one-half times as wide, the lateral margins arcuate; dorsum thickly beset with scales and with numerous flattened setae near the lateral margins; sternum with but few short setae and with numerous scales. Legs of the form typical of the genus, exceedingly stout, the mesothoracic and metathoracic claws with but an inconspicuous lobe at the base.

Abdomen slightly pointed, very thickly beset both dorsally and ventrally with scales, with a few lanceolate setae near the lateral margins dorsally and with more and larger setae ventrally. Scales (Fig. 288 C) quite uniform in size and shape, slightly cordate, very transparent and scarcely visible unless disturbed, but with very conspicuous pedicels. Apex of the abdomen with a tuft of setae. Spiracles (Fig. 288 E) small, provided with a specialized closing apparatus. Genitalia (Fig. 288 B) with a long basal plate (bp); parameres (par) very small and inconspicuous, much exceeded by the very large V-shaped pseudopenis (pp), the arms of which inclose a strongly sclerotic piece that may be regarded as the statumen penis (sp). Genital plate consisting of a pair of very small and inconspicuous longitudinal areas.

Female. Length 3.00-4.00 mm. In general very similar to the male, but with the abdomen more nearly circular, the ninth segment forming a small median apical lobe. Genital region (Fig. 288 A) very small and close to the apex of the abdomen. It is difficult to determine the exact disposition of the parts, but there appear to be two median lobes each bearing a cluster of crowded setae. Whether these lobes represent the vulva or the tufts of setae on the ninth sternite which appear in other species of this group is not determinable in the material at hand, but probably it is the latter.

Immature Stages. Representatives of the penultimate and possibly one other stage are at hand. These differ from the female significantly only in size.

Notes.—This species has been utilized by Mjøberg as the type of his genus *Antarctophthirus*, but while it departs in some respects from other members of *Antarctophthirus* there seem to be no good grounds for a generic separation.

5. *Antarctophthirus callorhini* (Osborn)

Figs. 289, 290


Previous Records. Known only from the original record by Osborn, from *Callorhinus alaskanus* (= urinus), Pribilof Islands, Alaska. The specimen, without host or locality data, upon which the description of
A. monachus Kellogg and Ferris was based, now appears without doubt to have come from this same lot.

Specimens Examined. A male, the type of A. monachus Kellogg and Ferris, undoubtedly one of the specimens originally recorded by Osborn; a male and a female and one immature specimen from the type host, Pribilof Islands, 1918, G. D. Hanna (all Stanford University).

Fig. 289.—Antarctophthirus callorhini (Osborn), male.

Male (Fig. 289). Length 2.5 mm. A comparatively slender-bodied member of this group. Head relatively large, with prominent post-antennal angles and a slightly constricted occipital region; dorsally with numerous short setae and a lateral and posterior fringe of long setae; ventral side with small setae of various shapes and a gular fringe of long setae.

Thorax about as long as the head and twice as wide, the lateral margins nearly parallel, with many setae of various lengths both dorsally and ventrally, but without scales. Mesothoracic spiracle exceedingly small. Meso- and metathoracic legs very large and stout, the claw with a distinct basal lobe (Fig. 290 D).

Abdomen elongate and slightly pointed, beset dorsally with setae of various lengths and sizes and particularly in the posterior half with scattered scales; ventral side more thickly beset with setae which are for the most part short and stout and with a few scattered scales in the apical region. Scales (Fig. 290 C) somewhat variable in form, but for the most part elongate, pointed, and with irregular serrations near the apex. Spiracles (Fig. 290 E) very small, provided with a specialized closing apparatus. Genitalia (Fig. 290 B) with a short, broad basal plate (bp); parameres (par) inconspicuous, shorter than the rather elongate and somewhat Y-shaped pseudopenis (pp), the arms of which inclose a conspicuous piece that may be regarded as the statumen penis (sp).

Fig. 290.—Antarctophthirus callorhini (Osborn): A, genital region of female; B, genitalia of male; C, types of scales; D, middle tibio-tarsus and claw; E, abdominal spiracle.
FEMALE. Length 3.00 mm. In general very similar to the male. Genital region (Fig. 290A) with an elongate area of crowded setae on each side on the ninth sternite.

NOTES.—In the pacity of its scales this species departs from the common characteristics of Antarctophthirus and in its general appearance suggests Prochnophthirus fluctus (Ferris) which occurs on the same host. But there seems to be no good reason for removing it from Antarctophthirus.

6. Antarctophthirus sp.

SPECIMENS EXAMINED. A fragment of a single specimen, from Arctocephalus sp., no data (U.S.N.M. 16463).

NOTES.—This fragmentary specimen seems to represent an undescribed species, with scales somewhat of the type of those of A. microchir but more elongate. While it should not be named from such a specimen, its occurrence is worthy of record.

Genus LEPIDOPHTHIRUS Enderlein

1904. Enderlein, Zoologischer Anzeiger, 28: 44.
1909. Enderlein, Deutsche Südpolar Expedition, 10: 513.

Anoplura without eyes; with four-segmented antennae, which are not sexually dimorphic; with the anterior legs relatively small and weak and with slender claw, the posterior and middle legs equal, large and stout, with stout claw which has a distinct lobe at the base; thorax with the notum reduced to at the most a very slight median furrow and a pit which is inclosed by the mesothoracic phragmata, the sternum not sclerotic; abdomen without tergal and sternal plates; paratergal plates entirely lacking; gonopophyses lacking; entire body very thickly beset with setae of various forms, many flattened and passing into scales with which the dorsum of thorax and abdomen is thickly beset; spiracles present on the mesothorax, but exceedingly small, and on the third to eighth abdominal segments, all provided with a specialized closing apparatus.

HOSTS. Known only from the genus Macrorhinus, the southern sea elephants, of the family Phocidae.

TYPE OF THE GENUS. Lepidophthirus macrorhini Enderlein, the only included species.
are directed forward. In the median region of the dorsum the scales are more heavily pigmented than elsewhere, leading to the formation of two dark, longitudinal bands which are conspicuous even to the naked eye. The scales are of varying form and size (Fig. 292 B), some being sharply pointed, others slightly emarginate at the apex.

On the ventral side the scales are for the most part lacking, appearing only in the genital region, and the derm is thickly beset with flattened lanceolate setae of various sizes. Genital region (Fig. 292 A) of unusual form, there being two elongate and slightly divergent lobes, which are thickly beset with setae. These lobes have the appearance of gonopophyses, but, on the basis of comparison with related species, it appears possible that they are merely lobes formed by the vulva. It has not been possible to work out the spiracular closing apparatus.

Male. Length 3.00 mm. In general very closely resembling the female, but with the dark dorsal bands of the abdomen not so conspicuous.
Genitalia (Fig. 292 D) in general of the type common to the other pinniped-infesting species, the basal plate (bp) large and long, the parameres (par) rather small, much exceeded by the pseudopenis (pp) which in the single specimen at hand appears to be divided into two parts; between the parameres is a large statumen penis (sp).

Notes.—Possibly because of individual variation, the scales on the specimens at hand do not agree entirely with the figure given by Enderlein, being much less truncate or emarginate than indicated by him. There is no reason to question the specific identification, however.

Genus PECIDINUS Gervais

1874. Pecidinus, Giesel, Insecta Epizoon, p. 32.
1912. Pecidinus, Fahrholz, Jahresberich des Niedersächsichen zoologischen Vereins zu Hannover, 2-4: 12-16.
1912. Phthirpedicinus, Fahrholz, ibid., p. 22.
1916. Phthirpedicinus, Ferris, ibid., p. 140.
1929. Neopedicinus, ibid.
1929. Phthirpedicinus, ibid.

Anoplura with eyes; antennae five-segmented, but frequently—especially in the female—with the last three segments more or less fused, causing a three-segmented appearance; sexually dimorphic by the presence of a short, stout seta on the dorsal side of each of the last three antennal segments; dorsum of the thorax with the pleural ridges uniting at the meson into a sclerotic area which encloses a slit-like median fold or pit which probably represents the vestiges of the true notum; sternal plate lacking; legs of varying form, the anterior pair always slender and with slender claw, the middle and posterior pairs ranging from but little stouter than the first to much stouter and with heavy claws; abdomen always membranous except for the usual sclerotization of the ninth tergite and the genital area; free paratergal plates present on the fourth to sixth or fifth and sixth segments; abdominal setae always very small, arranged in a single definite transverse row on each segment both dorsally and ventrally; gonopophyses vestigial, their position indicated chiefly by a row of small setae; genitalia of the male of a distinctive type, the parameres present and well developed, inclosing the pseudopenis between their apices, the penis borne at the apex of a sclerotic tube of varying form, the preputial sac not evident. Heers, Known only from old-world monkeys of the group Cynomorpha.

Type of the Genus. Pecidinus longiceps Piaget (= P. eurygaster of Gervais, not of Burmeister).

Sychronymic List of Names Previously Used in the Genus

Note.—Names in italics are synonyms of the name with which they are coupled.

The genera Phthirpedicinus and Neopedicinus, being here regarded as synonyms of Pecidinus, all names previously used in them are here recorded as if used in Pecidinus.

albidus (Rudow).
Harmatopinus albidus Rudow.
breecipis Piaget.
Pedicinus eurygaster (Burmeister). (Part.)
Pedicinus longiceps Piaget. (Part.)
colobii Fahrholz.
Pedicinus longiceps Piaget.
eurygaster (Burmeister).
Pedicinus breecipis Piaget. (Piaget, part; Mjöberg, part; misidentification.)
Pedicinus eurygaster (Burmeister). (Piaget, part.)
Pedicinus longiceps Piaget. (Part.)
Pedicinus microphs (Nitsch).
Pedicinus piagetii Strobel.
Pedicinus eurygaster Burmeister.
Pedicinus microphs Nitsch.
Phthirpedicinus microphlous Fahrholz.
Phthirpedicinus microphs (Nitsch).
eurygaster (Burmeister). (Misidentification.)
Pedicinus longiceps Piaget. (Part.)
}

granicopis Piaget.
Pedicinus longiceps Piaget.
hamadryas Mjöberg.
longiceps Piaget. (Part.)
Pedicinus breecipis Piaget. (Part.)
Pedicinus colobii Fahrholz.
Pedicinus eurygaster (Burmeister). (Gervais; Piaget, part; misidentification.)
Pedicinus praelicopis Piaget.
Pedicinus paraecopis Mjöberg.
Pedicinus paraecopis var. colobii Fahrholz.
Pedicinus rhesi Fahrholz.
Pedicinus vulgaris Fahrholz.
microphs (Nitsch).
Pedicinus eurygaster (Burmeister).
change in the application of the name Pedicinus will be produced, even if the genus Phthirpedicinus be accepted.

Neither Phthirpedicinus Fahrenholz nor Neopedicinus Fahrenholz is here accepted as valid. The former was named for the reception of species in which the claws of the middle and posterior legs are stout and heavy and but two pairs of paratergites are present. The latter was established for species with claws of this same type but with three pairs of paratergites. Pedicinus was thereby restricted to species with all the legs and claws essentially similar and with three pairs of paratergites. It does not appear that anything is to be gained by these divisions. The few known species are still obviously closely related members of a common stock and constitute a well-defined and homogeneous group which expresses nicely the concept of a genus that is adhered to throughout this series of papers.

1. Pedicinus longiceps Piaget

Figs. 293, 294, 295, 296 D

1844. Pedicinus eurygaster (Burmeister), Gervais, in Walckenaer, Histoire naturelle des insectes aplaties, 3: 301; pl. 48, figs. 1, 1b. (Misidentification.)

1890. Pedicinus eurygaster (Gervais), Piaget, Les Pediculinae, pp. 630-32; pl. 51, fig. 6. (Part; misidentification.)

1890. Pedicinus longiceps Piaget, ibid., pp. 632-33; pl. 51, fig. 7. (Part.)

1890. Pedicinus brevicus Piaget, ibid., pp. 632-33; pl. 52, fig. 1. (Part.)

1895. Pedicinus gracilipes Piaget, ibid., Supplement, pp. 141-42; pl. 15, fig. 2.


1908. Pedicinus longiceps Piaget, Dalla Torre, ibid., p. 9.


1910. Pedicinus brevicus Piaget, Mjöberg, ibid., p. 172. (Part; misidentification.)

1912. Pedicinus rhei Fahrenholz, Zoologischer Anzeiger, 39: 34.

1912. Pedicinus rhei Fahrenholz, Jahresbericht des Niedersächsischen zoologischen Vereins zu Hannover, 2-4: 16-19; pl. 16, figs. 4-9.

1912. Pedicinus eurygaster (Burmeister), Fahrenholz, ibid., pp. 14-15. (Part.)

1912. Pedicinus longiceps Piaget, Fahrenholz, ibid., p. 15. (Part.)

1912. Pedicinus brevicus Piaget, Fahrenholz, ibid., p. 16. (Part.)

1913. Pedicinus eurygaster (Burmeister), Patton and Cragg, Textbook of Medical Entomology, p. 546; pl. 68, fig. 1.


1916. Pedicinus eurygaster (Burmeister), Ferris, ibid., p. 139. (Part.)

1916. Pedicinus longiceps Piaget, Ferris, ibid., p. 139. (Part.)

1916. Pedicinus rhei Fahrenholz, Ferris, ibid., p. 140.

1916. Pedicinus rhei Fahrenholz, Fahrenholz, Archiv für Naturgeschichte, 81 (Abt. A): Fasc. 11: 5-6, 32; figs. 5-6.

1916. Pedicinus vulgaris Fahrenholz, ibid., p. 32.

1916. Pedicinus obtusus (Fahrenholz), ibid., p. 33.

1917. Pedicinus parallelepsis Mjöberg, Fahrenholz, Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten, 34: Beilage 2:3.

**Previous Records.** Recorded by Gervais, as *Pedicinus eurygaster* (Burm.), from Guenon, *Macacus*, and *Cynocephalus*. By Piaget (part) as

---

![Image of *Pedicinus longiceps* Piaget, male and female. From specimens in the Piaget Collection.](image)

*P. eurygaster*, from *Inius sinicus*, *I. nemestrinus*, and *Macacus cynomolgus*; as *P. longiceps* Piaget (part) from *Cercopithecus priusinus* and

---

3 The host names will be cited throughout the discussion of the monkey-infecting species as they have been published or as they occur on the labels of the specimens cited. The nomenclature of the monkeys is in a most extraordinary tangle and probably many of the records involve misidentifications of the hosts or misapplication of names. An attempt will be made to clarify the host nomenclature in connection with the host list which will appear in the final parts of this series. For the nomenclature of the Primates see C. W. Stiles and A. Hassall, "Key Catalogue of Primates for Which Parasites Are Reported," *United States Treasury Department, Public Health Service, Hygienic Laboratory Bulletin No. 152*, 1929.

---

*Macacus cynomolgus*; as *P. breviceps* Piaget (part) from *Cercopithecus mona*; as *P. gralliceps* Piaget from unnamed host. What is possibly this species was recorded by Rudow as *Haematopinus obtusus* from *Semnopithecus maurus*. Recorded by Möjberg as *P. paralleliceps* Möjberg from *Macacus silenus* and as *P. breviceps* from *Cercopithecus* sp. Described by Fahrenholz as *P. rhesi* from *Macacus rhesus* and as *P. paralleliceps* var. *colobii* from *Colobus caudatus*. Recorded by Wernerck as *P. eurygaster* from *Pitheus rhesus* and from rabbit, *Oryctolagus cuniculus*. Apparently all these records are from specimens taken from hosts in captivity.

**Specimens Examined.** From the Piaget Collection as follows: From *Semnopithecus priusinus*, three slides, males, females, and immatures. These may be accepted as co-types of the species and from among them the lecto-holotype should be chosen. Two slides from "*Cercopithecus cynomolhus* (Java)." Two slides labeled "*Pedicinus graciliceps* sur un singe?" which undoubtedly contain the types of this species. A slide of immature specimens labeled "*Pedicinus breviceps* sur un *Cercopithecus mona* (Guineè)." A slide labeled "*Pedicinus eurygaster Gerv. sur un Macacus cynomolgus*," containing a male and immature specimens of *P. longiceps* in company with a male of the species here regarded as *P. eurygaster*; a slide with the same data containing a female of *eurygaster* and males and females of *longiceps*; four slides with the same data and containing males, females, and immatures of *longiceps*. A slide labeled "*Pedicinus eurygaster Gervais sur un Inius nemestrinus*," and containing immatures and one adult male.

From the Berlin Museum, three slides determined by Fahrenholz as *Pedicinus rhesi* Fahrenholz, these including a male and a female from *Cynocephalus niger*, Zoological Garden, Berlin, and immature specimens from *Cercopithecus griseo-tridentis*.

From the Hamburg Museum a slide labeled as from "*Semnopithecus maurus*, A. Poppe det. 1881/2." These are from the type host of Rudow's *Haematopinus obtusus*, and as others of Rudow's supposed types are in the Hamburg Museum it is possible that they are the types of *obtusus*.

Immature specimens from the type lot of *P. paralleliceps* Möjberg and two females labeled "*Typen*" of *P. paralleliceps* colobii Fahrenholz have been available through the kindness of the Hamburg Museum.

Other specimens, as follows, have been examined:

*Cercopithecus diana*, no data (British Museum); *Cercopithecus pygerythraeus*, Rustenberg District, Transvaal, G. A. H. Bedford; *Cercopithecus* sp., Hamburg Zoological Garden, 26: XIII: 1911 (Hamburg Museum) and Lagos Laboratories, Nigeria (British Museum).

*Macacus arctoides*, Zoological Garden, Washington (United States National Museum); *Macacus rhesus*, Zoological Garden, London (British
Museum and Molteno Institute); *Marcusus speciosus*, Shinano Province, Japan, S. Nakayama (Stanford University).

*Na bullis larvulis*, Kuching, Borneo (British Museum).

*Pitheclus adnetus*, Telok Besar, Tenasserim (U.S.N.M. 124286); *Pitheclus mindanensis*, Mt. Apo, Mindanao, Philippine Islands (U.S.N.M. 125319); *Pitheclus mindorus*, Mt. Halcon, Mindoro, Philippine Islands (U.S.N.M. 144675); *Pitheclus martini*, London Zoological Garden (British Museum); *Pitheclus patas*, no data (British Museum); *Pitheclus rheums*, Kothar, Kashmir (U.S.N.M. 173812); *Pitheclus sp.,* Kashmir (U.S.N.M. 6471), West Sumatra (U.S.N.M. 114559), Chance Island, Mergui Archipelago (U.S.N.M. 104439).

*Squattius sanctorum*, Sullivan Island, Mergui Archipelago (U.S.N.M. 124113).

*Senopeithus entellus*, London Zoological Gardens (British Museum).

"Monkey," Alabang, Philippine Islands, W. B. Muzain (British Museum); Miri, Sarawak (British Museum).

"Java Monkey," Lagos Laboratory, Nigeria (British Museum).

**FEMALE** (Fig. 293). Length attaining 2.5 mm. **Head** (Fig. 294 D) elongate and slender, the fore head sharply rounded; the sclerotic areas forming a curved band across the dorsum of the fore head and longitudinal lateral areas on the hind head; eyes distinct, one faceted; antennae (Fig. 294 A) with the last three segments partially fused. **Thorax** with the prothoracic and mesothoracic coxal conydes united by a longitudinal bar (Fig. 294 G). **Legs** all with slender claws, the tibio-tarsus of the fore legs (Fig. 294 I) longer and relatively more slender than that of the middle and posterior legs (Fig. 294 J). **Abdomen** with the setae of the transverse rows numerous and set closely together, the lateral margins both dorsally and ventrally with scattered setae. Paratergal plates present on the fourth to sixth segments, only slightly sclerotic except for a small median area (Fig. 294 F). **Genital plate** (Fig. 294 C) very small.

**MALE** (Fig. 292). Length attaining 1.75 mm. **Head** (Fig. 294 E) shorter and stouter than that of the female, the antennae (Fig. 294 B) clearly five-segmented. **Abdomen** essentially as in the female. **Genitalia** (Fig. 294 K) of a distinctive form, the basal plate (bp) about as long as the parameres and deeply bifid posteriorly, the parameres (par) acutely pointed and incising the rather narrow pseudopenis (pp), the penis (p) in the form of an elongated tube, slightly expanded at the apex and forming a flat, truncate anterior process between the arms of the basal plate; genital plate (Fig. 294 H) quite small.

**Notes.**—It is only the opportunity of examining the types of the species described by Piaget, Mjöberg, and Fahrenholz that has made possible the unravelling of the tangle associated with this species, a tangle that has effectually blocked progress in the study of the systematics of this group. To explain the situation it is necessary to go back to the description of *Pediculus eryngaster* Burmeister, the first of the monkey-infesting forms to be named.

While the original description of *Pediculus eryngaster* is very inadequate, it definitely indicates the presence of two pairs of paratergal plates and the name must be applied to a species with this character. Such a species—and apparently only one such

---

[508]

---

[509]
exists and is here recognized under the name of Pedicinus eurygaster (Burmeister).
It is evident that the species upon which Gervais based the genus Pedicinus and
which he recorded as the eurygaster of Burmeister was misidentified, it being clearly
figured as possessing three pairs of parategal plates. Later authors failed to note
this discrepancy and perpetuated the misidentification.

Fig. 295.—Pedicinus longiceps Piaget: A, first-stage nymph; B, detail of apex of
abdomen of same; C, abdomen of penultimate-stage nymph.

Rudow (1869) complicated the situation by naming two new species from
monkeys, both included by him in Haematopinus. One of these, H. albicus, is here
recognized as a valid species and will be dealt with later. The other, H. obtusa,
from Semnopithecus maurus, is undoubtedly a Pedicinus. It is possible that the
specimens from this host recorded above as received from the Hamburg Museum
are the actual types of obtusa, for others of Rudow's types are in this museum. If
their validity could be established the name obtusa would have to be recognized and
would replace the name longiceps which is here utilized. However, the facts are
not established and it seems unreasonable to displace a name, the application of
which is definite, on such dubious grounds.

But the greatest complications are those for which Piaget was responsible. His
material has been remounted by the writer and put into condition for study. It in-
cludes but two species, but these were recorded by Piaget under four specific names,
three of which were new. One species, P. gracilicaps Piaget, was based upon pure
material, but each of the others included both actual species, they being included even
in the same slide preparations. It appears, furthermore, that Piaget was confused as
to the difference between adult and immature specimens and that his figure of P. brevi-
caps was based upon the head of one species and the body of another. It remains to
the present author, as the first reviser, to select lectotypes which will fix the status of these species. This has been done, keeping in mind the evidence afforded by
Piaget's descriptions and records, with the following results:

Pedicinus longiceps, as identified by Piaget, is represented by specimens from
Semnopithecus primus and Macacus cynomolgus. Accepting the hint given by

2. Pedicinus albicus (Rudow)

Fig. 296

1809. Haematopinus albicus Rudow, Zeitschrift für die gesamten Naturwissen-
schaften, 34: 168.

Insectorum, p. 11.

1916. Haematopinus f albicus Rudow, Ferris, "Catalogue and Host List of the

1916. Pedicinus albicus (Rudow), Fahrenholz, Archiv für Naturgeschichte, 81 (Abt.
Previous Records. Known only from the original record, from the “Barbary ape,” Macaca sylvanus (≡ Simia sylvanus, Macacus inanus).

Female. In all respects essentially identical with that of P. longiceps Piaget, differing chiefly in the form of the genital plate (Fig. 296 B), which is constantly much larger and of trapezoidal form with the posterior margin deeply emarginate. Antennae distinctly five-segmented. Legs all with slender claw, the anterior tibio-tarsus (Fig. 296 E) but little more slender than the middle and posterior (Fig. 296 F).

Male (Fig. 296 A). Essentially similar to the male of P. longiceps, from which it differs conspicuously only in the character of the genitalia (Fig. 296 H), the penis (p) being flattened instead of forming a cylindrical tube as in P. longiceps, and the parameres (par) having a strong tooth on the mesal margin. The fore head (Fig. 296 C) is noticeably shorter and broader than in P. longiceps (Fig. 296 D). Antennae (Fig. 296 G) with the usual modified setae and distinctly five-segmented.

Notes.—While this species is quite unrecognizable from the original description, its identity may be regarded as reasonably established on the basis of its host, especially as some of the material examined originated from hosts uncontaminated by life in a zoological garden. The characters given are constant in the two lots of material taken in different places and at different times, and the species is quite distinct and worthy of recognition.

3. Pedicinus hamadryas Mjöberg

Figs. 297, 298


Previous Records. Known only from the original record by Mjöberg, from Hamadryas sp.

Specimens Examined. Males and females from the type lot, received through the kindness of Dr. Von Brun of the Hamburg Museum, and a single specimen in the British Museum labeled merely “loose of monkey, Pediculus hamadryae.”

Female (Fig. 297). Length attaining 2.75 mm. In general characteristics very similar to P. longiceps Piaget, differing tangibly chiefly in the form of the legs. These are very long and slender, with the pigmented areas very sharply defined, the tibio-tarsus of the fore leg (Fig. 298 A) being especially slender. The slenderness of the tarsus of the middle and posterior legs (Fig. 298 B) is a distinctive feature. The accompanying figures are to the same scale as are the corresponding figures of other

Fig. 296.—Pedicinus albidus (Rodol): A, male; B, genital region of female; C, fore head of male; E, anterior tibio-tarsus; F, middle or posterior tibio-tarsus; G, antenna of male; H, genitilia of male.

Pedicinus longiceps Piaget: D, fore head of male.

Specimens Examined. Several males and females from the type host, London Zoological Garden (British Museum) and Morocco (U.S.N.M. 196984).
species. The setae in the transverse abdominal rows seem to be distinctly fewer than in *P. longiceps*.

**Male** (Fig. 297). Length 2.00 mm. **Head** shorter and broader than in the female, the first segment of the antennae much larger than in the female, the fore head rather strongly constricted. The legs are similar to those of the female. **Genitalia** (Fig. 298 C) differing from those of *P. longiceps* in certain details; parameres (par) without an acute point at the apex, rather broad and flat; pseudopenis (pp) quite small and narrow; penis (p) forming a cylindrical tube which is sharply pointed at the apex, its basal prolongation between the arms of the basal plate (bp) acute and not truncate as in *P. longiceps*.

**Note.**—While this is very similar to *P. longiceps* it is probably a valid species.

---

**Fig. 298.**—*Pedicinus hamadryas* Mjöberg: A, anterior tibio-tarsus; B, middle or posterior tibio-tarsus; C, genitalia of male.

---

**4. Pedicinus patas** (Fahrenholz)

Fig. 300 G


**Previous Records.** Known only from the original record, from *Cercopithecus patas*, without indication of locality. The host, for which the name *Erythrocebus patas* is apparently correct, is a native of West Africa.

**Specimens Examined.** Several individuals from *Erythrocebus whitei*, Gaas Ngishu Plateau, British East Africa (U.S.N.M. 162844); *Lasioptyga kolbi*, Lake Naivasha, British East Africa (U.S.N.M. 162844); *Lasioptyga albogularis kibonotensis*, Taveta, East Africa (U.S.N.M.). On the basis of hosts and the original description by Fahrenholz, I assume these to be this species. Specimens in the British Museum labeled merely “From Cercopithecus, Prof. Minchin,” represented only by very poor preparations, appear to be the same.

**Notes.**—The material at hand, unfortunately, is all in very bad condition, such as to make it impracticable to present complete figures. It is extremely close to the
next to be described and its distinctive characters will be discussed in connection therewith.

This species has been designated by Fahrenholz as the type of his genus *Neopedicinus*, the genus being based upon the combination of three pairs of paratergites with heavy claws on the middle and posterior legs. This genus is not here regarded as worthy of recognition.

5. *Pedicinus ancoratus* n. sp.

**Figs. 299, 300 A-F, H, I**

**Specimens Examined.** Holotype, a male, and allotype and four paratypes from *Presbytis pullata*, Pulo Sebang, East Sumatra (U.S.N.M. 123070); numerous paratypes from *Presbytis cristata*, Indragn River, East Sumatra (U.S.N.M. 113170), and Tanjong Ringsam, Banjka (U.S.N.M. 124713); *Presbytis germaini mandibularis*, Koh Chang Island, Siam (U.S.N.M. 201549); *Presbytis schistacea*, Lolab, Kashmir (U.S. N.M. 63470); *Presbytis rubicunda rubida*, Sukadana, West Borneo (U.S.N.M. 145334); and a single female doubtfully referred to this species, from *Pygathrix priamus*, Ceylon (U.S.N.M. 191986).

![Diagram](image)

**Fig. 299.** *Pedicinus ancoratus* n. sp., male and female. From the types.

**Fig. 300.** *Pedicinus ancoratus* n. sp.: A, genital region of female; B, genital plate of the male; C, antennae of male and female; D, genitalia of male with detail of penis; E, anterior tibio-tarsus; F, middle or posterior tibio-tarsus, with detail; H, paratergal plate; I, heads of male and female, *Pedicinus patas* Fahrenholz; G, detail of penis.

**Female** (Fig. 299). Length 2.5 mm. **Head** (Fig. 300 I) relatively slender, with the antennae set at about the anterior third, the anterior
margin of the head smoothly rounded, the occiput constricted into a short neck, the markings of the usual type; antennae (Fig. 300 C) with the last three segments quite closely fused. Thorax of the form characteristic of the genus, the coxal conoides not connected by longitudinal bands; anterior legs with the tibio-tarsus (Fig. 300 E) moderately slender and with slender claw; middle and posterior legs (Fig. 300 F) with the tibio-tarsus stout and flattened, with stout claw and with a heavily sclerotized area on the inner face of the tarsus, this opposing a similar area on the claw (Fig. 300 F, detail).

Abdomen of the ordinary form, the setae rather sparse and without marginal clusters; paratergites present on segments four to six, their posterior half (Fig. 300 H) strongly sclerotic; genital plate (Fig. 299 A) of a distinctive form as shown.

Male (Fig. 299). Length 1.75 mm. In general closely resembling the female, but with the head (Fig. 300 I) shorter and broader, the antennae (Fig. 300 C) of the typical form, with the third and fourth segments quite closely fused. Genitalia (Fig. 300 D) distinctive by reason of the peculiar form of the penis (p) which is strongly produced anteriorly between the arms of the basal plate (bp), with its posterior prolongation short, strongly sclerotic, and with distinct lateral points, the form of this suggesting the specific name; paratergites (par) with their apices truncate and inclosing the broad pseudopenis (pp). Genital plate (Fig. 300 B) relatively large.

Notes.—This species is very close to that which is here considered to be P. patas (Fahrenholz), the one precise and definite difference being found in the form of the penis. All the specimens at hand from hosts of the genus Prabys agree in having the penis of the form described, while all those which seem to be P. patas agree in lacking the lateral processes (Fig. 300 G). There are other apparent but slight differences, the specimens of patas having the head larger and more slender and apparently lacking the short "neck" which occurs in other species, the head having the appearance of rising from the dorsal aspect of the thorax as noted by Fahrenholz. None of the available specimens of P. patas show adequately the form of the genital plate in the female.

Some specimens, including unfortunately but poor preparations of females only, labeled as "found on cats and dogs by hospital assistant, sent by Acting Consul H. A. Attewill, Teng Yack, China, 1911-147," in the British Museum, may be P. ascortatus.

6. Pedicinus pictus n. sp.

Figs. 301, 302

Material Examined. Holotype, a male, and allotype and numerous paratypes from Colobus caudatus, Mt. Kenya, British East Africa (U.S.N.M. 163125). Paratypes from the same host and from Pygathrix

... [518]

entellus, London Zoological Gardens (British Museum). The normal host is in all probability Colobus caudatus.

Female (Fig. 301). Length 2.00 mm. Head (Fig. 302 E) with the antennae set at about one-third of the length from the anterior apex, the eyes slightly behind the middle; fore head sharply parabolic; occiput constricted into a distinct neck; markings those common in the genus; antennae (Fig. 302 H) quite distinctly five-segmented. Thorax with the pleural ridges uniting into a median sclerotic area, the lateral margins without bands connecting the conoides. Legs short, the tibio-tarsus of the fore leg comparatively slender and with slender claw (Fig. 302 F), that of the other legs (Fig. 302 G) stout, with stout claw and with two or three sclerotic ridges across the inner face of the tarsus at the base of the claw.

Abdomen rather short and rotund in the specimens at hand, the... [519]
paratergites and the genital plate and dorsal areas of the ninth segment strongly sclerotic and pigmented. Setae arranged in closely set rows. Paratergites with free margins (Fig. 302 B) present on the fourth to sixth segments, the seventh to eighth with an irregular sclerotic plate

without free margins caudal of the spiracle. Genital plate (Fig. 302 C) relatively very large, of a distinctive and constant form; between the gonopophyses and the apex a pair of moderately sclerotic transverse plates.

MALE (Fig. 301). Length 1.75 mm. In general closely resembling the female, the head (Fig. 302 D) somewhat shorter and stouter. Antennae (Fig. 302 H) with the usual modified setae on the last three segments. *Genitalia* (Fig. 302 A) distinguished especially by the form of the penis (p) which is prolonged anteriorly far up between the arms of the basal plate (bp), while its posterior prolongation is exceedingly small; parameres (par) blunt tipped, inclosing the rather narrow pseudopenis (pp).

NOTES.—This species is evidently quite closely related to *P. patas* (Fahrenholz), being marked chiefly by the paratergal plates of the seventh and eighth segments. The pigmentation of the sclerotic areas is unusually strong for a species of this genus and has suggested the name.

Certain specimens at hand, including a single male from *Colobus kirkii*, no data (USNM 16604), and males and females from *Colobus sp.*, Zanzibar (Molteno Institute), differ from *P. pictus* in lacking the paratergites of the seventh and eighth segments and in having the head noticeably short. The material, however, is poor and for the present I can do nothing more than place it as near *P. pictus*.

Specimens representing the last immature stage of *P. pictus* are at hand. They apparently lack the paratergites of the seventh and eighth segments and possess a pair of terminal sclerotic areas; otherwise they are very similar to the adults.

7. **Pedicinus eurygaster** (Burmeister)

Figs. 303, 304, 305


1890. *Pedicinus longiculepis* Piaget, *ibid., p. 632.* (Part.)


1881. *Pedicinus piagetii* Stroebelt, *Jahresbericht der zoologischen Section des westfälischen provincial-Vereins für Wissenschaft und Kunst, 9: 82; fig. 1.*

1908. *Pedicinus eurygaster* Gervais, Dalla Torre, *“Anoplura,” in Wytsman’s *Genera Insectorum, p. 9.* (Part.)

1908. *Pedicinus longiculepis* Piaget, Dalla Torre, *ibid. (Part.)*

1908. *Pedicinus breviceps* Piaget, Dalla Torre, *ibid.* (Part.)


1912. *Ptk. pedicinus piagetii* (Stroebelt), Fahrenholz, *ibid., pp. 27, 28.*


1915. *Pedicinus longiculepis* Piaget, Ferris, *ibid., p. 130.* (Part.)

three segments fused. Thorax (Fig. 304 H) without a lateral band uniting the condyles. Anterior legs with the claw (Fig. 304 D) slender and the tibio-tarsus relatively so; middle and posterior legs (Fig. 304 E) with the tibio-tarsus stout and flattened, the claw stout, the tarsus with three distinct, sclerotic ridges on its inner face (Fig. 304 E, detail).

![Monograph of the Sucking Lice](image)

**Fig. 303.—Pedicinus eurygaster (Burmeister), male and female. From specimens from "Cynomolagus cynomolgus," Hamburg Zoological Garden.**

**Abdomen** with the setae very small; paratergites (Fig. 305 C) present on only the fifth and sixth segments, small, their outer angle projecting from the abdomen; seventh and eighth segments with from two to four slender marginal setae; genital region (Fig. 304 C) with a small median plate.

**Male** (Fig. 303). Length 1.2 mm. **Head** (Fig. 304 A) somewhat shorter and broader than in the female; antennae (Fig. 304 B) with the last three segments distinctly separate and each bearing dorsally a short, stout seta. **Abdomen** as in the female, but blunter at the apex. **Genitalia** (Fig. 304 G) of the general form common to the group, the spines of the
parameres (par) widely separated by the broadly divergent arms of the pseudopenis (pp), the penis (p) in the form of an elongate, conical tube,

which is produced as a narrow, flat plate between the arms of the basal plate (bp). Genital plate as in Fig. 304 F.

Fig. 304.—Pedicinus eurygaster (Burmeister): A, heads of male and female; B, antennae of male and female; C, genital region of female; D, anterior tibio-tarsus; E, middle or posterior tibio-tarsus, with detail; F, genital plate of male; G, genitalia of male; H, portion of dorsum of thorax.

Fig. 305.—Pedicinus eurygaster (Burmeister): A, antenna of first-stage nymph; B, first-stage nymph; C, paratergal plate of adult.

Notes.—The identification of this species with the Pedicinus eurygaster of Burmeister rests frankly upon an assumption, but an assumption which seems completely justified. The original description of this species indicates clearly that it possesses but two pairs of paratergites. In all the wide range of material examined in connection with the preparation of this paper there appears but one species which possesses such a character, and this species is evidently very common on various kinds of monkeys in zoological gardens. By accepting the view that all the species which have been described as possessing but two pairs of paratergites are identical, no unrecognizable species of this type are left to encumber the literature, while otherwise P. eurygaster (Burmeister) and P. piagi (Strobel) cannot be disposed of.
The only possible basis for recognizing more than one species in the material examined is to be found in the fact that in some specimens, notably all those in the Piaget Collection, there are from three to four long marginal setae on the seventh and eighth abdominal segments, while in others there are but two. It does not appear that this offers any reasonable basis for a specific separation.

The immature stages differ but little, except in proportions, from the adult. The apparent first stage is figured (Fig. 305 B). The antennae of this stage (Fig. 305 A) have the three terminal segments closely fused. There are no marginal sclerotic areas on the abdomen, such as appear in the immature stages of P. longipes. The paratergites appear in what is perhaps the third instar, being then of essentially the same character as in the adult.

Fahrenholz has utilized this species as the type of his genus Philarpedicus. There seems to be no special reason for separating this genus from Pedicinus.

8. Pedicinus obtusus (Rudow)

1860. Haematopinus obtusus Rudow, Zeitschrift für die gesamten Naturschaffen-
ten, 34: 169.

Previous Records. Known only from the original record by Rudow, from Semnopithecus nasalis.

Notes.—This species is utterly unrecognizable from the original description and has been referred to Pedicinus solely on the basis of its host.

As has been pointed out in the discussion of Pedicinus longipes Piaget, the writer has examined certain specimens from the type host of P. obtusus, belonging to the Hamburg Museum, and it is possible that these are actually Rudow's types, since the supposed types of others of his species are in that museum. But unless it can be shown that such is actually the case, it would seem unjustifiable to suppress a definitely known species in order to recognize anything as vague as is P. obtusus. Were we dealing with species rigidly restricted to a single host species and were we certain that the host identification has been correctly made—as is not the case in connection with any of the monkeys—we should be justified in taking such a step, for the probabilities are all in its favor. But there is the possibility that Rudow had some other species, such as P. erythrocerus, which occurs commonly on various monkeys.

There seems nothing to do at present but to regard Pedicinus obtusus (Rudow) as unrecognizable.