THE POST-SPIRACULAR SETA AND SENSILLUS IN THE MALLOPHAGA (INSECTA).

By Theresa Clay, 
British Museum (Natural History).

Waterston (1928 : 352) seems to have been the first author to recognise the importance of the post-spiracular seta, that is the seta lying posterior to the tergal plate below the spiracle.

In the Amblycera the spiracles are apparent on abdominal segments III–VIII and lie on or near the lateral margins of the tergal plates. There is usually a clear division between the tergal plate and a sclerite (the pleurite or paratergal plate) which passes round the lateral margin of the abdomen and is separated from the sternite by a less strongly sclerotized area on the ventral surface. On each of the segments III–VIII there is a post-spiracular seta lying posterior to the spiracle each side of the segment. This seta is always associated with two small setae, the alveoli of which are contiguous with that of the post-spiracular seta (fig. 1). A similar group of three setae is present on each side of segment II, although there are no functional spiracles on this segment. In some genera (e.g. Somaphantus) the post-spiracular setae do not lie on the posterior margin of the tergal plates but between the spiracle and the marginal row of tergal setae.

In the avian Ischnocera the tergal plates are continued round the lateral margin of the abdomen and separated from the sternite by a space on the ventral surface. Spiracles are present on the tergal plates of segment III (=apparent 2nd) to VIII (=apparent 7th); in Nesiotinus spiracle VIII opens on that part of the plate which is carried round on to the ventral surface. The typical post-spiracular seta in the Ischnocera may be found on any of the segments III–VII lying posterior to the margin of the tergal plate below the spiracle each side and separated from the rest of the tergal setae (which may be submarginal) by a gap. It may, however, be absent on some or all of these segments, or there may be two or three setae in this position, or the tergal setae may form a continuous row along the posterior margin of the whole tergite. On segment VIII throughout the Ischnocera there is a lateral seta each side lying in a pocket in the integument. The assumption that the post-spiracular seta is a distinct seta homologous from species to species is supported by the fact that in many cases this seta is associated with a sensillus, similar in appearance to an alveolus but without the protruding seta. This sensillus, which is adjacent to or contiguous* with the alveolus of the post-spiracular seta (fig. 2), is here called the post-spiracular seta.

* Contiguous is here used in the sense of touching; adjacent, near or touching.
sensillus. In some genera (e.g. *Degeeriella*) these sensilli are relatively obvious characters found adjacent to the post-spiracular setae on segments III–V. These sensilli have not been found on the segments posterior to V except in the genus *Bruelia*, in which they occur fairly often on segments VI and VII. They may also occur on segment II (e.g. in *Philopterus* spp.), although there are no functional spiracles on this segment. In some species structures which appear to be post-spiracular sensilli are found on the tergal plates as small unpigmented circles not associated with any setae. That these are indeed homologous with the post-spiracular sensilli is shown by the fact that they occur only on segments II or III to V, those segments on which the typical post-spiracular sensilli normally occur.

Figs. 1 and 2.

1. Abdominal spiracle and post-spiracular seta of *Piagetiella* sp. (Amblycera). 2. Post-spiracular seta and contiguous sensillus of *Degeeriella* sp. (Isehnoeera). *p.s.p.s.* post-spiracular seta; *s.* sensillus; *sp.* spiracle.

In one specimen of a species of *Syr rhaptoecus* there appears to be a small spine-like seta in the sensillus of one side only of one of the segments. It seems probable, therefore, that these sensilli are homologous with the small setae associated with the post-spiracular setae throughout the Amblycera and represent hair-organs which have lost the setae.

It is not possible at the present time to give a complete analysis of the presence or absence of these sensilli in the different genera of the Isehnoeera or their use in classification. It is probable that the sensilli not adjacent to the post-spiracular setae are more frequent than is apparent. In lightly sclerotized specimens which have been treated with caustic potash the sensilli lying on the tergal plates are difficult to see, and it is possible that for purposes of classification only those sensilli lying posterior to the tergal plates and associated with the setae can be used; such sensilli are here called adjacent sensilli. The sensilli serve a useful purpose in showing whether or not the post-spiracular seta is present in those species with a continuous row of setae across the tergite;
in some Philopterus spp., for instance, with such a row of setae, one seta on each side of segments II or III–V has a contiguous sensillus; in Rallicola foedus (see below), on the other hand, no seta in the row has an adjacent sensillus. In Rallicola the absence of adjacent sensilli seems to be a good generic character: the majority of species have post-spiracular setae on segment VII only, but even in the few species which have setae on the anterior segments there are no adjacent sensilli, and in R. foedus, in which there is a continuous row of setae, no adjacent sensilli are present. In Lipereus the appearance and position of the post-spiracular setae and sensilli can be used as a generic character as follows: alveolus of post-spiracular seta V smaller than that of IV and with sensillus not contiguous; rarely sensillus contiguous, or rarely alveolus not smaller but with sensillus not contiguous. In the species of the Goniodes-complex of genera no adjacent sensilli have been found. Thus the sensilli can, at least in some cases (e.g. Rallicola), be used as a generic character, and in others (e.g. Brüelia) as specific characters. The presence or absence on various segments of both post-spiracular setae and sensilli should always be mentioned in descriptions of species belonging to this latter genus.

**Summary.**

Attention is drawn to the presence in some species of Ischnocera (Mallophaga) of sensilli on the tergum of the abdomen, which are here called post-spiracular sensilli. These sensilli may lie posterior to the margin of the tergal plates and be associated with the post-spiracular setae, when in this position they are here called adjacent sensilli. When the adjacent sensilli are actually touching the alveoli of the post-spiracular setae, they are called contiguous sensilli. The sensilli may lie on the tergal plate and not be associated with any setae; in this position they are said to be not adjacent. In some cases the presence or absence of adjacent sensilli is a useful systematic character.

**Reference.**

BIRD LICE FROM THE TINAMIDAE

BY THERESA CLAY

DEPARTMENT OF ENTOMOLOGY, BRITISH MUSEUM (NATURAL HISTORY)

The species of Mallophaga described by Rudow from Nothura boraquira Spix (= Tinnamus bannaquira of Rudow) have caused difficulty owing to the fact that Rudow’s original material has been lost and no subsequent author has examined material from the type host. In 1939, while on a visit to the United States, Colonel Meinertzhagen and I secured four species of Mallophaga from specimens of Nothura boraquira in the collection of Field Museum of Natural History. As a consequence, I am able, in this paper, to make some contribution to the elucidation of Rudow’s species. Descriptive and synonymical notes on other Mallophaga from Tinamidae are included. Acknowledgment is due Mr. Rudyerd Boulton, Curator of Birds, for his kind co-operation in making the material available for study, and Mr. Clifford C. Gregg, Director of Field Museum, for providing publication facilities.

In considering Rudow’s descriptions it must be remembered that these tend to be somewhat inaccurate, as can be shown by comparing them with the descriptions and figures made by Taschenberg (1882) from Rudow’s specimens. Hopkins (1940, p. 418) has also shown that the measurements given by Rudow cannot be taken into consideration, as they seem to have little relation to reality and appear to be the “wildest of guesses.” As the majority of Rudow’s specimens have been lost, it is important to fix his names definitely to the species from the type hosts which follow the descriptions most closely, even though there are apparent discrepancies. It cannot be emphasized too strongly that once these names have been fixed it is in the interests of all to adopt the usage of the names even if there are differences of opinion over the interpretation of the original descriptions.
Heptapsogaster dilatatus Rudow


Goniodes dilatatus Giebel, Insecta Epizoa, p. 192, 1874. Host: as above.

Neotype from skin of Nothura boraquira Spix from Bolivia. Female, slide No. 12667, in the Meinertzhagen Collection.

Neoolotype from skin of same host from Bolivia. Male, slide No. 12667, in the Meinertzhagen Collection.

Fig. 31. a, Heptapsogaster boultoni, male; head. b, H. dilatatus, male; head. c, H. dilatatus, female; paratergal plate III.

Neoparatypes from skins of same host from Bolivia and Brazil. Two males, one to be deposited in the collection of Field Museum of Natural History, one, slide No. 12667, in the Meinertzhagen Collection.

Description of female.—General shape as in H. s. stultus Clay. Head as shown in fig. 33, a, with bands, markings and chaetotaxy as shown for male (fig. 31, b). Thorax as in male. Abdomen with first two segments modified as is typical for Heptapsogaster (see Kéler, 1938, p. 306). Tergal plates II–VII approximating or fusing medially; paratergal plates well marked (fig. 31, c); sternal thickening in the form of a central quadrangular plate in each segment. Tergal plate I has one hair each side of midline; plates II–III have one lateral hair and one hair each side; plates IV–V have one lateral
hair and one hair each side of midline. Paratergal plates II–VII have one marginal hair; plates III–IV have one stout ventral hair; plate V has two ventral hairs. Sternal plates II–III have two small hairs each side of midline; plates IV–V have three small hairs each side of midline. Chaetotaxy and form of terminal segments of the abdomen as shown in fig. 34, c.

**Description of male.**—Similar in general appearance to the female but the abdomen is less elongated. Head and thorax as shown in fig. 31, b. Abdomen with general arrangement of plates on segments I–V as in female; terminal segments of abdomen as shown in fig. 34, d. Tergal plates I–II with chaetotaxy as in female; plates III–VI with one lateral hair each side. Chaetotaxy of paratergal plates and sternal plates I–V as in female. Genitalia as shown in fig. 33, e.

### Measurements

<table>
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<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
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<tr>
<td></td>
<td>Length mm.</td>
<td>Breadth mm.</td>
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<tr>
<td>Head</td>
<td>0.300–0.322</td>
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<tr>
<td>Prothorax</td>
<td>0.108–0.123</td>
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<td>Pterothorax</td>
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<tr>
<td>Abdomen</td>
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<tr>
<td>C.I</td>
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**Remarks.**—Mr. G. H. E. Hopkins (1941, p. 48) maintains that Giebel's identification of *dilatatus* Rudow was correct, and with this I agree. Giebel’s description differs from *dilatatus* as described above in that he states there are four marginal blotches on the anterior margin, whereas in this species and others of this type of *Heiptapso-gaster* there are actually six. It is possible, however, that the outer blotches, which are small, were not counted by Giebel; this may also apply to the blotches on the temple margin where there are three and not two, as stated by Giebel.

Taschenberg’s statements (1882, p. 48) on this species are of little value, as he presumed that *dilatatus* was described from *Rhynchotus rufescens* and the Rudow material which he saw was all from this host. Thus his subsequent remarks concerning *dilatatus* are largely invalidated.

It is therefore proposed to apply *dilatatus* Rudow to the species described above and to consider *dilatatus* Giebel as the same. Since Rudow’s description must apply to the female, this sex has been chosen as the neotype.
This species is of the same general type as *H. s. stultus* Clay (1937, pl. 1, fig. 4), from which it is distinguished by the form of the internal thickening of the paratergal plates, the male genitalia, and the terminal segments of the female abdomen.

**Heptapsogaster boraquirae** sp. nov.

Holotype from skin of *Nothura boraquira* from Bolivia. Male, slide No. 12667, in the Meinertzhagen Collection.

![Fig. 32. a, Heptapsogaster boraquirae, male; head. b, Strongylocotes tinnami, male; head.](image)

Paratypes, same data as the holotype. Two males and three females to be deposited in the collection of Field Museum of Natural History; four males and twelve females, slide No. 12667, in the Meinertzhagen Collection.

Description of male.—A somewhat elongated form showing surface sculpture. Head and thorax as shown in fig. 32, *a*. Abdomen with first segment (= true segment II) modified as in all species of *Heptapsogaster*; segment II large. Tergal plates transversely continuous; paratergal plates without distinct internal thickening. Sternal thickening in the form of central quadrangular plates, the lateral margins continuous, thickened, and somewhat raised,
forming a dark line down each side of the abdomen. Terminal segments of abdomen as shown in fig. 35, d. Tergal plate I with a hair each side of midline; plates II–III with one lateral, one medium-sized and one small hair each side; segments IV–V with one lateral and two small hairs each side of midline. Paratergal plates II–VII with one marginal hair each side of abdomen; plates III–IV with

one ventral hair; plates V–VII with two ventral hairs. Sternal plate II with one hair on each side of midline; and plates III–V with two hairs on each side of midline. Chaetotaxy of terminal segments as shown in fig. 35, d. Genitalia as shown in fig. 33, d, and characterized by the forked endomeres.

Description of female.—Similar in general appearance to male with head as shown in fig. 33, c. Chaetotaxy of head and characters of thorax as in male, except that the hair each side of midline of occiput is considerably smaller. Plates on segments I–V arranged as in male. Sternal plate II with one to two hairs each side of midline; plates III–IV with two to three hairs each side; plate V with four
hairs each side of midline. Chaetotaxy of terminal segments as shown in fig. 35, c.

**MEASUREMENTS**

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<th><strong>MALE</strong></th>
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<th><strong>FEMALE</strong></th>
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<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
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<tr>
<td>Head</td>
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<td>Pterothorax</td>
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C.I. 1.315-1.385 1.235-1.295

**Remarks.**—This species is similar to H. testudo Clay, and the same thickened lateral margins on the sternal plates give a characteristic appearance to the abdomen. It is distinguished from testudo, amongst other characters, by the shape of the head in both sexes and by the male genitalia.

**Heptapsogaster boultoni** sp. nov.

Holotype from a skin of Notthura boraquira from Bolivia. Male, slide No. 12667, in the Meinertzhagen Collection.

Paratypes, same data as the holotype. Two males and two females in the collection of Field Museum of Natural History; nine males and nine females, slide No. 12667, in the Meinertzhagen Collection.

**Description of male.**—Head and thorax as shown in fig. 31, a. Abdomen with first two segments modified as in typical Heptapsogaster. Tergal plates on segments II–IV separated medianly; those on segments V–VII approximating or fusing centrally. Paratergal plates with elongated internal thickening and with backwardly directed projections on the posterior margin in some of the segments. Segment II may have a small projection; segment III has two, each bearing a hair; and segments IV–V have one projection. Sternal thickening in the form of a central plate in each segment. Form and plates of terminal segments as shown in fig. 35, b. Tergal plate I has one hair each side of midline; plates II–III have one lateral hair and two on each side; plates IV–V have one lateral hair and one each side of midline. Paratergal plates II–VI have one marginal hair each side and plates III–V have two ventral hairs. Sternal plates I–II have one hair each side of midline; plates II–IV have three hairs each side; and plate V has five hairs each side of midline.
Chaetotaxy of terminal segments as shown in fig. 35, b. Genitalia of the same general type as in other Heptapsogaster (fig. 33, g).

_Description of female._—Similar in general appearance to male but somewhat larger. Head as shown in fig. 33, b. Thorax as in male.

Abdomen somewhat more elongated than in male and differing markedly in having the sternal thickening in the form of two lateral plates in each segment, not as a single continuous central plate as in the male. Tergal plates separated medianly; paratergal plates similar to those of the male but with one minute and three normal backwardly directed processes on segments III–IV and with one normal and one minute similar process on segment V. Tergal plate I has one central hair each side; plates II–IV have one lateral hair and two on each side of the midline. Paratergites with marginal hairs as in the male; paratergites III–VI with three ventral hairs. Sternal plates I–II with one hair each side of midline; plates III–V with five hairs each side of midline. Chaetotaxy of terminal segments as shown in fig. 35, a.
Measurements

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<tr>
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<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td></td>
<td>Length (mm.)</td>
<td>Breadth (mm.)</td>
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<tr>
<td>Head</td>
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<td>Prothorax</td>
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C.I. 1.685-1.740 1.67-1.72

Remarks.—This species has been placed in *Heptapsogaster*, although it cannot be considered at all typical of the genus as now constituted. However, it is the opinion of the author that too many genera have been erected for the species from the Tinamidae and that as more species are discovered some of the genera will have to be sunk. As it is probable that *Heptapsogaster* will have to be widened to include a number of more diverse forms, it seems more satisfactory to keep this species within the genus *Heptapsogaster*, at any rate for the present. *H. boultoni* is larger than the typical members of the genus and lacks the internal projections from the clypeal band. The species is named in honor of Mr. Rudyerd Boulton.

*Strongylocotes tinnami* Rudow


*Nirmus ansatus* Rudow, l.c., p. 474. Type host: as above.

Neotype from skin of *Nothura boraquira* Spix from Bolivia. Male, slide No. 12667, in the Meinertzhagen Collection.

Neoparatypes, same data as the neotype. Male and female to be deposited in the collection of Field Museum of Natural History; two females, slide No. 12667, in the Meinertzhagen Collection.

Description of male.—A typical *Strongylocotes* with head and thorax as shown in fig. 32, b. Abdomen tapering evenly to the narrow terminal segments and with segment I (= true segment II) modified as in other species of *Strongylocotes* (see Kéler, 1938, p. 308). Tergal plates with pitted surface; plates on segments I–VII separated medianly; lateral internal thickening in the form of pillar-like structures. Sternal thickening in the form of two plates, one heavily sclerotized, narrow, and with the longest axis lying horizontal, the other two more lightly sclerotized and with the longest axis vertical.
Characters and chaetotaxy of segments I–II and VI–IX as shown in fig. 34, a. Tergal plates III–V have one long hair and one smaller hair at the inner margin of the plates. Paratergal plates II–IV have two marginal hairs each side; plate V has three; plate VI has four; plate VII has three to four; plate VIII has four to five. Sternites III–IV have one fine hair on each side of midline and sternite V has two hairs each side. Genitalia of the same general type as found in other species of Strongylocotes (fig. 33, f).

Description of female.—Head of same general shape as that of male but proportions somewhat different (see Table of Measurements). Chaetotaxy of head, and shape and chaetotaxy of thorax as in male. Abdomen with segments I–VI similar to those of male but with tergal plates V–VI somewhat broader and those on segments II–VI with an indentation in the posterior margin. Chaetotaxy of tergites, paratergites, and sternites I–V as in male. Chaetotaxy and characters of terminal segments as shown in fig. 34, b.

### Measurements

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<tr>
<td>Head</td>
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<table>
<thead>
<tr>
<th></th>
<th>Length</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Head</td>
<td>0.770–0.785</td>
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C.I. 0.97 0.928–0.945

Remarks.—If it is assumed that Nirmus crassiceps Rudow (1870, p. 473) is Strongylocotes lipogonus Nitzsch, as figured by Carriker (1936, pl. 6, fig. 1), then it can be assumed that N. tinnami Rudow is also a Strongylocotes. If it is also assumed, as suggested by Carriker (1936, p. 93) that tinnami and ansatus are the two sexes of the same species, then it is necessary to find a species of Strongylocotes in which the hind end of the head is rounded and in which one sex has the abdomen with “dreihöckrigem Ende” and the other has the abdomen with “Enden abgerundet, dicht behaart, der vorletzte Ring ragt mit einer Spitze in den letzten über.” A species of Strongylocotes of the lipogonus group from the type host complies with these qualifications and, except for the description of the general shape of the head and some of the proportions given by Rudow, fits the descriptions of tinnami and ansatus. The heads of these specimens from Nothura boraquira do not appear obviously more triangular than that of
lipogonus (=crassiceps), but, as the other characters of these specimens agree with the description and as the head can be considered to be slightly more triangular, it seems most convenient to apply these names to the species described above.

It is not possible to state definitely which, if either, of the descriptions applies to the male, as it is not unlikely that one of the specimens examined by Rudow was immature, thus emphasizing the differences between the two. However, it is stated that ansatus has the longer head and, as the description of the terminal segments of the abdomen can apply to either sex, it is proposed to consider ansatus as the female and tinnami as the male. This has the added advantage of making it possible to designate the male as the neotype.

This species is distinguished from lipogonus by the shape of the head and by the characters of the terminal segments of the abdomen in both sexes.

**Strongyllocotes** Taschenberg


Through the kindness of Mr. Carriker it has been possible to examine the specimens of *Nirmocotes nirmoides* Carriker and there appears to be little doubt that this and the other species of *Nirmocotes* are actually immature *Strongylocotes*. This being the case, it is necessary to review the synonymy of the species contained in the genera *Nirmocotes* and *Strongylocotes*.

**Strongylocotes orbicularis** Carriker


The figure of the male to which the name must apply, as this sex is mentioned first, appears to represent an almost mature male of the *Strongylocotes lipogonus* type. The figure of the female (l.c., pl. 5, fig. 1, a) appears to be identical with immature specimens of *Strongylocotes paucisetosus* Kéler, i.e., *S. glabrous* Carriker (see below) from the same host, examined by the present author.

**Strongylocotes glabrous** Carriker


(?) *Nirmocotes orbicularis* Carriker, l.c., p. 79, pl. 5, fig. 1, a, 1936 (part, female). Type host: *C. tataupa* Temminck.


Carriker's figure of *glabrous* appears to represent a somewhat more mature specimen of the species figured as the female of *orbicularis* and appears conspecific with immature specimens of *S. paucisetosus* Kéler except for the anterior margin of the head. It is possible that the specimen of *S. glabrous* is somewhat distorted, as the clypeal band appears to be pushed out in such a manner as to give the appearance of another pair of trabeculae. *S. paucisetosus* Kéler must therefore be considered as a synonym of *S. glabrous* Carriker.

**Strongylocotes complanatus complanatus** Piaget

*Goniodes complanatus* Piaget, Les Pédictulines, p. 262, pl. 21, fig. 8, 1880. Type host: *Crypturellus o. obsoletus* Temminck (= *Tinamus obsoletus*).


Carriker's figure of *nirmoides* appears to represent an immature female of *Strongylocotes c. complanatus* and is identical with immature specimens of this species from the type host, *Crypturellus o. obsoletus*. 
Nirmocotes nirmoides Carriker must therefore be considered as a synonym of *S. c. complanatus* Piaget.

**Strongylocotes cordiceps** Carriker


This appears to be an immature *Strongylocotes* of the *spinosus* type. A single male specimen examined from *Tinamus major castaneiceps* Salvadori of the *spinosus* type is probably this species.

**Strongylocotes wernecki** Guimarães and Lane

*Strongylocotes wernecki* Guimarães and Lane, Rev. Mus. Paul., 23, p. 17, pl. 5, figs. 6, 6a, and 6b, 1937. Type host: *Tinamus solitarius* Vieillot.


*S. latithorax* Kéler must be considered a synonym of *S. wernecki* Guimarães and Lane from the same host.

**Cuclotogaster** Carriker


Mr. Carriker has kindly sent me the female of *Cuclotogaster laticorpus* Carriker from *Crypturellus soui modestus* Cabanis mentioned on page 68 (Carriker, 1936). Although this specimen is in poor condition, it appears to be certainly congeneric with and probably conspecific with *Gallipeurus h. heterographus* Giebel, the genotype of *Gallipeurus* Clay. Mr. Carriker has also written in a letter which he gives me permission to quote, that "I can find absolutely no difference between the two specimens (type of *Cuclotogaster* and specimen of *heterographus*) as to shape, proportions, markings and chaetotaxy. The only discrepancy I find is in the measurements, principally of the abdomen."

However, as there is considerable variation in the size of the abdomen among specimens of *heterographus*, it can be assumed that these two species are the same. Thus *Cuclotogaster laticorpus* Carriker (1936, p. 67) is a synonym of *Gallipeurus h. heterographus* Giebel and therefore necessitates the sinking of *Gallipeurus* as a synonym of *Cuclotogaster* (for further synonymy of *G. h. heterographus* see Clay, 1938, p. 136).

Discussing the occurrence of *heterographus* on *Crypturellus*, Mr. Carriker states: "It is barely possible that I might have carried a dead
chicken in my collecting bag. Also I have noted that Crypturellus soui does frequently inhabit the brush around small villages, in which villages domestic fowl are constantly prowling about, and they might occasionally pick up some of their parasites.”

It is possible therefore that the chickens and tinamous may share dust baths and thus exchange parasites (see Hoyle, 1938, p. 379).

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PIAGET, E.

RUDOW, FERDINAND

TASCHENBERG, ERNST OTTO W.
SYSTEMATIC NOTES ON THE PIAGET COLLECTIONS OF MALLOPHAGA.—PART IV.

By THERESA CLAY,
British Museum (Natural History).


COLPOCEPHALUM (sensu Piaget).—L.—Z.

COLPOCEPHALUM IMPORTUNUM Denny, 1842, sensu Piaget.

(1880, p. 548, pl. xlv, fig. 8.)

Type host: *Ardea* [c.] *cinerea* Linn.

Piaget's host: Type host.

B.M.†: 2 ♀, 3 ♂♀ *Ciconiphilus*, slides nos. 1095–6, from type host.

The only specimen labelled *C. importunum* now in the Denny collection is a headless nymph and obviously is not that from which Denny made his description and figure. There is little doubt, however, that his original specimen was a *Ciconiphilus*. The earliest name for the *Ciconiphilus* species on *Ardea cinerea* is *C. decimfasciatus* (Boisduval & Lacordaire); Piaget's specimens, which agree with authenticated material from the type host, must stand under this name.

Present status: *Ciconiphilus decimfasciatus* (Bois. & Lacord.).

COLPOCEPHALUM INCISUM Piaget.

(1880, p. 569, pl. xlvii, fig. 9.)

Type host: *Phaeton flavirostris* (de Madagascar). Error.

B.M.: 1 ♀ *Actornithophilus*, slide no. 1286, from type host.

Piaget's specimen is the distinctive type of *Actornithophilus* found on the genus *Anous*, and is presumably a straggler from one of the species of this genus. Two species, *Anous stolidus* and *A. tenuirostris*, are found on Madagascar from where the alleged host came, and it is probable that one of these is the true host of *incisum*. The proportions of the

† British Museum (Natural History) Collection.
head of Piaget’s single specimen differ from those of a small series from *A. stolidus*. Further material from this and the other species of *Anous* must be examined before the correct host of *incisum* can be found or the synonymy of *A. milleri* (Kell. & Kuw.) from *Anous stolidus galapagensis* and *A. epiphanes* (Kell. & Chapman) from *A. stolidus pileatus* settled.

Present status: *Actornithophilus incisus* (Piaget).

**Colpocephalum intermedium** Piaget.

(1880, p. 521.)

An unnecessary *nomen novum* for *C. tricinctum* Nitzsch; Piaget did not think that the name *tricinctum* was appropriate and said that he preferred *intermedium*.

**Colpocephalum latifasciatum** Piaget.

(1885, p. 130, pl. xiv, fig. 2.)

Type host: *Rhynchops flavirostris* Vieillot.

B.M.: 1 ♂ *Colpocephalum*, slide no. 1287, from type host.

Piaget’s specimen was possibly a straggler on the alleged type host (one of the Charadriiformes) as nothing like it is known from any member of that order.

Present status: *Colpocephalum latifasciatum* Piaget.

**Colpocephalum leptopygos** Nitzsch, 1874, *sensu* Piaget.

(1880, p. 553, pl. xlvi, fig. 3.)

Type host: *Ibis sacra*= *Plegadis f. falcinellus* (Linn.).

Piaget’s host: *Ibis melanocephala* (falcinellus)= *Threskiornis melanocephala* (Latham).

B.M.: 1 ♂, 1 ♀ *Colpocephalum*, slide no. 1288, from *Ibis melanocephala* from Java.

Leiden: 2 ♂♀ *Colpocephalum*, slide no. 262, host as on B.M. slide.

Piaget’s figures seem to have been drawn from the male and female *Colpocephalum* in the B.M. collection, although the shape of the head is somewhat different; it is doubtful whether Piaget ever saw specimens from the type host of Nitzsch’s species. Authenticated specimens of *Colpocephalum* from the type host, presumably *leptopygos*, are quite distinct from Piaget’s material, which is the species normally found on *Threskiornis melanocephala*.

**Colpocephalum longicaudum** Nitzsch, 1866, *sensu* Piaget.

(1880, p. 534, pl. xlv, fig. 6.)

Type host: *Columba tigrina*= *Streptopelia chinensis tigrina* (Temminck).

Piaget’s host: *Columba domestica*.

B.M. and Leiden: No specimens.

Piaget’s figure agrees with the female types (from the same host) of *C. turbinatum* Denny and his description and figure can be taken to
represent this species. Nitzsch's species comes from a different host and is not necessarily conspecific.

Present status: *Colpocephalum turbinatum* Denny.
Lectotype of *C. turbinatum* Denny: ♀ in the B.M., slide no. 728; paratypes: 4 ♀♀, slides nos. 729–732.

**COLPOCEPHALUM LONGIPES** Piaget.

(1880, p. 524, pl. xliii, fig. 7.)

Type host: *Eclectus puniceus*—*Lorius roratus* (P. L. S. Müller).
B.M.: 3 ♀♀ *Kélerimenonon*, slide no. 1093, from type host.

In a previous part of this series (Clay, 1949, 830) it was shown that there was considerable doubt about the authenticity of the hosts of all the species of *Kélerimenonon*, and it was suggested that perhaps members of the Megapodiidae were the true hosts. Since then further material of this genus has been examined as follows: 2 ♀♀ from skins of *Megapodius r. reinwardt* and *Alectura lathamii purpureicollis* (Megapodiidae) and five specimens from Psittaciformes as follows: 1 ♀ from skin of *Kakatoe galerita*, 1 ♀ and 2 nymphs from fresh specimens of *Psittacula krameri* collected by the present writer in Rajputana, India and 1 ♀ from the same host-species (a zoo bird) seen through the kindness of Mr. B. K. Tandan. The last two records rule out the possibility of *Kélerimenonon* being restricted to the Megapodiidae.

The above specimens taken from the parrots and *K. longipes* (Piaget) differ from the type species and all other specimens of this genus examined in the absence of posterior or lateral prolongations of any of the abdominal pleurites and in having the distal anterior angle of the second antennal segment prolonged as in *Hohorstiella*. Further reliable host-records of species of this genus are greatly needed.

Present status: *Kélerimenonon longipes* (Piaget).
Lectotype: ♀ in the B.M., slide no. 1093.

**COLPOCEPHALUM LONGIPES** Piaget.

(1885, p. 125.)

*Colpocephalum caudatum* var. *longipes* Piaget (nec Piaget, 1880).
Type host: *Chunga burmeisteri* (Hartlaub).
B.M.: 3 ♂♂, 6 ♀♀ *Colpocephalum*, slides nos. 1146–8, from type host. These specimens differ from any *Colpocephalum* seen from the Cariamidae and are almost certainly stragglers from a member of the Falconiformes. They appear to be the same as *caudatum* Giebel.

Present status: *Colpocephalum caudatum* Giebel.
Lectotype of *longipes* Piaget: ♂ in the B.M., slide no. 1147.

**COLPOCEPHALUM MACULATUM** Piaget.

(1880, p. 516, pl. xliii, fig. 1.)

Type host: *Polyborus* (*Caracara*) *brasiliensis*—*Polyborus planus brasiliensis* (Gmelin).
B.M.: 5 ♂♂, 5 ♀♀ *Colpocephalum*, slides nos. 464–466, from *Caracara brasiliensis*.

Leiden: 2 ♂♂, 2 ♀♀ *Colpocephalum*, slide no. 243*, from the same host.

* Specimens not remounted, see Part I, p. 812, 1949.
Piaget's specimens agree with authenticated material from the type host. *C. polybori* Rudow, 1869 from *Polyborus plancus* is almost certainly the same species, and the earliest name.

Present status: *Colpocephalum polybori* Rudow.

Lectotype of *Colpocephalum maculatum* Piaget: ♂ in B.M., slide no. 464a.

**COLPOCEPHALUM MAJUS** Piaget.

(1880, p. 519.)

*Colpocephalum caudatum* var. major Piaget.

Type host: *Gypogeranus serpentinarius* = *Sagittarius serpentinarius* (J. F. Miller).

B.M.: 1 ♂, 5 ♀ *Colpocephalum*, slides nos. 1149–50, from type host.

Leiden: 1 ♂, 1 ♀ *Colpocephalum*, slide no. 242*, from type host.

These specimens agree with authenticated material from the type host, and with Giebel's description of *cucullare* (1874).

Present status: *Colpocephalum cucullare* Giebel.

Lectotype of *Colpocephalum majus* Piaget: ♂ in B.M., slide no. 1150.

**COLPOCEPHALUM MAJUS** Piaget.

(1880, p. 538, pl. xlv, fig. 10.)

*Colpocephalum importunum* var. major Piaget.

Type host: *Ardea garcetta* = *Egretta garzetta* (Linn.).

B.M.: 2 ♂, 2 ♀ *Ciconophilus*, slides nos. 1100–1, labelled "*Colpocephalum importunum* N. var. P.", from type host.

Although there is no varietal name on the slides there is little doubt that these are the specimens on which Piaget based his description; he frequently did not add new varietal names to his labels. Piaget's name being invalidated by *majus* Piaget (1880, 519), Eichler (1937, 96) renamed this species *boisduvali*.

Present status: *Ciconiphilus boisduvali* (Eichler).

Lectotype of *Colpocephalum majus* Piaget: ♂ in B.M., slide no. 100.

**COLPOCEPHALUM MAJUS** Piaget.

(1885, p. 119, pl. xiii, fig. 2.)

*Colpocephalum dissimile* var. major Piaget.

Type host: *Haliaetus leucocephalus* (Gmelin).

B.M.: 3 ♂, 4 ♀ *Colpocephalum*, slides nos. 643–5, from type host.

Present status: *Colpocephalum majus* (Piaget), nec Piaget, 1880.

Lectotype of *C. majus* Piaget: ♂ in the B.M., slide no 643,
Colpocephalum maurosum Nitzsch, 1866, sensu Piaget.

(1880, p. 564, pl. xlvii, fig. 4.)

Type hosts: Sterna fiesipes=Chlidonias n. nigra (Linn.) and Larus tridactylyus=Rissa t. tridactyla (Linn.).

Piaget's hosts: Sterna nigra=Chlidonias nigra (Linn.) and Sterna cantiaca=Thalasseus sandvicensis (Latham).

B.M.: 1 $, 1 $ Actornithophilus, slide no. 1291, from Sterna nigra.

The following species of Actornithophilus have been described from the hosts given above:

A. piceus (Denny), 1842: Thalasseus s. sandvicensis.
A. maurosum (Nitzsch), 1866: Chlidonias n. nigra and Rissa. tridactyla.
A. sulcatus (Piaget), 1880: Chlidonias n. nigra.

A. piceus (Denny) is represented in the Denny collection by the single type-male, and is an example of the large Actornithophilus found on the Laridae. The type of A. sulcatus (Piaget), as shown below, is a nymph of the same group of large Actornithophilus. Two figures of A. maurosum (Nitzsch) in the Nitzsch manuscript (volume v, pages 17 and 47) show that it belongs to the same species-group as the two previous species.

As the type of sulcatus is a nymph the most satisfactory solution would seem to be the restriction of Nitzsch's species by designating Chlidonias nigra at the type host, and making sulcatus a synonym of maurosum.

Present status: Actornithophilus maurosum (Nitzsch).

Colpocephalum minus Piaget.

(1880, p. 539, pl. xlv, fig. 1.)

Type hosts: Megapodius rubripes var. Gilberti=M. nicobariensis gilberti G. R. Gray and var. Freycineti=Megapodius freycinet Gaimard.

B.M.: 1 $ Menopon, 2 $ Kélerimenopon, slide no. 1295, from var. Gilberti; 4 $ Kélerimenopon, slide no. 1296, from var. Freycineti.

Leiden: 2 $, 1 nymph Kélerimenopon, slide no. 263, from var. Gilberti.

This is a composite species; the figure of the whole female being taken from the Kélerimenopon specimens, that of the terminal segments of the male, from the Menopon. As the female is figured more fully, one of that sex on slide 1295 is selected as lectotype. This and the other species of Kélerimenopon are discussed above under C. longipes.

Present status: Kélerimenopon minus (Piaget).

Lectotype: $ in the B.M., slide no. 1295a, from Megapodius nicobariensis gilberti.

Colpocephalum minus Piaget.

(1885, p. 128.)

Colpocephalum trochioxum var. minor Piaget.

Type host: Ardea russata=Bubulcus ibis (Linn.).

B.M.: 4 $, 8 $ Ciconiphilus, slides nos. 1367–70, from type host.
These specimens agree with authenticated material from the type host.
Lectotype: ♂ in the B.M., slide no. 1367.

**Colpocephalum nanum** Piaget.
(1890, p. 257, pl. x, fig. 10.)

Type host: *Larus canus* Linn.
B.M.: 1 ♂ *Colpocephalum*, slide no. 1294, from type host.
No species of true *Colpocephalum* have been seen from any of the Laridae, and this specimen is most probably a straggler.
Present status: *Colpocephalum nanum* Piaget.

**Colpocephalum notatum** Piaget.
(1885, p. 126, pl. xiii, fig. 9.)

Type host: *Dicholophus cristatus*—*Cariama cristata* (Linn.).
B.M.: 2 ♂♂, 4 ♀♀ *Colpocephalum*, slides nos. 1297–8, from type host.
These specimens differ from others taken off the type host, which are probably *C. brev* Giebel; sufficient material is not yet available from *Cariama* to decide whether Piaget's specimens are stragglers or represent a second species of *Colpocephalum* on this host.
Present status: *Colpocephalum notatum* Piaget.
Lectotype: ♂ in the B.M., slide no. 1297.

**Colpocephalum obscurum** Giebel, 1874, *sensu* Piaget.
(1880, p. 551, pl. xlvi, fig. 1.)

Type host: *Ardea egretta*—*Casmerodius albus egretta* (Gmelin).
Piaget's host: Type host.
B.M.: 1 ♂ *Colpocephalum*, slide no. 1207, from type host.
*Colpocephalum obscurum* Giebel and all other species of Menoponidae described from this host are *Ciconiphilus*, and have been discussed under *Menopon sulcatum* Piaget (Clay, 1949, 915). Piaget's single male *Colpocephalum* is not, therefore, conspecific with *obscurum*; his description and figure should be ignored and certainly not given a new name.

**Colpocephalum occipitale** Nitzsch, 1866, *sensu* Piaget.
(1880, p. 547, pl. xlv, fig. 7.)

Type host: *Anastomus coromandelicus*—*Anastomus oscitans* (Boddart).
Piaget's host: *Anastomus lamelligerus* Temminck.
B.M.: 1 ♂, 1 ♀ *Colpocephalum*, slide no. 1299, from *Anastomus lamelligerus*.
Piaget's specimens agree with authenticated material from *A. lamelligerus*. There are, however, two species of *Colpocephalum* on this host and Piaget's is not conspecific with one of them, *C. subzebra* Bedford, 1940. *C. occipitale* Nitzsch, from a different species of *Anastomus*, appears, from a figure in the Nitzsch MS., to be similar to *subzebra*, and, therefore, different from Piaget's interpretation of *occipitale*. The identity of Piaget's specimens must wait for a revision of the group of species from these and related hosts.
Theresa Clay on the Piaget Collections of Mallophaga

COLPOCEPHALUM OCHRACEUM (Nitzsch), 1818, sensu Piaget.
(1880, p. 560, pl. xlvi, fig. 9.)

Type host: "Avis pluvialis"—Pluvialis apricaris oreophilos A. C. Meinertzhagen.

Piaget’s hosts: Vanellus cristatus=Vanellus vanellus (Linn.) and Vanellus varius=Squatarola squatarola (Linn.).

B.M.: 5♂, 4♀ Actornithophilus, slides nos. 1300-1 and 1303-4; 1♂ Pseudomenopon, slide no. 1302. All slides from Vanellus cristatus.

Leiden: 1♀ Actornithophilus, slide no. 256,* from Vanellus cristatus.

Piaget’s figure and description refer to the Actornithophilus specimens; the Pseudomenopon (marked by Piaget as "jeune") is a straggler and can be ignored.

Elsewhere (Clay & Hopkins, 1950, 254) it has been shown that Colpocephalum ochraceum (Nitzsch) owes its validity to a reference to plate xi in Redi, 1668; and in the same publication (1950) the type host was fixed as Pluvialis apricaria oreophilus. Piaget’s specimens are not ochraceum (Nitzsch), but may be conspecific with an already named species.

COLPOCEPHALUM PACHYGASTER Giebel, 1874, sensu Piaget.
(1880, p. 517.)

Type host: Pandion [h.] haliaetus (Linn).

Piaget’s host: Type host.

B.M.: 3♂, 4♀ Kurodaia, slides nos. 1316-8, from type host.

Although Piaget neither fully described nor figured this species there are specimens in the collection; it is probable that these came into his possession after the publication of "Les Pediculines". These specimens agree with the type-specimens of Colpocephalum haliaeti Denny, of which C. pachygaster Giebel is a synonym, and with authenticated material from the type host. C. haliaeti Denny is represented in the B.M. Denny collection by 1♂, 6♀ and one nymph Kurodaia.

Present status: Kurodaia haliaeti (Denny).

Lectotype of Colpocephalum haliaeti Denny: ♂ in the B.M., slide no. 698.

COLPOCEPHALUM PACHYPUS Piaget.
(1890, p. 258, pl. x, fig. 11.)

Type host: Prionites brasiliensis=Momotus momota (Linn).

B.M.: 1♂ Psittacomenopon, slide no. 822 labelled Menopon pachypus, from Pronatus brasiliensis.

Although the specimen is labelled Menopon and the name of the host incorrectly spelt, there is little doubt that it is the male from which Piaget made his figure of Colpocephalum pachypus; the female mentioned in the original description is no longer in either of the Piaget collections. Furthermore, the label also has the name crassiceps (crossed out), and as Piaget stated that pachypus resembled crassiceps he presumably first labelled it with this name. This specimen almost certainly originated from a parrot.

Present status: Psittacomenopon pachypus (Piaget).
Theresa Clay on the Piaget Collections of Mallophaga

**Colpocephalum pallidum** Piaget.
(1880, p. 526, pl. xliii, fig. 9.)

Type host: *Plictolophus moluccensis*—*Kakatoe moluccensis* (Gmelin).
B.M.: 2 ♀, 1 ♀ *Psittacomenopon*, slide no. 734, from type host.
Present status: *Psittacomenopon pallidum* (Piaget).
Lectotype: ♀ in the B.M., slide no. 734a.

**Colpocephalum parumpilosum** Piaget.
(1880, p. 536, pl. xliiv, fig. 8.)

Type host: *Lophophorus resplendens* (impeyanus) = *Lophophorus impeyanus* (Latham).
B.M. and Leiden: No specimens.
Piaget states that this species resembles *flavescens* and the figure shows a *Colpocephalum* of that type. No such *Colpocephalum* has been seen from the type host, and it is likely that it is a contamination from some other bird.
Present status: *Colpocephalus parumpilosum* Piaget.

**Colpocephalum parviceps** Piaget.
(1880, p. 531, pl. xliiv, fig. 4.)

Type host: *Lamprotornis aenea* = *Lamprotornis caudatus* (Müller).
B.M.: 2 ♂, 3 ♀ *Menacanthus*, slides nos. 1319-20, from type host.
Leiden: 2 ♂♀ *Mencanthus*, slide no. 251*, from type host.
Lectotype: ♂ in the B.M., slide no 1319.

**Colpocephalum patellatum** Piaget.
(1890, p. 254, pl. x, fig. 8.)

Type host: *Numenius* [a.] *arguata* (Linn.).
B.M.: 3 ♂, 2 ♀ *Actornithophilus*, slides nos. 1323-4, from type host.
These specimens agree with authenticated material from the type host.
Present status: *Actornithophilus patellatus* (Piaget).
Lectotype: ♂ in the B.M., slide no 1324.

**Colpocephalum penicillatum** Piaget.
(1880, p. 552, pl. xliiv, fig. 2.)

Type host: *Ibis cristata*—*Lophotibis cristata* (Boddart).
B.M.: 1 ♂, 1 ♀ *Colpocephalum*, slide no. 1325, from type host.
Leiden: 2 ♀♀, 1 nymph *Colpocephalum*, slide no 261, from type host.
Present status: *Colpocephalum penicillatum* Piaget.
Lectotype: ♂ in the B.M., slide no 1325.
Colpocephalum pilosum Piaget.
(1885, p. 128, pl. xiv, fig. 1.)

Type host: Chauna chavaria = Chauna torquata (Oken).
B.M.: 2♂♂, 6♀♀, 1 nymph Dictesia, slides nos. 1309–11, from Palamedea chavaria. 2♂♂, 1♀♀ Dictesia in the Hyslop collection from the "crested screamer" (one slide also labelled Chauna chavaria) are probably part of the type material as the original material was sent to Piaget by Hyslop (see 1885, p. 129).

There is some doubt about the true host of this species: Piaget gives Chauna chavaria in the text but Palamedea chavaria on the slides. This latter name was used by Geoffroy in 1797 for Chauna Chavaria (Linn.) and by Temminck in 1823 for Chauna torquata (Oken). The crested screamer is a vernacular name for Chauna torquata (Oken.) It seems extremely probable that the original Hyslop material was labelled merely "crested screamer", which is Chauna torquata, and that the confusion arose by the later misidentification of this name as Chauna chavaria; this latter name occurs on one only of the Hyslop slides, is in a different handwriting, and is probably a later addition to the label. There is some confirmation that the true host of pilosum is Chauna torquata as Piaget's specimens differ from 1♂, 2♀♀ taken from Chauna chavaria, in the shape of the head and thorax and the last segment of the antenna and resemble Kéler's figure (1938, p. 235) of specimens from Chauna torquata. Similarly, the host of Dictesia tristis (Giebel) given as Palamedea chavaria, might have been either chavaria or torquata; it will be shown below that the true host was probably the latter species.

Each of the two species from which specimens have been seen belonging to the two genera of the Anhimidae, Chauna and Anhima, is parasitized by three species of Dictesia, separable with the naked eye. Kéler (1938, 234–236) figured two of these: one he called Dictesia tristis (Giebel), 1874, a female (fig. 3, 235) from a collection of 20♀♀, 9♂♂ and 2 nymphs from Chauna cristata (which is Chauna torquata (Oken)) from Trinidad, and he implied that the males of this lot were identical with the single male type of Menopon triste Giebel in the Halle collection (now destroyed). There are also two males in the Meinertzhangen collection from Chauna torquata compared with the type of Menopon triste Giebel by Dr. Kéler and found to be conspecific. The types of Colpocephalum pilosum Piaget are conspecific with these specimens and with the female of triste as figured by Kéler (1938, 235, fig. 3); pilosum thus becomes a synonym of triste.

Carriker (1949, 303) is correct in stating that Kéler's figure (1938, 236, fig. 4) is not pilosum and that fig. 3 (ibid., 235) does represent pilosum, but not in suggesting that Kéler had confused the two and that his figure labelled "pilos" is triste, because Kéler had seen the type of triste and so alone knows which this species is. Carriker (1949, 304) described a new species, D. gracilis, from Chauna chavaria which is almost certainly based on nymphs, as the head shows the Y-shaped suture
characteristic of many nymphs of the Menoponidae. The shape of the head suggests that this is the nymph of a species similar to that figured by Kéler as "pilosa Piaget" from C. torquata. However, as tristis seems to be at least subspecifically distinct on Chauna chavaria and torquata, it is possible that this other species is also different on the two hosts. Therefore, before either making "pilosa Piaget" sensu Kéler a synonym of gracilis Carriker or renaming the former species it is necessary to examine further material from Chauna chavaria and to identify the adults of gracilis and compare them with Kéler's "pilosa".

The third species found on the Anhimidae is somewhat similar to Kéler's "pilosa" but the narrowing of the posterior segments of the female abdomen is more marked.

Present status: Dictelisia tristis (Giebel).
Lectotype of Colpocephalum pilosum Piaget: ♀ in the B.M., slide no. 1311.

Colpocephalum pungens Piaget.
(1890, p. 253, pl. x, fig. 7.)
Type host: Calorais panayensis = Aplonis panayensis (Scopoli).
B.M.: 1 ♀ Myrsidea, slide no. 1327, from type host.
Present status: Myrsidea pungens (Piaget).

Colpocephalum pustulatum Piaget.
(1880, p. 522, pl. xliii, fig. 6.)
Type host: Gypogeranus (Spizaetus) cirratus. Error.
B.M.: 1 ♀ Actornithophilus, slide no. 1312, from type host.
The true host of this species is presumably one of the Charadriiformes.
Present status: Actornithophilus pustulatus (Piaget).

Colpocephalum pustulosum Piaget.
(1880, p. 559, pl. xlvi, fig. 8.)
Type host: Machetes pugnax = Philomachus pugnax (Linn.).
B.M.: 1 ♂, 2 ♀ Actornithophilus, slides nos. 467-8; 1 ♂ Austromenopon, slide no. 468, from type host.
Leiden: 1 ♂, 1 ♀ Actornithophilus, slide no. 255*, from type host.
The figure is obviously that of the Actornithophilus specimens, the single male Austromenopon can, therefore, be ignored. Piaget's type-material agrees with authenticated material from the type host. Colpocephalum cornutum, Giebel, 1866 (nec C. cornutum Rudow, 1866) from the same host, can, in the loss of the types, be assumed to be the same as Piaget's species. A decision as to whether pustulosus Piaget is the same as umbrinum Burmeister as Piaget believed, and as is suggested by the figure of this latter species (in Giebel, 1874, pl. xiv, fig. 4) must await a revision of the whole group.
Present status: Actornithophilus pustulosus (Piaget).
Lectotype: ♂ in the B.M., slide no. 467a.
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Colpocephalum quadripustulatum Burmeister, 1838, sensu Piaget.
(1880, p. 546, pl. xlvi, fig. 6.)

Type host: Ciconia alba = Ciconia c. ciconia (Linn.).
Piaget’s hosts: Type host and Ciconia nigra (Linn.).
B.M.: 1 ♀ Actornithophilus, slide no. 1328, from type host.

There is little doubt, from the figure of Burmeister’s material (in Giebel, 1874, pl. xiii, fig. 7), that his species is a Ciconiphilus. Piaget’s female specimen (the male mentioned in the original description is not in the collection) is a straggler, presumably from one of the Charadriiformes and his description and figure should be ignored. The Denny collection contains 2 ♂♂, 1 ♀ Ciconiphilus from Ciconia alba, which are presumably the specimens sent to Denny by Burmeister (Denny, 1842, 216) and on which Denny based his figure and description of C. quadripustulatum. As Burmeister worked on the Nitzsch collection it is possible that these specimens are some of the “many specimens” collected from a young stork by Nitzsch in 1814 (see Giebel, 1874, 271), and on which Nitzsch’s description and figure (in Giebel, 1874) were made—a confirmation that Burmeister’s original description applied to the Ciconiphilus species from Ciconia alba.

Colpocephalum semicinctum Rudow, 1866, sensu Piaget.
(1880, p. 528, pl. xlv, fig. 1.)

Type host: Corvus scapulatus = Corvus albus Müller.
B.M.: 4 ♂♂, 4 ♀♀ Colpocephalum, slides nos. 1329–31, from type host.

There is no doubt that Rudow’s description refers to the typical Corvine Colpocephalum as represented by Piaget’s specimens and figure.
Present status: Colpocephalum semicinctum Rudow.

Colpocephalum setosum var. setosa Piaget.
(1880, p. 519.)

Colpocephalum caudatum var. setosa Piaget.

Type host: Helotarsus (Circaetus) caudatus = Terathopius ecaudatus (Daudin).
B.M.: 1 ♂, 2 ♀♀ Colpocephalum, slide no. 1151, from type host.

Lectotype: ♂ in the B.M., slide no. 1151.

Colpocephalum setosum Piaget.
(1880, p. 521, pl. xliii, fig. 5.)

Type host: Cathartes (Sarcorhamphus) gryphus = Vultur gryphus Linn.
B.M.: 1 ♂, 2 ♀♀ Colpocephalum, slide no. 1332, from type host.
Leiden: 1 ♂, 1 ♀ Colpocephalum, slide no. 294⁎, from type host.

These specimens agree with authenticated material of one of the species normally found on the type host. This name being pre-occupied
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by setosum Piaget, 1880, 519, it was re-named trichosum by Harrison, 1916, 55.

Present status: Colpocephalum trichosum Harrison.
Lectotype of Colpocephalum setosum Piaget: ♀ in the B.M., slide no. 1332.

**Colpocephalum setosum Piaget.**
(1885, p. 126, pl. xiii, fig. 8.)

Colpocephalum abdominale var. setosa Piaget.
Type host: Crax carunculata. Error.
B.M.: 1 ♀, 2 ♂, 2 nymphs Heleonomus, slides 1375-6 labelled Colpocephalum truncatum, from Grus carunculata.

There are no slides in the collection labelled either with the varietal name nor with Crax carunculata. The figures obviously represent a species of Heleonomus. The alleged host, Crax carunculata (=Crax globulosa), is a member of the Galliformes, an order from which Heleonomus is not known, nor is there any member of the Gruidae found in the same locality as Crax globulosa. There is, however, a Grus carunculata (=Bugeranus carunculatus (Gmelin)) and it seems likely that this is the actual host of setosa, a badly written "Grus" might have been interpreted as "Crax". Additional evidence supporting this supposition is the presence in the Piaget collection of the specimens of Heleonomus listed above from Grus carunculata and it is presumed that this material is that on which Piaget based his description of setosa.

Hopkins (1947, 180) has shown that Bugeranus carunculatus is almost certainly the true host of Heleonomus harrisoni (Bedford). Piaget's specimens from the same host have been compared and found to agree with the male and female H. harrisoni mentioned by Hopkins (ibid.), the female being a co-type, and the male one of the original series. Piaget's name being pre-occupied by setosum Piaget, 1880, Bedford's name can be used for this species.

Present status: Heleonomus harrisoni (Bedford).
Lectotype of Colpocephalum abdominale var. setosa Piaget: ♂ in the B.M., slide no. 1375.

**Colpocephalum spinosum Piaget.**
(1880, p. 537, pl. xlv, fig. 9.)

Type host: Francolinus capensis (Gmelin).
B.M.: 1 ♀, 1 ♂ Clayia, slide no. 1337, from type host.
Leiden: 1 ♀, 2 ♂ Clayia, slide no. 252*, from type host.
Present status: Clayia spinosa (Piaget).
Lectotype: ♂ in the B.M., slide no. 1337.

**Colpocephalum spinulosum Piaget.**
(1880, p. 563, pl. xlvii, fig. 3.)

Type host: Limosa melanura=Limosa l. limosa (Linn.).
B.M.: 1 ♂, 1 ♀ Actornithophilus, slide no. 1338, from type host.
These specimens agree with authenticated material from type host.

Present status: *Actornithophilus spinulosus* (Piaget).

Lectotype: 3 in the B.M., slide no. 1338.

**Colpocephalum subflavescens** Piaget.

(1880, p. 571, pl. xlviii, fig. 2.)

Type host: *Xenorrhynchus senegalensis* = *Ephippiorhynchus senegalensis* (Shaw).

B.M.: 1 ♂, 1 ♀ *Colpocephalum*, slide no. 1339, from type host.

These specimens are not conspecific with *tibiale* Piaget nor *oreas* Kellogg and no similar species has been seen from the type host. These either represent a third species of *Colpocephalum* from the type host or they are stragglers from another of the Ciconiiformes.

Present status: *Colpocephalum subflavescens* Piaget.

Lectotype: 3 in the B.M., slide no. 1339.

**Colpocephalum subpachygaster** Piaget.

(1880, p. 517, pl. xliii, fig. 2.)

Type hosts: *Strix noctua* = *Athene noctua* (Scopoli), *S. flammea* = *Tyto alba* (Pontopp.) and *S. passerina* = *Athene noctua* (Scopoli) or *Glaucidium passerinum* (Linn.).

B.M.: 3 ♀, 1 nymph *Kurodaia*, slide no. 1119, from *S. noctua*; 2 ♀ *Kurodaia*, slide no. 1120, from *S. flammea*; 1 ♂, 1 nymph *Kurodaia*, slide no. 1118 from *S. passerina*.

Leiden: 4 ♀ *Kurodaia*, slide no. 245*, from *S. noctua*.

It is difficult to know what bird Piaget meant by *S. passerina*. This name, as already shown (Clay, 1949, 898) has been used for *Athene noctua* and *Glaucidium passerinum*; Nitzsch and Giebel almost certainly used the name for the little owl (*Athene noctua*); Piaget, however, in his list of hosts (1880, 684) gives *Strix noctua*, *Strix passerina* and *Strix pygmea* (the alternative name for *Glaucidium passerina*). As there is some doubt about the interpretation of the name, the specimens from “*S. passerina*” will be ignored. The *Kurodaia* species from *Athene noctua* is *K. cryptostigmation* (Nitzsch) (see Clay, 1949, 898), and as the species from *Tyto alba* has no name, one of the specimens from that host, which are the same as authenticated material, will be designated as lectotype.

Present status: *Kurodaia subpachygaster* (Piaget).

Lectotype: ♀ in B.M., slide no. 1120, from *S. flammea* = *Tyto alba*.

**Colpocephalum subpenicillatum** Piaget.

(1885, p. 123, pl. xiii, fig. 6.)

Type host: *Ibis hagedasch* = *Hagedashia hagedash* (Latham).

B.M.: 1 ♂, 2 ♀ *Colpocephalum*, slides nos. 1341–2, from type host.

The two females in the Piaget collections are not conspecific. As one of these may be a straggler, no lectotype will be designated until the species of *Colpocephalum* from *Hagedashia hagedash* have been fully studied.

Present status: *Colpocephalum subpenicillatum* Piaget.
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**Colpocephalum sulcatum** Piaget.

(1880, p. 565, pl. xlvi, fig. 5.)

Type host: *Sturna nigra*—*Chlidonias nigra* (Linn.).
B.M.: 1 nymph *Actornithophilus*, slide no. 1394, from type host.
The species has been discussed above under *C. maurosum*.
Present status: *Actornithophilus maurosum* (Nitzsch).

**Colpocephalum temporale** Piaget.

(1890, p. 252, pl. x, fig. 6.)

Type host: *Macroglossus aterrimus*—*Probosciger aterrimus* (Gmelin).
B.M.: 1 ♀ *Psittacomenopon*, slide no. 1308, from type host.
*Menopon commissum* Neumann from the same host may prove to be a *Psittacomenopon* and to be conspecific with *temporale*.
Present status: *Psittacomenopon temporale* (Piaget).

**Colpocephalum tibiale** Piaget.

(1888, p. 163, pl. iv, fig. 6.)

Type host: *Tantalus senegalensis*—*Ephippiorhynchus senegalensis* (Shaw).
B.M.: 5 ♂♂, 7 ♀♀ *Colpocephalum*, slides nos. 1345–1348, from the type host.

Through the kindness of Dr. Malaise it has been possible to examine a male and female cotype of *Colpocephalum oreas* Kellogg and a male and female (probably cotypes) of *C. ephippiorhynchi* Mjöberg now in the Naturhistoriska Riksmuseum, Stockholm. The hosts of *C. oreas* were originally given as *Herodius alba* (=*Casmerodius albus melanorhynchos* (Wagler)), *Ephippiorhynchus senegalensis* and *Aplopecia larvata*. The cotypes in the Stockholm Museum are labelled *Ardea alba*, but agree with the cotypes of *ephippiorhynchi* and with authenticated material from *Ephippiorhynchus senegalensis*. It can be presumed, therefore, that this latter host is the true host of *oreas*. The specimens labelled *C. ephippiorhynchi* Mjöberg were taken from *Ephippiorhynchus senegalensis* in Khartoum and determined by Mjöberg and can be presumed to be part of the type material. *C. ephippiorhynchi* Mjöberg becomes a synonym of *C. oreas* Kellogg.

Piaget's type material of *C. tibiale* comprises two species, neither of which is conspecific with the two species discussed above. One of the species is, however, conspecific with *C. ferrisi* Bedford, stated in the original description to have come from *Ciconia nigra* but probably (see Hopkins, 1950, 237) actually from *Sphenorhynchus abdimi*. This identification suggested a comparison of Piaget's second species with another species normally found on this latter host, and it was also found to be conspecific. It seems most likely, therefore, that the true host of *tibiale* is *Sphenorhynchus abdimi*. A female of the second species was well figured by Piaget and a female of this species will be selected as lectotype.
C. tibiale can be distinguished from ferrisi by the shape of the head in both sexes and in the male by the presence in ferrisi of stout spine-like setae on the hind margins of the second and third femora.

Present status: Colpocephalum tibiale Piaget. True host probably Sphenorhynchus abdini Lichtenstein.

Lectotype: ♀ in the B.M., slide no. 1347; paratypes: 3 ♂♂, 4 ♀♀.

**Colpocephalum tricinctum** Nitzsch, 1861, sensu Piaget. (1880, p. 521.)

Type host: Milvus ater—Milvus migrans migrans (Boddaert).

Piaget's host: Type host.

B.M.: 1 ♀, 1 nymph Colpocephalum, slide no. 646, from type host.

Although the single female is teneral it seems to be conspecific with the species normally found on Milvus m. migrans, which can be presumed to be Colpocephalum tricinctum Nitzsch.

Present status: Colpocephalum tricinctum Nitzsch.

**Colpocephalum trimaculatum** Piaget. (1880, p. 525, pl. xliii, fig. 8.)

Type hosts: Platycecus palliceps=Platycecus adscitus palliceps Lear, P. barrabandi=Polytelis swainsonii (Desmarest).

B.M.: 3 ♂♂, 3 ♀♀ Colpocephalum, slides nos. 1069-71 from P. palliceps; 1 ♂ Colpocephalum, slide no. 1072 from P. barrabandi.

Leiden: 1 ♂, 1 ♀ Colpocephalum, slide no. 247, from P. palliceps.

Type host of this species will be fixed as P. a. palliceps by designating one of the males allegedly from this host as lectotype. However, this species does not belong to the Colpocephalum group, usually distinguished as the genus Psittacomenopon, found on the Psittacoformes, but resembles some of the less modified species of Colpocephalum found on the Falconiformes; Piaget's specimens are possibly stragglers from a member of this latter order.

Present status: Colpocephalum trimaculatum Piaget.

Lectotype: ♂ in the B.M., slide no. 1069.

**Colpocephalum trispinum** Piaget. (1885, p. 122, pl. xiii, fig. 5.)

Type host: Theristicus caudatus (Boddaert).

B.M.: 4 ♂♂, 4 ♀♀ Colpocephalum, slides nos. 1362-4, from type host.

These specimens agree with authenticated material from the type host.

Present status: Colpocephalum trispinum Piaget.

Lectotype: ♂ in B.M., slide no. 1363.

**Colpocephalum trochioxum** Burmeister, 1838, sensu Piaget. (1880, p. 550, pl. xlv, fig. 9.)

Type host: Ardea stellaris—Botaurus s. stellaris (Linn.).

Piaget's hosts: Type host and Ardea purpurea Linn.
B.M.: 1 ♂, 1 ♀ Ardeiphilus, slide no. 1365, from type host; 1 ♂, 1 ♀ Ardeiphilus, slide no. 1366, from Ardea purpurea.

Leiden: 1 ♂, 1 ♀ Ardeiphilus, slide no. 258, from type host.

Piaget’s specimens from Botaurus stellaris and Ardea purpurea seem to be conspecific with each other and with authenticated material from the former host. The specimens from the second host are possible stragglers from Botaurus stellaris. The Nitzsch figure (Giebel, 1874, pl. xiii, fig. 8) of the type material of trochioxum Burmeister shows the species to be an Ardeiphilus.

Present status: Ardeiphilus trochioxus (Burmeister).

Colpocephalum truncatum Piaget.
(1880, p. 540, pl. xliv, fig. 2.)

Type host: Grus cinerea (communis)=Grus g. grus (Linn.).

B.M. and Leiden: No specimens.

There are specimens of Heleonomus in the collection labelled C. truncatum from various species of Grus but none from the type host. There is no doubt, however, that Piaget’s figure represents a species of Heleonomus.

There is a figure of Colpocephalum macilentum Nitzsch (from the same host) in the Nitzsch manuscript (volume iv, p. 269) showing it to be a typical Heleonomus and it can be assumed that truncatum is conspecific with this species.

Present status: Heleonomus macilentus (Nitzsch).

Colpocephalum umbrinum Piaget.
(1880, p. 556, pl. xlvi, fig. 6.)

Type host: Tringa subarquata=Erolia testacea (Pallas).

B.M.: 1 ♂ Actornithophilus, slide no. 1379, from type host.

Piaget’s specimen agrees with authenticated material from the type host, and, as he states, differs from C. umbrinum Burmeister as figured by Nitzsch (Giebel, 1874, pl. xiv, fig. 4), allegedly from the same host (see also above under pustulosum). The name thus being pre-occupied by umbrinum Burmeister, Harrison (1916, 56) renamed it umbrosus. The female mentioned in the original description is no longer in the collection.

Present status: Actornithophilus umbrosus (Harrison).

Colpocephalum unicolor Rudow, 1866, sensu Piaget.
(1880, p. 535, pl. xliv, fig. 7.)

Type host: Carpophaga samoensis=Ducula pacifica microcera (Bonnaparte).

Piaget’s host: Carpophaga bicolor=Ducula bicolor (Scopoli).

B.M. and Leiden: No specimens.

Piaget’s figure does not represent a species of Colpocephalum of the type found on the Columbidae, nor does it seem to represent a Hohorstiella; it must be considered as generically unidentifiable and should be ignored.
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**Colpocephalum uniseriatum** Piaget.
(1880, p. 562, pl. xlvii, fig. 2.)

Type host: *Recurvirostra avocetta* Linn.
B.M.: 1 ♂, 4 ♀♀ *Actornithophilus*, slides nos. 1380–2, from type host.
Leiden: 1 ♂ *Actornithophilus*, slide no. 254*, from type host.
Present status: *Actornithophilus uniseriatus* (Piaget).
Lectotype: ♂ in B.M., slide no. 1380.

**Colpocephalum zebra** Burmeister, 1838, sensu Piaget.
(1880, p. 546, pl. xlv, fig. 6.)

Type host: *Ciconia alba*—*Ciconia c. ciconia* (Linn.).
Piaget’s host: Type host.
B.M.: 2 ♂♂, 4 ♀♀ *Colpocephalum*, slides nos. 1383–5, from type host.
Nitzsch’s figure of zebra (Giebel, 1874, pl. xiii, fig. 6) drawn from the type-material shows that this is the characteristic *Colpocephalum* species found on the type host; Piaget’s specimens belong to the same species.
Present status: *Colpocephalum zebra* Burmeister.

**References.**

**Carriker, M. A.** 1949. Neotropical Mallophaga Miscellany V. *Rev. Brasil Biol.* 9, 297–313.
XLII.—ADDITIONS AND CORRECTIONS TO THE CHECK LIST OF MALLOPHAGA.

By G. H. E. HOPKINS and THERESA CLAY.

The present paper is the first of what we hope will be annual instalments of additions and corrections to our Check List of the Genera and Species of Mallophaga (1952, British Museum (Nat. Hist.)). The Check List included, so far as possible, all systematic units whose descriptions were published before the close of 1950, but we have thought it better to make the additions as comprehensive as we can. The present instalment, therefore, deals not only with 1951 but also with everything published in 1952 that had come to our notice by the end of that year.

The arrangement is, so far as possible, the same as in the Check List, and the numbering of all species mentioned in the Check List is unaltered, but numbering of additions would have been too complicated and we have not attempted it. As before, an asterisk means that the holotype or lectotype is in the British Museum. As in the Check List, omission of any statement that the type species of a genus is so by subsequent selection or by monotypy means that it is the type by original designation.

**ADDITIONS**

**ACTORNITHOPHILUS** Ferris, 1916


Host: *Himantopus [h.] himantopus* (Linn.).

**ALCEDINIPHILUS** Ansari, 1951


Inseparable from *Myrsidea*.

**ALLOBRÜELIA** Eichler, 1951


Inseparable from *Bruelia*.

**AQUANIRMUS** Clay & Meinertzhagen, 1939


Host: (*Podiceps ruficollis capensis*)—*Poliocephalus ruficollis capensis* (Salvadori).
AUSTROGONIODES Harrison, 1915


Host: Eudyptes [c.] cristatus (J. F. Miller).

Host: Eudyptes [c.] cristatus (J. F. Miller).

Host: Spheniscus demersus (Linn).

AVIPEDICULUS Eichler, 1952


Inseparable from Paragoniocotes.

BRÜELIA Kéler, 1936

Type species: A. amsel Eichler.


Host: Turdus merula merula Linn.

antimarginalis Eichler, 1951. Bedeutung der Vogelwelt in Forschung und Praxis: 40, fig. 12.
Host: Turdus pilaris Linn.
Cf. no. 58.

Hosts: (Pastor roseus)—Sturnus roseyus (Linn.) and Acridotheres t. tristis (Linn.).

Host: Turdus merula merula Linn.

Host: Scotocerca inquieta platyura (Severtzov).

CAMPEPHAGOECUS Eichler, 1952


A synonym of Tritrabeculus, which is inseparable from Philopterus.

CARIAMIGOGUS Eichler, 1952


Inseparable from Colpocephalum.

CESARAEUS Kéler, 1952


Inseparable, in our opinion, from Austrogoniodes.
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CICONIPHILUS Bedford, 1939

Host: Bubulcus ibis coromandus (Boddart).

(CINCOLOECUS Eicher, nomen nudum)


Both in the reference given above and in Eichler, 1952 (Zool. Anz., 149: 76) there is no attempt to define the supposed genus; it is stated to differ from Docophorulus “durch den Bau des Clypeus und sonstige Merkmale der Kennart”, but it is not stated what these differences are, so the name is (in our opinion) a nomen nudum. Since the “Kennart” is stated to be “Cincoecus (olim Docophorus) cincli Den. sensu A. Koenig”, Cincoecus would, if it had been validly published, have been a synonym of Philopterus.

CLAVARCHIGONIODES Conci, 1952


Not separable from Gonioodes.

COLOCERAS Taschenberg, 1882

bychovskyi (Blagoveshtchensky), 1951 (Gonioodes). Mag. Parasit., Leningr. & Moscow, 13: 311, figs. 18, 184.
Host: Columba eversmanni Bonaparte.

fahrenholzi Eichler, 1950. Doriana, 1: 3. See also Check List, 1952: 74, no. 3b.
Host: Columba livia domestica.

We are uncertain whether the above or the reference given in the Check List is the correct one for this subspecies, but as the October–November Heft of Z. hyg. Zool. was received at the Commonwealth Institute of Entomology on 28. xii. 1950 while the above reference is dated 14. xii. 1950 it seems likely that the reference which we gave previously is the earlier. It would be difficult to condemn too strongly the practice of describing systematic units as new in more than one publication.

COLPOCEPHALUM Nitzsch, 1818


Host: Phoenicopterus antiquorum Temminck.
Host: Pavo cristatus Linn.
Host: Picus s. squamatus Vigors,
COLUMBICOLA Ewing, 1929


Host: (Paloma)—Columba livia Linn.

Almost certainly = no. 11.

Columba livia is the only pigeon occurring on Juan Fernandez and Dr. E. Stresemann kindly informs us that the type material (in the Zoologische Museum, Berlin) must have been collected from this host by Prof. Ludwig Plate (see Schalow, 1898, Zool. Jb. Suppl., 4: 738).


Host: Columba livia neglecta Hume.


Host: Columbina picui picui (Temminck).

triangularis Eichler, 1952. Beiträge Vogelk., 2: 353, fig. 5.

Host: Columba picazuro picazuro Temminck.


Host: Ducula fuctuosa (Temminck).

Unfortunately just not (technically) a nomen nudum.

COLUMBIMENOPON Ansari, 1951


A synonym of Hohorstiella.

chanabensis Ansari, 1951. See Nosopon.

modestum Ansari, 1951. See Hohorstiella.

CUCULIGOGUS Eichler, 1952


An absolute synonym of Osborniella.

CUCULIPHILUS Uchida, 1926

panjabensis Ansari, 1951. See Kurodaiia.


Host: Clamator j. jacobinus (Boddaert).

tirkhan Ansari, 1951. See Colpocephalum.


Host: (Hierococcyx varius)—Cuculus varius Vahl.

DAMALINIA Mjöberg, 1910


Host: Capra ibex Linn.

= no. 24.

DEGEERIELLA Neumann, 1906

baliola Blagoveshtchensky, 1951. See Quadraceps.

fuscopleura Blagoveshtchensky, 1951. See Briielia.

scotocercae Blagoveshtchensky, 1951. See Briielia.
Not generically separable from Gyropus, but probably recognizable as a subgenus.

Falcolipeurus Bedford, 1931

Host: Sarcogyps calvus (Scopoli).

Galliferrisia Ansari, 1951

A synonym of Galligogus, which is inseparable from Colpocephalum.

Gliricola Mjöberg, 1910

Host: Proechimys albinisculus albispinus (I. Geoffroy).

Host: Geocaprornys ingrahami (Allen).

Host: Proechimys trinitatis (Allen & Chapman).

Goniodes Nitzsch, 1818

bychovskyi Blagoveshtchensky, 1951. See Coloceras.

Host: Lagopus leucurus peninsularis Chapman.

Gyropus Nitzsch, 1818


Haematophagus Timmermann, 1950

Haematophagus. Timmermann, 1950, Fauna islandica, no. 2: 1, 2. Type species: Quadraceps haematopi (Denny).
Probably recognizable as a subgenus of Quadraceps—the status assigned to it by Timmermann.

Harrisoniella Bedford, 1929

Host: Diomedea exulans Linn.

Host: Diomedea epomophora Lesson.
HOHORSTIELLA Eichler, 1940


Host: *Streptopelia d. decaocto* (Frivaldsky).

INCIDIFRONS Ewing, 1929


Host: *Gallinula c. chloropus* (Linn.).


Host: *Porzana parva* (Scopoli).

KURODAIA Uchida, 1926


Host: *Athene brama indica* (Franklin).

MAUSOLUS Eichler, 1932


Inseparable from *Paragoniocoetes*.

MENACANTHUS Neumann, 1912


Host: *Lanius excubitor lahtora* (Sykes).


Host: *Pastor roseus* = *Sturnus roseus* (Linn.).


Host: *Molpastes cafer intermedins* = *Pycnonotus cafer intermedius* Jerdon.


Host: *Sturnus vulgaris humei* Brooks.

Probably = no. 81.


Host: *Coturnix c. coturnix* (Linn.).

Probably = no. 1.


Host: *Francolinus f. franco!inus* asiae Bonaparte.


Host: *Coloeus m. monedula* = *Corvus monedula soemeringi* Fischer.


Host: *Oriolus oriolus kundoo* Sykes.
G. H. E. Hopkins and T. Clay on Mallophaga


Host: *Phylloscopus collybita tristis* Blyth.


Host: *Pycnonotus l. leucogenys* (Gray).

**Menopon** Nitzsch, 1818


Host: *Francolinus pondicerianus interpositus* Hartert.

**Myrsidea** Waterson, 1915


Host: *Ramphastos dicolorus* Linn.


Host: *Pterocles exustus erlangeri* (Neumann). Error.


Host: (*Argya c. caudata*)=*Turdoideas c. caudata* (Dumont).


Host: *Motacilla alba dukhunensis* Sykes.


Host: *Gymnostinops montezuma* (Lesson).


Host: *Turdus musicus* Linn. (Redwing).


Host: *Ceryle lugubris gutulata* Stejneger. Possibly error.


Host: *Aplonis panayensis strigatus* Horsfield.


Host: *Acridotheres t. tristis* (Linn.).

Probably=no. 47.


(pycnonot) Eichler, 1951 (*Zool. Anz., 146:52*) was described under the same name by the same author in 1947. See no. 75.


Host: *Turdoideas terricolor terricolor* Hodgson.
Host: (*Trochalopteron lineatum grisescentior*) = *Garrulax lineatus grisescentior* (Hartert).

Host: *Thraupis palmarum* (Wied).

Host: *Myiophonus coeruleus temmincki* Vigors.

**MYRSIDELLA** Eichler, 1951

Inseparable from *Myrsidea*.

**NEOMENOPON** Bedford, 1920

baktitar Ansari, 1951. See *Myrsidea*.

**NOSOPON** Hopkins, 1949

Host: *Gyps himalayensis* Hume.

**OSBORNIELLA** Thompson, 1948


**PARAGONIOCOTES** Cummings, 1916


**PARASORICELLA** Eichler, 1952

Inseparable from *Columbicola*.

**PECTINOPYGUS** Mjöberg, 1910

Host: (*Phalacrocorax niger*) = *Haliètor niger* (Vieillot).

**PENENIRMUS** Clay & Meinertzhagen, 1938

Host: *Erythrina rubicilla severtzowi* (Sharpe).

Host: (*Ammomanes deserti orientalis*) = *Ammomanes d. deserti* (Lichtenstein).

Host: *Alauda arvensis* [cantarella Bonaparte].
Host: (Galerida cristata iwanowi) = Galerida cristata altirostris Brehm.


**PHILOPTERUS** Nitzsch, 1818


*bischoffi* (Eichler), 1951 (Docophorulus). *Bedeutung der Vogelwelt in Forschung und Praxis*, Berlin: 33.
Host: *Turdus pilaris* Linn.

diversus Blagoveshtchensky, 1951. See *Strigiphilus*.


= no. 73.

*osculolimbatus* (Eichler), 1952 (Campephagoecus). *Zool. Anz.*, 149: 75, fig. 2.

Host: *Graucalus papuensis sclateri* Salvadori.

*sabia* (Eichler), 1951 (Docophorulus). *Bedeutung der Vogelwelt in Forschung und Praxis*, Berlin: 34.

Host: (Sabia-Drossel). Probably = *Turdus a. albicollis* Vieillot, *T. amaurochalinus* Cabanis, *T. r. rufiventris* Vieillot, *T. subalaris* (Seebohm) or *Platycichla f. flavipes* (Vieillot), but there are other possibilities.

It would be interesting to know what scientific purpose is supposed to be served by publishing an inadequate description, without drawings, of a species without a proper host-record, especially in so large and difficult a genus as *Philopterus*.

**PICUSPHILUS** Ansari, 1951


Not distinguishable from *Colpocephalum*.

**PSEUDOCOLPOCEPHALUM** Qadri, 1936

doriabagla Ansari, 1951. See *Ciconiphilus*.

**PSEUDOMENOPON** Mjöberg, 1910

Host: *Poliocephalus r. ruficollis* (Pallas).

Host: *Porphyrule allenii* (Thomson).

Host: *Porzana porzana* (Linn.).

Host: *Atlantisia rowani* Lowe.
QUADRACEPS Clay & Meinertzhagen, 1939

Haematophagus. Timmermann, 1950, Fauna islandica, no. 2: 1, 2. Type species: Quadraceps haematopi (Denny). Probably valid as a subgenus.

  Host: Larosterna inca (Lesson).

  Host: Gabianus scoresbyi (Traili).

  Host: Gelochelidon n. nilotica (Gmelin).

  Host: Larus hemprichi Bruch.

  Host: Lobivanellus i. indicus (Boddart).

  Host: Creagrus furcatus (Néboux).

  Nomen novum for Nirmus anagrapsus var., Giebel, 1874: 173.
  Host: Sterna dougalli (Montagu).

It is sometimes desirable to rename an adequately described species whose name is invalid without simultaneously redescribing it. But the practice of going systematically through the work of the earlier authors and giving new names to all the specimens described as being slightly different is the reverse of helpful. In the present instance, for example, the description is utterly inadequate, the type-material is lost, it is impossible to be certain that the host-record is correct, and the supposed differences may well be illusory, as they definitely are in many instances of forms described by Piaget.

  Host: Anous minutus melanogenys G. R. Gray.

  Host: Sterna aurantia J. E. Gray.

  Host: Larus heermanni Cassin.

  Host: Sterna anaethetus fuligula Lichtenstein.

  Host: Attagis m. malouinus (Boddart).

pagasti (Eichler), 1951 (Koeniginirmus). Bonner zool. Beiträge, 2: 128, fig. 2.
  Host: Chlidonias leucoptera (Temminck).

  Host: Larus genei Breme.

Piaget’s description is extremely insufficient. See note under *Q. giebeli* (Eichler).


no. 6.


**RALLICOLA** Johnston & Harrison, 1911


**RHOMBICEPS** Eichler, *nomen nudum*


In our opinion *Rhombiceps* is a *nomen nudum*. The only statement even purporting to be a description is that it is "gegenüber anderen Nirmi der Laro-Limicolae bereits durch die Kopfform gut abgegrenzt", but there is not the smallest attempt to indicate in what way the shape of the head differs from that of other genera, a fact rather easily explained when we note Eichler’s admission that he had not seen specimens. Incidentally, there is no such species as "*Nirmus recurvirostrae* sensu Clay 1950", nor did Clay publish any paper in *Proc. zool. Soc. Lond.* of that year. Clay & Hopkins (1950, *Bull. Brit. Mus.* (Nat. Hist.), 1: 258, figs. 52–55) redescribed *Pediculus recurvirostrae* Linn., which they referred to *Quadraceps*.

This practice of giving new generic names without having seen either specimens of the species concerned or good modern descriptions of them, is extremely unhelpful. In the present instance the group indicated appears to be a good genus and should be described, preferably under a name other than *Rhombiceps*.

**RICINUS** De Geer, 1778

Host: (Accentor collaris)—Prunella collaris rufilatus (Severtzov).

Host: (Terpsiphone paradisi turkestanica)—Tchitrea paradisi turkestanica Zarudny & Härms.

**ROTUNDICEPS** Edwards, 1952  


**SAEMUNDSSONIA** Timmermann, 1935  
Host: *Hemiparra crassirostris* [crassirostris (Hartlaub)].

Host: *Rhynchops flavirostris* Vieillot.

The holotype of this species is not in the British Museum, as stated in the original description, but in the Musée du Congo Belge, Tervuren.

Host: *Larus novaehollandiae* [scopulinaus J. R. Forster].

Host: *Larus minutus* Pallas.

Host: *Calidris canutus* canutus (Linn.).

Host: *Capella g. gallinago* (Linn.).

Host: *Larus heermanni* Cassin.

Host: *Anous s. stolidus* (Linn.).

Host: *Limosa limosa* limosa (Linn.).

Host: *Larus minutus* Pallas.

**SCOPIGOGUS** Eichler, 1952  

Inseparable from Colpocephalum.

**SPLENDOROFFULA** Clay & Meinertzhagen, 1951  
Host: (Corvthaixoides concor concor) = Crinifer concor concor (A. Smith).
STRIGIPHILUS Mjöberg, 1910
Host: Bubo bubo (Linn).

STURNIDOECUS Eichler, 1944
Host: (Turdus musicus) = Turdus p. philomelos Brehm.
*sulcatus (Piaget), 1888 (Docophorus). Tidschr. Ent., 31: 149, pl. 3, fig. 2.
Host: (Ardea minuta. Error) = Tyto alba (Scopoli).
= no. 24.

TURDINIRMUS Eichler, 1951
Type species: Turdinirmus merulensis (Denny).
The type species is a Brüelia, but (of the other species referred here by Eichler) caligineus Carriker is a Penenirmus, while simplex Kellogg and apparently melodicus Eichler belong to Sturnidoecus.

ULULOECUS Ansari, 1951
A synonym of Conciella, which is a subgenus of Kurodaia.

CORRECTIONS

P. 13. Transfer Strongylocotes from Philopteridae to Heptapsogastridae.
P. 30. No. 40. Alter to:
*40. subaequalis (Piaget), 1880 (Menopon). Pédiculines: 463, pl. 37, fig. 5.
Host: (Euplocamus ignitus) = Lophura ignita (Shaw).
No. 41. Alter to:
*41. substituta (Harrison), 1916 (Menopon). Parasitology 9: 45.
Nomen novum for Menopon subaequale Piaget, 1880, thought to be preoccupied by Liotheum subaequale Haan, 1829.
= no. 40.

P. 33. No. 41. Author of host should be: Temminck.
P. 35. No. 9. Alter host record to:
Host: (Pochard) = Nyroca ferina (Linn.).
P. 38. No. 8. Change host record as given under p. 84, no. 80 below.
P. 39. No. 15. Add to host record: "Probably error".
P. 42. Ardeiphagus no. 2. Delete whole entry.
P. 45. Nos. 4 & 5. The host Eudyptes chrysocephalus should = Eudyptes cristatus filholi Hutton.
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P. 53. No. 3. Second line should read: “In Giebel, Insecta epizoa: 132”.

P. 55. No. 31. Author of host should be: Bonaparte.

P. 57. No. 56. For “20 fig. 5” read “220, pl. 20 fig. 3”.

P. 65. No. 6. Alter entry to:

mallophagulus Eichler, 1943. See Rallicola.

This species was described from a single female and placed in the genus Carduiceps although compared with Nirmus euprepes Kellogg & Chapman, which is certainly a Quadraceps. A photograph of the holotype of mallophagulus has now been published (Eichler, 1952, Behandlungstechnik parasitärer Insekten, Leipzig: 204, fig. 60) which shows the species to have neither the type of head nor the abdominal characters of Carduiceps. It appears to be a Rallicola, and this is confirmed by the mention in the original description of stout spine-like setae on each side of the genital region, since these are characteristic of female Rallicola.

P. 71. No. 13. Add: “=doridabagla (Ansari)”.

P. 78. No. 22. For “ephippiarhynchi Mjöberg” read “ephippiarhynchi Mjöberg”.

P. 80. No. 44. Alter entry to:

*44 longipes Piaget, 1885 (nec 1880). Pédiculines Supplement: 125.

Host: Chunga burmeisteri. Probably error for some member of Falconiformes.

P. 84. No. 80. Change host-record to:


P. III. No. 3. Alter second line to:

6: 499, pl. 67, fig. 6.

P. 113. No. 24. Insert brackets round author’s name.

P. 113. No. 26. Change host-record to:

Host: Pernis [a.] apivorus (Linn.).

P. 126. Alter entry for sulcatus to:

sulcatus Piaget, 1888. See Strigiphilus.

P. 127. No. 4. Change host-record to:

Host: (Paradisaeus viridis in next cage to “cactou”)=Kakatoe sp.

P. 136. No. 8. Delete “pl. 14 fig. 4”.

P. 201. No. 3. Delete whole entry.

P. 232. No. 64. Add: “=ovatula Eichler”.

P. 242. Cordatus Osborn, 1896. For “See Lunaceps” read “See Rotundiceps”.

P. 248. No. 6. Alter entry to:

tyrannus Osborn, 1896. See Penenirmus.

P. 261. Pachyskelotes, no. 1. Date should be 1914.

P. 274. Pelmatocerandra, no. 3. Add asterisk.

Psittaconirmus. Alter entries 2 and 6 to:
chandabani Ansari, 1947. See Neopsittaconirmus.
lybartota Ansari, 1947. See Neopsittaconirmus.
Add asterisk to nos. 1 and 5.

The first word in the last line of p. 307 should be annulatus, not antennatus. This entry is given correctly on p. 250.

No. 24. Alter to:
clypeatus (Kellogg & Paine), 1941 (Nirmus). Rec. Indian Mus., 10: 237, pl. 14, fig. 3.
Host: (Corvus cornix. Error)=Tringa nebularia (Gunnerus).
=no. 114.

No. 32. Alter host-record to:

No. 58. The name jugifer should be in italics. Add: =no. 63.
No. 61. Alter host-record to:
Host: (Buteo augur. Error)=Stephanibyx lugubris (Lesson) or S. c. coronatus (Boddaert), probably the former.

The second line of the entry should read: 3: 89, pl. 4, figs. 5 & 6, pl. 5, fig. 3.
This is renamed in a revision by Clay, now in press.
The generic name of the host should be Phloeoeceastes.
The subspecific name of the host should be in square brackets.

Rhynonirmus no. 3. Alter host-record to:

No. 3. Add to host-record:
Error, probably some member of the Alcidae.

magna (Piaget), 1880 (Docophorus). Pédiculines: 112.
Host: (Larus atricilla. Error)=Stercorarius parasiticus (Linn.).
=no. 19.

Generic name of host should be: Puffinus.
Wilsoniella. In the reference to Pessoaiella Guimaraes, alter
the volume number to 24 and the page to 300,
THE EARLY LITERATURE ON MALLOPHAGA
(PART II)

THERESA CLAY
AND
G. H. E. HOPKINS

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
ENTOMOLOGY
Vol. 2 No. 1
LONDON: 1951
THE EARLY LITERATURE ON MALLOPHAGA

BY

THERESA CLAY

AND

G. H. E. HOPKINS

PART II. 1763–1775

Pp. 1–36; PIs. 1–3; 45 Text-figures

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THE BULLETIN OF THE BRITISH MUSEUM (NATURAL HISTORY), instituted in 1949, is issued in five series, corresponding to the Departments of the Museum.

Parts appear at irregular intervals as they become ready. Volumes will contain about three or four hundred pages, and will not necessarily be completed within one calendar year.

This paper is Vol. 2, No. 1 of the Entomology series.
THE EARLY LITERATURE ON MALLOPHAGA

By THERESA CLAY and G. H. E. HOPKINS

PART II, 1763-1775

SYNOPSIS

This is the second part of a series of papers in which it is intended to review the species of Mallophaga described between 1758 and 1818. This part deals with the twenty species described by G. A. Scopoli in 1763 and 1772, the single species described by Pontoppidan in 1763, and the three species described by J. C. Fabricius in 1775.

In the first part of this work (Clay and Hopkins, 1950) we remarked on the possibility that specimens in the Nitzsch collection that are not the types of names given by Nitzsch might wrongly be considered as types by writers who do not accept the rules of nomenclature. We were not aware, when we wrote this, that Kéler (1941) had listed many of the Halle specimens of species described by Nitzsch in 1818 by reference to older descriptions as the types of the 1818 names. Leaving aside queried instances, the names affected that concern us in our discussion of the early literature are as follows:

*Trichodectes crassus* Nitzsch (p. 129). The specimens of *Pediculus melis* in Fabricius’s collection are still preserved at Copenhagen and are of necessity the types of *crassus* as well as of *melis*.

*Trichodectes scalaris* Nitzsch (p. 130). Since *scalaris* is merely a *nomen novum* for *Pediculus bovis* Linn., the types are the lost specimens of Linné, which we have replaced (1950: 227). The specimens in Nitzsch’s collection have no special status.

*Trichodectes longicornis* (p. 130). Although the specimens in the Nitzsch collection at Halle are not types, there is no reason why one of them should not be erected as a neotype, and we intend to take this course in the final instalment of this work. Until this is done they have no special status.

No host-records are given in Kéler’s list mentioned above, but the hosts can be ascertained by reference to his two papers ‘Baustoffe zu einer Monographie der Mallophagen’, Parts I and II (1938 and 1939), and (as it happens) in none of the above-mentioned cases is the host of Nitzsch’s material definitely different from that of the earlier author on whose description or figure Nitzsch’s 1818 names rest their sole claim to validity. We therefore considered whether we could accept Kéler’s listing of these specimens as types of Nitzsch’s names as constituting them neotypes of the earlier names, but we have decided against this. In the instances mentioned above (except in the case of *crassus*) this course might be possible, but in the case of *crassus* the original types are still in existence at Copenhagen and in other cases, also, it would be quite impossible to accept Kéler’s listing. As an instance, *Goniodes dissimilis* was first described by Denny in 1842 and the specimens listed by Kéler (p. 133) would (if they have any status at all) be types of *Goniodes dissimilis* Nitzsch 1874 (not *G. dissimilis* Denny 1842, nor *G. dissimilis* Gurlt 1842) if the species were not the same. We think the principle underlying these statements of fact to be of such
importance that we find ourselves unable to stretch a point by regarding Kéler's listing of specimens as 'Typen' of Nitzsch's 1818 names as constituting them neotypes of the older names on which Nitzsch based them in 1818. We are confirmed in this attitude by the fact that Kéler has evidently not studied the early literature at all—'equi (Lin.)', for instance, does not exist, no species having been described under this name prior to 1842, when Denny described it.

We are indebted to the Trustees of the British Museum for permission to publish Figs. 9, 10, 21, 31, 32, 34, drawn by Mr. A. J. E. Terzi, and to Colonel Meinertzhagen for permission to publish Figs. 8, 16–18, 23–25, 29–30, 38–40 drawn by Mr. R. S. Pitcher. Figs. 2, 11, 12, 15, 20, 33, 36 were drawn by Miss B. A. Read. The remaining figures were drawn by Miss T. Clay. We are also indebted to Captain W. H. Pollen for the photographs on Pl. II, figs. 1–2; the other photographs, with the exception of Pl. I, fig. 2, were taken by Mr. H. M. Malies.

In the measurements given under each species the length of the male genitalia has almost always been taken from a specimen other than the neotype: it has, therefore, not been considered necessary to note this fact in individual instances, as we did in Part I of this work.

**Scopoli 1763 (Entomologia Carniolica. Vindobonae: 381–385)**

The names in this work are unquestionably in valid form, and the descriptions, though very brief, are usually adequate for the recognition of the genus, which is as much as we can expect from the old descriptions. Scopoli's collections are stated to have been destroyed, either by fire or shipwreck, in 1776.1

**Pediculus haematopus** (p. 381)

The description is undoubtedly that of a *Philopterus* s.l. and the host-record is 'Habitat in Falcone Palumbrio, & Strige Ulula'. The name would, therefore, refer to a mixture of a *Craspedorrhynchus* and a *Strigiphilus* but for the fact that Scopoli notes that the specimens from the owl were slightly different, thus constituting *Falco palumbarius* = *Accipiter gentilis* (Linn.) the type-host. J. C. Fabricius (1775: 806) unnecessarily renamed the species *Pediculus Strigos* (nec *P. strigos* Pontoppidan, 1763), and Nitzsch (1818: 290) again renamed it *Philopterus* (*Docophorus*) *platyrhynchus*. Harrison's erroneous belief that *haematopus* is preoccupied by *haematopi* Linn., 1758 (which is not a homonym), has caused most later authors to call the species by the name given to it by Nitzsch.

**Pediculus tinnunculi** Latreille? 1818 (nec Linné 1758) is also a synonym of *Craspedorrhynchus haematopus* (Scopoli). As pointed

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out by Hopkins (1949, *Ann. Mag. nat. Hist.* (12) 2: 48), it is based on a drawing copied from one copied by Hooke (in Albin's *Natural History of Spiders and Other Curious Insects*, 1736) from one of Redi's figures of 'Pollini dell' Astore', so the host is *Accipiter gentilis* (Linn.).

Neotype male (Fig. 1) and neallotype female (Fig. 2) of *Craspedorrhynchus haematopus* (Scopoli) from *Accipiter g. gentilis* (Linn.) from Estonia (Meinertzhagen collection slide No. 1464); these specimens agree in characters other than those figured here with the figures published by Merisuo (1945, pl. 2, fig. D; pl. 3, figs. D, d).

**Neoparatypes:** 14 males and 12 females from the same host-form, Estonia.

The neotypes are automatically also neotypes of *Craspedorrhynchus strigis* (J. C. Fabricius) 1775 and of *Craspedorrhynchus platyrhynchus* (Nitzsch) 1818.

**Pediculus maximus** (p. 382)

The particulars given, especially the size, can apply only to a *Laemobothrion*, and this fact has been recognized ever since the genus was erected. The host is *Falco Buteo = Buteo buteo* (Linn.).

J. C. Fabricius (1776: 309) renamed the species *Pediculus Buteonis*; Nitzsch (1818: 301) proposed the name *Liotheum (Laemobothrion) giganteum* for *maximus* Scopoli, *buteonis* Fabricius, and *circi* Geoffroy, and we shall deal with Nitzsch's name in such a way as to make it a synonym of *Laemobothrion maximum* (Scopoli).

Eichler has figured the species (1941, fig. 28, and 1942, fig. 4) and in the second of these papers he erects (p. 59) a neotype for the species, the neotype being from a specimen of *Buteo vulgaris* collected at Agna Manja, Teneriffe; Dr. Eichler informs us (in litt.) that this was probably *Buteo buteo insularum* Flöricker.

Eichler's neotype of *Laemobothrion maximum* (Scopoli) is automatically also neotype of *L. buteonis* (J. C. Fabricius), but not of *L. giganteum* (Nitzsch).
The host-record is 'Lanio Collur'. Harrison (1916: 12) considered the name to apply to a Menopon s.l. and placed M. fuscocinctum Denny and other names in the synonymy, but this identification of Scopoli’s species is quite certainly incorrect, for the mention of a white abdomen with seven conical fuscous spots on each side and with a fuscous apical fascia, coupled with the host-record, is completely diagnostic of a Philopterus. J. C. Fabricius (1798: 570) described a Pediculus lanii, from Lanius collurio Linn., which we consider to be the same species, and Schrank (1803: 187) described a Pediculus collurionis from ‘Dorndreher’ (= L. collurio). Schrank’s description is independent, but he quotes coarctatus as a synonym and his species is certainly a Philopterus; we identify this, also, as a synonym of coarctatus.

The species of Philopterus parasitizing the small European Passeres are very similar to each other, and in many cases it is difficult (if not impossible) to distinguish the females of two species. Specific differences in the head may be found in the form of the hyaline margin and the shape of the dorsal anterior plate (clypeal signature). The measurements of the head are, in general, unreliable characters; not only is there considerable variation within a species but, although species may be distinguished from each other by the means of the length or breadth, there is always considerable overlap, making the identification of many specimens by measurements impossible. Again, in most species the proportions of the head show no reliable specific differences; the cephalic index (breadth : length) tends to remain constant and gives less indication of differences than do the actual measurements of length and breadth. Tables of the C.I. and breadth measurements for three species illustrate these points (Tables 1–4).

As in most species with heavily sclerotized plates, there is always considerable variation in the outline of these plates. The exact outline of the prosternal plate, the abdominal tergites, and the sternites of the male and female genital regions cannot, therefore, be used as specific characters. The prosternal plate may vary considerably in outline within one species (Fig. 3), but in some species (P. citrinellae (Schrank), for instance) the posterior part is more heavily sclerotized and pigmented. The female genital plate varies in outline (Fig. 44 shows the outline in four specimens of P. fringillae taken from the same host individual), but such characters as the curvature of the anterior margin and the ratio of breadth to length may be of specific importance. Comparison of the female genital plate of P. coarctatus with that of P. fringillae shows that the anterior margin always tends to be more rounded in the former than in the latter. The ratio of breadth to length is given in Table 5; the variation is caused by the variation in the length of the plate due to the lack of posterior sclerotization in some specimens, the breadth tends to be fairly constant.

The chaetotaxy of the thorax and abdomen shows much variation, but some
Figs. 4-5. Philopterus coarctatus (Scopoli): 4. Male (setae not shown on legs).
5. Male genitalia. × 196.

species can be distinguished by the unusually large or small number of setae on certain segments.

The male genitalia, as is usual throughout the Ischnocera, give the most reliable specific differences, although in these characters, also, the differences are of small magnitude.

*Philopterus coarctatus* (Scopoli) (Figs. 3–7; Pl. I, fig. 1; Tables 1–5) is distinguished in the male by the characters of the genitalia, and in the female by the form of the hyaline margin, the prosternal plate, and the proportions of the genital plate.

**Measurements in mm.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.55</td>
<td>0.50</td>
</tr>
<tr>
<td>Prothorax</td>
<td>..</td>
<td>0.28</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>..</td>
<td>0.42</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.78</td>
<td>0.62</td>
</tr>
<tr>
<td>Total</td>
<td>1.55</td>
<td>..</td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.27</td>
<td>..</td>
</tr>
</tbody>
</table>

*Neotype* male (Figs. 4–5) and *neallotype* female (Figs. 3, 6, 7; Pl. I, fig. 1) of *Philopterus coarctatus* (Scopoli) from *Lanius c. collurio* Linn., from Yugoslavia (British Museum (Natural History) collection, slide No. 485). *Neoparatypes*: 28 males and 51 females from the same host-form from Yugoslavia, Poland, Estonia, Sweden, the British Isles, and the Anglo-Egyptian Sudan.

**Pediculus ocellatus** (p. 382)

The unusually good description places it beyond doubt that this species is a *Philopterus*, as has long been accepted. The hosts, however, are *Corvus corax* and *C. cornix*, so that the name originally applied to a mixture of *Philopterus corvi* (Linn.) and a second species which had not then been described. It has commonly been accepted as a principle that the first host mentioned by an author should be regarded as the type-host, but we can only accept this principle when there is no strong reason in favour of its rejection. In the present instance the fact that *ocellatus* has been accepted since 1818 (at least) as referring to the species found on *Corvus corone cornix* would be a very strong argument against accepting *Corvus corax* as type-host even if Nitzsch (1818: 290) had not restricted *ocellatus* to the species found on *C. corone* and its sub-species.

J. C. Fabricius (1775: 807) unnecessarily renamed the species as *Pediculus Cornicis* and dropped the mention of *Corvus corax* as a host. Nitzsch (1818: 290) retained Scopoli’s name, contrary to his usual practice, and the species was subsequently always known as *ocellatus* (the authorship usually wrongly ascribed to Nitzsch) until Thompson (1935: 214) mistakenly replaced this name by *Philopterus corvi* (Linn.), with which we have already dealt and which is not the same species.

*Philopterus ocellatus* (Scopoli) is distinguished from *P. corvi* (Linn.) by having the
anterior plate (＝ clypeal signature) heavily sclerotized and pigmented posteriorly, and by the characters of the male genitalia and female genital region.

**Fig. 8. Philopterus ocellatus (Scopoli), male.**

**Fig. 9. Philopterus ocellatus (Scopoli), male genitalia.**

**Measurements in mm.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.75</td>
<td>0.76</td>
</tr>
<tr>
<td>Prothorax</td>
<td>..</td>
<td>0.47</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>..</td>
<td>0.68</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.34</td>
<td>1.11</td>
</tr>
<tr>
<td>Total</td>
<td>2.46</td>
<td>..</td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.48</td>
<td>..</td>
</tr>
</tbody>
</table>

*Neotype* male (Figs. 8–9, 11; Pl. I, fig. 2) and *neallotype* female (Figs. 10, 12) of *Philopterus ocellatus* (Scopoli) from Corvus corone sardonius Kleinschmidt from EN TOM. 2, 1
THE EARLY LITERATURE ON MALLOPHAGA

Yugoslavia (British Museum (Natural History) collection, slide No. 484). Neoparatypes: 10 males and 9 females from the same host-form from Yugoslavia, Greece, Palestine, and Egypt and 40 males and 30 females from Corvus corone cornix Linn. from the British Isles, Estonia, and Sweden.

Fig. 10. Philopterus ocellatus (Scopoli), female.

These neotypes are also neotypes of Philopterus cornicis (J. C. Fabricius). There is no such species as Philopterus ocellatus (Nitzsch).

Pediculus dolichocephalus (p. 382)

There has never been any doubt about the identity of this species, the very brief description agreeing with no oriole-parasite except Ricinus. The original host-record is 'Habitat in Coracia Oriolo', which Harrison (1916: 66) misconstrued as meaning Coracias and Oriolus, evidently not realizing that in Scopoli's time the oriole was
contained in the genus Coracias. Similar errors will be mentioned under Pediculus ardealis and P. troglodytis.

J. C. Fabricius (1776: 310) renamed the species Pediculus Orioli, and Nitzsch (1818: 302) called it Liotheum (Physostomum) sulphureum, but there is not the slightest justification for either of these nomina nova. The description given by Fabricius is an abridged version of that of Scopoli, and Nitzsch gives no description and no 'indication' except a reference to Scopoli, so both these names derive their validity solely from Scopoli's description.

This species is distinguished from other species of Ricinus by the characters of the
mandibles (Fig. 13), by the shape of the head and the characteristic colour-pattern of the body (Pl. I, fig. 3), the characters of the male genitalia (Fig. 14), and the terminal segments of the female abdomen (Fig. 15).


Fig. 15. *Ricinus dolichocephalus* (Scopoli), terminal segments of female abdomen, ventral. ×75.

*Measurements in mm.*

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.76</td>
<td>0.68</td>
<td>0.97</td>
<td>0.78</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.57</td>
<td>0.57</td>
<td>0.70</td>
<td>0.70</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.75</td>
<td>0.75</td>
<td>1.03</td>
<td>1.03</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.83</td>
<td>0.83</td>
<td>1.16</td>
<td>1.16</td>
</tr>
<tr>
<td>Total</td>
<td>3.50</td>
<td></td>
<td>4.65</td>
<td></td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.46</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Neotype* male (Figs. 13-14) and *neallytype* female (Fig. 15; Pl. I, fig. 3) of *Ricinus dolichocephalus* (Scopoli) from *Oriolus o. oriolus* (Linn.) from NE. Poland (Meinertz-)

1 These structures show characters of specific value throughout the genus *Ricinus*.
hagen collection, slide No. 4190). \textit{Neoparatypes}: 3 males and 10 females from same host-form, NE. Poland, Switzerland, and Cyprus.

These neotypes are, of necessity, also neotypes of \textit{Ricinus oriol} (J. C. Fabricius) and of \textit{R. sulphureus} (Nitzsch).

\begin{center}
\textit{Pediculus fasciatus} (p. 363)
\end{center}

The host is \textit{Cuculus canorus} and the description, unmistakably that of the characteristic \textit{Cuculiphilus} found on this bird, has long caused the name to be correctly ascribed to this louse.

J. C. Fabricius (1775: 807) renamed the species \textit{Pediculus Cuculi}, his description being copied from that of Scopoli, and Nitzsch (1818: 300) proposed \textit{Liotheum (Monopon) phanerostigmaton} as a \textit{nomen novum} for it. The species went under this latter name (and its variant, \textit{phanerostigma} Giebel) until Harrison (1916: 47) restored Scopoli's name. Uchida (1926: 47) designated \textit{Pediculus fasciatus} Scopoli as type species of \textit{Cuculiphilus}.

\textit{Neotype} male (Figs. 16–17) and \textit{neallotype} female (Fig. 18) of \textit{Cuculiphilus fasciatus} (Scopoli) from \textit{Cuculus c. canorus} Linn. from NE. Poland (Meinertzhagen collection, slide No. 4211). \textit{Neoparatypes}: 3 males and 8 females from same host-form, NE. Poland, Ushant (France), and Tanganyika Territory.

These neotypes are automatically also neotypes of \textit{Cuculiphilus cuculi} (J. C. Fabricius) and of \textit{C. phanerostigmaton} (Nitzsch).

\textit{Neotype} of \textit{Cuculiphilus phanerostigma} (Giebel), a male from \textit{Cuculus c. canorus} Linn. from Ushant, France (Meinertzhagen collection, slide No. 780), agreeing with the neotype of \textit{Cuculiphilus fasciatus} (Scopoli).

\textbf{Measurements in mm.}

\begin{center}
\begin{tabular}{|l|c|c|c|c|}
\hline
\textbf{} & \textbf{Male} & \textbf{Female} \\
\hline
\textbf{Head} & 0.35 & 0.58 & 0.35 & 0.63 \\
\textbf{Prothorax} & 0.37 & 0.52 & 0.39 & 0.48 \\
\textbf{Pterothorax} & 0.45 & 0.73 & 0.42 & 0.82 \\
\textbf{Abdomen} & 0.90 & 1.52 & 1.02 & 1.79 \\
\textbf{Total} & 1.52 & 0.48 & 1.79 & \ \\
\textbf{Genitalia} & & & & \\
\hline
\end{tabular}
\end{center}
The hosts are *Picus major* and *P. martius*, i.e. *Dryobates major* (Linn.) and *Dryocopus martius* (Linn.), and the description unquestionably refers to a *Penenirmus*. In the absence of any indication to the contrary, we regard the first host mentioned by Scopoli as the type-host. Schrank (1803: 188) described a *Pediculus Pici* from 'Schwarzpecht' (= *Dryocopus martius*), placing *auritus* Scopoli as a synonym, but we cannot accept this as a restriction of *auritus* to one host, especially as Schrank also placed *Pulex picae* Redi (i.e. *Myrsidea picae* (Linn.), from *Pica pica*) as a synonym.

Burmeister (1838: 427) and Giebel (1874: 94, pl. 10, fig. 3) described as *Docophorus superciliosus* an insect that seems to be certainly the same as *Penenirmus auritus* (Scopoli) and is from *Dryobates major* (Linn.). Harrison (1916: 88) listed *auritus* in *Philopterus* with *superciliosus* as a synonym.
Neotype male (Fig. 19; Pl. I, fig. 4) and neallotype female (Fig. 20) of Penenirmus auritus (Scopoli) from Dryobates major pinetorum (Brehm) from Yugoslavia (British Museum (Natural History) collection, slide No. 498). Neoparatatypes: 12 males and 21 females from same host-form, Yugoslavia and NE. Poland; 23 males and 26 females from Dryobates major major (Linn.), Estonia.

Measurements in mm.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.53</td>
<td>0.48</td>
</tr>
<tr>
<td>Prothorax</td>
<td>…</td>
<td>0.29</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.40</td>
<td>0.46</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.93</td>
<td>0.60</td>
</tr>
<tr>
<td>Total</td>
<td>1.72</td>
<td>…</td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.28</td>
<td>…</td>
</tr>
</tbody>
</table>

**Fig. 19**

**Fig. 20**


Neotype of *Penenirmus superciliosus* (Burmeister) a male from *Dryobates m. major* (Linn.), Estonia (Meinertzhagen collection, slide No. 1568), agreeing with our description and figures of the neotype of *Penenirmus auritus* (Scopoli).

**Pediculus dentatus** (p. 383)

The host-record is merely ‘*in Anate*’, but as the next species described by Scopoli is from *Anas boschas*, now known as *A. platyrhynchos* Linn., we think it only reasonable to assume that *dentatus* was from the same host, the specific name of which was inadvertently omitted. The description is definitely that of an *Anatoecus*. Eichler
selected *Anas platyrhynchos* as type-host of this species, but without erecting neotypes.

We can find nothing in the subsequent literature that adds anything to our knowledge of this species; Harrison (1916: 13, 93) referred it to *Philopterus*, placing most of the duck-infesting species as synonyms, but pending redescription of the numerous species that have been described from ducks we are unable to suggest which names are synonyms of *Anatoecus dentatus* (Scopoli). Cumings (1916: 652) was the first author to draw attention to the two distinct forms of genitalia found in male *Anatoecus*—those with and those without the so-called ‘effractor’. Unfortunately his otherwise excellent account of various species found on the Anatidae is rendered largely useless by his failure to give any indication of the
host of the majority of the species that he figured. Cummings did not discuss the distribution of the two groups of species, but it has been found that on all the European ducks from which material is available there are two species of Anatoecus, the males of which are separable by the presence or absence of the effractor in addition to other less obvious characters. It has not been possible to assign the females to the different males with certainty, and for this reason no female neallotype nor neoparatypes will be designated for dentatus or other species of Anatoecus with which we shall deal. Cummings made Philopterus icterodes Nitzsch the type-species of Anatoecus and placed it in the group without an effractor; this species will be dealt with later and Cummings’s interpretation will be followed. Cummings did not mention dentatus Scopoli, and in order to fix representative species of the two main groups by the erection of neotypes and publication of figures we have chosen the species from Anas platyrhynchos in which the effractor is present to bear the name dentatus Scopoli.

Measurements in mm.

<table>
<thead>
<tr>
<th></th>
<th>Male Length</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.47</td>
<td>0.43</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td>Pterothorax</td>
<td></td>
<td>0.37</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.72</td>
<td>0.60</td>
</tr>
<tr>
<td>Total</td>
<td>1.45</td>
<td></td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.46</td>
<td></td>
</tr>
</tbody>
</table>

Measurements in mm. of heads of specimens examined

<table>
<thead>
<tr>
<th>Individual No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total length in midline</td>
<td>0.47</td>
<td>0.50</td>
<td>0.47</td>
<td>0.48</td>
<td>0.45</td>
<td>0.45</td>
<td>0.50</td>
<td>0.46</td>
<td>0.47</td>
<td>0.48</td>
</tr>
<tr>
<td>Length of hyaline margin</td>
<td>0.16</td>
<td>0.17</td>
<td>0.16</td>
<td>0.16</td>
<td>0.15</td>
<td>0.15</td>
<td>0.17</td>
<td>0.16</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Breadth at temples</td>
<td>0.43</td>
<td>0.43</td>
<td>0.42</td>
<td>0.43</td>
<td>0.42</td>
<td>0.43</td>
<td>0.41</td>
<td>0.42</td>
<td>0.43</td>
<td>0.43</td>
</tr>
<tr>
<td>Breadth at base of hyaline margin</td>
<td>0.25</td>
<td>0.26</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.26</td>
<td>0.27</td>
<td>0.24</td>
<td>0.26</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Neotype male (Figs. 21–22; Pl. I, fig. 5) of Anatoecus dentatus (Scopoli) from Anas p. platyrhynchos Linn. from NE. Poland (Meinertzhagen collection, slide No. 4176). Neoparatypes: 9 males from same host-form, Poland and England.

Pediculus crassicornis (p. 383)

The host is Anas Boschas and the louse is undoubtedly an Anaticola.

Schrank (1781: 503) described as Pediculus Anatis a form which is certainly partly crassicornis and which will be discussed later; his host is ‘Anas Boschas, varietas fera’, but there is some evidence of confusion with Anaticola anseris (Linn.). J. C. Fabricius (1798: 571) also described a Pediculus Anatis from Anas Boschas, his description being apparently independent. Nirmus crassicornis ‘Olfers’ (see Harrison, 1916: 13) does not exist, von Olfers correctly attributing the name to Scopoli, though his host-records indicate the confusion between this species and anseris for which Schrank appears to be responsible. Nitzsch (1818: 292) proposed Philopterus (Lipeurus)
squalidus as a nomen novum for Pediculus anatis Fabricius; this name, also, is a synonym of Anaticola crassicornis (Scopoli).

This species is distinguished from Anaticola anseris (Linn.) (see Clay and Hopkins, 1950: 239) by the characters of the anterior region of the head and the shorter penis (see measurements).

**Measurements in mm.**

<table>
<thead>
<tr>
<th></th>
<th><strong>Length</strong></th>
<th><strong>Breadth</strong></th>
<th><strong>Length</strong></th>
<th><strong>Breadth</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
<td><strong>Female</strong></td>
<td></td>
</tr>
<tr>
<td>Head</td>
<td>0.67</td>
<td>0.43</td>
<td>0.68</td>
<td>0.46</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.27</td>
<td>0.27</td>
<td>0.30</td>
<td>0.47</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.45</td>
<td>0.45</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.63</td>
<td>0.50</td>
<td>2.10</td>
<td>0.53</td>
</tr>
<tr>
<td>Total</td>
<td>2.92</td>
<td>0.70</td>
<td>3.40</td>
<td></td>
</tr>
</tbody>
</table>

**Length of penis** (number of specimens in brackets).

- *Anaticola crassicornis*: 0.13 mm. (1), 0.15 (7), 0.16 (1).
- *Anaticola anseris*: 0.27 mm. (3).

*Fig. 23*

Neotype male (Figs. 23–24) and neallotype female (Fig. 25) of Anaticola crassicornis (Scopoli) from Anas p. platyrhynchos Linn., from NE. Poland (Meinertzhagen collection, slide No. 4242). Neoparatypes: 12 males and 20 females from same host-form, Poland, Hungary, and the British Isles.

Pediculus pilosus (p. 384)
The host is Fulica atra Linn., but all the description given is that the louse has a red head, a long abdomen, and a particularly hairy anus with the hairs parallel.

Although this description is extremely unsatisfactory and Harrison (1916: 17) rejected pilosus as unrecognizable, we think that the description of the anus can only apply (among coot-parasites) to a Pseudomenopon, and the other characters are not inconsistent with this identification. Pseudomenopon could certainly be described as having a red head and its abdomen is moderately elongate, much more so than that of Incidifrons, for instance, which seems the only alternative.

The species was redescribed as Menopon tridens by Burmeister (1838: 440) from material from the same host (Fulica atra); Piaget (1880: 480), wrongly taking Gallinula chloropus as the type-host of tridens, renamed the form from Fulica atra as Menopon tridens var. major (preoccupied by Menopon quadrifasciatum var. major Piaget 1880: 441); Eichler (1937: 97), noting that the name of Piaget's variety from the coot was preoccupied, renamed it Pseudomenopon thompsoni. Mjöberg (1910: 51) made Menopon tridens 'N.' the type-species of his genus Pseudomenopon.

Neotype male and neallotype female of Pseudomenopon pilosum (Scopoli) from Fulica a. atra Linn. from Ireland (Meinertzhagen collection, slide No. 16388). These specimens agree with the figures published by Ferris (1924, Parasitology, 16: 64, fig. 4), although the male drawn by Ferris was from the American coot, Fulica a. americana Gmelin. The stout spine-like seta and the smaller seta below it on each side of the dorsal surface of the prothorax are not shown in fig. 4a (Ferris, 1924), nor are the three setae on each side of the dorsal surface of the metathorax. Neoparatypes: 12 males and 41 females from Fulica a. atra Linn., British Isles.

Neotype of Pseudomenopon tridens (Burmeister) a male (Meinertzhagen collection, slide No. 10510) from Fulica a. atra Linn. from Ireland. This specimen agrees with the neotype of P. pilosum (Scopoli).
The types of *Pseudomenopon thompsoni* Eichler (*Menopon* var. *major* Piaget 1880: 480 *nec* 441) are in the British Museum and also agree with the neotypes of *P. pilosum* (Scopoli).

**Pediculus colymbinus** (p. 384)

The host is *Colymbus auritus* Linn. (= *Podiceps auritus* (Linn.) of European authors), and Scopoli states that young specimens have an ovate abdomen with elliptical black dorsal spots and that the adult becomes rufous. This description is extremely inadequate, but the black dorsal spots (if not gut-contents) confine us to the Ischnocera and the only genus of Ischnocera reliably reported from the grebes is *Aquanirmus*. Denny (1842) described a *Nirmus fusco-marginatus* (a male *Aquanirmus*) from the same host and a *Nirmus podicepis* (a female of the same genus) from another
species of grebe, and later authors have identified what Scopoli considered to be young specimens with \textit{N. podicepis} Denny. Although thinking the identification of \textit{colymbinus} as an \textit{Aquanirmus} far from certain, we see nothing in the description that disproves it and there is no object in disturbing the accepted application of Scopoli’s name. We cannot accept the assumption that Denny’s male and female are conspecific pending a much more careful examination of the forms occurring on different species of grebes than has yet been made, but the lectotype of \textit{fusco-marginatus} Denny agrees with our male neotype of \textit{colymbinus}.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
 & \textbf{Male} & & \textbf{Female} & \\
 & Length & Breadth & Length & Breadth \\
\hline
Head & 0.46 & 0.35 & 0.53 & 0.42 \\
Prothorax & .. & 0.28 & .. & 0.33 \\
Pterothorax & .. & 0.37 & .. & 0.45 \\
Abdomen & 0.87 & 0.40 & 1.47 & 0.55 \\
Total & 1.65 & .. & 2.35 & .. \\
Genitalia & .. & .. & .. & .. \\
\hline
\end{tabular}
\caption{Measurements in mm.}
\end{table}

Neotype male (Figs. 26–27; Pl. II, fig. 1) and neotypal female (Fig. 28; Pl. II, fig. 2) of \textit{Aquanirmus colymbinus} (Scopoli) from \textit{Columbus auritus} Linn. from Devon, England (Meinertzhagen collection, slide No. 14736). \textit{Neoparatypes}: 1 male and 6 females from the same host-form, England.

There are two males and one nymph of \textit{Nirmus fusco-marginatus} from \textit{Podiceps auritus} (= \textit{Columbus auritus}) in the Denny collection; one of these males (slide No. 349) is hereby selected as lectotype of \textit{Aquanirmus fusco-marginatus} (Denny).

\textit{Pediculus ardealis} (p. 384)

Harrison (1916: 11) wrongly considered this name to be a synonym of \textit{Ardeicola ardeaæ} (Linn.), doubtless through misreading of the host-record ‘\textit{Ardea Ciconia}’ (= \textit{Ciconia ciconia}). Of the species found on \textit{Ciconia ciconia} (Linn.), Scopoli’s very poor description could only apply to \textit{Neophilopterus incompletus} (Denny) or to a nymph of \textit{Ardeicola ciconiae} (Linn.). But, in addition to the description, Scopoli gives two references: to the less hairy figure on Frisch \textit{Insect.} 5, pl. 4, and to Linné, 1758, p. 613, No. 26. The reference to Frisch is an obvious slip, for plate 4 only contains one insect, but the reference to Linné is to \textit{Ardeicola ciconiae}, and under this species Linné refers to Frisch’s plate 6; the latter plate does show two insects, one with hairs and the other without, both belonging to the genus \textit{Ardeicola}. It is, therefore, certain that Scopoli’s insect was the \textit{Ardeicola} and not the \textit{Neophilopterus}.

\textit{Neotype} of \textit{Ardeicola ardealis} (Scopoli) a male from \textit{Ciconia c. ciconia} (Linn.) from South Africa (British Museum collection, slide No. 430) that agrees with the neotype of \textit{Ardeicola ciconiae} (Linn.) (see Clay and Hopkins, 1950: 253).

\textit{Pediculus ovalis} (p. 384)

The host is \textit{Scolopax arquatus} and the description states that the louse is smaller than \textit{Pediculus humanus}, has eight abdominal segments, and a depressed ovate body,
the antennae are shorter than the head but longer than the thorax, and the colour is rufous-brown. No subsequent author has anything useful to say about the species, and Harrison (1916: 17) discards it as unrecognizable, but we claim that it is recognizable with certainty.

Admittedly there is no species on the curlew that agrees perfectly with Scopoli's description, and in particular none with an 8-segmented abdomen, but there are only three species normally found on this host that could possibly be described as rufous-brown and oval—a Cummingsiella, an Austromenopon, and perhaps Saemundssonia humeralis (Denny). Quite apart from the facts that the Cummingsiella fits the colour-character best and is by far the commonest of the three species (and therefore the most likely to have been observed by Scopoli), the description of the antenna convinces us that this is the form that Scopoli described. In the Austromenopon the antennae are concealed and the palps (sometimes mistaken for antennae in early descriptions) certainly do not project far enough beyond the margin of the head to be described as being longer than the thorax, but in the male of the Cummingsiella the antennae are almost as long as the thorax. This identification of Scopoli's species
involves the relegation of *Cummingsiella testudinaria* (Denny) to synonymy, but this is in any case inevitable because *Docophorus testudinarius* Denny and *D. biseriatis* Denny (the name used on p. 250 in Denny’s explanation of his plate 1, fig. 6) are not independent names but merely misdeterminations of Children’s *Nirmus testudinarius*. The only other synonym of *Cummingsiella ovalis* (Scopoli) is *Nirmus pseudonirmus* Nitzsch.

Neotype male (Figs. 29–30) and neallotype female (Fig. 31) of *Cummingsiella ovalis* (Scopoli) from *Numenius a. arquatus* (Linn.) from Yugoslavia (British Museum collection, slide No. 522). Neoparatypes: 86 males and 99 females from the same host-form, Yugoslavia, Hungary, and the British Isles.

Neotype of *Cummingsiella pseudonirmus* (Nitzsch) a male (British Museum (Natural
THE EARLY LITERATURE ON MALLOPHAGA

History), slide No. 523) from Numenius a. arquatus (Linn.) from Scotland, which agrees with the neotype of C. ovalis (Scopoli).

Measurements in mm.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.70</td>
<td>0.72</td>
</tr>
<tr>
<td>Prothorax</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.16</td>
<td>1.03</td>
</tr>
<tr>
<td>Total</td>
<td>2.10</td>
<td>..</td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.65</td>
<td>..</td>
</tr>
</tbody>
</table>

The Denny collection contains one male and two female Cummingsiella labelled Docophorus testudinaris but without host-record. These specimens agree with the neotypes of C. ovalis (Scopoli).

**Pediculus junceus (p. 384)**

The host is Tringa vanellus = Vanellus vanellus (Linn.), and the description is obviously that of a Degeeriella s.l. Denny (1842: 53, 143, pl. 9, fig. 5) made an identification of this species with which we are in full agreement; his specimens (3 females) came from the same host, although on p. 143 he added two other hosts. We do not agree with Harrison in considering Pediculus tringae Schrank 1803 (nec O. Fabricius, 1780) to be the present species, and it will be discussed separately. On the other hand, in spite of Schrank's definite statement (1803: 190) that his Pediculus Vanelli, from 'Kybize' (= Vanellus vanellus) is not Scopoli's insect we can find nothing in his description that supports this statement and suspect that the explanation must be that he misidentified junceus; our suspicion that this is the case is much strengthened by the fact that we have been unable to find any nirmoid species except junceus on Vanellus vanellus.

Measurements in mm.

<table>
<thead>
<tr>
<th></th>
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<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.47</td>
<td>0.30</td>
</tr>
<tr>
<td>Prothorax</td>
<td>..</td>
<td>0.22</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>..</td>
<td>0.30</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.93</td>
<td>0.41</td>
</tr>
<tr>
<td>Total</td>
<td>1.04</td>
<td>..</td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.30</td>
<td>..</td>
</tr>
</tbody>
</table>

Neotype of Quadraceps junceus (Scopoli) a male (Fig. 32; Pl. II, fig.3) and neallo-type a female (Fig. 33; Pl. II, fig. 4) from Vanellus vanellus (Linn.) from Italy (British Museum (Natural History), slide No. 524). Neoparatypes: 154 males and 140 females from the same host-form, Italy and the British Isles.
Denny (1842: 51, 130, pl. 6, fig. 2) redescribed as *Nirmus cuspidatus* a species that he took to be the same as that of Scopoli, though he thought it necessary to query the

determination. Scopoli's host-record is 'Rallo aquat.', and Denny's original specimen (no longer in his collection) evidently also came from *Rallus aquaticus* Linn., because this is the only host mentioned on p. 51. Scopoli's description is not by any means diagnostic, but so far as it goes it fits *Ralicola* at least as well as can be expected from these old descriptions. No subsequent author seems to have seen the species.

*N*eotype male (Figs. 34–35; Pl. II, fig. 5) and *n*eallotype female (Fig. 36; Pl. II, fig. 6) of *Ralicola cuspidatus* (Scopoli) from *Rallus a. aquaticus* Linn. from Kent, *Entom. 2*, I
England (Meinertzhagen collection, slide No. 8332). *Neoparatypes*: 13 males and 48 females from the same host-form, British Isles.

![Fig. 35](image)

**Fig. 35**

**Fig. 34**

**Fig. 36**


**Measurements in mm.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
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<tbody>
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</tr>
<tr>
<td>Head</td>
<td>0.37</td>
<td>0.30</td>
</tr>
<tr>
<td>Prothorax.</td>
<td>0.27</td>
<td>0.29</td>
</tr>
<tr>
<td>Pterothorax</td>
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<td>0.35</td>
</tr>
<tr>
<td>Abdomen</td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.25</td>
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</tr>
</tbody>
</table>

*Genitalia*
The host is *Columba palumbus* Linn., and the reference to a hemispherical head rules out all genera of Mallophaga known from European pigeons except *Coloceras* and *Campanulotes*. *Pediculus bidentatus* was constantly placed as a synonym of *Campanulotes compar* (Burmeister), from *Columba livia domestica*, until Harrison (1916) reversed this arrangement. Although we find nothing in the original description of *bidentatus* that enables us to decide which of the two genera Scopoli had before him, we think it best to accept this long-standing generic determination of his species.

This species is near *C. compar* (Burmeister) from *Columba livia*, from which it is distinguished by its greater size (see measurements below). The chaetotaxy and general characters are as figured by Kéler (1939: 158–160, figs. 89–91) for *C. compar* except that in fig. 89 a median ventral seta has been omitted on segments VI and VII; in fig. 90 the latero-dorsal temple spine has been omitted, the dorsal setae on abdominal segments II–III should be about twice as long as shown, and the median dorsal setae on segments V–VI have been omitted; and in fig. 91 the long ventral seta on the last abdominal segment has been omitted. The genital region of the female of *C. bidentatus* is shown in Fig. 37.

**Measurements in mm.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.34</td>
<td>0.47</td>
<td>0.43</td>
<td>0.53</td>
</tr>
<tr>
<td>Prothorax</td>
<td>...</td>
<td>0.29</td>
<td>...</td>
<td>0.34</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>...</td>
<td>0.37</td>
<td>...</td>
<td>0.42</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.61</td>
<td>0.57</td>
<td>0.90</td>
<td>0.66</td>
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<tr>
<td>Total</td>
<td>1.20</td>
<td>...</td>
<td>1.58</td>
<td>...</td>
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**Neotype** of *Campanulotes b. bidentatus* (Scopoli) a male (Pl. III, fig. 1) and neallotype a female (Fig. 37) from *Columba p. palumbus* Linn. from Somerset, England (Meinertzhagen collection, slide No. 864). **Neoparatypes:** 63 males and 58 females from the British Isles.
Comparison of breadth of heads, in mm.

<table>
<thead>
<tr>
<th>Species and No. of specimens</th>
<th>Males</th>
<th>Females</th>
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<tbody>
<tr>
<td></td>
<td>Breadth in mm.</td>
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<tr>
<td></td>
<td>0.38</td>
<td>0.39</td>
</tr>
<tr>
<td>C. bidentatus compar</td>
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<td>10</td>
</tr>
<tr>
<td>C. bidentatus bidentatus</td>
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</tr>
<tr>
<td></td>
<td>Breadth in mm.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.43</td>
<td>0.44</td>
</tr>
<tr>
<td>C. bidentatus compar</td>
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<td>4</td>
</tr>
<tr>
<td>C. bidentatus bidentatus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pediculus albiventris** (p. 385)

The original host-record is 'Motacilla Troglodyte', which Harrison (1916: 87) wrongly took to mean Motacilla and Troglodytes, whereas only one species, the bird now known as *Troglodytes troglodytes* (Linn.), is mentioned. Clay and Meinertzhagen (1938: 73) showed that *Pediculus albiventris* (Scopoli) is the same as *Docophorus*

trogloidyis (Waterston), from Troglodytes troglodytes zetlandicus Hartert, and made it the type species of Penenirmus. J. C. Fabricius (1776: 310) renamed the species Pediculus motacillae.

Measurements in mm.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
<td>Breadth</td>
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<tr>
<td>Head</td>
<td>0.42</td>
<td>0.37</td>
<td>0.48</td>
<td>0.45</td>
</tr>
<tr>
<td>Prothorax</td>
<td>.</td>
<td>0.20</td>
<td>.</td>
<td>0.25</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>.</td>
<td>0.33</td>
<td>.</td>
<td>0.40</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.73</td>
<td>0.45</td>
<td>1.13</td>
<td>0.63</td>
</tr>
<tr>
<td>Total</td>
<td>1.33</td>
<td>.</td>
<td>1.85</td>
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</tbody>
</table>

Neotype of Penenirmus albiventris (Scopoli) a male (Figs. 38–39) and neallotype a female (Fig. 40) from Troglodytes t. troglodytes (Linn.) from Wiltshire, England (Meinertzhagen collection, slide No. 15399). Neoparatypes: 44 males and 52 females from various subspecies of Troglodytes troglodytes from the British Isles.

These neotypes are also automatically neotypes of Penenirmus motacillae (J. C. Fabricius)

PONTOPPIDAN, 1763 (Den Danske Atlas. 1 Kiøbenhavn: 699)

Only one of the names of Mallophaga published in this work is new.

Pediculus strigis (p. 699, pl. xxx)

This species is stated to be new and is described with a reference to plate xxx b, a figure of an obvious Philopterus s.l. There is no host-record other than that provided by the specific name. Before we go on to discuss the identity of the species it will be as well to consider the subsequent history of the name.

Scopoli (1772: 124) gives a completely independent description of a Pediculus strigis which is also clearly a Philopterus s.l.; there is no host-record, but as he describes a Hippoboscid from Strix bubo we think it nearly certain that this species was also the host of the louse. J. C. Fabricius (1775: 806) applied the name Pediculus strigis to Pediculus haematopus Scopoli, Fabricius’s nomen novum thus being not only unnecessary but twice preoccupied, to say nothing of the fact that haematopus (and therefore strigis Fabricius) is not from an owl but from a hawk. Müller (1776: 185) mentioned the name with a reference to
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‘P.D.A.’ (= Pontoppidan’s Danske Atlas). 0. Fabricius (1780: 216) gave references to Pontoppidan and Müller and also an independent description of the differences between his material (from Strix nyctea) and Pontoppidan’s plate. Harrison (1916: 18) did not know strigis Pontoppidan and rejected all the other uses of the name as either unrecognizable or preoccupied. The position may be summarized as follows:

P. strigis Pontoppidan is a valid name and easily determinable to the genus. P. strigis Scopoli may or may not be Pontoppidan’s species but is certainly congeneric. P. strigis J. C. Fabricius is an unwanted nomen novum for Pediculus (now Craspedorrhynchus) haematopus Scopoli. It is twice preoccupied and is not congeneric with the others. P. strigis ‘Müller’ does not exist, Müller merely listing Pontoppidan’s species. P. strigis O. Fabricius is partly a reference to Pontoppidan and partly a new species, the name of the latter thrice preoccupied.

In the circumstances it seems to us that much the most satisfactory course is to fix strigis Pontoppidan in such a way that it is the same as strigis Scopoli and (if possible) so that its restoration does not upset any well-established name of later date. Not only does Bubo bubo, which we consider to be the host of Scopoli’s species, occur in Denmark, but Pontoppidan definitely described another parasite from this host, so that it is very probable that his louse came from this species of bird. Two species of Strigiphilus occur on Bubo bubo, one of which has long been known as S. heteroceros (Nitzsch) whereas the other had not been named until Eichler (1949: 14) named it ‘Neodocophorus’ hopkinsi, though it is probably a component of S. cursor (Burmeister) as described by Giebel (1874: 70). The first species, however, cannot retain the name Strigiphilus heteroceros (Nitzsch), because this species was not described until 1861 whereas Grube used the same name (Docophorus heterocerus) for a species found on Strix uralensis liturata Tengmalm ten years earlier (Grube, 1851: 469). Eichler (1949: 11) has correctly pointed out this fact and renamed the species with sexually dimorphic antennae found on Bubo bubo as Strigiphilus goniodicerus. Both the species concerned have, therefore, been named and both the names are of equal seniority, so it does not matter to which species we apply the name strigis Pontoppidan (his figure applying fairly well to either), so we have selected hopkinsi to bear Pontoppidan’s name.

Measurements in mm.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
</tr>
<tr>
<td>Head</td>
<td>0.69</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.49</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.56</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.93</td>
</tr>
</tbody>
</table>

This species is distinguished from S. goniodicerus Eichler, from the same host, by the antennae being similar in the two sexes and by the smaller and less complicated
male genitalia. Although there are two species of females represented in the available material it has not been possible to assign them with certainty to the males, so no neallotype or female neoparatypes have been erected.

**Fig. 41**

Figs. 41-42. *Strigiphilus strigis* (Pontoppidan), male: 41. Terminal segments of abdomen. $\times 74$.

42. Genitalia. $\times 294$.

**Neotype of Strigiphilus strigis** (Pontoppidan) a male (Figs. 41-42, Pl. III, fig. 2) from *Bubo bubo* (Linn.) from Russia (Meinertzhagen collection, slide No. 10975a).

**Neoparatypes**: 9 males from the same host-form, Russia and Italy (captive host).

**Neotype of Strigiphilus strigis** (Scopoli) a male (Meinertzhagen collection, slide No. 10975b) from *Bubo bubo* (Linn.) from Russia, that agrees with the neotype of *Strigiphilus strigis* (Pontoppidan).


The descriptions in this work are very poor. Fortunately they are also very few.

**Pediculus hirci junioris** (p. 124)

We only mention this name because we feared at first that it might be the earliest name for a chewing louse of the goat. But we are certain that the description does not refer to a member of the Mallophaga and we think it likely that the insect was one of the Anoplura.

**Pediculus strigis** (p. 124)

This name has been dealt with under *Pediculus strigis* Pontoppidan and a neotype has been erected. *Strigiphilus strigis* (Scopoli) is both a homonym and a synonym of *S. strigis* (Pontoppidan).
Pediculus ralli (p. 125)

There is no host-record other than that provided by the specific name, but the host must be assumed to have been some bird that occurs in Carniola and was included in the genus Rallus in Scopoli’s time.

The entire description is that the head of the insect is bidentate and the abdomen glabrous, with pilose and crenate sides. Among parasites of the Rallidae this description could only apply to the genus Incidifrons, but as we have not seen this genus from any bird that complies with the conditions we have mentioned as necessary assumptions we are unable to erect a neotype for the species. We think it of the first importance that Incidifrons ralli (Scopoli) should eventually be fixed in such a way that Incidifrons ralli (Denny) becomes a synonym as well as a homonym, thus avoiding the confusion that would be caused by the transfer of the name ralli from one species to another. We therefore intend to assume in all future work that the host of Incidifrons ralli (Scopoli), like that of I. ralli (Denny), was Rallus a. aquaticus Linn., and we most strongly urge other workers to make the same assumption. There are no specimens of I. ralli in the Denny collection.

Pediculus fringillae (p. 125)

The entire description is that the head is bidentate and the sides of the abdomen are pilose and rugose, but among parasites of the birds included in Fringilla in Scopoli’s time only Philopterus fits this description. There is no host-record other than that provided by the name, so we have chosen as host of our neotype one of the commoner birds included by Scopoli in Fringilla, namely, Fringilla domestica, now known as Passer domesticus Linn.1

Fig. 43. Philopterus fringillae (Scopoli), male genitalia. x 319.

We hope that our action will finally settle the confusion that has arisen (as shown in Part I of this work (Clay and Hopkins, 1950: 270)) through the application of Geoffroy’s invalid appellation ‘subflavescens’ to the Philopterus from this host. Fourcroy (1785: 519) gave the name Pediculus passeris to the species described by Geoffroy, and Philopterus passeris (Fourcroy) and P. passeris (Piaget) (together with subflavescens of authors subsequent to Geoffroy) become synonyms of Philopterus fringillae (Scopoli).

This species has been discussed above under P. coarctatus (Scopoli) 1763, from which it differs in having a median indentation in the hyaline margin of the head, and in the characters of the male genitalia and female genital plate.

Neotype male (Fig. 43; Pl. III, fig. 3; Tables 1 and 3) and neallotype female (Fig. 44; Tables 2 and 4–5) of Philopterus fringillae (Scopoli) from Passer d. domesticus (Linn.)

1This host is not given in the publication under discussion, in which no species of Fringilla are mentioned, but in Part I of the same work, published in 1769, Scopoli refers to Fringilla domestica on p. 149.

**Measurements in mm.**

<table>
<thead>
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<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.55</td>
<td>0.50</td>
</tr>
<tr>
<td>Prothorax</td>
<td>...</td>
<td>0.29</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>...</td>
<td>0.45</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.70</td>
<td>0.68</td>
</tr>
<tr>
<td>Total</td>
<td>1.45</td>
<td>...</td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.31</td>
<td>...</td>
</tr>
</tbody>
</table>

---

![Image of genital plates]

**Fig. 44. Philopterus fringillae** (Scopoli), genital plates of 4 females taken from one host individual. × 102.

**Pediculus pari palustris** (p. 125)

'Cauda quadrirseta, ut in *P. Pari majoris* Linn.' As no differences from Linné's species are mentioned we consider this to be a *nomen nudum*, but in any case the name clearly does not refer to the Mallophaga but to a mite.

**J. C. Fabricius, 1775** (*Systema Entomologiae. Flensburgi et Lipsiae: 804–810*)

The great majority of the names mentioned in this work have already been dealt with, being either quoted from Linné or entirely unnecessary renamings of Scopoli's species, with descriptions quoted from the latter author. Only the following are genuinely new:

**Pediculus vulturis** (p. 806)

The description is quite obviously that of a *Laemobothrion*, but the host-record is merely 'Habitat in Indiae orientalis vulturibus'. In these circumstances the most reasonable procedure seems to be to attach the name to a *Laemobothrion* from one of the Indian vultures. We have chosen *Pseudogyps bengalensis* (Gmelin).

This species differs from *L. tinnunculi* (Linn.) (see Clay and Hopkins, 1950: 228)
in the larger size, the shape of the head (Pl. III, figs. 4, 6), in the greater number of prosternal setae1 and the shape of the sternal plates (Fig. 45), the presence of a line of setae on the lateral margins of the sternal plates, and in details of the male genitalia. No material of *Laemobothrion maximum* (Scopoli) has been seen from *Buteo buteo*, but from Eichler’s figures (1941: 363, fig. 28; 1942: 59, fig. 4), and examination of specimens (possibly not conspecific with maximum) from other species of *Buteo*, it seems to differ from *vulturis* in the smaller size, the smaller number of prosternal setae, the shape of the prosternal plate, and possibly in the details of the male genitalia.

### Measurements in mm.

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Breadth</th>
<th>Length</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head*</td>
<td>1-52</td>
<td>1-70</td>
<td>1-56</td>
<td>1-80</td>
</tr>
<tr>
<td>Abdomen</td>
<td>5-76</td>
<td>2-48</td>
<td>6-92</td>
<td>3-02</td>
</tr>
<tr>
<td>Total</td>
<td>9-24</td>
<td></td>
<td>10-56</td>
<td></td>
</tr>
<tr>
<td>Genitalia</td>
<td>2-90</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The head is liable to distortion in mounted specimens of *Laemobothrion* and throughout the genus these measurements may show considerable variation in one species.

**Neotype male** (Pl. III, figs. 4–5) and **neallotype female** (Fig. 45; Pl. III, fig. 6) of *Laemobothrion vulturis* (J. C. Fabricius) from *Pseudogyps bengalensis* (Gmelin) from Deccan, India (Meinertzhagen collection, slide No. 8607). **Neoparatypes**: 1 male and 2 females from the same host-form, Deccan and Siam.

**Pediculus procellariae** (p. 808)

An elongate, filiform, fuscous species occurring ‘in Brasiliae procellariis’ can only be a *Halipeurus* or a *Perineus*, the former being the more probable identification because members of this genus are more elongate than those of *Perineus* (Fabricius seems to have been particularly impressed by this character) and also more fuscous. But in view of the number of species of petrels which occur in Brazilian waters the selection of host must be purely arbitrary. Mr. R. L. Edwards informs us that in a paper he is about to publish he will redescribe *Halipeurus procellariae* (J. C. Fabricius) from specimens taken from *Pterodroma m. macroptera* (A. Smith). *Halipeurus constrictiventris* (Pessôa and Guimarães) 1935 will thus become a synonym of *H. procellariae*.

**Pediculus diomedeae** (p. 808)

One of us (Clay, 1940: 300–302) has already discussed this species and erected neotypes from *Diomedea m. melanophris* Temminck. It is perhaps as well to repeat that it is a *Perineus*, not a *Harrisoniella*, has nothing to do with *Harrisoniella ferox* (Giebel), and that the type species of *Harrisoniella* is *Esthiopterum diomedeae* Harrison 1916 (ne J. C. Fabricius 1775) (= *Lipeurus ferox* Giebel).

1 Examination of further material suggests that this is an unreliable character owing to individual variation. See Part III (in press) for further notes on *Laemobothrion vulturis*. 
THE EARLY LITERATURE ON MALLOPHAGA

Pediculus hirundinis (p. 810)

We have noted above (Clay and Hopkins, 1950: 26) that this name must be ascribed to Linné and have discussed it under that author.

TABLES 1–5. MEASUREMENTS OF PHILOPTERUS SPECIES

Table 1. Breadth (in mm.) of head at temples of males, with number of specimens

<table>
<thead>
<tr>
<th></th>
<th>0.45–0.46</th>
<th>0.47–0.48</th>
<th>0.49–0.50</th>
<th>0.51–0.52</th>
<th>0.53–0.54</th>
<th>0.55–0.56</th>
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<tr>
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<td></td>
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<td></td>
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<tr>
<td>fringillae</td>
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<tr>
<td>citrinellae</td>
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Table 2. Breadth (in mm.) of head at temples of females, with number of specimens

<table>
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<th></th>
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<th>0.49–0.50</th>
<th>0.51–0.52</th>
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<th>0.57–0.58</th>
<th>0.59–0.60</th>
<th>0.61–0.62</th>
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<td></td>
</tr>
<tr>
<td>fringillae</td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>citrinellae</td>
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Table 3. Cephalic index of males, with number of specimens

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<th></th>
<th>0.90–0.91</th>
<th>0.92–0.93</th>
<th>0.94–0.95</th>
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<th>1.02–1.03</th>
<th>1.04–1.05</th>
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<tr>
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<tr>
<td>citrinellae</td>
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Table 4. Cephalic index of females, with number of specimens

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<th>0.92–0.93</th>
<th>0.94–0.95</th>
<th>0.96–0.97</th>
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<td>citrinellae</td>
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Table 5. Ratio of breadth : length of female genital plate, with number of specimens in parentheses

<table>
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<th>1.38 (1), 1.45 (1), 1.53 (2), 1.54 (1), 1.55 (1), 1.58 (1), 1.79 (1), 1.88 (2), 1.91 (2), 2.00 (3), 2.10 (1)</th>
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</table>

LIST OF SPECIES

The synonymy of the following names has been established.

Specific name | Present status | Page
--------------|---------------|-----
albiventris Scopoli | Penenirmus albiventris (Scopoli) | 28
anatis Fabricius | Anaticola crassicornis (Scopoli) | 17
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<td>tinnumculi Latreille.</td>
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<td>tridens Burmeister.</td>
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<td>vulturis Fabricius.</td>
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REFERENCES

Only those papers not referred to in Part I are listed here.


PLATE I

Fig. 1. Philopterus coarctatus (Scopoli), ♀.
Fig. 2. Philopterus ocellatus (Scopoli), ♂.
Fig. 3. Ricinus dolichocephalus (Scopoli), ♀.
Fig. 4. Penenirmus auritus (Scopoli), ♂.
Fig. 5. Anatoecus dentatus (Scopoli), ♂.
PLATE 2

Fig. 1. *Aquanirmus colymbinus* (Scopoli), ♂.
Fig. 2. *Aquanirmus colymbinus* (Scopoli), ♀.
Fig. 3. *Quadraceps juncus* (Scopoli), ♂.
Fig. 4. *Quadraceps juncus* (Scopoli), ♀.
Fig. 5. *Rallicola cuspidatus* (Scopoli), ♂.
Fig. 6. *Rallicola cuspidatus* (Scopoli), ♀.
PLATE 3

Fig. 1. Campanulotes bidentatus (Scopoli), ♂.
Fig. 2. Strigiphilus strigis (Pontoppidan), ♂.
Fig. 3. Philopterus fringillae (Scopoli), ♂.
Fig. 4. Laemobothrium vulturis (J. C. Fabricius), ♂.
Fig. 5. Laemobothrium vulturis (J. C. Fabricius), ♂ genitalia.
Fig. 6. Laemobothrium vulturis (J. C. Fabricius), ♀.
Systematic Notes on the Piaget Collections of Mallophaga.—Part III. By Theresa Clay, British Museum (Natural History).


[Plate XX.]

**Colpocephalum (sensu Piaget).—H.**

**Colpocephalum heterosoma** Piaget. (1880, p. 572, pl. xlviii, figs. 3 and 4.)

Type host: *Phcenicopterus antiquorum* Temminck.

B.M.: 6 ♂♂ *Colpocephalum*, slides nos. 475, 477, 479, 480; 5 ♀♀ *Colpocephalum*, slides nos. 474, 477, 480; 1 ♂, 1 ♀ *Colpocephalum (? stragglers)*, slide no. 473; 1 ♀ *Colpocephalum (? straggler)*, slide no. 476; 3 nymphs *Colpocephalum*, slides nos. 473, 474, 479. All specimens from the type host.

Leiden: 1 ♂, 2 ♀♀ *Colpocephalum*, slide no. 265.

A superficial examination of Piaget's specimens and 153 males from the type host taken in the Sudan, Kenya, Somaliland and India suggested that there were normally parasitic on the flamingo three species of *Colpocephalum* which differed from each other in size, degree of indentation of the abdominal segments and the chaetotaxy. However, a more detailed examination revealed a series of intermediates between two of the supposed forms and showed that *heterosoma* is a species in which the males exhibit an unusually large range of size (Table II) together with heterogony of certain characters. Only two kinds of females have been found (further confirmation that only two species are involved), that is *heterosoma* and the new species described below.

Pl. XX, figs. 1 and 2, show the two extremes of *heterosoma* and illustrate the differences in size and degree of indentation of the abdominal segments. The mandibles increase in relative size with the increase of the head-size (fig. 13). The most marked differences in the chaetotaxy are shown by the dorsal marginal setæ of the terminal segment of the abdomen, in which the fine setæ of the small forms are replaced by stout spines in the large forms (figs. 1 and 5). Figs. 1–5 and Table I show the general correlation between the size of the individual and the form of the four posterior abdominal setæ, and also the variation in the intermediate size-group not only between different specimens, but also between the different sides of one

† British Museum (Natural History) Collection.
specimen. This general correlation between size of the whole insect and size (and in some cases number) of setæ is found in many areas of the body, for example the number and size of the setæ comprising the metasternal clump (figs. 6 and 7). The degree of indentation of the abdomen increases with the size of the specimen. The

Figs. 1-5.

*Colpoecephalum heterosoma*, posterior margins of last abdominal segments of male specimens taken from one host individual. Breadth of head in mm. at temples as follows: 1. 0.48. 2 & 3. 0.50. 4. 0.54. 5. 0.62.

following characters appear to be constant or show individual variation independant of the size of the whole insect: the number and size of the setæ in the femoral and abdominal combs, chaetotaxy of the legs and the setæ of the mesothoracic clump.
There seems little doubt, therefore, that all these specimens belong to a single species, the apparent distinguishing characters being correlated with size and the differences being emphasized by the heterogeneity of some of the characters. In general, the individuals of a species of Mallophaga are remarkably uniform in size, presumably as a result of the abundance of the available food supply and to the constancy of the humidity and temperature of the environment. The large range in size shown by the males of *heterosoma* may be caused by an inherent genetical variation with or without some environmental factor. The size might be dependent on the part of the body where the nymph was reared, due to some environmental difference such as feather structure, or the difference in temperature or humidity in the more exposed parts of the host’s body such as the head. The size of the individual might also be affected by the numbers in the population, but there is no accurate data on population size available.

Figs. 6–8.

8. *C. salimalii*.

Male metasternal setae.
On the Piaget Collections of Mallophaga.

The female, which on the evidence of metathorax, shape and distribution, is presumed to be *heterosoma* is shown in Pl. XX, fig. 4.

*Measurements in millimetres:—*

<table>
<thead>
<tr>
<th></th>
<th>Male.</th>
<th>Large specimen as Pl. XX, fig. 2.</th>
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<tr>
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<tr>
<td>Head</td>
<td>0.33 0.48</td>
<td>0.43 0.63</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.40</td>
<td>0.49</td>
</tr>
<tr>
<td>Metathorax</td>
<td>0.52</td>
<td>0.63</td>
</tr>
<tr>
<td>Abdomen*</td>
<td>1.16 0.55</td>
<td>1.50 0.72</td>
</tr>
<tr>
<td>Total*</td>
<td>1.90</td>
<td>2.54</td>
</tr>
</tbody>
</table>

Piaget’s material includes females (presumed to be *heterosoma*) and both large and small male specimens of *heterosoma*. In addition there is a distinct male and female (slide no. 473), possibly stragglers, and a single female (slide no. 476) which is almost certainly a straggler. Unfortunately, Piaget drew his figure of the female from this last specimen, thus making his species composite. The male he figured is one of his smaller specimens without spine-like setae on the last abdominal segment and one of these specimens has therefore been selected as lectotype of *heterosoma*.

Present status: *Colpocephalum heterosoma* Piaget.

Lectotype: ♂ in the B.M., slide no. 475, as figured in Pl. XX, fig. 1 and figs. 9–12.

*Colpocephalum salimalii*, sp. n.

Together with specimens of *C. heterosoma* on *Phaeni-
copterus antiquorum* are others of a *Colpocephalum*, which, although not differing in the characters of the male genitalia must be considered as a distinct species. The differences are shown in the shape of the metathorax and abdomen and in the chaetotaxy. In this species, although the breadth of the head at the temples (0.57–0.63 mm.) falls within the range of the larger specimens of *heterosoma*, the indentations of the abdomen are slight and the setae in general are fewer and finer than in the smallest

*Length and breadth of the abdomen are unreliable measurements in all Colpocephalum species as they are greatly affected by the amount of pressure exerted on the cover slip during mounting.*
heterosoma specimens. In addition there are differences in the chaetotaxy which are not merely matters of degree (cf. figs. 12 and 15), noticeably the presence of three (occasionally four) minute setae borne on small tubercles on the middle of the posterior margin of the last abdominal segment. The female, which is presumed to belong to this species (see above under heterosoma) is quite distinct from that of heterosoma and supports the view that the differences between the males are specific.

Head and thorax.—As shown in Pl. XX, fig. 3 and fig. 14. The setae comprising the metasternal clump (fig. 8) are more equal in size than are those of the smaller heterosoma specimens and less numerous and finer than in those of the larger specimens, but there are probably individuals which could not be distinguished on this character.

Abdomen.—This is at once distinguished in the male from that of heterosoma by the slight degree of the lateral indentations (Pl. XX, fig. 3) and by the chaetotaxy (fig. 15). Most of the setae tend to be finer and less numerous than in heterosoma and, the majority of the setae on the dorsal
14. Colpocephalum salimalii, sp. n., male head and thorax. (Setae drawn on one side only.) 15. Colpocephalum salimalii, sp. n., terminal segments of male abdomen.
51 males of *heterosoma* from one host individual arranged according to temple breadth (43 = 0.43 mm. 65 = 0.65 mm.) to show general correlation between size of the individual and the form of the four posterior abdominal setae. *f.* = fine, *m.* = medium, and *sp.* = spine-like setae. These categories are necessarily somewhat arbitrary.

|         | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | Total |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|     |
| 4 sp....|    |    |    |    |    |    |    |    | 1  | 1  | 2  |    |    |    |    |    | 1  | 4  | 3  |    |    |    |    | 14  |     |
| 2 m. 2 sp.|   |    |    |    |    |    |    | 1  |    | 2  | 1  |    |    |    |    |    |    |    |    |    |    |    |    | 1   | 4   |
| 1 f. 3 sp.|   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 2   |
| 2 f. 2 sp.|   |    |    |    |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 1   |
| 2 f. 1 m. 1 sp.|   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 1   |
| 4 f.     | 1  | 4  | 4  | 11 | 5  | 2  | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 29  |
| Total    | 1  | 4  | 4  | 11 | 6  | 2  | 4  |    | 3  | 1  | 1  | 3  |    |    |    |    |    |    | 2  | 1  |    | 4  | 3  | 1   | 51  |
surface of all the tergites are minute (cf. figs. 12 and 15). In the female the abdomen is distinguished from that of *heterosoma* by the shape, particularly by the pointed posterior prolongation of the last abdominal segment (Pl. XX, fig. 5).

**Measurements in millimetres:**

<table>
<thead>
<tr>
<th></th>
<th>Male.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length.</td>
</tr>
<tr>
<td>Head</td>
<td>0.39</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.50</td>
</tr>
<tr>
<td>Metathorax</td>
<td>0.57</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.51</td>
</tr>
<tr>
<td>Total</td>
<td>2.46</td>
</tr>
</tbody>
</table>

Holotype: male in the Meinertzhagen collection (British Museum (Nat. Hist.)), slide no. 15717, from *Phaenicopterus antiquorum* from Kutch, India; paratypes: 5 ♀♀ from the same host species from India, the Sudan and Somaliland.

The species is named in honour of Mr. Salim Ali, who collected some of the type material.

**Colpocephalum hirtum** Rudow, 1866, *sensu* Piaget. (1880, p. 530, pl. xliii, fig. 3.)

Type host: *Buceros ruficollis=Aceros plicatus ruficollis* (Viellot).

Piaget’s host: *Buceros cassidix=Aceros cassidix* (Temminck).

B.M.: 1 ♀ (headless), 2 nymphs *Chapinia*, slide no. 1285, from *B. cassidix*.

Apart from Piaget’s material no specimens of Amblycera have been seen from any species of *Aceros*. It can be presumed that *hirtum* belongs to *Chapinia*, but whether Piaget’s specimens are conspecific it is impossible to say.

**Table II.**

Breadth in mm. of head at temples of 141 male *heterosoma* with number of specimens and of 38 females (in brackets).

<table>
<thead>
<tr>
<th></th>
<th>0.43–0.44</th>
<th>0.45–0.46</th>
<th>0.47–0.48</th>
<th>0.49–0.50</th>
<th>0.51–0.52</th>
<th>0.53–0.54</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>28. (3)</td>
<td>55. (14)</td>
<td>10. (16)</td>
<td>3. (3)</td>
<td>8.</td>
</tr>
<tr>
<td>0.55–0.56</td>
<td>0.57–0.58</td>
<td>0.59–0.60</td>
<td>0.61–0.62</td>
<td>0.63–0.64</td>
<td>0.65–0.66</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
EXPLANATION OF THE PLATE.

Plate XX.

Fig. 1. Colpocephalum heterosoma ♂ (lectotype).
Fig. 2. C. heterosoma ♂ (large specimen).
Fig. 3. C. salimalii ♂.
Fig. 4. C. heterosoma ♀.
Fig. 5. C. salimalii ♀.
Colpocephalum (sensu Piaget).—A—G.

Colpocephalum abdominale Piaget.
(1880, p. 543, pl. xlv, fig. 4.)

Type host: Grus leucachen=Grus vipio Pallas.
B.M.†: 2 ♂, 3 ♀, 3 nymphs Heleonomus, slides nos. 1034–7, from type host, Japan.
Leiden: 1 ♂, 1 ♀ Heleonomus, slide no. 260*, from type host, Japan.
Present status: Heleonomus abdominalis (Piaget).
Lectotype: ♂ in the B.M., slide no. 1036.

† British Museum (Natural History) Collection.
* Specimens not remounted, see Part I, p. 812, 1949.
Miss Theresa Clay on the

**Colpocephalum aculeatum** Piaget.

(1885, p. 121, pl. xiii, fig. 4.)

Type host: *Columba iriditorques* Cassin. Error.

**B.M.** : 1 ♀ *Psittacomenopon*, slide no. 1121, from type host.

The single, rather damaged specimen, seems to belong to the genus *Psittacomenopon*, and is presumably a straggler from one of the Psittaciformes.

Present status: *Psittacomenopon aculeatum* (Piaget).

**Colpocephalum affinis** Nitzsch, 1874, *sensu* Piaget.

(1880, p. 561.)

Type host: *Totanus maculatus*—*Tringa erythropus* (Pallas).


**B.M.** : 1 ♀, 3 ♂♂ *Actornithophilus*, slides nos. 1123–4, from *T. latirostris*; 2 ♂♂ *Actornithophilus*, slide no. 1122, from *T. ochropus*.

Leiden: 1 ♀ *Actornithophilus*, slide no. 253 *, from *Totanus ochropus*.

It is unlikely that Piaget saw material from the type host, *Tringa maculata*, the name merely being quoted from Nitzsch's original description. No material has been seen from this host and it is not possible to say, therefore, whether Piaget's specimens are *Actornithophilus affinis* (Nitzsch) or not.

**Colpocephalum albidum** Giebel, 1874, *sensu* Piaget.

(1880, p. 533, pl. xlv, fig. 5.)

Type host: *Phaps chalcoptera* (Latham).


**B.M.** : 3 ♂♂, 1 nymph *Menopon*, slide no. 1125, from *Columba (sic) phasianella*.

Piaget's figure shows a male *Menopon* (incorrectly described as a female), and it seems probable that all his specimens belonged to the genus *Menopon*, stragglers from one of the Galliformes. The figure and description should be ignored and certainly not given a new name.

Giebel's description of *albidum* is quite unrecognizable, and as the type is lost the name will probably have to be discarded.
COLPOCEPHALUM ANGULATICEPS Piaget.
(1880, p. 569, pl. xlvii, fig. 8.)

Type host: *Fregata (Atagen) minor* = *Fregata minor* (Gmelin).

B.M.: 1 ♀ nymph, 3 ♀♀ Colpocephalum, slide no. 1128, from type host.

This species has been well figured by Ferris (1932, p. 55, fig. 8) from material from the type host. In the same paper (p. 54) it is stated that *Colpocephalum spineum* Kellogg is synonymous with *angulaticeps*. However, *spineum* was taken from *Fregata aquila* in Panama (= *Fregata magnificens rothschildi* Mathews) and unfortunately Ferris does not state whether he compared the type of *spineum* or specimens from its type host with his material from *F. minor*. A comparison of a small series of *Colpocephalum* from another species of *Fregata* with specimens from *F. minor* suggests that the specimens are at least sub-scientifically different on the two hosts.

Present status: *Colpocephalum angulaticeps* Piaget.
Lectotype: ♀ in the B.M., slide no. 1128.

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COLPOCEPHALUM ASSIMILE Piaget.
(1880, p. 544.)

Type host: *Grus americana*.

B.M.: 1 ♂, 3 ♀♀, 2 nymphs Heleonomus, slides nos. 1129–30, from *Grus mexicana*.

Piaget gave the host in his text as *Grus americana*, the specimens now in the collection are labelled *Grus mexicana*, but it seems probable that these are the type specimens. Peters (1934, p. 151) considers *G. mexicana* unidentifiable and replaces it by *G. canadensis tabida* (Peters); *Grus americana* has also been used for *G. canadensis*. Amidst this confusion it is not possible to say whether Piaget's specimens came from *Grus americana* Linn. or *G. canadensis* (Linn.). No material has been seen from *G. canadensis*. Piaget's male appears to differ from one taken from *Grus americana* in the details of the male genitalia; however, these are complicated structures and further material from the two hosts is needed to decide the true host of *assimile*.

Present status: *Heleonomus assimilis* (Piaget).
Lectotype: ♂ in the B.M., slide no. 1130.
Miss Theresa Clay on the

**Colpocephalum atrofasciatum** Piaget.
(1880, p. 542, pl. xliv, fig. 3.)

Type hosts: *Grus communis*—*Grus g. grus* (Linn.); *Grus pavonina*—*Balearica pavonina* (Linn.).

B.M. and Leiden: No specimens.

There are three slides with specimens of *Gruimenopon* from a host not mentioned in the text and five slides with specimens of *Gruimenopon* from *Grus pavonina* and *Balearica pavonina* labelled "*C. atrofasciatum* var." which are no doubt those referred to as a variety by Piaget on page 543. These specimens and the figure suggest that *atrofasciatum* is a *Gruimenopon*. In Part I of the present paper (1949, p. 836) it was shown that *Gruimenopon longum* (Giebel) was the earliest name for the *Gruimenopon* from *Grus grus* and a neotype and neallotype was designated; it was also shown that specimens from *Balearica pavonina* were not conspecific. Since there are no specimens labelled *atrofasciatum* from *Grus grus* and those from *Balearica pavonina* are labelled as a variety (it is perhaps doubtful whether Piaget had any other specimens from this latter host) it seems that the most satisfactory procedure is to fix *Grus grus* as the type host. Neotypes are, therefore, designated from the series taken from a specimen of *Grus grus* from which the neotypes of *Gruimenopon longum* were selected. The remaining 15 males and 29 females of the series are here designated as neoparatypes of *Gruimenopon longum* (Giebel).

Neotype female (since Piaget figured this sex) and neallotype male of *Gruimenopon atrofasciatum* (Piaget): ♀ and ♂ in the Meinertzhagen collection, slide no. 1164a, from *Grus grus*. These specimens agree with the neoallotype and neotype respectively of *Gruimenopon longum* (Giebel).

Present status: *Gruimenopon longum* (Giebel).

**Colpocephalum bicolor** Piaget.
(1880, p. 561, pl. xlvii, fig. 1.)

Type host: *Strepsilas interpres*—*Arenaria interpres* (Linn.).

B.M. and Leiden: No specimens.

There is little doubt that Piaget’s figure represents the *Actornithophilus* species normally found on the type host. *Colpocephalum obscurum* Carriker, 1910, from the same
host is almost certainly conspecific, as is also *C. ocularis* Carriker, 1910. *C. petulus* Kell. & Kuw. is also an *Actornithophilus* and should probably be considered as another synonym of *bicolor*.

Present status: *Actornithophilus bicolor* (Piaget).

**COLPOCEPHALUM BISERIATUM** Piaget.
(1880, p. 532.)

Type host: *Gracula javanensis = Gracula r. religiosa* Linn.

Leiden: 1 ♀, 2 nymphs *Menacanthus*, slide no. 250 *, from type host.

Lectotype: ♀ in the B.M., slide no. 1139.

**COLPOCEPHALUM CASTANEUM** Piaget.
(1885, p. 53, pl. xvi, fig. 7.)

Type host: *Cygnus atratus = Chenopis atrata* (Latham).

B.M.: 2 ♀, 4 ♂ *Ciconiphilus*, slides nos. 1110–1112, from type host.

Present status: *Ciconiphilus castaneus* (Piaget).
Lectotype: ♀ in the B.M., slide no. 1111.

**COLPOCEPHALUM CAUDATUM** Giebel, 1874, *sensu* Piaget.
(1880, p. 518, pl. xliii, fig. 3.)

Type host: *Vultur indicus = Gyps indicus* (Scopoli).
Piaget's hosts: *Vultur tenuirostris = Gyps indicus nudiceps* Baker, and type host.

B.M.: 1 ♂, 2 ♀ *Colpocephalum*, slide no. 1142, from *Vultur tenuirostris*.
Leiden: 1 ♂, 2 ♀ *Colpocephalum*, slide no. 241 *, from *Vultur tenuirostris*.

There are no specimens labelled *Vultur indicus* in the Piaget collections and it is probable that this name was quoted from Giebel's original description. Piaget calls figure 3 a male, but both 3 and 3a represent females. Giebel thought that his single specimen of *caudatum* might be a straggler because it resembled Denny's figure of *C. turbinatum* which was taken from a domestic pigeon. However, the condition of the abdomen described by Giebel and shown in Piaget's figure is found in specimens of *Colpocephalum* from the Falconiformes, and there is no
reason, therefore, why Giebel’s description should not apply to the Colpocephalum normally found on Gyps indicus. Piaget’s specimens agree with authenticated material from this host and can be assumed to be caudatum Giebel.

*Neocolpocephalum gypæ Qadri from Gyps i. indicus* (Scopoli) seems to be this species, and should almost certainly be considered as a synonym of *C. caudatum*.

Present status: *Colpocephalum caudatum* Giebel.

**Colpocephalum ciliatum** Piaget.

(1890, p. 256, pl. x, fig. 9.)

Type host: *Tetraogallus cuvieri* (Novæ Guineæ) = *Talegalla cuvieri* Lesson.

B.M.: 1♂, 1♀ *Kelerimenopon*, slide no. 1152, from *Talegalla “Novæ Guineæ”*.

Although the host genus given by Piaget in the text is different from that on the label, and although he seems to have substituted the locality for the specific name on the latter, there seems little doubt that the host meant by Piaget was *Talegalla cuvieri* Lesson. The other known species of this genus of Mallophaga and their hosts have been discussed under *Menopon griseum* Piaget (Clay, 1949, p. 830).

Present status: *Kelerimenopon ciliatum* (Piaget).

Lectotype: ♂ in the B.M., slide no. 1152.

**Colpocephalum grassiceps** Piaget.

(1885, p. 120, pl. xiii, fig. 3.)

Type host: *Psittacus [erithacus] timneh* Fraser.

B.M. and Leiden: No specimens.

Although Piaget refers to his specimen as a female there seems little doubt that the figure represents the male of *Menopon impar* which he described from the same host.

Present status: *Psittacomenopon impar* (Piaget).

**Colpocephalum grassipes** Piaget.

(1880, p. 566, pl. xlvii, fig. 6.)

Type host: *Sterna poliocera = Thalasseus bergii cristatus* (Stephens).

B.M.: 2 nymphs *Actornithophilus*, slide no. 1153, from type host.

Present status: *Actornithophilus grassipes* (Piaget).

Lectotype: nymph in B.M., slide no. 1153.
COLPOCEPHALUM DISSIMILE Piaget.

(1880, p. 520, pl. xliii, fig. 4.)

Type host: *Milvus [migrans] aegyptius* (Gmelin).

B.M.: 1 ♂, 1 ♀ *Colpocephalum*, slide no. 642, from type host.

These specimens appear to be conspecific with those from *Milvus m. migrans*, presumably *C. tricinctum* Nitzsch. The figure of the female of *C. abruptofasciatum* Mjöberg also from *Milvus migrans aegyptius* agrees with Piaget's female of *C. dissimile*; both these names must be considered synonyms of *C. tricinctum*.

Present status: *Colpocephalum tricinctum* Nitzsch.

Lectotype of *C. dissimile* Piaget: ♂ in the B.M., slide no. 642a.

COLPOCEPHALUM ELLIPTICUM Piaget.

(1880, p. 570, pl. xlviii, fig. 1.)

Type host: "*Xulla (Larus) mangola*"—*Corvus e. enca* (Horsfield).

B.M.: 1 ♀ *Colpocephalum*, slide no. 469 from "*Xulla Mangola*".

This species and its type host has been discussed elsewhere (Clay, 1940, p. 432).

Present status: *Colpocephalum ellipticum* Piaget.

COLPOCEPHALUM ELONGATUM Piaget.

(1880, p. 529, pl. xlv, fig. 2.)

Type host: *Pyrrhocorax alpinus*—*Pyrrhocorax g. graculus* (Linn.).

B.M.: 3 ♂, 3 ♀ *Colpocephalum*, slides nos. 1154–6, from type host.

Leiden: 1 ♂, 1 ♀ *Colpocephalum*, slide no. 249*, from type host.

These specimens agree with authenticated material from the type host.

Present status: *Colpocephalum elongatum* Piaget.

Lectotype: ♂ in the B.M., slide no. 1156.

COLPOCEPHALUM EURYGASTER Piaget.

(1888, p. 162, pl. iv, fig. 5.)

Type host: *Leptoptilus argala*. Error.

B.M.: 3 ♂, 1 ♀, 2 nymphs *Bucerophagus*, slides nos. 1157–8, from type host.
Piaget’s type material agrees with specimens of *Bucero-
phagus* from *Bucorvus abyssinicus* (Boddaert), and probably
originally came from that host. *Colpocephalum productum*
Burmeister, 1838, from the same host was figured from the type material (see Clay, 1947, p. 541) by Nitzsch
(Giebel, 1874, pl. xiv, figs. 2–3), and is certainly a *Bucero-
phagus* and almost certainly the same as Piaget’s specimens.
*B. africanus* Bedford from *Bucorvus leadbeateri* (Vigors) is
a distinct species, although *B. productus* also seems to
occur naturally on this latter host. *B. africanus* also
occurs on *Bucorvus abyssinicus* (fide G. H. E. Hopkins).

Present status: *Bucerocephagus productus* (Burmeister).

Lectotype of *Colpocephalum euryqaster* Piaget: ♂ in the
B.M., slide no. 1157 a.

**Colpocephalum femoratum** Piaget.

(1885, p. 124, pl. xiii, fig. 7.)

Type host: *Mycteria americana* Linn.

B.M.: 2 ♂♂, 4 ♀♀ *Ciconiphilus*, slides nos. 1160-1, from
type host.

Thirty-three specimens of *Ciconiphilus* from the type
host of *femoratum* are not conspecific with Piaget’s
specimens, which may therefore be stragglers from another
host; alternatively *Mycteria americana* may have two
species of *Ciconiphilus*. *Menopon maculipes* Giebel, 1874,
from the same host, is almost certainly a *Ciconiphilus*
and the name can be used for the species normally found
on the type host. *Colpocephalum scalariforme* Rudow
also from this host is without doubt a true *Colpocephalum*
and not conspecific with either of the above species.

Present status: *Ciconiphilus femoratus* (Piaget).

Lectotype: ♂ in the B.M., slide no. 1161.

**Colpocephalum flavescens** (de Haan),

1829, sensu Piaget.

(1880, p. 515, pl. xlii, fig. 10.)

Type host: “Aigle” = *Halietus albicilla* (Linn.).

Piaget’s hosts: type host, *Milvus regalis*, *Astur
apalumbarius*, *Falco peregrinus*, *Pernis apivorus*, *Aquila
naevia*, *Halietus leucogaster*, *Buteo vulgaris* and *Circus
cinererus* (modern equivalents of these names not given).

B.M.: 3 ♂♂, 3 ♀♀ *Colpocephalum*, slides nos. 1162–3,
from type host; 4 ♂♂, 4 ♀♀ *Colpocephalum*, slides nos.
1164–5, from *Halietus leucogaster* (Gmelin); 1 ♂, 2 ♀♀
*Colpocephalum*, slide no. 1166, from *Circus cinereus*
Vieillot,
Leiden: No specimens from the hosts listed by Piaget, 1880.

It is doubtful whether Piaget saw specimens from all the hosts he listed, and it is not possible to say from which specimens his figures were drawn. Hopkins (1949, p. 51) has shown that this name was first validly used by de Haan, the host being given as “un aigle”, and has erected neotypes from Halicetus albicilla, thus fixing this bird as the type host. Piaget’s specimens from this host have been compared with the neotype and neallotype and found to be conspecific.

Present status: *Colpocephalum flavescens* (de Haan).

**Colpocephalum fusipes** Piaget.

(1880, p. 567, pl. xlvii, fig. 7.)

Type host: *Larus dominicus* Lichtenstein.
B.M.: 1♀ *Actornithophilus*, slide no. 1170, from type host.

Present status: *Actornithophilus fusipes* (Piaget).

**Colpocephalum fusconigrum** Giebel, 1874 *sensu*, Piaget.

(1880, p. 555, pl. xlvi, fig. 4.)

Type host: *Ibis alba*—*Guara alba* (Linn.).
Piaget’s hosts: type host and *Ibis melanocephala—Threskiornis melanocephala* (Latham).
B.M.: 1♀ *Colpocephalum*, slide no. 1173; 2♂♂, 2♀♀, 1 nymph *Plegadiphilus*, slides nos. 1171–3, from *Ibis melanocephala* (slide 1172 labelled Java).

It is extremely doubtful whether Piaget saw specimens from the type host; he probably took this name from Giebel’s original description. Piaget’s figure was drawn from the *Plegadiphilus* specimens and is not conspecific with *fusconigrum* Giebel, which would seem to be a true *Colpocephalum*.

**Colpocephalum gracile** Piaget.

(1880, p. 555, pl. xlvi, fig. 5.)

Type host: *Platalea leucorodia* Linn. Error.
B.M.: 1♀ *Actornithophilus*, 1 nymph *Colpocephalum*, slide no. 1174, from type host.

Although there is now no female in the collection it is apparent from the figure that Piaget could not have made his description of this sex from the *Colpocephalum* nymph; this is unfortunate, as *Platalea leucorodia* is probably its
correct host. The name must, therefore, stand for the
Actornithophilus specimen without a true host.
Present status: Actornithophilus gracilis (Piaget).

**Colpocephalum grandiceps Piaget.**
(1880, p. 558, pl. xlvi, fig. 7.)

Type host: *Haematopus ostralegus* Linn.
B.M.: 1 ♂, 1 ♀ Actornithophilus, slide no. 1175, from
type host.

Piaget's specimens agree with authenticated material
from the type host. *Colpocephalum laticeps* Mjöberg,
1910, from the same host is almost certainly conspecific
with this species.

Present status: Actornithophilus grandiceps (Piaget).
Lectotype: ♂ in the B.M., slide no. 1175.

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(11), xiv, pp. 540–552.

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THE EARLY LITERATURE ON MALLOPHAGA (PART I)

THERESA CLAY AND G. H. E. HOPKINS

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THE EARLY LITERATURE ON MALLOPHAGA

BY

THERESA CLAY AND G. H. E. HOPKINS

PART I. 1758-62

Pp. 221-272; Pls. 1-2; 63 Text-figures

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THE EARLY LITERATURE ON MALLOPHAGA

By THERESA CLAY and G. H. E. HOPKINS

(With Plates 1–2)

SYNOPSIS

In this and subsequent papers it is intended to review the species of Mallophaga described between 1758 and 1818. As there is frequently confusion over the interpretation of these old names, neotypes will be erected and figured, thus fixing the identity of the species and their type hosts. The first part deals with the twenty-six species described by Linnaé (1758 and 1761) and the descriptive phrases of E. L. Geoffroy (1762) which previously have been accepted as valid binomial names.

PART I, 1758–1762

INTRODUCTION

Perhaps no group of insects has suffered so much at the hands of authors who were ignorant of, or careless about, the Rules of Nomenclature as have the Mallophaga.

Nitzsch is rightly considered the pioneer of our systematic knowledge of the group, because he was the first after Redi to make a special study of the insects parasitic on mammals and birds. Unfortunately Nitzsch paid no heed to the Rules of Nomenclature,1 and in his paper published in 1818 (the only one published by himself in which he gives specific names) he considered it necessary to rename, with only one or two exceptions, all the species mentioned by him which had already been named by previous authors, quite regardless of whether the names formerly given them were valid or not.

Until fairly recently nearly all authors had accepted this state of affairs, though a few pre-Nitzschian names were restored at different times. But in Harrison’s catalogue of the Mallophaga (1916) a real attempt to apply the principle of priority in the nomenclature of the Mallophaga was made, and the nomenclature and synonymy given by him have been very generally accepted since. Unfortunately Harrison accepted too readily the conclusions of earlier authors (especially Piaget) in questions of synonymy, regarded as valid a large number of names that have no validity under the international rules, and discarded other names for reasons that are inadequate under the same rules.

Opponents of the strict application of the principle of priority often argue that it is not scientific to use names attached to grossly inadequate descriptions, especially when the types are no longer in existence, in place of names given in connexion with good descriptions and of which the types are still preserved. This is a perfectly reasonable attitude, and it is one that supporters of the Rules of Nomenclature should do all they can to satisfy. A single example will at once show how valid the criticism is: three recent authors have utilized the name Pediculus corvi Linn. for

1 Rules of Nomenclature were formulated in Linnean times, but post-Linnean authors, especially in the early part of the nineteenth century, were usually too busy naming organisms to respect the work of their predecessors.
three different species of Philopterus, though all of them recognize that the three species of Philopterus concerned are distinct. Such confusion, due to individual interpretations of what is meant by a Linnean or other early name, can only (so we think) be avoided by the establishment of neotypes for species of which the original types are lost, as is the case with nearly all the species described prior to Nitzsch. We therefore think the time is ripe for a re-examination of all names applied to Mallophaga up to and including 1818, the re-examination being based on the original descriptions and only to a very secondary degree on the opinions of later authors, followed by the definite fixation of these names by the establishment of neotypes.

A few notes are necessary as to the hosts of our neotypes. Most of the earlier authors give no indication of the source of their material, but a species described in Fauna Suecia must be assumed to have come from Sweden, a species described in Fauna Boica from Bavaria, in Fauna Groenlandica from Greenland, and in Entomologia Carniolica from Carniola, a district formerly in Austria and now in Yugoslavia. But it is necessary to remember that in the case of Mallophaga the locality is of very minor importance and the all-important point is the species (and sometimes the subspecies) of the host. Furthermore, birds are not stationary objects and a White Stork, for instance, which is in Sweden to-day may be in tropical Africa a few weeks hence. Naturally the parasites of a White Stork shot in Europe will not differ in any way from the parasites of the same bird shot on migration in Africa. Even the so-called non-migratory species have their own local movements which pay no heed to the political divisions of the world. Where there is some indication of the locality from which a species of Mallophaga was described we have felt ourselves bound to select neotypes from a subspecies of the host which occurs in the country concerned, though not necessarily from a bird actually obtained in that country nor from the resident subspecies of the host.1 In the case of migratory birds and domestic birds and mammals we have felt ourselves to have a perfectly free hand in the matter of locality. A further difficulty, applying mainly in the case of Linnean names, is that in many instances Linne had not seen the insect concerned and his name derives its validity solely from a reference to one of Redi’s figures. The host-names in the original version of Redi’s work were in Italian, but Linne referred to a Latin version in which the host-names were sometimes mistranslated. In such cases we consider the host to be the species indicated in the original Italian version of Redi, not that suggested by the mistranslation into Latin and accepted by Linne. In other instances a species as originally described has more than one host, and we have adopted two principles in dealing with such instances: In the writings of Linne and some of the other early authors it commonly happens that after naming a species they give a secondary appellation such as ‘P. Falconis Tinnunculi’, ‘P. Sternae Hirundinis’, followed by ‘Habitat in Falconibus Tinnunculis, Milvis’, ‘Habitat in Sternis, Laris’. We regard the secondary appellation as a definite indication of the type-host and have considered ourselves bound by it. Furthermore, it very commonly happens that the name given by Linne covers a species which he had himself seen and described

1 Although even so early a writer as Redi, whose work was published in 1668, examined captive mammals in the Grand Duke’s menageries and foreign birds in the Boboli Gardens.
and a different species which is represented by a reference to a plate published by some other author. In such cases it seems to us to be obvious that in restricting the name we must apply it to the material actually seen by its author.\(^1\) We have quoted host-names both in the original form and under the modern equivalent, the modern form (only) with the author’s name added.

Our purpose being only to fix the old names beyond possibility of doubt, we have made little attempt to decide which of them are synonyms, and have treated all names of forms from different hosts as referring to distinct species. The forms of Philopterus from many small Passerines, for example, seem to us to be at most sub-specifically distinct, but will be treated here as full species.

In interpreting the old descriptions it must be borne in mind that the naturalists of the eighteenth and early nineteenth centuries must have worked with very imperfect forms of microscope, producing only low magnifications. We think that what some of them saw can probably be appreciated better by the use of a hand-lens than by employing a modern compound microscope.

Measurements of typical males and females have been given as an indication of the general size and proportions of the species. The length of the head was measured along the midline, total length from the middle of the anterior margin of the head to the most distal point of the abdomen; measurements of breadth were made at the widest point. An asterisk placed against the measurement of the length of the male genitalia means that this measurement was made from another specimen.

Publications in which the so-called names proposed are invalid (because, for instance, they are not names but descriptive phrases) are only discussed below in so far as they bear on the identity of species described under valid names, and we have not felt justified in wasting much time or space over names that were preoccupied when published and can never become valid, except when valid names have been given to the species at a later date. Similarly we have not felt it necessary to note the infinite repetitions that are to be found in so much of the early literature, except where the author has added something to our knowledge of the species.

We feel that our action (in a later instalment) in designating neotypes for such of Nitzsch’s 1818 names as are not nomina nuda, when specimens purporting to be type-material of some of them are in existence, calls for an explanation. Our action is essential for the very reason that the Halle collection contains material purporting to be the types, for it cannot be too strongly emphasized that, since none of Nitzsch’s 1818 names has any validity except that derived from the references he gives to previous descriptions, the types are not the specimens in his collection but the lost types of the earlier authors. In many cases Nitzsch’s names are absolute synonyms, and in such cases our designation of a neotype for the old name is of necessity a designation of a neotype for Nitzsch’s name also (e.g. the neotype of Pediculus dolichocephalus Scopoli is automatically the neotype of Liotheum (Physostomum) sulphureum Nitzsch). But in the cases of the few valid names a most serious difficulty

\(^1\) As far as Linné is concerned this usually presents no difficulty: he marks with a † species which he had not seen, and in cases where he had seen material from one of the hosts he mentions, but not from the others, it is usually possible to ascertain from which host his material came by reference to Fauna Suecica.
might arise, of which examples may be useful: Philopterus (Docophorus) ict rod es Nitzsch 1818 is a perfectly valid nomen novum for the species shown in De Geer's pl. 4, fig. 14 (1778), and the host must of necessity be Mergus serrator, but (judging from the list of hosts given by Giebel in 1874) Nitzsch had no material from this host. Similarly, Liotheum (Trinoton) conspurcatum Nitzsch 1818 is a new name for Pediculus anseris Sulzer 1776 nec Linné 1758, but Nitzsch gives as hosts both Anser cinereus and Cygnus olor; the species on these two hosts are almost certainly not the same, and if the Cygnus were to be selected as type-host of conspurcatum the name would be applied to the wrong species. Such selection would be quite invalid, but more confusion would result before it was corrected. We have to remember that the Halle collection has been (and may again be) in the hands of authors who do not entirely accept the Rules of Nomenclature and who might well make invalid type-selections. To avoid any possibility of such action we have designated neotypes for all the potentially valid names contained in Nitzsch's work of 1818, which will be the last work considered in the present series of papers.

It is our pleasant duty to thank Dr. Karl Jordan, F.R.S., President of the International Commission on Zoological Nomenclature, for much invaluable assistance in the interpretation of the Rules. We are also indebted to the Trustees of the British Museum for permission to publish Figs. 1, 7, 12, 13, 15, 19, 35, 43, 49, drawn by Mr. A. J. E. Terzi, and to Colonel Richard Meinertzhagen for permission to publish Figs. 34–36, 38–40, 45, 48, 50, 52, 54–59 by Mr. R. S. Pitcher, and Figs. 60–62 by Mr. A. Smith. We are also indebted to Captain W. H. Pollen for the photographs on Plate 1, fig. 2, and Plate 2, figs. 1–2; the other photographs were taken by the late Mr. J. G. Bradbury.

Linné, 1758 (Systema Naturae, Ed. x, 1: 611–614)

Pediculus porcelli (p. 611)

By Article 21 of the International Rules of Nomenclature 'the author of a scientific name is that person who first published the name in connection with an indication, a definition, or a description' (italics ours). In the present instance none of these is to be found and Pediculus porcelli Linn. 1758 is a nomen nudum and has no standing in nomenclature. The first author to describe a species under this name was Schrank in 1781, and it will be discussed under his work.

Pediculus cameli (p. 611)

Although this name belongs to a sucking- louse, and has never been used otherwise, we must mention it because of the erroneous reference 'Red. exp. t. 22' given by Linné. The species shown on Redi's plate 22 (1668) are both dealt with elsewhere by Linné and the reference should be to Redi's plate 20.1

1 This was written before we knew of the destruction of the greater part of the Halle collection. We have let it stand because of the importance of the principle involved, but have now made many more neotypes than we previously intended.

2 The numbering of the plates is the same in the Italian edition of Redi and in the Latin translation that Linné used.
Pediculus cervi (p. 611)

There is no description, but there are references to ‘Frisch. ins. 12. p. 15. t. 5’ and ‘Red. exp. t. 5.’ Frisch’s plate represents a Hippoboscid. The reference to Redi is an obvious lapsus calami, for his plate 5 is a bird-parasite which is named by Linne on a later page. Redi’s plate 23, however, represents two Pediculidi del Cervo, of which one is a sucking-louse and the other a Trichodectid, and there can be no doubt that it was to this plate that Linne intended to refer. P. cervi, as originally published by Linne, is a composite of a Hippoboscid, a Mallophagan, and an Anopluran.

Harrison (1916: 12 & 69) endeavoured to apply the name to the Trichodectid, quoting it as an earlier name for Trichodectes longicornis Nitzsch. But Linne (1761: 476) gives only the reference to Frisch, thus restricting the name to the Hippoboscid now known as Lipoptena cervi (Linn.). Much later, von Olfers (1816: 86) restricted the name cervi to the upper figure in Redi’s plate 23, i.e. to the sucking-louse, so that Harrison’s application of the name is twice invalidated.

Nitzsch’s action (1818: 296) in applying the name Trichodectes longicornis to the lower figure on Redi’s plate 23 is perfectly legitimate and his name must stand.

Pediculus ovis (p. 611)

The only apparent ‘indication’ is a reference to ‘Red. exp. t. 22 f. i?’, but this indication is qualified by a question-mark, which renders it nugatory. In passing it seems worth while pointing out that, as Redi’s figure is fairly good, the presence of the query suggests strongly that what Linne had before him was something different. The author of Pediculus ovis is Schrank (1781, q.v.).

Pediculus bovis (p. 611)

There is an exceedingly brief description: ‘P. Bovis Tauri, abdomine lineis transversis octo ferrugineis’, and a reference to No. 1155 in Fauna Suecica (1761). Even this brief description is sufficient to indicate beyond reasonable doubt that Linne was describing the species later known as Trichodectes scalaris Nitzsch, and the description in Fauna Suecica is a quite detailed one of the same species.

Linne later changed the name of the species to Pediculus tauri (1761: 476, No. 1946), but otherwise it remained without synonyms until Nitzsch (1818: 296) renamed it Trichodectes scalaris; the latter name has no ‘indication’ except a reference to P. bovis. Kéler (1936: 450) described and figured a female from Nitzsch’s series and (in the legend of fig. 34) called it ‘Bovicola scalaris Nitzsch (bovis Linne), typisches Weibchen’. This is not a designation of a type, and there is no such designation in the text of Kéler’s work. The male appears to be excessively rare and was almost certainly unknown to Linne, but Bedford (1920, pl. 6, fig. 3) figured the genitalia of a single male contained in his collection and the same specimen served for Werneck’s figures of this sex (Werneck, 1941: 196, fig. 1).

Neotype of Damalinia bovis (Linn.): a female, in the British Museum (Nat. Hist.) (slide No. 422), from domestic ox, Bos taurus Linn., Cyprus; this specimen was determined by F. L. Werneck and agrees with his excellent figures (1936, figs. 183–185). Neotypos The author of the name is Schrank (1781, q.v.).
in South Africa, and still in the Bedford collection. Neoparatypes: 6 males and 97 females from the same host from Great Britain, Eire, Cyprus, South Africa, U.S.A., and Brazil; these include two specimens, labelled Trichodectes scalaris, in the Denny collection.

Since T. scalaris Nitzsch 1818 owes its validity entirely to the reference to bovis, our neotypes of the latter are automatically also neotypes of Damalinia scalaris (Nitzsch).

Pediculus equi (p. 612)

A nomen nudum, which was copied into the works of almost all authors, still as a nomen nudum, until Denny (1842: 61, pl. 17, fig. 7) finally described a Trichodectes equi which he attributed to Linné. The confusion into which Harrison and Johnston (1912: 20, 21) and Harrison (1916: 70, 72) fell over these names necessitates our saying more about them than would otherwise have been required. In the former paper the authors state that equi Denny and equi Lin. are not the same, that T. pilosus Giebel and T. parumpilosus Piaget are Denny's species, and that T. pilosus Piaget nec Giebel is the species 'described' by Linné. The actual facts are that as Linné never described his species it is impossible to say what it may have been, that T. pilosus Piaget nec Giebel is a goat-parasite, and that pilosus Giebel and parumpilosus Piaget are synonyms of Damalinia equi (Denny).

Pediculus asini (p. 612)

Like cameli, this name belongs to the Anoplura and has never been applied to a Mallophagan. It is only mentioned because Linné gives the erroneous reference ‘Red. exp. t. 22. f. 1’. Redi's 'Pidocchio dell Asino' is depicted on his plate 21.

Pediculus tinnunculi (p. 612)

There is no description, but there are references to Fauna Suecica No. 1157 (1746), 'Red. exp. t. 13' (1668), and 'Frisch. ins. II. p. 24. t. 24'; the host-record is 'habitat in Falconibus Tinnunculis, Milvis'. The description in Fauna Suecica is fairly detailed and could not apply to any parasite of the Falconidae but a Laemobothrion, as is confirmed by the plates of Redi and Frisch, both of which represent species of this genus, though Frisch's species is not the same as Redi's. The only host-record in Fauna Suecica is 'Habitat in Falcone Tinnunculo s. Cenchride 67'.

The species was renamed Nirmus hasticeps by von Olfers, and this name was altered to hastipes by Burmeister (1838: 442); otherwise there appear to be no synonyms except that Kéler (1937: 322) quite wrongly applied the name Laemobothrion giganteum Nitzsch to the present species; giganteum is a different species and will be dealt with in the discussion of Nitzsch's paper of 1818.

This species is a typical Laemobothrion with characters as shown in Pl. I, fig. 1, and Figs. 1–5. It lacks the longitudinal line of hairs on the lateral margins of the sternal plates seen in related species, and has fewer hairs on the anterior margin of the prothorax (4–6 each side).

Fig. 3. *Laemobothrium tinnunculi* (Linn.), ♀, terminal segments of abdomen.
5. Terminal segments of abdomen, ventral.

**Measurements**

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*Neotype of Laemobothrion tinnunculi* (Linn.): A female in the British Museum (Nat. Hist.) (slide No. 405), from *Falco t. tinnunculus* Linn., from Cyprus. *Neallotype*: a male in the British Museum (Nat. Hist.) (slide No. 406) from the same host-form from Uganda. *Neoparatypes*: 9 males and 25 females from the same host-form, Great Britain, Cyprus, Palestine, Asia Minor, India, and East Africa.

*Neotype of Laemobothrion hasticeps* Burmeister: a female (Meinertzhagen collection, slide No. 6079) from *Falco t. tinnunculus* Linn. from Kenya, which agrees with the neotype of *L. tinnunculi* (Linn.). *Laemobothrion hasticeps* (von Olfers) will be dealt with under the work of the latter author.
Pediculus corvi (p. 612)

The species is not described, but there are references to No. 1158 in Fauna Suecica (1746) and to ‘Red. exp. t. 16. f. 2’ (1668). The host-record is ‘habitat in Corvis’. There has never been any doubt that the description in Fauna Suecica refers to a Philopterus, and this view is confirmed by Redi’s figure. But the question of the specific identity of Philopterus corvi (Linn.) is much more debatable and has given rise to much confusion. Harrison (1916: 92) incorrectly quotes the host as Corvus corone and places atratus ‘Nitzsch in Denny’ as a synonym; Thompson (1935: 214) accepts the erroneous host-record given by Harrison and places ocellatus (Scopoli) as a synonym, and Kéler (1937: 323, 324), noting correctly that Redi’s ‘Pollino del Corvo’ (Redi’s plate 16, left-hand or lower figure) represents the species found on the Rook, uses ‘Docophorus corvi (Redi) Linne’ to replace Philopterus atratus Nitzsch.

It is generally recognized that the species found on Corvus corax, Corvus corone (sspp. corone and cornix), and Corvus frugilegus are different; they have usually been referred to as Philopterus (or Docophorus) semisignatus, ocellatus, and atratus respectively, all the names being attributed to Nitzsch. Of these, the second was first used by Scopoli in 1763 and will be dealt with below; atratus (Nitzsch, 1818: 290) is a nom. nov. for the species depicted by Redi on his plate 16 and is the valid name for the species found on Corvus frugilegus unless it is a synonym of an earlier name, which we hope to show that it is not.

In our opinion none of the determinations of Pediculus corvi Linn. that we have quoted above can be sustained. Linne not only gives a reference to Fauna Suecica, where the only host is Corvus corax, but gives ‘P. Corvi Coracis’ as his secondary appellation for the species. The type-host is, therefore, Corvus corax, and Docophorus semisignatus Denny (1842: 41, 66, pl. 1, fig. 5) must sink as a synonym.

This species (Pl. I, fig. 2; Figs. 6-9) is distinguished from related species by having the clypeal signature sclerotized only at the anterior end.

Measurements

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Neotype male and nealotype female of Philopterus corvi (Linn.): a male and female in the Meinertzhagen collection (slide No. 16149) from Corvus corax corax Linn., from Sweden. Neoparatypes: 41 males and 45 females from the same host-form, Sweden, Russia, and Great Britain.

Lectotype of Philopterus semisignatus (Denny) here selected: a male in the Denny collection (slide No. 201) from Corvus c. corax Linn. from Britain. Paratypes: 1 male and 8 females with the same data.
Figs. 6–8. Philopterus corvi (Linn.): 6. ♀ head, dorsal. 7. ♂ genitalia. 8. Terminal segments of ♀ abdomen, ventral.
As this species was described from material supposedly collected from a bird and was quoted in the literature dealing with Mallophaga for very many years it must have a brief notice. Harrison (1916: 15) writes of it: 'Based on a brief description in the Fn. Suec. of what is very clearly a Psocid.' We entirely agree with this opinion.

A nomen novum for the species depicted by Redi on plate 5, and marked by Linné as not seen by him. This name has given us a great deal of trouble owing to confusion over the host. In 1668 Redi calls the parasite 'Pollino della Garza', but in the Latin editions of Redi (1671 and 1729) the louse is called Pulex picae. Now 'garza' is Egretta a. alba, whereas 'gazza' is the magpie, Pica. p. pica, and Linné gives the host of the species as Corvus Pica. Harrison (1916: 17) states that 'gazza' means jay, but this is incorrect. The further statement made by Harrison (l.c.) that 'Linné's species is undoubtedly that mentioned in the Fauna Suecica as coming from Pica lapponica' is also incorrect: not only does Linné mark picae as not seen by him (whereas he had seen the species on P. lapponica), but comparison of his references shows that the species from P. lapponica is Pediculus infausti, with which we have just dealt.

We have either to assume that the host given in 1668 was a lapsus calami for 'gazza' or that the host given in the Latin editions is a mistranslation; either assumption could be supported by parallel cases. We have searched many herons, including Egretta alba, without finding any Mallophaga remotely resembling Redi's figure, nor have any authors known to us figured any species at all like it from the Ardeidae. Séguy (1944: 134, fig. 192) has taken up a suggestion made by Denny (1842: 214) and uses the name for the common Myrsidea of the magpie. This species sufficiently resembles Redi's figure (which is one of his poorest) for us to feel bound to accept the identification. The species described by Denny (1842: 199, 213, pl. 18, fig. 6) as Colpocephalum eurysternum (nec Burmeister) is conspecific with Myrsidea picae.
(Linné), and is represented in the Denny collection by two females, but the species described by Piaget (1880: 433, pl. 34, fig. 2) as ‘Menopon picae D.’ (though Denny never described any species under this name) has nothing to do with Linné’s species, being a Menacanthus.  

Myrsidea picae (Linn.) (Figs. 10–12) is distinguished from related species by the ventral chaetotaxy of the abdomen and the form of the tergal plates. The male resembles the female (Fig. 10) in general form but tends to be smaller, does not have the anterior tergal plates modified, and differs in the ventral chaetotaxy of the posterior segments of the abdomen (Fig. 11).

**Measurements**

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Neotype female and neallotype male of Myrsidea picae (Linn.) in the British Museum (Nat. Hist.) (slide No. 408) from Pica p. pica (Linn.) from Liguria, Italy. Neoparatypes: 46 males and 83 females from the same host-form, from England, Estonia, Poland, Yugoslavia, and Macedonia.

**Pediculus cygni (p. 612)**

Linné had not seen this species and merely gives a reference to Redi’s plate 8, which is an unmistakable representation of an Ornithobius. Redi gives the host as ‘Cygno’ and Linné as Anas cygnus, but we have to take into consideration Cygnus olor (Gmelin), because this species was not recognized as distinct from cygnus in 1668 or 1758. We have examined material from both these hosts and find that the species of Ornithobius found on them are not the same; fortunately Redi’s figure of the end of the abdomen is rather good and it definitely agrees better with the species found on C. cygnus (Linn.) than with that on C. olor. Redi’s figure shows a female.

This species has comparatively little synonymy. No author added anything to our knowledge of it until Denny (1842: 60, 183, pl. 23, fig. 1) described and figured it as Ornithobius cygni, correctly attributing the name to Linné. Vollenhoven (1860, pl. 8, fig. 4) ‘emended’ the name to cygnorum and Rudow (1870: 139) described nymphs from Cygnus musicus (= C. cygnus) as Melopeuron punctatum. Denny’s material, which is not in his collection in the British Museum, was from ‘Cygnus ferus, olor, and bewickii’; as the first of these names is a synonym of C. cygnus (Linn.), his material must have been a mixture including Linné’s species. The species on C. olor (Gmelin) is Ornithobius bucephalus (Giebel).

Ornithobius cygni (Linn.) (Figs. 13–17) is distinguished from O. bucephalus (Giebel) by the absence of stout spines on the vulva and by the male genitalia.
Measurements

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<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
</tr>
<tr>
<td>Head</td>
<td>0.88</td>
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<td>0.82</td>
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<td>2.70</td>
<td>0.98</td>
<td>2.52</td>
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<tr>
<td>Total</td>
<td>4.35</td>
<td>0.65</td>
<td>4.05</td>
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</tbody>
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Neotype female and neallotype male of Ornithobius cygni (Linn.) in the Meinertz-hagen collection (slide No. 119) from Cygnus c. cygnus (Linn.), South Uist, Outer Hebrides, Scotland. Neoparatypes: 4 males and 11 females from the same host-form from Scotland and Eire.

Fig. 15. Ornithobius cygni (Linn.), ♀.
Figs. 16-17. *Ornithobius cygni* (Linn.), terminal segments of abdomen: 16. ♂. 17. ♀.
Neotype of *Ornithobius punctatus* (Rudow): a male (Meinertzhagen collection, slide No. 80) from *Cygnus c. cygnus* (Linn.) from South Uist, Outer Hebrides, Scotland, which agrees with the neotype of *O. cygni* (Linn.).

**Pediculus anseris** (p. 612)

There is no description, but a reference to Redi's plate 10. The host-record is 'habitat in *Anseribus*-feris & mansuetis'.

Redi's plate 10 shows two 'Pollini dell' *Oca Reale'* belonging to different genera; we must therefore seek a restriction of Linne's name. This is to be found in the work of J. C. Fabricius (1775: 807), where he adds to the references a brief description 'filiformis, pallidus: margine nigro punctato'. This agrees with the species shown in the right-hand figure of Redi's plate and not with the other; this figure depicts an *Anaticola*, which must be known as *Anaticola anseris* (Linne), 1758. Fortunately this restriction agrees with the modern use of the name. The species which Sulzer (1776, pl. 29, fig. 4) depicted as *Pediculus anseris* is not congeneric and will be discussed as *Trinoton conspurcatum* Nitzsch, 1818. As regards Redi's host-name, 'Oca Reale' appears to have no meaning, but 'Oca ferae' would mean wild goose; there are on the plate very evident signs of an attempt to alter the word *Reale* and it seems probable that it was an error. In the Latin edition the parasite is called 'Pulex anseris sylvestris', which tends to confirm this suggestion. We have assumed the wild goose to be *Anser anser* (Linn.).

**Pediculus anseris** Linne, as restricted by Fabricius, escaped synonyms (apart from the fact that von Olfers confused it with *crassicornis* Scopoli) until 1818, when Nitzsch proposed the name *Ph. (Lipeurus) jejunus* for it; he did not describe it, but cited references to Linne, Fabricius, and the right-hand figure of Redi's plate.

**Measurements**

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Neotype male and neallotype female (Figs. 18-21; Pl. II, fig. 1) of *Anaticola anseris* (Linn.) in the Meinertzhagen collection (slide No. 228) from *Anser anser* (Linn.) from South Uist, Outer Hebrides, Scotland. Neoparatypes: 6 males and 12 females with the same data and from Ireland.

The neotypes are also automatically neotypes of *Anaticola jejunus* (Nitzsch).

**Pediculus moschatae** (p. 612)

Without description and with the symbol used by Linne for species he had not seen, but with a reference to 'Red. exper. t. 9. f. 1'.

The central figure of Redi's plate, though unnumbered, is obviously the one to
THE EARLY LITERATURE ON MALLOPHAGA

which Linné refers; it is labelled 'Pollino del German Turco' and is an unmistakable representation of a species of *Acidoproctus*. Linné gives the host as *Anas moschata*, which is definitely erroneous because the name 'German Turco' belongs to *Netta rufina*. No *Acidoproctus* has been recorded from *Cairina moschata*, but the species on

![Figure 21. Anaticola anseris (Linn.), terminal segments of ♀ abdomen.](image)

*Netta rufina* is well known as *A. stenopyx* (Burmeister) or *A. stenopygus* ' (Nitzsch)'. Comparison of Redi's figure with those published by Giebel (1874, pl. 8, figs. 6 & 7) will show the high degree of accuracy to which Redi's artist sometimes attained.

This species (Figs. 22–25; Pl. I, figs. 3–4) is distinguished from related species of *Acidoproctus* by the shape of the head and terminal segments of the abdomen and by the characters of the vulva and male genitalia.

**Measurements**

<table>
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<td>Head</td>
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<td>mm.</td>
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<td>0.83</td>
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<td>Genitalia</td>
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Neotype female and neallotype male of *Acidoproctus moschatae* (Linn.) in the Meinertzhagen collection (slide No. 10994), from *Netta rufina* (Pallas) from Rajputana,
23. Terminal segments of abdomen.
India. Neoparatypes: 27 males and 27 females from the same host-species, India, Lake of Antioch, and Russia.

Neotype of Acidoproctus stenopyx (Burmeister): a male (Meinertzhagen collection, slide No. 8938) from Netta rufina (Pallas) from Rajputana, India, which agrees with the neotype of A. moschatae (Linn.). Since Lipeurus stenopygos Giebel (1861: 318) is a nomen novum for Nirmus stenopyx Burmeister, the neotype of Acidoproctus stenopyx (Burm.) is also automatically the neotype of A. stenopygos (Giebel).


Pediculus querquedulae (p. 612)

No description, and marked by Linné as not seen by him, but with a reference to 'Red. exper. t. 12'. Redi's plate represents a Trinoton from 'Arzavola o Farquetola' = Anas crecca Linn.

This species (Figs. 26-28; Pl. II, fig. 2) is similar to that figured by Ferris (1928: 226) as Trinoton anserinum (Fabricius), but differs in having fewer hairs in the brushes on the third femora and fourth sternites (Fig. 28) and on the genital region of the male (Fig. 26); the genital region of the female also shows minor differences (Fig. 27). The male genitalia are as represented by Ferris (1928, fig. 9 c) for a specimen from Cygnus bewickei Yarrell.


**Measurements**

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<td>Length</td>
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<tr>
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<tr>
<td>Genitalia</td>
<td>2.27*</td>
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*Neotype female and neallotype male of *Trinoton querquedulae* (Linn.): in Meinertz-hagen collection (slide No. 4007) from *Anas c. crecca* Linn., from England. Neopara-

**Fig. 26**

**Fig. 27**

*Figs. 26–27. Trinoton querquedulae* (Linn.), terminal segments of abdomen: 26. ♂. 27. ♀.*
types: 15 males and 12 females from the same host-form, England, Iceland, Kenya, Morocco, Nepal, and India (Rajputana).

**Pediculus sternae (p. 612)**

One of us (Clay, 1949:4) has already dealt with *Saemundssonia sternae* (Linn.) and has erected neotypes for it. The neotypes are from *Sterna h. hirundo* Linn.

![Image of Trinoton querqueulidae](image)

**Fig. 28. Trinoton querqueulidae** (Linn.), fourth and fifth sternites, ♀.

**Pediculus plataeae (p. 613)**

There is no description, but a reference to Redi’s plate 4. The host-record is ‘in Leucorodia’ and the secondary appellation *P. Plataeae Leucorodiae*. Linné had not seen the species.

The reference is erroneous, the only Spoonbill parasite figured by Redi being his ‘Pollino del Palettone’, on plate 7 (*Pulex albardeolae* in the Latin edition). We have been unable to find any later reference that adds anything to our knowledge of the species until Giebel (1866: 384) described it as *Lipeurus platalearum*. The hosts were given by him as *Platalea ajlaja* and *leucorodia*, but in 1874: 384 he dropped the former host-name. Harrison (1916: 17, 139) restored Linné’s name and gave *platalearum* as a synonym. The species must stand as *Ardeicola plataeae* (Linné), 1758.

Our specimens of this species are from *Platalea leucorodia* from Jidda, Arabia, sufficient material not being available from the European Spoonbill. Although Eastern breeding birds have been separated as *P. l. major* Temminck and Schlegel on size, there is apparently considerable overlap in measurements, and it is doubtful whether this subspecies is recognizable; moreover, Redi obtained some of his material from non-Italian birds kept in the Boboli Gardens, and his Spoonbill may well not have been of the European form. We have, therefore, felt ourselves justified in erecting neotypes from Arabian breeding birds.

ENTOM. I, 3.

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Measurements

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<th>Female</th>
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<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
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<tr>
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<td>Abdomen</td>
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<td>Genitalia</td>
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Neotype female (Pl. I, fig. 5 and Figs. 31–33) and neallotype male (Figs. 29–30, 32) of Ardeicola platalea (Linn.), a female and male in the British Museum (Nat. Hist.) (slide No. 348) from Platalea l. leucorodia Linn. from Jidda, Arabia. Neoparatypes: 24 males and 26 females from the same host-form, Jidda and India (Rajputana).

Neotype of Ardeicola platalearum (Giebel), a male (British Museum (Nat. Hist.), slide No. 420), from Platalea l. leucorodia Linn. from S. Spain, which agrees both with Giebel’s description and with the neallotype of A. platalea (Linn.).

Fig. 33. Ardeicola platalea (Linn.) ♀️ terminal segments of abdomen.

Pediculus ardeae (p. 613)

Not seen by Linné, based on Redi’s plate 6. The host-record is ‘in Ardeis’ and the secondary appellation P. Ardeae cinerea.

Redi’s plate 6 is a ‘Pollino dell’ Airone’, which is unquestionably the species now known as Ardeicola ardeae (Linné). It does not appear to have been found again until comparatively recent times, for the mentions in the literature are mere references until Stephens (1829: 332) quite unnecessarily renamed it Lipeurus obtusus and Burmeister (1838: 434) described it as Lipeurus leucopygus. Harrison’s references (p. 130) to ardeae-cinerea Fabricius, 1794, and to ardealis Scopoli, 1763, are incorrect, for Fabricius’ mention is a quotation of the reference for ardeae Linné and Scopoli’s name refers to a totally different species which will be discussed later. Clay (1936: 615) made ardeae Linn. the type species of Ardeicola.

Measurements

<table>
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<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
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<tr>
<td></td>
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Neotype male (Figs. 34-35) and neallotype female (Figs. 36-37) of *Ardeicola ardeae* (Linn.) in the British Museum (Nat. Hist.) (slide No. 423) from *Ardea c. cinerea* Linné, from Liguria, Italy. Neoparatypes: 46 males and 86 females from the same host-form, from Great Britain, Eire, Uganda, and South Africa.

These neotypes automatically become neotypes of *Ardeicola obtusus* (Stephens).

*Neotype of Ardeicola leucopygus* (Burmeister): a female (Meinertzhagen collection slide No. 211) from *Ardea c. cinerea* Linn. from South Uist, Outer Hebrides, Scotland, which agrees with the neallotype of *A. ardeae* (Linn.).

_Pediculus gruis* (p. 613)

No description, but a reference to No. 1162 in *Fauna Suecica* and to Redi’s plate 3. The host-record is ‘in Gruibus’ and the secondary appellation *P. Ardea Gruis*. In *Fauna Suecica* there is a reference to ‘Frisch. germ. 5. p. 15. t. 4’ and the host-record
is 'in Grue proprie dicta 131'. Linné had not seen any material. Redi’s plate is an absolutely unmistakable representation of the species which Harrison made the type species of his genus Esthiopterum, but that of Frisch shows a Philopterus (s.l.). Fabricius (1781: 481) gives a brief description of gruis which appears to have been drawn up from Redi’s figure and which could be taken as a restriction of the name, as also must the fact that Linné dropped the reference to Frisch in 1758. Nitzsch (1818: 293) published the name Ph. (Lipeurus) ebraeus, but as this was also based on Redi’s plate it is necessarily a synonym of gruis and our neotypes are those of both names. Giebel (1874: 226, pl. 16, figs. 5, 6) ‘emended’ the name ebraeus to hebraeus.

**Measurements**

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<td></td>
<td><strong>Length</strong></td>
<td><strong>Breadth</strong></td>
</tr>
<tr>
<td>Head</td>
<td>1:06</td>
<td>0:87</td>
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<tr>
<td>Abdomen</td>
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<td>1:04</td>
</tr>
<tr>
<td>Total</td>
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<td></td>
</tr>
<tr>
<td>Genitalia</td>
<td>2:02a</td>
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</tbody>
</table>
Neotype male and neallotype female (Figs. 38-41) of *Esthiopterum gruis* (Linn.) in the British Museum (Nat. Hist.) (slide No. 407) from *Megalornis g. grus* (Linn.) from Genoa, Italy. Neoparatypes: 50 males and 57 females from the same host-form, from Germany, Finland, and Algeria.


It is perhaps not irrelevant to insert here a note as to the genus *Esthiopterum*. Harrison erected this genus (1916: 26) for species of *Lipeurus* which do not possess a circumfasciate head, *Esthiopterum* (*Lipeurus*) *ebraeum* Burmeister being designated type species. Later (1937: 25) he considered that the fact that he had included *Pseudonirmus charcoi* (Neumann), the type species of *Pseudonirmus* Mjöberg, in *Esthiopterum* made this genus a synonym of *Pseudonirmus* and he changed the name to *Esthiopterella* with *E. gruis* Linn. as type species. This view is quite incorrect and the name *Esthiopterella* is unnecessary and must be abandoned in favour of *Esthiopterum*. 
Although there is no description, Linné had seen specimens; the reference is ‘Frisch. Ins. 8. p. q. t. 6’, the host-record ‘in Ciconii’, and the secondary appellation P. Ardeae Ciconiae. Frisch’s plate shows figures of a male and female Ardeicola.

Fabricius (1775: 808) described what is undoubtedly Linné’s species as ‘elongatus filiformis, abdomine albo: lateribus nigro punctatis’. Nitzsch (1818: 292) renamed the species Phil. (Lipeurus) versicolor, and it was generally known under this name until Harrison restored Linné’s name and transferred the species to Esthiopterus.

This species (Figs. 42-44; Pl. II, figs. 3-4) shows the characteristics of typical Ardeicola and is distinguished from related species by the shape of the head, terminal
segments of the abdomen in both sexes, and the male genitalia. In the male tergal plates II–IV are divided medially, in the female tergal plates II–VIII are divided.

![Image](image-url)

**Fig. 44. Ardeicola ciconiae (Linn.) terminal segments of ♀ abdomen.**

**Measurements**

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</thead>
<tbody>
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<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
</tr>
<tr>
<td>Head</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
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<td>...</td>
<td>4.81</td>
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Neotype male and neallotype female of *Ardeicola ciconiae* (Linn.) in the Meinertzhagen collection (slide No. 7857), from *Ciconia c. ciconia* (Linn.) from Sudan. Neoparatypes: 59 males and 45 females from the same host-form from Europe (captive bird), Sudan, Kenya, Uganda, and South Africa.

These neotypes are necessarily also neotypes of *Ardeicola versicolor* (Nitzsch).

**Pediculus charadrii** (p. 613)

No description, and marked by Linne as not seen by him, but with a reference to Redi’s plate 9. The host-record is ‘in Pluvialibus’ and the secondary appellation *P. Charadrii Pluvialis.*
Redi's plate 9 does not contain plover-parasites, but plate 11 shows two 'Pollini del Piviere' (in the Latin edition 'Pulices avis Pluvialis') and is obviously the reference intended by Linné; the upper or left-hand figure is an Actornithophilus and the other a Quadraceps.

Müller (1775: 1035) gives a very brief description of 'Die Grillvogellaus. P. charadrii' which runs 'Sie hat ein eckiges Bruststück und ist an den Seiten gerändelt'. If this is an original description it seems to us completely meaningless; if we assume that it is a description of Redi's drawings rather than of actual specimens, then the angular 'Bruststück' (? prothorax) seems to refer to the Actornithophilus but the margined sides seem more like the Quadraceps. We cannot regard anything so completely vague as a restriction.

Nitzsch (1818: 298) renamed the upper figure of Redi's plate as Liotheum (Colpoecephalum) ochraceum; Harrison (1916: 12) rejects charadrii on the inadequate grounds that 'neither figure is specifically referred to'. In order not to disturb Nitzsch's name L. ochraceum, we restrict charadrii Linné to the lower or right-hand figure on Redi's plate; ochraceum will be dealt with under Nitzsch, 1818.
‘Piviere’ is the Italian vernacular name for *Charadrius apricarius* Linn., and *C. pluvialis* (the host mentioned by Linné) is a synonym. Two subspecies of *apricarius* occur as migrants to Italy, where Redi probably obtained his material, and we have chosen one of these as type-host of the louse.

**Measurements**

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<td>Genitalia</td>
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</table>

Neotype male (Figs. 45–46) and neallotype female (Fig. 47, Pl. II, fig. 5) of *Quadraceps charadrii* (Linn.) in the Meinertzhagen collection (slide No. 11559) from *Charadrius apricarius oreophilus* A. C. Meinertzhagen from Scotland. Neoparatypes: 22 males and 10 females from the same host-form, Scotland and Ireland.

*Pediculus fulicae* (p. 613)

No description, and marked by Linné as not seen. The host-record is ‘in Fulicis’ and the secondary appellation *P. Fulicae atrae*. The reference is to Redi’s plate 4, which depicts three ‘Pollini della Polaga’, a *Eulaemobothrion* (fig. I), a *Fulicoffula* (fig. II), and an *Incidifrons* (fig. III).
There is no formal restriction of *Pediculus fulicae* in the old literature. Müller (1775: 1035) states 'Sie führet am After viele gleichweitig stehende lange Härchen', which applies equally to all three genera; von Olfers (1816: 19) comes near to a restriction when he drops Redi’s fig. 2 and suggests that figs. 1 and 3 are male and female of one species, but he still includes the *Eulaemobothrion* and the *Incidifrons*. But Schrank (1803: 191) describes as *Pediculus fulicae* a species from 'Blässhuhn' (= *Fulica atra* Linne) which is quite definitely the *Incidifrons* even without his reference to fig. 3 of Redi’s plate, and the obvious course is to accept this as a restriction although he gives no reference to Linne. The matter has been dealt with at some length by one of us (Hopkins, 1940: 421, 422) and the name *fulicae* Linne formally restricted to the *Incidifrons*. The synonymy was also dealt with in the same paper.
### Measurements

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<td>Length</td>
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<tr>
<td>Head</td>
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<td>mm.</td>
</tr>
<tr>
<td>Abdomen</td>
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<td>2.03</td>
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<td>Genitalia</td>
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</table>

**Fig. 50. Incidifrons fulicae** (Linn.) female.

*Neotype* male (Figs. 48–49) and *neallotype* female (Figs. 50–51) of *Incidifrons fulicae* (Linn.) in the Meinertzhagen collection (slide no. 4941) from *Fulica a. atra* Linn. from England. *Neoparatypes*: 46 males and 53 females from the same host-form, from England, Scotland, India (Sind and Rajputana), Macedonia, Italy, and Morocco.

*Neotype* of *Incidifrons pertusus* (Burmeister): a male (Meinertzhagen collection slide No. 2934) from *Fulica a. atra* Linn. from England, which agrees with the neotype of *I. fulicae* (Linn.).
There are references to *Fauna Suecica* and to *It. oel. 90* and Linné had seen the species. The host-record is 'in Recurvirostris' and the secondary appellation *P. Recurvirostriae Avosettae*.


The reference to *It. oel. 90* (1745) is quite unhelpful; there is no mention of the Avocet on p. 90, but on p. 9 the bird is mentioned, with the remark 'om ganska många insekter'.

J. C. Fabricius (1775: 808) refers to Linné and gives a description which appears to be an abbreviation of Linné’s. Later authors have mentioned the species without being able to decide as to what it is, and Harrison (1916: 18) places it in *Degeeriella* but rejects it as unrecognizable.

Of the species known from *Recurvirostra avosetta*, those later described as *Nirmus pileus* Nitzsch and *N. signatus* Piaget could each be regarded as having an almost linear abdomen in the female sex, whereas none of the other species (nor the males of these two) could well be so described. *N. pileus* is the only one in which the female has a *corpus fuscum*, its head is more triangular than that of any of the other species, and it is the only one in which we would describe the head as acuminate. The *linea*
transversalis excavata in medio on the head is found in both pileus and signatus, though it is plainer in the latter. The eight incisions on the abdomen are present in both species and the antennae are not capitate in either but can appear so in both when the insect is examined with a hand-lens. The legs are more obviously short in pileus. The balance of probability is strongly in favour of Linne’s insect having been N. pileus Nitzsch (as figured by Piaget, 1880). The species is very aberrant and may require a new genus, but we refer it provisionally to Quadraceps.

**Measurements**

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*Neotype female (Figs. 52–53) and neallotype male (Figs. 54–55) of Quadraceps recurvirostrae (Linn.) in the Meinertzhagen collection (slide No. 1101) from Recurvirostra a. avosetta Linn. from Russia. Neoparatypes: 49 males and 27 females from the same host-species from Russia, Palestine, Turkey, Kenya, and South Africa.*

*Neotype of Quadraceps pileus (Nitzsch): a male (Meinertzhagen collection, slide No. 8024) from Recurvirostra a. avosetta Linn. from Palestine, which agrees with the neallotype of Q. recurvirostrae (Linn.).*

**Pediculus haematopi (p. 613)**

The species is not described, but there is a reference to Fauna Suecica and Linne had seen material. The host-record is ‘in Haematopis’ and the secondary appellation P. Haematopii Ostralegi.

In Fauna Suecica the host is given as Haematopus bellonii and the species is described as: ‘Magnitudo pulicis. Totus glaucus. Caput subrotundum, glaberrimum, convexoplanum. Abdomen ovatum incisuris decern, transversis, pallidis. Pedes breves. Antennae brevissimae. Thorax anguisissimus. Pili ad lateris posteriores abdominis.’

Subsequent authors add nothing to our knowledge of this species, but Gmelin (1788: 2919) altered the name to haematopodis and was followed in this by Fabricius (1805: 347); Stephens (1829: 332) renamed it Nirmus glaucus. Harrison (1916: 15) discards it on the grounds that the genus is not recognizable with certainty, but even if this were adequate we claim that his belief is incorrect; the description definitely indicates the Ischnocera and of the Ischnocera parasitic on the Oyster-catcher only the species mentioned by Giebel in 1866 (p. 361) as Docophorus Haematopi (a nomen nudum) and described by him in 1874 (p. 101) as Docophorus acanthus agrees at all with the description in Fauna Suecica. Linne’s specimen appears to have been a nymph or perhaps a teneral adult.

1 We considered the possibility that this character might mean that Linne’s material belonged to the Amblycera, but other points in the description are irreconcilably at variance with this suggestion.
Details of both sexes of *Docophorus acanthus* have been well figured by Kéler (1936: 263, figs. 2 b, 2 d) as the type species of *Hastaephorus* (= *Saemundssonia Timmermann*).

*Neotype* male and *neallotype* female of *Saemundssonia haematopi* (Linn.) a pair, agreeing with Kéler’s figures referred to above, in the Meinertzhagen collection (slide No. 10568) from *Haematopus o. ostralegus* Linn. from Ireland. *Neoparatypes*: 34 males and 43 females from the same host-form from Great Britain and Eire.

The neotypes are automatically neotypes of *Saemundssonia haematopodis* (Gmelin) and *Saemundssonia glaucus* (Stephens), also.

*Neotype* of *Saemundssonia acanthus* (Giebel), a male (Meinertzhagen collection, slide No. 2352) from *Haematopus o. ostralegus* Linn. from Scotland, which agrees with the neotype of *S. haematopi* (Linn.).
THE EARLY LITERATURE ON MALLOPHAGA

Pediculus pavonis (p. 613)

No description and marked by Linné as not seen, but with references to ‘Frisch. ins. 12. t. 3. f. 6’ and Redi’s plate 15. The secondary appellation is P. Pavonis cristati.

There has never been any serious dispute about this species; Frisch’s figure represents a female Goniodes and Redi’s shows a young nymph of the same species. Later authors add very little of value, but Gmelin (1788: 2919) adds an erroneous reference to Geoffroy (1762), whose species is a turkey-parasite. Nitzsch (1818: 293) proposed the name Phil. (Goniodes) falcicornis for Pediculus pavonis Linn. and Fabr., and added references to Panzer (1798) and Redi plate 14 (an adult male of the same species).

Neotypes of Goniodes pavonis (Linn.) have already been designated by one of us (Clay, 1940: 7). These specimens are also neotypes of Goniodes falcicornis (Nitzsch).

Pediculus meleagridis (p. 613)

There is no description, but there are references to Fauna Suecica and ‘Frisch. ins. 8. t. 4’ and a queried reference to Redi’s plate 22. The host-record is ‘in Gallo-pavonibus’ and the secondary appellation is P. Meleagridis Gallo-pavonis. Linné had seen specimens.
As the reference to Redi is queried we can leave it out of account; Frisch's figure certainly represents the common *Chelopistes* of the Turkey. In *Fauna Suecica*, 1746, there is a description and a reference (dropped in 1758) to Redi's plate 1; the description seems certainly to refer to the turkey *Chelopistes* and the left-hand figure on Redi's plate 1, though nominally a hawk-parasite, shows a strong resemblance to the same species.

Geoffroy (1762: 600) called the species *Pediculus galli-pavonis*, but (as will be shown below) this, in spite of appearances, is not a name, and his description is merely a translation of that in *Fauna Suecica*. Schrank (1781: 504, pl. 1, fig. 4) described and figured it under Linné's name; though he questioned whether his species was the same as that of Linné, there is no doubt that it was. In 1818 (p. 294) Nitzsch proposed Ph. (Goniodes) *stylifer* as a *nomen novum* for *P. meleagridis* Schrank, and it has many times been described under this name and the 'emendation' *styliferum* Taschenberg. Harrison (1916: 16, 77) restored Linné's name.

Neotypes of *Chelopistes meleagridis* (Linn.) have already been selected (Clay, 1941: 124). They are not neotypes of *C. stylifer* (Nitzsch) nor of *C. styliferum* (Taschenberg), because the former is a renaming of *Pediculus meleagridis* Schrank (not of *P. meleagridis* Linn., although these are the same) and the latter has an independent description.

*Pediculus gallinae* (p. 613)

There is a very brief description 'thorace capitique utrinque mucronato' and a reference to *Fauna Suecica*, where there is a more detailed description. The secondary appellation is *P. Phasiani Galli* and the host-record is 'in Gallinis domesticiis'. The species was redescribed and figured under Linné's name by Schrank (1776: 114, pl. 5, fig. 2) and by Panzer (1798: 21); Nitzsch (1818: 299) proposed the name *Lio. (Menopon) pallidum* for it, quoting Redi plate 17 and Panzer, but not Linné. There has never been any real doubt about the identity of the species.

*Menopon gallinae* (Linn.) has been very well figured by Ferris (1924: 57, fig. 1), but in the male genitalia the 'parameres' of Ferris should have bulbous ends and the structure 'X' is in fact a paired structure, as shown in Fig. 56, X.

Neotype male and neallotype female of *Menopon gallinae* (Linn.) in the Meinertz-hagen collection (slide No. 2490) from *Gallus domesticus* from Scotland; these specimens agree with Ferris's figures (referred to above) except for the details of the male genitalia mentioned. Neoparatypes: 24 males and 47 females from the same host from Great Britain, Roumania, Uganda, British Guiana, and Colombia. These neotypes are not also neotypes of *Menopon pallidum* (Nitzsch) because Nitzsch did not include Linné among his references.

Neotype of *Menopon pallidum* (Nitzsch) a male (Meinertzhagen collection, slide No. 4920) from *Gallus domesticus* from England, which agrees with the neotype of *M. gallinae* (Linn.).

*Pediculus caponis* (p. 614)

The host-record and secondary appellation are the same as for *gallinae*. There are references to 'Frisch. ins. ii. t. 24', to Redi's plate 16, fig. 1, and to *Fauna Suecica*. Frisch's figure is a *Laemobothrion* and the upper figure on Redi's plate 16 is *Menopon*.
gallinae (Linn.), but the description in Fauna Suecica is undoubtedly a Lipeurus and the name has long been accepted in this sense. The first author to note the discrepancy was Schrank (1803: 193); he notes that neither of the figures to which Linne referred are this species and gives a short new description which definitely refers to the Lipeurus and which should be accepted as a restriction of the previously composite

![Fig. 56. Menopon gallinae (Linn.): ♂ genitalia.](image)

P. caponis Linn. In any case we must go by what Linne had before him, as indicated by his description, and not by his errors. Fortunately application of the name caponis to the Lipeurus is in accordance with modern usage.

The species has been described and figured in detail by one of us (Clay, 1938: 112, figs. 1, 2 a, b, 3 a). Synonymy was discussed in the same paper, but we wish to add that Nirmus tessulatus Denny, described from a nymph supposedly obtained from a bittern, is a Lipeurus and should be assumed to be L. caponis (Linn.), as it probably actually is (see Clay, 1940: 431).

Neotype male and neallotype female of Lipeurus caponis (Linn.) in the Meinertzhagen collection (slide No. 4930), selected from the material utilized for Clay's redescription and figures (Clay, 1938), from Gallus domesticus, Great Britain. Neoparatypes: 19 males and 18 females from the same host-form and locality.

Neotype of Lipeurus variabilis Burmeister: a male (Meinertzhagen collection, slide No. 2488) from Gallus domesticus from Great Britain which was compared with the
type of *L. variabilis* by Dr. S. Kéler in 1936, and which agrees with the neotype of *L. caponis* (Linn.).

**Pediculus tetraonis** (p. 614)

There is no description and a reference to Redi is queried, so *tetraonis* is a *nomen nudum* so far as the publication under consideration is concerned, but Linné described the species in the 1761 edition of *Fauna Suecica* and it will be dealt with under that work.

**Pediculus lagopi** (p. 614)

Linné gives a reference to a description in *Fauna Suecica* and the secondary appellation is *P. Tetraonis Lagopi*.

Harrison (1916: 15) discarded the name as unrecognizable, but Waterston (1926: 89-91) showed conclusively that the mention of the fruits of *Capsella bursa-pastoris* and *Veronica* constitutes an unmistakable reference to the shape of a Goniodes and that Goniodes *lagopi* (Linn.) must replace the various other names that have been applied to the Goniodes of *Lagopus lagopus*.

*Neotype* of Goniodes *lagopi* (Linn.), selected by Clay (1940: 48), in the Meinertzhagen collection (slide No. 1576), from *Lagopus L. lagopus* (Linn.), from Estonia. The synonymy was dealt with in the same paper. The neotype of Goniodes *lagopi* (Linn.) is also automatically the neotype of *G. lagopodis* (Gmelin).

**Pediculus columbae** (p. 614)

Without description, and marked as not seen, but with a reference to ‘Red. exper. t. 2 f. r’. The host-record is ‘in Columbis’ and the secondary appellation is *P. Columbae Oenatis*.

Redi’s plate is not good but the figure to which Linné refers is quite obviously a Columbicola; it is labelled ‘Pollino del Piccion grosso’ (in the Latin edition ‘Pulex Columbae majoris’). As Linné had not seen specimens his mention of *Columba oenas* cannot be accepted as a designation of a type-host unless there is some confirmation, for the name owes all its validity to Redi’s plate. But we consider it more than probable that the mention of *C. oenas* is not only unwarranted but erroneous. On the same plate Redi shows a ‘Pollino della Tortora’ (a mite), and this suggests very strongly that ‘Piccion grosso’ is merely used in contrast to the Turtle-dove and applies to the domestic pigeon. The latter is by far the most likely host of Redi’s specimens, and it was from this host that all other authors redescribed the species for many years after. Eichler (1941: 276) designated *C. livia domestica* as type-host of the species; although this action has no validity (since Eichler did not erect neotypes), it is an additional reason for making this species the host of the neotypes.

Geoffroy (1762: 509) redescribed the species, but his ‘name’ for it is a descriptive phrase and not binominal; Fabricius (1775: 809) redescribed it under Linné’s name. Schrank (1776: 114, pl. 5, fig. 3) had been unable to consult Redi’s work and therefore doubted if his species was the same as that of Linné, whose name he applied to it, but his figure shows a nymph of the same species. Nitzsch (1818: 293) proposed the name *Ph. (Lipeurus) baculus* for the species shown on Redi’s plate and ‘*Ped. columbae*
Panzer'; his host-record is 'Columbarum plur.', for which must be substituted *C. livia domestica*.

**Measurements**

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<tr>
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*Neotype* male (Figs. 57–58) and *neallotype* female (Fig. 59) of *Columbicola columbae* (Linn.) in the British Museum (Nat. Hist.) (slide No. 409–410) from *Columba livia domestica* from Florence, Italy. *Neoparatypes*: 42 males and 54 females from the
same host-form from Italy and London and from *Columba l. livia* Linn. from the Orkney Isles.

Because of the reference to Panzer, the neotypes of *Columbicola columbae* are not also automatically neotypes of *C. baculus* (Nitzsch), but we select the male as lectotype of the latter name.

**Pediculus pari** (p. 614)

There is a very brief description: 'cauda quadriseta; and a reference to 'Frisch. ins. 8. p. 9. t. i. f. 5.' This is not a member of the Mallophaga. It is perhaps a mite.

**Linné, 1761 (Fauna Suecica: 476–479)**

Besides the names dealt with below, this work also contains three other appellations which must be mentioned: under *Pediculus meleagridis* the reference to Redi, t. 1, f. 2, is followed by the words 'Pediculus accipitrís', under *Pediculus caponis* the reference to Redi, t. 16, is followed by 'Pulex capi', and that to Frisch 11: 24 by 'Pediculus galli'. In the case of Redi’s plates it is clear that Linné copied the captions of the plates in the Latin edition except for the change of Pulex accipitrís to *Pediculus Accipitris*; in fact, throughout this 1761 edition of Fauna Suecica all references to Redi’s plates are followed by the caption appearing in the Latin edition of Redi, but in nearly all cases Linné retained the genitive of the host-name (e.g. ‘tinnunculi’, ‘caponis’) as the specific portion of the insect’s name. The case of the mention of ‘galli’ under Frisch is less clear; the reference is to Frisch’s ‘Hüner-Geyer-Laus’, which is presumably the Hühnergeier-Laus, or louse of *Circus aeruginosus*, and Frisch’s figure supports this presumption, for (in spite of a discrepancy in size) it apparently represents a *Laemobothrion*. One must suppose that Linné, intending to give a Latin translation of the German name used by Frisch, translated only part of it, i.e. ‘Hüner-Laus’ = *Pediculus galli*—possibly Linné thought that ‘Hüner-Geyer’ represented two bird-species, whereas it is in fact the name of one species.

Taking into account Linné’s system of nomenclature, there seems no doubt that *Pediculus accipitrís*, *P. capi*, and *P. galli* are merely Latin translations of the original Italian and German names and must, therefore, be considered as vernacular names.

**Pediculus tauri** (p. 476)

The brief description given in 1758 (p. 611) for *Pediculus bovis* is repeated, together with the reference to No. 1155 in the 1746 edition of Fauna Suecica and the five-line description given in the latter work. *Pediculus tauri* is, therefore, an unnecessary nomen nudum for *Pediculus bovis* (Linn.).

The neotypes of *Damalinia bovis* (Linn.) are automatically also neotypes of *Damalinia tauri* (Linn.).

**Pediculus tetraonis** (p. 478)

This species, included in 1758 as a nomen nudum, has here a description that unquestionably refers to a Goniodes. Goniodes tetraonis Denny (partim) and *G. heterocerus* Nitzsch are synonyms of *G. tetraonis* (Linn.).

1 As Harrison did in such cases as *Ardea ciconia*, *Motacilla troglodytes*, *Hirundo apus*, and *Coracias oriolus*. 
Neotype of Goniodes tetraonis (Linn.), erected by Clay (1940: 42), in Meinertzhagen collection (slide No. 1572) from Lyurus t. tetrix (Linn.) from Estonia.

**Pediculus hirundinis** (p. 479)

The insect is described as ‘*pallescens, abdomen obovato albo nigro contaminato lateribus setis posticis majoribus. Habitat in Hirundine apode.*’

Only two genera are known from the Apodidae, for *Menopon parvulum* Piaget is a *Menacanthus* and the host-record almost certainly erroneous. Not only does Linne’s description fit *Dennyus* much better than *Eureum* (which has an almost circular abdomen), but *Eureum* appears to be extremely rare¹ and is most unlikely to have been the species observed by Linne.

We have, therefore, no hesitation in deciding that *Pediculus hirundinis* Linne must have been a *Dennyus*.

The subsequent history of the name is peculiar. J. C. Fabricius (1775: 810) copied from *Fauna Suecica* the name, host-record, and part of the description, slightly re-worded (‘*pallescens, abdomen albo, nigro maculato*, ‘*Abdominis latera setosa*’), and Schrank (1803: 810) got very completely muddled over the name. He first described (p. 193) as *Pediculus hirundinis* a species that he claimed to be the one described in *Fauna Suecica* and then (p. 194) described a *Pediculus prognes* that he asserted to be *Pediculus hirundinis* Fabricius nec Linne; his host-record for both names is *Hirundo urbica*. *Pediculus hirundinis* Schrank and *P. prognes* Schrank will be dealt with under that author’s work, and we need only note here that *Pediculus hirundinis* Fabricius does not exist (being *P. hirundinis* Linne), that the host mentioned by both Linne and Fabricius is *Hirundo apus*, now known as *Apus apus* (Linn.), and not any member of the Hirundinidae, and that neither of Schrank’s species is *Dennyus hirundinis* (Linn.).

The species was redescribed by von Olfers in 1816 as *Nirmus truncatus*, which will be dealt with under his work. Denny (1842: 202, 231, pl. 22, fig. 5) redescribed it as *Nitzschia burmeisteri* and Nitzsch (in Giebel, 1866: 391) as *Menopon pulicare*. But Denny (1842: 231) and Giebel (1861: 304) had mentioned *M. pulicare*, without description, as a synonym or alternative name for *Nitzschia burmeisteri* Denny; its status is, therefore, that of an unwanted *nomen novum* for *N. burmeisteri* and Denny’s types are necessarily also types of *Dennyus pulicare* (Denny). Piaget (1880: 574, pl. 48, fig. 6) redescribed the species as *Nitzschia pulicaris* N.; the specimens (4 males and 2 females, slides no. 1279–1282) in the British Museum (Piaget Collection) on which he based his description and figures agree with the neotypes of *hirundinis* (Linn.). Piaget also described a *Nitzschia tibialis* (loc. cit.: 576) from *Cypselus murarius* (*Apus a. apus*). There are no specimens in the collection labelled with this name or from the type host, but there seems little doubt that it is the same species and the name, therefore, should be considered as a synonym of *hirundinis* (Linn.).

¹ Denny and Nitzsch had only two specimens each, Piaget and Ewing one each. On the 152 specimens of Apodidae that have been examined by the present writers only five specimens of *Eureum* have been found.
Measurements

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Figs. 60–61. *Dennyus hirundinis* (Linn.): 60. Male. 61. ♀ genitalia.

Neotype male (Figs. 60–61) and neallotype female (Figs. 62–63) of *Dennyus hirundinis* (Linn.) from *Apus apus apus* (Linn.) from Suffolk, England (Meinertzhagen collection, slide No. 3982). Neoparatypes: 34 males and 33 females from the same host-form, England, Scotland, Eire, France, Estonia, Asia Minor, and Kenya.

Lectotype of *Dennyus burmeisteri* (Denny): male in the British Museum (Denny collection) (slide No. 708) from *Cypselus apus [= *Apus a. apus* (Linn.)], Britain. Paratypes: 1 male and 2 females from the same host-form and locality.
Geoffroy, 1762 (Histoire abrégée des Insectes: 598-605)

The 'names' contained in this work are not binominal, being descriptive phrases, and therefore not in accordance with Article 15 of the International Rules of Zoological Nomenclature. They are thus invalid. Dr. Jordan very kindly confirms our opinion with regard to this, and points out that Geoffroy, in his introduction, explains that in his opinion there are really no species separate from one another, that if we had all the material they would intergrade (an amazingly modern viewpoint!), and that for this reason he does not give names to species. Most of the phrases which have a greater appearance of being names have been published in valid form by later authors, and these will be dealt with in their proper place; some (such as 'Pediculus albo nigroque varius') are so obviously not names that no attempt has ever been made to employ them.

The portion of the work which deals with Mallophaga is divided into two parts, the
first part containing species known to Geoffroy which he describes rather carefully, and the second part containing a list of species unknown to him, most of which are arranged in couplets such as:

1. Pediculus accipitris abdomine oblongo.
2. Pediculus accipitris abdomine ovato.

All of these latter are accompanied by references, mostly to Redi’s plates, but fortunately they appear never to have been published in valid form. We do not propose to mention them further, but we think that as so many of the phrases in the first part of the work have been considered to be names and attributed to Geoffroy it may be useful to give brief notes on them.

Pediculus circi, fuscus oblongus . . . (p. 598, pl. 29, fig. 1)

Both the description and the figure are obviously of a Laemobothrion and have never been mistaken for any other genus. The host is given as ‘Busard des marais, circus Bellon.’

The ‘name’ was first published in valid form by Fourcroy (1785), and will be dealt with later.

Pediculus subflavescens; abdomine ovato . . . (p. 599)

An obvious Philopterus, stated to be from ‘moineau franc’ i.e. Passer domesticus (Linn.). Not shortened to valid form until after Fourcroy (1785: 518) had named the species Pediculus passeris, but in order to settle the confusion which has arisen over the name for the Philopterus of Passer domesticus we intend in a later part to erect neotypes of the Philopterus from this host for Pediculus fringillae Scopoli (1772: 125) which was described without a host.

Pediculus oblongus, filiformis albicans . . . (p. 599)

There is a reference to pl. 2, fig. 1, of the Latin version of Redi and the description agrees well with this figure, which is Columbicola columbae (Linn.). It is important to note that this phrase, not being a name, does not invalidate Pediculus oblongus Scopoli, 1763. We have not been able to find any later use of the ‘name’, but in any case it would be a synonym of Columbicola columbae (Linn.), which is based on the same figure of Redi’s plate, and would be preoccupied by P. oblongus Scopoli.

Pediculus albo nigroque varius . . . (p. 600)

So obviously not a name that no attempt has ever been made to use it.

Pediculus galli-pavonis (p. 600)

But for the general character of the work and Geoffroy’s introductory remarks, mentioned above, this would undoubtedly be taken for a valid name. Geoffroy’s description and his reference to ‘Linn. faun. suec. n. 1160. Pediculus meleagridis’ show perfectly clearly that his species (from ‘dindon’, i.e. Meleagris gallopavo domestica) was Chelopistes meleagridis (Linn.), and we cannot understand why Harrison (1916), having correctly taken this view on p. 15, quoted ‘Lipeurus gallipavonis Geoffroy’ as a valid species on p. 83 with polytrapezius as a synonym. The only effect of this is to
make *Lipeurus gallipavonis* Harrison 1916 a synonym of *Oxylipeurus p. polytrapezius* (Burmeister). Geoffroy's description is merely a translation of that of Linné.

The last two descriptive phrases form a couplet and can be dealt with together. They are 'Pediculus gallinae, abdomine margine nigro' and 'Pediculus gallinae, thorace capiteque utrinque mucronato' (p. 601). They are Nos. 1165 and 1166 of Fauna Suecica respectively, and have already been dealt with as *Lipeurus caponis* (Linn.) and *Menopon gallinae* (Linn.).

**LIST OF SPECIES**

The synonymy of the following names has been established:*  

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* Nomina nuda, phrases that are not names, and names that refer to species other than Mallophaga are omitted.
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REFERENCES

In general only those papers subsequent to Kéler’s bibliography (1938: 487-524) are given, or where the reference in that paper is incorrect.

Redi, F. 1668. Esperienze intorno alla generazione degli’ insetti, &c. Firenze. 4º.
PLATE 1

Fig. 1. *Laemobothrium tinunculi* (Linn.) ♂
Fig. 2. *Philopterus corvi* (Linn.) ♀
Fig. 3. *Acidoproctus moschatae* (Linn.) ♂
Fig. 4. *Acidoproctus moschatae* (Linn.) ♀
Fig. 5. *Ardeicola plataeae* (Linn.) ♀
PLATE 2

Fig. 1. *Anaticola anseris* (Linn.) ♀
Fig. 2. *Trinoton querquedulae* (Linn.) ♂
Fig. 3. *Ardeicola ciconiae* (Linn.) ♀
Fig. 4. *Ardeicola ciconiae* (Linn.) ♀
Fig. 5. *Quadraceps charadrii* (Linn.) ♀
Systematic Notes on the Piaget Collections of Mallophaga.—Part I. By Theresa Clay, British Museum (Natural History).

Thompson (1937, pp. 19–22) has described the history and original condition of the Piaget collection of Mallophaga now in the British Museum. This collection has now largely been remounted, that is, the specimens removed from the original slides, treated with caustic potash and remounted in Canada balsam. The specimens from each original slide—in some cases now on more than one slide—have been given a number for reference; this number is quoted in the list of specimens of each species given below.

Piaget collected almost entirely from skins in the Leiden Museum and from specimens from the Rotterdam Zoological Gardens; it is not surprising, therefore, that a number of his specimens were stragglers and his host records erroneous. Piaget also misidentified some of his specimens or purposely mounted two species from the same host on one slide with only one identification label, so that a series under one specific name often comprises more than one species. He also showed some carelessness in labelling: there are cases of both the name of the host and parasite being slightly altered, for example *Menopon rotundum* for *subrotundum*; again, where a species described by Piaget is apparently not represented in the collection, there may be specimens from the type host.

Published November 1949.
but under another specific name, which agree with Piaget’s figure and description of the missing species. It seems probable that Piaget originally identified and labelled such specimens as an already described species, later decided that they were new, described them, but forgot to alter the original labels. In such cases the erection of one of the specimens as lectotype of the species in question, although not labelled with the specific name, seems justified. It is probable when the whole collection has been remounted and examined that only a few of Piaget’s type-specimens will be found to be missing; for this reason neotypes should not be made for Piaget’s species which are presumed to be missing in Thompson’s published lists of the Piaget collection (1937–1939).

When Piaget left Leiden, a small number of duplicates remained in the Museum. These have been examined and a number of the specimens remounted, but at the request of Dr. Blöte of the Leiden Museum, to whom I am much indebted for assistance, as many as possible of the Leiden slides have been left in their original condition. Actually the Leiden slides have dried out to a much lesser extent than the British Museum slides, and more details can be seen. All Leiden material not remounted has been marked with an asterisk, and the specific identification of these specimens must be accepted conditionally.

The scope of this and following papers on the Piaget collection is limited. Every species described will be listed with its published host in its original form and the modern equivalent. In those few cases where there has been no change in the form of the host name, the author’s name only is added; where there is an addition of a subspecific name only, this is added in square brackets. In most cases Piaget gave no locality for his hosts, so that, in general, binomials must be used. In many cases when Piaget was redescribing a species of one of the older authors he would give the hosts mentioned in the original description, from which he had probably never seen specimens. This means that Piaget had not necessarily seen specimens from all the hosts he mentions for any given species. The number and details of the specimens of each species now in the British Museum (referred to as B.M.) and Leiden portions of the Piaget collection will
be listed. Specimens in the collection from hosts not referred to in Piaget's original description will be omitted, except where these are relevant to the interpretation of the species or its host. Where possible, Piaget's type-specimens will be compared with authenticated specimens from the type host in order to give an indication as to whether the former are likely to be stragglers. The fact that so many hosts have two distinct but related species means that differences between Piaget's specimens and those from the type host do not necessarily prove that the former are stragglers. Where there is no reference to any such comparison it means that no suitable material has been available.

The synonymy of each species is discussed in relation to—and only to—other species described from the same host; the present status of Piaget's name is then given. No attempt has been made to compare the Piaget species with related species. This must wait for detailed revisions of groups of species; comparisons of odd species entails much unproductive work and is likely to be inaccurate. Some of the species will later necessarily be found to be synonyms of each other and of species described by earlier authors. For this reason, except in a few cases, no new names will be given to those already pre-occupied, or to Piaget's redescription of species allegedly those of earlier authors, but quite obviously not. Not only may such pre-occupied names already have a published name available, but in the latter case, that is Piaget's alleged re-descriptions of old names, the specimens are sometimes straggler, the host of which will in many cases be difficult or impossible to identify; the re-naming of such stragglers is not only useless but definitely detrimental to the systematics of the group.

In addition to many new species Piaget also described and figured species which he ascribed to early authors. As stated elsewhere (Clay, 1949, p. 2), these species must be discussed as Piaget has for so long been taken as an authority on the Nitzsch and Giebel names, when, in fact, he was only interpreting the published descriptions, and often did so from stragglers and specimens from other than the type host. These species will be included with the type host of the original author and the hosts listed by Piaget; the specimens in the Piaget collection
will be listed and the synonymy of the name discussed. The present status of the name as Piaget used it, which is not necessarily that of the original author, will be given. In view of the almost complete destruction of the Halle collection, Piaget's figures and descriptions of species purporting to be those of Nitzsh, Giebel, Taschenberg, and Rudow will be taken as such where his descriptions were made from specimens from the type host and which do not seriously conflict with the original description of the species, and where there has been no subsequent re-description. It will serve no useful purpose to erect Piaget's specimens of these species, the types of which are lost, as neotypes, even though he is the first author to re-describe them. Not only are his figures and descriptions specifically unrecognizable, but there is always the possibility that his specimens may have been stragglers or his host identification incorrect.

Those species of other authors, specimens of which had not been seen by Piaget but the description of which he copied from the original publication, are not mentioned.

The genera of Amblycera used are those recognized by the present writer (Clay, 1947, pp. 457-477), with the addition of one which has been described since that date.

The purpose of this series of papers is to give an indication of the identity of the species described by Piaget in relation to other described species from each of his type hosts, and in so doing to fix their synonymy. It will also enable reviewers of groups of species to know which of the Piaget species must be considered, especially where these are stragglers and so might be omitted from such revisions.

I am greatly indebted to Dr. H. C. Blote of the Rijksmuseum van Natuurlijke Historie, Leiden, for all his kindness and assistance to me while in Leiden and for allowing me to remount and examine the Piaget material; also to Dr. Junge of the same Museum, who has allowed me to examine the birds from which Piaget obtained his specimens, and for the time he has spared in finding the correct identifications of many of Piaget's bird hosts. Finally, as always, I am deeply in the debt of Mr. G. H. E. Hopkins for the loan of material and much valuable assistance on the synonymy of many of the species mentioned,
Menopon (sensu Piaget).

Menopon abdominale Piaget.
(1880, p. 473, pl. xxxvi. fig. 9.)

Type host: Perdix cothurnix = Coturnix c. cothurnix (Linn.).
B.M.: 2 ♀ Menacanthus, slide no. 198, from type host.
Leiden: 2 ♀ Menacanthus, slide no. 285, from type host.

These specimens agree with authenticated material from the type host. No other Menacanthus has been described from Coturnix cothurnix; Menopon fulvomaculatum Denny from this host is an Amyrsidea.
Present status: Menacanthus abdominalis (Piaget).
Lectotype of Menopon abdominale Piaget: ♀ in the B.M., slide no. 198a.

Menopon abnorme Piaget.
(1880, p. 481, pl. xxxviii. fig. 8.)

Type host: Gallinula haematopus = Gallinula chloropus frontata Wallace.
B.M.: 1 ♂ Plegadiphilus, slide no. 814, from Gallophasis hamatus.

This specimen differs from the figure of abnorme in the shape of the head, pterothorax, abdomen and male genitalia; segment I is slightly smaller than II, not larger as stressed in the description. These points, and the fact that the host is different, show clearly that the specimen on slide no. 814 is not that from which Piaget took his figure and description of abnorme. No suggestion as to the correct generic position of abnorme can be made.

Menopon acuticeps Piaget.
(1880, p. 422, pl. xxxiii. fig. 7.)

Type host: Sittace ararauna = Ara ararauna (Linn.).
B.M.: 1 ♀ Psittacomenopon, slide no. 659, from type host.

Present status: Psittacomenopon acuticeps (Piaget).

Menopon acutovulvatum Piaget.
(1881, p. 5, pl. i. fig. 4.)

Type host: Buceros malabaricus = Anthraceros malabaricus (Gmelin).
Miss Theresa Clay on the

B.M.: 1 ♂, 6 ♀ Chapinia, slides nos. 774, 776-7, from type host.
These specimens are the same as authenticated specimens from the type host.
Present status: *Chapinia acutovulvata* (Piaget).
Lectotype of *Menopon acutovulvatum* Piaget: ♂ in the B.M., slide no. 777.

**Menopon affine** Piaget.
(1890, p. 248, pl. x. fig. 3.)

Type host: *Diomedea exulans* Linn.
B.M.: 2 ♀ Austromenopon, slide no. 658, from type host.
Present status: *Austromenopon affine* (Piaget).

**Menopon albescens** Piaget.
(1880, p. 491, pl. xli. fig. 4.)

Type host: *Sula australis = Morus serrator* (G. R. Gray).
B.M.: 4 ♂♂ Eidmaniella, slides nos. 663-4, from type host.
Present status: *Eidmaniella albescens* (Piaget).

**Menopon albicans** Piaget.
(1880, p. 463, pl. xxxviii. fig. 3.)

Type host: *Euplocomus horsfieldi = Gennaeus h. horsfieldii* (G. R. Gray).
B.M.: 1 ♂, 4 ♀ Menacanthus, slides nos. 221-2, from type host.
Present status: *Menacanthus albicans* (Piaget).
Lectotype of *Menopon albicans* Piaget: ♂ in the B.M., slide no. 221 a.

**Menopon albiceps** Piaget.
(1880, p. 437, pl. xxxiv. fig. 4.)

Type host: *Garrulus caledonicus = Coracina caledonicus* (Gmelin).
Piaget Collections of Mallophaga.

B.M.: 2 ♂️, 2 ♀️, 3 nymphs Myrsidea, slides nos. 399-400, from type host, Celebes.

These specimens comprise two species, a male and female of each. The females are distinguished by the characters of the abdomen, that on slide no. 400 showing greater dorsal modifications; segments I and II being fused and bearing numerous elongated dorso-lateral setae. The two males are distinct, but it is not possible to assign them to the females. As Piaget figured the female (slide no. 399) with the less strongly modified type of abdomen, this will be designated as lectotype of albiceps. On p. 680 (1880) Piaget unnecessarily renamed this species albipes (see below).

Present status: Myrsidea albiceps (Piaget).
Lectotype of Menopon albiceps Piaget: ♀ in the B.M., slide no. 399.

Menopon albofasciatum Piaget.
(1880, p. 680.)

A nomen novum given by Piaget to his species Menopon albiceps (see above) because he thought, mistakenly, that Giebel (1876, p. 250) had used the name for a species from Lobivenellus albiceps; actually, Giebel used the name albipes, not albiceps.

Present status: Myrsidea albiceps (Piaget).

Menopon albofasciatum Piaget.
(1880, p. 496, pl. x. fig. 6.)

Type host: Tadorna vulpanser (Anas tadorna) = Tadorna tadorna (Linn.).
B.M.: 1 ♂️ 2 ♀ Holomenopon, slide no. 528, from type host.

These specimens differ from authenticated specimens from the type host in details of the chaetotaxy. A larger amount of material will have to be examined before it is possible to decide whether there are two closely related species of Holomenopon on Tadorna tadorna or whether Piaget’s specimens are stragglers from another duck. Menopon tadornae (Gervais), 1847 (originally described as Philopterus, but as an obvious error) is a Holomenopon from the same host, and can be used for the species usually found on this host which is distinct from albofasciatum Piaget. Colpocephalum quadriseriatum Picaglia was also
described from the same host; no species which might have been called a *Colpocephalum* by Picaglia has been seen from any of the ducks, and it is possible that the original specimens were stragglers.

Present status: *Holomenopon albofasciatum* (Piaget).

Lectotype of *Menopon albofasciatum* Piaget: ♀ in the B.M., slide no. 528 a.

**Menopon anathorax** Nitzsch, 1866 (*sensu* Piaget).

(1880, p. 428, pl. xxxiv. fig. 8.)

Type host: *Corvus monedula* Linn.

Piaget's host: As type host.

B.M.: 1 ♀, 1 ♂ *Myrsidea*, slide no. 660, from type host.

Leiden: 1 ♂ *Myrsidea*, slide no. 269 *, from type host.

There is no doubt that the full description of *M. anathorax* (1874, p. 282) is that of a *Myrsidea*; and as Piaget's specimens are the same as authenticated ones from the type host, he was correct in assigning them to Nitzsch's species.

Present status: *Myrsidea anathorax* (Nitzsch).

**Menopon appendiculatum** Piaget.

(1880, p. 473, pl. xxxvi. fig. 8.)

Type host: *Perdix cinera*. Error.

B.M.: 1 ♂ *Psittacomemenopon*, slide no. 196, from type host; 1 ♂ *Psittacomemenopon*, slide no. 197, from *Psittacus erithacus* = *Psittacus e. erithacus* Linn.

Piaget labelled the type-specimen on slide no. 196 a male and refers to this sex in the description, but he correctly called the figure a female.

The type-specimen (slide no. 196) appears to be conspecific with the female from *Psittacus e. erithacus* and with an authenticated female from the same host. It seems probable, therefore, that this is the true host of *M. appendiculatum*. The earliest name for this species from *Psittacus e. erithacus* is *Psittacomemenopon heterocephalum* (Nitzsch).

Present status: *Psittacomemenopon heterocephalum* (Nitzsch).

**Menopon arctifasciatum** Piaget.

(1885, p. 112, pl. xii. fig. 4.)

Type host: *Rhynchotus rufescens* (Temminck).
B.M.: 2 ♂♂, 6 ♀♀ Menacanthus, slides nos. 573-5, from type host.
These specimens agree with authenticated material from the type host.
Present status: Menacanthus arctifasciatus (Piaget).
Lectotype of Menopon arctifasciatum Piaget: ♂ in the B.M., slide no. 574.

Menopon atrofulvum Piaget.
(1880, p. 483, pl. xxxix. fig. 2.)
Type host: Platalea leucorodia Linn. Error.
B.M.: 2 ♂♂, 3 ♀♀ Austromenopon, slides nos. 661-2, from type host.
These specimens are presumably stragglers from one of the Charadriiformes.
Present status: Austromenopon atrofulvum (Piaget).
Lectotype of Menopon atrofulvum Piaget: ♂ in the B.M., slide no. 662 a.

Menopon bifurcatum Piaget.
(1880, p. 423, pl. xxxv. fig. 10.)
Type host: Psittacus [e.] erithacus Linn.
B.M.: 1 ♀ Psittacomenopon, slide no. 684, from type host.
When Piaget made his description and figure he had no female; this single female is, therefore, not type material and must be ignored. It seems most doubtful that Piaget’s figure could represent the male of the species he described as M. impar var. scalaris (= Psittacomenopon heterocephalum) from the same host; the figure differs in the shape of the head and chaetotaxy of the abdomen. No decision, therefore, can be made about the identity of this species, but it can be presumed to be a Psittacomenopon.
Present status: Psittacomenopon bifurcatum (Piaget).

Menopon biseriatum Piaget.
(1880, p. 469, pl. xxxvii. fig. 2.)
Type host: Gallophasis (Euplocomus) cuvieri = Gennaeus lineatus lineatus (Vigors) × Gennaeus leucomelanus leucomelanus (Latham).
B.M.: 1 ♂, 3 ♀ nymph *Menacanthus*, slides nos. 395 and 397, from type host.

Leiden: 1 ♂, 1 ♀ *Menacanthus*, slide no. 281 *, from type host.

Piaget mentions that he also found this species on *Gallus domesticus*, *Phasianus colchicus*, *Pavo speciferus* (= *Pavo muticus* Linn.), and *Meleagris gallopavo*. There are examples from the first three hosts in the B.M. Piaget collection. The earliest name for the species is *Menacanthus stramineus* (Nitzsch). This large species of *Menacanthus* has only been recorded from domestic game-birds, and its true host is not known.

Present status: *Menacanthus stramineus* (Nitzsch).

Lectotype of *Menopon biseriatum* Piaget: ♂ in the B.M. collection, slide no. 397 a.

**Menopon brevicolle** Piaget.

(1885, p. 108, pl. xi. fig. 9.)

Type host: *Thinocorus rumicivorus* Eschscholtz.
B.M.: 1 ♂ *Meromenopon*, slide no. 687, from type host.
This specimen resembles *Meromenopon incisum* (Giebel) found on *Coracias g. coracias* Linn.; it seems probable, therefore, that it was a straggler on *Thinocorus* (Charadrii) from some member of the Coraciiformes.

Present status: *Meromenopon brevicolle* (Piaget).

**Menopon brevifimbriatum** Piaget.

(1880, p. 499, pl. xli. fig. 1.)

Type host: *Procellaria glacialis* = *Fulmarus glacialis* (Linn.).
B.M.: 2 ♂, 3 ♀ *Austromenopon*, slides nos. 704–5, from type host.
Leiden: 1 ♂, 1 ♀ *Austromenopon*, slide no. 298 *, from type host.

*Menopon numerosum* Kellogg, 1896, from "*Fulmarus glacialis* vars. glupischa and rodgersii" (= *Fulmarus glacialis rodgersii* Cassin) is probably identical with Piaget’s species.

Present status: *Austromenopon brevifimbriatum* (Piaget).

Lectotype of *Menopon brevifimbriatum* Piaget: ♂ in the B.M., slide no. 705 a.
**Menopon brevipalpae** Piaget.
(1880, p. 498, pl. xl. fig. 5.)

Type host: *Phalacrocorax* (Graculus) *carbo* = *Phalacrocorax carbo* (Linn.).

B.M.: 3 ♂♂, 2 ♀♀, 1 nymph *Eidmaniella*, slides nos. 186–7, from type host.

Leiden: 1 ♀, 1 nymph *Eidmaniella*, slide no. 301*, from type host.

These specimens agree with authenticated material from *Phalacrocorax c. carbo* (Linn.) from the British Isles. *Menopon sigmoidale* Picaglia, 1885, from *Graculus lucidus* (from the Red Sea) = *Phalacrocorax carbo lugubris* (Rüppell) is almost certainly an *Eidmaniella*, and will probably prove to be conspecific with *brevipalpae*.

Present status: *Eidmaniella brevipalpis* (Piaget).

Lectotype of *Menopon brevipalpae* Piaget: ♂ in the B.M., slide no. 186 a.

**Menopon brevipes** Piaget.
(1885, p. 110, pl. xii, fig. 1.)

Type host: *Crossoptilon mantschuricum* = *C. mantschuricum* Swinhoe.


Present status: *Menopon brevipes* Piaget.

Lectotype of *Menopon brevipes* Piaget: ♂ in the B.M., slide no. 201 a.

**Menopon brevithoracium** Piaget.
(1880, p. 495, pl. xli. fig. 2.)

Type hosts: *Cygnus musicae* = *Cygnus cygnus* (Linn.); *Cygnus nigricollis* = *Cygnus melanocoryphus* (Molina).

B.M.: 2 ♂♂, 2 ♀♀ *Holomenopon*, slides nos. 702–3, from *Cygnus nigricollis*.

These specimens agree with authenticated specimens of *Holomenopon* from *C. melanocoryphus*; no specimens have been seen from *Cygnus cygnus*. As the specimens from the first-mentioned host are missing, one of those from *C. melanocoryphus* will be designated as lectotype so that the type host of *brevithoracium* may be fixed as this host.

Present status: *Holomenopon brevithoracium* (Piaget).
Lectotype of *Menopon brevithoracium* Piaget: ♂ in the B.M., slide no. 703 a.

**Menopon breviventre** Piaget.  
(1880, p. 441, pl. xxxv. fig. 8.)  
Type host: *Pastor tricolor = Gracupica melanoptera* (Daudin).  
B.M.: 1 ♂ *Myrsidea*, slide no. 779, from type host.  
Present status: *Myrsidea breviventris* (Piaget).

**Menopon brunneum** Nitzsch, 1886 (sensu Piaget).  
(1880, p. 435, pl. xxxiv. fig. 5.)  
Type host: *Corvus caryocatactes = Nucifraga c. caryocatactes* (Linn.).  
Piaget's host: As type host.  
B.M.: 2 ♂♂, 3 ♀♀, 2 nymphs *Myrsidea*, slides nos. 952-4, from type host.  
Leiden: 1 ♂, 1 ♀ *Myrsidea*, slide no. 270 *, from type host.  
*Menopon brunneum* Nitzsch, as figured in Giebel (1874, pl. xiv. figs. 9-10.) is a *Myrsidea*. No authenticated material has been seen from the type host, but it can be presumed that Piaget's specimens and Nitzsch's figure represent the *Myrsidea* from this host.  
Present status: *Myrsidea brunnea* (Nitzsch).

**Menopon castanea** Piaget.  
(1885, p. 99.)  
*Menopon ovatum* var. *castanea* Piaget.  
Type host: *Corvus macrorhynchus = Corvus coronoides* Vigors and Horsfield.  
B.M. and Leiden: No specimens.  
This species was originally described as a variety of *Menopon ovatum* Piaget, which is a *Menacanthus*; in the absence of specimens and figure it must be assumed that the variety was also a *Menacanthus*.  
Present status: *Menacanthus castaneus* (Piaget).

**Menopon cinereum** Piaget.  
(1885, p. 111, pl. xii. fig. 3.)  
Type host: *Himantornis hsematopus* Hartlaub.  
B.M.: 1 ♂, 1 nymph *Pseudomenopon*, slide no. 690, from type host.  
Present status: *Pseudomenopon cinereum* (Piaget).
Menopon cingulatum Piaget.
(1885, p. 91, pl. ix. fig. 9.)

Type host: Polyborus vulgaris. Error.
B.M.: 1 ♂ Ciconiphilus, 2 ♀ Austromenopon, slide no. 683, from type host.

It is apparent from the figures that this species is composite, the female having been drawn from the Austromenopon, the male from the Ciconiphilus; it is certain that Polyborus (Falconiformes) is not the true host of any of the specimens. As the female Austromenopon specimens will be difficult, if not impossible, to identify, the male Ciconiphilus will be designated as lectotype. It has not been possible to identify this with specimens from known hosts, but its genitalia show that it belongs to the group found on the Ciconiæ, not the Ardea.

Present status: Ciconiphilus cingulatus (Piaget).
Lectotype of Menopon cingulatum Piaget: ♂ in the B.M., slide no. 683a.

Menopon circinatum Piaget.
(1890, p. 249, pl. x. fig. 4.)

Type host: Stercorarius pomarinus (Temminck).
B.M.: 2 ♀ Austromenopon, slide no. 689, from type host.

As there are only females of this species available and these are teneral, it has not been possible to decide whether circinatum is conspecific with A. fuscofasciatum (Piaget) from the same host, but they appear to be distinct. Adequate material from the type host will have to be examined before a decision can be made.

Present status: Austromenopon circinatum (Piaget).
Lectotype of Menopon circinatum Piaget: ♀ in the B.M., slide no. 689a.

Menopon concretum Piaget.
(1880, p. 481, pl. xxxviii. fig. 9.)

Type host: Porphyrio melanopterus = Porphyrio poliocephalus melanopterus Bonaparte.
B.M.: 1 ♀ Pseudomenopon, slide no. 780, from the type host, Celebes; 1 ♀ Pseudomenopon, 1 ♂ Myrsidea, slide no. 781, from type host.

Leiden: 1 ♂ Pseudomenopon, slide no. 292 *, from type host, Celebes.
Piaget’s description and figure of the female were obviously taken from the *Pseudomenopon* and those of the male from the *Myrsidea*. As the host is one of the Rallidæ there is no doubt that the *Myrsidea* is a straggler from another bird and that the name should be applied to the *Pseudomenopon*, a genus found commonly on the Rallidæ.

Specimens of females from *Porphyrio p. poliocephalus*, which are presumably *Pseudomenopon poliocephalus* Qadri, agree with Piaget’s types; it is probable, therefore that *P. poliocephalus* is a synonym of *concretum*.

Present status: *Pseudomenopon concretum* (Piaget).

Lectotype of *Menopon concretum* (Piaget): ♀ in the B.M., slide no. 780.

**Menopon consanguineum** Piaget.

(1884, p. 111.)

Type host: *Pelecanus erythrorhynchos* Gmelin.

B.M.: 1 ♂, 3 ♀♀ *Piagetiella*, slides nos. 436-7, from type host.

Piaget’s specimens agree with authenticated material from the type host, and are presumably conspecific with *Piagetiella peralis* (Leidy) from the same host. *P. impar* (Kellogg) and *P. ragazii* (Picaglia), both from *Pelecanus erythrorhynchos*, must also be treated as synonyms of *P. peralis*.

Present status: *Piagetiella peralis* (Leidy).


**Menopon consimile** Piaget.

(1885, p. 97, pl. x. fig. 7.)

Type host: *Corvus cornix = Corvus corone cornix* Linn.

B.M. and Leiden: No specimens.

Specimens of *Myrsidea* from the type host have been compared with the figure of *consimile*, and the only significant difference is the absence of medium dorsal hairs in the figure. It is doubtful whether any species of *Myrsidea* lack these hairs and it can be assumed that they were omitted from the drawing in error. In the absence of evidence to the contrary, it is proposed to make *consimile* a synonym of *Myrsidea cornicis* (de Geer), the earliest name for the *Myrsidea* from *Corvus corone cornix*.

Present status: *Myrsidea cornicis* (de Geer).
**Menopon crassiceps** Piaget.
(1885, p. 92, pl. x. fig. 1.)

Type host: *Pulsatrix turqua = Pulsatrix perspicillata* (Latham).

B.M.: 2 ♂♂, 4 ♀♀ *Kurodaia*, slides nos. 433, 785, from type host.

The only other *Kurodaia* species described from this host is discussed under *M. elongatum* Piaget.

Present status: *Kurodaia crassiceps* (Piaget).

Lectotype of *Menopon crassiceps* Piaget: ♂ in the B.M., slide no. 785 a.

**Menopon crassipes** Piaget.
(1880, p. 450, pl. xxxv. fig. 7.)

Type host: *Epimachus magnificus = Epimachus fastosus* (Hermann).

B.M.: 4 ♂♂, 1 ♀, 3 nymphs *Myrsidea*, slides nos. 789-791, from type host.

Leiden: 1 ♀, 2 nymphs *Myrsidea*, slide no. 275 *, from type host.

One of the B.M. males (on slide no. 790) shows certain differences from the other four males, in the shape of the temples, sternal plates and genitalia. From the shape of the temples and prosternal plate the female most probably belongs to the species represented by the four males. The figure seems to be composite, the sternal plates being drawn from the form represented by the single male, the complete figure from the other form. As one of the species may be a straggler from another host, no lectotype will be designated until material is available to clear up this point.

Present status: *Myrsidea crassipes* (Piaget).

**Menopon crocatum** Nitzsch, 1866 (*sensu* Piaget).
(1880, p. 475, pl. xxxix. fig. 3.)

Type host: *Numenius [a.] arquata* (Linn.).

Piaget's host: *Haematopus ostralegus* Linn.

B.M.: 2 ♀♀ *Austromenopon*, slide no. 975, from *Haematopus ostralegus*.

Leiden: 1 ♀ *Austromenopon*, slide no. 296, from *Numenius arquatus*.
The amplified description of *M. crocatum* Nitzsch in Giebel, 1874, p. 295, shows that this species is an *Austromenopon*. Specimens of this genus from *Numenius arquatus* and *Haematopus ostralegus* are quite distinct, and therefore, as Piaget's figure and description were taken from specimens from the latter host, these do not refer to *A. crocatum* (Nitzsch). Whether or not there is a name available for Piaget's described specimens must wait for a revision of the group.

Present status: *Austromenopon* species?

**Menopon delicatulum** Piaget.  
(1880, p. 448, pl. xlii. fig. 7.)

Type host: *Picnonotus ochrocephalus*. Error.
B.M.: 1 ♂ *Pseudomenopon*, slide no. 688, from type host.

The host as given is one of the Passeres; the specimen is a straggler, presumably from a member of the Rallidae.

Present status: *Pseudomenopon delicatulum* (Piaget).

**Menopon dubium** Piaget.  
(1880, p. 452, pl. xxxvi. fig. 6.)

Type host: *Edolius longus* = *Dicrurus macrocercus thai* Kloss.
B.M.: 4 ♀♂ *Menacanthus*, slides nos. 685-6, from type host, Java.

Leiden: 1 ♀, 1 nymph *Menacanthus*, slide no. 288 *, from type host, Java.

Present status: *Menacanthus dubius* (Piaget).

Lectotype of *Menopon dubium* Piaget: ♀ in the B.M., slide no. 685a.

**Menopon elongatum** Piaget.  
(1885, p. 93, pl. x. fig. 2.)

Type host: *Pulsatrix torquata* = *Pulsatrix perspicillata* (Latham).
B.M.: 1 ♂, 2 ♀♀ *Kurodaia*, slide no. 801, from type host.

Although it is stated in the original description that there was no male, one is present on what is presumably the original slide; Piaget probably believed it to be a female, the differences between the sexes not being strongly marked. These specimens appear to be conspecific with the types of *Kurodaia crassiceps* (Piaget); the differences
enumerated by Piaget (1885, p. 93) probably being due to differences in the condition of the specimens.

Present status: *Kurodaia crassiceps* (Piaget).

Lectotype of *Menopon elongatum* Piaget: ♀ in the B.M., slide no. 801 a.

**Menopon eurum** Piaget.

(1880, p. 502, pl. xl. fig. 3.)

Type host: *Carbo javanicus = Haliëtor niger* (Vieillot).

B.M.: 1 ♀ *Eidmaniella*, slide no. 682, from type host.

Present status: *Eidmaniella eura* (Piaget).

**Menopon eurysternum** Burmeister, 1838

*(sensu* Piaget).

(1880, p. 434, pl. xlii. fig. 3.)

Type host: *Corvus pica = Pica pica* (Linn.).

Piaget's hosts: *Pica melanoleuca = Pica pica* (Linn.) and *Pica leucoptera = Pica pica* bacteriana Bonaparte.

B.M.: 1 ♀ *Myrsidea*, slide no. 741, from *Pica leucoptera*.

The earliest name for the *Myrsidea* species from *Pica pica* is *M. pice* (Linn.) (Höpkins, 1947, p. 100); Piaget's specimen agrees with authenticated specimens from the type host. *Menopon eurysternum* Burmeister is a *Mencanthus*.

Present status: *Myrsidea pice* (Linn.).

**Menopon extraneum** Piaget.

(1880, p. 506, pl. xlii. fig. 2.)

Type host: *Cavia cobaya = Cavia porcellus* (Linn.).

Error.

B.M.: 2 ♂♂, 2 ♀♀ *Holomenopon*, slides nos. 1073–4, from type host.

The specimens must have been stragglers on the guinea-pig, presumably from one of the Anseriformes.

Present status: *Holomenopon extraneum* Piaget.

Lectotype of *Menopon extraneum* Piaget: ♂ in the B.M., slide no. 1073 b.

**Menopon femorale** Piaget.

(1880, p. 484, pl. xxxix. fig. 8.)

Type host: *Platalea [l.] leucorodia* Linn.

B.M.: 1 ♂, 3 ♀♀, 2 nymphs *Eucolpocephalum*, slides nos. 802–4, from type host, one slide labelled "Holland,"

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Leiden: 1 ♀, 2 nymphs Eucolpocephalum, slide no. 291*, from type host.

Present status: Eucolpocephalum femorale (Piaget).

Lectotype of Menopon femorale Piaget: ♀ in the B.M., slide no. 802.

**Menopon Fertile** Nitzsch, 1866 (sensu Piaget).

(1880, p. 445, pl. xxxv. fig. 3.)

Type host: Upupa [e.] epops Linn.

Piaget’s host: As type host.

B.M.: 1 ♀ Amyrsidea, slide no. 1002, from type host.

M. fertile Nitzsch is almost certainly the Menacanthus species found on Upupa epops; Piaget’s specimen is a straggler, presumably from one of the Galliformes. As the true host of this specimen is unknown Piaget’s description and figure should be ignored and certainly not given a new name.

**Menopon Flavescens** Piaget.

(1880, p. 439, pl. xxxv. fig. 9.)

Type host: Sturnus (Acridothis) cristatellus = Acridothis fuseus javanicus Cabinis.

B.M.: 1 ♂, 1 ♀, 1 nymph Myrsidea, slide no. 897, from type host, Java.

Leiden: 2 ♂♂ Myrsidea, slide no. 272*, from type host.

Present status: Myrsidea flavescens (Piaget).

Lectotype of Menopon flavescens Piaget: ♀ in the B.M., slide no. 897.

**Menopon Flavidum** Piaget.

(1880, p. 438, pl. xlii. fig. 5.)

Type host: Eurylaimus cuculatus = Eurylaimus ochromelas Raffles.

B.M.: 1 ♂, 1 nymph Myrsidea, slide no. 813, from type host.

Present status: Myrsidea flavidc (Piaget).

**Menopon Fulvofasciatum** Piaget.

(1880, p. 417, pl. xxxiii. fig. 3.)

Type host: Buteo vulgatis = Buteo buteo (Linn.).

B.M.: 2 ♀ Kurodaia, slide no. 838, from type host.
These specimens agree with authenticated ones from the type host.

Present status: *Kurodaia fulvofasciata* (Piaget).

Lectotype of *Menopon fulvofasciatum* Piaget: ♀ in the B.M., slide no. 838.

**Menopon fuscafasciatum** Piaget.

(1880, p. 492, pl. xl. fig. 9.)

Type host: *Lestris pomerina* = *Sternorarius pomerinus* (Temminck).

B.M.: 2 ♀ *Austromenopon*, slide no. 678, from type host.

The other species of *Austromenopon* from this type host has been discussed above under *A. circinatum* (Piaget).

Present status: *Austromenopon fuscafasciatum* (Piaget).

Lectotype of *Menopon fuscafasciatum* Piaget: ♀ in the B.M., slide no. 678 a.

**Menopon germanum** Piaget.

(1880, p. 450, pl. xxxvi. fig. 1.)

Type host: *Pogonorynchus rolleti* = *Erythrobrucco rolleti* (Defil.).

B.M.: 1 ♀ *Menacanthus*, slide no. 674, from type host.

Present status: *Menacanthus germanus* (Piaget).

**Menopon gracile** Piaget.

(1880, p. 482, pl. xl. fig. 1.)

Type host: *Porphyrio smaragdinus*. Error.

B.M.: 3 ♂♂, 2 ♀ ♀ *Menacanthus*, slides nos. 675–676, from type host, Java (slide no. 676).

Leiden: 2 ♀ ♀ *Menacanthus*, slide no. 293 *, from type host.

These specimens belong to the group of *Menacanthus* species with long oral spines, which are found on some of the Passeres. They are certainly stragglers on the member of the Rallidae from which Piaget recorded them.

Present status: *Menacanthus gracilis* (Piaget).

Lectotype of *Menopon gracile* Piaget: ♂ in the B.M., slide no. 675 b.

**Menopon grandiceps** Piaget.

(1880, p. 494, pl. xli. fig. 6.)

Type host: "*Xulla Mangola*" = *Corvus enca enca* (Horsfield) (see Clay, 1940, p. 432).
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B.M.: 3 ♂♂, 2 ♀♀, 2 nymphs Myrsidea, slides nos. 469–471, from "Xulla Mangola."
Leiden: 1 ♂, 1 ♀, 1 nymph Myrsidea, slide no. 305 *, from "Xulla Mangola".

Myrsidea saturata (Piaget) from Corvus enca compiler Richmond is not conspecific.

Present status: Myrsidea grandiceps (Piaget).

Lectotype of Menopon grandiceps Piaget: ♂ in the B.M., slide no. 471 b.

Menopon Grisewm Piaget.
(1885, p. 102, pl. xi. fig. 3.)

Type host: Paradisea papuana = Paradisea minor Shaw.

B.M.: 1 ♂, 1 ♀ Kélérimenopon and 1 ♂ Myrsidea, slide no. 673, from type host.

There is no doubt that Piaget's description and figure refer to the male Kélérimenopon. The remark on page 103 that this species lives on the same individual as Menopon crassipes is probably based on the presence of the Myrsidea which Piaget assumed to be crassipes; it seems also likely that he took the female Kélérimenopon to be a Myrsidea as he states that he has only seen the male. As Piaget did not recognize the female as belonging to this species, the male automatically becomes the only type specimen. Kélérimenopon contains five species: K. sanfilippoi Conci and the following four species of Piaget's: Menopon grisewm, Colpocephalum ciliatum, C. longipes and C. minor. The type material of all these species were collected from skins and the host records of none are certain; Piaget collected eight specimens from skins of Megapodiidae and four other specimens have been taken from skins of the same family, it is possible, therefore, that members of this family are the true hosts. All the known species appear to be distinct from each other with the possible exception of K. minor, which may prove to be the same as grisewm; no decision can be taken until males of minor have been seen. The male genitalia of grisewm are quite distinctive in character from the only other males known, i.e. those of ciliatum and sanfilippoi.

Present status: Kélérimenopon grisewm (Piaget).
**Menopon icterus** Burmeister, 1838 (*sensu* Piaget).
(1880, p. 478, pl. xxxix. fig. 9.)

Type host: *Scolopax [r.] rusticola* Linn.

Piaget's host: As type host.

B.M.: 1 ♀ *Austromenopon*, slide no. 996, from type host.

The figure of the type specimen (Giebel, 1874, pl. xvii. fig. 9) shows this to be an *Austromenopon* which agrees with specimens from the type host, as also does Piaget's specimen. *Menopon icterus* Denny *nec* Burmeister is represented in the B.M. Denny collection by 3 ♀♂, 5 ♀♀, and one nymph *Austromenopon*; the host labels of these specimens are "Sanderling (*Tringa variabilis*)". However, as Mr. Hopkins has pointed out (in litt.), *Tringa variabilis* is elsewhere used by Denny as the Latin name of the dunlin (*Erolia alpina*), and that Denny also calls the species "the louse of the Dunlin"; it seems most probable, therefore, that Denny used the name "sanderling" in error. Sufficient material from the two possible hosts for comparison with the types is not available, but these types do not agree with specimens of *icterus* Burmeister from *Scolopax rusticola*.

Present status: *Austromenopon icterus* (Burmeister).

**Menopon impar** Piaget.
(1885, p. 94, pl. x. fig. 4.)

Type host: *Psittacus [erithacus] timneh* Fraser.

B.M.: 4 ♀♂, 1 ♀ *Psittacomemenopon*, slides nos. 430, 432, from type host.

The male specimens are not conspecific with authenticated males from *Psittacus e. erithacus*, the type host of *P. heterocephalum* (Nitzsch) (see under *appendiculatum*).

Present status: *Psittacomemenopon* impar (Piaget).

Lectotype of *Menopon impar* Piaget: ♂ in the B.M. slide no. 432.

**Menopon inaequale** Piaget.
(1880, p. 443, pl. xxxv. fig. 1.)

Type host: *Lanius [c.] collurio* Linn.

B.M. and Leiden: No specimens.

Specimens of *Menacanthus* and *Myrsidea* from species of *Lanius* have been compared with Piaget's figure;
neither of these exactly resembles the figure, but allowing for a slight distortion in the head of Piaget's original specimen, it can be presumed with reasonable certainty that his specimen was a Menacanthus. Elsewhere it will be shown that Pediculus coarctatus Scopoli from Lanius c. collurio, placed by Harrison (1916, p. 35) in Menopon must be used as the name for the Philopterus species from that host. Menopon fusco-cinctum Denny from the same host is represented in the Denny collection by 4 ♀♀ Menacanthus; these are quite distinct from authenticated specimens from the type host and are similar to the form of Menacanthus represented by M. spiniferus (Piaget), and which is found on a number of Passeres. The true host, if this type does not also occur on Lanius collurio, must wait for a revision of the spiniferus group of species.

Present status: Menacanthus inaequalis (Piaget).

**Menopon indivisum** Nitzsch, 1866 (sensu Piaget).

(1880, p. 436, pl. xxxiv. fig. 3.)

Type host: Corvus glandarius = Glandarius glandarius (Linn.).

Piaget's host: As type host.

B.M. and Leiden: No specimens.

There is no doubt that Menopon indivisum Nitzsch is a Myrsidea; Piaget's figure is apparently conspecific with authenticated specimens of Myrsidea from the type host and can be taken to represent this species.

Present status: Myrsidea indivisa (Nitzsch).

**Menopon infumatum** Piaget.

(1885, p. 106, pl. xi. fig. 7.)

Type host: Dacelo gigas de Madagascar = Dacelo novæguineæ (Hermann).

B.M.: 1 ♀ Menacanthus, slide no. 670, from type host.

As Harrison (1916, p. 38) stated, either the host or the locality of this species must be incorrect, as Dacelo novæguineæ is confined to Australia.

Present status: Menacanthus infumatus (Piaget).

**Menopon insulsum** Piaget.

(1885, p. 149, pl. xvi. fig. 3.)

Type host: Psitta (sp.?).

B.M.: 1 ♀ Myrsidea, slide no. 671, from type host.
Piaget gives *Psitta* as the host both in the text and on the label of the slide, but in the list of hosts (1885, p. 158) he gives *Pitta*; this latter is perhaps the correct host.

Present status: *Myrsidea insula* (Piaget).

**Menopon intergrum** Piaget.

(1880, p. 451, pl. xxxv. fig. 5.)

Type host: *Chalibœus viridis* (*Paradisia chalibœa*) = *Manucodia chalibœa* (Forster).

B.M.: 2 ♀♀, 1 nymph *Myrsidea*, slides nos. 672 and 818, from type host.

Present status: *Myrsidea integra* (Piaget).

Lectotype of *Menopon integrum* Piaget: ♀ in the B.M., slide no. 818.

**Menopon intermedia** Piaget.

(1880, p. 430.)

*Menopon obovatum* var. *intermedia* Piaget.

Type host: *Corvus torquatus* Less.

B.M.: 1 ♂, 1 ♀ *Myrsidea*; 1 ♂ *Colpopcephlum*, slide no. 403, from type host.

The original description obviously refers to a *Myrsidea*, the single male *Colpopcephlum* can, therefore, be ignored. This species is quite distinct from *M. obovata* (Piaget).

Present status: *Myrsidea intermedia* (Piaget).

Lectotype of *Menopon intermedia* (Piaget): ♀ in the B.M., slide no. 403.

**Menopon intermedium** Piaget.

(1880, p. 497, pl. xl. fig. 4.)

Type host: *Atagen* (*Fregatta*) *minor* = *Fregata minor* (Gmelin).

B.M.: 1 ♂ *Eidmaniella*, 1 ♀ *Kelerimenopon*, slide no. 700, from type host.

Piaget's description and figure of both male and female refer to the *Eidmaniella*, although there is no female now in the collection; the *Kelerimenopon* is a straggler and should be ignored. This species is quite distinct in the characters of the male genitalia from *E. singularis* (Koll. & Kuw.), as figured by Emerson, 1947, pp. 137–138, also probably from a species of *Fregata*. Piaget's name being pre-occupied by *intermedium* Piaget, 1880, p. 430, it was renamed *intermissum* by Harrison (1916, p. 38).
Miss Theresa Clay on the

Present status: *Eidmanicella intermissa* (Harrison).
Lectotype of *Menopon intermedium* Piaget: ♂ in the
B.M., slide no. 700 a.

**Menopon interpolatum** Piaget.
(1880, p. 493, pl. xlii. fig. 1.)

Type host: Unknown.
B.M.: 1 ♂, 1 ♀ *Cuculiphilus*, slide no. 696, from ? host.
The female agrees with specimens (no males available)
from *Scytherops novaschollandiae* Latham, and with the
female on which Piaget based his description and figure
of *Menopon platygaster* Giebel, 1874 (see below). It can
be reasonably assumed, in the loss of the types, that
*M. platygaster* is the *Cuculiphilus* species found on
*Scytherops novaschollandiae*; *M. interpolatum* becomes a
synonym.

Present status: *Cuculiphilus platygaster* (Giebel).
Lectotype of *Menopon interpolatum* Piaget: ♀ in the
B.M., slide no. 696 b.

**Menopon latifasciatum** Piaget.
(1880, p. 467, pl. xxxviii. fig. 4.)

Type host: *Tetrao urogallus* Linn.
B.M.: 2 ♀♀, 3 ♀♀ *Amyrisidea*, slide nos. 218–219, from
type host.
These specimens agree with authenticated material
from the type host.

Present status: *Amyrisidea latifasciata* (Piaget).
Lectotype of *Menopon latifasciatum* Piaget: ♂ in the
B.M., slide no 219 a.

**Menopon lativulvatum** Piaget.
(1880, p. 465, pl. xxxvii. fig. 6.)

Type host: *Megapodium rubripes* (Forsteni) = *Mega-
podium reinwardt forstenii* Gray.

Present status: *Amyrisidea lativulvata* (Piaget).

**Menopon latum** Piaget.
(1880, p. 457, pl. xxxvii. fig. 1.)

Type host: "*Pigeon domestique*'' = *Columba livia*
domestica.
B.M.: 1 ♂, 2 ♀♀, 2 nymphs Hohorстиела, slides nos. 668-669, from type host.

These specimens agree with authenticated material from the type host. *Menopon longicephalum* Kellogg, 1896 (from a domestic pigeon, *Columbia livia*) as represented in the original figure is a *Menopon sens. str.*, and as stated by Harrison (1916, p. 39) is a straggler from one of the Galliformes, almost certainly *Gallus domesticus*. It therefore becomes a synonym of *M. gallinæ* (Linn.).

Present status: *Hohorстиела lata* (Piaget).

Lectotype of *Menopon latum* Piaget: ♂ in the B.M., slide no. 668 b.

**MENOPON LONGIPALPE** Piaget.

(1880, p. 461, pl. xxxviii. fig. 2.)

Type host: *Gallophasis (Euplocomus) melanotus = Gennæus leucomalæan mes melanotus* (Hutton).

B.M.: 2 ♂♂, 2 ♀♀, 3 nymphs *Ménacanthus*, slides nos. 208–210, from type host.

Leiden: 1 ♂, 1 ♀ *Ménacanthus*, slide no. 282 *, from type host.

Present status: *Ménacanthus longipalpis* (Piaget).

Lectotype of *Menopon longipalpe* Piaget: ♂ in the B.M., slide no. 208 a.

**MENOPON LONGIPES** Giebel, 1874 (*sensu* Piaget).

(1880, p. 419, pl. xxxiii. fig. 4.)

Type host: *Strix bubo = Bubo b. bubo* (Linn.).

Piaget's hosts: *Strix brachyotus = Asio f. flammeus* (Pontopp.) and *Strix bubo = Bubo bubo* (Linn.).

B.M.: 1 ♂ Myrsidea, slide no. 844, from *Strix bubo*; 1 ♀ Myrsidea, slide no. 845, from *Brachyotus europæa = Asio o. otus* (Linn.).

*Menopon longipes* Giebel, from the description (1874, p. 280), is almost certainly a *Kurodsia*; Piaget's figure (pl. xxxiii. fig. 4) seems to be that of the male *Myrsidea*, slide no. 844, which is presumably a straggler from one of the Passeriformes. Although Piaget's description and figure does not refer to *longipes* Giebel, this is one of the instances where to replace a preoccupied name would serve no useful purpose whatsoever.
The supposed occurrence of the Myrsidea on the owl is certainly not normal and must have been due to contamination before or after death. Identification of a male Myrsidea without any idea of its true host would be almost impossible, and to give this specimen a name would, therefore, merely add to the long list of unidentifiable species.

**Menopon longitarsus** Piaget.

(1880, p. 504, pl. xli. fig. 7.)

Type host: *Halmaturus giganteus = Macropus major* Shaw.

B.M.: 1 ♂, 1 ♀ *Heterodoxus*, slide no. 425, from type host; 2 ♂♂, 2 ♀♀, 3 nymphs *Heterodoxus*, slides nos. 426–8, from "Kangourou."

Leiden: 2 ♀♀ *Heterodoxus*, slide no. 308, from type host.

Of the many subsequent authors who have mentioned this name it seems probable that only F. L. Werneck (1941, pp. 47–55) had Piaget’s species; he redescribed it from cotypes.

Present status: *Heterodoxus longitarsus* (Piaget).

Lectotype of *Menopon longitarsus* (Piaget): ♂ in the B.M., slide no. 426 b, from which Werneck drew his figure 2 (1941, p. 53).

**Menopon longithoracicum** Piaget.

(1880, p. 500, pl. xli. fig. 5.)

Type host: *Procellaria cinerea = Adamastor cinereus* (Gmelin).

B.M.: 5 ♂, 3 ♀ *Austromenopon*, slides nos. 697–699, from type host.

Leiden: 1 ♂, 1 ♀ *Austromenopon*, slide no. 299 *, labelled *M. thoracium*, from type host.

Present status: *Austromenopon longithoracicum* (Piaget).

Lectotype of *Menopon longithoracicum* Piaget: ♂ in the B.M., slide no. 697 a.

**Menopon longum** Giebel, 1874 (*sensu* Piaget).

(1880, p. 486, pl. xl. fig. 2.)

Type host: *Grus communis = Grus g. grus* (Linn.).

Piaget’s hosts: *Grus pavonina* (balearica) = *Balearica p. pavonina* (Linn.), and type host.
B.M.: No specimens.

Leiden: 2 ♀♂ Gruimenopon, slide no. 294 *, from Grus pavonina.

Menopon longum Giebel, as described, seems to be the Gruimenopon species usually found on Grus grus. Specimens from Balaerica pavonina belong to a different species, and as Piaget had specimens from both hosts it is not possible to say from which he made his description and figure. The species from Balaerica pavonina should, therefore, be described independently as new, and Piaget's description and figure, which are not adequate for recognition, ignored.

As the types of longum Giebel have been destroyed, the male and female (slide no. 1164, in the Meinertzhagen collection) from which the figures of Gruimenopon longum (Giebel) were drawn (C. & M., 1941, pp. 340-341, figs. 8-10) are here designated as neotype and neallotype respectively.

Menopon lutescens Burmeister, 1838 (sensu Piaget).

(1880, p. 477, pl. xxxix. fig. 4.)

Type hosts: Totanus maculatus = Tringa erythropus (Pallas); Tringa pugnax = Philomachus pugnax (Linn.); Alca torda Linn.

Piaget's hosts: Machetes pugnax = Philomachus pugnax (Linn.) and Totanus maculatus = Tringa erythropus (Pallas).

B.M.: 2 ♀♀ Austromenopon, slide no. 999, from Machetes pugnax.

In the original description Burmeister gave the three hosts listed above; Piaget probably had no specimens from Totanus maculatus, but was merely quoting this host from the original or one of the later descriptions of lutescens; he also drew attention to the fact that specimens from Alca torda differed from those on Machetes pugnax: three specimens from the former host in his collection are marked as "M. lutescens var." As Piaget redescribed the species from specimens, alleged to have come from Philomachus pugnax and which appear (females only) to agree with authenticated specimens from the type host, this should be accepted as a restriction of the type host; and, as the types of lutescens are lost, a neotype should be described and figured from this host.

Present status: Austromenopon lutescens (Burmeister).
**On the Piaget Collections of Mallophaga.**

**MENOPON MAJOR Piaget.**

(1880, p. 441.)

*Menopon quadrifasciatum var. major Piaget.*

Type host: *Fringilla* (*Emberiza*) *nivalis = Plectrophenax nivalis* (Linn.).

B.M.: 6 ♀♂ *Myrsidea*, slides nos. 841–2, from type host.

The correct identification of the type host is uncertain; *Fringilla nivalis* is the snow-finch, *Montifringilla n. nivalis* (Linn.) and *Emberiza nivalis* the snow-bunting, *Plectrophenax nivalis*. However, in his list of hosts (1880, p. 686) Piaget drops the *Fringilla*, referring to the bird as *Emberiza nivalis*; as this is also the more likely bird for Piaget to have examined in Holland, there is probably little doubt that *Plectrophenax nivalis* is the correct host.

Present status: *Myrsidea major* (Piaget).

Lectotype of *Menopon major* Piaget: ♀ in the B.M., slide no. 842.

**MENOPON MAJOR Piaget.**

(1880, p. 462.)

*Menopon productum var. major Piaget.*

Type host: *Lophophorus resplendens = Lophophorus impeyanus* (Latham).

B.M.: 1 ♂, 1 ♀, 1 head only *Menopon*, slide no. 373 from *Lophophorus impeyanus*.

Leiden: 1 ♂, 2 ♀♂ *Menopon*, slide no. 280 *, from *L. impeyanus*.

As this species may prove to be conspecific with a named species of *Menopon* from a related host, no new name will be given to it.


Lectotype of *Menopon productum var. major Piaget*: ♂ in B.M., slide no. 373.

[To be continued.]
Menopon major Piaget
(1880, p. 471.)

*Menopon pallescens var. major* Piaget.
Type host: *Perdix rubra = Alectoris r. rufa* (Linn.).
B.M.: 1 ♀, 1 ♂ *Menopon*, slide no. 211, from type host.

Again no new name will be given to this species, as a revision of the genus *Menopon sens. str.* may show that it is conspecific with another named species from a related host.


Lectotype of *Menopon pallescens var. major* Piaget: ♂ in the B.M., slide no. 211 a.

Menopon major Piaget
(1880, p. 480.)

*Menopon tridens var. major* Piaget.
Type host: *Fulica atra* Linn.
B.M.: 3 ♂, 2 ♀ *Pseudomenopon*, slides nos. 883-4, from type host.
These specimens agree with authenticated ones from the type host. As shown below under *Menopon tridens* Burmeister, Piaget was confused over the correct type host of this species, which is *Fulica atra; major*, described from the type host of *tridens*, therefore, becomes a synonym of this species. Eichler (1937, p. 97) following Piaget's confusion of hosts, renamed *major* as *thompsoni*, this name also becomes a synonym of *tridens*.

Present status: *Pseudomenopon tridens* (Burmeister).

Lectotype of *Menopon tridens* var. *major* Piaget: ♂ in the B.M., slide no. 883.

**Menopon mamillatum** Piaget.

(1885, p. 114, pl. xii. fig. 5.)

Type host: *Theristicus caudatus* (Boddaert).
B.M.: 4 ♀♀ *Plegadiphilus*, slides nos. 665-6, from type host.

Present status: *Plegadiphilus mamillatus* (Piaget).

Lectotype of *Menopon mamillatum* Piaget: ♀ in the B.M., slide no. 666.

**Menopon menadense** Piaget.

(1880, p. 458, pl. xlii. fig. 8.)

Type host: *Macropygia (Columba) menadensis = Turacoena manadensis* (Quoy and Gaimard).
B.M. and Leiden: No specimens.

No specimens of any *Amblycera* have been seen from the type host, but a single female *Hohorstiella* from a species of *Macropygia*, a genus related to *Turacoena*, agrees generically with Piaget's figure. It can be presumed, therefore, that Piaget's original specimen belonged to this genus.

Present status: *Hohorstiella menadensis* (Piaget).

**Menopon meniscus** Piaget.

(1880, p. 447, pl. xxxvi. fig. 7.)

Type host: *Emberiza laponica = Calcarius lapponicus* (Linn.).
B.M.: 2 ♀♀ *Menacanthus*, slide no. 667, from type host.
Leiden: 1 ♂, 2 ♀♀ *Menacanthus*, slide no. 274 *, from type host.

Present status: *Menacanthus meniscus* (Piaget).
MENOPON MERMUM Piaget.
(1885, p. 108, pl. xi. fig. 10.)

Type host: *Ptilopus fasciatus*. Error.
B.M.: 1 nymph *Myrsidea*, slide no. 821, from type host.
The host given is a pigeon (Columbiformes); the type specimen is presumably a straggler from one of the Passeriformes. The identification of its true host will be difficult if not impossible.
Present status: *Myrsidea mera* (Piaget).

(MENOPON MESOLEUCUM (Nitzsch), 1818 (sensu Piaget)
(1880, p. 426, pl. xxxiv. fig. 7.)

Type host: *Corvus cornix = Corvus corone cornix* Linn.
Piaget's hosts: *Corvus cornix = Corvus corone cornix* Linn. and *Corvus corone = Corvus corone cornix* Linn.
B.M.: 2♂♂, 5♀♀, 8 nymphs *Myrsidea*, slides nos. 955–9, from *Corvus cornix*.
Leiden: 2♀♀ *Myrsidea*, slide no. 266*, from *Corvus cornix*.

*Menopon mesoleucum* (Nitzsch), 1818, owes its validity to the reference to de Geer’s figure (1778, pl. 4. fig. 11) of *Ricinus cornicis*. This figure is a *Myrsidea*, and mesoleucum is merely an unnecessary new name for De Geer’s species. As Piaget’s specimens agree with *Myrsidea* specimens from the type host of *cornicis*, that is *Corvus corone cornix*, they should be placed under this species.
Present status: *Myrsidea cornicis* (De Geer).

MENOPON MINOR Piaget.
(1880, p. 418.)

*Menopon fulvofasciatum* var. *minor* Piaget.
Type host: *Accipiter (Astur) nisus = Accipiter n. nisus* (Linn.).
B.M.: 3♂♂, 2♀♀ *Genus c.* (Clay, 1947, p. 471), slide no. 839, from type host.
Lectotype of *Menopon minor* Piaget: ♂ in the B.M., slide no. 839 a.

(MENOPON MINOR Piaget.
(1880, p. 420.)

*Menopon longipes* var. *minor* Piaget.
Type host: *Strix noctua = Athene noctua* (Scopoli).
B.M.: 5♀♀ *Kurodaia*, slides nos. 694–5, from type host.

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Piaget's specimens agree with authenticated material from the type host. Piaget described another *Kurodaia* under *Colpocephalum subpachygaster* from three owls, including *Athene noctua*; the lectotype of this species will be so designated that *Tyto alba* becomes the type host. *Kurodaia cryptostigmation* (Nitzsch), 1861, was described from *Strix passerina*; this latter name has been used for *Athene noctua* and *Glaucidium passerina*, however, in Giebel's host list (1874, viii-ix), there is no mention of *Strix noctua* (= *Athene noctua*), but *Strix pygmea*, another name for *Glaucidium passerina*, is given. From this it is almost certain that Nitzsch used *Strix passerina* for the little owl (*Athene noctua*). *K. cryptostigmation* can therefore be used for *M. minor* Piaget, 1880, p. 420, nec Piaget, 1880, p. 418; *K. xavirido* (Eichler), 1943, a new name for *M. minor* Piaget, also becomes a synonym of Nitzsch's name.

Present status: *Kurodaia cryptostigmation* (Nitzsch).

Lectotype of *Menopon minor* Piaget: ♀ in the B.M., slide no. 694.

**Menopon minor** Piaget.

(1885, p. 101.)

*Menopon tibiale* var. minor Piaget.

Type host: *Lamprocolius auratus = Hartlaubius auratus* (Müller).

B.M.: 5 ♀♀ *Menacanthus*, slides nos. 872–3, from type host.


Lectotype of *Menopon minor* Piaget: ♀ in the B.M., slide no. 872.

**Menopon minor** Piaget.

(Thompson, 1937, p. 24.)

*Menopon fuscofasciatum* var. minor Piaget.

Type host: *Sterna caniaca = Thalasseus sandvicensis* (Latham).

B.M.: 1 ♂, 2 ♀♂ *Austromenopon*, slide no. 681, from type host and 2 ♂♂, 2 ♀♀ *Austromenopon*, slides nos. 677, 680, from type host, but without varietal name.

Piaget (1880, p. 493) stated that specimens from *Sterna caniaca* (= *Thalasseus sandvicensis* (Latham) and *Sterna
gracilis (= Sterna dougallii gracilis Gould) differed from typical fuscofasciatum from Lestris pomarina in certain characters which he enumerated; he did not publish a name for these specimens. Unfortunately Thompson in his list of the Piaget collection (1937, p. 24) published the name minor (which is written on one of the above slides, no. 681) as a varietal name; as Thompson also referred to Piaget’s remarks on page 493, in which he gives certain characters for these specimens, minor becomes valid but pre-occupied.

As Thompson did not mention the second host given by Piaget, this restricts the type host to Sterna cantiaca.

Present status: Austromenopon minor (Piaget), 1937, nec Piaget, 1880.

Lectotype of Menopon minor Piaget: ♂ in the B.M., slide no. 681 a.

**Menopon minusculum** Piaget.
(1885, p. 104, pl. xi. fig. 5.)

Type hosts: Philepitta jala de Madagascar = Philepitta castanea (Müller) and Rhipidura sp.?

B.M.: 3 ♂♂ Myrsidea, slide no. 826, from Philepitta jala (Magad.); 1 ♂ Myrsidea, slide no. 827, from Rhipidura sp.?

In the absence of specific determination of the Rhipidura host, one of the males on slide no. 826 will be designated as lectotype, thus fixing the type host of minusculum as Philepitta castanea (Müller).

Present status: Myrsidea minuscula (Piaget).

Lectotype of Menopon minuscula Piaget: ♂ in the B.M., slide no. 826.

**Menopon obovatum** Piaget.
(1880, p. 429, pl. xxxiv. fig. 1.)

Type host: Corvus scapulatus = Corvus albus Müller.

B.M.: 2 ♂♂, 3 ♀♀ Myrsidea, slides nos. 410–2, from type host.

Piaget’s specimens agree with authenticated material from the type host, but are distinct from Myrsidea sjostedti (Kellogg) and M. subanaspila Bedford from the same host.

Present status: Myrsidea obovata (Piaget).
Lectotype of *Menopon obovatum* Piaget: ♀ in the B.M., slide no. 401 b.

**Menopon obscurum** Piaget.

(1880, p. 497, pl. xl. fig. 8.)

Type host: *Anas radjah = Tadorna radjah* (Lesson).

B.M.: 1 ♀ *Holomenopon*, 1 ♂ *Eomenopon*, slide no. 691, from type host.

Leiden: 1 ♂, 1 ♀ *Holomenopon*, slide no. 303*, from type host.

There does not appear to be any reference to the male *Eomenopon* in the description, and the figure is that of the *Holomenopon*; the former specimen is a straggler and should be ignored.

Present status: *Holomenopon obscurum* (Piaget).

Lectotype of *Menopon obscurum* Piaget: ♂ in the B.M., slide no. 691 a.

**Menopon ovatum** Piaget.

(1880, p. 430, pl. xxxiv. fig. 6.)

Type host: *Corvus scapulatus = Corvus albus* Müller.

B.M.: 1 ♀ *Menacanthus*, slide no. 404, from type host.

This specimen agrees with authenticated *Menacanthus* females from the type host and with a female paratype of *Menacanthus corvus* Bedford, 1930; this latter name, therefore, becomes a synonym of *ovatum*.

Present status: *Menacanthus ovatus* (Piaget).

**Menopon ovata** Piaget.

(1885, p. 102.)

*Menopon crassipes* var. *ovata* Piaget.

Type host: *Paradisea rubra* Daudin; *P. sexpennis = Parotia sefilata* (Forster).

B.M.: 2 ♀♀, 2 nymphs *Myrsidea*, slides nos. 792–3, from *P. rubra*.

As the specimens recorded by Piaget from *Parotia sefilata* are neither in the B.M. nor Leiden collections and are most probably lost, the adult male on slide no. 793 will be designated as lectotype, thus fixing *Paradisea rubra* Daudin as the type host of *ovata*.

Lectotype of *Menopon ovata* (Piaget): ♂ in the B.M., slide no. 793.

**Menopon pachypus** Piaget.

(1888, p. 161, pl. iv. fig. 4.)

*Type host: Sterna hirundo* Linn.

*B.M.:* 1 nymph *Austromenopon* labelled *Menopon fuscofasciatum*, slide no. 679, from *Sterna hirundo*.

There is one slide labelled *Menopon pachypus* in the B.M. collection, but this is obviously an error for *Colpocephalum pachypus* and will be discussed under that genus. The specimen listed above, a nymph *Austromenopon* from the type host, agrees with Piaget's figure of *Menopon pachypus*. Piaget refers to the specimen as a female and it can therefore be presumed that the male genitalia were absent, this together with the shape of the head as shown in the figure makes it certain that Piaget's specimen was a nymph. There seems little doubt, therefore, that the specimen labelled *Menopon fuscofasciatum* from the type host is that from which Piaget made his figure and description of *Menopon pachypus*, and that it should be considered as the type.

**Present status: Austromenopon pachypus** (Piaget).

**Menopon pallescens** Nitzsch, 1874 (*nec* Nitzsch, 1866)

*sensu* Piaget.

(1880, p. 470, pl. xxxviii. fig. 6.)

*Type host: Perdix cinerea = Perdix p. perdix* (Linn.).

*Piaget's host: As type host.*

*B.M.:* 2 ♂♂, 3 ♀♀ *Menopon*, slides nos. 212–213, from type host.

*Leiden: 2 ♂♂, 2 ♀♀ Menopon*, slide no. 286, from type host.

The name *Menopon pallescens* Nitzsch was first published in Giebel, 1866, p. 391. No description was given, but only a reference to *M. fulvo-maculatum* Denny with an incorrect figure number. Nitzsch's description of *M. pallescens* was published by Giebel, 1874, p. 293. Kéler (1937, p. 132) discussed the material on which Nitzsch's description of *pallescens* was based and gave figures which shows it to be a *Menopon sens. str.*, *M. fulvo-maculatum* Denny, from a different host, is an
Amyrsidea. It is apparent from these facts that *Menopon pallescens* Nitzsch was first published in 1866 as an unnecessary *nomen novum* for *M. fulvo-maculatum* Denny and must stand as a synonym of that name. As the type material of *Menopon pallescens* Nitzsch, Giebel, 1874 *nec* *M. pallescens* Nitzsch, Giebel, 1866, as figured by Kéler, 1937, is lost, this species is named *Menopon pallens* and types designated (see below). Piaget's specimens agree with Kéler's figures.

*Menopon perdicis* Denny, 1842, represented in the B.M. Denny collection by 3 ♀♀, is an *Amyrsidea*. *Menopon megalosomum* Overgaard was described from specimens taken from *Perdix perdix* and *Phasianus colchicus*, no holotype nor type host being designated. This species is an *Amyrsidea* and may prove to be conspecific with *A. perdicis* Denny.

*Menopon appendiculatum* Piaget, supposedly, from the same host has already been discussed.

Present status: *Menopon pallens*, sp. n.

Holotype of *Menopon pallens*: ♀ in the B.M. collection, slide no. 441, which agrees with Kéler, 1937, fig. 4, from *Perdix p. perdix* from Scotland; allotype: ♀, slide no. 442, with the same data, which agrees with Kéler, 1937, fig. 3; paratypes: 13 ♂♂, 22 ♀♀ from the same host species from various localities.

**Menopon pallidum** Nitzsch, 1818 (*sensu* Piaget).

(1880, p. 459, pl. xxxvii. fig. 7.)

Type host: *Gallus domesticus*.

Piaget's hosts: *Gallus domesticus*; “preseque tous les oiseaux de basse-cour; . . . pigeons; canards”.

B.M.: 7 ♀♀ *Menopon* and 2 ♂♂, 6 ♀♀, 7 nymphs *Mena-
canthus*, slides nos. 190–1 and 1010–1012, from *Gallus
domesticus*.

Leiden: 1 ♀ *Menopon* and 2 ♂♂, 3 ♀♀ *Mena-
canthus*, slides nos. 276–7 *, from *Gallus domesticus*.

In his figures Piaget has shown the *Menopon* species of the domestic fowl, but has confused the sexes (7 is a male, 7 b and 7 c show the end of the ♀ abdomen). The earliest name for this species is *Menopon gallinæ* (Linn.), of which *M. pallidum* Nitzsch is a synonym.

Present status: *Menopon gallinæ* (Linn.).
Menopon pallida Piaget.
(1880, p. 471, pl. xxxviii. fig. 7.)

Menopon pallescens var. pallida Piaget.
Type host: Cucalis saxatilis = Alectoris graeca saxatilis (Bechstein).
B.M. and Leiden: No specimens.
The figure shows this to be a species of Menopon sens. str.
Present status: Menopon pallida Piaget, 1880, née Nitzsch, 1818.

Menopon pallida Piaget.
(1885, p. 102, pl. xi. fig. 2.)

Menopon crassipes var. pallida Piaget.
Type host: Epimachus albus = Seleucides nigricans (Shaw).
B.M.: 2 ♂, 1 nymph Myrsidea, slide no. 794, from type host; 1 ♀ Myrsidea, slide no. 630, labelled Menopon crassipes, from type host.
The label of slide no. 794 is marked male and female, but it seems unlikely that Piaget made the description of the female from the nymph as he states that “les dimensions de la femelle sont un peu plus fortes” to that of M. crassipes; this is not the case with the nymph on slide no. 794. It is probable that the single female on slide no. 630 was the specimen used, Piaget having omitted to add the varietal name to the label. The name pallida being pre-occupied by Menopon pallida Nitzsch, 1818, Harrison (1916, p. 59) renamed Piaget’s species piageti.
Present status: Myrsidea piageti Harrison.
Lectotype of Menopon pallida Piaget: ♂ in the B.M., slide no. 794.

Menopon pallipes Piaget.
(1885, p. 111, pl. xii. fig. 2.)

Type host: Exscafactoria [chinensis] australis Gould.
B.M.: ♀ Menacanthus, slide no. 207, from type host.
Present status: Menacanthus pallipes (Piaget).
Miss Theresa Clay on the

**Menopon Parumpilosum** Piaget.
(1880, p. 421, pl. xxxiii. fig. 6.)

Type host: *Trichoglossus ornatus*. Error.
B.M.: 1 ♀ _Pseudomenopon_, slide no. 1404, from type host.

This specimen recorded from a parrot is a straggler, probably from one of the Rallidæ.
Present status: _Pseudomenopon parumpilosum_ (Piaget).

**Menopon Parviceps** Piaget.
(1880, p. 446, pl. xxxvi. fig. 3.)

Type host: *Alauda arvensis* Linn.
B.M.: 2 ♀ _Menacanthus_, slide no. 820, from type host.

Piaget’s specimens agree with authenticated material from the type host. Elsewhere it will be shown that the earliest name for the _Menacanthus_ from this host is _M. alaudæ_ (Shrank).
Present status: _Menacanthus alaudæ_ (Shrank).
Lectotype of _Menopon parviceps_ Piaget: ♀ in the B.M., slide no. 820.

**Menopon Parvulum** Piaget.
(1880, p. 444, pl. xxxv. fig. 4.)

Type host: _Cypselus apus = Apus a. apus_ (Linn.).
B.M.: 1 ♂ _Menacanthus_, slide no. 782, from type host.

No _Menacanthus_ species has been seen or recorded from any of the Cypseli; it is likely, therefore, that _Cypselus apus_ is not the true host of this species.
Present status: _Menacanthus parvulus_ (Piaget).

**Menopon Pectiniferum** Piaget.
(1885, p. 90, pl. ix. fig. 8.)

Type host: _Milvago pezoporus = Milvago c. chimango_ (Vieillot).
B.M.: 1 ♂, 1 ♀ _Osborniella_, slide no. 819, from type host.

These specimens are similar to a type of _Colpocephalum_ found on the Cuculi; of which _Colpocephalum crotophagee_ Stafford has recently been made the type species of a new genus _Osborniella_ Thompson, 1948. No other species of this type have been seen from any of the Falconiformes and so it is not possible to say whether Piaget’s specimens are stragglers, or whether in addition to _Cuculiphilus_, the
Cuculi and Falconiformes have in common another genus of Amblycera. As *pectiniferum* is rather different from the species from *Crotophaga*, the latter suggestion may be correct.

Present status: *Osborniella pectinifera* (Piaget).

Lectotype of *Menopon pectiniferum* Piaget: ♀ in the B.M., slide no. 819.

**Menopon perforatum** Piaget.  
(1880, p. 453, pl. xlii. fig. 9.)

Type host: *Eremophila chrysolaena = Eremophila alpestris chrysoleema* (Wagler).
B.M.: 1 ♀ *Menacanthus*, slide no. 829, from type host.
Present status: *Menacanthus perforatus* (Piaget).

**Menopon phaeopus** Nitzsch, 1866 (sensu Piaget).  
(1880, p. 501, pl. xli. fig. 8.)

Type host: *Larus ridibundus* Linn.
Piaget’s hosts: *Larus ridibundus* Linn. and *Larus glaucescens = Larus hyperboreus* Gunnerus.
B.M.: 1 ♀, 1 nymph *Austromenopon*, slide no. 297, from *Larus glaucescens*.
Leiden: 1 ♀ *Austromenopon*, slide no. 297 *†*, from *Larus glaucescens*.

There is little doubt that *Menopon phaeopus* Nitzsch is an *Austromenopon*. *M. ridibundus* Denny was described from the same host; the figure (1842, pl. xx. fig. 3), although poor, represents an *Austromenopon*. In the Denny collection in the British Museum there is a single female *Austromenopon* without host which was labelled as the type of *M. ridibundus* by the person responsible for remounting the Denny collection; this suggests that it was labelled *Menopon ridibundus* by Denny †. This single female agrees with authenticated females from the type host and should be considered as the type specimen. The type of *phaeopus* Nitzsch being lost, it can be assumed that this species is the same as *ridibundus* Denny, of which it becomes a synonym.

It is doubtful whether Piaget had any specimens from the first host he mentions; he probably took this from the original description of *phaeopus*; if this is so, his

† Unfortunately the original labels were not affixed to the slides when the specimens were mounted and now seem to be lost.
description and figure were made from the female specimens now in the collections. The species found on \textit{Larus hyperboreus} is not \textit{ridibundus} and may be new.

\textbf{Menopon \textit{phæostomum} Nitzsch, 1866 (sensu Piaget).} 
(1880, p. 466, pl. xxxviii. fig. 1.)

Type host: \textit{Pavo cristatus} Linn.
Piaget's hosts: \textit{Pavo cristatus} Linn. and \textit{Pavo spiciferus} = \textit{Pavo muticus} Linn. and \textit{Pavo javanicus} = \textit{Pavo muticus} Linn.

B.M.: 2 ♂♂, 2 ♀♀ \textit{Amyrsidea}, slide no. 381, from \textit{Pavo javanicus}; 6 ♂♂, 3 ♀♀ \textit{Amyrsidea}, slides nos. 382-4, from \textit{P. spiciferus}, one slide marked from Java.
Leiden: 4 ♂♂, 2 ♀♀ \textit{Amyrsidea}, slides nos. 283-4, from \textit{Pavo spicifer}, from Java.

It is doubtful whether Piaget saw specimens from the type host of \textit{phæostomum}, that is \textit{Pavo cristatus}; his description and figure were probably made from the specimens from \textit{Pavo muticus}. There are three species of \textit{Amyrsidea} parasitic on \textit{Pavo}, one of which is considerably larger than the other two; a tracing of the figure of \textit{phæostomum} in the Nitzsch manuscript shows that his species is the large one. Piaget specimens resemble one of the smaller species, and are not conspecific with \textit{phæostomum} Nitzsch.

\textbf{Menopon \textit{picæ} Piaget.} 
(1880, p. 433, pl. xxxiv. fig. 2.)

Type host: \textit{Corvus pica} = \textit{Pica pica} (Linn.).
B.M.: 6 ♀♀ \textit{Menacanthus}, slides nos. 411 and 415, from \textit{Pica caudata} = \textit{Pica pica} (Linn.).

Piaget attributed the authorship of this name to Denny, but, as Hopkins (1947, p. 100) has shown, Denny never described such a species; Hopkins also discusses the species of Menoponidæ from \textit{Pica pica} and shows that \textit{M. picæ} Piaget becomes a synonym of \textit{Menacanthus eurysternum} (Burmeister), the earliest name for the \textit{Menacanthus} from this host.
Present status: \textit{Menacanthus eurysternum} (Burmeister).
Lectotype of \textit{Menopon \textit{picæ} Piaget}: ♀ in the B.M., slide no. 411 a.
MENOPON PICI Denny, 1842 (sensu Piaget).
(1885, p. 93, pl. x. fig. 3.)

Type host: *Picus viridis* (pluvius) Hartert.
Piaget’s host: As type host.
B.M.: 3 ♂, 6 ♀ *Menacanthus*, slides nos. 412-4, from type host.

Denny’s type material of Menopon pici, in the British Museum, comprises 2 ♀ *Menacanthus*, of the same species as Piaget’s specimens and of authenticated material from the type host.

Present status: *Menacanthus pici* (Denny).
Lectotype of Menopon pici Denny: ♂ in the B.M., Denny collection, slide no. 773.

MENOPON PILOSUM Piaget.
(1880, p. 432, pl. xxxiii. fig. 9.)

Type host: *Corvus senex* = *Corvus tristis* Lesson and Garnot.
B.M.: 1 ♂, 2 ♀ *Myrsidea*, slide no. 783, from type host.
Leiden: 2 ♀, 1 nymph, slide no. 268, from type host.

These specimens comprise two species, in one of these (represented by one of the females on slide no. 783) the anterior abdominal segments of the female are not modified (as shown in pl. xxxiii. fig. 9); in the other (represented by one female on slide 783 and two females on slide 268) the first two abdominal segments of the female are strongly modified. As the description and figure refer to the female with the unmodified abdomen this specimen must be taken as the type of *pilosum*. It is not possible to say to which species the single male belongs. Neither of the species discussed above are conspecific with *M. robsoni* Cummings, allegedly from the same host.

Present status: *Myrsidea pilosa* (Piaget).
Lectotype of Menopon pilosum Piaget: ♂ in the B.M., slide no. 783.

MENOPON PLANICEPS Piaget.
(1885, p. 115, pl. xii. fig. 6.)

Type host: *Ardea leucolopha* = *Tigriornis leucolopha* (Jardine).

**Menopon platygaster** Giebel, 1874 (*sensu* Piaget).

(1880, p. 420, pl. xxxiii. fig. 5.)

Type host: *Scyphrops novaehollandiae* Latham.

Piaget's host: As type host.

B.M.: 1 ♀, 1 nymph *Cuculiphilus*, slide no. 1405, from type host.

Piaget’s female specimen agrees with authenticated females from the type host and with Giebel’s description of *M. platygaster*.

Present status: *Cuculiphilus platygaster* (Giebel).

**Menopon popellus** Piaget.

(1890, p. 251, pl. x. fig. 5.)

Type host: *Podoa senegalensis* = *Podica senegalensis* (Vieillot). Error.

B.M.: 1 ♂ (labelled ♀) *Austromenopon*, slide no. 830, from type host.

Piaget refers to the female only and the slide is labelled female, but the specimen is a male. Piaget’s figure represents a male and it can be assumed that the specimen now in the collection is the one on which Piaget based his description and figure. The specimen is almost certainly a straggler from a member of the Procellariiformes.

Present status: *Austromenopon popellus* (Piaget).

**Menopon productum** Piaget.

(1880, p. 461, pl. xxxvii. fig. 8.)

Type hosts: *Phasianus pictus* = *Chrysolophus pictus* (Linn.) and *Phasianus colchicus* Linn.

B.M.: 1 ♂, 1 ♀ *Menopon*; 1 ♂ *Menacanthus*, slide no. 364, from *Phasianus pictus*.

The figure shows a male and female *Menopon sens. str.*, the single male *Menacanthus* should, therefore, be ignored.

As there are no specimens from the second mentioned host, the male from *Chrysolophus pictus* will be made the lectotype, thus fixing that host as the type host of *productum*. Harrison (1916, p. 43) placed this species as a synonym of *M. fulvo-maculatum* Denny, this latter species
is not only from another host, but belongs to the genus _Amyrsidea_.

Present status: _Menopon productum_ Piaget.


**Menopon productum** Piaget.
(1885, p. 109.)

_Menopon subsequale_ var. _producta_ Piaget.

Type host: _Euplocomus swinhoei = Hierophisis swinhoei_ (Gould).

B.M.: 4 ♂, 4 ♀ _Menopon_, slides nos. 374–376, from type host.

Present status: _Menopon productum_ Piaget, 1885, nec Piaget, 1880.

Lectotype of _Menopon productum_ Piaget: ♂ in the B.M., slide no. 376 b.

**Menopon pullulum** Piaget.
(1885, p. 105, pl. xi. fig. 6.)

Type host: _Artamia bernieri = Oriolia bernieri_ Geoffroy.

B.M.: 1 ♂ _Myrsidea_, slide no. 837, from type host.

Present status: _Myrsidea pullula_ (Piaget).

**Menopon pustulosum** Nitzsch, 1866 (sensu Piaget).
(1880, p. 490, pl. xli. fig. 3.)

Type host: _Sula alba = Morus bassanus_ (Linn.).

Piaget’s hosts: _Sula alba_ and _Sula fiber = Sula leuco-gaster plotus_ (Forster).

B.M.: 7 ♂, 11 ♀ _Eidmaniella_, slides nos. 935–943, from _Sula alba_; 1 ♂, 2 ♀, slide no. 934, from _Sula bassana_.

Leiden: 1 ♂, 1 ♀ _Eidmaniella_, slide no. 304 *, from _Sula alba_.

Piaget’s specimens agree with authenticated material from the type host of _pustulosum_. Kéler in his original description of the genus _Eidmaniella_ (1938, p. 84) placed _Menopon pustulosum_ Nitzsch, the type material of which he had seen, in that genus; there is little doubt that Piaget’s specimens are conspecific with _pustulosum_ Nitzsch.

Present status: _Eidmaniella pustulosa_ (Nitzsch).
Bliss Theresa Clay on the Menopon quadrifasciatum Piaget.
(1880, p. 440, pl. xxxv. fig. 6.)

Type host: *Passer* [d.] *domesticus* (Linn.).
B.M. and Leiden: No specimens.

The characters of the head, prosternal plate and abdominal sternites as shown in the figure represent those of a species of *Myrsidea*. That Piaget's original specimens were, in fact, *Myrsidea* is to some extent confirmed by the presence in the collection of a slide labelled *Menopon quadrifasciatum* from *Passer montanus* with two specimens of *Myrsidea*. *Menopon annulatum* Giebel from the same host is almost certainly a *Menacanthus*. *Liotheum scopularium* Neumann allegedly from *Passer domesticus* appears, from the figure, to be an *Actornithophilus* and is presumably a straggler from one of the Charadriiformes.

Present status: *Myrsidea quadrifasciata* (Piaget).

*MENOPON RUSTICUM* Giebel, 1874 (*sensu* Piaget).
(1880, p. 443, pl. xxxvi. fig. 2.)

Type host: *Hirundo* [r.] *rustica* Linn.
Piaget’s hosts: Type host and *Hirundo riparia = Riparia r. riparia* (Linn.).

Figs. 1 and 2:

![Figure 1](image1)

![Figure 2](image2)

Part of tergite V ($\times$ 156) of *Myrsidea* spp.
Fig. 1.—*M. rustica* (Giebel).
Fig. 2.—*M. latifrons* (Carriker).

B.M.: 1 nymph *Myrsidea*, slide no. 1043, from *Hirundo rustica*; 1 ♀ *Myrsidea*, slide no. 1042, from *Hirundo riparia*. 
Available specimens of *Myrsidea* from European *Hirundo r. rustica* and *Riparia r. riparia* show that these two hosts are parasitized by distinct species. The most obvious difference between these species is the presence of one or more irregular rows of setae anterior to the marginal row of each of the abdominal tergites (fig. 1 and Conci, 1942, fig. 2) in male specimens from *Hirundo r. rustica*, and the absence of these setae in male specimens from *Riparia r. riparia* (fig. 2 and Carriker, 1910, fig. 4); the males can also be distinguished by the shape of the sclerite in the preputial sac (fig. 3 and 4, not shown in Conci, 1942, fig. 2) and both sexes by the shape of the head (figs. 5 and 6). Conci has figured the male with the plural rows of tergal setae as *Myrsidea rustica* Giebel, the type host of which is *H. r. rustica*; as Giebel's types are now lost, a neotype and neallotype from this host which agree with Conci's figure will be designated. *Nitzschia latifrons* Carriker, 1910, from *Riparia r. riparia* (Linn.) is almost certainly the usual species of *Myrsidea* found on the European *Riparia r. riparia*, with a single row of tergal setae in the male, and is the earliest name for that species. Thompson (1935, p. 153) has dealt with the types, now in the British Museum, of two species of *Myrsidea*
described by Kistiakowski (as _Nitzschia_) from _Hirundo_ and _Riparia_, but these are not both synonym of _M. rustica_ as he suggests. _Myrsidea piageti_ (Kistiakowsky), 1926, was described from a male specimen from _Hypotrichiorhitis subbuteo_ (one of the Falconiformes) and a female from _Riparia r. riparia_; these specimens are both _M. latifrons_ (Carriker), the one allegedly from the hawk, without doubt, being a straggler from _Riparia riparia_. _Myrsidea femuralis_ (Kistiakowsky), 1926, was described from a female last stage nymph or teneral adult taken from _Hirundo rustica guturalis_ Scop., and although this is in poor condition there seems little doubt that it is _M. rustica_ sensu Conci.

Piaget’s adult specimen (which he figures in pl. xxxvi. fig. 2) allegedly from _Riparia riparia_, is _Myrsidea rustica_; the nymph is unidentifiable.

The synonymy of the species discussed above is as follows:—

_Myrsidea rustica_ (Giebel), 1874. Type host: _Hirundo r. rustica_ Linn. _M. femuralis_ (Kistiakowsky), 1926.
Piaget Collections of Mallophaga.

Myrsidea latifrons (Carriker), 1910. Type host: Riparia r. riparia (Linn.). M. piageti (Kistiakowsky), 1926.

Neotype and neallotype of Menopon rusticum Giebel: ♂ (slide no. 443) and ♀ (no. 444) in the B.M., which agree with figs. 1, 3, 5 and with Conel, 1942, figs. 1–2, from Hirundo r. rustica Linn., England; 6 ♂♂ and 25 ♀♀ paratypes from the same host species from various localities.

Lectotype of Nitzschia piageti (Kistiakowsky): ♀ in the B.M., slide no. 209, from Riparia r. riparia (Linn.), Kiew, U.S.S.R.

MENOPON SATURATUM Piaget.

(1885, p. 96, pl. x. fig. 6.)

Type host: Corvus enca de Sumatra = Corvus enca compilator Richmond.

B.M.: 1 ♂, 1 ♀ Myrsidea, slide no. 405, from type host and locality.

These specimens are not conspecific with Myrsidea grandiceps (Piaget) allegedly from another subspecies of Corvus enca.

Present status: Myrsidea saturata (Piaget).

Lectotype of Menopon saturatum Piaget: ♀ in the B.M., slide no. 405 G.

MENOPON SCALARIS Piaget.

(1885, p. 95, pl. x. fig. 5.)

Menon impar var. scalaris Piaget.

Type host: Psittacus [e.] erithacus Linn.

B.M.: There is no slide labelled scalaris, but one of the slides (no. 431) labelled impar has Psittacus erithacus on the host label. This slide has two female Psittacomenopon of the type shown in the figure of scalaris and there is no doubt that these specimens are Piaget's type material.

These females agree with authenticated material from the type host. It has already been shown (p. 818) that the earliest name for this species is P. heterocephalum (Nitzsch).

Present status: Psittacomenopon heterocephalum (Nitzsch).

Lectotype of Menopon scalaris Piaget: ♀ in the B.M., slide no. 431.
Miss Theresa Clay on the

MENOPON SCITUM Piaget.
(1880, p. 442, pl. xlii. fig. 6.)

Type host: Copsychus mindanensis Wagler. Error.

B.M.: 1 ♂ Pseudomenopon, slide no. 769, from type host.

The alleged host is a Passerine, a group from which Pseudomenopon is not known; the true host is probably one of the Rallidae.

Present status: Pseudomenopon scitum (Piaget).

MENOPON SEMILUNARE Piaget.
(1880, p. 424, pl. xxxiii. fig. 8.)

Type host: Cuculus orientalis. Error.

B.M.: 1 ♂ Eomenopon, slide no. 843, from type host.

This specimen is presumably a straggler from one of the Psittaciformes, the only order on which Eomenopon is known to occur.

Present status: Eomenopon semilunare (Piaget).

MENOPON SETOSUM Piaget.
(1885, p. 103, pl. xi. fig. 4.)

Type host: Coccothraustes vulgaris = Coccothraustes c. coccovraustes (Linn.).

B.M.: 2 ♀ Menacanthus, slide no. 855, from type host.

Present status: Menacanthus setosus (Piaget).

Lectotype of Menopon setosum (Piaget): ♀ in the B.M., slide no. 855.

MENOPON SPINIFERUM Piaget.
(1885, p. 99, pl. x. fig. 9.)

Type host: Cyanocorax pileatus = Cyanocorax chrysops (Vieillot).

B.M.: 1 ♂, 7 ♀ Menacanthus, slides nos. 1406-8, from type host.

Present status: Menacanthus spiniferus (Piaget).

Lectotype of Menopon spiniferum Piaget: ♂ in the B.M., slide no. 1406.

MENOPON SPINOSUM Piaget.
(1880, p. 449, pl. xxxvi. figs. 4-5.)

Type host: Cardinalis virginianus = Richmondena cardinalis (Linn.).
B.M. : 2 ♂, 7 ♀ Menacanthus, slides nos. 856–9, from type host.
Leiden : 1 ♂, 2 ♀, Menacanthus, slide no. 273 *, from type host.
Present status : Menacanthus spinosus (Piaget).
Lectotype of Menopon spinosus Piaget : ♂ in the B.M., slide no. 859.

**Menopon subæquale** Piaget.
(1880, p. 463, pl. xxxvii. fig. 5.)
Type host : Euplocamus ignitus = Lophura ignita (Shaw).
B.M. : 6 ♂ Amyrsidea, slides nos. 361, 367–9, from type host.
Leiden : 2 ♀ Amyrsidea, slide no. 369, from type host.
Harrison (1916, p. 45) re-named this species substitutum, considering that it was invalidated by subæquale Lyonet, 1889; however, Mr. G. H. E. Hopkins has pointed out (in litt.) that Piaget’s name is valid because subæquale Lyonet was described as a Liotheum (e.g. Colpocephalum) and is now in Myrsidea.
Present status : Amyrsidea subæqualis (Piaget).
Lectotype of Menopon subæquale Piaget : ♂ in the B.M., slide no. 361 b.

**Menopon subrotundum** Piaget.
(1880, p. 453, pl. xxxv. fig. 2.)
Type host : Gracula sulcirostris = Phalacrocorax sulcirostris (Brandt).
B.M. : 1 ♂, 1 ♀ Eidmaniella, slide no. 851, labelled Menopon rotundum, from type host.
As Thompson (1937, p. 26) has said, there seems little doubt that these specimens, although incorrectly labelled, are the type material used by Piaget for his original description.
Present status : Eidmaniella subrotunda (Piaget).

**Menopon sulcatum** Piaget.
(1880, p. 485, pl. xxxix. fig. 7.)
Type host : Ardea egretta = Casmerodius albus egretta (Gmelin).
B.M. and Leiden : No specimens.
No specimens of any Amblyceran genus have been seen from the type host, but of the genera known from the Ardeidæ Piaget's figure resembles only Ciconiphilus. Colpocephalum obscurum Giebel, 1874, from the same host, is almost certainly a Ciconiphilus and the name must take priority over sulcatum. Colpocephalum laticeps Kellogg, 1896, also from the same host, is a Ciconiphilus, presumably identical with obscurum; and C. veratrum Kellogg, 1910, from Cosmerodius albus melanorhynchos (Wagler), also a Ciconiphilus, may prove to be conspecific with specimens from C. albus egretta.

Present status: Ciconiphilus obscurus (Giebel).

**Menopon tarsatum** Piaget.

(1880, p. 472, pl. xlii. fig. 4.)

Type host: *Cryptonyx coronatus* = *Rollulus roulroul* (Scopoli).

B.M.: 7 ♂♂, 2 ♀♀ Menacanthus, slides nos. 377–9, from type host.

*Menacanthus okadai* (Uchida), 1926, from the same host is almost certainly the same as tarsatum, and should be considered as synonym of this latter name.

Present status: *Menacanthus tarsatus* (Piaget).


**Menopon tempokale** Piaget.

(1880, p. 487, pl. xxxix. fig. 6.)

Type host: *Leptoptilus argala* = *Leptoptilos dubius* (Gmelin).

B.M.: 4 ♂♂, 4 ♀♀, 3 nymphs Ciconiphilus, slides nos. 865–9, from type host.

Leiden: 1 ♂, 1 ♀ Ciconiphilus, slide no. 295, from type host.

The host name given by Piaget, *Leptoptilus argala* has been used for both *L. dubius* (Gmelin) and *L. crumeniferus* (Lesson); however, specimens of Ciconiphilus from the two hosts are easily distinguished by the characters of the male genitalia, and there is no doubt that Piaget's specimens came from *L. dubius*. The type material of *Colpocephalum eurygaster* Piaget, allegedly from *Leptoptilus argala*, is Bucerophagus, and presumably originated from one of the Bucerotidae.
Present status: *Ciconiphilus temporale* (Piaget).
Lectotype of *Menopon temporale* Piaget: ♂ in the B.M., slide no. 865.

**Menopon Tibiale** Piaget.
(1885, p. 100, pl. xi. fig. 1.)

Type host: *Cyanopolius cooki = Cyanopica cyanus cooki* Bonaparte.
B.M.: 5 ♀♀ *Menacanthus*, slides nos. 870–1, from type host.
Present status: *Menacanthus tibialis* (Piaget).
Lectotype of *Menopon tibiale* Piaget: ♀ in the B.M., slide no. 871.

**Menopon Titan** Piaget.
(1880, p. 503, pl. xl. fig. 7.)

Type host: *Pelecanus onocrotalus* Linn.
B.M.: 1 ♀, 1 ♀ *Piagetiella*, slide no. 439, from type host.
Leiden: 1 ♂ *Piagetiella*, slide no. 307 *, from type host.
Present status: *Piagetiella titan* (Piaget).
Lectotype of *Menopon titan* Piaget: ♂ in the B.M., slide no. 439.

**Menopon Translucidum** Piaget.
(1885, p. 150, pl. xvi. fig. 4.)

Type host: *Amblyrhamphus holosericeus* (Scopoli).
B.M.: 4 ♂♂, 8 ♀♀ *Menacanthus*, slides nos. 874–7, from type host.
Present status: *Menacanthus translucidus* (Piaget).
Lectotype of *Menopon translucidum* Piaget: ♂ in the B.M., slide no. 875.

**Menopon Tridens** Burmeister, 1838 (sensu Piaget).
(1880, p. 479, pl. xxxix. fig. 1.)

Type host: *Fulica [a.] atra* Linn.
Piaget’s host: *Gallinula [c.] chloropus* (Linn.).
B.M.: 1 ♀, 6 ♀♀, 10 nymphs *Pseudomenopon*, slides nos. 878–80, from *Gallinula chloropus*.
Leiden: 3 ♀♀, 1 nymph *Pseudomenopon*, slide no. 230, from *Gallinula chloropus*.

Piaget was obviously confused about the type host of *tridens*, as he redescribed this species from specimens
from *Gallinula chloropus* and described specimens from *Fulica atra*, the true type host of tridens, as a new variety (see above under major 1880, p. 480). Although the species from *Gallinula chloropus* has no name, a new name will not be given to Piaget's description because this is inadequate for recognition and because a revision of the whole genus may show that there is a name available for this species.

**Menopon trinoton** Piaget.  
(1880, p. 431, pl. xxxiii. fig. 10.)

- **Type host:** *Corvus validissimus* = *Corvus validus* Bonaparte.  
  B.M.: 4 ♀♀, 4 ♀♀ *Myrsidea*, slides nos. 406–8, from type host.  
  Leiden: 1 ♀, 2 ♀♀ *Myrsidea*, slide no. 267, from type host.  
- **Present status:** *Myrsidea trinota* (Piaget).  
- **Lectotype of Menopon trinoton Piaget:** ♀ in the B.M., slide no. 408 b.

**Menopon triseriatum** Piaget.  
(1880, p. 460, pl. xxxvii. fig. 3.)

- **Type host:** *Gallus [gallus] banciva* Temminck.  
  B.M.: 1 ♂, 3 ♀♀ *Amyrsidea*, slide no. 220, from type host, Java.  
- **Present status:** *Amyrsidea triseriata* Piaget.  
- **Lectotype of Menopon triseriatum Piaget:** ♂ in the B.M., slide no. 220 a.

**Menopon trithorax** Piaget.  
(1885, p. 97, pl. x. fig. 8.)

- **Type host:** *Corvus macrorhynchus* Wagler.  
  B.M.: 3 nymphs *Myrsidea*, slide no. 204, from type host.  
- As at least two species of *Myrsidea* may be found on the Corvidae it is not possible to say, without a study of nymphal stages, whether *Myrsidea shirakii* Uchida, 1920, from *Corvus macrorhynchus levallianti* from Formosa (probably *Corvus macrorhynchus colonorum* Swinhoe) is a synonym of Piaget's species.  
- **Present status:** *Myrsidea trithorax* (Piaget).
Menopon tumidum Piaget.
(1885, p. 151, pl. xvi. fig. 5.)

Type host: *Plectopterus gambensis* (Linn.).
B.M. : 2 ♂, 1 ♀ Holomenopon, slide no. 891, from type host.

*Menopon africanum* Kell. and Paine from the same host is represented in the B.M. collection by three specimens labelled as types, one of these is a nymphal *Menacanthus* and the other two, female *Holomenopon*. These latter specimens differ from Piaget's female in the characters of the dorsal chaetotaxy. Apart from these, only five other female *Holomenopon*, allegedly from the type host, have been seen; of these, three resemble *africanum* and two *tumidum*. Further material is necessary to decide whether there are two closely related species of *Holomenopon* on this type host, or whether some of the specimens examined are stragglers. *H. africanum* is, anyhow, not a synonym of *H. tumidum*.

Present status: *Holomenopon tumidum* (Piaget).

Menopon unicolor Piaget.
(1880, p. 471, pl. xxxviii. fig. 5.)

Type host: *Perdix javanica = Arborophila javanica* (Gmelin) and *Perdix sp.?* from Celebes.
B.M. : 2 ♂, 1 ♀ *Menacanthus*, slide no. 206, from *Perdix javanica*.
Leiden : 2 ♂, 1 ♀ *Menacanthus*, slide no. 287 *, from *Perdix javanica*.

As there is no specimen now in the collections from the second-mentioned host and as this, anyhow, is unidentifiable, one of the specimens on slide no. 206 will be designated as lectotype, thus fixing the type host as *Arborophila javanica*.

Present status: *Menacanthus unicolor* (Piaget).

Lectotype of *Menopon unicolor* Piaget : ♂ in the B.M., slide no. 206 a.

Menopon uniseriatum Piaget.
(1880, p. 464, pl. xxxvii. fig. 4.)

Type host: *Phasianus pretatus = Diardigallus diardi* (Bonaparte).
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B.M.: 3 ♂♂, 3 ♀♀ Amyrisidea, slides nos. 214–5, from type host.

Present status: *Amyrisidea uniseriata* (Piaget).


**MENOPON ZONATUM** Piaget.

(1885, p. 152, pl. xvi. fig. 6.)

Type host: *Sacorhamphus gryphus* = *Vultur gryphus* Linn.

B.M.: 3 ♂♂, 6 ♀♀ Cuculiphilus, slides nos. 892-4, from type host.

*Menopon gryphus* Giebel, 1874, from the same host does not seem to be a *Cuculiphilus*, nor is it possible to apply the description to any of the Amblyceran parasites of the hawks. As the type is lost the name will probably have to be discarded as unrecognizable.

Present status: *Cuculiphilus zonatus* (Piaget).

Lectotype of *Menopon zonatum* Piaget: ♂ in the B.M., slide no. 894.

**References.**

Only those references published since the bibliography given by Harrison (1916, pp. 145–154) are included.


Two female specimens of a new genus and species of Mallophaga recently examined show an external cuticular organ of a type hitherto undescribed in the Mallophaga, or, as far as is known, in any other insect. The species belongs to the subfamily Menoponinae and its affinities would seem to lie with those of Menopon Nitzsch sens. str. As only one sex of this species is known and as there is some doubt as to its true host\(^1\) the genus and species will not be described until further material is available.

\(^1\) The specimens were taken from a skin of *Ptilinopus bellus* (Sclater), a New Guinea pigeon; a large number of skins of many species of *Ptilinopus* have been searched in vain for further specimens. It is possible, therefore, that another New Guinea bird is the true host, contamination having taken place during collecting. Much confusion has already been caused in the systematics of the Mallophaga by the describing of new genera and species from one sex and with incorrect type hosts.

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Each specimen shows a single pair of these organs on the dorsum of the abdomen. Each organ comprises a curved row of stout elongate setae arising immediately posterior to the sixth tergite; the setae are directed backwards and their apices, which are clubbed, are held in a pocket-like depression in the adjoining posterior tergite (fig. 3). The posterior margin of the sixth tergal plate is indented to allow for the curvature of the row and there is a strip of intertergital sclerotization between the sixth and seventh tergites. There are 11–18 of these setae, the most central one of each group being longer and stouter than the lateral setae (figs. 1 and 2). The apices of some of the setae of each organ are spirally twisted about each other within the pocket. Each seta appears to be a modified type of the normal setae found along the posterior margin of the tergites of this and other segments.

The pocket, lying in tergite 7, has a thickened rim round the dorsal opening, and its ventral base is nearly flat (figs. 3 and 4). Whether or not this base represents a direct opening of the pocket into the abdomen cannot be determined.

It is not possible, with the present material, to say what the function of the setae may be nor that of the whole organ. The specimens were dead and in a dried condition when collected, and it has therefore been impossible to determine whether or not there are glands associated with the pocket or the setae. I have discussed this organ with Dr. H. E. Hinton, Dr. W. H. Thorpe and Mr. J. F. Gates Clarke, to whom I am much indebted for the following suggestions. Dr. H. E. Hinton has pointed out that the clubbed setae are not very dissimilar in shape to the setae which in some other insects are known to be associated with the openings of odiferous glands, and he suggests that if it should prove to be the case that an odiferous gland opens in the pocket or on the apex of each seta, that the posterior pocket may function in one or both of the following ways: (1) to hold the setae close together so that any excess secretion is carried by capillarity between their adjoining surfaces, and the surface area of the liquid, and therefore its rate of evaporation thus greatly increased; (2) to serve as a reservoir for the secretion.

Dr. W. H. Thorpe has suggested a proprioceptive function for these organs. Pringle (1938 : 467) has shown that the hairs of the "hair plates" on the legs of the cockroach (Periplaneta americana) are excited by a fold of the intersegmental membrane, the excitation varying with the position of the joint, and suggests that these plates and similar structures in other parts of the bodies of insects act as proprioceptive organs. The fact that the setae involved in the organ described here appear to be modified types of the sensory setae normally found on the abdomen would make such a function possible. These organs may, therefore, have a proprioceptive function associated with some unusual movement of the abdomen, and in which the intertergital sclerotization may act as a hinge.

Mr. J. F. Gates Clarke has drawn my attention to a somewhat analogous condition found in some of the Microlepidoptera. In five species of Stenoma the males have a "hairpencil" arising from the basal part of the anal section of each hind wing; the end of each "hairpencil"
is held in a groove in the abdomen, which, depending on the species, passes over two to four segments. Meyrick (1930: 29) refers to this condition in *S. vacans*. There is no indication of what the function may be of the "hairpencil" (formed, of course, from modified scales, not setae) in the *Stenoma* species.

Some knowledge of the biology of the species and whether these organs are also present in the male is essential before any suggestions can be made for the function of an odiferous secretion, if this proves to be associated with the organs; or if the organs prove to have a proprioceptive function, why such a function should be necessary in this particular part of the body.

References.

THE ECLOSION OF TSETSE (GLOSSINA) LARVAE (DIPTERA).

By C. H. N. Jackson, D.Sc., Ph.D.

(Department of Tsetse Research, Tanganyika.)

These observations were made on wild Glossina swynnertoni Austen. The sections were cut at a thickness of 10 microns and stained with Delafield's haematoxylin and eosin. Whole larvae were mounted in polyvinyl alcohol lacto-phenol.

The mouth in the first instar larva is antero-dorsal (Roubaud, 1909) and is blocked by a chitinised median tooth about 0.5 mm. long. This tooth is shown in Plate 1 (figs. 1 and 2) in an entire larva, and in transverse section in Plate 2 (fig. 8). It is cast with the skin of the first instar, and until then prevents attachment to the teat of the mother. The tooth appears to be movable in the dorso-ventral plane, and is evidently an egg-tooth, used to puncture the chorion, which then splits Plate 2 (fig. 4) along a line of weakness on the dorsal side as described by Newstead, Evans and Potts (1924). An oral egg-tooth in an insect is probably unique, because though egg-bursters are dorsal the mouth usually is not.

The removal of the chorion is then accomplished by a special organ arising from the floor of the uterus; this organ I have called the choriothete from χοριόθητος, skin or shell, and θήτως, one who places or disposes. At its anterior end the choriothete is attached to the floor of the uterus, but posteriorly it rises from the floor and projects freely backwards to a point below the nerve cords of the first instar larva and immediately above a depression in the floor. Posteriorly the choriothete is a hollow organ and throughout its length it is provided with a characteristic dorsal columnar epithelium which by some means not elucidated is able to adhere to the chorion and afterwards to release it. It is present in the freshly emerged fly, where it was seen by Stuhlmann (1907, Plate 4 (fig. 145), who refers to it in the text (page 61) as dorsal: "It is peculiar that this fly had on the dorsal side of the uterus a strong thickening of the epithelium, whose significance is obscure to me." Several of his figures, however, Plate 2 (figs. 55 and 56), Plate 4 (figs. 108 to 141) are reproduced upside-down. Plate 3 (fig. 5) shows the choriothete removing the chorion from the anterior end of a hatching larva, which has shrunk in fixation. The choriothete is here attached to the floor of the uterus by a muscular apparatus which enables it to change its shape, and probably, as Dr. P. Tate has suggested to me, to force blood into its posterior cavity. Plate 3 (fig. 6) shows the posterior part of the choriothete in the same specimen, where it is lying free of the uterus floor. In both of these figures the dorsal epithelium can be seen gripping the chorion closely and apparently drawing it downwards away from the larva. Plate 4 (fig. 7) illustrates the same process, but with a larva which is not shrunken, showing that it is the activity of the
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By Theresa Clay, B.Sc.

I. Notes on the Goniodidæ.

Dr. Kéler (1939, pp. 1–254) has published a full account with figures of the species of Goniodidæ and Heptapso-gastridæ in the Halle collection. His excellent figures make it possible for the first time to interpret with certainty the Nitzsch, Giebel and Taschenberg names. There are, however, discrepancies between certain of Dr. Kéler's conclusions and those of the present writer.

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(Clay, 1940, pp. 1-120), which it seems desirable to discuss. Hopkins (1947, p. 74) has mentioned the inclination of Dr. Kéler to ignore the principle of priority, and his acceptance of *nomina nuda*, especially when these are attributed to Nitzsch and the original specimens, are present in the Halle collection. Hopkins has emphasized how this "unilateral repudiation" of the rules by Kéler adds to the confusion and does not in any way simplify the interpretation of the old names. In the paper under discussion Dr. Kéler attributes a number of names to Nitzsch, which, in fact, should stand under the authorship of other authors who used names originally published by Nitzsch as *nomina nuda*. There is some difficulty in establishing the author of certain species based on material in the Halle collection. This collection was used primarily by Nitzsch, who described, and in some cases figured in manuscript form, the majority of specimens. Nitzsch published only one paper containing valid names (1818, pp. 261-316) during his life-time. After his death, Giebel published Nitzsch's manuscript names in various papers, some as *nomina nuda* and some with the original descriptions; the full descriptions of the majority of species appearing only in *Insecta Epizoa*, 1874. In this latter publication there are also a number of species, the descriptions of which were not taken from the Nitzsch manuscript but are Giebel's original work; such names are not followed by the name of Nitzsch or any other author (e.g. *Menopon albidum*, p. 280). However, before Giebel published any of the manuscript names Burmeister, working on the Nitzsch material, published (1838, pp. 418-433) a number of independent descriptions, using for the most part Nitzsch manuscript names. Taschenberg also described specimens in the Halle collection, including some of Rudow's which seem to have found their way to Halle. In addition, Denny (1842) and other authors described species to which they attached Nitzsch's *nomina nuda* and (in the case of Denny, at least) Nitzsch's unpublished manuscript names, evidently obtained from Burmeister in correspondence (see Denny, 1842, p. xxii.). It follows from this that all such names published for the first time with independent descriptions, by Burmeister, Denny and others, must stand under the authorship of these writers, even though they used the names taken
from the Nitzsch manuscript, and in some cases based their descriptions on the same material as used by Nitzsch. All the names with descriptions first published by Giebel should be referred to the authorship of Nitzsch (because Giebel himself showed that the descriptions were those of Nitzsch), with the exception of those which in *Insecta Epizoae* are not followed by an author's name; these should be attributed to Giebel. As "Nitzsch in Giebel" is long and clumsy, and incidentally inaccurate, it is suggested that such names should be quoted as (e.g.) *Menopon ambiguum* Nitzsch, and when listed in synonymies, as *Menopon ambiguum* Nitzsch. Giebel, 1874, p. 295. There is no such author as "Nitzsch in Denny" or "Nitzsch in Burmeister."

Through the great kindness of Dr. Menner of the Zoologisches Institut, Halle, it has been possible to examine all the material on which Dr. Kéler based his paper. The fact that Dr. Kéler was able to examine only such a small amount of material may account for the large number (17) of new genera described for species within the existing genera *Goniodes*, *Goniocotes* and *Coloceras*. No detailed discussion will be given here of these genera, but the present writer strongly disagrees with the erection of the majority of them, and in the case of *Goniodes* from the Galliformes (Clay, 1940, pp. 1-120) has shown, under the discussions of the species groups into which the various *Goniodes* species were divided, the undesirability of further generic divisions. Of the Goniodidae from the Columbæ, it seems doubtful whether there is sufficient material yet available for an adequate generic classification. It can be presumed, on the analogy of other groups from large host orders, that many of the Goniodidae on the Columbæ are relatively recent derivations from a common ancestor, and that a complete series of species from all the living Columbæ would link up some, if not all, of the somewhat diverse groups placed in separate genera by Dr. Kéler. The following is a synonymy of the genera of Goniodidae from the Galliformes and Columbiformes which the present author intends to recognize provisionally:

**Goniodes** Nitzsch.

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Oulocrepis Kéler.  Margaritenes Kéler.
Solenodes Kéler.  Kelerigonioidea Conci.
Astrocotes Kéler.  Claygonioidea Conci.
Astrodes Kéler.  Archigonioidea Conci.

PASSONOMEDA Carriker.
PACHYSKELOTES Kéler.
GONIOCOTES Burmeister.
Synonym: Dictyocotes Kéler.
CHELOPISTES Kéler.
Synonym: Trichodomedea Carriker.
LABICOTES Kéler.
COLOCERAS Taschenberg.
Synonyms: Ancistrodes Kéler.

Nitzschiella Kéler.
CAMPANULOTES Kéler.
KODOCEPHALON Kéler.
AURICOTES Kéler.
PHYSCONELLOIDES Ewing.
Synonyms: Goniocotocanthus Guimarães.

1. PACHYSKELOTES Kéler. (1939, p. 55.)
Hopkins (in the press) has discussed the confusion which has been caused by the inclusion of the male of one species and the female of another, under the name Lipeurus orthopleur. Nitzsch, the genotype of Pachyskelotes.

2. GONIODES DISCOGASTER (Taschenberg). (Kéler, 1939, p. 77.)
The description of the male of this species (Clay, 1940, p. 114) shows that it cannot be placed in the same genus as Goniodes suborbiculatus, the genotype of Kodocephalon Kéler. Its affinities would seem to lie with the species included in the genus Homocerus Kéler (1939, p. 117) or species group M (Clay, 1940, p. 102).

3. GONIODES CHELICORNIS. (Kéler, 1939, p. 79.)
Kéler attributes this name to Nitzsch, 1818; but in this publication chelicornis was a nomen nudum. As
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previously shown (Clay 1940, p. 37) the earliest name for the Goniodes from Tetrao urogallus is G. bituberculatus Rudow, 1869.

4. GONIODES COSTATUS (Kéler). (1939, p. 83.)

Goniodes tetraogallae Clay (1940, p. 74) is a synonym of this name.

5. GONIODES CUPIDO. (Kéler, 1939, p. 90.)

Kéler attributes the name to Giebel, 1866, but the mention in this publication is a nomen nudum; the author should, in fact, be Rudow (see Clay, 1940, p. 45). The types mentioned by Kéler (p. 93) must stand as the types of Goniodes cupido Giebel, 1874 nec Rudow, 1870.

6. THE GONIODES SPECIES FROM PERDIX AND ALECTORIS. (Kéler, 1939, pp. 102–109.)

The present writer (1940, p. 87) considered that specimens from Perdix perdix (type-host of dispar Burmeister), Alectoris rufa (type-host of truncatus Giebel = flaviceps Rudow), and Alectoris grasea (type-host of breviantennatus Piaget and cypricus Kéler) could not be separated. Kéler considers dispar, truncatus (= flaviceps), breviantennatus and cypricus to be distinct species.

The characters distinguishing dispar from cypricus, as given by Kéler (1939, pp. 102, 107 and 220), are the shape of the anterior region of the head, shape of temples, and the proportion of head length to body length. Of the four male and ten female specimens of dispar in the Halle collection mentioned by Kéler (p. 103), three males and five females have been examined; none of the females has the straight posterior margin of the temples as shown by Kéler (fig. 53), nor has this condition been found amongst forty-four other females from Perdix perdix, with the exception of one obviously distorted example. Kéler states that his figure shows a female "mit extrem kleinem kopfe," which suggests that it may have been a shrunken and somewhat distorted specimen. A series of twenty-two males and forty-four females from Perdix perdix examined show some variation in the shape of the anterior margin of the head; this may resemble the condition shown by Kéler (fig. 53), or that shown by Merisuo (1944, p. 99). The type series, two females and three males, of G. cypricus has been compared with the
series from *Perdix perdix* and cannot be separated on head shape. Merisuo has made a careful comparison of the measurements of specimens collected from *Perdix perdix* in Finland with those of the types of *dispar* and *cypricus* as published by Kéler. Merisuo concluded, both on measurements and shape of the head, that his specimens from *Perdix perdix* (type-host of *dispar*) must be *cypricus* (originally described from specimens from *Alectoris graeca*). In fact, his results show clearly that the specimens from the two host species cannot be separated, and his measurements illustrate the range of variation within the species.

Kéler (p. 221) gives as the characters distinguishing *breviantennatus* Piaget from *cypricus*: the larger size and the smaller cephalic index of *breviantennatus*; the male antennae shorter than those of the female in *breviantennatus*, but longer in *cypricus*; and the female abdomen being broadest anterior to the middle in *breviantennatus*, and posterior to the middle in *cypricus*. Kéler takes his measurements of *breviantennatus* from Piaget's original description (1885, p. 50); but as previously shown (Clay, 1940, p. 59), Piaget's published measurements do not bear any constant relationship to the measurements of his type material after this has been treated with caustic potash and mounted in canada balsam; his original measurements cannot, therefore, be used for comparison with material mounted by this latter method. All the measurements given by Kéler for *cypricus* fall within the measurements of Piaget's type series; the two female types of *cypricus* are both unusually small examples (possibly partly due to different methods of mounting) when compared with the series of specimens from *Alectoris graeca* listed in Clay, 1940, p. 89: however, one of Piaget's females is comparable in size to the females of *cypricus*. The cephalic indices of a male and female of Piaget's specimens are 1.28 and 1.25 respectively, these being comparable to those of *cypricus*: 1.23–1.31 in the males and 1.25–1.28 in the females (Kéler, pp. 107 and 221 gives 1.31 in error for 1.23 for the male and 1.35 for 1.28 in the female). In the type material of *breviantennatus*, the male antennae are longer than those of the female, and in both *cypricus* and *breviantennatus* the type females have the abdomens broadest at segments IV and V. There seems little doubt, therefore, that *cypricus* must be
considered as a synonym of *breviantennatus*; it has already been shown above that *cypricus* (and therefore *breviantennatus*) is a synonym of *dispar*.

In the key given by Kéler (pp. 220–1) *dispar* is separated from *truncatus* and *cypricus* by the shape of the anterior margin of the head, shape of temples, and proportions of head length to body length; it has been shown above (under *cypricus*) that these differences are not constant and cannot be accepted. In the same key *cypricus* is separated from *truncatus* by its shorter antennae and by having the dorsal abdominal setae of the male neither so long nor so stout. Measurements have been made of male antennae (Kéler had seen no females of *truncatus*) from the types of *breviantennatus*, *cypricus* and *truncatus*, and from other specimens from the type-hosts of these species: there is a certain amount of variation in different specimens (partly due, no doubt, to different methods of treatment and foreshortening in the balsam), but as such variations are found in specimens from the same host, they cannot be considered as specific differences but merely as individual variations or artefacts. There appear to be no constant differences in the form of the male abdominal setae. The apparent differences in the ends of the parameres (Kéler, fig. 55) of *truncatus* and *dispar* (fig. 53) are due to distortion; in the former the ends are curled back on themselves. It has previously been shown (Clay, 1940, p. 87) that *flaviceps* Rudow is the earliest name for the *Goniodes* from *Alectoris r. rufa*, and ante-dates *truncatus* Giebel.

It is considered that, on the available material, specimens from *Perdix perdix*, *Alectoris rufa*, and *A. graea* are not separable, and hence *flaviceps* Rudow (*truncatus* Giebel), *breviantennatus* Piaget (*cypricus* (Kéler)) are synonyms of *dispar* Burmeister.

7. *Goniodes capitatus* (Kéler). (1936, p. 106.)

*Goniodes capitatus* (Kéler) appears to be distinct from the species discussed above under 6, with the characters as given by Kéler.

8. *Goniodes minor* (Piaget). (Kéler, 1939, p. 120.)

It was shown (Clay, 1940, p. 102) that *minor* Piaget (1880, p. 241) was a composite species, the type material
comprising three related species, separable only by the characters of the male genitalia and chaetotaxy. A lectotype of minor was designated and figured; and one of the other species was described as G. biordinatus. Kéler’s specimens, figured as minor, fig. 64, are, in fact, biordinatus Clay.

9. Goniodes meyeri (Kéler). (1939, p. 122.)
Kéler’s type, allegedly from Talegallus fuscirrostris, has been compared with Piaget’s types of G. major and appears to conspecific. The differences given by Kéler between meyeri and major are based on Piaget’s published figure and measurements; it cannot be too often emphasized that these are useless for the comparison of closely related forms. The types of G. major (Piaget) are from Megapodium rubripes var. gilberti=Megapodius nicobariensis gilbertii Gray, and not Megacephalon maleo as stated by Kéler, p. 122.

10. Goniodes temporalis (Kéler). (1939, p. 131.)
This species was described from two female specimens in the Halle collection, the host of which is given as “Perd.?” The type specimens have been examined and appear to be indistinguishable from paratypes of G. extraneus Clay (1940, p. 79) from Francolinus gularis (Temminck). The apparently smaller head breadth (and hence cephalic index) given by Kéler is due to the temple processes, which are membranous in this species, being somewhat shrunken in the type specimens of temporalis. Both these specimens show segment X elongated and produced beyond the posterior margin of the last segment of the abdomen (as in Clay, 1940, fig. 55b), not coterminous with it (as in Kéler, 1939, fig. 70). It can, therefore, be assumed that extraneus Clay is a synonym of temporalis (Kéler); although, in the absence of males, complete certainty is not possible.

It is unfortunate that many authors continue to describe species from unidentified or obviously incorrect hosts, and (in the Ischnocera) from female specimens only, as confusion must result.

11. Goniocotes numidæ. (Kéler, 1939, p. 147.)
Kéler refers this name to Gurlt, 1857, p. 297, but Gurlt’s mention of the name was as a nomen nudum; the name
must stand, therefore, as *G. numidæ* Kéler, 1939. The type-host of *numidæ* Kéler is *Numida meleagris* subsp.? Mjöberg (1910, p. 107) described *Gc. nigromaculatus* from *Numida meleagris mitrata* Pallas. Mjöberg’s types are believed to be lost and no material has been seen from the type-host. It is probable that all the subspecies of *Numida meleagris* are parasitized by the same form of *Goniocotes*, and that *numidæ* Kéler, 1919 will have to stand as a synonym of *nigromaculatus* Mjöberg, 1910.

12. **Auricotes lativenter** Kéler. (1939, p. 167.)

This species was described from one female (marked holotype) from *Carpophaga bicolor* = *Ducula bicolor* (Scopoli), three females and one nymph (marked paratypes) from *Myristicivora melanura* = *Ducula melanura* (G. R. Gray) and one male (marked allotype) from *Tinamus rufescens* = *Rhyncotus rufescens* (Temminck); this material comprises at least two species. Species of *Ducula* may have two species of *Auricotes*, one similar to *carpophaga* (Rudow) (see Kéler, 1939, fig. 94), and those shown on Kéler’s plates I–IV, with the exception of plate I, figures 3–4; these are small forms, without sexual dimorphic antennæ, and with male genitalia small and simple in character. The other type is more robust, the male antennæ enlarged, and the genitalia relatively larger and more complicated. The females listed above, including the holotype, belong to the robust type, the single male to the first type. This male appears to be indistinguishable from *carpophaga* (Rudow). It will be necessary to examine a reasonable series of the different species of *Auricotes* occurring on the various species of *Ducula* before an attempt can be made to clarify the systematics of this group. As stated above it is doubtful whether *Ischnoceren* species should ever be described from females only; and confusion must be caused by making obvious stragglers, as in the case of the male of *lativenter*, into type specimens.

13. **Osculotes** Kéler. (1939, p. 175.)

This is the earliest name for the genus, with *Gc. curtus* Burm. as genotype, of which *Opisthocomiella* Guimarães, 1940, p. 287, and *Sikorella* Eichler, 1940, p. 97 are absolute synonyms.
14. **Chelopistes** Kéler. (1939, p. 180.)

This genus, with *Goniodes meleagridis* (Linn.) as genotype, is an earlier name for *Virgula* Clay *nec* Simpson, 1906.

15. **Ornicholax alienus** (Giebel). (Kéler, 1939, p. 201.)

Kéler places *O. robustus* Carriker as a synonym of *alienus* but, as Hopkins (1940, p. 420) has shown, the former species is distinct, and *O. solitarius* from *Tinamus solitarius* Guim. & Lane is most probably a synonym of *O. alienus*. Specimens from *Tinamus solitarius* appear to be identical with the type of *O. alienus*, which is, however, in poor condition, so that absolute certainty as to its identity is not possible. The type is also quite distinct from a male of *Ornicholax* from *Tinamus s. serratus*, identified as *robustus* by Carriker.

16. **Strongylocotes complanatus** (Piaget). (Kéler, 1939, p. 206.)

The specimen figured by Kéler (fig. 114, labelled ♀, in error) is a male *Strongylocotes* from *Tinamus (=Crypturellus) variegatus*, and is not the same as that found on *Crypturellus obsoleteus*, the type-host of *S. complanatus* (Piaget). The males (Piaget's type is a female) of the two forms found on these two hosts are quite distinct in the characters of the ninth abdominal segment (cf. Carriker, 1936, pl. 6, fig. 2, and pl. 7, fig. 3). Kéler's figure does not, therefore, represent *S. complanatus* (Piaget) but *S. complanatus variegatus* Carriker.

II. THE TYPE-HOST OF **OXYLIPEURUS APPENDICULATUS** (Piaget).

In Clay, 1938, p. 160, the type-host of *Oxylipeurus appendiculatus* (Piaget) was given as *Megapodius r. reinwardt*. This is wrong. In the original description the hosts given were *Megapodium rubripes bernsteinii* = *Megapodius nicobariensis bernsteinii* Schlegel and *Megapodium rubripes gilberti* = *Megapodius nicobariensis gilbertii* G. R. Gray. The Piaget collections contain specimens from the latter host only, as shown in Clay, 1938, p. 161 and 1940, p. 430; in this last paper a lectotype of *appendiculatus* was designated, but as the host of this was not given, the confusion caused in the previous
paper was not rectified. The lectotype and paratypes of *Oxylipeurus appendiculatus* (Piaget) come from *Megapodius nicobariensis* *gilbertii* G. R. Gray, which is, therefore, the type-host.

**III. The Denny and Piaget Collections in the British Museum.**

The type specimens alleged to be present in these two collections were listed by G. B. Thompson in various papers, and these published lists are being used as a basis for erecting neotypes for those specimens marked as missing. However, for reasons discussed below, it must not be assumed that the type specimens of a species are lost because they are marked as missing in the above lists. In the case of the Denny collection (Thompson, 1937, pp. 74–81), twenty of the species marked as missing are, in fact, represented by one or more specimens. Amongst these are the type specimens of *Nirmus (=Columbicola) claviformis* Denny (apparently omitted from the list altogether), for which Eichler (1942, p. 27) has erected neotypes, and *Lipeurus (=Pectinopygus) gyricornis* Denny (marked without specimens on p. 81 of the Denny list), for which Thompson (1947, p. 770) has erected neotypes. These neotypes, of course, have no standing.

In the Piaget lists specimens marked as missing may be present in the collection for another reason. *Lipeurus (=Pectinopygus) annulatus* Piaget, for example, is marked as missing and there is no slide in the British Museum collection labelled with this name. There is, however, a slide with two males labelled *Lipeurus pullatus* with *Sula fusca* on the host label. These two males are not *Pectinopygus pullatus=P. bassani* (O. Fab.) but are similar to Piaget’s figure of *annulatus*, the type-host of which is *Sula fusca* (=*Sula leucogaster* plotus Forst.). There seems little doubt that these are the original specimens from which Piaget made his description and figure of *annulatus*, and they should, therefore, be considered as the type specimens. It can be presumed that Piaget first identified and labelled them as *pullatus* and, after describing them as new, omitted to alter the name on the label. There are a number of slides in the collection with species described by Piaget, which have on the labels Nitzsch or Giebel names crossed out and
the Piaget name added. In some cases, of which annulatus is an example, it seems certain that Piaget forgot to make the necessary alterations.

It seems probable that when the Piaget collection has been remounted and studied in detail, only a small number of the type specimens will be found to be missing. Neotypes for Denny and Piaget species should not, therefore, be erected without reference to the British Museum.

IV. Host Names in the Pelecaniformes.

There has been much confusion over the names used at different times for the species of Sula, and it is often doubtful to which species the early authors were referring. Dr. Stresemann, to whom I am most grateful for the trouble he has taken, sends the list, given below, of the most probable modern equivalents of the species used by the early writers on Mallophaga:

- **Sula fiber Rudow**, 1869.
- **Sula fusca Piaget**, 1880.
- **Sula piscatrix Piaget**, 1890.
- **Sula piscator Piaget**, 1880.
- **Sula piscator Kellogg**, 1902.
- **Sula leucogaster plotus Forster**.
- **Sula leucogaster plotus Forster**.
- **Sula sula rubripes Gould**.
- **Sula sula rubripes Gould**.
- **Sula sula websteri Rothschild**.

References.

Only those references not included in Kéler’s bibliography (1938: 487) are listed.


A Preliminary Key to the Genera of the Menoponidae (Mallophaga).

By Theresa Clay, B.Sc.

[Introduced October 23, 1946.]

(With 49 figures in the text.)

Introduction.

This paper deals with the family Menoponidae Mjöberg as used by Harrison (1916, p. 27). No attempt has been made to use a re-classification of the family although such a re-classification is necessary and has, in fact, been done; it is felt that further material and more detailed study, including that of the internal morphology, are needed before it is possible to decide which characters show relationships between Mallophagan genera. It is not yet possible to distinguish those characters which are recent adaptations to the present host from those which have evolved more slowly and retained sufficient of their primitive structure to show relationships. In certain cases, the former type of characters can be recognized where species on one host, although belonging to separate genera, have certain characters in common; examples of such characters are the degree of development of the crop teeth and pigmentation, thickness and surface texture of the sclerotized areas (see Clay, 1940, p. 33). But are the characters of the laterodorsal margin of the head and prothoracic plate of Dennyus and Eureum adaptations to the immediate environment found on Apod host species? This fact, for example, is a type of relationship which is more common than that among other genera. Such adaptations reflect a comparatively recent common origin of the two genera? Again, are such characters as the ventral sclerotized processes on the head or the combs of spines on the third femora indications of relationship, or have they been evolved more than once in unrelated genera?

Eichler (1941, p. 345) has attempted to re-classify all the known genera of the Phthiraptera (Mallophaga and Anoplura), but in the case of the Menoponidae at least his classification seems to bear little relationship to the facts. The subfamily Menoponinae (sens. Eichler), for example, contains such diverse genera as Dicteisia Kéler, Eidmaniella Kéler and Numidcola Ewing, while Amyrsidea Ewing is placed in a subfamily with Dennyus Neumann. Such classifications tend to be misleading, especially where deductions of the relationships of the hosts are made from those of the parasites. It is becoming evident, as more material is available, that considerable circumspection must be used in making such deductions (see Clay, 1946, p. 403); this is particularly true of the Amblycera, where adaptation to host is less close than in the Ischnocera, and where genera therefore appear to have a wider distribution. This fact, together with cases of real and apparent discontinuous distribution of a genus due to its extinction in certain host orders or to insufficient collecting, may, unless such factors are taken into account, lead to completely erroneous deductions of host relationships. Such statements as suggesting a relationship between the Musophagidae and the Cuculidae by relating Turacoeca to Cuculophilus (Thompson, 1938, p. 352) are misleading; Turacoeca shows no closer relationship to Cuculophilus than to many of the other comb-bearing genera which are found on widely separated Avian orders.

Now that the majority of the commoner genera of Menoponidae have been described, it would seem useful and desirable, in spite of certain limitations, to tabulate this information in key form. The word “preliminary” in the title should, however, be stressed, as it has not been found possible to formulate an accurate, comprehensive and simple key. This is largely due to the small number of species examined relative to the existing species; thus a genus or
which only one or two species are now known may ultimately contain a large number, some of which will not show the characters used in the key; there are also almost certainly a number of quite distinct new genera as yet unknown. For this reason most of the divisions are given two or more characters so that diverse species can be included and new genera stand out as distinct. It should be emphasized, however, that a species which cannot be included in the key is not necessarily a new genus; the key should be altered to fit the genera not the genera made to conform to the key. In addition certain generic characters, which may or may not prove to be constant and which are not used as key-characters, are included in brackets opposite the genus. A further reason for the preliminary nature of the key is that certain groups of genera containing a large number of species such as Colpocephalum and Menacanthus, as here defined, need considerably more detailed study before a decision on the generic divisions can be reached. Even with the relatively small amount of material on which this key is based, which it should be noted is considerably larger than that available to any other worker, the finding of characters which are constant throughout the genus and suitable key characters has not been easy. The most useful characters are those of the lateral areas of the head, including the antennary fossae and the latero-dorsal margins; there may, however, be some variation in the form of the preocular slit or notch, some genera, e.g., Chapinia, showing either a narrow slit or shallow notch, and in Menopon it seems doubtful whether the presence or absence of a slit will prove to be of generic value. The form of the antennae appears to be constant, but one artefact should be noted, that is the inversion in some specimens of the distal end of the terminal segment to form a cup in which lie the terminal spines. The presence or absence of ventral sclerotized processes near the base of the palpi (not a generic character in Pseudomenopon nor genus C), the form of the gular and prosternal plates, the number of setae on the prothorax (variable in some genera) and the presence or absence of femoral and sternal combs have all proved to be relatively constant characters. The form and position of the femoral and sternal brushes of setae are usually good generic characters, but in some species of a genus the brushes may be completely absent, e.g., Chapinia sp. from Rhinoplax vigil (Forst.). No one character can be treated as constant, but each must be considered in the context of the genus in question; for instance, the femoral combs, usually constant characters, are absent in some species of Piagetiella. Characters which rarely seem to be generically constant are the shape of the prothorax and its breadth in relation to that of the head, degree of development of the hypopharyngeal sclerites, number and arrangement of the tergal setae, the presence or absence of internal pleural thickening, and sexual dimorphism of the abdomen. As Bedford (1939, p. 122) has stated, the male genitalia may be so constant for a genus that they are not even of specific importance and may also be of the same type in different genera; in other cases they may vary considerably within the genus. The characters of the anus and genital region of the female may be similar in different genera but in some genera seem to show good generic characters; in other cases they are variable within the genus (see discussion in note 20). Gastric teeth are probably always present, but differ in degree of development; they are certainly present in Kurodasia although their absence was stated in the original generic diagnosis.

This key may also be useful in drawing attention to certain points in the delimitation of genera and in discouraging the present trend towards the erection of a multiplicity of new genera. It is usual for the systematics of any group to progress in three stages: the first, in which there are a few genera containing a number of heterogeneous species with little in common; the second, during which there is an excessive erection of new genera, many of which are monotypic; and the third stage in which many of these genera are dropped, reducing the classification to a smaller number of larger genera. The systematics
of the Mallophaga are now in the second stage, large numbers of small genera being described with the prospect of many more as new species become known. Where a considerable amount of material is available, as in the Meinertzhagen collection, it is already apparent that many of these genera are not tenable. Dr. Körler (1889, p. 1), working on a small number of species, i.e., 26, of Goniodes from hosts of the Galliformes has recognized ten genera, whereas the present author (Clay, 1940, p. 1), working on a larger number of species, i.e., 61, of the same genus from the same Avian order, has shown that it is doubtful whether there are any new generic groups recognizable. The worker on Mallophaga who has come late into the field of systematics might profit from the example of workers in other groups and omit this second stage. It can be argued that the classification of species into genera may serve some useful purpose even though the latter should later be amalgamated; this might be so if such genera were based on careful work and not erected for species which the author has not seen, nor based on single specimens of one sex, nor on specimens the correct host of which is unknown nor on new species, an adequate figure of which is not given. Unfortunately the literature of Mallophaga, even at the present time, is only too full of such instances.

In deciding the limits of a genus considerable attention has been paid to the host distribution of the species involved. Species from one Avian order or family, even when somewhat diverse in character, are usually retained in one genus, whereas a group of species from an Avian order with a character difference, even if small, constant throughout that group and separating it from a group of similar species from a different Avian order is separated generically from the second group. There is no doubt that some of these genera, as more species become known, will have to be amalgamated, but it seems reasonable to use the host distribution as a guide to relationships of the parasites and to those characters which show relationships. A classification based on such criteria, those factors mentioned in the first paragraph having been taken into account, would appear to reflect natural relationships and would form a convenient system, the tests of a good classification. It should, however, be strongly emphasized that the genera must be based primarily on good morphological characters. These remarks should not be taken as supporting the present habit of separating, generically, groups of species because of their host distribution, when these show neither constant nor distinctive morphological differences. Nor the erecting of new genera for groups of species from closely related hosts such as the Corvidae within the Passeres; such species, as would be expected, tend to have more characters in common, although there is almost always considerable overlap with species from other groups of hosts belonging to the same order. Such genera tend to obscure the wider and more fundamental and interesting relationships between the species groups, and the relationship of the hosts as shown by their parasites. It is possible that the subgeneric category could be usefully employed for such groups.

A table is given of the Menoponidae genera and their Avian hosts, based entirely on the Meinertzhagen collection and not on published records. There is no consistency in the divisions of the Avian hosts used, the choice between order, suborder or family depending on the host specificity of the parasite genus and on that which best shows its distribution.

**Figures.**—The figures are drawn to show the character mentioned in the key not as complete representations of the part in question; magnification, chaetotaxy, and other structures have therefore been omitted without comment.

**Authors.**—A complete list of all the genera of Menoponidae mentioned with authors, dates, genotypes and type hosts are given, these facts are therefore not mentioned in the key or notes. It should be noted that the genotypes and type hosts given are those in general use and these, as listed, should in no way be taken as designations either of genotype or type host.
Abbreviations.—C.I.—Head index, i.e., the ratio of the breadth of the head to its length. B.—breadth of any structure; L.—length of any structure.

Notes.—The numbers at the right hand of a word refer to the notes on pp. 468–475.

Acknowledgements are due to Mr. G. H. E. Hopkins for certain valuable criticisms and suggestions.

KEY.

1. Venter of 3rd femora with a limited number of combs of stout setae (fig. 1). ................................................. 2.

   Venter of 3rd femora with irregular rows of minute combs (fig. 2). (Preocular notch; prosternal plate developed; prosternum with two median setae; varying number of sternites with rows of minute combs as on 3rd femora) ................................................. 460

2. One or more abdominal sternites with combs of setae similar to those on 3rd femora ................................................. 3.

   Abdominal sternites without combs of setae similar to those on 3rd femora. (Head without preocular slit or notch; terminal segment of antenna elongate and cylindrical; prosternum with two median setae; sternites IV-V with small brushes of stout setae; sternite VII with three long setae each side; tergite VII with comb of elongate stout setae; the clubbed ends of which are held in pocket on tergite VII) ................................................. 6.

3. Head with ventral sclerotized processes arising near base of palpi (fig. 16) ................................................. 4.

   Head without such processes ................................................. 5.

4. Head with two pairs of ventral processes (fig. 16). (Deep, narrow preocular slit; prosternal plate developed; prosternum with more than two median setae; sternites III-IV with single full comb each side) ................................................. 2.

   Head with one pair of ventral processes. (Narrow preocular slit; prosternal plate developed; prosternum with two median setae; sternites III-IV or III-V with two or more combs each side) ................................................. 4.

5. Terminal segment of antenna with definite signs of division into two (fig. 3). (Deep, narrow preocular slit; prosternal plate developed; prosternum with two median setae; lateral margins of tergites with or without internal sclerotic buttresses; sternites III-IV in 2, III-V in 3 with two or more combs each side) ................................................. 20.

   Terminal segment of antenna without definite signs of division into two (figs. 4 and 5) ................................................. 2.

6. Prosternum with more than two median setae. 6

   Prosternum with two median setae 7

7. Antennae lying in ventral spherical excavations of dorsal margins of head, partly covered by lateroventral margins (fig. 20). (Species large, length <3-8 mm.; deep, narrow preocular slit; gular and prosternal plates well developed; sternite III with two or more combs each side; sternite IV with or without combs) ................................................. 20.

   Antennae not lying in such spherical excavations 7

8. Segments of antenna short; terminal segment approximately globate or shortly ovoid (fig. 4) ................................................. 9.

   Segments of antenna elongate; terminal segments elliptical or cylindrical (fig. 5). (Short, broad or narrow preocular slit; prosternal plate developed; sternites III-IV with single full comb each side) ................................................. 9.


   Males without abdominal characters, described in 10–12 11

10. Ventral sclerite between vulva and anus with spina-bearing processes, the two lateral spines each side, stout and projecting well beyond posterior margin of abdomen (fig. 31); sternites III-IV or III-V with single full comb each side. (Broad, shallow preocular slit; abdominal short and broad, ratio of B : L. is <0.75) ................................................. 11.

   Without above combination of characters 12

   M. microctenia ................................................. 20.


   Odomiphila ................................................. 4.

   New Genus B 4

   Cuculiphilus 3.

   Plagiotella (part.) ................................................. 6.

   Ciconiphilus (part.) ................................................. 8.

   Dictotria ................................................. 10.

   Turacoeca ................................................. 11.

   P. planata (part.) 8

   C. obtusus (part.) 8

   D. dictotria 10

   T. turacoeca 11

   M. microctenia 20
11. Ventral sclerite present between vulva and anus bearing marginal and surface setae (fig. 32); abdomen ovoid with greatest width at segment IV, ratio of II: L is < 0.78; dorsal bands joining occipital and preocular sclerotized areas absent. (Deep, broad or narrow preocular slit; sternite III with two or more full combs; sternite IV with group of one to six lateral setae each side similar to those in combs.) 
Without above combination of characters .................. 12.

12. Abdomen with either or both of the following characters: 
termines of one or more segments divided longitudinally into three distinct areas of vulva long and curved, the lateral margins of abdomen. (Temples as in 13; either sternite III with single full comb or sternite III with two or more combs and sternite IV with or without single full comb.)
Abdomen without either of the above characters .............. 13.

13. Temples with square (fig. 17) or flatly rounded (fig. 18) never tapering (fig. 19) ends; preocular notch (fig. 16) or short broad slit (fig. 18) never deep narrow slit (fig. 19); head with conspicuous dark brown or black sclerotized areas; one at each preocular notch or slit, one at each proximal end of lateroventral margin, one pair on occipital margin linked by transverse band and by lighter band to preocular areas (fig. 17). (Combs as in 12.)
Temples as above; preocular notch never slit; sclerotized areas partially or totally absent except for a few preocular areas. (Combs as in 12.)
Without above combination of characters .................. 14.

14. Sternites of more than one segment (III-IV or III-V) with only single full comb each side. (Temples not greatly expanded with square or flatly rounded ends; abdomen short and broad, ratio of II: L is < 0.78.)
Sternites of more than one segment (III-IV) with two or more full combs each side. (Temples well expanded with rounded tapering ends; deep preocular emargination and deep narrow slit; abdomen with lateral internal thickening in both sexes.)
Sternite of one segment (III) with single full comb or sternite of one segment with two or more combs each side and following sternite with or without single comb
15. Temples not greatly expanded with square or flatly rounded ends (fig. 18)

16. Shallow preocular notch

17. Sternites IV-V with many small scattered brushes of black selerite

18. Telomera without such projections

19. Distal anterior angle of 2nd segment of antennae produced laterally and pointed (fig. 4)

20. Lateral margins of head with small prothoracic setae (fig. 21); 1st and 2nd segments of antenna with distal anterior expansions (fig. 6). (Large species, L. < 4.0 mm.; lateroventral emargination of varying depths which may overlap eye giving appearance in some species of deep slit; prosternum with many setae; 3rd femora and sternites IV-V with thick or more scattered brushes of small setae.)
Head without above combination of characters .............. 21.

21. Antennary fossae deep and pouch-like; prothorax reduced to stout process; antennae of three segments; antennae of telanephalic type; pseudotergites III-VI or VII with scattered hairs of normal thickness.
Head without above combination of characters .............. 22.
Figs. 1–15.


22. Laterodorsal margin with preocular slit; gular plate characteristic, large and tripartite in form (fig. 29). (Head with or without pair of ventral sclerotized processes originating near base of palpi; abdominal pleurites with posteroventral angles prolonged posteriorly as pointed process (as in fig. 38); 3rd femora and sternites III–V or VI with small scattered brushes of normal setae.)

Head without above combination of characters ................................................. Pseudomenopon. 23.

23. Head with pair of ventral sclerotized processes arising at or near nesternite margin. (Deep, narrow preocular slit; antennary fossa deep and pouch-like; 3rd femora with scattered brushes of stout setae; one or more sternites with single comb of stout setae each side.)

Head without such processes .......................................................... Eomenopon 41. 24.

24. Deep, narrow preocular slit; laterodorsal margin of head passes to anterodistal temple angle where it fuses (fig. 24); cavity between latero-dorsal and ventral margins of head not roofed over distally (cf. fig. 27); terminal segment of antenna approximately globate; femoral and sternal brushes and combs absent. (Sclerotized processes arising near base of palpi may be present or absent.)

Without above combination of characters .................................................. Genus C 45. 25.

25. Head with ventral sclerotized processes arising near or lateral to base of palpi ................................................................. 26.

26. Head without such processes .......................................................... 27.

26. Head with one pair of such processes .......................................................... 27.

27. Head with two pairs of such processes ..................................................... 28.

27. Laterodorsal margin of head without preocular slit or notch. (Terminal segment of antenna globate with stout spines; prosternal plate developed with median pointed process; prosterum with two median setae; 3rd femora and sternites IV–VI with scattered brushes of normal setae.)

Laterodorsal margin of head with preocular slit ........................................... New Genus D 44. 28.

28. Distal anterior angle of 2nd segment of antenna greatly prolonged and rounded (fig. 7). (Narrow, deep preocular slit; some abdominal pleurites with posteroventral angles prolonged posteriorly; 3rd femora and sternites IV–VI or III–V with scattered or thick brushes of stout setae.)

Distal anterior angle of 2nd segment not prolonged as above. (3rd femora with or without brushes; sternites IV–VI without scattered brushes or marginal spine-like setae; abdominal pleurites may have posteroventral angles prolonged posteriorly.)

29. One ventral process originating near base of each palpus and one near base of each antenna; some abdominal pleurites with posteroventral angles prolonged posteriorly or laterally, as pointed processes. (Preocular slit; 3rd femora and sternites IV–VI with brushes of normal setae; sternites with more scattered brushes; all brushes may be absent.)

Two processes originating near base of each palpus, none near base of antenna; posteroventral angles of abdominal pleurites not prolonged as pointed processes. (Short broad preocular slit; prosterum with more than two median setae; 3rd femora and sternites III–VI with scattered brushes of normal setae.)

30. Sternite III with two or more combs of setae; 3rd femora with scattered brushes of stout setae .............................................................. Zemiodes 16.

30. Without above combination of characters .................................................. Piagetella (part.) 31.

31. Head without preocular notch or slit; both sexes with group of long stout or spine-like setae on each posterolateral angle of enlarged sternite II (fig. 37); ♀ or both sexes with metanotum and corpetal plates I, II or more usually modified. (Clicking prosteral plates well developed; prosterum with two median setae; 3rd femora and abdominal sternites with or without brushes.)

Without above combination of characters .................................................. Myrsidea. 32.

32. Prosternal plate with thickened margin and extending from anterior prothoracic margin to between 1st coxae (fig. 33); head without preocular notch or slit; ventral truncated-ovoid excavation on dorsal margin of head with thickened anterior rim and partly roofed over by ventral margin (fig. 25). (Prosternum with more than two median setae.)

Without above combination of characters .................................................. 33.

33. 
33. Gular plate horseshoe shaped (fig. 33); temples greatly expanded, C.I.<.9. (3rd femora and sternite V-VII with thick brushes of small setae.)

Gular plate not horseshoe shaped; temples not greatly expanded C.I.>.3. (3rd femora and sternite V with thick brushes of small setae; sternite VI with small median or posterior row of scattered brushes.)

34. Head without preocular notch or slit; cavity between laterodorsal and lateroventral margins of head pouch-like and usually deep, with basal thickening passing up to laterodorsal margin and not roofed over distally by fusion between dorsal and ventral margins (fig. 29).

Head with narrow preocular slit; cavity between laterodorsal and lateroventral margins as above, but is roofed over distally by fusion between ventral and dorsal margins (fig. 27). (Prosternal plate developed with median pointed process; prosternum with two median setae; 3rd femora and sternites IV-VI with brushes of normal setae, those on VI may be scattered.)

35. Laterodorsal margin of head with row of short fine setae (fig. 28). (3rd femora and abdominal sternites without brushes of setae; marked sexual dimorphism in size and in form of gular and prosternal plates.)

Laterodorsal margin of head without row of short fine setae.

36. Prosternum with more than two median setae; prosternal plate with characteristic (fig. 34). (Gular plate larger than prosternum with central perforation and lateral processes; 3rd femora without brushes; abdominal sternites without brushes, but with one or more short spine-like setae laterally.)

Prosternum with two median setae; prosternal plate not as above.

37. Prosternal plate with deeply serrated posterior margin (fig. 33). (3rd femora and sternites IV-V with scattered to moderately thick brushes of normal setae; sternites III and IV may also have scattered brushes.)

Prosternal plate without deeply serrated posterior margin. (Brushes as above or absent.)

38. Tibiae I-III with outer submarginal comb of fine setae (fig. 30).

Tibiae I-III without such comb.

39. Short, narrow preocular slit; sclerotized area at proximal end of lateroventral margin with median fault; brushes on sternites IV-V towards centre of sternites. (Terminal segment of antenna elongate and cylindrical; venter of 2nd femora covered with scattered setae; 3rd femora with thick brushes of small setae; sternites IV-V with small brushes and normal setae.)

Preocular notch not slit; sclerotized area at proximal end of lateroventral margin without median fault; external brushes at lateral margins of sternites. (Terminal segment of antenna elongate and cylindrical; 3rd femora and sternite IV with thick brushes of small setae; sternites II-III and V-VIII with scattered brushes of larger setae.)

40. Antennary fossa formed by cavity between dorsal and ventral margins absent; head either with B=L, B<L, or B slightly >L, C.I.> or approximately to 1; abdomen elongate, tubular and weakly sclerotized.

Without above combination of characters.

41. Terminal segment of antenna showing definite signs of division into two. (Laterodorsal margin without preocular notch or slit; lateral margins of head almost parallel, diverging slightly posteriorly; head longer than broad, C.I.>.970; 3rd femora each with two to four setae on venter, no definite brush; abdominal sternites without brushes; abdominal chaetotaxy sparse.)

Terminal segment of antenna without definite signs of division into two.

35. Eureum.

36. Dennyus.

37. Eidmianella.

38. Ancistroan.


40. Hoazinus.

41. Helephonumus.

Fig. 31. Turacoeca seleroderma (Ewing), ventral sclerite between vulva and anus.

Fig. 32. Karodaia haliati (Denny), terminal abdominal segments, ventral.


Fig. 37. Myrsidea vitrix Waterston, abdominal sternite II, 5.

Fig. 38. Plegadiniphilus threktornis Bedford, abdominal pleurites, III–IV.


42. Terminal segment of antenna narrow and elongate; sternite IV with definite brushes. (Laterodorsal margin of head with anterior ventral excavation; preocular notch or slit absent, but has line of thickening; 3rd femora with small scattered brushes of small setae; sternite IV with brushes of small setae; abdominal chaetotaxy heavy.) .......... Somaphantus.

Terminal segment of antenna broad and short (fig. 10); no definite sternal brushes. (Laterodorsal margin of head with shallow posterior ventral excavation; preocular notch, slit or thickening absent; 3rd femora and sternites IV–VI with slight concentration of hairs insufficient to form brushes.) .. New Genus F 19.
43. Anterolateral margins of head swollen considerably to point or flattened margin from which they pass posteriorly and inwards to narrow precoccal slits (figs. 29–30); prosternal plate developed, with central perforation ...

44. Cavity between dorsal and ventral margins of head deep and pouch-like (fig. 29); 3rd femora and sternites IV–VI with thick brushes of normal setae; more scattered brushes on VII. (Temple well expanded; terminal segment of antenna globose.) ...

Without above combination of characters ...

Cavity between dorsal and ventral margins of head shallow (fig. 30); 3rd femora and sternite IV–V with brushes of small setae; more scattered brushes on VII. (Temple moderately or well expanded; posteroventral angles of pleurites may or may not be prolonged posteriorly.) ...

45. Prosternum with two median setae ...

Prosternum with more than two median setae ...

46. Ends of temples square or flatly rounded; precoccal notch or broad slit; brushes or thick at or thickness on sternite IV. (Gular and prosternal plates developed; 3rd femora and sternite IV with thick or scattered brushes of normal setae; sternites III and V may have scattered brushes.) ...

Without above combination of characters ...

47. Terminal segment of antenna showing definite signs of division into two, either by transverse line or marginal indentation (fig. 8) ...

Terminal segment of antenna without definite signs of division into two (fig. 9) ...

48. Some abdominal pleurites with posteroventral angles prolonged posteriorly as point process (fig. 38). (Precoccal slit deep and narrow or short and broad; 3rd femora and sternites IV–V or VI with scattered brushes of normal setae, in some species scarcely forming brushes.) ...

Abdominal pleurites with posteroventral angles not prolonged posteriorly as pointed process. (Head somewhat elongated; precoccal notch or short broad slit; 3rd femora and sternites IV–V either without brushes or with brushes of normal setae; abdomen with processes arising from sclerite between vulva and anus bearing long stout setae and strong spines.) ...

49. Mesosternum with only two median setae. (Precoccal slit or shallow notch; terminal segment of antenna short and broad; pretoral plate developed; 3rd femora and sternites IV–V or IV–VI with thick brushes of small normal setae; sternites II and III may also have scattered brushes; abdomen with processes as in Bucerophagus, but never bearing strong spines.) ...

Mesosternum with more than two median setae ...

50. Tibiae I–III with outer marginal and submarginal setae finer than normal marginal setae of legs, but not arranged in comb (fig. 40). (Shallow precoccal notch; 3rd femora and sternite IV with thick brushes of small setae.) ...

Tibiae I–III without above chaetotaxy ...

51. Terminal segment of antenna short and irregular in shape (fig. 11); femoral brushes absent. (Shallow precoccal notch backed by narrow sclerotized area; head not greatly broader than long; C.I. > 1:28; abdomen ovoid or chaetotaxy splitting; 3rd femora with 3–5 hairs on venter, normal brushes; sternite III with small scattered brushes of spine-like setae.) ...

Terminal segment of antenna elongate and cylindrical (figs. 12–14); femoral brushes usually present ...

52. Antennae with all segments very narrow and elongate (fig. 12); abdomen short and broad with flattened or flatly rounded lateral margins. (Laterococcal margin without nodular notch or slit; but line of thickening; abdominal chaetotaxy heavy; 3rd femora and sternites IV–VI with small scattered brushes of stout setae.) ...

Antennae without all segments very narrow and elongate (figs. 13–14); abdomen narrowly elongate or elongate-ovoid ...

Neomenopon ...

Meromenopon ...

Actornitophilus ...

Plegadiphilus ...

Bucerophagus ...

Chapinia ...

Gruemenopon ...

Bonomiella ...

Numidalota ...
53. Pleural plates well developed with row of posterior marginal setae; ventral abdominal chaetotaxy normal or heavy. (Laterodorsal margin with shallow notch or narrow preocular slit, deep or shallow; temples little to well expanded; 3rd femora and sternites III–IV or V, IV–V or IV–VI with thick or scattered brushes of small and normal setae; sternites III and VII may have more scattered brushes; sternal brushes may be absent; abdomen with or without internal pleural thickening.) .............................................. AMYRSIDAEA 29.

Pleural plates very narrow or non-apparent, never with posterior marginal setae; ventral abdominal chaetotaxy sparse ..................................................

54. Definite brushes on sternites IV–V; tergite VI with comb of stout elongate setae (this and other characters described under 2) ........................................

Definite brushes on sternite IV only; tergite VI without comb of stout elongate setae. (Laterodorsal margin with or without narrow preocular slit; 3rd femora and sternite IV with thick brushes of small setae; sternite V may have indefinite brushes of 3–6 setae; abdomen with internal pleural thickening.) ..............................................................

55. Prosternum normally with three median setae (fig. 36). (Frenal notch; ends of temples square; 3rd femora and sternite IV with brushes of normal setae.)

Prosternum with four or more median setae ........................................

56. Terminal segment of antenna elongate and cylindrical, without signs of division. (Laterodorsal margin with broad preocular slit or shallow notch; temples little to moderately expanded; 3rd femora and sternite IV–VI with small brushes of normal setae; sternite VII may have more scattered brushes.)

Terminal segment of antenna with signs of two or more divisions (fig. 15). (Narrow preocular slit; tergites of certain abdominal segments with raised transverse bars; 3rd femora and sternites IV–V with scattered brushes of normal setae.) ........................................

EUCOLPOCEPHALUM.

NOTES.

1. A comb of setae (fig. 1) is here used to describe the row of short stout setae, with the alveoli lying close together and approximately in a straight line, which are found on the venter of the third femora and posterolateral areas of one or more abdominal sternites in certain genera. In some species or in some specimens of a species there may be two or more such setae forming a partial comb, either in addition to the one or more full combs on a sternite or alone on the following sternite; for the purpose of the key these are not considered as combs.

2. The preocular slit is an emargination in the laterodorsal margin of the head immediately anterior to the eye, the margins of which are approximately equal and parallel (fig. 19). The preocular notch is a similar emargination in which the margins are strongly divergent (fig. 17); the notch may be triangular or semicircular in shape.

3. New genus A (shortly to be described) is represented in the Meinertz-hagen collection by two females collected from a skin of Ptilinopus bellus (Sclater) (Columbidae) from New Guinea. The setae on the third femora are irregular in arrangement and do not form typical combs. This and the absence of sternal combs suggests that species will be found with definite femoral brushes; the species has therefore been included both with the comb-and non-comb-bearing genera. The unusual character of the setae on tergite VI will be fully described elsewhere.

4. New genus B*, the description of which by G. H. E. Hopkins is in the press, has been erected for Menacanthus megaspinus Carriker. Only a single

female, in poor condition, has been seen; this appears to have a preocular slit, not shown in Carriker's figure (1940, p. 296), and has combs on sternites III–IV not III–V.

5. Species of *Cuculiphilus* have been examined from seven genera of the Cuculi and from four genera of the Falconiformes. Certain species from the Falconiformes can be distinguished by the absence of the internal sclerotic buttresses at the lateral margins of the tergites as shown by Guimarães in his description of *Falcophilus* (1942, p. 241). The tergal buttresses, however, are present in species from *Pseudogyps* and *Gyps* as shown by Eichler in his description of *Aegypiphilus* (1943, p. 56). The sclerization of the head, a character mentioned by Guimarães, varies and some species from the Falconiformes cannot be distinguished from those from the Cuculi on this character. The blunt spine-like setae on tergite VII of the male of the genotype of *Falcoophilus* are absent in the species from *Gyps*. It seems doubtful, therefore, whether *Falcoophilus* and *Aegypiphilus* will prove to be distinct from *Cuculiphilus*.

6. All Menoponidae examined have two short setae on the anterior median region of the prosternum (fig. 35); in addition and posterior to these, certain genera have a number of larger setae (fig. 34), the presence or absence of which is usually a generic character. Some species may also have small setae laterally near the first pair of coxae; for the purposes of the key these should be ignored.

7. In a paper in the press Hopkins has shown that, under the strict application of the Rules of Nomenclature, neither *Colpocephalum* nor *Liotheum* can be used for the species from the Ciconiformes of which *C. zebra* Burmeister is typical. In order to avoid further confusion it is hoped to have *Colpocephalum*, in this sense, declared a nomen conservandum. For the purposes of this paper it is so used.

The *Colpocephalum*-complex of genera needs further study before an adequate classification can be made; some indication of the complexity of the subject is shown in the key. Species of *Colpocephalum*, sens. str., that is those with head characters as in section 13 and female abdominal characters as in section 12 of the key, are known from hosts belonging to the Pelecaniformes, Ciconiformes, Falconiformes, Galliformes and Columbidae and will almost certainly be found on further Avian orders. On the Ciconiformes and Falconiformes modifications of this type are also found, those species which would seem to form the extreme of the series having been placed in a separate genus, *Ciconiphilus*, in the former case but not separated in the latter. Species of *Colpocephalum* have been seen from twenty-four genera of Ciconiformes and the majority of these are found to be of the *Colpocephalum*, sens. str., type. The atypical species resemble *Colpocephalum*, sens. str., in having the temples little expanded, with square or flatly rounded ends and in the presence of a preocular notch not a slit, but vary in other characters. The species from *Ardea p. purpurea* Linn. lacks almost entirely the typical pigmented areas of the head; other species may have only a single full comb on each side of sternite III instead of the usual two or more combs; *C. uchidi* (Qadri) has the typical head characters but the female abdominal tergites are entire, the vulva lacks the long curved hairs and in the male the lateral abdominal internal thickening is absent. In the characters of the abdomen, therefore, this species cannot be distinguished from species of *Ciconiphilus*.

Species of *Ciconiphilus* have been examined from eighteen genera of Ciconiformes and are found to be rather diverse in character. The sclerotized areas of the head range from those found in typical *Colpocephalum* to those in which the areas are lightly sclerotized with the dorsal bands light, interrupted or non-apparent. The tergites do not show the divisions but may be more lightly sclerotized medially and the vulva may have curled hairs; these, however, do not pass round the lateral margins of the abdomen, largely owing
to the greater width of the abdomen at this point than is found in *Colpocephalum*, sens. str. The ventral chaetotaxy of the posterior segments of the female abdomen, although of characteristic form in some species, does not form a constant generic character. The male may or may not have the lateral internal abdominal thickening characteristic of *Colpocephalum*. The presence of a slit, deep and narrow or short and broad but never a notch, and the more expanded temples with rounded somewhat tapering ends and the presence of one or more lateral or posterior pointed projections on the telomera appear to be constant characters.

Specimens of *Anseriphilus* Eichler (1943, p. 57) have been examined from *Anser* and *Cygnus*, and although these have the temples somewhat recurved it seems doubtful whether *Anseriphilus* can be separated from *Ciconiphilus*.

Species have been seen from twenty-six genera of Falconiformes and these range from typical *Colpocephalum* to broader-headed forms without the strongly pigmented sclerotic areas and with the dorsal bands either light, or interrupted and with a short broad to relatively narrow preocular slit; the modified tergal plates and long curved vulval hairs may or may not be present.

The Cariamae, Phoenicopterae, Strigiformes and Passeres do not have *Colpocephalum*, sens. str., but species with one or more of the *Colpocephalum* characters. Those from the Cariamae have the typical *Colpocephalum* head sclerotization, but the temples are well expanded with somewhat tapering ends as in *Ciconiphilus*. The preocular notch is small and somewhat slit-like in form; the tergites are not divided and the vulval hairs are not curved round the lateral margins of the abdomen. Species from the Strigiformes are similar to the atypical *Colpocephalum* species from the Falconiformes and in some cases approach *Kurodaia* in the general shape of the temples and abdomen. In species from the Passeres the head has the typical *Colpocephalum* sclerotization, the tergites are divided but the vulval hairs are not long and curved; the males seem to be generically indistinguishable from some of the species found on the Falconiformes.

No attempt has been made in the key to separate *Psittacomnenopon*; species have been seen from only five genera of Psittaciformes and these show somewhat diverse characters. It is not considered possible on these few species, from what is a large and widely distributed Avian order, to decide whether *Psittacomnenopon* will ultimately be distinguished from *Colpocephalum* or whether it should itself be further divided.

It can be tentatively postulated that *Colpocephalum*, sens. str., was once found throughout the Aves and that it became extinct in some orders and modified to a broader less heavily sclerotized form in others, the original type either disappearing as in the Strigiformes or persisting alongside the modified form as in the Ciconiformes. Alternatively, and more probably, the broader forms with less modified abdomens may have been the ancestral type, these having completely disappeared in the Galliformes, Columbidae and Procellariiformes, leaving only the modified type of *Colpocephalum*, sens. str. It is possible that when material is available from all the *Colpocephalum*-bearing hosts, that species will be found forming a relatively complete series between the different forms, making a generic separation between *Colpocephalum*, *Allocolpocephalum*, *Ciconiphilus* and *Psittacomnenopon* impossible. *Kurodaia*, *Cuculiphilus*, *Dictesia*, *Ardeiphilus* and *Turacoeca* would also seem to have a *Colpocephalum* origin but in these cases have developed characters sufficiently distinct to make generic separation possible. The affinities of *Odoriphila* and genus B are doubtful. *Kurodaia* species on the Strigiformes can be distinguished from those on the Falconiformes by the large size of the lateral ventral sclerotized areas of the head and by the larger more heavily sclerotized areas at the base of the antennary fossae. It is doubtful whether this group of species should be separated generally, but may form a good subgenus,
It will be no solution to this complicated problem to erect new genera for every species which shows atypical characters; there are six or seven such species in the Meinertzhagen collection from the Cicinniformes alone. The most satisfactory method of tackling this question would seem to be a detailed study and figuring of the species, dividing them into species groups and leaving the question of generic divisions until a nearer approach to the optimum condition of a complete series from all the possible hosts has been achieved.

8. In the original description of Ardeiphilus it is stated that the head lacks a preocular notch or slit; however, in all specimens examined there is a deep narrow slit before the eyes, the margins of which, in some specimens, may be so closely approximated that the slit is obscured.

9. This species (Key, 16), the generic position of which is obscure, is represented in the Meinertzhagen collection by 1 ♂ and 2 ♀, collected from a skin of Crotophaga major Gmelin. Further material is needed to confirm that this is the correct host of the specimens.

10. Many genera of Menoponidae have concentrations of setae on the venter of the third femora and on one or more abdominal sternites. Such concentrations, here referred to as brushes of setae, may take the form of a few comparatively widely spaced setae, described as small scattered brushes or a large number of closely set setae, described as large thick brushes; those of intermediate form have no qualifying adjectives. The setae comprising the brushes may be of approximately the same length and thickness as the surrounding setae, when they are described as normal or the majority of the setae comprising the brushes may be considerably smaller than the surrounding setae, when they are described as small. The brushes on at least one abdominal sternite are almost always similar in composition to those on the third femora.

11. The fact that Emenopenon has combs of setae on some of the abdominal sternites suggests that species will be found in which the stout setae forming the scattered femoral brushes will be arranged as combs, as is the case in Piagetiella. Such species differing only in this character should not be considered as generically distinct.

12. Genus C is represented in the Piaget collection by 3 ♂♂ and 2 ♀♀ of Menopon fulvofasciatum var minor from Accipiter nisus and in the Meinertzhagen collection by 1 ♂ and 1 ♀ from Falco rupicolaus Linn. and 11 ♂♂ and 5 ♀♀ from Aquila rapax vindhianna Franklin. The characters of the lateral margins of the head, prosternal plate and the presence of a setae-bearing sclerite between vulva and anus in some of the species suggests, in spite of the absence of combs, that the affinities of this genus lie more with the comb-bearing genera, Cuculiophus and Kurodaia, from the Falconiformes, than with Menacanthus. The species included in this genus show a certain amount of diversity; that from Aquila has well-marked ventral processes arising near the palpi as in Menacanthus, the female has a sclerite, with pointed posterior angles in the genital chamber, apparently associated with the spermatheca, and the male genitalia are larger with a more complicated preputial sac than in the other species. The species from Accipiter and Falco show no definite ventral sclerotized processes, although the thickenings which gives rise to these processes are present just posterior to the bases of the palpi and well developed.

Eichler has described Nosopoius (1940, p. 363) for species from the Falconiformes with the ventral head processes as in Menacanthus. Unfortunately the genotype chosen, Menopon fulvofasciatum Piaget, belongs to Kurodaia. As Hopkins (1944, p. 186) has convincingly argued, the genotype must be the specimens on which the author based the description of the genus and not a name. Nosopoius does not therefore become a synonym of Kurodaia but must be used for the Menacanthus-like species seen by Dr. Eichler. No characters are given in the original description of Nosopoius which would distinguish it from Menacanthus species found on the Passeres and no mention is made of the form

* Now found to be Colpocephalum crotaphaga Stafford, 1943, Bol. Ent. Venez. (1), 46,
of the lateral margins of the head. Although it is possible, therefore, that the specimens seen by Dr. Eichler are true Menacanthus originally from a Passerine host, transference to the hawk having taken place during feeding, it is more probable that Nosopoios is identical with genus C. These species, however, must remain without a genus until Nosopoios has been adequately described and figured and the confusion over its name resolved. This confusion is due to the unfortunate habit of designating genotypes from species of older authors, which have not been adequately figured and of which the identity is doubtful without examination of the original material, and to describing new genera without adequate descriptions and figures.

13. New genus D is represented in the Meinertzhagen collection by a single female collected from a skin of Apteryx owenii Gould. Further material and confirmation that this is the correct host is needed before the genus can be described.

14. The Menacanthus-complex contains species from the Apterygidae, Tinamidae, Galliformes, Musophagidae, Columbidae and Passeriformes (sens. P. R. Lowe, 1946, p. 127). The species on the Apterygidae and Columbidae appear to be generically separable. The systematic position of Kelerimenopon and Zemiodes are not discussed as sufficient material has not been seen. More detailed study is necessary to decide whether the characters and present distribution of Menacanthus, as here used, indicate that it is a good generic group, once found throughout the Aves but now extinct in many orders or whether the ventral head processes have arisen more than once and thus obscured the fact that Menacanthus, sens. lat., comprises a number of distinct and unrelated genera. The fact that the ventral processes near the base of the palpi may be present or absent in some genera, e.g., Pseudomenopon and genus C, suggests that the latter theory may be correct, whereas the points of resemblance between some of the species from the Galli and Passeriformes, shown below, would suggest that the ventral head processes are a good generic character. Even if these processes are ignored, there would appear to be no good generic differences between some of the species from these two host groups.

Specimens of Menacanthus have been examined from forty-six genera of Passeres and these are found to show considerable variation in proportions of the head, size of ventral head processes, development of the gular plate, and in the presence of brushes on the third femora and abdominal sternites, and of spines on the abdomen. There are two definable groups, one in which the temples are well expanded, the head processes stout and elongate, the gular plate, large and rectangular in form and with or without a central perforation, without brushes of setae on the third femora and abdominal sternites, but with stout spine-like setae on the posterolateral margins of a varying number of sternites and on the posterior margins of pleurites and tergites. The second group contains species with the temples considerably less expanded, the head processes small to minute, the gular plate in the form of two lateral sclerites or undeveloped, the third femora and sternites II or III–VI or VII with small scattered to thick brushes of normal to small setae and abdominal spines absent. There are, however, species intermediate between these two groups in the proportions of the head and size of the ventral processes; some species of the first group may have small scattered sternal brushes in addition to the sternal spines, and species of the second group may have tergal spines.

When an adequate series of species from the Galliformes is compared with species in the second group there appear to be no generic distinctions. The species vary among themselves in the size of the ventral head processes, length and shape of the terminal segment of the antenna, in the degree of development of the hypopharyngeal sclerites, presence and absence of internal pleural thickening, in the size and thickness of the femoral and sternal brushes and the
presence and absence of pleural and tergal spines. While the terminal segment of the antennae tends to be elongate and cylindrical in *Menocerus* species from the Gall and shorter and irregular in shape in those from the Passeriformes, this is not constant (cf. species from *Alectoris b. barbara* (Bonaparte) and *Menura n. novaehollandiae* Latham). It is proposed, therefore, to retain *Eomenacanthus* and *Uchida*, for the present, in *Menacanthus*.

15. No specimens of *Kelerimenopon* have been seen from the type host of the genotype and only known species, or from related hosts. Five specimens have been seen from three different hosts, none of which can be said with certainty to be the true host; these have the two ventral head processes, the inner pair being small as in *K. sanfilippo* Conci but the outer pair are longer and stouter. The posteroventral angles of some abdominal pleurites are prolonged posteriorly and some at right angles to the long axis of the abdomen. The femoral and sternal brushes are either scattered or absent. Until the distribution and variability of *Kelerimenopon* is known and the correct hosts of the above specimens are established, it would seem wiser to expand the definition of the genus to include these species.

16. *Zemiodes* was described from a single female taken from *Gallus domesticus*; this bird had been living in the animal house of the Bernhard-Nocht-Institut für Schiff- und Tropenkrankheiten in Hamburg. The specimen, Dr. Eichler informs me, was lost in the U.S.S.R. in 1943. There is no detailed figure and it appears from the photograph that the specimen, especially in the head region, may have been somewhat distorted. A single female in the Meinertzhagen collection from a skin of *Colinus virginianus floridanus* (Cones) is almost certainly congeneric with *Zemiodes zumpti* Eichler. It would seem therefore probable that the genotype of *Zemiodes* had straggled from another Galliformes host kept in captivity in the Hamburg institute and not that it represents a new and indigenous genus from the European *Gallus domesticus*.

17. *Austromenopon* as defined here, includes species from hosts of the suborders Charadrii, Lari and Alcae of the Charadriiformes and from the Procellariiformes. Those from the Charadrii vary in the number and thickness of the femoral and sternal brushes, presence and absence of internal pleural thickening and the complexity of the male genitalia. It should be noted that some species from the Lari seem to have a thinner area in the centre of the laterodorsal margin of the head which may break if too much pressure is applied during mounting, giving the appearance of a preocular slit.

Conci (1942, p. 30) has described *Australimenopon* for *Menopon cinerea* Thompson, but apparently had not seen specimens and does not compare it to related genera. There are no characters in the description and figures of *M. cinerea* which would differentiate it from *Austromenopon* with the exception of the brushes on sternites IV-V, the setae of which are described as being "very small." No *Austromenopon* species has been seen with the setae of the brushes which could be so described. The setae on sternites II-III in some species of *Austromenopon* have a tendency to be "peg-like" as described in *Menopon cinerea*. Without further material it is impossible to say whether the specimens of *Menopon cinerea* may have straggled from a species of Charadriiformes, or whether, there is in fact, an *Austromenopon*-like genus on the Passeres, and if so whether it is generically distinct from that on the Charadriiformes.

18. I am indebted to Mr. G. H. E. Hopkins for the loan of specimens of new genus E (which he is about to describe), collected from *Glareola osculans* Verreaux (Charadriiformes).

19. New genus E is represented in the Meinertzhagen collection by 1♂ and 2♀♀ from a skin of *Bulweria bulweria* (Jardine and Selby) (Procellariiformes). The bird was originally collected under conditions which would seem to exclude the possibility that these specimens might be stragglers from another host.
20. The generic division of the species of Menoponidae (omitting Colpocephalum and Menacanthus) from the Galli into Menopon, Amyrsidea and Clayia with the related, but at present distinctive, genera of Somaphantus and Numidicola does not, on the available distinctive material, appear entirely satisfactory. However, the Galli are a large order of birds, from which only a relatively small number of species are known, and it would seem that a satisfactory assessment of the generic divisions must wait for a more complete series of species; it will tend to complicate, not simplify the problem, if new genera are described for every atypical species, of which in the Amyrsidea group alone, there are at least five in the Meinertz-hagen collection. Menopon, as described under 53 and 54, seems to be a well defined and distinctive genus; Clayia is dealt with in note 21. Amyrsidea was originally described for the atypical species found on Argusianus argus (Linn.), with narrow head, narrow, almost obscured preocular slit and narrow elongate abdomen with submarginal row of dorsal spine-like setae on the terminal segment of the female. Amyrsidea, as used here, contains a somewhat heterogeneous group of species; there is, however, a gradation in head shape, width and depth of slit and shape of abdomen through the species from Argusianus argus, Arboricola, Pavu mutus and Genaeus to those species with broad heads, deep slits and broad abdomens, examples of which are found on many host genera and which seems to be the most usual type*. The form of the sternal brushes is various; the genotype has thick brushes on sternites III–IV and scattered brushes on V; the species from Arborephila has thick brushes on sternites IV–V; the species on Pavu mutus has brushes on IV–VI in the female but shows no definite brushes in the male; the broad forms of Amyrsidea usually have thick brushes on IV–VI, but these may be scattered or absent. The characters of the terminal segments and anus in the female also show considerable diversity. In the genotype the anal opening appears to be of unique form (material insufficient for adequate interpretation), with membraneous lateral lobes, minute anterior and few posterior marginal setae; it is largely obscured in mounted specimens by the prolonged dorsal sclerotized plate of the terminal segment which bears 7–8 stout marginal spine-like setae. The species from Arboricola has the anus similar to that found in Menopon gallinae (Linn.), in which the anterior and posterior setal fringes of the opening are widely separated; the dorsal sclerotized plate of the terminal segment, which is prolonged as in Menopon and the genotype of Amyrsidea, does not bear marginal spine-like setae. The small species from Pavu mutus and the majority of the broad type of Amyrsidea have the anus as is typical for many of the genera of Menoponidae (i.e., anterior margin ventral, posterior margin terminal, both with fringe of setae giving characteristic “anal corona” as figured in Ferris, 1923, p. 62, fig. 3B). Exceptions to this type are found in species from Francolinus, in which the anus is entirely ventral and the anterior marginal setae small; in one of the species from Guttera, in which the anal fringes of setae are absent and the anus is covered ventrally by the prolonged and greatly modified vulva and in species from Megapodius in which the anus is similar to the typical type but the margins are terminal and coterminous with each other. It does not seem, therefore, that the characters of this part of the female abdomen can be used as a guide to generic divisions.

21. Clayia contains two somewhat distinct groups of species, one with broad preocular slit and temples moderately expanded and the other with a shallow notch and head narrow at the temples; there are however, species intermediate between these two groups making a generic division unsatisfactory.

22. Through the kindness of Dr. Wetmore, of the United States National Museum, it has been possible to examine a sketch of Chapinia robusta Ewing; from this there is little doubt that Allomenopon Bedford is congeneric with Chapinia.

Table.—Menoponidae Genera and Hosts.

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23. No species of *Colpocephalum* have been seen from the Lari. The figure of *Comatomenopon elongatum* Uchida does not resemble closely any known *Colpocephalum* sp., and as there is no reason why hosts of this suborder should not be parasitized by *Colpocephalum* the authenticity of the host need not necessarily be doubted. Without material it is not possible to decide whether *Comatomenopon* is distinct from *Colpocephalum*.

24. Again through the kindness of Dr. Wetmore it has been possible to see a sketch of the genotype of *Acolpocephalum* Ewing. It would seem from this that *Acolpocephalum* was described from a *Myrsidea* nymph. The sketch shows a small pigmented area at the base of the emargination in the laterodorsal margin of the head characteristic of *Myrsidea* nymphs and the proportions of the tarsal segments, stressed in the original description, is again characteristic of the nymphs. The general form of the whole insect as shown in the sketch is consistent with it being a *Myrsidea* and the host is a Passerine. Taking into account all these points it can be assumed that *Acolpocephalum* is congeneric with *Myrsidea*.

25. A male and female of *Colpocephalum*, sens. str., from a skin of *Pygoscelis adeliae* (Homborn and Jacquinot) has been seen. Although there is no reason why this genus should not occur on the Sphenisciformes the record requires confirmation.

26. The record of *Austromenopon* from the Pelecaniformes is restricted to the species found on *Phaethon*. As shown by Thompson (1938, p. 459), the Phaethontidae although placed with the Pelecaniformes are parasitized by Mallophagan genera otherwise restricted to the Charadriiformes.

27. There is still disagreement over the systematic position of the Phoenicopteridae; for the purpose of the table this family is included in the Anseriformes, a position which is supported by the genera of Mallophaga which parasitize it.

28. The family Rallidae is used here to include the genera *Aramus* and *Podiceps*, both of which are parasitized by species of *Pseudomenopon*.

29. The record of *Pseudomenopon* from the Charadrii is restricted to the species found on *Rostratula*.

**List of Genera, Genotypes and Type Hosts.**

<table>
<thead>
<tr>
<th>Genus</th>
<th>Genotype</th>
<th>Type Host</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Actornithophilus</em></td>
<td><em>A. anserisauris</em> (Piaget)</td>
<td><em>Recurvirostra avosetta</em> (Linn.)</td>
</tr>
<tr>
<td><em>Amyrsides</em> Ewing, 1927</td>
<td><em>A. centralis</em> (Nitsch.)</td>
<td><em>Argusianus argus</em> (Linn.).</td>
</tr>
<tr>
<td>(Argimenopen Eichler, 1947)</td>
<td><em>A. polytrichum</em> Eichler.</td>
<td><em>Argusianus argus</em> (Linn.).</td>
</tr>
<tr>
<td><em>Ancistrus</em> Westwood, 1874</td>
<td><em>A. procellariae</em> Westwood.</td>
<td><em>Daption capensis</em> (Linn.).</td>
</tr>
<tr>
<td><em>Ardipophilus</em> Bedford, 1939</td>
<td><em>A. troschiaux</em> (Burmeister)</td>
<td><em>Botaurus stellaris</em> (Linn.).</td>
</tr>
<tr>
<td>†(<em>Colpocarenum</em> Keler, 1939 Nom. nud.).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Austromenopon</em> Bedford, 1938. (Australmenopon Conci, 1942.)</td>
<td><em>A. crocutum</em> (Nitsch.)</td>
<td><em>Numenius arquata</em> (Linn.).</td>
</tr>
<tr>
<td><em>Bononiella</em> Conci, 1942.</td>
<td><em>A. cenera</em> (Thompson).</td>
<td><em>Struthidea cinerea</em> (Gould.).</td>
</tr>
<tr>
<td><em>Chapinia</em> Ewing, 1927. (†(Allomenopon &amp; Bedford, 1930.),)</td>
<td><em>B. forcipatum</em> (Nitsch).</td>
<td><em>Buceros rhinoceros</em> (Linn.).</td>
</tr>
<tr>
<td><em>Ciconiphilus</em> Bedford, 1939. (†(Anetaulus Keler, 1890, Nom. nud.),)</td>
<td><em>C. megaspina</em> Carriker.</td>
<td><em>Opisthocomus hoazin</em> (Mull.).</td>
</tr>
<tr>
<td></td>
<td><em>C. robusta</em> Ewing.</td>
<td><em>Ceratogymna atrata</em> (Temm.).</td>
</tr>
<tr>
<td></td>
<td><em>C. bucerosis</em> Kellogg.</td>
<td><em>Bycanistes crinitus</em> (Rüpp.).</td>
</tr>
<tr>
<td></td>
<td><em>C. quadripustulatus</em> (Burmeister).</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>C. pectinatus</em> (Neumann).</td>
<td><em>Anser domesticus</em> (Linn.).</td>
</tr>
</tbody>
</table>

**Type Host**

- *Recurvirostra avosetta* (Linn.)
- *Argusianus argus* (Linn.)
- *Daption capensis* (Linn.)
- *Botaurus stellaris* (Linn.)
- *Numenius arquata* (Linn.)
- *Struthidea cinerea* (Gould.)
- "Unknown pigeon."
- *Bucorvus cafer* (Schleg.)
- *Buceros rhinoceros* (Linn.)
- *Opisthocomus hoazin* (Mull.)
- *Ceratogymna atrata* (Temm.)
- *Bycanistes crinitus* (Rüpp.)
- *Ciconia ciconia* (Linn.)
- *Anser domesticus* (Linn.)
LISTS OF GENERA, GENOTYPES AND TYPE HOSTS (continued).

GENUS

Clayia Hopkins, 1941.
Colmenesopon C. & M., 1911.
Colpocophalum *.
(Allocolpocophalum Qadri, 1930.
(Corecolpocophalum Conci, 1942.
(Dimorphicenter Eichler, 1943.
(Neocolpocophalum Ewing, 1933. Nom. nov. for Ferrisia uchida, preoccupied.
Pseudocolpocophalum Qadri, 1930.
Scutariomola Kéler, 1939. Nom. nud.)
emanotenopon Uchida, 1920 *.
Caudiphilus Uchida, 1926.
(Aegyptiphilus Eichler, 1943.
(Falcophilus Guimarães, 1942.
†(Vulgariphilus Eichler, 1943. Nom. nud.)
(Stenodennyus Ewing, 1930. (Takamatsuia Uchida, 1926.
Dictesis Kéler, 1938.
Eidmanicella Kéler, 1938.
Lomenesopon Harrison, 1915.
Eucolpocophalum Bedford, 1930.
Eureaum Nitzisch, 1818.
Grimenopon C. & M., 1941.
Haleneum Ferris, 1916.
Hastineum Guimarães, 1940.
†(Carrikerella Eichler, 1941.
Holarthrum Eichler, 1940.
Holomenesopon Eichler, 1941.
Kellerimenopon Conci, 1942.
Kurodai Uchida, 1926.
Machaerilaenus Harrison, 1915.
(Hirundoecus Ewing, 1930.
Menocentria Neumann, 1912.
(Lomenocentria Uchida, 1926.
Uchida Ewing, 1930. Nom. nov. for Neumannia Uchida, preoccupied.
Menopon Nitzsch, 1818.
Menomenopon C. & M., 1941.
†(Tannantia Conci, 1941.
Microchonṭa Kéler, 1939.
Myodisphex Waterston, 1915.
(Ascolpocophalum †Ewing, 1927.
(Allomyrida Conci, 1942.
(Coremenopon Conci, 1942.

GENOTYPE

C. majusculi (Cummings).
C. uroclytus (Bedford).
C. zebra Burm.
C. semicircularis Rudov.
C. subaequalis Burmeister nec de Haan.
C. spiniferus Kellogg.
C. turbinatum Denny.
C. uchidai (Quadri).
C. elongatum Uchida.
C. fasciatus (Seopoli).
C. gypsi (Eichler).
C. alternatus (Osbom).
D. burmeisteri (Denny).
D. spiniger Ewing.
D. major (Uchida).
D. triatpis (Giebel).
E. bravoalpis (Piaget).
E. denticulatus Harrison.
E. robustus Bedford.
E. cimicoides Burm.
G. longum (Giebel).
H. truncatus (Piaget).
H. armiferum (Kellogg).
H. armiferum (Kellogg).
H. lauta (Piaget).
H. albifasciatus (Piaget).
K. sanfilippoii Conci.
K. haliaeetii (Denny).
M. latifrons Harrison.
M. americanus (Ewing).
M. robustus (Kellogg).
M. bisericatus (Piaget).
M. okadaei (Uchida).
M. gallinae (Linn).
M. merops C. & M. §
M. rurianus (Conci) *.
M. sibiricus Kéler.
M. victorius Waterston.
M. brevipes (Ewing).
M. struthidea Thompson.
M. rodeli (Cummings).

TYPE HOST

Guttera edouardi (Hartläuber).
Collisium indicum Latr.
Ciconia ciconia (Linn.).
Corvus albus Muller.
Corvus frugilegus Linn.
Fregata aquila Linn.
Columbia livia domestica.
Dissorrha episcopus (Boddilier.).
Sterna hirundinaria (Linn.).
Cuculus canorus Linn.
Gyps fulvus (Habizi).
Cathartes aura (Linn.).
Apus apus (Linn.).
Nepoeciciscus niger (Gmelin.).
Hirundapus caudacutus (Latham).
Cochaena torquata Oken.
Philacorax carpinus Linne.
Psittacutes versicolor (Lear).
Platalea alba Seopoli.
Aptus apus (Linn.).
Grus grus (Linn.).
Grus grus (Linn.).
Opihiochomus hoxmin (Mull.
Opihiochomus houmin (Mull.)
Columbina livia domestica.
Tadorina tarda Linn.
Tropicophaeus Novae-guinana (S. Miull.)
Pandion haliaetus (Linn.).
P Boehmie gaudiae (Gould).
Progne subis (Linn.).
Psaltriparus minullnus (Townsend).
Gallotyrannis (Euplo-
canius) exilitis (*).
Rollulus coutrell (Seopoli).
Gallus domesticus.
Merops opisther Linn.
Merops opisther Linn.
Tinamus solitarius (Vielliot)
Bhamsthatos tocuard Vieill.
Psitohara victoriae Gould.
Struthiodia cinerea Gould.)
Corvus tristis Less.)
**GENUS.**

*Neomenopon* Bedford, 1920.
*Noseonopis* Eichler, 1940.

*Numidocela* Ewing, 1927.
*Odoriphila* C. & M., 1941.

*Pleuropithus* Bedford, 1939.

*Pseudomenopon* Möjberg, 1910

*Petitcomenopon* Bedford, 1930. *(Franciscolca* Conci, 1942.
*Sonaphatus* Paine, 1914.
Trinachon Nitzsch, 1818.
*(Ewingella* Eichler, 1941.
*Turoacoea* Thompson, 1938.

*Zentiodes* Eichler, 1944.

**GENOTYPER.**

*N. pterodurus* Bedford.
*Menopon fulvofasciatum* Piaget sens. Eichler.
*N. longicornis* Ewing.
*O. phoeiculci* C. & M.
*P. ragazzii* (Picaglia).

**TYPE HOST.**

*Pteroetes namaqua* (Gmelin).
*Buteo buteo* (Linn.)
*Numida meleagris* (Linn.)
*Phoeniculus bollei* (Hartl.)
*Pelecanus erythrophicans* Gmelin.

*P. thresiornis* Bedford.
*P. tridens* (Burn.)
*P. poicophilus* (Bedford).
*P. cacatuae* (Conci).
*S. leucippus* (Fabricius).
*T. aff. femoratum* Ewing.
*T. sceleroderm* (Ewing).

*Z. zumpti* Eichler.

*Thresiornis aethiopic* (Latham).
*Pulico atria* Linn.
*Poicephalus meyeri* (Crotzchamer.)
*Kakatoe galerita* (Latham.)
*Numida meleagris* (Linn.)
*Amer domesticus*.
*Phoenicopterus ruber* Linn.
*Corythaeola cristata* (Vieillot).

*Gallus domesticus*.

*Names in plain brackets are those of genera not recognized as distinct from the genus which they follow; those in brackets marked † are synonyms about which there is little doubt.

† Believed to be a hybrid between *Ganassa lineata* and *Ganassa leucomelas*.

‡ *T. rara* Conci is an absolute synonym of *M. merops* C. & M.

**REFERENCES.**


[Received May 3, 1947.]

(With 1 figure in the text.)

The following table represents the results of an examination of birds which died in the Society's Gardens between 1939-1946. In no case can the numbers of Mallophaga be regarded as a total count, though the proportion of sexes is probably correct. In the majority of cases the genus only is given. The correct naming of each species would entail a review of each genus.

Little work has been done on Mallophaga from captive birds. Clay and Rothschild (Novit. Zool. XLI. 1938., pp. 61-73) published a list of Ectoparasites from Captive Birds, mainly from the Society's Gardens but also from private collections. It is as yet too early to draw any definite conclusions, but from the following list we would draw attention to three points.

1. Out of 76 infested birds, four show heavy infestation, much heavier than normal. Out of over 15,000 wild birds examined for Mallophaga, less than one per thousand show such heavy infestation and in two of that small percentage the mandibles of the host had been badly damaged, thus preventing preening.
2. In cases of heavy infestation there was no apparent damage to plumage.
3. There is a tendency towards a higher proportion of Amblycera to Ischnocera than occurs among wild birds. In some cases it would appear that certain genera of Ischnocera cannot survive captivity.

The classification of hosts is based on 'Vertebrated Animals exhibited in the Gardens of the Zoological Society, 1828-1927,' by Low, 1929.

The “reference No.” corresponds to the slide number in the Meinertzhagen Collection, now deposited in the British Museum.

We wish to take this opportunity to express our gratitude to Mr. William Lawrence and John Cushion of the Society's Prosectorium, who have with zest and energy given us unstinted help. We must also express our thanks to the Zoological Society for permitting us to make such valued use of their material.

<table>
<thead>
<tr>
<th>Host</th>
<th>Parasite</th>
<th>No. of individuals</th>
<th>Reference no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyrrhocorax graculus</td>
<td>Colpocephalum sp.</td>
<td>4 ♂</td>
<td>14852</td>
</tr>
<tr>
<td>Alpine Chough</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priorius pictatus</td>
<td>Echinophilopterus sp.</td>
<td>7 ♂, 8 ♀, 4 im.</td>
<td>13322</td>
</tr>
<tr>
<td>Rocket-tailed Parrot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanygnathus sumatranus</td>
<td>Echinophilopterus sp.</td>
<td>4 ♂</td>
<td>13323</td>
</tr>
<tr>
<td>Muller's Parrakeet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ketupa zeylonensis</td>
<td>Colpocephalum sp.</td>
<td>2 ♂, 15 ♀</td>
<td>13575</td>
</tr>
<tr>
<td>Ceylon Fish Owl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gyps fulvus</td>
<td>Falcipleurus sp.</td>
<td>32 ♂, 46 ♀</td>
<td>13319</td>
</tr>
<tr>
<td>Griffon Vulture</td>
<td></td>
<td>Many pairs of this parasite found in copula</td>
<td></td>
</tr>
<tr>
<td>Trigonocops occipitalis</td>
<td>Kurodasia sp.</td>
<td>20 ♂, 41 ♀</td>
<td>13526</td>
</tr>
<tr>
<td>White-headed Vulture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buteo rufiglauces auriger</td>
<td>Colpocephalum sp.</td>
<td>5 ♂, 2 ♀</td>
<td>16132</td>
</tr>
<tr>
<td>Augur Buzzard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buteo lineatus</td>
<td>Craedapodynchus sp.</td>
<td>3 ♂</td>
<td>13310</td>
</tr>
<tr>
<td>Red-shouldered Buzzard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buteo lagopus sancti-johannis</td>
<td>Degeeriella sp.</td>
<td>13 ♂, 15 ♀</td>
<td>13317</td>
</tr>
<tr>
<td>St. John's Buzzard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Host</td>
<td>Parasite</td>
<td>No. of individuals</td>
<td>Reference no.</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------</td>
<td>-------------------</td>
<td>---------------</td>
</tr>
<tr>
<td><em>Aquila chrysaetos</em></td>
<td><em>Laemobothrium</em></td>
<td>1♂, 2♀, 10 im.</td>
<td>13320</td>
</tr>
<tr>
<td>Golden Eagle</td>
<td><em>Kurodaia</em> sp.</td>
<td>2♂.</td>
<td></td>
</tr>
<tr>
<td><em>Haliaeetus leucocephalus</em></td>
<td><em>Kurodaia</em> sp.</td>
<td>7♂, 7♀.</td>
<td>12584</td>
</tr>
<tr>
<td>White-headed Sea Eagle</td>
<td><em>Kurodaia</em> sp.</td>
<td>10♂, 4♀.</td>
<td>13882</td>
</tr>
<tr>
<td><em>Gypaetus angolensis</em></td>
<td><em>Kurodaia</em> sp.</td>
<td>2♂.</td>
<td></td>
</tr>
<tr>
<td>Vulturine Fis Eagle</td>
<td><em>Kurodaia</em> sp.</td>
<td>23♂, 6♀.</td>
<td>12528</td>
</tr>
<tr>
<td><em>Haliaeetus indus</em></td>
<td><em>Kurodaia</em> sp.</td>
<td>3♂, 5♀, 1 im.</td>
<td>12529</td>
</tr>
<tr>
<td>Brahminy Kite</td>
<td><em>Falco columbarius</em></td>
<td>7♂, 12♀.</td>
<td>14462</td>
</tr>
<tr>
<td>Iceland Falcon</td>
<td><em>Falco columbarius</em></td>
<td>15♂, 23♀, 6 im.</td>
<td></td>
</tr>
<tr>
<td><em>Morus bassanus</em></td>
<td><em>Pectinopygus</em></td>
<td>5♂, 6♀.</td>
<td>15758</td>
</tr>
<tr>
<td><em>Phoenicopterus antiquorum</em></td>
<td><em>Anatella</em> sp.</td>
<td>1♂, 3♀.</td>
<td>12526</td>
</tr>
<tr>
<td>Greater Flamingo</td>
<td><em>Colpoccephalum</em></td>
<td>1♂, 3♀.</td>
<td></td>
</tr>
<tr>
<td><em>Phoenicopterus antiquorum</em></td>
<td><em>Anatella</em> sp.</td>
<td>8♀, 12♂.</td>
<td>14817</td>
</tr>
<tr>
<td>Black Swan</td>
<td><em>Colpoccephalum</em></td>
<td>1♂, 2 im.</td>
<td></td>
</tr>
<tr>
<td><em>Phoenicopterus chilensis</em></td>
<td><em>Anatella</em> sp.</td>
<td>1♂, 2 im.</td>
<td></td>
</tr>
<tr>
<td>Chilian Flamingo</td>
<td><em>Laemobothrium</em></td>
<td>5♂, 2♀.</td>
<td></td>
</tr>
<tr>
<td><em>Cygnus bewickii</em></td>
<td><em>Anaticola</em> sp.</td>
<td>2♂, 3♀.</td>
<td>13500</td>
</tr>
<tr>
<td>Bewick’s Swan</td>
<td><em>Anaticola</em> sp.</td>
<td>2♂, 3♀.</td>
<td></td>
</tr>
<tr>
<td><em>Cygnus olor</em></td>
<td><em>Anaticola</em> sp.</td>
<td>28♂, 51♀, 41 im.</td>
<td>15000</td>
</tr>
</tbody>
</table>

This bird had recently arrived from South America and was heavily infested. All feathers of the axillaries of both wings were covered with eggs whose estimated number was over 14,000. There were many thousands of adult parasites on the bird. Each egg, with capsule, measured almost exactly 1 millimetre, the eggs being pure white and arranged in rows between the rami of feathers which they were attached by transparent cement.

*Cygnus bewickii* Anaticola sp. 2♂, 3♀ 13500

The plumage was in poor condition and the bird had clearly been in bad health for some time. The parasites were evenly distributed throughout the head and body, which is unusual, their usual habitat being the head. No sign of eggs nor nymphs was found.

*Cygnus melancorpus* Ornithobius sp. 11♂, 3♀ 13779

Black-necked Swan

*Cygnus melancorpus* Ornithobius sp. 6♂, 2♀ 14823

Black-necked Swan

*Cygnus melancorpus* Ornithobius sp. 13♂, 15♀ 15323

Black-necked Swan

*Chenops atrata* Ornithobius fuscus Lo Souef 4♂, 13♀ 15325

Black Swan

*Chenonetta jubata* Anatocida sp. 12♂, 20♀ 15328

Maned Goose

*Chloephaga hybrida* Trinoton sp. 6♂, 8 im. 13502

Kelp Goose

*Anas sylvatica* Trioton sp. 1♂, 4 im. 14818

Chloro Wigeon

*Nyronis nyroca* Anatocida sp. 1♂, 10♀ 12544

White-eyed Pochard

*Bucephala islandica* Anatocida sp. 3♂, 2♀ 12531

Barrow’s Golden-eye

*Bubulcus coromandus* Ooentophilus sp. 4♂, 29♀ 13326

Cattle Egret

*Gleona cismina* Ardeicola sp. 5♂, 2♀ 14822

White Stork

*Gleona cismina* Ardeicola sp. 2♂, 4♀ 14829

White Stork

*Gleona cismina* Ardeicola sp. 3♀ 14829
Axillary feather of *Phoenicopterus chilensis*, heavily infested with eggs of *Anaticola* sp.

A. Whole feather × 1¼.

B. Section more highly magnified to show method of attachment of eggs between rami × 15.

<table>
<thead>
<tr>
<th>Host.</th>
<th>Parasite.</th>
<th>No. of individuals</th>
<th>Reference no.</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ephippiorhynchus senegalensis</em></td>
<td><em>Colpocephalum</em> sp.</td>
<td>5♂, 22♀</td>
<td>13881</td>
</tr>
<tr>
<td>Saddle-billed Stork.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Leptoptilos crumeniferus</em></td>
<td><em>Gicomphillus</em> sp.</td>
<td>3♂, 6♀</td>
<td>12532</td>
</tr>
<tr>
<td>Marshou Stork.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Leptoptilos dubius</em></td>
<td><em>Gicomphillus</em> sp.</td>
<td>4♂, 4♀</td>
<td>12525</td>
</tr>
<tr>
<td>Indian Adjutant.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cariama cristata</em></td>
<td><em>Goniocotes</em> sp.</td>
<td>1♂, 13♀</td>
<td>12537</td>
</tr>
<tr>
<td>Crested Cariama.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cariama cristata</em></td>
<td><em>Colpocephalum</em> sp.</td>
<td>(Eggs)</td>
<td>15014</td>
</tr>
<tr>
<td>Crested Cariama.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Masses of eggs were found on the neck and throat.

| *Grus nipio*                       | *Heleonomus* sp.  | 24♂, 16♀          | 14851         |
| Japanese Crane.                    |                   |                    |               |
| *Grus nipio*                       | *Heleonomus* sp.  | 11♂, 13♀          | 15322         |
| Japanese Crane.                    |                   |                    |               |
| *Grus antiquam*                    | *Heleonomus* sp.  | 7♂, 9♀            | 15015         |
| Sarus Crane.                       |                   |                    |               |
| *Tetrapteryx paradisea*            | *Heleonomus* sp.  | 4♂, 29♀           | 13325         |
| Stanley Crane.                     |                   |                    |               |
It has long been known that a species of Actornithophilus infests the inside of the quills of various species of Curlew (Numenius), laying eggs freely inside the quill, but emerging on to the body for feeding. The entrance hole is bored on the underside of the feather, but in this case, a single hole was bored on the top side, a procedure not previously noted.

The detail of infestation in this Culew was as follows:

**Right Wing.**
- 6th primary. Hole 57 mm. from base, containing 7 parasites.
- 7th 
- 8th 

**Left Wing.**
- 6th primary. Hole 55 mm. from base, containing 3 parasites.
- 7th
- 8th
- 9th

(The hole on the top side was in this 9th primary.)

<table>
<thead>
<tr>
<th>Hosts</th>
<th>Parasite</th>
<th>No. of individuals</th>
<th>Reference no.</th>
</tr>
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<tbody>
<tr>
<td><em>Balearica pavonina pavonina</em></td>
<td><em>Heleonomus</em> sp.</td>
<td>4♂, 2♀</td>
<td>12527</td>
</tr>
<tr>
<td>West African Crowned Crane.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Balearica pavonina pavonina</em></td>
<td><em>Heleonomus</em> sp.</td>
<td>4♂, 5♀</td>
<td>13778</td>
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<tr>
<td>West African Crowned Crane.</td>
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<tr>
<td><em>Tringa glareola</em></td>
<td><em>Quadriceps</em> sp.</td>
<td>5♂, 4♀</td>
<td>13775</td>
</tr>
<tr>
<td>Wood Sandpiper.</td>
<td><em>Actornithophilus</em> sp.</td>
<td>2♂</td>
<td></td>
</tr>
<tr>
<td><em>Numenius arquata</em></td>
<td><em>Actornithophilus</em> sp.</td>
<td>(See below)</td>
<td>14863</td>
</tr>
<tr>
<td>Curlew.</td>
<td></td>
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</tbody>
</table>

**Larus marinus** ................ *Actornithophilus* sp. .... 2♀ ............... 14854
Greater Black-backed Gull.

**Spheniscus demersus** .......... *Austrogoniodes* sp. ...... 31♂, 23♀ .... 14850
**Jackass Penguin.**

**Spheniscus magellanicus** ...... *Austrogoniodes* sp. ...... 11♂, 32♀ .......... 13774
**Magellanic Jackass Penguin.**

**Spheniscus magellanicus** ...... *Austrogoniodes* sp. ...... 9♂, 7♀ .......... 13780
**Magellanic Jackass Penguin.**

**Spheniscus magellanicus** ...... *Austrogoniodes* sp. ...... 16♂, 10♀ .......... 13781
**Magellanic Jackass Penguin.**

**Podiceps cristatus** .......... *Aquanirmus* sp. ........ 2♂, 2♀, 1 im. .... 16130
Great Crested Grebe.

**Porphyrio poliocephalus** ...... *Columbicola* sp. ...... 13♂, 24♀, 6 im. .... 12535
Grey-headed Gallinule.

**Streptopelia decaocto** .......... *Columbicola* sp. ...... 2♂ ........................................ 15324
Indian Turtle Dove.

**Perdix perdix perdix** .......... *Lipeurus caponis (L.)* .......... (Numerous) .......... 15947
Partridge.

The whole bird was heavily infested with *Lipeurus caponis (L.)*, a straggler from the Domestic Fowl, a rough estimate of their numbers being 8000 specimens. Scething clusters were found at the base of throat and rump feathers. Thousands of eggs had been deposited on the aftershafts of rump feathers and a few on the throat, the insects swarming round the clusters of eggs. There was no apparent damage to plumage.

The bird had been in captivity for many years.

**Lophophorus impejanus** ......... *Goniodes* sp. ...... 8♀, 16 im. .......... 12524
Impyean Pheasant.

**Lophophorus impejanus** .......... *Goniocotes* sp. ...... 2♂, 6♀ .......... 13277
**Impyean Pheasant.**

**Lophura rufa** ................. *Goniocotes* sp. ...... 2♂, 6♀ .......... 12536
Vieillot’s Fire-backed Pheasant.

**Crossoptilon mantchuricum** ...... *Lipeurus* sp. ...... 2♂, 7♀, 2 im. .......... 15329
Manchurian Eared Pheasant.

**Gennaeus nycthemerus** .......... *Menacanthus* sp. ...... 1♂, 8♀, 2 im. .......... 16131
Chinese Silver Pheasant.

**Gennaeus beli** ............... *Goniocotes* sp. ...... 263♀, 386♂ .......... 15013
Bel’s Pheasant.

Neither eggs nor nymphs found.
<table>
<thead>
<tr>
<th>Hosts</th>
<th>Parasite</th>
<th>No. of individuals</th>
<th>Reference no.</th>
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<tr>
<td><em>Gennaeus horsfieldii</em></td>
<td><em>Goniocotes</em> sp.</td>
<td>1 ♀</td>
<td>13328</td>
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<tr>
<td>Black-breasted Kalij</td>
<td><em>Goniocotes</em> sp.</td>
<td>1 ♂, 4 ♀</td>
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</tr>
<tr>
<td>Pheasant</td>
<td><em>Amyrisda</em> sp.</td>
<td>2 ♀</td>
<td></td>
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<tr>
<td><em>Calophasis elioti</em></td>
<td><em>Lipeurus</em> sp.</td>
<td>9 ♂, 12 ♀</td>
<td>14819</td>
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<tr>
<td>Elliot's Pheasant</td>
<td><em>Goniocotes</em> sp.</td>
<td>4 ♂, 16 ♀</td>
<td>13601</td>
</tr>
<tr>
<td><em>Calophasis mikado</em></td>
<td><em>Goniocotes</em> sp.</td>
<td>7 ♀</td>
<td></td>
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<tr>
<td>Mikado Pheasant</td>
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<tr>
<td><em>Chrysolophus pictus</em></td>
<td><em>Menopon</em> sp.</td>
<td>2 ♂, 4 ♀, 2 im.</td>
<td>14821</td>
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<tr>
<td>Golden Pheasant</td>
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<tr>
<td><em>Chrysolophus amherstiae</em></td>
<td><em>Lipeurus</em> sp.</td>
<td>1 ♂, 14 ♀</td>
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<tr>
<td>Lady Amberst's Pheasant</td>
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<tr>
<td><em>Polyplectron germaini</em></td>
<td><em>Goniocotes</em> sp.</td>
<td>3 ♂, 9 ♀</td>
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<td>Germain's Peacock Pheasant</td>
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<tr>
<td><em>Gallus lafayetti</em></td>
<td><em>Menopon</em> sp.</td>
<td>9 ♀</td>
<td>12530</td>
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<tr>
<td>Ceylon Jungle Fowl</td>
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<tr>
<td><em>Rhea rothschildi intermedia</em></td>
<td><em>Struthiolipeurus</em> sp.</td>
<td>4 ♂, 5 ♀</td>
<td>13315</td>
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<tr>
<td>Common Rhea</td>
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<tr>
<td><em>Rhea rothschildi intermedia</em></td>
<td><em>Struthiolipeurus</em> sp.</td>
<td>14 ♂, 9 ♀</td>
<td>15327</td>
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<tr>
<td>Common Rhea</td>
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<td></td>
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<tr>
<td><em>Rhea rothschildi intermedia</em></td>
<td><em>Struthiolipeurus</em> sp.</td>
<td>16 ♂, 22 ♀</td>
<td>14781</td>
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<tr>
<td>Common Rhea</td>
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<td></td>
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<tr>
<td><em>Struthio camelus australis</em></td>
<td><em>Struthiolipeurus</em> sp.</td>
<td>4 ♂, 44 ♀</td>
<td>13321</td>
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<tr>
<td>South African Ostrich</td>
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</tbody>
</table>
A NEW GENUS AND SPECIES OF MALLOPHAGA

BY

THERESA CLAY, B.Sc.

FROM PARASITOLOGY, Vol. XXXIII, No. 1, March 1941

CAMBRIDGE
AT THE UNIVERSITY PRESS
PRINTED IN GREAT BRITAIN
A NEW GENUS AND SPECIES OF MALLOPHAGA

By THERESA CLAY, B.Sc.

From British Museum, Natural History

(With 7 Figures in the Text)

Elsewhere (paper in the Press) the author has shown that the majority of species originally described under *Goniodes*, although somewhat diverse in form, are fundamentally similar and cannot be separated generically. However, there are certain species originally placed in *Goniodes* which are generically distinct and should be separated. Among these is a group of species, forming the new genus described below, which is distinguished in both sexes by the small size of the first segment and the characters of the terminal segments of the abdomen and in the male by the form of the clavi.

**Virgula** n.g.

*Description of the genus.* Head circumfasciate and somewhat diverse in shape with the form of the male clavi being the most constant and typical generic character. The clavi (*=zapfen* of Kéler) are transparent and consist of a basal portion which is prolonged distally into a fine point (Fig. 2a); in the female the clavi are normal. In the known species the antennae are sexually dimorphic, the male having the distal pre-axial angle of the third segment produced to a greater or less extent. In *Goniodes*, on the other hand, in the sexually dimorphic antennae, it is the distal post-axial angle which is produced.

Pterothorax comparatively large with straight divergent lateral margins and a central sternal plate bearing hairs.

Abdomen elongated and somewhat pointed posteriorly with segment I (=true II) small in both sexes (compare *Goniodes*). In the male segments VIII and IX (=true IX and X) are fused and elongated in an antero-posterior plane. The terminal bilobed portion of the abdomen is probably formed from segment X (=true XI). In *Goniodes* segments VIII and IX are small and not fused and segment X is probably associated with the genital opening which lies on the dorsal surface. In this genus however the genital opening is ventral. Paratergal plates well marked with complicated re-entrant heads. Sternal thickening of segments I–VI in the form of lateral plates; sternites of VIII and IX fused and giving rise to an elongated finger-shaped appendage bearing minute spines especially numerous on the terminal area. At the base of this appendage the chitin is modified to form what is apparently a hinge and there are supporting struts passing in towards the appendage from each lateral margin.
In the female of *Goniodes* segments VIII and IX (=true IX and X) are fused and surround the small remnant of segment X (=true XI). In the genus *Virgula*, it appears that segment X is comparatively large and has well-marked tergal plates separated medianly and that it is not surrounded by but is posterior to the segment formed from the fusion of VIII and IX. The genital region is without particular distinguishing marks and there is a single row of hairs on the posterior margin of the vulva.

Genotype. *Goniodes meleagridis* (Linne) from *Meleagris gallopavo domestica*, the domestic turkey.

This genus contains species from *Meleagris, Agriocharis, Lerwa, Oreophasis, Pauxi, Ortalis, Chamaepetes, Craz, Penelope, Penelopina, Dendrortyx, Callipepla* and *Odontophorus*. The distribution of this genus is therefore somewhat curious, occurring as it does on the Meleagrididae, on one genus of the Phasianinae (*Lerwa*), on the Odontophorinae and Cracidae. It may also of course be found to occur on other families of birds. This distribution cannot indicate any close affinities between the families and subfamilies mentioned above but may possibly be due to the fact that the genus was once widespread throughout the Galliformes and has since died out in the intervening genera. The diversity of the species of the genus lends support to this theory.

**Virgula meleagridis** (Linne), 1758 (Figs. 1-4)


*Goniodes stylifer* Nitzsch, 1818, p. 294. Host: as above.

*Rhopaloceras styliferum* Taschenberg, 1882, p. 47, emend. for *stylifer* Nitzsch.

This is a distinct and characteristic species separable from the other species of the genus by the temples in both sexes being greatly prolonged backwards and by the characters of the male genitalia.

**Male.** Head as shown in Fig. 1a. First segment of antennae enlarged and bearing a small thickened process; third segment has the distal pre-axial angle slightly prolonged and the distal dorsal margin bears a small thickened process, giving rise to three small hairs. Temples expanded and produced backwards each side.

Thorax with lateral margins of pro- and pterothorax divergent. Sternal plate triangular in shape and bears six stout elongated hairs each side (Fig. 2b). Dorsal chaetotaxy as in female.

Abdomen somewhat elongated with segment I the shortest and with segments VIII and IX enlarged. Tergal plates I–VI are separated widely; those of the terminal segments being transversely continuous. Paratergal plates well developed with large beak-like re-entrant heads. Sternal thickening of segments I–VI in the form of individual lateral plates; that of segments VII and VIII in the form of single central plates. The ventral abdominal appendage arises from segment VIII and bears numerous spine-like hairs on the distal portion (Fig. 1b). On the dorsal surface of the abdomen segments
II–VI have one long lateral hair each side; segment I has six central hairs; segments II–VI with number of hairs variable in number, ranging from seven to ten; segment VII has two central hairs. On the ventral surface segment I

![Diagram of Virgula moleagrictis](image)

*Fig. 1. Virgula moleagrictis, ♀. a, head; b, terminal segments of abdomen.*

has two central hairs; segments II–V have a variable number of hairs on each segment, ranging from eight to ten; segment VI has four hairs. Terminal segments as shown in Fig. 1b.
A new genus and species of Mallophaga

The genitalia (Fig. 2c) have been fully described by Cummings (1916, p. 292).

**Female.** Head as shown in Fig. 3 and differs from that of male in the absence of the modified clavi and enlarged antennae.

**Fig. 2.** *Virgula meleagridis*, ♂. a, clavi; b, sternal thoracic plate; c, genitalia.

Thorax and abdomen as shown in figure. On the ventral surface segment I has two central hairs; segment II has fifteen to eighteen hairs across the segment; segments III–V have seventeen to twenty hairs; segments VI–VII have two central hairs. Chaetotaxy of vulva and terminal segments as shown in Fig. 4.
Fig. 3. Virgula meleagris, ♂.
A new genus and species of Mallophaga

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
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<tr>
<td>Head</td>
<td>0·76*</td>
<td>1·28</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0·40</td>
<td>0·66</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·62</td>
<td>1·13</td>
</tr>
<tr>
<td>Abdomen</td>
<td>2·25</td>
<td>1·50</td>
</tr>
<tr>
<td>Total</td>
<td>3·85</td>
<td>3·54</td>
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<tr>
<td>Cephalic index</td>
<td>1·68</td>
<td></td>
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</table>

Total length of genitalia 0·825 mm.

* Measurements taken from anterior margin to mid-line of occiput.

Specimens examined. 10♂, 8♀ from Meleagris gallopavo domestica from various localities; 9♂, 5♀ from skins of M. gallopavo merriami Nelson from Texas; 5♂, 6♀ from skins of Agriocharis ocellata (Cuvier).

Neotype. ♂ in the British Museum Collection, no. 1906-174, from Meleagris gallopavo domestica from Roumania. Neoparatypes. 9♂, 8♀ from the same host from various localities.

Taschenberg (1882, p. 47) included this species in his genus Rhopaloceras, for which he made no genotype. Harrison (1916, p. 24) designated Goniodes alicept Nitzsch from Tinamus tao as genotype of Rhopaloceras, which means that this genus is quite distinct from that described above.

Virgula lervicola n.sp. (Figs. 5–7)

This is a distinct species not closely resembling any other known species of the genus. The diagnostic characters are the shape of the head and terminal segments of the abdomen in both sexes and the male genitalia.
Description of male. Head with narrow clypeal band and transparent pointed clavi characteristic of the genus; antennae with first segment enlarged and bearing small thickened process and with distal pre-axial angle of third segment prolonged slightly with thickened distal end. Temples with angles curved slightly posteriorly and bearing thickened elongated hair (Fig. 5a).

Fig. 5. *Virgula lervicola*, ♂. *a*, head and thorax; *b*, paratergite and sternite of fourth abdominal segment.
Thorax as shown in Fig. 5a, with irregular triangular sternal plate bearing four stout elongated hairs each side.

Abdomen somewhat elongated in shape with segment I small and segments VIII and IX enlarged, the latter being deeply bilobed posteriorly and with the distal point of each lobe greatly thickened. Tergal plates I–VI widely separated; plates VII and VIII transversely continuous. Paratergal plates of characteristic form (Fig. 5b). Sternal thickening of segments I–VI in the form of individual lateral plates and that of segment VII as a continuous plate across the segment. Ventral abdominal appendage arises from segment VIII and does not reach beyond the posterior margin of abdomen (Fig. 6a). Abdominal chaetotaxy as shown in table given below.

Genitalia comparatively small with basal plate swollen proximally and paramera club-shaped (Fig. 6b).

Description of female. Head differing in shape from that of male (Fig. 7a) and with clavi somewhat transparent and not projecting laterally.

Thorax as in male.

Abdomen with first segment short and terminal segment enlarged, and broadly bilobed. Tergal plates I–VII separated medianly; paratergal plates
as in male; sternal thickening on segments I–VII in the form of lateral plates. Posterior margin of vulva bilobed and set with short hairs (Fig. 7b). Abdominal chaetotaxy as shown in table.

Fig. 7. *Virgula lervicola,* ♀. a, outline of head; b, terminal segments of abdomen.

Table 2. Abdominal chaetotaxy

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<th>Female</th>
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<td></td>
<td>T. S. P.</td>
<td></td>
<td>T. S. P.</td>
</tr>
<tr>
<td>I</td>
<td>6 2 0 0</td>
<td></td>
<td>8 2 0 0</td>
</tr>
<tr>
<td>II</td>
<td>1 6 1 6–8 1 1</td>
<td></td>
<td>1 10–14 1 10–12 1 1</td>
</tr>
<tr>
<td>III</td>
<td>1 6 1 6–8 1 1</td>
<td></td>
<td>1 10–14 1 10–12 1 1</td>
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<tr>
<td>IV</td>
<td>1 6 1 6–8 1 1</td>
<td></td>
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<tr>
<td>V</td>
<td>1 6 1 6–8 2 2</td>
<td></td>
<td>1 8 1 2 2 2</td>
</tr>
<tr>
<td>VI</td>
<td>1 4 1 2 2 2</td>
<td></td>
<td>Fig. 7b 2 2</td>
</tr>
<tr>
<td>VII</td>
<td>2 2 2 2</td>
<td></td>
<td>Fig. 7b 2 2</td>
</tr>
<tr>
<td>VIII</td>
<td>4 Fig. 6a</td>
<td></td>
<td>Fig. 7b 2 2</td>
</tr>
<tr>
<td>IX</td>
<td>4 Fig. 6a</td>
<td></td>
<td>Fig. 7b 2 2</td>
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</table>

A new genus and species of Mallophaga

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
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<th>Female</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.60-0.65</td>
<td>0.78-0.86</td>
<td>0.69-0.70</td>
<td>0.94-0.97</td>
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<tr>
<td>Prethorax</td>
<td>0.24-0.26</td>
<td>0.48-0.50</td>
<td>0.22-0.24</td>
<td>0.52-0.54</td>
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<tr>
<td>Pterothorax</td>
<td>0.36-0.40</td>
<td>0.72-0.79</td>
<td>0.36-0.38</td>
<td>0.79-0.83</td>
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<tr>
<td>Abdomen</td>
<td>1.42-1.55</td>
<td>0.98-1.09</td>
<td>1.29-1.42</td>
<td>1.11-1.30</td>
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<td>Total</td>
<td>2.57-2.87</td>
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<td>2.54-2.65</td>
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<tr>
<td>Cephalic index</td>
<td>1.30-1.32</td>
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<td>1.37-1.39</td>
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</tbody>
</table>

Total length of genitalia 0.385 mm.

Described from 13 ♂ and 18 ♀ from skins of *Lerwa lerwa* (Hodgson) from Sikkim.


The following species should also be included in *Virgula*:

*Goniodes longipes* Piaget.

*Goniodes longipes* Piaget, 1880, p. 253, pl. XX, fig. 7. Host: *Pauxi pauxi* (Linné). (*Crau galeata.*)

This species is represented in the Piaget Collection in the British Museum by two males and two females and in the Leiden Museum by two females. It is hoped in a subsequent publication to give figures and a description of this species.

*Goniodes bicolor* Rudow.


Taschenberg (1882, p. 34), who saw Rudow’s specimens, considered this species to be identical with *longipes* Piaget. It can therefore be assumed that the two species are congeneric, but without material from the type host of *bicolor* it is not wise to assume that *bicolor* and *longipes* are conspecific.

*Goniodes eximius* Rudow.

*Goniodes eximius* Rudow, 1869, p. 25. Host: *Oreophasis derbianus* Gray. (*Oreophasis Derbianus aus Guatemala.*)

This species was described and figured by Taschenberg (1882, p. 35, pl. III, fig. 1) from Rudow’s original specimens and is a typical *Virgula*.

*Goniodes diversus* Rudow.

*Goniodes diversus* Rudow, 1870, p. 484. Host: *Penelopina nigra* (Fraser). (*Penelope nigra.*)

Taschenberg (1882, p. 37), who saw a single example of this species from Rudow’s collection, considered that it was most probably conspecific with *eximius*. Therefore it can be assumed, as in the case of *bicolor* and *longipes*, that *diversus* and *eximius* are congeneric although not necessarily conspecific.
Goniodes rotundus Rudow.

Goniodes rotundus Rudow, 1869, p. 28. Host: Penelopina nigra (Fraser).

It does not appear from the description that this species is conspecific with diversus, and it is difficult to say to what genus it does belong. The name must therefore be ignored until sufficient material from Penelopina nigra has been examined and the species occurring on this host known.

Species included in the genus Virgula

<table>
<thead>
<tr>
<th>Type</th>
<th>Host</th>
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<tbody>
<tr>
<td>Virgula meleagridis (Linné)</td>
<td>Meleagris gallopavo domestica.</td>
</tr>
<tr>
<td>Virgula lervicola n.sp.</td>
<td>Lerwa lerwa (Hodgson).</td>
</tr>
<tr>
<td>Virgula longipes (Piaget)</td>
<td>Pauxi pauxi (Linné).</td>
</tr>
<tr>
<td>Virgula bicolor (Rudow)</td>
<td>Penelope marail (Müller).</td>
</tr>
<tr>
<td>Virgula eximia (Rudow)</td>
<td>Oreophasis derbianus Gray.</td>
</tr>
<tr>
<td>Virgula diversa (Rudow)</td>
<td>Penelopina nigra (Fraser).</td>
</tr>
</tbody>
</table>

The author is indebted to the Trustees of the British Museum (Natural History) for permission to publish certain of the text-figures drawn by Mr Terzi.

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(MS. received for publication 15. vll. 1940)
THE TRABECULA.

1. GENERAL.

It seems desirable to re-define the terms *trabecula* and *conus* (= *clavus*) as used for certain structures in the Mallophaga; recent literature shows that there is still confusion in regard to these terms and this has contributed in at least one case to an incorrect generic diagnosis.

Kéler (1938 a, p. 403 and 1938 b, p. 309) was the first author to show that the term *trabecula* was used indiscriminately for two structures morphologically distinct. He restricted the term *trabecula* to the structure in the Ischnocera which arises from the antennal socket, and the posterior margin of which is continuous with the anterior margin of the first segment of the antenna; he showed that it was well developed only in *Philopterus* sens. str. In many other genera it is represented by an inconspicuous fold projecting hardly or not at all beyond the lateral margin of the head. The second structure, also referred to as *trabecula*, is that to which Kéler (1938 a, p. 401) gave the German name "Zapfen" and later (1939, p. 14) the Latin name "*conus*".* The *conus* is a prolongation of the lateral margin of the head, each side, immediately anterior to the antennal socket, of which it forms the anterior margin. Kéler showed that the lateral outgrowths immediately anterior to the antennae of such genera as *Degeeriella* sens. str. are homologous with the postero-lateral or lateral prolongations of the anterior margin of the head in *Goniodes*. The type of *coni* is largely conditioned by the form of the head, depending on the degree of prolongation of the pre-antennal region. In *Philopterus* sens. str. both *trabeculae* and *coni* are well developed; in the majority of Ischnoceran genera it is the *coni* which are prominent, and in some genera both *trabeculae* and *coni* are undeveloped. Kéler has also shown (1939, p. 15) that the *coni* in *Goniodes* is usually divided into an anterior part with internal

* Clay, 1940, p. 2, used the name "*clavus*."
thickening (the *nodulus* of Kéler, 1939, fig. 1) and a posterior hyaline part. Kéler has shown that this hyaline portion may be separated off as a discrete process as in *Chelopistes* Kéler, when he names it the *appendix coni*. It would seem that the sclerotized process occupying this position in *Goniodes cervinicorns* Giebel should also be regarded as an *appendix coni*. The partly hyaline nature of the *conus* in some species has given rise to confusion in the interpretation of this structure, as in prepared specimens the hyaline part may be shrunk against the upper part and non-apparent. In such cases the upper hard part has been represented as the complete *conus* and shown as a triangle with the apex pointing laterally, and a flattened posterior margin instead of a rounded triangular structure with the posterior margin rounded or pointed and prolonged posteriorly (fig. 1). A case

in which the hard part of the *conus* has been compared with the complete *conus*, the differences being used as a subspecific character, will be mentioned in a subsequent note.

2. PARAGONIOCOTES Cummings and EPIPSITTACUS Carriker.

In the generic description of *Epipsittacus* (Carriker, 1944, p. 233, and 1940, p. 294) mention is made of
"curving spines at the base of the antennae" in the female and of "well developed trabeculae" in the male. In fact neither of these are trabeculae, but both structures are prolongations of the margin of the head immediately anterior to the antennal socket and are therefore homologous with the coni of other genera. In many species where there is sexual dimorphism of the antennae there is also sexual dimorphism of the coni, caused by the increased size of the first antennal segments of the male, the coni being closely associated with the antennae both morphologically and functionally. For this reason it is probable that sexual dimorphism of the coni alone, like that of the antennae, will seldom prove to be a reliable generic character, although the form of the male antennae (e.g., Coloceras) or the male coni (e.g., Chelopistes) may be characteristic. In this connection it seems somewhat premature to say, as in the description of Pseudocophorus (Carriker, 1940, p. 281), "antennae are strongly dimorphic (decidedly a generic character in this group, but not in all others)," when only four species of the genus are known. It has been shown elsewhere (Clay, 1940, figs. 1 and 2) that there may be considerable variation in the form of the coni amongst congeneric species.

Among the characters used to distinguish Epipsittacus from Paragoniocytes are those of the female genital region. It is stated (Carriker, 1940, p. 285) that the three long curving spines and the genital plate of the female abdomen are on the dorsal surface in Epipsittacus, and that the spines are on the posterior margin of the last segment in Paragoniocytes. In fact Epipsittacus c. colombianus * Carriker, Paragoniocytes cornutus Carriker *, P. acutifrons Carriker *, P. gripocephalus Cummings *, P. neivai Guimarães, and Goniocytes fasciatus Piaget * have the sub-genital plate and associated clusters of spines in the normal ventral position.

The only remaining characters mentioned for the separation of Epipsittacus from Paragoniocytes are those of the male genitalia. These structures, although of prime importance in the separation of species, are not necessarily of generic importance. In Goniodes (see Clay, 1940) the male genitalia cannot be used as generic characters, and the same will probably prove to be the case in many

* Specimens examined.
other of the large genera. In the group of species under discussion it also seems doubtful whether they will serve as generic characters. *Goniocotes fasciatus* Piaget agrees with *Epipsittacus mirabilis* Carriker in the character of the male and female coni, in the form of the male tergites and in the association of sternite X in the female with the genital cluster of spines. The male genitalia show the short parameres and elongated dorsal endomeres * as in *P. gripocephalus*; the inner “endomeral parts” (see Cummings, 1916, fig. 6) seem in *fasciatus* to be fused medianly. The broad anterior “endomeral plate,” bearing a lateral spine, which is found in *Epipsittacus mirabilis*, may be homologous with the elongated “penal complex” (Cummings, 1916, fig. 6) which bears a similar lateral spine; *fasciatus* has an elongated penis.

In conclusion, it can be said that there are known at present a number of species occurring on the Psittaciformes which do not differ in any fundamental characters but which can be split into two groups, one containing species in which the coni and antennae are sexually dimorphic, the males have only the first abdominal tergite divided medianly and the females have sternite X strongly sclerotized and lying at the base and partly surrounding the genital cluster of spines; and a second group showing no sexual dimorphism of the coni and antennae, the males with only the second abdominal tergite entire and the female with sternite X not strongly sclerotized nor closely associated with the genital cluster of spines. As at present only a fraction of the Mallophaga from the Psittaciformes of the world can be known it is most probable, on the analogy of other groups parasitizing large host orders, that species will be found combining characters from both groups. In support of this can be mentioned a single female from *Amazona sestiva xanthopteryx* (Berlepsch), Bolivia, which has the coni of the female not in the form of sclerotized curving hooks, but similar to those of the male *Epipsittacus*; the genital region is typical *Paragoniocotes* in form. Taking into account these points it would seem to be more satisfactory to retain all these species in *Paragoniocotes*.

* Called parameres by Cummings (1916); it is, however, the shorter outer pair which articulate in the normal manner with the basal plate.
3. Chelopistes * Kéler.

As shown above, the male of Chelopistes Kéler (1939, p. 180) has elongated, hyaline appendices coni prolonged distally into a fine point (Kéler, 1939, fig. 102, and Clay, 1941, fig. 2a). Carriker (1945, p. 365) has erected a new genus, Trichodomedea, for a group of species some of which were considered to be congeneric with the genotype of Chelopistes, *C. mealeagridis* (Linn.), by both Kéler and Clay. The generic diagnosis of Trichodomedea contains the supposition that the appendix coni, typical of male Chelopistes, is not present in those species placed in the new genus. The types of the species of Trichodomedea listed below, which are in the Meinertzhagen collection, have been examined, and in all the males the typical hyaline pointed appendices coni can be seen:—

*Trichodomedea latafrons crassus* Carriker.
*T. setosa gujanensis* Carriker.
*T. d. dendrortyx* Carriker.
*T. d. similis* Carriker.

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THE RELATIONSHIP BETWEEN MALLOPHAGA AND HIPPOBOSCID FLIES

By THERESA CLAY and COLONEL R. MEINERTZHAGEN

(With 2 Figures in the Text)

It has been known for a long time that certain species of Mallophaga attach themselves to hippoboscid flies, the act taking place on the bird host. This has been referred to as Phoresy, 'a type of interrelationship between insects in which one is carried on the body of another larger insect, but the former does not feed on the latter', or, in other words, free passage without food.

The recorded cases are as follows:

1857. Aube. Two Mallophaga, said to be those from a magpie, Pica pica, recorded from Ornithomyia aviculare L. (quoted by Thompson, 1934).

1890. Sharp. Records a single Ornithomyia aviculare from Dartford, Kent, 'to which several specimens of Mallophaga were firmly adhering, apparently by the mandibles'.

1910. Mjöberg. Records two Ornithomyia aviculare from a starling (Sturnus v. vulgaris) in Sweden, the one with seven and the other with three Philopterus leontodon adhering to the long hairs of the abdomen. (P. leontodon = P. sturni.)

1910. Wanach. Records a Philopterus sp. probably from Turdus m. merula, the blackbird, on the abdomen of an Ornithomyia aviculare near Berlin.

1911. Jacobson. Records a single Ornitoeca pusilla taken off a pitta (Eucichla cyanura) near Batavia in Java with a Mallophaga clasped between the legs of the (dead) fly.

1912. Forsius. Records a single Ornithomyia aviculare with two Degeeriella quadrulata adhering to the base of the wing of a blackcock, Lyurus tetrix in Finland. (Degeeriella quadrulata = Lagopusculus lyurus Clay.)

Also a single Ornithomyia aviculare with two Degeeriella uncinosa, adhering, one to the hind tibia and another to the abdominal hairs. (D. uncinosa = Bruelia uncinosa.) Host Corvus corone cornix, the hooded crow.

1920. Banks. Records an Ornithomyia to which two Mallophaga were attached, one on each side near the tip of the abdomen.

1922. McAtee. Records an Ornithomyia aviculare from Saskatchewan on 11 August 1920, to which was attached a Degeeriella rotundata. Host unknown. A second Ornithomyia aviculare from Oregon on 30 September 1920 had a second Degeeriella rotundata, host Corvus brachyrhynchos hesperis, an American crow. (Degeeriella rotundata = Bruelia rotundata.) In both cases the Mallophaga were attached by their mandibles to the upper surface of the abdomen near the hind margin.

1922. Johnson. Records the same specimen as Banks. Two specimens of undetermined Mallophaga were attached to a single Ornithomyia euchneuria taken from a jay, Perisoreus canadensis barbouri, on Anticosti Island on 3 September 1919. The Mallophaga were one on each side of the abdomen at posterior edge of 1st segment.
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1927. Ewing. Records a specimen of *Ornithomyia avicularis* from a song sparrow, *Melospiza m. melodia*, to which were attached two *Degeeriella interposita* (= *Bruelia interposita*). They were adhering to the body wall of abdomen by the mandibles. In a second case, a specimen of *Ornithomyia avicularis* from a catbird, *Dumetella carolinensis*, to which was attached a single *Bruelia interposita*. In both cases the specimens were taken in Ohio.

1928. Warburton. Records a specimen of *Ornithomyia avicularis* captured on a window in Cambridge (England). Attached to the hairs of the abdomen was a specimen of *Degeeriella marginalis* (= *Bruelia marginalis*) a common parasite on members of the genus *Turdus*.

1928. Spencer. Records a single *Ornithomyia avicularis* taken on a Steller’s jay, *Cyanocitta s. stelleri*, on Vancouver Island, and to it were attached sixteen *Degeeriella deficiens* (= *Bruelia deficiens*) holding on to the abdominal tergites with their mandibles.

1933. Thompson. Records an *Ornithomyia avicularis* taken in Hertfordshire from a young song thrush, *Turdus philomelos clarkei*, to which were attached three *Bruelia marginalis*. They were adhering to the posterior margin of the abdomen.

A second specimen of *Ornithomyia avicularis* found in the British Museum collection had eleven *Bruelia marginalis* fixed to the posterior portion of the abdomen. It was caught on a window at Woking in Surrey.

1934. Thompson. Records (ex Waterston) two specimens of *Ornithomyia avicularis* from the Shetlands each with a *Philopterus sturni* attached. Also (ex Britten) a specimen of *Ornithomyia avicularis* found on a window in Cumberland with a *Bruelia marginalis* attached.


It is relevant to record here the case of *Trichodectes tibialis* being found attached to Culicidae (Thompson (1933) (ex Pens, *Z. Parasit*. 5, 740–41).)

It is also relevant to mention the case of mammal Mallophaga (*Gyropus* and *Trichodectes*) found attached to a dragonfly (*Ischnogomphus jessei* Williamson) in Columbia, (Mann (1920).)

In addition to the above, the following cases have come to our notice:

1. *Garrulus glandarius ruftergum*. Jay, Berkshire, July 1941. Specimen wrapped up and immersed in chloroform fumes at once. Host was infested with six *Ornithomyia avicularis* on two of which adhered Mallophaga. On one were 2♀ *Bruelia glandarii* attached to the lower abdomen; on the other was a single ♀ *Bruelia glandarii* on the left lower flank. Total population on host, 9♀, 2♀, 8 im. *Bruelia glandarii*. (Slide 14458, Meinertzhagen coll.)

2. *Aphelocoma c. californica*, California jay, California, no date. Specimen received from Bequaert. 1♀ *Bruelia* (probably from a species of Corvidae, but not from *Aphelocoma*) on *Ornithoica confluenta*, attached to the vein of the wing. One mandible
of *Bruelia* is underneath the junction of the costa and first longitudinal vein, pressing it upwards against the other mandible which has pierced the wing and lies on top (see Fig. 1). (Slide, Meinertzhagen coll.)

3. *Pastor roseus*, rose-coloured Pastor, Deccan, India, February 1937. Collected by Meinertzhagen. 1 ♀ *Philopterus* on *Ornithoica metallica*, attached to the last segment of the abdomen, probably by gripping the base of the hairs. Total population on host: 2 ♂, 3 ♀, 1 im. *Philopterus*; 1 ♂, 2 ♀, 1 im. *Bruelia*. (Slide 8828, Meinertzhagen coll.)

4. *Sturnus v. vulgaris*, starling, Estonia, August 1934. Collected by Meinertzhagen. 1 ♀ *Bruelia* on *Ornithomyia lagopodis*, attached to the last segment of the abdomen. Total population on host: 1 ♂ *Bruelia* and 5 *Myrsidea*. (Slide 1434, Meinertzhagen coll.)

![Fig. 1. Portion of the wing of *Ornithoica confucta*, showing mandibles (m) of *Bruelia*. c, costa; 1l and 2l, 1st and 2nd longitudinal veins.](image)

![Fig. 2. Posterior end of the abdomen of *Ornithomyia avicularis* with mandibles (m) of *Bruelia merulences* attached to a hair (h).](image)

5. *Sturnus vulgarus zetlandicus*, Shetland starling, Orkneys, August 1938. Collected by Meinertzhagen. A single *Ornithomyia lagopodis* was caught on bird when shot and found to be free of Mallophaga. Insect returned to host for an hour and then host was chloroformed. The dead fly was then found to have 3 ♀ *Philopterus sturni* attached to abdomen. Total host population: 9 ♂, 13 ♀, 3 im. *Philopterus sturni* and 5 ♂, 25 ♀ *Bruelia*. (Slide 11479, Meinertzhagen coll.)

6. *Sturnus vulgaris zetlandicus*, Shetland starling, Orkneys, August 1938. Collected by Meinertzhagen. A single *Ornithomyia lagopodis* was caught on bird when shot and found to be free of Mallophaga. Insect returned to host for an hour and then host was chloroformed. The dead fly was then found to have 7 ♂ and 21 ♀ *Philopterus sturni* attached to abdomen. Total host population: 24 ♂, 32 ♀, 21 im. *Philopterus sturni* and 3 ♂, 24 ♀, 9 im. *Bruelia*. (Slide 11525, Meinertzhagen coll.)
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7. *Sturnus vulgaris zetlandicus*, Shetland starling, Orkneys, August 1938. Bird chloroformed within an hour of death. On shaking out for parasites, a single *Ornithomyia lagopodis* was found to have 2 ♂, and 4 ♀ *Philopterus sturni* attached, two on one flank of the abdomen and four on the posterior end of the abdomen. Total host population: 15 ♂, 24 ♀, 5 im. *Philopterus sturni*, 6 ♂, 2 ♀, 4 im. *Bruelia* and 2 ♀ *Menacanthus*. (Slide 11413, Meinertzhagen coll.)

8. *Sturnus vulgaris zetlandicus*, Shetland starling, Orkneys, August 1938. This is perhaps the most remarkable of all cases which have come to our notice and deserves recording in detail. Immediately after being shot the bird was examined and seven *Philopterus* were seen to be adhering to the inside of the webs of some of the left wing feathers. On the right wing were eight *Philopterus* adhering to feathers. That makes fifteen *Philopterus* in all. The specimen was wrapped up in muslin at once and after about two hours was immersed in the fumes of chloroform. When shaken out for parasites, a hippoboscid fly (*Ornithomyia lagopodis*) fell out. 1 ♂ and 6 ♀ *Philopterus sturni* were found to be adhering to the abdomen, 3 ♀ *Philopterus sturni* were still adhering to the wing and 3 ♂ and 2 ♀ were shaken from the body. The whole philopterid population were therefore accounted for, some of which had taken the precaution of boarding the fly as the host cooled off; in other words, the Mallophaga appeared to use the fly as a lifeboat. Total host population: 4 ♂, 11 ♀ *Philopterus sturni* and 7 ♂, 25 ♀ *Bruelia*. (Slide 11308, Meinertzhagen coll.)

9. *Sturnus vulgaris zetlandicus*, Shetland starling, Shetland, August 1939. Collected by Meinertzhagen. 1 ♀ *Philopterus sturni* on *Ornithomyia lagopodis* attached to the last segment of the abdomen. This fly was caught on the window and placed on the dead bird soon after it was shot. After chloroforming, the dead fly had the *Philopterus* adhered to the bird. Total host population: 1 ♂, 4 ♀ *Philopterus sturni*, 3 ♂, 8 ♀ *Bruelia*, and 1 ♀ *Myrsidea*. (Slide 13609, Meinertzhagen coll.)

10. *Pipilo maculatus megalonyx*, Towhee (U.S.A.). Received from Bequaert. 1 ♀ *Bruelia* on *Ornithomyia confluenta*, attached to the vein of the wing. The species of *Bruelia* is probably from some member of the Corvidae. (Slide, Meinertzhagen coll.)

11. *Tschagra s. senegallus*, bush shrike, Morocco, October 1938. Collected by Meinertzhagen. 2 ♀ *Bruelia* on an unidentified hippoboscid fly, one attached to each flank of the abdomen. The species of *Bruelia* is the same as occurred on the host. Total host population: 1 ♀ *Philopterus*, 6 ♂, 7 ♀, 2 im. *Bruelia*. (Slide 11946, Meinertzhagen coll.)

12. *Turdus m. migratorius*, the American robin, Mass., U.S.A. Received from Bequaert. 2 ♀ *Philopterus* on *Ornithomyia fringillaria*, one attached to each side of the abdomen. (Slide, Meinertzhagen coll.)

13. *Cuculus c. canorus*, cuckoo, Suffolk, August 1935. 1 ♀ *Bruelia merulensis* on *Ornithomyia avicularis* attached to the hairs on the posterior end of the abdomen. *Bruelia merulensis* is only known from *Turdus merula*, the blackbird. There were no other Mallophaga on the cuckoo which was a juvenile specimen. See Fig. 2. (Slide 3919, Meinertzhagen coll.)

Of these thirteen cases, ten were collected by ourselves, and it is remarkable that between 200 and 300 hippoboscid flies have been taken from freshly killed birds in four continents with such meagre results.
The following additional experiments were carried out with hippoboscid flies in the Orkneys and Shetlands in August 1938 and August 1939. Eight living hippoboscids (Ornithomyia lagopodis) were placed on eight freshly killed and warm starlings known to be infested with Bruelia and Philopterus and remained in contact with the birds for two hours without a single fly having a Mallophaga attached. Also, four hippoboscids of the same species, fresh but dead, were placed on freshly killed starlings known to be infested with Philopterus and Bruelia without any result after three hours.

In addition, six living Philopterus and eight living Bruelia from a starling were placed in a small glass phial with two living hippoboscids (Ornithomyia lagopodis) for two days without any resultant attachments, though both classes of insects were in continual contact.

To revert for a moment to cuckoos. A recently fledged cuckoo, a beautiful albino now in the British Museum, was picked up dead in the New Forest on 18 July 1939. We saw it in the British Museum on the following day. It was then infested with 1 ♀ Bruelia merulensis and 2 Philopterus sp., probably from Delichon urbica, the house martin.

Young cuckoos are reared by foster parents and have no contact with their own parents; in fact, adult cuckoos leave Britain before their offspring are fully fledged. Therefore any Mallophaga found on a young cuckoo must have come either from the foster parent or from an infested hippoboscid fly. It is interesting to note that neither the blackbird nor the house martin are foster parents to the cuckoo, except in cases of negligible value.

In addition to the above case we have examined five young cuckoos in Britain and Estonia in July. None had Mallophaga. One had nine, two had five, one had two and one had no hippoboscid flies. In only one case were Mallophaga attached to the fly (see case 12 above). But it is clear that hippoboscid flies are partial to young cuckoos.

Of seven adult cuckoos shot in Britain, Poland and Afghanistan in summer, none had hippoboscid flies on them, but every specimen was fairly heavily infested with Mallophaga.

Of nine cuckoos obtained in Ushant on spring migration in 1935, there were two females. One of these had bred in the previous year and she was infested with three species of Mallophaga. The other female was a bird of the previous year and had never bred. She had a single Cuculoecus which must have been carried by some agency other than contact. The fact that she had but a single parasite indicates carriage by hippoboscid fly during the winter in tropical Africa.

It is difficult and unproductive to generalize on all the above evidence, which is insufficient and fragmentary. All we can say is that the only genera of Mallophaga known to be carried by hippoboscid flies are Philopterus and Bruelia, and that these probably attach themselves to the roots of the hairs or veins of wings and do not embed their mandibles into the abdomen of the fly. It is also significant that Mallophaga attach themselves to flies after the death of the host.

Any further evidence on this subject will be welcomed by the authors. Isolated cases, if published as they occur in various journals, are apt to be overlooked. If collected by one agency they could be collated and published periodically in co-ordinated form.
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(MS. received for publication 3. ix. 42.—Ed.)

Since going to press the following additional record has come to notice:

Emberiza c. citrinella, yellow hammer, Devon, October 1942. 2 ♀ Bruelha sp. on Ornithomyia fringillina, collected by Meinertzhagen, the Mallophaga being attached to the upper surface of the abdomen. There were no other Mallophaga on the host. (Slide 14802, Meinertzhagen coll.)
Three new Genera of Mallophaga from Charadriiformes.
By Theresa Clay, B.Sc., and R. Meinertzhagen.

[Plate XIII.]

It is apparent from drawings in the British Museum prepared by Mr. Terzi for the late Dr. Waterston, that the latter intended to describe four genera from the Charadriiformes, namely Rhynonirmus Thompson, 1935, and the three described below. Unfortunately, all Dr. Waterston’s manuscript has been lost, so that his descriptions and names he intended for these genera cannot be used. A fifth genus, Parricola Harrison, 1915, from the Jacanidæ (Charadriiformes) is distinguished by the absence of a distinct clypeal suture.

Lunaceps, gen. nov.

This genus is distinguished from all other known genera by the characters of the clypeal region.

Head with narrow hyaline margin arising from clypeal suture; internal and clypeal bands broadly fused anteriorly for about a third of their lengths; clypeal signature small and irregular in shape and may be joined to fused part of clypeal and internal bands. Dorsal antennal bands pass inwards on each side to form transverse suture across head. Dorsal occipital band and transverse antennal band absent (text-fig. 1). Pterothorax with lateral margins divergent. Abdomen with segment I small; paratergal plates simple without inwardly directed process and only rarely with elongated re-entrant
Theresa Clay and R. Meinertzhagen on

"heads." Tergal plates transversely continuous and rarely with partial median division. Segment IX in the male clearly demarcated from segment VIII.

Genotype: *Degeeriella actophila* (Kellogg & Chapman), 1899.

Type-host: *Crocethia alba* (Pallas), Sanderling.

Specimens of this genus have been examined from the following genera:— *Hæmatopus, Numenius, Limosa, Crocethia, Ereunetes, Erolia, Philomachus, Micropolama.*

Text-fig. 1.

This genus is distinguished by the characters of the clypeal region and abdomen.

Head with broad hyaline margin arising from clypeal suture; clypeal and internal bands fusing at their anterior ends; clypeal signature large. Dorsal antennal bands pass inwards and downwards to form narrow suture each side of pre-antennal region. Heavily chitinized transverse antennal band across head at level of mandibles; dorsal and ventral occipital bands present (text-fig. 2).
Pterothorax short with lateral margins not divergent. Abdomen with segment I small; paratergal plates without elongated re-entrant "heads" and bearing anterior and posterior inwardly directed processes; the posterior process continued across tergal plate as thickened bar, giving a characteristic appearance to abdomen. Tergal plates entire and transversely continuous. Male abdomen with segment IX much reduced, not protruding and scarcely demarcated from segment VIII.

Genotype: Degeeriella complexiva (Kellog & Chapman), 1899.
Type-host: Crocethia alba (Pallas), Sanderling.
Specimens of this genus have been examined from the following genera:—
Limosa, Limnodromus, Crocethia, Ereunetes, Erolia, Philomachus, Micropalama.
Theresa Clay and R. Meinertzhagen on

**QUADRACEPS, gen. nov.**

This genus, which is more widely spread throughout the Charadriiformes than either *Lunaceps* or *Carduiceps*, is distinguished from the two latter by the hyaline margin arising anterior to the clypeal suture and by the presence of a median dorsal pre-antennal suture.

Head with broad hyaline margin arising from near anterior end of clypeal band; clypeal and internal bands fused near their anterior terminations but with

*Text-fig. 3.*

*Quadraceps vanelli* (Denny). ♀.

free anterior ends. Dorsal antennal bands on each side pass inwards to form narrow median suture (*text-fig. 3*). Narrow suture each side of post-antennal region, transverse antennal band and dorsal occipital bands as in *Carduiceps* present in some species. Pterothorax with lateral margins divergent. Abdomen with segment I small; paratergal plates with elongated re-entrant
"heads," but without inwardly directed processes. Tergal plates of some or all segments showing either partial or complete division into two plates. Segment IX in male clearly demarcated from segment VIII.

Genotype: *Degeeriella vanelli* (Denny), 1842.

Type-host: *Squatarola squatarola* (Linn.), Grey Plover.

Specimens of this genus have been examined from the following genera:—


All genera of suborder Lari except Pagophila, Phætusa, and Gygis.

**Key to Genera of Degeeriellini from Charadriiformes.**

1. Without hyaline margin or definite clypeal signature. *Rhynonirmus.*
   
   With hyaline margin and clypeal signature .................... 2.

2. Without definite clypeal suture .............................. 3.
   
   With definite clypeal suture ................................. 3.

3. Hyaline margin arising anterior to clypeal suture; median vertical pre-antennal suture .......................... *Quadraceps.*
   
   Hyaline margin arising at clypeal suture; without median vertical suture ........................................ 4.

4. With transverse pre-antennal suture .......................... *Lunaceps.*
   
   With vertical pre-antennal suture each side of head .......... *Carduiceps.*

**EXPLANATION OF PLATE XIII.**

*Fig. 1.* Lunaceps actophilus (Kell. & Chapman).
*Fig. 2.* Carduiceps complexius (Kell. & Chapman).
*Fig. 3.* Quadraceps vanelli (Denny).
*Fig. 4.* Rhynonirmus fuscosus (Osborn).
*Fig. 5.* Parricola sulcata (Piaget).
Mallophaga from Charadriiformes.
Genera and species of Mallophaga occurring on gallinaceous hosts.—Part II. Goniodes. By Theresa Clay, B.Sc., F.Z.S.

[From the Proceedings of the Zoological Society of London, Series B, Vol. 110, Parts 1 and 2, 1940.]
[Published July 18th, 1940.]
Genera and Species of Mallophaga occurring on Gallinaceous Hosts.—
Part II.* Goniodes. By Theresia Clay, B.Sc., F.Z.S.

(Text-figures 1-79.)

The continuation in this part of the paper on the genera and species occurring on gallinaceous hosts deals with the genus Goniodes as defined by the present author. In a subsequent paper it is hoped to deal with the genus Goniocotes and new genera which have been removed from Goniodes, together with a key to the genera of Goniodinae, and a complete host-list of Ischnoceran Mallophaga occurring on gallinaceous hosts.

Authors' Names.—In Part I certain species of Nitzsch were wrongly attributed to the authorship of Giebel, i.e., those with descriptions published by Giebel, but taken directly from the Nitzsch manuscript. Thus the following species should stand under the authorship of Nitzsch:

- Gallipeurus heterographus (Nitzsch), 1866.
- G. heterogrammicus (Nitzsch), 1866.
- G. cinereus (Nitzsch), 1866.
- Oxylipeurus mesopelios (Nitzsch), 1866.
- Lagopoecus cemenicicus (Nitzsch), 1874. (Reference in Part I, p. 192, incorrect. Read 1874, p. 154.)

Types.—Lectotypes have been designated for all species of Piaget, and for those of Denny in the cases where this had not already been done. Neotypes have been designated for certain species where the types are known to be lost, and where material from the type-host has been available.

Type-hosts.—The present name of the type-host (according to 'Check-list of Birds of the World,' Peters, 1934) has been given under each species followed by the host name as given in the original publication where this is different.

Piaget and Denny Collections.—Lists of the species contained in these collections have been published by Thompson (1937 (1), p. 74, and 1938, p. 493), but as the names have been taken from the labels without any reference to the actual identity of the specimens on the slides these lists are in many cases misleading. As a result of this it has been considered advisable to list the specimens and hosts contained in these collections under their correct species,

although in many cases these specimens are obvious stragglers or on wrongly labelled slides, and as regards to the host records should be ignored.

*Abdominal Segments.*—Throughout the paper the segments have been numbered from their actual positions, although it is probable that the apparent first segment is formed by the fusion of the true first and second, and that the apparent second to ninth segments in the male are actually the third to tenth. In the female it is probable that the apparent eighth segment is formed by the fusion of two segments, i. e., IX and X.

*Chaetotaxy.*—The abdominal chaetotaxy has been given for all species. Although the addition or loss of two or three hairs in a group of hairs is not of specific importance, the presence or absence of certain hairs is in many cases a diagnostic character. Examples of the diagnostic arrangement of the hairs are:—the presence or absence of the first pair of sternal and pleural hairs; the increase of the central sternal or tergal hairs from 2 to 8 or more; the presence or absence of the lateral post-spiracular tergal hair on the abdomen; and the presence or absence of the meso- and meta-tergal hairs on the thorax. Two pairs of fine hairs, arising from pits in the integument, one pair on the ventro-lateral margins of the pterothorax, the other on the lateral margins of segment VII, occur in every species, and have, therefore, not been mentioned under the specific descriptions.

*Abbreviations.*—The following abbreviations have been employed:—

C.I. Head index (breadth : length, taken from centre of clypeal margin to centre of occipital margin).


Those figures marked T. have been drawn by Mr. Terzi; those marked P. by Mr. R. S. Pitcher.

As in the previous paper, the majority of specimens on which the paper is based are in the collection of Colonel R. Meinertzhagen. The author is also indebted to the Trustees of the British Museum (Natural History) for permission to publish certain figures drawn by Mr. Terzi; to the Zoological Society of London for material; to Mr. G. H. E. Hopkins for material and much valuable advice, and to Dr. S. Keler for information concerning the Nitzsch and Giebel types in the Halle collection.

**ISCHNOCERA** Kellogg.

**PHILOPTERIDÆ** Burmeister.

**Goniodes** Nitzsch, 1818.


*Description of Genus.*—Head circumfasciate; clypeal margin flattened or broadly rounded, with clypeal angles prominent; clypeal band without sclerotic spine-like process arising from inner margin each side (compare *Physconelloides*). Trabeacula undeveloped, and represented by membraneous lobes (see Keler, 1938, p. 310); clavi* present, and may be either membraneous or sclerotic in character (text-figs. 1 & 2). Temple angle with latero-ventral process bearing hair or spine in at least one sex, and usually both (compare *Goniocotes*);

* Name suggested for German "Zapfen" used by Keler.
occipital margin drawn out posteriorly each side to form occipital angle bearing small hair or spine. Antennae may or may not be sexually dimorphic, but segments IV–V never modified or greatly reduced in the male (compare Coloceras).

Pterothorax present without lateral indication of meso-metathoracic junction

Text-figure 1.

Clavi of Goniodes spp.: (a) G. pavo; (b) G. meinertzhageni; (c) G. simoni; (d) G. intermedius.

and always bearing a fine ventro-lateral hair arising from a pit in the integument. Hairs either absent or present on both meso- and metasternum, never present on mesosternum alone.

Abdomen with segment I large, and with free lateral margin (compare Heptapsogastriidae, Austrogoniodes, Lagopoečus, and Syrrhopoečus); tergal plates I–VII widely separated, and sternal thickening in the form of lateral, never central, plates. Pleurites broad, with complicated re-entrant heads.
Segment VII with fine lateral hair arising from pit in integument. Male abdomen with nine segments, of which segment VIII (=IX) is greatly reduced, and appears as a lateral rudiment each side; genital opening dorsal, and bearing hairs on the anterior and posterior margins. Female abdomen with apparently eight segments (8th=IX and X); tergal plate VIII continuous across the segment; vulva either terminal or at the level of segment VII, and varies in form, but never bears 1–2 sclerotic spines at the lateral corners (compare Coloe as).

Text-figure 2.

Clavi of Goniodes spp.: (a) G. diardi; (b) G. cervicornis; (c) G. crossoptilon; (d) G. longus.
Goniodex, as defined above, contains a large number of species of diverse form, which fall into a number of more or less well-defined groups. These, however, cannot be considered to be of generic value, as there occur species which are intermediate between the groups, and connect up the whole range of species, with one or two exceptions, into a definable genus. The generic separation of these groups would merely obscure the natural relationships of the species, and would in no way clarify the classification.

The discussion of the relationships of the groups and the characters which might be considered of generic value are given under each species group.

**Species Group A.**

1. Large species (males, 3·60–3·80 mm.; females, 3·80–4·70 mm.).
2. Temples similar in the two sexes, and not greatly expanded.
3. Clavi thickened in both sexes, and prolonged posteriorly in male and postero-laterally in female.
4. Antennæ sexually dimorphic. In the male first segment enlarged and bearing thickened process; third with distal post-axial angle prolonged as narrow elongated process. In the females first segment longer than second, but shorter than the combined lengths of segments II–IV * (segment I, 1·186–122 mm.; segments II–IV, 334–388 mm.).
5. Meso- and metasternal hairs present.
6. Pleurites broad, due to a thickened area between the marginal band of the pleurite and the spiracle being present.
7. Female with bifid structure associated with internal genital organs apparent in abdomen.
8. Vulva at the level of segment VII with hairs concentrated at lateral corners; no spinous process present on the genital region.
9. Anterior margin of male genital opening somewhat prolonged posteriorly and bilobed.

Species group A contains a single species with certain distinctive characters. However, that its affinities lie with group B is shown by the characters of *meinertzhageni*, a species somewhat intermediate between the two groups.

**Goniodes pavonis** (Linné), 1758. (Text-figs. 1 a, 3, 4 a, 5, & 9 a.)

*Nirmus tetragonoccephalus* Ouders, 1816, p. 90. Host: *Pavo cristatus*.

**Goniodes falcicornis** Nitzsch, 1818, p. 293. Host: *Pavo cristatus*.

This is a distinct species not closely related to any other, although its affinities lie with the three following species. It is distinguished by the large, thickened overhanging clavi and terminal segments of the abdomen in both sexes, and by the male genitalia. The female resembles somewhat that of *meinertzhageni*, from which it is distinguished by the shape of the head, the blunted, not pointed clavi, and the form of the terminal segments of the abdomen.

**Male.**—Head and thorax as shown in text-fig. 3, and characterized by the elongated thickened clavi and greatly thickened process on the first antennal segment. Ventral chaetotaxy of head and thorax as in female.

Abdomen as shown in figure with ventral chaetotaxy of segments I–VII as in female; segment IX with 14–18 long, stout, elongated marginal and submarginal hairs each side, and 6–8 shorter and finer marginal hairs.

Genitalia as shown in text-fig. 4a, and characterized by the large, flattened, leaf-like paramera.

Female.—Ventral view as shown in text-fig. 5a, with dorsal chaetotaxy of segments I–VII as in male. Dorsal chaetotaxy of terminal segments as shown in text-figure 3.

*Ooniodes pavonis*, ♂.

Lying in the abdomen, and apparently associated with the internal genital organs, is a sclerotic structure which is not apparent elsewhere among the *Goniodes*, except in *meinertzhageni*, *spinicornis*, and *tragopan* (text-fig. 9a).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.  mm.</td>
<td>mm.  mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.86–0.90  1.09–1.13</td>
<td>0.96–1.13  1.32–1.56</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.40–0.43  0.78–0.83</td>
<td>0.40–0.45  0.80–0.96</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.50–0.55  1.14–1.21</td>
<td>0.55–0.72  1.23–1.40</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.85–1.99  1.94–2.08</td>
<td>2.28–2.78  2.13–2.50</td>
</tr>
<tr>
<td>Total</td>
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<td>3.69–4.69</td>
</tr>
<tr>
<td>C.I.</td>
<td>1.26–1.27</td>
<td>1.37–1.38</td>
</tr>
</tbody>
</table>
Species of Mallophaga occurring on Gallinaceous Hosts.

Specimens examined.—18 males, 22 females, from skins, and captive and wild specimens of Pavo cristatus Linné from India; 1 male, 1 female, from Pavo muticus Linné from S. Annam.

Piaget Collection.—British Museum, 5 males, 5 females, from Pavo cristatus

Text-figure 4.

♂ genitalia: (a) Goniodes pavonis; (b) G. meinertzhageni.

Linné, and 3 males, 2 females from Pavo nigripennis (=Pavo cristatus). Leiden Museum, 2 males and 2 females, from Pavo cristatus.

Neotype.—Male in the Meinertzhagen collection, slide no. 8175, from captive specimen of Pavo cristatus from India.

Neoparatypes.—22 males, 27 females, from the same host.

Species Group B.

1. Large species (males, 3·48–5·22 mm.; females, 3·66–5·65 mm.).
2. Temples either similar in the two sexes and not expanded, or with the temples of the female greatly expanded.
3. Clavi thickened in both sexes; scarcely developed in the male (text-fig. 1 b); produced postero-laterally in the female.
4. Antennae as in group A.
5. Thoracic sternal hairs as in A.
6. Pleurites either as in A (*meinertzhageni*), or without inner thickened area.
8. Vulva nearly terminal, with hairs along posterior margin, and not concentrated laterally. No spinous process on genital region.
9. Genital opening either similar to A (*meinertzhageni*), or with margin not prolonged posteriorly.

Species with metanotum in male (female also in *spinicornis*) with irregular lateral or posterior process each side, which approximates to, or in some individuals fuses with, the tergal plates of the first abdominal segment.

Text-figure 5.

*Goniodes pavonis*: (a) ♀; (b) terminal segments of ♀ abdomen, dorsal.

A distinctive group of species, but approaches C in the characters of female *spinicornis*, and both groups I and J, through the common characters of the males of *crossoptilon* (olim major Piaget) and *cervicornis*, with those of male *spinicornis* (text-figs. 1 & 2).
GLOSSODES MEINERTZHAGENI, sp. n. (Text-figs. 1 b, 4 b, 6, 7, & 9 b.)

This species is somewhat intermediate between spinicornis and pavonis, the male resembling the former species, and the female in many respects resembling the latter. It is distinguished from related species in the male by the genitalia, from megaceros and spinicornis in addition by the characters of the first antennal segment, and from pavonis by the absence of elongated clavi. In the female it is distinguished from spinicornis by the slight expansion of the temples, and from this species and pavonis by the characters of the genital region and the number and arrangement of the sternal hairs.

Text-figure 6.

Glossodes meinertzhageni: (a) ♂ head and thorax; (b) ♀ head.

Description of Male.—Head similar to that of spinicornis in shape, with square temples, and small clavi scarcely projecting beyond the lateral dorsal margin of the head. Antennae with first segment greatly enlarged and bearing thickened, somewhat pear-shaped process (text-fig. 6 a).

Thorax, as shown in text-fig. 6 a, with process arising each side from posterolateral margins of metanotum; this process appears to fuse with the tergal plate of the first abdominal segment each side. Mesosternum with two long and metasternum with three to four long hairs.

Abdomen with broad pleurites similar to those of pavonis, and segment IX somewhat elongated posteriorly, with rounded distal margin bearing numerous
marginal and submarginal hairs. Lip of genital opening prolonged, and somewhat thickened as large bilobed process (text-fig. 7a).

Genitalia, which are similar in certain respects to those of spinicornis, differ in the form of the paramera, which are narrow, elongate, and uniformly thickened; pseudopenis shorter than paramera (text-fig. 4b).

Description of Female.—Head similar in shape to that of male, with square temples. Clavi elongated and thickened (text-fig. 6b).

Text-figure 7.

Thorax as in male, but without lateral processes from metanotum, and in the only specimen examined there are five metasternal hairs.

Abdomen, except for characters of the posterior segments, similar to that of pavonis. Vulva deeply bilobed, with a number of hairs on the inner and terminal margins of each lobe, and with anterior portion of genital region striated (text-fig. 7b). Thickened structure associated with genital organs present, but differing in shape from that of spinicornis and tragopan (text-fig. 9b).
**Species of Mallophaga Occurring on Gallinaceous Hosts.**

*Abdominal Chaetotaxy.*

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T.</td>
<td>S.</td>
</tr>
<tr>
<td>I.</td>
<td>3, 4, 3</td>
<td>4</td>
</tr>
<tr>
<td>II.</td>
<td>1, 2, 1</td>
<td>8</td>
</tr>
<tr>
<td>III</td>
<td>1, 2, 1</td>
<td>10</td>
</tr>
<tr>
<td>IV.</td>
<td>1, 2, 1</td>
<td>9-10</td>
</tr>
<tr>
<td>V.</td>
<td>1, 2, 1</td>
<td>9-10</td>
</tr>
<tr>
<td>VI.</td>
<td>3, 2, 3</td>
<td>4</td>
</tr>
<tr>
<td>VII</td>
<td>3-4, 2, 3-4</td>
<td>2</td>
</tr>
<tr>
<td>VIII</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
<tr>
<td>IX.</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
</tbody>
</table>

In the male, in addition to the tergal hairs shown above, there are a number of minute spines. In the female the lateral sternal hairs of segments III–IV are considerably smaller than the central hairs, and the sternal hairs on segments V–VI vary in size and cannot be divided into the usual three groups.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
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<td>1-05</td>
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<tr>
<td>Prothorax</td>
<td>0-37</td>
<td>0-81</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-64</td>
<td>1-14</td>
</tr>
<tr>
<td>Abdomen</td>
<td>2-16</td>
<td>2-01</td>
</tr>
<tr>
<td>Total</td>
<td>3-73</td>
<td>1-26</td>
</tr>
</tbody>
</table>

Described from 3 males, 1 female, from skins of *Pavo cristatus* Linne from Delhi.

*Holotype.*—Male in the Meinertzhagen collection, slide no. 4452.

*Paratypes.*—2 males, 1 female, from the same host.

Named after Colonel R. Meinertzhagen, whose large and unique collection has made this work possible.

**Goniodes spinicornis** (Nitzsch), 1866 (Text-fig. 9 c.)


Goniodes bicuspidatus Piaget, 1880, p. 278, pl. xxiii. fig. 3. Host: *Tragopan satyra*. (Zoological Garden, Hague.)

This is a large species, distinguished by the shape of the head, characters of the clavi and antennae, and by the genitalia of the male and genital region of the female. The differential characters between this species and *tragopan, megaceros*, and *meinertzhageni* are given under those species.

**Male.**—Head with narrow clypeal band and square temples bearing hairs and stout spines; clavi small, and scarcely projecting beyond the lateral margin of the head, and showing considerable amount of variation in the shape of the distal end. Antennae with first segment greatly enlarged and bearing elongated thickened process, third segment with distal post-axial angle produced into narrow elongate process, fourth and fifth segments comparatively small.

* Species which are to be figured by Dr. Kéler in his paper on the Goniodes of the Halle collection have not been figured fully here.
Thorax with lateral prothoracic margins straight, and diverging posteriorly; stout hair on postero-lateral angle, and stout dorsal spine near antero-lateral angle. Lateral pterothoracic margins short and rounded, and bearing two long hairs each side; posterior margins each with two long hairs together, a shorter hair and a long hair on each side of the centre. Posteriorly the dorsum of the pterothorax is divided into two irregular lobes which approximate, or in some cases fuse, with the tergite of the first abdominal segment each side. Mesothorax and metasternum each with two long hairs, and in some specimens there is a group of two to five hairs posterior to the metasternal hairs.

Abdomen large and somewhat elongated; segment VIII with small flattened lateral margin; segment IX large, with flattened posterior margin. Genital opening similar to that of *megaceros*, but narrower, and lies in a more anterior position. Upper lip of opening with 6–10 long hairs each side, and lower lip with 14–16 shorter hairs each side.

Genitalia with elongated basal plate, small, leaf-like, somewhat transparent paramera, and thickened pseudopenis; sac present (see Cummings, 1916, p. 288, f. 20).

**Female.**—Head with shape differing markedly from that of the male, and resembling *eurygaster*. Clypeal band narrow; temples widely expanded, with flattened lateral margins bearing two long hairs and a stout spine each side; occipital angle large and bearing stout spine. Clavi elongated and pointed.

Abdomen large and more elongated than in male. Vulva with flattened posterior margin bearing a continuous line of small spine-like hairs. Thickened structure associated with genital organs present (text-fig. 9c).

### Abdominal Chaetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>T.</td>
<td>S. P.</td>
</tr>
<tr>
<td>II</td>
<td>2–3</td>
<td>4–6, 2–3</td>
</tr>
<tr>
<td>III</td>
<td>2–4, 3</td>
<td>6–10</td>
</tr>
<tr>
<td>IV</td>
<td>1–2, 3</td>
<td>8–10</td>
</tr>
<tr>
<td>V</td>
<td>3–2, 4–3</td>
<td>6–10</td>
</tr>
<tr>
<td>VI</td>
<td>3–2, 4–3</td>
<td>2–4</td>
</tr>
<tr>
<td>VII</td>
<td>14–20</td>
<td>3–3</td>
</tr>
</tbody>
</table>

In the male, in addition to the tergal hairs shown above, there are a number of minute hairs which may become elongated in some individuals. Segment IX has 6–8 long, stout, sternal hairs each side. In the female the posterior margin of tergite VIII has 2 long and 4–6 short hairs each side.

### Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0·84–1·00</td>
<td>1·09–1·17</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0·46–0·52</td>
<td>0·85–0·92</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·70–0·79</td>
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<tr>
<td>Abdomen</td>
<td>1·72–2·09</td>
<td>1·69–2·05</td>
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<tr>
<td>Total</td>
<td>3·48–3·94</td>
<td>3·82–4·78</td>
</tr>
<tr>
<td>C.I.</td>
<td>1·17–1·39</td>
<td>1·65–1·78</td>
</tr>
</tbody>
</table>
"Species of Mallophaga Occurring on Gallinaceous Hosts."

Specimens examined.—10 males, 9 females, from skins and captive specimens of *Tragopan satyra* (Linne) from Sikkim; 2 males, 1 female, from these specimens compared with type of *spinicornis* by Dr. Keler; 6 males, 8 females, from skins and captive specimens of *T. b. blythii* (Jerdon) from Assam; 12 males, 6 females, from skins and captive specimens of *T. t. temminckii* (J. E. Gray) from Assam and Szechwan; 3 males, from skin of *T. caboti* (Gould) from S. China.

Piaget Collection.—British Museum, 6 males, 6 females, 2 imm., from *Tragopan satyra*; 5 males, 5 females, 2 imm., from *Tragopan temminckii*; 1 male, 2 females, from *T. caboti*. Leiden Museum, 1 male, 1 female (labelled *G. bipunctatus*), from *Tragopan satyrus*.

Lectotype of *bicuspidatus* designated by present author:—Male in the Piaget collection, slide no. 10, from *T. satyra*.

Paratypes.—5 males, 6 females, in the Piaget collection from the same host.

**Goniodes tragopan**, sp. n. (Text-figs. 9d & 11c.)

This species, which is extremely close to *spinicornis*, is distinguished in the male by the somewhat greater width of the temples; and by the genitalia, which are larger and in which the paramera are more elongate in shape and uniformly thickened (text-fig. 11c). The characters of the first antennal segment of the male appear to be diagnostic in that the lateral thickened margin distal to the process is raised to a greater extent than in *spinicornis*, although there appears to be considerable variation in this character throughout the latter species. In the female there tend to be fewer hairs on the posterior margin of the valve, and the thickened structure associated with the genital organs, as mentioned under *spinicornis*, is in this species thickened to a greater extent, and is flattened anteriorly (text-fig. 9d). In all other characters examined this species is apparently identical with *spinicornis*.

**Measurements.**

<table>
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<td>Pterothorax</td>
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<td>2·42</td>
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<td>4·20</td>
<td></td>
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</table>

C.I. 1·35–1·38 1·77

Described from 2 males, 6 females, from skins of *Tragopan melanocephalus* (J. E. Gray) from Kashmir.

Holotype.—Male in the Meinertzhagen collection, slide no. 3762.

Paratypes.—1 male, 6 females, from the same host.

**Goniodes megaceros** Kellogg & Paine, 1914. (Text-figs. 8a & 11a.)


This species is distinguished in the males from *spinicornis* by the characters of the genitalia and antennae, and from *meinertzhageni* by the shape of the head and genitalia. The females of this species are probably unknown (see discussion below).
Male.—Head as described and figured by Kellogg and Paine with characters of clypeal angle and clavi as in spinicornis, the latter being more rounded distally.

Pterothorax with an irregular process arising laterally each side from the posterior margin of the dorsum, which lies approximate to the tergal plate of the first abdominal segment. Small rounded meso- and metasternal plates present, each bearing two long hairs (one specimen with three on the mesosternal plate).

Abdomen with dorsal view as shown in Kellogg and Paine, except for the posterior segments, which are apparently somewhat distorted in the figure. Genital opening dorsal, but practically terminal (text-fig. 8a).

Genitalia large, with distal end of paramera thickened, and drawn out into a point laterally (text-fig. 11a).
Abdominal Chetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>T.</th>
<th>S.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>2–3, 12, 2–3</td>
<td>7</td>
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<td>II.</td>
<td>2–3, 9, 2–3</td>
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<td>III.</td>
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<td>2, 2</td>
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<tr>
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<td>2, 8, 2</td>
<td>18</td>
<td>2, 2</td>
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<td>VI.</td>
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<td>VII.</td>
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<td>10</td>
<td>3, 3</td>
</tr>
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<td>VIII.</td>
<td>Fig.</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
<tr>
<td>IX.</td>
<td>Fig.</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
</tbody>
</table>

The three groups of tergal hairs are joined up by a number of extremely small hairs:—22–30 each side in segments I–IV; 13–18 each side in segments V–VI; and 7 each side in segment VII.

Measurements as given by Kellogg and Paine with C.I. as taken from the text:—1.19 (presumably with length of head taken from anterior margin to posterior level of occipital angles). C.I. with length of head taken from anterior margin to centre of mid-occipital margin:—1.40.

**Female.**—Five females were collected from the same host as two males of *megaceros*, and apparently do not differ from the females collected with the males of *eurygaster*. There is, however, a certain amount of variation in the shape and size of the clavi among the 32 females examined. Unfortunately, all the specimens from *Lophophorus impeyanus* examined were taken under conditions in which the total population was not necessarily collected, so that the evidence of the distribution of the males of the two species with the females is of little use. There are two possibilities therefore, either the females of
megaceros have not yet been found, or the females of the two species are so close that without accurate collecting in the field and evidence as to which males the females belong, it is impossible to say whether the differences are individual variations or specific.

**Measurements.**

<table>
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<tr>
<td>Prothorax</td>
<td>0.60</td>
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<td>Pterothorax</td>
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<td>Abdomen</td>
<td>2.89</td>
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</tr>
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<td>C.I</td>
<td></td>
<td>1.40</td>
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*Specimens examined.*—2 males, from skins of *Lophophorus impeyanus* (Latham) from Sikkim. 2 males from skin of *Lophophorus sclateri* Jerdon from Yunnan differ from *megaceros* in the shape of the distal end of the paramera, but in other respects appear conspecific.

**Species Group C.**

1. Size as in group B.
2. Temples similar in the two sexes, but widely expanded.
3. Clavi similar in the two sexes, and not greatly developed nor thickened.
4. Antennae sexually dimorphic. In the male first segment without process; third prolonged distally as small blunt-ended process. Female antennae as in A.
5. Thoracic sternal hairs as in A.
6. Pleurites without inner thickened area.
7. Bifid structure not apparent.
8. Vulva as in B.
9. Male genital opening unmodified.

Contains a single species, which, although distinctive, has its affinities with group B.

**Goniodes eurygaster** Piaget, 1885. (Text-figs. 8 b, 10, 11 b, & 12.)


This species is distinguished from other known species by the combination of its large size, lack of sexual dimorphism in the shape of the head, slight sexual dimorphism of the male antennae, and the characters of the male genitalia. The female resembles that of *spinicornis*, from which it is distinguished by the shape of the head and characters of the genital region. The position of this species depends upon the correct elucidation of the females of *megaceros* (see discussion under that species).

*Male.*—Head large, with widely expanded temples; clavi small, with rounded or flattened ends; antennae with first segment slightly enlarged, and third with distal post-axial angle prolonged into a small blunt-ended process. Piaget's figure (pl. vi. fig. 1) differs somewhat in the shape of the head from his type-specimens (text-fig. 10).

Thorax with shape as shown in text-fig. 10. Prothorax with stout elongated hair at each postero-lateral angle. Pterothorax with 2 stout elongated hairs on each lateral margin, 2 similar hairs each side on the lateral part of the
Species of Mallophaga occurring on Gallinaceous Hosts.

Posterior margin, and a finer and shorter hair lateral to the centre of the posterior margin. Small rounded meso- and metasternal plates present, each bearing 2 stout hairs.

Abdomen with general shape as shown in Piaget's figure, with segment IX having flattened posterior margin with thickened marginal band bearing hairs (text-fig. 8 b).

Genitalia simple, with narrow, pointed paramera (text-fig. 11 b).

Goniodes eurygaster: head and thorax, ♂.

Female.—Head with general shape as that of male with clavi similar, but variable in shape and size (see under megaceros).
Thorax as in male.
Abdomen large, with posterior margin of valve bilobed, and bearing a continuous row of small spine-like hairs (text-fig. 12).

Abdominal Chlotaxy.

<table>
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<tr>
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<td>2</td>
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<td>IV.</td>
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<td>1</td>
<td>2</td>
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<td>V.</td>
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<tr>
<td>VI.</td>
<td>16</td>
<td>6</td>
<td>3</td>
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<tr>
<td>VII.</td>
<td>24</td>
<td>Fig.</td>
<td>3</td>
</tr>
<tr>
<td>VIII.</td>
<td>Fig.</td>
<td>Fig.</td>
<td>2</td>
</tr>
<tr>
<td>IX.</td>
<td>Fig.</td>
<td>Fig.</td>
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<table>
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<td>2</td>
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<td>16</td>
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<td>Fig.</td>
<td>3-4, 3-4</td>
</tr>
<tr>
<td></td>
<td>Fig.</td>
<td>Fig.</td>
<td></td>
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</tbody>
</table>

In the male the tergal hairs are continuous across the segments, with the outer 2–6 each side being stouter and longer; the tergal hairs are variable in number from specimen to specimen, but are as given above with + or −2–6 hairs.

Text-figure 11.

♂ genitilia: (a) Goniodes megaceros; (b) G. eurygaster; (c) G. tragopan.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Length.</th>
<th>Breadth.</th>
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<tbody>
<tr>
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<tr>
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<tr>
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<tr>
<td>Pterothorax</td>
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<td>1.31–1.46</td>
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<tr>
<td>Abdomen</td>
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<td>2.14–2.30</td>
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<td>Total</td>
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<tr>
<td>C.I.</td>
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<th>Length.</th>
<th>Breadth.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
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<tr>
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<td>1.86–2.16</td>
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<tr>
<td>Prothorax</td>
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<tr>
<td>Pterothorax</td>
<td>0.71–0.85</td>
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<tr>
<td>Abdomen</td>
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<td>Total</td>
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</tr>
<tr>
<td>C.I.</td>
<td>1.73–1.92</td>
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</table>

Specimens examined.—3 males, 5 females, in the Piaget collection from Lophophorus impejanus (Latham); 8 males, 21 females, from fresh specimens of Lophophorus impejanus from Nepal and the Zoological Gardens, London. Lectotype, designated by present author.—Male in the Piaget collection, slide no. 34. Paratypes.—2 males, 5 females, in the Piaget collection.
Species Group D.

1. Species of medium size (males, 2.05-2.65 mm.; females, 2.50-3.05 mm.).
2. Temples as in A.
3. Clavi in the male either undeveloped or membranous; in the female membranous.
4. Antennae exhibiting either slight or exaggerated sexual dimorphism; segment I without process. In the female segment II may be either considerably longer (coronatus) or approximately equal in length (indicus) to segment I.

Text-figure 12.

Species of mallophaga occurring on gallinaceous hosts.

Goniodes eurygaster: terminal segments of ♀ abdomen.

5. Thoracic sternal hairs as in A.
6. Pleurites as in A.
7. Bifid structure not apparent.
8. Vulva at level of segment VII with hairs on posterior margin, and with concentration of hairs at lateral corners.
9. Male genital opening may or may not be somewhat modified.

Containing two rather diverse species whose affinities are not apparent.

Goniodes coronatus (Giebel), 1874. (Text-fig. 13.)
Goniocotes obscurus Giebel, 1874 (2), p. 191, nec Giebel, 1874, p. 188. Host as above.
Goniocotes coronatus Giebel, 1874 (2), p. 302, nom. nov. for Gc. obscurus Giebel.
Goniodes lavisi Piaget, 1880, p. 673, pl. lvi. fig. 2. Host: Rollulus roulroul (Scopoli) (Cryttonyx coronatus) (Sumatra and Madagascar).
Goniocotes latifasciatus Piaget, 1883, p. 157, pl. ix. fig. 4*. Host: Cinclodesoma bicolor (in error).

* Incorrect reference in Harrison, 1916, p. 81. Piaget described this species again as new in 1885, p. 38, pl. iv. fig. 8.
This and the following species are characterized by the lack of sexual dimorphism in the temple region of the head, the presence of meso- and metasternal hairs, form of the pleurites, terminal segment of the female abdomen, and female genital region. Characters distinguishing these two species are given under *indicus*.

*Male.*—Head with broad clypeal band traversed by wide caniculae; clavi apparently undeveloped, and temples but little expanded. Antennae with first segment somewhat enlarged, second greatly elongated, and third with distal post-axial angle prolonged into blunt-ended process.

Thorax as shown in Piaget’s figure (pl. lvi. f. 2) with meso- and metasternal hairs present.

Abdomen with shape as shown in Piaget’s figure; pleurites broad; tergal plate VIII elongated laterally; segment IX small, with somewhat flattened posterior margin (text-fig. 13 a.)

Genitalia with elongated basal plate continuous with the thickened paramera; mesosome bifid (text-fig. 13 c).

*Female.*—Head similar to that of male with pre-antennal region more elongated, and small membranous clavi present (see Piaget, 1885, pl. iv. f. 8). Thorax as in male.

Abdomen more elongate than in male, with shape as shown in Piaget’s figure (1885). Terminal segment of distinctive form with thickened lateral plates and bilobed posterior margin. Vulva convex with spine-like hairs at the lateral corners, and a few fine marginal hairs (text-fig. 13 b).
Abdominal Chelotaxy.

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.</td>
<td>S.</td>
</tr>
<tr>
<td>I.</td>
<td>16-18</td>
</tr>
<tr>
<td>II.</td>
<td>20-24</td>
</tr>
<tr>
<td>III.</td>
<td>16-20</td>
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<tr>
<td>IV.</td>
<td>20-26</td>
</tr>
<tr>
<td>V.</td>
<td>28-28</td>
</tr>
<tr>
<td>VI.</td>
<td>28-30</td>
</tr>
<tr>
<td>VII.</td>
<td>0</td>
</tr>
<tr>
<td>VIII.</td>
<td></td>
</tr>
</tbody>
</table>

In the male the tergal hairs are continuous across the segment, and except for 1-3 of the outer hairs are short and fine; in the female there are no lateral tergal hairs on segments I-II.

Measurements.

<table>
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<tr>
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<th>Female</th>
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<tbody>
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<td>Pterothorax.</td>
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<td>Abdomen.</td>
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<tr>
<td>C.I.</td>
<td>1-16-1-17</td>
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</table>

Specimens examined.—9 males, 17 females, from skins of Rollulus roulroul (Scopoli) from Burma and Borneo, 2 males, 2 females, from these specimens compared with type of coronatus by Dr. Kéler.

Piaget Collection.—2 males, 6 females, labelled G. levis from Cryptonyx coronatus (=Rollulus roulroul); 2 females without host; 1 female, from Anas arcuata (an obvious straggler). 1 female labelled Gc. latifasciatus from Cinclonoma bicolor, a passerine bird, is conspecific with specimens from Rollulus roulroul, and is most probably a straggler from this host.

Lectotype of levis designated by present author:—Male in the Piaget collection, slide no. 45, from the type-host.

Paratypes.—1 male, 6 females, in the Piaget collection from the same host.

Holotype of latifasciatus.—Female in the Piaget collection, slide no 56, as described above.

Goniodes indicus (Kellogg & Paine), 1914. (Text-fig. 14.)

Goniocotes indicus Kellogg & Paine, 1914, p. 218, pl. xiv. fig. 4. Host: Arborophila r. rufogularis (Blyth) (Arboricola rufogularis) (E. Himalayas).

This is a distinct species not closely resembling any other, but appears to be most nearly related to coronatus, from which it is distinguished by the shape of the head in both sexes; by the antennae in the male, and the genital region in the female.

Male.—Head with thick clypeal band; temples with rounded margins, and not greatly protruding. Clavi partly membranous, and not prolonged posteriorly; antennae showing slight sexual dimorphism in the larger size of first segment and the greater length of second segment. In this latter character it resembles to a certain extent coronatus, in which the male has the second antennal segment greatly elongated. Third antennal segment unmodified.

Thorax with shape as shown in Kellogg and Paine's figure. Meso- and metasternal hairs present.
Abdomen somewhat elongate, more so than in *coronatus* with tergal chaetotaxy as shown in Kellogg and Paine's figure. Upper lip of genital opening with 5–6 hairs each side, and lower lip with 7–8 each side.

Genitalia asymmetrical, with broad elongated basal plate, tapering anteriorly, paramera flattened and pointed distally (text-fig. 14c).

**Female.**—Head similar to that of male, but somewhat larger, and differing in the size of the antennal segments (text-fig. 14a).

Thorax as in male.

Text-figure 14.

*Goniodes indicus:* (a) ♀ head; (b) terminal segments ♀ abdomen; (c) ♂ genitalia.

Abdomen more elongate than in male. Terminal segment similar to that of *coronatus*, but without broad lateral band, and with continuous tergal plate. Posterior margin of vulva rounded, and except in the median portion set with small hairs, lateral corners with a concentration of somewhat larger hairs (text-fig. 14b)
In the male the tergal hairs on segments I–V are continuous across the segments; in the female there are no lateral tergal hairs on segments I–II.

**Measurements.**

<table>
<thead>
<tr>
<th>Measurements</th>
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<th>Female</th>
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</thead>
<tbody>
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<td>Pterothorax</td>
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<td>0.72</td>
<td>0.38</td>
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<tr>
<td>Abdomen</td>
<td>1.45</td>
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<td>1.77</td>
</tr>
<tr>
<td>Total</td>
<td>3.64</td>
<td>3.01</td>
<td>1.19</td>
</tr>
</tbody>
</table>

C.I. 1.12 .................................. 1.16

Specimens examined.—1 male, 1 female, from skin of Arborophila r. rufogularis (Blyth) from Sikkim; 3 males, 5 females, from skins of Arborophila rufogularis tickelli (Hume) from Tenasserim; 4 males, 5 females, from skins of Arborophila t. torqueola (Valenciennes) from Sikkim; 2 males, 3 females, from skin of Arborophila t. batemani (Ogilvie-Grant) from Burma; 1 male, from skin of A. t. millardi (Stuart Baker) from central Himalayas; 1 male, 1 female, from skin of Arborophila gingica (Gmelin), do not appear quite typical, and may prove to be a new subspecies.

**Species Group E.**

1. Large species (males, 2.70 mm.; females, 3.90).
2. Temples as in A.
3. Clavi as in A, but prolonged posteriorly in both sexes.
4. Antennae sexually dimorphic. In the male first segment without process third prolonged distally as blunt-edged process.
5. Meso- and metasternal hairs absent.
6. Pleurites as in A.
7. Bifid structure not apparent.
8. Vulva terminal with hairs on the posterior margin.
9. Male genital opening unmodified.

Contains a single species whose affinities are not apparent, but which resembles wilsoni in the character of the clavi, and both wilsoni and group G in the characters of the vulva.

**Goniodes processus** Kellogg & Paine, 1914. (Text-fig. 15.)


No specimens have been examined from the type-host, A. r. rufogularis, but a male from A. r. tickelli appears to be identical with the description and figure of G. processus, except that segment IX of the abdomen is more elongated than shown in Kellogg and Paine’s figure. However, that this varies from individual to individual is shown in the case of two males from the same host (A. t. torqueola), in which one has the outline of segment IX as in Kellogg and Paine’s figure, and one elongated as in specimen from A. r. tickelli. Kellogg and Paine were unable to examine the female of this species, but with the discovery of this sex the name processus becomes even more apt, the female being extremely distinct in the presence of finger-like processes at the temple angles formed by the prolongation of the temple margin, and in the peculiar character of the terminal segment of the abdomen, in which the lateral margin each side
is drawn out into a finger-like process. In the male this species is unlike any other, being distinguished by the large, thickened, over-hanging clavi, shape of the head, and the characters of the abdomen and genitalia.

**Male.**—Head with broad clypeal band; temples not greatly rounded or expanded, and with occipital angles pointed and produced backwards to level of prothoracic hair. Clavi large and thickened, and produced posteriorly to a considerable extent; antennae with first segment enlarged, and distal post-axial angle of third segment produced as process at right angle to fourth segment.

Prothorax small, with flattened lateral margins, each bearing long hair arising from the anterior part.

Pterothorax with flattened lateral margins each bearing three long hairs.

**Abdomen somewhat elongated, and narrower than is usual in this genus. Pleurites thickened and distinctive.**

**Female.**—The following description and figures are taken from specimens from *A. r. tickellii*, as no specimens from the type-host have been examined.

Head of distinctive appearance due to the great prolongation of the ventral spine-bearing process on the temples, which is present in a minute and transparent form in all *Goniodes* females. The female of *extraneus* approaches nearest to this species in the prolongation of the temple process. In the characters of the clavi, clypeal band, and occipital angles the female resembles the male (text-fig. 15a).

**Thorax as in male.**

Abdomen large and somewhat elongated in shape, and distinguished from that of other *Goniodes* by the appearance of the terminal segment, which is deeply emarginate, the lateral arms being prolonged into finger-like processes. It is of interest to note that in the *Oxylipeurus (formosanus)* from *Arborophila* the terminal abdominal segment is modified in a similar manner. Genital opening nearly terminal in position, with posterior margin of vulva set with
a row of marginal hairs, and genital region with a number of stout elongated hairs each side (text-fig. 15 b).

**Abdominal Chaetotaxy.**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.</td>
<td>S.</td>
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<tr>
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<td>1, 16, 1</td>
</tr>
<tr>
<td>III.</td>
<td>3, 11-14, 3</td>
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<tr>
<td>IV.</td>
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<td>V.</td>
<td>4, 6-8, 4</td>
</tr>
<tr>
<td>VI.</td>
<td>3, 6, 3</td>
</tr>
<tr>
<td>VII.</td>
<td>7-8, 7-8</td>
</tr>
<tr>
<td>VIII.</td>
<td>...</td>
</tr>
</tbody>
</table>

On the upper lip of the genital opening of the male there are 6–8 long hairs each side, and on the lower lip 7–8 shorter and finer hairs each side; dorsal surface of segment IX with 2–3 hairs each side; ventral surface of segment IX with 5–6 hairs each side, and 2 short and 3 long marginal hairs each side.

**Measurements.**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.84</td>
</tr>
<tr>
<td>Prothorax</td>
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<tr>
<td>Pterothorax</td>
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</tr>
<tr>
<td>Abdomen</td>
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</tr>
<tr>
<td>Total</td>
<td>2.70</td>
</tr>
<tr>
<td>C.I.</td>
<td>1.13</td>
</tr>
</tbody>
</table>

*Species examined.*—1 male, 2 females, from skins of *Arborophila rufogularis tickelli* (Hume) from Tenasserim; 1 male, 1 female, from skin of *A. rufogularis intermedia* (Blyth) from Burma; 3 males, 3 females, from skins of *Arborophila t. torqueola* (Valenciennes) from Sikkim and Assam; 2 males, 1 female, from skin of *Arborophila torqueola millardi* (Stuart Baker) from Central Himalayas; 2 females, from skin of *A. atrogularis* (Blyth) from Assam; 2 females, from skin of *A. gingica* (Gmelin) from S.E. China.

*Species from skins of A. b. brunneopictus* (Blyth), *A. b. heinici* (Oustalet), and *A. erythrophrys* (Sharpe) from Borneo do not appear quite typical, and may prove to be new subspecies.

**Species Group F.**

1. Siza as in B.
2. Temples as in A.
3. Clavi as in E.
4. Antennae sexually dimorphic. In the male first segment without process; third prolonged distally. In the female segment II tends to be longer than I.
5. Meso- and metasternal hairs absent.
6. Pleurites as in A.
7. Bifid structure absent.
8. Vulva terminal without marginal hairs.
9. Anterior margin of male genital opening thickened, and bearing numerous spine-like hairs.
Containing a single distinctive species whose affinities apparently lie with group G. It resembles this latter group in the general character of the clavi, male genital opening, female vulva, and the distinctive chetotaxy. It differs from this group, however, in important characters such as the absence of intertergital chitin, and in the form of the sternal thickening.

**Goniodes wilsoni** Clay, 1938.


**Species Group G.**

1. Species of medium to large size (males, 2·68–4·20 mm.; females, 4·45–4·80 mm.).
2. Temples similar in the two sexes and somewhat expanded.
3. Clavi either large and greatly thickened, or small and partly membranous.
4. Antennae sexually dimorphic. In the male first segment without process; third produced distally to a greater or less extent. In the female segment II considerably longer than segment I.
5. Meso- and metasternal hairs absent.
6. Pleurites as in A.
7. Structure not apparent.
8. Vulva as in F.
9. Upper margin of male genital opening modified, and may or may not be thickened.

A distinctive and homogeneous group of species in which the males have numerous elongated marginal hairs on the temples and pterothorax, and clumps of spine-like hairs on tergites III, IV, or V; intertergital plates present between segments I–VI in the female and between segments V–VI or II–VI in the male, and with sternal thickening in the form of two irregular plates each side of the abdomen. However, the characters of *wilsoni* on one hand, and of *gigas* on the other, prevent this group being considered of generic value.

**Goniodes hopkinsi**, sp. n. (Text-figs. 16 & 17.)

This species resembles *wilsoni* to a certain extent in the presence of enlarged clavi: form of the male antenna; chetotaxy of the head, thorax, and abdomen; male genitalia and certain characters of the terminal segments of the female. It is at once distinguished, however, by the shape of the head and clavi, and by the details of the genital region of the female. From *fimbriatus* it is distinguished, amongst other characters, by the shape of the clavi in both sexes and by the characters of the male antenna, and from *perlatus*, in the male by the presence of thickened clavi and absence of intertergital chitin between segments I–IV, and in the female by the shape of the clavi.

**Description of Male.**—Head with thickened pointed clavi elongated posteriorly; antennae with first segment not enlarged comparatively to that of female, with second segment elongated, and third with post-axial angle prolonged as a somewhat transparent process parallel to the fourth. Long marginal hairs numerous on clypeal and temple margins, and whole dorsal surface of head covered with small spine-like hairs (text-fig. 16).

Thorax with shape and chetotaxy as shown in text-fig. 16.

Abdomen short and rounded, with intertergital thickening only present between segments V and VI; sternal thickening in the form of two, or in some cases three, plates each side; genital opening not greatly modified or thickened.
Species of Mallophaga occurring on Gallinaceous hosts.

The species \textit{fimbriatus} and \textit{perlatus} (text-fig. 17a); segments III and IV with a clump of stout spines at the central edge of each tergal plate (text-fig. 16).

Description of Female.—Head of the same shape as that of male, but larger, and with clavi of different shape (text-fig. 17b), and without the numerous spine-like hairs on the dorsal surface of the post-antennal region.

Thorax with shape as in male, but with fewer dorsal ptero-thoracic hairs.

Text-figure 16.

\textit{Cniodes hopkinsi}, \textit{\textcopyright}.

i.e., 7–10 lateral marginal hairs each side, and 3 hairs each side of the posterior margin.

Abdomen similar to that of \textit{fimbriatus}, with tergal and sternal plates of segments I–VI as in this latter species. On the dorsal surface chaetotaxy of segments I–VI as in \textit{fimbriatus}, except that in segments II–III there are a greater number of median hairs each side, i.e., 6–8. Ventral and ventrolateral hairs as in \textit{fimbriatus}. Plates and chaetotaxy of terminal segments as shown in text-fig. 17c. Genitalia similar to those of \textit{perlatus}. 
Text-figure 17.

Goniodes hopkinsi: (a) ♂ genital opening; (b) ♀ head; (c) ♀ abdomen.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.89-0.94</td>
<td>1.23-1.34</td>
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<tr>
<td>Prothorax</td>
<td>0.34-0.28</td>
<td>0.69-0.73</td>
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<tr>
<td>Pterothorax</td>
<td>0.42-0.45</td>
<td>1.02-1.09</td>
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<tr>
<td>Abdomen</td>
<td>1.48-1.51</td>
<td>1.17-1.67</td>
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<tr>
<td>Total</td>
<td>2.90-3.00</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>1.38-1.47</td>
<td></td>
</tr>
</tbody>
</table>

Described from 10 males, 15 females, from *Guttera edouardi sett-smithi* Neumann from Budongo Forest, Uganda; 2 males, 5 females, from skins and fresh specimens of *G. edouardi sclateri* Reinchenow from Cameroon; 2 males, 1 female, from skin of *G. edouardi pallasi* Stone from Togoland; 1 female, from skin of *G. e. edouardi* (Hartlaub) from Nyasaland; 1 male, from skin of *G. pucherani* (Hartlaub) from Tanganyika Territory.

**Holotype.**—Male in the British Museum, slide no. 261, presented by Mr. G. H. E. Hopkins, from *G. edouardi sett-smithi*. **Paratypes.**—9 males, 15 females, from the same host.
Goniodes numide Mjöberg, 1910.

Goniodes numide Mjöberg, 1910 (1), p. 102, figs. 60–61. Host: Numida m. meleagris (Linne) (Sudan).

Dr. René Malaise has with great kindness searched for the type of this species in the Naturhistoriska Riksmuseum, but the only specimen labelled numide is an extremely immature example, quite useless for comparison. The measurements of the head and the description of the male antennae of numide are apparently as those of fimbriatus, but in the figure and measurements of the male abdomen it differs considerably from fimbriatus, resembling perlatus. Therefore, without examination of the type material or specimens from the type-host, it is impossible to place this species, and for the present it is more satisfactory to keep fimbriatus and perlatus distinct.

Goniodes fimbriatus Neumann, 1913. (Text-fig. 18.)


Neumann gave a locality, but no host, for this species; but as it is a Numida parasite it is probable that the host was Numida meleagris galeata Pallas, which occurs in the given locality. A male and female from this host agree with Neumann’s description and figures, and have been used as the basis for the following description.

This species is distinguished from hopkinsi by the shape of the clavi in both sexes, and by the characters of the antennae, genital opening, and genitalia
of the male. For characters distinguishing this species from *perlatus* see under the latter species.

**Male.**—Head as shown in Neumann’s figure, except that in the specimens examined there are 8 hairs each side on the dorsal surface of the temple region, of which at least 5 are considerably smaller than the single hair shown in Neumann’s figure; in addition to these hairs there are a number of minute hairs scattered over the dorsal surface. Ventro-lateral temple hair elongate, not spine-like. Large, blunt-ended clavi present. Antennae with first segment enlarged comparatively to that of female, second segment elongate, and distal post-axial angle of third segment prolonged at right angles to fourth segment as a large process rounded distally (text-fig. 18 a).

Thorax as shown in Neumann’s figure, but in the specimens examined the posterior prothoracic margin appears somewhat more flattened and bears 3-4 hairs each side; lateral pterothoracic margin with 14-18 long hairs each side, and 9-12 dorsal hairs each side of the posterior margin. Dorsal thoracic thickening as in *hopkinsi* (text-fig. 16).

Abdomen similar to that of *perlatus*, but larger and more elongate; inter-tergal chitin present between segments I-VII (i.e., 6 plates); dorsal margin of genital opening prolonged into a thickened process bilobed distally (text-fig. 18 b); sternal thickening consisting of two plates each side. Chetotaxy similar to that of *perlatus*, except that there is a slight indication of a group of spines at the inner margin of the tergal plate of segment III, a definite group on segment IV (as in *perlatus*), and a scanty group on segment V.

Genitalia similar to those of *perlatus*, and consisting of an elongated basal plate terminating in simple pointed paramera of unequal length.

**Female.**—Head of the same shape as that of the male, with filiform antennae; similar clavi, but somewhat more elongated than in the male; clypeal band with only 2 long submarginal hairs.

Thorax as in male, but lateral pterothoracic margins bear fewer hairs, i.e., 12 on each side, and the posterior margin bears only 3 hairs each side.

Abdomen large and more elongated than in male; tergal plates widely separated medianly, with narrow strips of intertergal chitin between segments I-VIII (i.e., 7 strips); sternal plates in two pieces each side; posterior-lateral corner of segment I is prolonged into thickened point (Neumann’s fig. 20, labelled 3). On the dorsal surface segments I-IV have 2 lateral hairs each side, 4-5 median hairs each side, and 2 long central hairs which are situated somewhat more anteriorly; segments V-VI have 2-3 lateral hairs, 3-5 median hairs each side, 2 of which may be shorter and finer, and 2 long central hairs. On the ventral surface segments I-VII have 2 central hairs except for segments V-VI, which have 4 central hairs. Segment I has no pleural hairs; segment II, 4-5 each side; segments III-VII have 5-8 each side. Posterior segments with plates and chetotaxy as shown in text-fig. 18 c.

<table>
<thead>
<tr>
<th>Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male.</strong></td>
</tr>
<tr>
<td><strong>Length.</strong></td>
</tr>
<tr>
<td>Head (a)</td>
</tr>
<tr>
<td>(b)</td>
</tr>
<tr>
<td>Prothorax</td>
</tr>
<tr>
<td>Pterothorax</td>
</tr>
<tr>
<td>Abdomen</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>C.I. (a)</td>
</tr>
<tr>
<td>(b)</td>
</tr>
</tbody>
</table>

* Length to posterior level of occipital angles.
Species of Mallophaga occurring on gallinaceous hosts.

Specimens examined.—1 male, 1 female, from skin of Numida meleagris galeata Pallas from Sierra Leone; 1 male, from skin of Numida m. callewerti Chapin from Belgian Congo.

Goniodes perlatus, sp. n. (Text-figs. 19 & 20.)
This species is distinguished from fimbriatus in the male by the absence of enlarged thickened clavi, by the form of the third antennal segment, the shape of the abdomen, and by the characters of the genital opening. The females of this species are apparently indistinguishable from those of fimbriatus.

Description of Male.—Head with clypeal margin bearing a number of long hairs, and dorsal surface covered with numerous short spine-like hairs. Clavi small and transparent; antennae with first segment scarcely enlarged, second segment elongated, and third segment with distal post-axial angle prolonged parallel to fourth segment as a somewhat transparent process (text-fig. 19 a).

Thorax with lateral pterothoracic margin bearing numerous hairs (text-fig. 19 a).

Abdomen short and broad, and widest at the third segment, with intertergital chitin present, and double sternal plates (text-fig. 20 a). Dorsal surface of genital opening prolonged into pear-shaped process, with thickened margin bearing hairs (text-fig. 19 b).

Genitalia with pointed unequal paramera continuous with the outer margins of the elongated basal plate (text-fig. 20 b).

Description of Female.—Apparently identical with that of fimbriatus.
MISS THERESA CLAY: A REVISION OF THE GENERA AND

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0·85–0·89</td>
<td>1·31–1·33</td>
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<tr>
<td>Prothorax</td>
<td>0·25–0·27</td>
<td>0·74–0·76</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·38–0·44</td>
<td>1·16–1·19</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1·27–1·33</td>
<td>1·68–1·83</td>
</tr>
<tr>
<td>Total</td>
<td>2·68–2·76</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>1·47–1·53</td>
<td></td>
</tr>
</tbody>
</table>

Described from 41 males, 15 females, from Numida meleagris major Harlaub from Budongo, Uganda; 2 males, 1 female, from skins of N. meleagris maxima

Text-figure 20.

Goniodes perlatus: (a) ♂ abdomen; (b) ♂ genitalia.

Neumann from Angoland; 1 male, 1 female, from N. m. coronata Gurney from Transvaal; 4 males, 1 female, from skins of N. m. mitrata Pallas from Zambesi Valley; 1 male, from skin of N. m. damarensis Roberts from S.W. Africa.

Holotype.—Male in the Meinertzhagen collection, slide no. 7638, from Numida meleagris major, from Uganda. Paratypes.—40 males, 15 females, from the same host.

Amongst material examined from Numida there is at least one, and possibly two, further species related to fimbriatus and perlatus, but the material is inadequate for descriptions.
Species Group H.

1. Size as in G.
2. Temples similar in the two sexes, and not greatly expanded.
3. Clavi membraneous and similar in the two sexes.
4. Antennae similar in the two sexes, with segment II considerably larger than segment I.
5. Thoracic sternal hairs as in G.
6. Pleurites as in A.
7. Structure not apparent.
8. Vulva as in A.
9. Male genital opening similar to G. (hopkinsi).

Containing two species which, in addition to the above characters, resemble group G in the double nature of the sternal plates and the form of tergal plate VIII in the female. The strongly developed crop teeth and the coloration, two characters in which this group resemble group G, are most probably directly correlated with the habitat, and do not necessarily indicate close relationship, as these characters are also found in the Goniocotes and Lippeurus species occurring on the Numidide. These species cannot, however, be included in group G with the other Goniocotes from the Numidide owing to the absence of the distinctive chaetotaxy and intertergital chitin, and to the differences in the character of the female vulva.

Goniodes gigas (Taschenberg), 1879. (Text-figs. 21 & 22.)
Goniocotes hologaster Denny, 1842, pp. 56 & 153, pl. xiii, fig. 4, nec Gc. hologaster (Burmeister), 1838. Host: Gallus domesticus (British Isles).
Goniocotes gigas Taschenberg, 1879, p. 104, pl. i. fig. 10. Nom. nov. for hologaster Denny.

Although originally described from the domestic chicken (Gallus domesticus), the true host of this species is the guinea fowl (Numida).

This species and agelastes are not closely related to any other, except that in certain characters they resemble the preceding Goniodes species from the Numidide.

Male.—Head with thick clypeal band and temples but little expanded; antennal band terminating centrally in circular thickening. Antennae with second segment elongated, and third simple and unmodified (text-fig. 21).

Thorax with shape and dorsal chaetotaxy as in female (text-fig. 22), and without sternal plates or hairs.

Abdomen broadly rounded, with the posterior margins of the two halves of the first tergal plate fused to the anterior margins of the second; sternal plates on segments II–VI in two parts each side. Genital opening resembling that of hopkinsi.

Genitalia with thickened elongated basal plate and somewhat flattened paramera reaching a considerable distance below the distal termination of the mesosome (Cumings, 1916 (1), fig. 18).

Female.—Head as in male, but larger, and with antennae comparatively shorter.

Thorax as shown in text-fig. 22.

Abdomen large; tergal plates of segments I and II not fused; tergal plate on segment VIII partially divided into two antero-posteriorly, the most posterior portions each side fusing centrally as in fimbriatus (text-fig. 22).

Abdominal Chaetotaxy.

Male.

<table>
<thead>
<tr>
<th>T.</th>
<th>S.</th>
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<tbody>
<tr>
<td>I.</td>
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</tr>
<tr>
<td>II.</td>
<td>2-3, 18-20, 2-3</td>
<td>2</td>
</tr>
<tr>
<td>III.</td>
<td>2-3, 16-18, 2-3</td>
<td>4</td>
</tr>
<tr>
<td>IV.</td>
<td>2-3, 14-16, 2-3</td>
<td>6</td>
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<tr>
<td>V.</td>
<td>3, 9-12, 3</td>
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</tr>
<tr>
<td>VI.</td>
<td>3, 6-6, 3</td>
<td>4</td>
</tr>
<tr>
<td>VII.</td>
<td>4, 2, 4</td>
<td>2</td>
</tr>
<tr>
<td>VIII.</td>
<td>....</td>
<td>....</td>
</tr>
<tr>
<td>IX.</td>
<td>....</td>
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Female.

<table>
<thead>
<tr>
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<th>S.</th>
<th>P.</th>
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</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td>4-6</td>
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<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fig.</td>
</tr>
</tbody>
</table>

In the male the central tergal hairs are irregular in size and position.

Text-figure 21.

Measurements *

<table>
<thead>
<tr>
<th>Male.</th>
<th>Female.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>1.09-1.09</td>
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<tr>
<td>Prothorax</td>
<td>0.24</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.49</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.74</td>
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<tr>
<td>Total</td>
<td>5.30</td>
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<tr>
<td>C.I.</td>
<td>1.09-1.15</td>
</tr>
</tbody>
</table>

* Measurements made from specimens from N. meteagrìs mirata.
Specimens examined.—1 female in the Denny collection labelled hologaster, from Gallus domesticus, British Isles; 3 males, 3 females, in the Piaget collection labelled abdominalis, from Gallus domesticus; 1 male, 5 females, from the same host from Nigeria, Uganda, and British Guiana; 1 male, 5 females, from Numida meleagris major Hartlaub from Uganda; 2 males, 3 females, from skins of N. m. mitrala Pallas; 1 male, from skin of N. m. rikwe Reichenow.
from Tanganyika; 2 females, from skin of *N. m. coronata* Gurney from Transvaal; 1 female, from skin of *N. m. calidwerti* Chapin from Belgian Congo; 1 female, from skin of *N. m. galeata* Pallas from Sierra Leone; 1 male, 1 female, from *N. m. reichenowi* Ogilvie-Grant from Kenya; 4 males, 4 females, from *Guttera edouardi* Ogilvie-Grant from Tanganyika; 1 male, from skin of *G. p. plumifera* (Cassin) from Cameroons.

Holotype of *hologaster* Denny.—Female in Denny collection from *Gallus domesticus*.

Piaget Collection: British Museum.—Lectotype of *abdominalis* Piaget designated by present author:—Male, slide no. 1, in the Piaget collection from *Gallus domesticus*. Paratypes.—2 males, 3 females, in the Piaget collection from same host. Leiden Museum, 1 male, 1 female, slide no. 134, paratypes from *Gallus domesticus*.

*Goniodes agelastes*, nom. nov.

*Goniocotes abdominalis* var. *latifasciata* Piaget, 1885, p. 44, pl. v. fig. 3 *.* ncc Piaget, 1883. Host: *Agelastes meleagrides* Bonaparte (*Agelastus meleagrides*). The only material of *agelastes* seen is the single female on which the original description was based, and it is not possible, therefore, to decide whether it should be given specific or subspecific rank.

This species is distinguished from *gigas* by the greater thickness of the clypeal band, and by the chaetotaxy of the genital region, *agelastes* having the hairs at the lateral margins of the vulva more numerous and stouter in form, and having more numerous spines anterior to these hairs. The measurements fall within the range of those of *gigas*.

*Specimen examined.*—1 female, in the Piaget collection, labelled *Gc. abdominalis* var. *latifasciata*, from *Agelastes meleagrides* Bonaparte.

Holotype.—Female in Piaget collection, slide no. 55, as described above.

**Species Group I.**

1. Species large to median size (males, 1-90-4-10 mm.; females, 2-40-4-48 mm.).
2. Temples exhibiting sexual dimorphism in shape, being little, or not at all, expanded in the male, and being expanded to a greater extent in the female.
3. Clavi partly membranous in both sexes, and developed to a greater or less extent (text-figs. 1 a & 2 c).
4. Antennae sexually dimorphic. In the male the first segment may either have no process (*lagopii* and others), a small unthickened process (*dentatus* and *ectus*), or a large thickened process (*crossoptilin*): third segment produced distally at right angles to fourth segment. In the female segment II is either shorter or equal to segment I.
5. Meso- and metasternal hairs absent.
6. Pleurites without thickened area between marginal band of pleurite and spiracle.
7. Structure in female abdomen absent.

8. Vulva with hairs concentrated at lateral corners (exc. "mammillatus").
   Spinous process present on genital region.
9. Male genital opening unmodified.

Contains a fairly homogeneous group of species, which cannot in all cases
be separated from K, the two groups merging into each other. The clavi in
groups I, J, and K are diverse in shape, and in I and K, and some species of J,
are membraneous, and apt to be distorted and indistinct in specimens treated
with caustic potash.

**Goniodes bituberculatus** Rudow, 1869. (Text-figs. 23, 24, & 27 a.)


Pou de Coq de Bruyère, Lyonet, 1829, p. 268, pl. iv. fig. 7.

Text-figure 23.

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**Goniodes bituberculatus**: (a) ♂; (b) ♀ genitalia.

**Goniodes chelicornis** Denny, 1842, pp. 57 & 160, nec Children, 1836.

**Goniodes bituberculatus** Rudow, 1869 (2), p. 27. Host: *Tetrao urogallus* ×

*Lyurus tetrix* (*Tetrao medius*).
The history of this name is somewhat unfortunate, as it was originally published by Nitzsch as a *nomen nudum*; Lyonet figured it, but gave no name; de Haan was doubtful in his application of Nitzsch's *nomen nudum* to Lyonet's figure of "Pou de coq de Bruyère," and so cannot be considered as the author; Children first applied the name *chelicornis* to the *Goniodes* occurring on *Lagopus* (=*G. lagopi*), and since he refers to a previous figure, and gives measurements and host, he must be considered as the first author of *chelicornis*. This, however,

Text-figure 24.

unfortunately means sinking the name as a synonym of *lagopi*. *G. bituberculatus* Rudow is therefore the next available name for the *Goniodes* from *Tetrao urogallus* if Taschenberg's identification of the original specimen is taken. As this specimen is apparently lost, a neotype has been designated, and the type-host restricted to *Tetrao u. urogallus*.

Complete figures of the male and female of this species are given to facilitate the descriptions and comparisons of related species. As would be expected, this species is most closely related to other species from hosts belonging to the
Tetraonidae, and is distinguished in the male by the antennae, chaetotaxy of segment VI, and the genitalia. The differences in the female are given below under the related species.

**Male.**—Head as shown in text-fig. 23a, with ventral chaetotaxy as in *tetraonis*. The first antennal segment is somewhat broader than in the following closely related species, and, as shown below, the ratio of the breadth of segment I to the breadth of segment IV, a fairly constant measurement, gives a useful index of the breadth of segment I.

Thorax and abdomen, as shown in figure, with the number of long abdominal dorsal hairs varying to the extent of 2–3 in different specimens.

Genitalia as shown in text-fig. 23b.

**Female.**—Head as shown in text-fig. 27a, with dorsal chaetotaxy as in male.

Thorax and abdomen as shown in text-fig. 24. The long dorsal abdominal hairs are arranged in three groups, a central, and two lateral, linked together by a varying number of minute hairs (see table).

### Abdominal Chaetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T.</td>
<td>S.</td>
</tr>
<tr>
<td>I.</td>
<td>Fig.</td>
<td>0</td>
</tr>
<tr>
<td>II.</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>III.</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>IV.</td>
<td>2–4</td>
<td>3, 3</td>
</tr>
<tr>
<td>V.</td>
<td>2–4</td>
<td>3, 3</td>
</tr>
<tr>
<td>VI.</td>
<td>9–14</td>
<td>4, 4</td>
</tr>
<tr>
<td>VII.</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>VIII.</td>
<td>20–24</td>
<td>3, 3</td>
</tr>
</tbody>
</table>

In both sexes there are a number of minute hairs present on most tergites, which in some specimens are elongated, thus increasing the apparent number of hairs. In the female on tergites I–VI the inner 1–3 lateral hairs each side may be shorter and finer than the remaining hairs; on tergite VIII, 2 of the hairs each side are longer and stouter than the remaining hairs.

### Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>0.84–0.74</td>
<td>0.69–0.84</td>
</tr>
<tr>
<td>II.</td>
<td>0.22–0.24</td>
<td>0.49–0.59</td>
</tr>
<tr>
<td>III.</td>
<td>0.35–0.36</td>
<td>0.76–0.88</td>
</tr>
<tr>
<td>IV.</td>
<td>1.32–1.36</td>
<td>1.21–1.40</td>
</tr>
<tr>
<td>Total</td>
<td>2.40–2.53</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>1.04–1.15</td>
<td></td>
</tr>
</tbody>
</table>

Proportion of breadth of male antennal segment I to breadth of antennal segment IV.

- *G. bituberculatus*: 4:00 : 1 – 1:4:40 : 1
- *G. cupido*: 3:34:1 – 1:3:46:1
- *G. tetraonis*: 2:67:1 – 1:3:52:1
- *G. lagopi*: 3:02:1 – 1:3:56:1

Specimens examined.—16 males, 26 females, from *Tetrao u. urogallus* Linné from Scotland and Europe; 4 males, 1 female, from skin of *T. u. aquitanicus* Ingram from the Pyrenees; 2 males, 1 female, from skin of *T. u. lugens* Lonnberg from Finland; 1 male, from skin of *T. u. kuretakensis* Buturlin.
from Yenessei; 8 males, 2 females, from skins of *T. u. parvirostris* Bonaparte from Amurland; 1 female, from skin of *T. u. kamschaticus* Kittlitz from Kamchatka.

Piaget Collection.—4 males, 3 females, 3 imm., labelled *G. chelicornis* from *Tetrao urogallus*.

*Lectotype of Chelicornis* Denny nec Children designated by present author.—Male in Denny collection from *Tetrao u. urogallus*. *Paratypes.*—2 females in Denny collection from same host.

*Neotype* of *bituberculatus* designated by present author.—Male in the Meinertzhagen collection, slide no. 1580, from *Tetrao u. urogallus* from Estonia. *Neoparatypes.*—15 males, 26 females, from same host.

**Goniodes tetraonis** (Linne), 1761. (Text-figs. 25 & 26.)


Text-figure 25.


This species is distinguished from *cupido*, *centrocerci*, *simoni*, and *lagopi* in the male by the form of the genitalia, and from *bituberculatus*, in addition to the genitalia, by the shape of the head in both sexes, by the ventral chaetotaxy of segment VI in the male, and by the chaetotaxy of the genital region of the female.

*Male.*—The head tends to be smaller than that of *bituberculatus*, and differs slightly, but distinctly, in the curvature of the anterior margin and in the shape of the temple region (text-fig. 25 a). The breadth of the first antennal segment is proportionally less than in *bituberculatus* (see under measurements of the latter species).

Thorax and abdomen with general characters as in *bituberculatus*, but all measurements tend to be less. Chaetotaxy as in *bituberculatus*, with the exception of segment VI, which has only 4–6 central hairs on the ventral surface,
and there tend to be fewer hairs on the ventral surface of segment IX, and a smaller number of hairs round the genital opening.

Genitalia as shown in text-fig. 26.

Female.—The head tends to be somewhat smaller than that of *bituberculatus*, and proportionally narrower across the temples (see C.I.).

Thorax and abdomen as in *bituberculatus*, but as in the male all measurements tend to be less. Chaetotaxy as in *bituberculatus*, but the hairs on the valve and on the ventral surface of segment VIII are fewer in number (text-fig. 25c).

---

### Measurements

<table>
<thead>
<tr>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.57-0.64</td>
<td>0.68-0.71</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.17-0.20</td>
<td>0.40-0.43</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.26-0.27</td>
<td>0.61-0.66</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.00-1.15</td>
<td>1.03-1.16</td>
</tr>
<tr>
<td>Total</td>
<td>1.92-2.10</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>1.11-1.22</td>
<td></td>
</tr>
</tbody>
</table>

---

*Specimens examined.*—2 males, 3 females, from *Lyrurus t. tetrix* (Linné) from Estonia and Norway; 4 males, 8 females, from *L. tetrix britannicus* Witherby & Lonnberg from Scotland; 1 female, 1 imm., from skin of *L. tetrix viridanus* (Lorenz) from S.E. Russia; 2 males, 3 females, from skins of *Lyrurus mlokosiewiczi* (Taczanowski) from Caucasus.

**Denny Collection.**—Male lectotype, 7 female paratypes labeld *G. tetraonis*, from Tetrao sp.; 1 male, without species label, from *Phasianus colchicus*.

**Piaget Collection:** British Museum.—1 male, 1 female, with both *tetraonis* and *heteroceros* on label from *Tetrao scoticus* (= *Lagopus s. scoticus*). Leiden Museum, 1 male, 1 female, labelled *G. heteroceros*, from *Tetrao tetrix*.

**Neotype of tetraonis.**—Male in Meinertzhagen collection, slide no. 1572, from *Tetrao t. tetrix*, from Estonia.

**Goniodes centroceri** Simon, 1938. (Text-figs. 27 b–d.)


This species resembles most closely *simoni*, from which it is distinguished in the male by the characters of the genitalia; in the female by the shape of the antennal band, by the ventral spinous process on the genital region of the abdomen, which is unusually small (only 5 females examined), and by the fewer number of hairs at the lateral margins of the vulva. In both sexes the C.I. tends to be larger, i.e., the breadth at the temples tends to be greater. *Centroceros* is distinguished from other related species in the male by the somewhat concave lateral margins below the eye; the greater expansion of the temples and the genitalia; in the female by the shape of the antennal band, and by the position and small size of the ventral process on segment VII.

**Male.**—Head with characters as in *simoni*, but with antennal band somewhat narrower distally.

Thorax and abdomen with characters as in *tetraonis*.

Genitalia as shown in text-fig. 27 d.

**Female.**—Head with characters similar to the preceding species, but with antennal band narrower (text-fig. 27 b).
SPECIES OF MALLOPHAGA OCCurring ON GALLINACEOUS HOSTS.

43

Thorax and abdomen as in bituberculatus, but with all measurements tending to be less, and with characters of genital region distinct. Ventral spinous process on genital region lying parallel to lateral margin of abdomen and

Text-figure 27.

extremely small (text-fig. 27c). However, there is often a certain amount of variation in the size of this process, and it is possible if more material had been examined that individuals with larger processes might have been found.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0·58-0·64</td>
<td>0·74-0·81</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0·17-0·19</td>
<td>0·49-0·55</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·26-0·31</td>
<td>0·60-0·67</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1·05-1·11</td>
<td>1·65-1·75</td>
</tr>
<tr>
<td>Total</td>
<td>1·95-2·16</td>
<td>2·70-2·92</td>
</tr>
<tr>
<td>C.I</td>
<td>1·22-1·26</td>
<td></td>
</tr>
</tbody>
</table>

Specimens examined.—4 males, 5 females, from skins and fresh specimens of Centrocerus urophasianus (Bonaparte) from Nebraska and Wyoming, U.S.A.
Goniodes simoni, sp. n. (Text-figs. 1 c & 28.)

This species, which is extremely close to centroceri, is separated in the male by the following characters:

1. In the head the antennal band is somewhat broader and the C.I. tends to be smaller (text-fig. 28a).

2. In the characters of the male genitalia. Unfortunately, the material at hand was not preserved in such a way as to make an accurate examination of the genitalia possible. But it is apparent that structure $x$ (text-fig. 27 d) in simoni is smaller and does not reach to the proximal end of the semicircular indentation in the distal end of the basal plate as it does in centroceri; the structure $y$ is considerably smaller, and occurs at a higher level than in centroceri; the paramera appear distinct from those of centroceri in shape (text-fig. 28 b).

The females are distinguished by the following characters:

1. The antennal band is considerably broader, and the C.I. tends to be less (text-fig. 28 c).

2. The spinous process on the genital region which lies parallel to the lateral margin is of considerably greater size than that of centroceri, and the hairs on the margin of the vulva are more numerous (text-fig. 28 d).


**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0-60-0-64</td>
<td>0-71-0-77</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0-15-0-18</td>
<td>0-38-0-41</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-23-0-28</td>
<td>0-58-0-61</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-00-1-08</td>
<td>1-06-1-09</td>
</tr>
<tr>
<td>Total</td>
<td>1-95-2-08</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>1-15-1-21</td>
<td></td>
</tr>
</tbody>
</table>

Specimens examined.—6 males, 6 females, from skin and fresh specimens of *Dendragapus o. obscurus* (Say) from Utah and N. Colorado.

Holotype.—Male in Meinertzhangen collection, slide no. 12522, from Utah.

Paratypes.—5 males, 6 females, from the same host.

This species is named after Mr. Felix Simon, who pointed out the differences in the male genitalia between this species and *centrocerci* (1938, p. 107), and who has most kindly sent specimens.

**Goniodes cupido** Rudow, 1870. (Text-figs. 29 d & 30 b.)


*Goniodes cupido* Rudow, 1870, p. 482. Host: *Tympanuchus cupido* (*Tetrao cupido*).

This species is distinguished from the preceding by the narrow clypeal band and genitalia; in the former character it resembles *lagopi*. In the male it is distinguished from *lagopi* by the characters of the genitalia, and in the female by the shape of the antennal band.

**Male.**—Head with shape and chaetotaxy as in *lagopi*. Thorax and abdomen with characters as in *tetraonis*. Genitalia diagnostic (text-fig. 30 b).

**Female.**—Head with narrow clypeal band and antennal band with shape as shown in text-fig. 29 d. Thorax and abdomen with characters as in *tetraonis*.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0-61-0-63</td>
<td>0-69-0-71</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0-18</td>
<td>0-43</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-31</td>
<td>0-89</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-18</td>
<td>1-17</td>
</tr>
<tr>
<td>Total</td>
<td>2-22</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>1-13</td>
<td></td>
</tr>
</tbody>
</table>

Specimens examined.—Piaget Collection, British Museum, 2 males, 4 females, from *Tympanuchus cupido* (*Tetrao cupido*); Leiden Museum, 1 male, 2 females, from the same host. 1 male (imm.), 2 females, from skin of *Tympanuchus cupido pinnatus* (Brewster) from N.E. Texas.

Neotype.—Male in the Piaget collection, British Museum, slide no. 134.

Neoparatypes.—1 male, 4 females, in Piaget collection.
Goniodes lagopi (Linne), 1758. (Text-figs. 29 a-c & 30 a.)

Pediculus lagopodis Gmelin, 1790, p. 349, emend. for lagopi L.
Goniodes chelicornis Children, 1836, p. 539. Host: Lagopus l. lagopus (Tetrao saliceti).


Text-figure 29.

Goniodes lagopi: (a) ♂ head; (b) ♀ head; (c) ♂ abdomen; (d) G. cupido, ♀ head.

Waterston drew attention to the confusion which had arisen over the names used for the Goniodes parasitic on Lagopus and Lyrurus, and cleared up the problem in two papers published in 1922 (p. 103) and 1926 (p. 89).
Goniodes descripans, quoted by Kellogg and Mann (1912, p. 14), as under the authorship of Kellogg and Paine from the host, Lagopus lagopus, is probably a synonym of lagopi. However, the original description has never been traced, and it is possibly a nomen nudum.
The Goniodes from Lagopus scoticus described and figured by Shipley, 1909, p. 309, under the name tetraonis Denny, should be referred to this species.
In both sexes this species resembles *cupido* in the presence of a narrow clypeal band, but is distinguished from *cupido* and other species on the Tetraonidae by the considerable contrast between the dark inner edges and the light outer portions of the sclerotic bands of the head and pleurites. In the male the genitalia, and in the female the shape of the antennal band, together with the narrow clypeal band, are diagnostic.

**Male.**—Head with characters as shown in text-fig. 29a, and differing from that of *bituberculatus*, *centrocerci*, and *simoni* by the shape of the temples, and from *tetraonis* in the curvature of the anterior margin.

**Female.**—Head with narrow clypeal band and antennal band with shape as shown in text-fig. 29b.

Thorax and abdomen with general characters as in *bituberculatus*, but with only 4–7 sternal hairs on segment VI of the abdomen.

Genitalia distinctive in the possession of paired distal curved rods approximating centrally (text-fig. 30a).

**Text-figure 30.**

3 genitalia: (a) Goniodes lagopi; (b) G. cupido.
than in either *bituberculatus* or *tetraonis*, and with the ventral spinous process of the genital region finer and narrower than in the two latter species (text-fig. 29 c).

**Measurements.**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Head</strong></td>
<td>0.58-0.64</td>
</tr>
<tr>
<td><strong>Prothorax</strong></td>
<td>0.21-0.24</td>
</tr>
<tr>
<td><strong>Pterothorax</strong></td>
<td>0.34-0.37</td>
</tr>
<tr>
<td><strong>Abdomen</strong></td>
<td>1.12-1.22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2.17-2.23</td>
</tr>
</tbody>
</table>

**Specimen examined.** —1 male from *Lagopus l. lagopus* (Linné) from Estonia; 7 males, 24 females, from the same host from Churchill, Canada; 8 males, 20 females, from *Lagopus s. scoticus* (Latham) from Scotland; 3 males, 4 females, from *Lagopus mutus millaisi* Hartert from Scotland; 2 males, 2 females, from *Lagopus mutus islandorum* (Faber) from Iceland; 1 male, 7 females, from *Lagopus mutus captus* Peters from N.E. Greenland.

**Denny Collection.** —3 females, labelled *G. tetraonis* from ptarmigan (= *Lagopus s. scoticus*); 1 male, 2 females, labelled *G. colchici* from *Phasianus colchicus*.

**Piaget Collection.** —1 male, 1 female, labelled *G. ? heteroceros* var. d, *cupido* from *Tetrao tetrix*; 1 male, 1 female, labelled *tetraonis* and *heteroceros* from *Tetrao scoticus* (*Lagopus scoticus*).

All these specimens should be referred to *lagopi*, and possibly 2 imm. specimens also labelled *heteroceros* from *Tetrao scoticus* (= *Lagopus scoticus*).

**Holotype of chelicornis Children.** —Male in British Museum, Children’s type, from *Lagopus l. lagopus* (*Tetrao saliceti*).

**Neotype of lagopi.** —Male in the Meinertzhagen collection, slide no. 1576, from *Lagopus l. lagopus* from Estonia.

**Goniodes corpulentus** Kellogg and Mann, 1912.


No material of this species examined.

**Goniodes merriamanus** Packard, 1873.


The figure shows that this species is quite distinct from that found on *Dendragapus obscurus* by Simon, 1938, p. 107, and by the present author. It appears to be nearer the *colchici* type of species, and it is possible that it was a straggler from one of the introduced pheasants, such as *Phasianus colchicus* or *Gennseus sp*.

**Goniodes itthaginis**, sp. n. (Text-figs. 31 & 36 a.)

This species is distinguished from all related species by the presence of a dorsal central projection passing posteriorly from the sclerotic area.
immediately internal to the clypeal band to the level of the anterior border of the oral fossa.

Description of Male.—Head as shown in text-fig. 31 a; with first antennal segment enlarged, but without lateral process.

Thorax as in colchici.

Abdomen normal with dorsal chaetotaxy as in bituberculatus. On the ventral surface segments I–VII with 2 central hairs, and in addition on segments III–V there may be 2–4 finer and shorter hairs. Pleural hairs as in bituberculatus except that segment I may have 3–6 hairs each side. Genital opening similar to that of dentatus, but with fewer hairs present. Segment IX with tergal plate indented posteriorly and with fewer long ventral hairs than in dentatus, i.e., 6–9 in the posterior part of the segment each side.

Genitalia as shown in text-fig. 36 a.

Description of Female.—The head is proportionately wider across the temples than in colchici, has a narrower clypeal band, and an irregular central projection arising from the sclerotic area immediately internal to the clypeal band and passing posteriorly.

Thorax and abdomen normal with ventral chaetotaxy of segments I–VI as in the male. Dorsal chaetotaxy as in bituberculatus with segment V bearing 7–8 central hairs. Chaetotaxy of genital region as shown in text-fig. 31 b, with pediculate spines present.

**Text-figure 31.**

*Goniodes ithaginis:* (a) ♀ head; (b) ♂ abdomen.
Measurements.

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length.</strong></td>
<td><strong>Breadth.</strong></td>
</tr>
<tr>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0·71-0·77</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0·18-0·22</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·31-0·37</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1·12-1·25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2·23-3·48</td>
</tr>
<tr>
<td>C.I.</td>
<td>1·23-1·25</td>
</tr>
</tbody>
</table>

Described from 6 females; 6 females, from skins of *Ithaginis c. cruentus* (Hardwicke) from Sikkim; 2 males, 3 females, from skins of *Ithaginis cruentus clarkei* Rothschild from Yunnan; 1 female, from skin of *Ithaginis cruentus geoffroyi* Verreaux from E. Tibet.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 3750, from *Ithaginis c. cruentus*.

**Paratypes.**—5 males, 6 females, from the same host.

**Goniodes colchici** Denny, 1842. (Text-figs. 32 & 34 b.)

*Goniodes colchici* Denny, 1842, pp. 56 & 158, pl. xii. fig. 4. Host: *Phasianus colchicus*, Britain.

This species is distinguished from the preceding by the shape of head in both sexes, by the genitalia of the male, and by the genital region of the female.

**Male.**—Head and thorax as shown in text-fig. 32 a.

Abdomen normal with chaetotaxy as in *bituberculatus*, but with 2-4 central hairs on the ventral surface of segment VI.

Genitalia large and of complicated structure (text-fig. 34 b).

**Female.**—Head similar to that of male but broader across the temples.

Thorax and abdomen normal with chaetotaxy as in *bituberculatus* except for the hairs on the valve and the presence of a row of characteristic pediculate spines (text-fig. 326).

Measurements.

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length.</strong></td>
<td><strong>Breadth.</strong></td>
</tr>
<tr>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0·69-0·73</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0·17-0·18</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·32-0·36</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1·09-1·20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2·22-2·24</td>
</tr>
<tr>
<td>C.I.</td>
<td>1·03-1·11</td>
</tr>
</tbody>
</table>

Specimens examined.—1 female lectotype, 1 female paratype in the Denny collection in the British Museum from *Phasianus colchicus* from Britain; 2 males, 1 female, from the same host and locality; 29 males, 47 females,
from *Phasianus colchicus bianchii* Buturlin from Afghanistan; 2 females, from skin of *Phasianus colchicus mongolicus* Brandt.

*Piaget Collection.*—British Museum, 1 male, 2 females, 2 imm., from *Phasianus colchicus*. Leiden Museum, 1 female from the same host.

**Goniodes chrysolophi**, sp. n. (Text-figs. 33 & 34 a.)

This species differs but little from *colchici* except in the size and details of the genitalia, which are quite distinct. In the male the sides of the temples tend to be somewhat more concave, and in the females the heads tend to be wider across the temples (see C.I.), and the details of the chaetotaxy of the genital region are distinct.

*Description of Male.*—Head as shown in text-fig. 33 a.
Thorax and abdomen normal with chaetotaxy as in *bituberculatus*, but with 2 central hairs on the ventral surface of segment VI.

Genitalia differing in detail from those of *colchici* (text-fig. 34 a).

Text-figure 33.

---

Goniodes *chrysolophi*: (a) ♀ head; (b) ♂ abdomen.

Description of Female.—Head similar to that of *colchici*, but tends to be somewhat wider across the temples.

Thorax and abdomen normal with posterior ventral chaetotaxy differing from that of *colchici* in having fewer hairs and a considerably shorter spiny process on the genital region (text-fig. 33 b).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Breadth</th>
<th>Length</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.69-0.72</td>
<td>0.82-0.83</td>
<td>0.80-0.83</td>
<td>1.06-1.17</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.15</td>
<td>0.46</td>
<td>0.15</td>
<td>0.47</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.31</td>
<td>0.69</td>
<td>0.34</td>
<td>0.74</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.09</td>
<td>1.18</td>
<td>1.54</td>
<td>1.42</td>
</tr>
<tr>
<td>Total</td>
<td>2.18</td>
<td></td>
<td>2.72</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>1.13-1.19</td>
<td></td>
<td>1.31-1.47</td>
<td></td>
</tr>
</tbody>
</table>
Species of Mallophaga occurring on Gallinaceous hosts.

Described from 2 males, 6 females, from skins of *Chrysolophus amherstiae* (Leadbeater) from Tibet; 1 male, 3 females, from skins of *Chrysolophus pictus* (Linne) from China.

**Text-figure 34.**

♀ genitalia: (a) *Goniodes chrysolophi*; (b) *G. colchici*.

*Holotype.*—Male in the Meinertzhagen collection, slide no. 4428, from *Chrysolophus amherstiae*.

*Paratypes.*—1 male, 6 females, from the same host.

*Goniodes dentatus* (Rudow), 1870. (Text-figs. 35, 36 b, & 37.)

*Goniocotes dentatus* Rudow, 1870, p. 476. Host: *Gennaeus nycthemerus lineatus* (Vigors) (*Nycthemerus linearis*).

Although Rudow included this species under the genus *Goniocotes*, it seems more likely that he was describing a female *Goniodes*. The description is applicable to the *Goniodes* from *Gennaeus nycthemerus*, and Rudow himself compares *dentatus* to *tetraonis*, which indicates that this species was a *Goniodes*.
The size, 1·5 mm., given in the description is obviously not that of a *Goniodes*, but none of Rudow’s measurements can be relied upon as accurate, since in the same paper (1870, pp. 480–487) the measurements of the true *Goniodes* species range from 1·1–1·5 mm.

This species is distinguished from the preceding species by the shape of the head, and form of the genitalia in the male and the chaetotaxy of the genital region in the female.

*Male.*—Head as shown in text-fig. 35 *a*, with first antennal segment bearing a small process.

Thorax as in *colchici*.

Text-figure 35.

Abdomen normal with chaetotaxy of segments I–VII as in *iihaginis*.

Chaetotaxy of genital opening as shown in text-fig. 35 *b*.

Genitalia as shown in text-fig. 36 *b*.

*Female.*—Head as shown in text-fig. 37 *a*, with broad clypeal band.

Thorax as in male.

Abdomen normal with lateral tergal hairs as in *bituberculatus*, and with 6–8 central hairs on segments I–VII. Sternal chaetotaxy of segments I–VII as in male. Genital region with numerous hairs at the lateral corner of the vulva and pediculate spines present (text-fig. 37 *b*).
Measurements.

Male.

<table>
<thead>
<tr>
<th></th>
<th>Length (mm)</th>
<th>Breadth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.69-0.73</td>
<td>0.75-0.79</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.18-0.19</td>
<td>0.46-0.48</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.29-0.32</td>
<td>0.71-0.76</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.23-0.30</td>
<td>1.28-1.37</td>
</tr>
<tr>
<td>Total</td>
<td>2.30-2.34</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>1.06-1.09</td>
<td></td>
</tr>
</tbody>
</table>

Female.

<table>
<thead>
<tr>
<th></th>
<th>Length (mm)</th>
<th>Breadth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.76-0.83</td>
<td>0.99-1.06</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.18-0.20</td>
<td>0.47-0.61</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.31-0.34</td>
<td>0.67-0.78</td>
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<tr>
<td>Abdomen</td>
<td>1.45-1.61</td>
<td>1.05-1.26</td>
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<tr>
<td>Total</td>
<td>2.58-2.86</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>1.28-1.31</td>
<td></td>
</tr>
</tbody>
</table>

Specimens examined.—8 males, 6 females, from Genus leucomeanos hamiltonii (J. E. Gray) from the Himalayas (died in the London Zoological Gardens); 1 female from the skin of the same host from central Himalayas;

Text-figure 36.

Male genitalia: (a) Goniodes ithapis; (b) G. dentatus.

21 females, 19 males, from Genus l. leucomeanos (Latham) from Nepal; 1 male, 2 females, from skins of G. nythemerus horsfeldii (G. R. Gray) from Assam; 1 female, from skin of G. nythemerus oatesi Ogilvie-Grant from Burma.
3 males, 4 females, from skins of *Pucrasia m. macrolopha* (Lesson) from the Himalayas, 1 female, from the same host which died in the London Zoological Gardens and 1 male, 3 females, from skin of *P. macrolopha* *biddulphi* Marshall from Kashmir are apparently indistinguishable from specimens from *Gennaeus* spp.

A neotype has not been designated for this species as no specimens have been examined from the type-host, although there is little doubt that specimens from *G. nycthemerus* *lineatus* would prove to be the same as those examined from the other species of *Gennaeus*.

**Goniodes sectus** Kellogg & Paine, 1914. (Text-fig. 38.)


This species is distinguished from *dentatus* in the male by the shape of the temple region and the characters of the antennae and genitalia; in the female by the absence of a sclerotic area below the clypeal band.

*Male.*—Head with flattened lateral margins below the eye and no expanded temple angle; clypeal band narrow and without sclerotic area below; first antennal segment with large blunt process bearing an elongated spine (text-fig. 38 a).
Thorax as shown in Kellogg and Paine’s figure with meso- and metasternal hairs absent.

Abdomen with shape as shown in Kellogg and Paine’s figure and with chetotaxy as in dentatus.

Genitalia of similar type to those of dentatus but differing in detail (text-fig. 38 b) *

Text-figure 38.

Goniodes sectus: (a) ♂ head; (b) ♂ genitalia.

Female.—Head with temples not greatly expanded and without sclerotic area below clypeal band.

Thorax as in male.

Abdomen with ventral chetotaxy, including that of the genital region, as in dentatus. Dorsal chetotaxy as in dentatus, but there tend to be a greater number of elongated central hairs on segments I–IV, i.e., 12.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.84–0.85</td>
<td>0.89–0.96</td>
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<tr>
<td>Prothorax</td>
<td>0.31–0.32</td>
<td>0.61–0.68</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.37–0.43</td>
<td>0.91–1.02</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.73–1.74</td>
<td>1.67–1.92</td>
</tr>
<tr>
<td>Total</td>
<td>3.16–3.23</td>
<td>3.23–3.41</td>
</tr>
</tbody>
</table>

Specimens examined.—2 males, 2 females, from skin of Catreus wallichii (Hardwicke) from Himalayas.

* Only one specimen of genitalia examined in poor condition, details of mesosome may not be accurate.
**Goniodes crossoptilon**, nom. nov. (Text-figs. 2c & 39.)

*Goniodes major* Piaget, 1880, p. 274, pl. xxiv. fig. 1, *nec* Piaget, 1880, p. 239.  
Host: *Crossoptilon auritum* (Pallas) (Zoological Gardens, Rotterdam).

This species resembles *cervinicornis* to a certain extent in the characters of the male genitalia and in the presence of a thickened process on the first antennal segment, but is at once distinguished from this species by the shape of the head, the absence of heavily thickened clavi in the male, and the characters of the genital region of the female.

**Male.**—Head as shown in Piaget's figure with temples not greatly expanded; first antennal segment enlarged and bearing a process, pointed and thickened distally.

**Text-figure 39.**

![Text-figure 39](image)

**Goniodes crossoptilon**: (a) ♀ head; (b) ♀ abdomen.

Thorax with shape as shown in Piaget's figure and with chaetotaxy as in *bitalbuculatus*.

Abdomen with shape as shown in Piaget's figure.

Genitalia large stretching from segment I to the end of the abdomen and with general characters of paramera, sac and mesosome resembling *cervinicornis*, but quite distinct (material inadequate for figure).

**Female.**—Piaget's figure of the head (pl. xxiv. fig. 1, a) differs somewhat in shape from his specimen in that the temples are shown less expanded (text-fig. 39 a).

Thorax as in male.

Abdomen large and broadly rounded with ventral spinous process somewhat elongated and pointed (text-fig. 39 b).
Abdominal Chetotaxy.

<table>
<thead>
<tr>
<th>Male</th>
<th>T.</th>
<th>S.</th>
<th>P.</th>
<th>Female</th>
<th>T.</th>
<th>S.</th>
<th>P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I....</td>
<td>7, 2, 7</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3, 4, 10, 3-4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>II...</td>
<td>4-5, 2, 4-5</td>
<td>2</td>
<td>3-4, 3-4</td>
<td>2</td>
<td>2-3, 13, 2-3</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>III..</td>
<td>4-5, 4-5</td>
<td>2</td>
<td>3-4, 3-4</td>
<td>2</td>
<td>2-3, 12, 2-3</td>
<td>2</td>
<td>3-4, 3-4</td>
</tr>
<tr>
<td>IV...</td>
<td>4-5, 6, 4-5</td>
<td>2</td>
<td>3-4, 3-4</td>
<td>2</td>
<td>2-3, 12, 2-3</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>V....</td>
<td>4-5, 2, 4-5</td>
<td>2</td>
<td>2-6, 2-6</td>
<td>2</td>
<td>2-3, 12, 2-3</td>
<td>2</td>
<td>3-4, 3-4</td>
</tr>
<tr>
<td>VI...</td>
<td>4-5, 2, 4-5</td>
<td>6</td>
<td>4-6, 4-6</td>
<td>2</td>
<td>2-3, 12, 2-3</td>
<td>2</td>
<td>5, 5</td>
</tr>
<tr>
<td>VII..</td>
<td>Fig.</td>
<td>8</td>
<td>7-8, 7-8</td>
<td>4</td>
<td>4, 10, 4</td>
<td>2</td>
<td>7-8, 7-8</td>
</tr>
<tr>
<td>VIII.</td>
<td>Fig.</td>
<td>..</td>
<td>6-9, 6-9</td>
<td>Fig.</td>
<td>Fig.</td>
<td>6-7, 6-7</td>
<td></td>
</tr>
<tr>
<td>IX...</td>
<td>Fig.</td>
<td>Fig.</td>
<td>..</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the male the groups of tergal hairs are linked up by a number, 2-8, of shorter finer hairs not shown in table.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>1-02</td>
<td>1-15</td>
<td>Piaget’s</td>
<td>1-12</td>
<td>1-50</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0-35</td>
<td>0-85</td>
<td>Piaget’s</td>
<td>1-12</td>
<td>1-50</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-50</td>
<td>1-27</td>
<td>Piaget’s</td>
<td>1-12</td>
<td>1-50</td>
</tr>
<tr>
<td>Abdomen</td>
<td>2-26</td>
<td>2-35</td>
<td>Piaget’s</td>
<td>1-12</td>
<td>1-50</td>
</tr>
<tr>
<td>Total</td>
<td>4-10</td>
<td>..</td>
<td>Eiehler’s</td>
<td>1-38</td>
<td>1-38</td>
</tr>
</tbody>
</table>

Specimens examined.—1 male, 1 female, in the Piaget collection labelled Gd. major from Crossoptilon auritum (Pallas).

Lectotype designated by present author.—Male in the Piaget collection, slide no. 70.

Paratype.—Female in the same collection.

Goniodes dolani Eichler, 1937.


This subspecies has been included here temporarily as a species although the females (no males have been seen) are indistinguishable from those of Crossoptilon (olim major Piaget). However, there appears to be more than one species of Goniodes occurring on the species of Crossoptilon, since a male examined from Crossoptilon c. harmani appears to differ from Piaget’s type in the proportions of the head and the characters of the male genitalia. Until males have been examined from Crossoptilon c. crossoptilon it is impossible to place dolani correctly.

G. dolani was described from a female and separated on the measurements as compared with those given in Piaget, 1880, p. 275. Piaget’s text measurements, however, are nearly always different from the measurements taken from his types when these have been treated with caustic potash and remounted in Canada balsam.

| Length of head (a) (to centre of posterior margin) | 1-20 | 1-25 | 1-18 |
| Length of head (b) (to level of postero-lateral corners of head) | 1-33 | .. | 1-31 |
| Breadth of head | 1-80 | 1-56 | 1-81 |
| C.I. (a) | 1-26 | 1-62 | 1-38 |
| C.I. (b) | 1-35 | .. | 1-38 |
As will be seen from the above table, G. dolani cannot be separated from G. crossoptilon on the measurements of the head; the other measurements of the body as given by Eichler, 1937, p. 96, do not differ greatly from those of Piaget's type.

Specimens examined.—1 female, Eichler's type from Crossoptilon c. crossoptilon (Hodgson), and 1 female from skin of the same host from Szechwan.

Goniodes mamillatus Rudow, 1870. (Text-fig. 40.)

Goniodes mamillatus Rudow, 1870, p. 483. Host: Pelecanus ruficollis (name untraceable) in error.

Text-figure 40.

Goniodes mamillatus: (a) ♂ genitalia; (b) ♂ head and thorax; (c) ♀ abdomen.

Taschenberg, 1882, p. 25, who examined Rudow's original specimen and re-described and figured this species, considered it to be identical with specimens
from *Lophortyx californica*. This host must be therefore considered as the type-host of *mamillatus*.

*G. mamillatus* is not closely related to any known species, and is distinguished from others in this group by the shape of the head, characters of antennae and genitalia of the male, and by the shape of the head and characters of the genital region of the female.

**Male.**—Head with narrow clypeal band; temples scarcely expanded, and ventral lateral temple hair fine and spine-like; first antennal segment enlarged, and distal post-axial angle of third segment prolonged to a considerable extent at right angles to the fourth (text-fig. 40 b).

Thorax with prothoracic lateral margins flattened and diverging posteriorly; pterothorax with lateral margins rounded and diverging posteriorly.

Abdomen not greatly swollen and somewhat elongated; segment IX with straight posterior margin and with thickened submarginal band.

Genitalia with large thickened basal plate stretching from segments I–VI, and with mesosome complex in character (text-fig. 40 a).

**Female.**—Head with narrow clypeal band and temples not greatly expanded, but to a greater extent than those of the male.

Thorax as in male.

Abdomen somewhat elongated and with tergal plate on segment VIII continuously thickened. Chaetotaxy of vulva unusual in having a row of marginal hairs and no concentration of hairs at the lateral corners; pediculate spines absent; narrow elongated spinous process present (text-fig. 40 c).

### Abdominal Chaetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T.</td>
<td>S.</td>
</tr>
<tr>
<td>I.</td>
<td>2-4, 6, 2-4</td>
<td>2, 2</td>
</tr>
<tr>
<td>II.</td>
<td>2, 4, 2</td>
<td>2, 3</td>
</tr>
<tr>
<td>III.</td>
<td>2, 4, 2</td>
<td>2, 3</td>
</tr>
<tr>
<td>IV.</td>
<td>2, 4, 2</td>
<td>2, 3</td>
</tr>
<tr>
<td>V.</td>
<td>2, 2, 2</td>
<td>2, 4</td>
</tr>
<tr>
<td>VI.</td>
<td>2-3, 2, 2-3</td>
<td>2, 4</td>
</tr>
<tr>
<td>VII.</td>
<td>2-3, 2-3</td>
<td>2-3, 2-3</td>
</tr>
<tr>
<td>VIII.</td>
<td>2-3, 2-3</td>
<td>Fig.</td>
</tr>
<tr>
<td>IX.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.13-0.14</td>
<td>0.35-0.37</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.23-0.24</td>
<td>0.50-0.52</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.94-0.98</td>
<td>0.92-0.94</td>
</tr>
<tr>
<td>Total.</td>
<td>1.80</td>
<td>1.85</td>
</tr>
</tbody>
</table>

C.I. 0.89-0.93 1.01-1.16

**Specimens examined.**—4 males, 3 females, from skins of *Lophortyx c. californica* (Shaw) from California; 2 males from skin of *Lophortyx g. gambelii* Gambel from California.
Goniodes dissimilis Denny, 1842. (Text-figs. 41–43.)

Goniodes dissimilis Denny, 1842, pp. 57 & 162, pl. xii. fig. 6. Host: Gallus domesticus.
Goniodes dissimilis var. bankiva Piaget, 1880, p. 269, pl. xxii. fig. 3 a. Host: Gallus g. bankiva Temminck.

This is a distinct species, and not closely related to any other. It is distinguished by the shape of the head and thick clypeal band in both sexes, by the terminal segments and genitalia of the male, and by the chaetotaxy of the genital region of the female.

Text-figure 41.

Goniodes dissimilis: (a) ♀ genitalia; (b) ♂ head; (c) ♂ abdomen.

Male.—Head as shown in text-fig. 41 b, and is proportionately broader across the pre-antennal region than the preceding species; clypeal band broad; first antennal segment without process.
Thorax with shape as in the female (text-fig. 42).
Abdomen normal except for segment VIII, which is larger than in the preceding species, and segment IX, which is narrower. Dorsal chaetotaxy as Text-figure 42.

Goniodes dissimilis, ♀.

In bituberculatus, except for the hairs surrounding the genital opening. On the ventral surface segments I–VII have two central hairs with some specimens having 4 central hairs on segments IV–V. The pleural hairs are as follows:
Segment I has no hairs, segment II has 2 each side, segments III–IV have 3, segments V–VII have 4 each side. Chetotaxy of genital openings and posterior segments as shown in text-fig. 41 c.

**Female.**—As shown in text-fig. 42, and characterized by the broad clypeal band, prominent ventral spine-bearing process on the temples, and by the chetotaxy and form of the terminal segments of the abdomen. Segment VIII is elongated posteriorly, protruding beyond segment IX, and dorsally bears a thickened lateral plate. Pleural chetotaxy as in the male; sternites I–VII with 2 central hairs.

Genital region with a considerably greater number of hairs and "stalks" of pediculate spines of greater length than in the majority of the preceding species (text-fig. 43).

### Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length (mm)</td>
<td>Breadth (mm)</td>
</tr>
<tr>
<td>Head</td>
<td>0.72–0.74</td>
<td>0.80–0.84</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.15</td>
<td>0.50</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.35</td>
<td>0.71</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.15</td>
<td>1.29</td>
</tr>
<tr>
<td>Total</td>
<td>2.36</td>
<td></td>
</tr>
<tr>
<td>CI</td>
<td>1.10–1.14</td>
<td>1.27–1.38</td>
</tr>
</tbody>
</table>

**Text-figure 43.**

In the Piaget collection there is 1 female labelled *G. dissimilis var. bankiva* from *Gallus bankiva* and 1 male, 1 female, labelled *G. dissimilis* from the same host; these are all typical *dissimilis*, the differential characters as given by Piaget (p. 269) being found in specimens of *dissimilis* from the type-host.
Species of Mallophaga Occurring on Gallinaceous Hosts. 

Specimens examined.—8 males, 5 females, from Gallus domesticus from England; 5 males, 4 females, from skins of Gallus g. labouelli Delacour and Kinnear from Annam; 7 males, 12 females, from skins of Gallus g. murghi Robinson and Kloss from Sikkim; 2 males, 4 females, from skins of Gallus g. gallus (Linné) from Siam; 5 males, 4 females, from skins of Gallus lafayetii Lesson from Ceylon.

Piaget Collection.—British Museum, 1 female, labelled G. dissimilis var. bankiva, slide no. 101, from Gallus g. bankiva Temminck; 1 male, 1 female, labelled G. dissimilis from same host. Leiden Museum, 1 male, 1 imm. from "coq."

Holotype of G. dissimilis var. bankiva.—Male slide no. 101, as described above.

Denny's specimens of dissimilis is not in the British Museum collection and is almost certainly lost; a neotype has therefore been designated.

Neotype.—Female in the British Museum collection, from Gallus domesticus from England. Neotype.—7 males, 5 females, from the same host.

Species Group J.

1. Size as in I.
2. Temples as in I.
3. Clavi in male either but little developed or produced posteriorly and strongly thickened (text-figs. 1d & 2a & b). In female as in I.
4. Antennal segment of intermedius, longus, diardi to cervinicornis (text-figs. 1 & 2). The species intermedius and humise resemble colchici, chrysolophi, dentilus, and sectus of group I in the presence of a definite unthickened process on the first antennal segment in the male, and are only separable from this latter group by the characters of the genital region of the female. Although cervinicornis appears extremely distinct when considered alone, it is seen to have affinities with crossoptilon on one side and through diardi with longus and intermedius on the other.

Goniodes intermedius Neumann, 1913. (Text-figs. 1d, 44b, & 45b.)


This species is distinguished by the complete absence of a temple angle, by the characters of the genitalia in the male, and by the characters and chostaxy of the genital region of the female. It resembles most closely humise, being distinguished from this species in the male by the characters of the genitalia, the females being apparently indistinguishable.

Male.—Little can be added to Neumann's original description and figure. The head, which is practically indistinguishable from that of humise, is characterized by the complete lack of temple angles, the post-antennal margins of the head falling away immediately behind the eyes and not flattened for a short distance as in humise. The first antennal segment bears a short protuberance carrying a spine-like hair.

Thorax with lateral prothoracic margins flattened and diverging somewhat posteriorly; pterothorax with shape and chaetotaxy as in colchici. Abdomen as in Neumann’s figure. Chaetotaxy as shown in table below.

Genitalia similar to that of humiae, but whole structure somewhat larger, (length from proximal end of mesosome to distal end of paramera = 374 mm.; breadth = 334 mm.), and with structures x and y bearing stout spines (text-fig. 45b).

Female.—Head as shown in Neumann’s figure.
Thorax as in male.

Text-figure 44.

(a) Goniodes humiae, ♂ head; (b) G. intermedius, ♀ abdomen.

Abdomen normal with chaetotaxy as shown below. Terminal segments differing in chaetotaxy and form from those of the species considered above, in the arrangement of the hairs at the lateral corners of the valve, and in the absence of the spinous process on the genital region (text-fig. 44b); in these characters this species resembles cervinicornis and longus.

Measurements as given by Neumann, but since his longitudinal head measurements are apparently taken from the anterior margin to the posterior level of the occipital angles, and not to the mid-line of the occipital margin as in the measurements of the other species given in this paper, the C.I. of Neumann’s specimens are given below to facilitate comparison with other species:

C.I.: male, 1-09; female, 1-40–1-47.
Abdominal Chaetotaxy.

Male. | Female.
---|---

<table>
<thead>
<tr>
<th>T.</th>
<th>S.</th>
<th>P.</th>
<th>T.</th>
<th>S.</th>
<th>P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>4, 2, 4</td>
<td>2</td>
<td>1-2</td>
<td>2</td>
<td>1-2</td>
</tr>
<tr>
<td>II.</td>
<td>3, 3, 3</td>
<td>2</td>
<td>3</td>
<td>3, 3</td>
<td>2</td>
</tr>
<tr>
<td>III.</td>
<td>3, 3, 3</td>
<td>2</td>
<td>3</td>
<td>3, 3</td>
<td>2</td>
</tr>
<tr>
<td>IV.</td>
<td>3, 3, 3</td>
<td>2</td>
<td>4</td>
<td>4, 4</td>
<td>2</td>
</tr>
<tr>
<td>V.</td>
<td>3, 3, 3</td>
<td>2</td>
<td>4, 4</td>
<td>4-2</td>
<td>2-3</td>
</tr>
<tr>
<td>VI.</td>
<td>3, 3, 3</td>
<td>2</td>
<td>4, 4</td>
<td>4-2</td>
<td>2-3</td>
</tr>
<tr>
<td>VII.</td>
<td>4-6, 4-6</td>
<td>2</td>
<td>4, 4</td>
<td>4-2</td>
<td>2-3</td>
</tr>
<tr>
<td>VIII.</td>
<td>...</td>
<td>...</td>
<td>3, 3</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
<tr>
<td>IX.</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

In the male the hairs surrounding the genital opening and on the dorsal surface of segment IX are as in dentatus, except that those of the posterior lip of the genital opening are somewhat longer and stouter, and there are 8-9 hairs each side of segment IX; ventral hairs of segment VIII-IX as in dentatus.

In both sexes there are a number of minute tergal and sternal hairs varying in number in different specimens which have not been included in the above table.

Specimens examined.—1 male, 2 females, Neumann’s types in the British Museum from Pucrasia macrolopha darwini Swinhoe; 1 male from skin of Pucrasia macrolopha biddulphi Marshall from Kashmir.

Lectotype.—Designated by present author:—male from Neumann’s types in the British Museum. Paratypes.—2 females.

Goniodes humle, sp. n. (Text-figs. 44 a & 45 a.)

This species is only distinguishable from intermedius by the details of the genitalia and the shape of the temple region in the male; the females are apparently indistinguishable.

Description of Male.—Head as shown in text-fig. 44 a, and differing from that of intermedius in having the post-antennal margin flattened for a short distance behind the eye and not falling away at once.

Thorax and abdomen as in intermedius, except that segment I tends to have a greater number of elongated lateral hairs on the dorsal surface, i.e., 6-10, and segments V-VIII have 5-6 pleural hairs.

Genitalia with whole structure comparatively smaller than that of intermedius (length from proximal end of mesosome to distal end of paramera = 280 mm.; breadth = 259 mm.) and differing in details (text-fig. 45 a).

Description of Female.—The female appears identical with that of intermedius, except that on tergite I there are 2-4 lateral hairs each side and tergite II has a greater number of central hairs, i.e., 10-12. However, these differences in the number of hairs cannot be used as a diagnostic character in either sex, as only 2 males and 2 females of intermedius have been examined.

Measurements.

<table>
<thead>
<tr>
<th>Male.</th>
<th>Female.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length.</strong></td>
<td><strong>Breadth.</strong></td>
</tr>
<tr>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.72-0.75</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.21-0.23</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.39-0.41</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.82-1.48</td>
</tr>
<tr>
<td>Total</td>
<td>2.50-2.76</td>
</tr>
</tbody>
</table>

f 2
Described from 13 males, 9 females, from skins of *Syrmaticus h. humiae* (Hume) from Burma; 4 males, from skin of *S. humiae burmanicus* (Oates) from Yunnan.

Text-figure 45.

Holotype.—Male in the Meinertzhagen collection, slide no. 4430 from *S. h. humiae*.
Paratypes.—12 males, 9 females, from the same host.

**Goniodes longus** Rudow, 1869. (Text-figs. 2d, 46, & 48 a.)


*Goniodes latifasciatus* Piaget, 1880, p. 269, pl. xxii. fig. 4. Host: *Lophura ignita* (*Euplocomus ignitus*). Skin.

Taschenberg (1882, p. 28), who apparently examined Rudow’s specimens of *G. longus*, considers this species to be the same as Piaget’s *latifasciatus*. In
the same paper Taschenberg states that the type of *G. pallidus* is an immature female; this female is no longer in the Halle collection, and so it is impossible to say exactly what *G. pallidus* represents. Comparison of specimens from the type-host of *G. pallidus* with specimens of *G. longus* shows no constant differences, and Giebel's description (1877, p. 530), with the exception of one or two of the measurements, is applicable to these specimens.

This species, which resembles *intermedius* in the shape of the male head and genital region of the female, is distinguished in the male by the vertical slightly concave lateral margins of the head, the first antennal segment, and by the genitalia; in the female by the details of the chaetotaxy of the genital region.

*Male.*—Head with broad clypeal band and temples not expanded. Clavi with posterior margins thickened and approaching the condition found in *diardi* (text-fig. 46a).

Thorax as shown in Piaget's figure (1880, pl. xxii. fig. 4) with chaetotaxy as in *bituberculatus*.
Abdomen with shape as shown in Piaget’s figure and chaetotaxy as given below.

The genitalia in Piaget’s specimens are somewhat distorted, and the parameres appear narrower distally than those in text-fig. 48a, which are drawn from a specimen collected from Lophura rufa.

Female.—Head with broad clypeal band; temples not greatly expanded and with lateral ventral temple spine borne on prominent process.

Thorax as in male.

Abdomen similar in shape to that of male, but somewhat longer; segment VIII bilobed with lobes produced posteriorly. Genital region characterized by the large number of hairs concentrated at the lateral margins of the vulva, and by the absence of the spinous process (text-fig. 46b).

**Abdominal Chaetotaxy.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>2-3, 2, 2-3</td>
<td>0-0</td>
</tr>
<tr>
<td>II.</td>
<td>2-3, 2-3</td>
<td>3-4, 3-4</td>
</tr>
<tr>
<td>III.</td>
<td>2-3, 2-3</td>
<td>4-5, 4-5</td>
</tr>
<tr>
<td>IV.</td>
<td>2-3, 2-3</td>
<td>4-5, 4-5</td>
</tr>
<tr>
<td>V.</td>
<td>2-3, 2-3</td>
<td>4-5, 4-5</td>
</tr>
<tr>
<td>VI.</td>
<td>2-3, 2-3</td>
<td>4-5, 4-5</td>
</tr>
<tr>
<td>VII.</td>
<td>2-3, 2-3</td>
<td>5-6, 5-6</td>
</tr>
<tr>
<td>VIII.</td>
<td></td>
<td>2-3, 2-3</td>
</tr>
<tr>
<td>IX.</td>
<td>8-10, 8-10</td>
<td>14-18, 14-18</td>
</tr>
</tbody>
</table>

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.81-0.86</td>
<td>0.89-0.94</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.08-0.105</td>
<td>0.10-0.125</td>
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<tr>
<td>Pterothorax</td>
<td>0.90-0.92</td>
<td>0.90-0.92</td>
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<tr>
<td>Abdomen</td>
<td>1.85-1.91</td>
<td>1.78-1.82</td>
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<td>Total</td>
<td>3.18-3.24</td>
<td>3.43-3.59</td>
</tr>
<tr>
<td>C.I.</td>
<td>1:21-1:22</td>
<td>1:31-1:35</td>
</tr>
</tbody>
</table>

Specimens examined.—1 male, 1 female, from skin of Lophura rufa (Raffles) from Sumatra; 5 males, 6 females, from skins of Houppifer e. erythrophthalmus from Sumatra.

Piaget Collection.—British Museum, 3 males, 3 females, of G. latifasciatus from Lophura ignita; 1 male, labelled G. latifasciatus from Houppifer erythrophthalmus pyronotus (G. R. Gray).

Leiden Museum, 1 male, 1 female, labelled G. latifasciatus from Euplocomus ignitus (Lophura ignita).

Lectotype of latifasciatus designated by present author. Male in Piaget collection, slide no. 51, from Lophura ignita. Paratypes.—3 males, 4 females, in the Piaget collection from the same host.

Goniodes diardi, sp. n. (Text-figs. 2a & 48c.)

This species is intermediate between longus and cervinicornis in respect to the form of the clavus. In diardi the clavi are small and thickened and produced posteriorly to a greater extent than in longus. It is distinguished from this latter species in the male by the shape of the head, antennae, and
Species of Mallophaga occurring on Gallinaceous hosts.

Species or Mallophaga occurring on gallinaceous hosts. 71

Genitalia, and in the female by the characters of the genital region. This species is extremely close to cervinicornis, from which it is distinguished by the form of the clavi, antennal appendage, and genitalia in the male. In the females these two species appear almost indistinguishable, except that the head index of diardi tends to be smaller.

Description of Male.—Head and thorax as in cervinicornis, except that the clavus is smaller and the appendage on the first antennal segment is somewhat different in shape (text-fig. 2a).

Abdomen as in cervinicornis with segment I tending to have more of the lateral dorsal hairs elongated, i.e., 5–8 each side; ventral chaetotaxy as in cervinicornis, except that segment VI tends to have fewer central hairs, i.e., 8–10.

Genitalia similar to those of cervinicornis, but differ in the proportions and characters of the paramera and in having the bilobed termination of the endosomal plate unthickened (text-fig. 48c).

Description of Female.—Head as in cervinicornis, but the head-index tends to be smaller, i.e., 1:32–1:38 compared with 1:41–1:47 in cervinicornis.

Thorax and abdomen as in cervinicornis.

Measurement of Male.

<table>
<thead>
<tr>
<th>Length</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0-81–0.83</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0-27–0.30</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-42–0.44</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-42–1.64</td>
</tr>
<tr>
<td>Total</td>
<td>2-82–2.88</td>
</tr>
</tbody>
</table>

Description of Female.

<table>
<thead>
<tr>
<th>Length</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0-94–0.96</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0-25–0.29</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-42–0.46</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-76–1.87</td>
</tr>
<tr>
<td>Total</td>
<td>3-26–3.34</td>
</tr>
</tbody>
</table>

Described from 9 males, 20 females, from Diardigallus diardi (Bonaparte) from the London Zoological Gardens (Siam).

Holotype.—Male in the Meinertzhagen collection, slide no. 8304. Paratypes.—8 males, 20 females, from the same host.

Goniodes cervinicornis Giebel, 1874. (Text-figs. 2b, 47, 48b, & 49.)


This species is distinguished in the male by the thickening and enlargement of the clavi and the characters of the genitalia, and in the female by the characters of the genital region. The characters by which this species is distinguished from diardi are given above under that species.

Male.—Head with broad clypeal bands; thickened clavi produced medianly; first antennal segment enlarged and bearing a process thickened and forked distally (text-fig. 47a).

Thorax as shown in text-fig. 47a.

Abdomen with dorsal chaetotaxy as in bituberculatus, with the hairs surrounding the genital opening stouter and more elongated and somewhat more numerous. Sternites II–V with 2 central hairs; sternite VI with 8–12 central hairs; sternite VII with 2–4 hairs. Pleural hairs arranged as follows:—Segment 1 has 2 hairs each side; segments II–III, 3–6 hairs; segment IV, 4 hairs; segments V–VI, 6 hairs; segments VII–VIII have 4 hairs each side. All these hairs are long and stout.
Male genitalia as shown in text-fig. 48 b.

Female.—Head as shown in text-fig. 47 b. Thorax as in male.

Abdomen normal except for genital region. Dorsal chaetotaxy of segments I–VI as in male, but there tend to be fewer long lateral hairs on segment I.

Text-figure 47.

Goniodes cervinicornis: (a) ♂ head and thorax; (b) ♀ head.

Pleural hairs as in male; sternal hairs with 2 central hairs on segments II–VII with a varying number of minute spines in each segment. Posterior segments and genital region similar to those of longus, but with fewer hairs at lateral margins of vulva (text-fig. 49).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.89–0.91</td>
<td>1.15–1.19</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.25–0.31</td>
<td>0.71–0.73</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.50–0.53</td>
<td>1.06–1.08</td>
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<tr>
<td>Total</td>
<td>1.02</td>
<td>1.92–2.00</td>
</tr>
<tr>
<td>C.I.</td>
<td>1.29–1.30</td>
<td>1.41–1.47</td>
</tr>
</tbody>
</table>
Specimens examined.—2 males, 3 females, from skins of Gennæus n. nycthemerus (Linne) from Fokien, China; 2 females, from skin of Gennæus nycthemerus horsfieldii (G. R. Gray) from Assam.

Text-figure 48.

3 genitalia: (a) Goniodes longus; (b) G. cervinicornis; (c) paramere of G. diardi.

Pilage Collection.—British Museum, 2 male, 2 females, 1 imm., labelled G. cervinicornis from Gennæus nycthemerus; 1 male, 3 females, labelled G. cervinicornis from Tragopan satyrus. Leiden Museum, 1 male, 1 female, from Tragopan satyrus.

Species Group K.

1. Species large to small in size (males, 1-60-4-20 mm.; females, 2-05-3-90 mm.).
2. Temples expanded and similar in the two sexes.
3. Clavi as in 1.
4. Antennae sexually dimorphic. In the male first segment without thickened process; third produced distally as a minute tubercle (securiger) or as a process lying either parallel or at right angles to fourth segment. Female as in 1.
5. Thoracic sternal hairs as in I.
6. As in I, except for *isogenos*, in which the pleurites have the thickened area as in A.
7. Structure absent.
8. Vulva as in I with the exception of *extraneus*.
9. Male genital opening as in I.

This group contains a diverse collection of species which are, however, not conveniently separated into further groups. The females are not separable from those of I, nor can certain species in this group be separated from those of *L.*

**Goniodes cervicornis**, *♂* abdomen.

5. Thoracic sternal hairs as in I.
6. As in I, except for *isogenos*, in which the pleurites have the thickened area as in A.
7. Structure absent.
8. Vulva as in I with the exception of *extraneus*.
9. Male genital opening as in I.

This group contains a diverse collection of species which are, however, not conveniently separated into further groups. The females are not separable from those of I, nor can certain species in this group be separated from those of *L.*

**Goniodes tetraogallis**, sp. n. (Text-figs. 50 & 51.) \(= G. c. e. u. l (K e l e r) : 83 \)

This is a distinct species not closely related to any known species, and is at once recognized by the deeply-coloured sclerotic bands, by the genitalia of the male, and by the indication of occipital bands in the female.

*Description of Male.*—Head with temples expanded and with ventral lateral temple hair greatly elongated instead of the usual short spine (text-fig. 50 a).

Thorax as shown in text-fig. 50 a, with 3 lateral pterothoracic hairs.

Abdomen normal with tergal plate of segment VIII larger than is usual. Dorsal surface with a continuous row of hairs across each segment, due to the fact that the intervening minute hairs present in the preceding species are here elongated. Segments I–VII with 2 central sternal hairs, except in segment V, where there are 4. Pleural hairs arranged as follows:—Segment I with 1 hair each side, segment II with 2–4, segments III–IV with 4, segments V–VIII with 5–6 each side. Form and chaetotaxy of posterior segments as shown in text-fig. 51 a.

*Description of Female.*—Head with widely expanded temples and with a
Species of Mallophaga occurring on Gallinaceous Hosts.

Lateral temple spine, not an elongated hair as in male. Occipital bands present (text-fig. 50c).

Thorax as in male.

Abdomen normal with sternal and pleural chaetotaxy of segments I–VI.

Text-figure 50.

Goniodes tetraogalles: (a) ♂ head; (b) ♂ genitalia; (c) ♀ head.

As in the male. Lateral tergal hairs as in bituberculatus and central tergal hairs as follows:—Segments I–VI, 10–12; segment VII, 6–8. Chaetotaxy and form of posterior segments as shown in text-fig. 51 b, with number of pediculate spines each side varying from 4–9 in different individuals and from side to side of the same individual.
Text-figure 51.

*Goniodes tetrogalius*: (a) ♂ abdomen; (b) ♀ abdomen.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length (mm)</td>
<td>Breadth (mm)</td>
</tr>
<tr>
<td>Head</td>
<td>0.80-0.84</td>
<td>1.60-1.03</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.22-0.24</td>
<td>0.64-0.59</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.32-0.43</td>
<td>0.77-0.85</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.33-1.39</td>
<td>1.42-1.57</td>
</tr>
<tr>
<td>Total</td>
<td>2.56-2.74</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>1.23-1.25</td>
<td></td>
</tr>
</tbody>
</table>

Described from 7 males, 7 females, from skins of *Tetraogallus h. himalayensis* G. R. Gray from Ladak; and 3 females from fresh examples of the same host.
from Afghanistan; 3 females, from skin of Tetraogallus h. koslowi Bianchi from Koko-nor; 1 female, from skin of T. a. altaicus (Gebler), bought in the London market; 8 males, 1 female, from skins of T. t. tibetanus Gould from Ladak and Sikkim; 1 male, 4 females, from T. tibitanus aquilonifer R. and A. Meinertzhagen from Sikkim.

Holotype.—Male in the Meinertzhagen collection, slide no. 3259, from T. h. himalayensis from Ladak. Paratypes.—6 males, 10 females, from the same host.

Goniodes oreophilus, sp. n. (Text-figs. 52 & 53.)

A large darkly-marked species distinguished by the shape of the head in both sexes, by the large flattened genitalia of the male, and by the characters of the terminal segments of the abdomen of the female.

Description of the Male.—Head and thorax as shown in text-fig. 52 b, with temples expanded widely and with the small process bearing the ventro-lateral temple spine apparent; first antennal segment enlarged, and distal post-axial angle of third segment prolonged to a considerable extent.

Abdomen with inner margin of tergal plates straight; segment IX large, rounded, and protruding with thickened marginal band (text-fig. 53 a).

Genitalia of peculiar form and unlike any other known species (text-fig. 52 a).

Description of Female.—Head of similar shape to that of the male, but is somewhat wider across the temples.

Thorax as in male.

Abdomen large and rounded, with form and chaetotaxy of terminal segments as shown in text-fig. 53 b.
Text-figure 53.

Goniodes oreophilus: (a) ♂ abdomen; (b) ♀ abdomen.

**Abdominal Chaetotaxy.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>T. 4, 91-1, 4</td>
<td>S. 0</td>
</tr>
<tr>
<td>II</td>
<td>2, 16, 2</td>
<td>2, 2</td>
</tr>
<tr>
<td>III</td>
<td>4-5, 7-8, 4-5</td>
<td>2, 3, 3</td>
</tr>
<tr>
<td>IV</td>
<td>2-5, 7-8, 4-5</td>
<td>2, 3, 3</td>
</tr>
<tr>
<td>V</td>
<td>2, 10-12, 2</td>
<td>2-4, 3, 3</td>
</tr>
<tr>
<td>VI</td>
<td>2, 10-12, 2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VII</td>
<td>Fig. 2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VIII</td>
<td>Fig.</td>
<td>1, 1</td>
</tr>
<tr>
<td>IX</td>
<td>Fig.</td>
<td></td>
</tr>
</tbody>
</table>

In both sexes there are a number of minute spines on the sternites, and there may be an increase or decrease by one or two in the number of pleural hairs in different specimens.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>Length. 0-91-0-95</td>
<td>Breadth. 1-36-1-39</td>
</tr>
<tr>
<td></td>
<td>mm. 0-91-0-95</td>
<td>mm. 0-91-0-95</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0-27-0-31</td>
<td>0-62-0-66</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-45-0-49</td>
<td>0-98-1-03</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-35-2-40</td>
<td>1-97-2-90</td>
</tr>
<tr>
<td>Total</td>
<td>3-52-3-80</td>
<td>3-06</td>
</tr>
<tr>
<td>C.I.</td>
<td>1-45-1-51</td>
<td>1-52-1-58</td>
</tr>
</tbody>
</table>
Described from 9 males, 8 females, from *Francolinus shelleyi therese* Meinertzhagen from Mt. Kenya, Kenya Colony; 6 males, 7 females, collected both from skins and fresh specimens of *F. j. jacksoni* Ogilvie-Grant, from Aberdare Mts., Kenya Colony; 1 male, 6 females, from *F. jacksoni pollenorum* Meinertzhagen from Mt. Kenya, Kenya Colony; 2 males, 1 female, from skins of *F. jacksoni* subsp. 1 from Kenya Colony.

**Holotype.**—Male in the Meinertzhagen collection from *F. shelleyi therese*, slide 6589, from Mt. Kenya, Kenya Colony. **Paratypes.**—8 males, 8 females, from the same host.

It is of interest to note that the two mountain inhabiting *Francolinus* species of tropical Africa have apparently identical species which are quite distinct from those found on other species of *Francolinus*.

**Goniodes extraneus**, sp. n. (Text-figs. 54 & 55.)

This is an extremely distinctive species unlike any found on the other species of *Francolinus*. It is distinguished by having the ventral temple spine, which is somewhat longer than usual, borne on a definite elongated process in both sexes, by the male genitalia, and by the form of the terminal segments and genital region of the female.

**Description of Male.**—Head with temples widely expanded and with lateral temple spine borne on definite blunt-ended process; first antennal segment enlarged, and distal postaxial angle of third segment produced at right angles to fourth segment as a narrow appendage thickened distally (text-fig. 54 a).
Thorax as shown in text-fig. 54a, with lateral margin of pterothorax flattened, and bearing a greater number of hairs than in related species.

Abdomen ovoid and somewhat elongated, with the postero-lateral margin of segment VIII produced into a short blunt-ended process (text-fig. 55a).

Genitalia with elongated thickened basal plate and paramera of unequal length (text-fig. 54b).

Text-figure 55.

Gonoides extraneus: (a) ♂ abdomen; (b) ♀ abdomen.

Description of Female.—Head and thorax with shape and chaetotaxy as in male; antennae filiform.

Abdomen broad and large with segment VIII elongated somewhat posteriorly; vulva nearly terminal with long marginal hairs; spinous process of genital region absent (text-fig. 55b).

Abdominal Chaetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>22-24</td>
<td>1, 8, 1</td>
</tr>
<tr>
<td>II</td>
<td>22-24</td>
<td>2, 8, 1</td>
</tr>
<tr>
<td>III</td>
<td>22-24</td>
<td>3-4, 8, 3-4, 4-5, 4-5, 4-5, 4-5, 4-5</td>
</tr>
<tr>
<td>IV</td>
<td>22-24</td>
<td>2, 3-4, 4-5, 4-5, 4-5, 4-5, 4-5, 4-5</td>
</tr>
<tr>
<td>V</td>
<td>26-28</td>
<td>3-4, 6, 3-4, 2-4, 3-4, 4-5, 4-5</td>
</tr>
<tr>
<td>VI</td>
<td>30-32</td>
<td>3-4, 6, 3-4, 2-4, 3-4, 4-5, 4-5</td>
</tr>
<tr>
<td>VII</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
<tr>
<td>VIII</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
<tr>
<td>IX</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
</tbody>
</table>

Fig.
Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.92-0.95</td>
<td>1.29-1.37</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.17-0.22</td>
<td>0.55-0.60</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.31-0.39</td>
<td>0.77-0.92</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.65-1.91</td>
<td>1.44-1.66</td>
</tr>
<tr>
<td>Total</td>
<td>3.02-4.15</td>
<td>1.49-1.44</td>
</tr>
<tr>
<td>C.I.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Described from 3 males, 8 females, from Francolinus gularis (Temminck) from Nepal, and 2 females from a skin of the same host from N. Bengal.

Holotype.—Male in the Meinertzhagen collection, slide no. 9116 from Nepal.

Paratypes.—2 males, 10 females.

Goniodes assimilis Piaget, 1880. (Text-figs. 56 & 57.)


Text-figure 56.

Goniodes assimilis, ♂ head and thorax.

In a key to the species of Goniodes, Piaget (1880, p. 246) separates the species truncatus (= flavipes), dispar, and assimilis on the presence or absence of an
appendage on the lateral bands of the abdominal segments. All these species, however, possess this anterior re-entrant portion of the pleurite on segments I–VII, although in slightly immature specimens it appears to be absent. Bedford, when describing *pterntiostis* and *scleroptilus*, must have based his comparisons on Piaget's key, and thus separated the Goniodes occurring on *Pternistis* from *assimilis* Piaget by the fact that in the former "the bands on all the segments have an appendage," while in the latter "only the lateral bands on the last segment have an appendage"; whereas in reality there appears to be no difference between specimens from *Pternistis swainsoni* and the types of *assimilis*.

This species, found on a large number of species of *Francolinus* and *Pternistis*, is distinguished from *dispar* by the shape of the head, the tergal plates, and the characters of the male genitalia and female genital region.

**Male.**—Head with expanded temples bearing the lateral spine on a small transparent process; antennae with first segment not greatly enlarged, and

---

**Text-figure 57.**

*Goniodes assimilis*: (a) ♂ abdomen; (b) ♀ abdomen.
distal post-axial angle prolonged into a short rather transparent process parallel to the fourth segment (text-fig. 56).

Thorax as shown in text-fig. 56.

Abdomen with terminal segments as shown in text-fig. 57a.

Genitalia as shown in Bedford's figure of G. pternistis (1929, fig. 21).

Female.—There are no females of assimilis in the Piaget collection, nor have any been examined from the type-host, except 2 females in the Bedford collection labelled G. assimilis from Francolinus capensis; these, however, are quite distinct from the females from the species of Francolinus and Pternistis mentioned below, and do not seem to differ in any way from a female of scleroptilus lent through the kindness of the late Mr. Bedford. The following description is taken from specimens from Francolinus clappertoni gedgii.

Head similar to that of male in shape, but somewhat larger and with filiform antennae.

Thorax as in male.

Abdomen more elongated than in the male with tergal plates the same. There are no pediculate spines on the valve, and the spinous process on the genital region is but little thickened and easily overlooked (text-fig. 57 b).

Abdominal Chaetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>T</td>
<td>S</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>12-20</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>II</td>
<td>3, 6, 3</td>
<td>2</td>
<td>2, 2</td>
</tr>
<tr>
<td>III</td>
<td>14-16</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>IV</td>
<td>14-16</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>V</td>
<td>14-16</td>
<td>6</td>
<td>4, 4</td>
</tr>
<tr>
<td>VI</td>
<td>14-16</td>
<td>4</td>
<td>4, 4</td>
</tr>
<tr>
<td>VII</td>
<td>4-6, 4-6</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VIII</td>
<td>Fig.</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
<tr>
<td>IX</td>
<td>Fig.</td>
<td>Fig.</td>
<td>Fig.</td>
</tr>
</tbody>
</table>

The tergal hairs in the male are divided roughly into three clumps, two lateral and one central, the groups being connected up by one or two hairs.

Measurements.

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piaget’s types of assimilis.</td>
<td>Specimens from Francolinus clappertoni gedgii</td>
</tr>
<tr>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0-88</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0-13-0-14</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-24</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-02-1-06</td>
</tr>
<tr>
<td>Total</td>
<td>1-87-2-04</td>
</tr>
<tr>
<td>C.I.</td>
<td>1-33-1-36</td>
</tr>
</tbody>
</table>

Specimens examined.—2 males, Piaget collection, from Francolinus capensis (Gmelin); 1 male, from skin of Francolinus c. clappertoni Children from E. Sudan; 4 males, 4 females, from skin of Francolinus clappertoni gedgii Ogilvie-Grant.
from Mt. Elgon; 1 male, from skin of F. c. heuglini Neumann from S. Sudan; 1 male, from skin of F. c. sharpii Ogilvie-Grant from Sudan; 2 females, from skin of F. b. bicarinatus (Linne) from Gold Coast; 1 male, 2 females, from skin of F. b. ogilvie-granti Bannerman from Cameroon; 4 males, from skin of F. c. erkelii (Rüppell) from Abyssinia; 2 males, from skin of F. c. pentoni Praed from Sudan; 1 male, 1 female, from skin of F. sephasna zambesise Praed from Zambesi river; 1 female, from skin of F. sephasna rovuma G. R. Grau from Dar-es Salaam; 1 male, 1 female, from F. squamatus maranensis Mearns from Kenya; 1 female, from F. e. pentoni Praed from Sudan; 1 female (labelled G. pteristis), from Pternislis swainsonii P. Smith from the Pretoria Zoological Gardens, kindly lent by the late Mr. G. A. H. Bedford, and 1 male, 1 female, from skin of the same host from Transvaal; 1 female, from skin of P. a. afer (Müller) from Angola; 1 male, from skin of P. a. afer nyanza Conover from Uganda; 1 male, 1 female, from skin of P. a. hildebrandti Cabanis from Tanganyika; 10 males, 12 females, from F. hildebrandti altumii Fisher and Reichenow from Kenya; 1 male, 1 female, from skin of P. a. intercedens Reichenow from Congo; 1 male, from skin of P. a. humboldtii (Peters) from Nyasaland; 1 male, from skin of P. a. harterti Reichenow from Lake Tanganyika; 3 females, from P. leucoscepus infuscatus Cabanis from Kenya, and 1 male, 1 female, from skin of same host from Somaliland.

1 male, 1 female, from skin of Ptilopachus p. petrosus, (Gmelin) from Portuguese Guinea, are apparently conspecific with assimilis.

Lectotype of assimilis designated by present author.—Male in Piaget collection, slide no. 6, from Francolinus capensis. Paratype.—Male in the Piaget collection from same host.

Goniodes antennatus, sp. n. (Text-fig. 58.)

This species resembles assimilis in its general characters, but is at once distinguished in the male by the prolongation of the distal post-axial angle lying at right angles to the fourth segment, and not parallel as in assimilis and by the genitalia.

Description of Male.—Head with broad clypeal band and temples widely expanded; first antennal segment enlarged to a greater extent than in assimilis, and with prolongation of third segment larger and at right angles to fourth segment (text-fig. 58 a).

Thorax as in assimilis.

Abdomen similar to that of assimilis but somewhat larger, and in the specimens examined lacks the central hairs on sternites I–II.

Abdominal Chartotaxy.

<table>
<thead>
<tr>
<th></th>
<th>T.</th>
<th>S.</th>
<th>P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>22</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>II</td>
<td>14–18</td>
<td>0</td>
<td>2, 2</td>
</tr>
<tr>
<td>III</td>
<td>14–18</td>
<td>2</td>
<td>3–4, 3–4</td>
</tr>
<tr>
<td>IV</td>
<td>14–19</td>
<td>2</td>
<td>3–4, 3–4</td>
</tr>
<tr>
<td>V</td>
<td>14–18</td>
<td>2</td>
<td>3–4, 3–4</td>
</tr>
<tr>
<td>VI</td>
<td>10</td>
<td>2</td>
<td>3–4, 3–4</td>
</tr>
<tr>
<td>VII</td>
<td>4, 4</td>
<td>2</td>
<td>3–4, 3–4</td>
</tr>
<tr>
<td>VIII</td>
<td>assimilis</td>
<td>1, 1</td>
<td></td>
</tr>
<tr>
<td>IX</td>
<td>assimilis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Tergal hairs not divisible into lateral and central groups, although the outer and the central hairs are somewhat longer and stouter than the intermediate hairs.

Genitalia of unique form with broad, evenly thickened basal plate and widely curved parameres (text-fig. 58b).

Females unknown.

![Text-figure 58.](image)

**Goniodes antennatus**: (a)♂ head and thorax; (b) ♀ genitalia.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.80-0.81</td>
<td>1.05-1.09</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.15</td>
<td>0.48</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.28</td>
<td>0.69</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.43</td>
<td>1.51</td>
</tr>
<tr>
<td>Total</td>
<td>2.58</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>1.31-1.34</td>
<td></td>
</tr>
</tbody>
</table>

Described from 3 males from skins of *Pternistis l. leucoscepus* (G. R. Gray) from Somaliland.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 3643. **Paratypes.**—2 males from the same host.
Goniodes scleroptilus Bedford, 1929. (Text-fig. 59.)

_Goniodes scleroptilus_ Bedford, 1929, p. 520, fig. 20. Host: _Francolinus gariepensis jugularis_ Büttikofer (_Scleroptila g. jugularis_) (S.W. Africa).

The host of this species was originally given as _gariepensis pallidor_, but was corrected to _gariepensis jugularis_ in Bedford, 1932, p. 331.

Through the kindness of the late Mr. Bedford I have been able to examine a female of this species. It resembles the females of _assimilis_, from which it is distinguished in having the temples somewhat less expanded (text-fig. 59a)

and in the chaetotaxy of the valve and posterior segments. There are fewer hairs at the lateral margins of the valve, and a row of pediculate spines not seen in _assimilis_ is present; the lateral spinous process on the genital region is in this species thickened and more obvious (text-fig. 59b).
Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Female.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length.</td>
</tr>
<tr>
<td></td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.86</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.34</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.62</td>
</tr>
<tr>
<td>Total</td>
<td>2.88</td>
</tr>
<tr>
<td>C.I.</td>
<td></td>
</tr>
</tbody>
</table>

Specimen examined.—1 female, from Francolinus gariepensis jugularis Büttikofer from Kunene river, S.W. Africa.

Goniodes dispar Burmeister, 1838. (Text-fig. 60a.)

Goniodes dispar Burmeister, 1838, p. 432. Host: Perdix p. perdix (Perdix cinerea.)
Goniodes flaviceps Rudow, 1869 (2), p. 28. Host: Alectoris r. rufa (Linné)' (Perdix rufa).
Goniodes brevianennatus Piaget, 1885, p. 50, pl. v. fig. 8. Host: Alectoris gruca chukar (J. E. Gray) (Caccabis chukar).

This species is distinguished from assimilis by the shape of the head and tergal plates in both sexes; by the male genitalia and by the characters of the female genital region in which pediculate spines are present as well as a thickened ventral spinous process. From securiger it is distinguished in the male by the
shape of the head and clavi, the character of the third antennal segment, and the genitalia; in the female by the shape of the head and the characters of the genital region.

Male.—Head with expanded temples and narrow clypeal band; first antennal segment only slightly enlarged and the distal post-axial angle of third segment prolonged parallel to fourth segment and lightly thickened and rounded distally (text-fig. 60a).

Thorax as in assimilis.

Abdomen short and oval with inner margin of tergal plates rounded, not straight as in assimilis.

Genitalia with simple uncomplicated mesome and long-pointed paramera.

Text-figure 61.

![Text-figure 61](image)

*Goniodes securiger*: (a) ♂ genitalia; (b) ♀ abdomen.

Female.—Head with shape as that of male but somewhat larger; spine on temple angle shorter and stouter; clavi resemble those of male securiger in shape. The ventral process bearing the lateral temple spine does not project in either sex.

Thorax as in male.

Abdomen more elongated than in the male. There is a considerable amount of variation in the number of hairs at the corners of the posterior margin of the vulva and in the number and arrangement of the pediculate spines. These spines range in number from 3–9 each side, and may be arranged in a single row or where there are many partly in a double row. It is interesting to note that on an examination of a small number of specimens it was at first thought that there was some correlation between the number of spines and the host species; thus specimens from *Alectoris r. rufa* had 7–8 spines each side and
SPECIES OF MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.

specimens from Perdix perdix rarely had more than 5, but on the examination of more material many individuals from Alectoris rufa were found with as few as 3 spines each side and from Perdix perdix with up to 7 each side.

For chaetotaxy of terminal segments see under securiger.

### Abdominal Chaetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
<td>S</td>
<td>P</td>
</tr>
<tr>
<td>I</td>
<td>20-30</td>
<td>2</td>
<td>1, 1</td>
</tr>
<tr>
<td>II</td>
<td>20-30</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>III</td>
<td>20-30</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>IV</td>
<td>18-22</td>
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<td>3, 3</td>
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<tr>
<td>V</td>
<td>18-22</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VI</td>
<td>24-26</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VII</td>
<td>5-8, 5-8</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VIII</td>
<td></td>
<td></td>
<td>2, 2</td>
</tr>
<tr>
<td>IX</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The tergal hairs in the male are continuous across the segment, the more lateral 2-3 each side being longer and stouter than the rest. On the ventral surface in both sexes there are a number of minute spines. The tergal hairs of the female are in three groups, two lateral and a central, these groups being linked up by 1-4 smaller and finer hairs.

### Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0-58-0-63</td>
<td>0-77-0-86</td>
<td>0-75-0-81</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0-15</td>
<td>0-44</td>
<td>0-20</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-23</td>
<td>0-65</td>
<td>0-34</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-12</td>
<td>1-26</td>
<td>2-80</td>
</tr>
<tr>
<td>Total</td>
<td>2-60</td>
<td></td>
<td>3-30</td>
</tr>
<tr>
<td>C.I.</td>
<td>1-32-1-40</td>
<td></td>
<td>1-37-1-45</td>
</tr>
</tbody>
</table>

Specimens from Perdix perdix and the species of Alectoris listed below are apparently indistinguishable, although those from Alectoris barbara are quite distinct (see securiger).

Specimens examined.—15 males, 23 females, from Perdix p. perdix (Linné) from British Isles and Hungary, 1 male, 2 females, of which have been compared with type of dispar by Dr. Kéler; 2 males, 10 females, from Perdix p. lucida (Altum) from Estonia and Poland; 19 males, 31 females, from Alectoris r. rufa (Linné) from British Isles, 7 males, 3 females, which have been compared with the type of truncatus by Dr. Kéler; 1 male, 1 female, from skin of Alectoris greca chukar (J. E. Gray) from Ladak; 1 male, 2 females, from skin of A. greca vallescens (Hume) from Ladak; 1 male, 2 females, from skin of A. greca phillipyi Lowe from Arabia; 48 males, 44 females, from A. greca falki Hartert from Afghanistan.

Piaget Collection.—British Museum, 5 males, 4 females, labelled G. breniantennatus, from Alectoris greca chukar; 1 male, labelled G. dispar from Perdix cinerea (=Perdix perdix); 4 males, 4 females, labelled G. colchicus from Phasianus veneratus reevesii [=Syrmaticus reevesii (J. E. Gray)]; 1 male, 1 female, labelled G. colchicus from Phasianus veneratus (=Syrmaticus reevesii). These specimens from Syrmaticus reevesii are almost certainly stragglers or on
wrongly labelled slides. Leiden Museum, 1 female, labelled G. truncatus from Perdix rubra.

Lectotype of G. breviantennatus designated by present author.—Male, slide 24, Piaget collection. Paratypes.—4 males, 4 females, as described above.

Goniodes securiger Nitzsch, 1866. (Text-figs. 60 b & 61.)


According to information received from Dr. Kéler the only specimen of securiger in the Halle collection is a larva, but the description and figures in Giebel, 1874 (p. 194, pl. xv. figs. 11 & 12), seem to apply to the species as described below, although in the figure of the female the temples appear too much prolonged posteriorly.

This species is distinguished from dispar in the male by the shape of the head, characters of the antennae and genitalia, and by the reduction in the size of segment VIII of the abdomen; in the female by the characters of the genital region.

Male.—Head similar in shape to that of dispar, but with lateral margins below eye tending to be somewhat convex, not concave as in the latter species. Clavi partly membraneous and differing in shape from those of dispar; first antennal segment slightly enlarged and distal post-axial angle produced as minute process (text-fig. 60 b).

Thorax with characters as in dispar.

Abdomen short and rounded with segment VIII greatly reduced in size, and segment IX small with flattened posterior margin and with thickened tergal plate indented posteriorly. Genital opening similar to that of assimilis, but without anterior sclerotic area and with a greater number of hairs on and round the lower lip, i.e., 20–24 each side.

Genitalia with elongated pointed paramera continuous with basal plate (text-fig. 61 a).

Female.—Head similar to that of male, but somewhat larger and proportionally broader across the temples.

Thorax with characters as in male.

Abdomen large with sclerotic areas deeply coloured; inner termination of pleural thickenings appearing anterior to margins of tergites, not parallel as in the male. Genital region similar to that of dispar, but there are fewer hairs at the lateral margins of the vulva, and the “stalks” of the pediculate spines are longer (text-fig. 61 b).

**Abdominal Chasotaxy.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>T.</td>
<td>S.</td>
<td>P.</td>
</tr>
<tr>
<td>II</td>
<td>3–4, 2, 3–4</td>
<td>0</td>
<td>2, 2</td>
</tr>
<tr>
<td>III</td>
<td>2–3, 2, 2–3</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>IV</td>
<td>2–3, 2, 2–3</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>V</td>
<td>2–3, 2, 2–3</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VI</td>
<td>2–3, 2, 2–3</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VII</td>
<td>3–4, 2, 3–4</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VIII</td>
<td>..</td>
<td>1, 1</td>
<td></td>
</tr>
</tbody>
</table>
In the male the tergal hairs are linked up by a number of shorter and finer hairs not given above. Segment IX has 14-16 long sternal hairs each side of the segment.

**Measurements.**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length.</strong></td>
<td><strong>Breath.</strong></td>
</tr>
<tr>
<td>Head</td>
<td>0·62-0·64</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0·15-0·18</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·25-0·26</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0·92-0·95</td>
</tr>
<tr>
<td>Total</td>
<td>1·87-1·94</td>
</tr>
</tbody>
</table>

Specimens examined.—70 males, 86 females, from Alectoris b. barbara (Bonnaterre) from Morocco.

**Goniodes isogenos** Nitzsch, 1866.

This species is quite distinct in the female from other Goniodes occurring on *Francolinus* and *Pternistis* in the form of the pleurites and genital region. As only a single female has been examined this species will not be described. Dr. Keler, who has examined the original types, will deal with it in his paper on the Goniodes of the Halle collection.

Specimen examined.—1 female, from skin of *Francolinus a. africanus* Stephens from Transvaal, compared with the type-specimen by Dr. Keler.

**Goniodes ortygis** Denny, 1842. (Text-fig. 62.)

**Goniodes dispar** var. minor Piaget, 1880, p. 248. Host: *Lophortyx californica* (*Perdix californica*).

There appears to be no constant difference between specimens from *Colinus virginianus* and Piaget's type of *dispar* var. *minor*, although the male of *ortygis* in the Denny collection differs from Piaget's specimen in having a narrower head (C.I. 1·07 and 1·17). However, other specimens from *Colinus v. virginianus* and *C. v. floridians* show that Denny's male is unusual in this respect, and that *dispar* var. *minor* must be treated as a synonym of *ortygis*.

This species is distinguished by its small size, the male genitalia, and by the chaetotaxy of the genital region of the female.

Male.—Head with narrow rounded pre-antennal region and temples slightly expanded. Antennae with first segment enlarged and with distal post-axial angle of third segment prolonged at right angles to fourth segment (text-fig. 62 a).

Thorax as shown in text-fig. 62 b.

Abdomen short and rounded with segment VIII small (text-fig. 62 a).

Genitalia with elongated basal plate continuous with the pointed paramera.

**Female**.—Shape of the head similar to that of male but somewhat broader. Thorax as in male but broader.
Abdomen more elongated than in the male; tergal plate VIII with median butterfly-shaped thickening; spinous process present on genital region, vulva.

Text-figure 62.

Goniodes ortygis: (a) ♂ abdomen; (b) ♂ head and thorax; (c) ♀ abdomen.

with posterior margin rounded and a few hairs concentrated at the lateral corners and a small number of simple spines (text-fig. 62 c).

Abdominal Chaetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>T.</th>
<th>S.</th>
<th>P.</th>
<th></th>
<th>T.</th>
<th>S.</th>
<th>P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>28-23</td>
<td>2</td>
<td>2</td>
<td></td>
<td>0, 4, 0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>II.</td>
<td>28-23</td>
<td>2</td>
<td>3, 3</td>
<td></td>
<td>2-3, 6, 2-3</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>III.</td>
<td>28-23</td>
<td>2</td>
<td>3, 3</td>
<td></td>
<td>2-3, 5-10, 2-3</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>IV.</td>
<td>26</td>
<td>2</td>
<td>3, 3</td>
<td></td>
<td>2, 8, 2</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>V.</td>
<td>20-22</td>
<td>2</td>
<td>4, 4</td>
<td></td>
<td>3, 6, 3</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VI.</td>
<td>2-3, 2-3</td>
<td>2</td>
<td>4, 4</td>
<td></td>
<td>2-3, 4, 2-3</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VII.</td>
<td>2-3, 2-3</td>
<td>2</td>
<td>4, 4</td>
<td></td>
<td>4-5, 2, 4-5</td>
<td>2</td>
<td>4, 4</td>
</tr>
<tr>
<td>VIII.</td>
<td></td>
<td></td>
<td>2, 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IX.</td>
<td></td>
<td></td>
<td>6-8, 6-8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the male the tergal hairs of the first five segments are not divisible into the usual three groups, but the outer 6-8 hairs each side are longer and stouter.
Measurements.

### Male

<table>
<thead>
<tr>
<th>Type G. ortygis</th>
<th>Type G. minor</th>
<th>Specimens from C. v. virginianus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length</strong></td>
<td><strong>Breadth</strong></td>
<td><strong>Length</strong></td>
</tr>
<tr>
<td><strong>mm.</strong></td>
<td><strong>mm.</strong></td>
<td><strong>mm.</strong></td>
</tr>
<tr>
<td>Head</td>
<td>0·51</td>
<td>0·50</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0·15</td>
<td>0·58</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·25</td>
<td>0·56</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0·81</td>
<td>0·56</td>
</tr>
<tr>
<td>Total</td>
<td>1·60</td>
<td>0·62</td>
</tr>
<tr>
<td>C.I</td>
<td>1·07</td>
<td>1·10–1·17</td>
</tr>
</tbody>
</table>

### Female

<table>
<thead>
<tr>
<th><strong>Length</strong></th>
<th><strong>Breadth</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>mm.</strong></td>
<td><strong>mm.</strong></td>
</tr>
<tr>
<td>Head</td>
<td>0·63–0·68</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0·17</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·26</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1·52</td>
</tr>
<tr>
<td>Total</td>
<td>2·38</td>
</tr>
<tr>
<td>C.I</td>
<td>1·20–1·23</td>
</tr>
</tbody>
</table>

Specimens examined.—1 male lectotype, 2 female paratypes in the Denny collection from Colinus virginianus; 3 males, 1 female, from skin of Colinus v. virginianus (Linné) from Washington; 2 males, 1 female, from skin of C. v. floridanus (Coues) from Florida; 1 male, 1 female, from skin of C. v. texanus (Lawrence) from Texas.

Piaget Collection.—1 male, labelled G. dispar var. minor from Perdix californica (=Lophortyx californica).

Holotype of dispar var. minor.—Male in the Piaget collection, slide no. 89, as described above.

Goniodes ammoperdix, sp. n. (Text-figs. 63 & 64.)

This species does not resemble closely any other species, being distinguished by the shape of the head and narrow clypeal band in both sexes; by the genitalia of the male and the chetotaxy of the genital region of the female.

**Description of Male.**—Head with narrow clypeal band and temples but little expanded laterally; first antennal segment somewhat enlarged, and distal prolongation of third segment short and at right angles to fourth segment (text-fig. 63 a).

Thorax with prothoracic lateral margin diverging and with postero-lateral angle in the form of a small protuberance. Lateral margins of pterothorax flattened and diverging posteriorly.

Abdomen elongate oval in shape; segment IX small with flattened posterior margin (text-fig. 64 a).

Genitalia as shown in text-fig. 63 b.

**Description of Female.**—Head similar to that of male in shape but tends to be broader across the temples.

Thorax as in male.

Abdomen more elongate than that of male; the spinous process on the genital region is long and pointed; pediculate spines are absent, and there is a continuous row of marginal hairs on the vulva (text-fig. 64 b).
Text-figure 63.

Goniodes amboperioides: (a) α head and thorax; (b) α genitalia.

Abdominal Chaetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T.</td>
<td>S.</td>
<td>P.</td>
</tr>
<tr>
<td>I.</td>
<td>1, 4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td>2-3</td>
<td>4-6, 2-3</td>
<td>2, 2</td>
</tr>
<tr>
<td>III.</td>
<td>2-2</td>
<td>3-3, 2-3</td>
<td>2, 3</td>
</tr>
<tr>
<td>IV.</td>
<td>2-2</td>
<td>3-3, 2-3</td>
<td>2, 3</td>
</tr>
<tr>
<td>V.</td>
<td>2-2</td>
<td>3-3, 2-3</td>
<td>2, 3</td>
</tr>
<tr>
<td>VI.</td>
<td>2-2</td>
<td>3-3, 2-3</td>
<td>2, 3</td>
</tr>
<tr>
<td>VII.</td>
<td>Fig.</td>
<td></td>
<td>4, 4</td>
</tr>
<tr>
<td>VIII.</td>
<td>Fig.</td>
<td></td>
<td>3, 2, 3</td>
</tr>
<tr>
<td>IX.</td>
<td>Fig.</td>
<td></td>
<td>1, 1</td>
</tr>
</tbody>
</table>

In the male two of the central tergal hairs on each segment are longer and stouter than the remainder.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head.</td>
<td>0.55-0.59</td>
<td>0.66-0.70</td>
<td>0.61-0.65</td>
</tr>
<tr>
<td>Prothorax.</td>
<td>0.17-0.19</td>
<td>0.42-0.48</td>
<td>0.17-0.20</td>
</tr>
<tr>
<td>Pterothorax.</td>
<td>0.22-0.25</td>
<td>0.61-0.60</td>
<td>0.23-0.25</td>
</tr>
<tr>
<td>Abdomen.</td>
<td>0.98-1.05</td>
<td>0.95-1.06</td>
<td>1.37-1.48</td>
</tr>
<tr>
<td>Total.</td>
<td>1.85-1.97</td>
<td></td>
<td>2.31-2.48</td>
</tr>
<tr>
<td>C.I.</td>
<td>1.18-1.25</td>
<td></td>
<td>1.27-1.32</td>
</tr>
</tbody>
</table>
Species of Mallophaga occurring on Gallinaceous hosts.

Described from 19 males, 20 females, from Ammoperdix griseogularis (J. F. Brandt) from India and Afghanistan; 2 males, 3 females, from skins of the same host from Iraq; 4 males, 4 females, from skins of Ammoperdix heyi cholmleyi (Ogilvie-Grant) from Upper Egypt; 1 female, from Ammoperdix heyi Nicolli (Hartert) from Lower Egypt.

Holotype.—Male in the Meinertzhagen collection, slide no. 9475, from Ammoperdix griseogularis from Peshawur. Paratypes.—18 males, 20 females, from the same host from India and Afghanistan.

Goniodes keleri, sp. n. (Text-figs. 65 & 66 a.)

This species is distinguished from Ammoperdix by the shape of the head and broader clypeal band in both sexes, and by the chaetotaxy of the genital region of the female. The genitalia of the male are of the same general type as those of the Ammoperdix but differ in detail.

**Male.**—Head and thorax as shown in text-fig. 65 a, and characterized by the short blunt-ended prolongation of the distal post-axial angle of the third antennal segment, which lies at right angles to segment IV, and by the temple angles not being greatly expanded.

Abdomen short, but not greatly rounded (text-fig. 65 a).

Genitalia as shown in text-fig. 65 b.

**Female.**—Head of similar shape to that of the male, but is somewhat broader. Thorax as in male.

Abdomen with pleurites as in the male. On the dorsal surface segment I has no lateral hairs and 4–5 central hairs; segment II, 1 lateral hair each side.
and 6 central; segments III–VI, 2–3 lateral hairs each side and 6 central hairs; segment VII, 4 central hairs. On the ventral surface segments I–VII have 2 central hairs with 2 finer hairs in addition on segments III–VI. Segment I has no pleural hairs; segments II–III, 3 hairs each side; segments IV–VII, 3–4 hairs each side. Terminal segments as shown in text-fig. 66 a.

**Text-figure 65.**

*Goniodes kelii* : (a) ♀ ; (b) ♀ genitalia.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Breadth</th>
<th>Length</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.59</td>
<td>0.87</td>
<td>0.60–0.63</td>
<td>0.70–0.75</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.13</td>
<td>0.34</td>
<td>0.14–0.16</td>
<td>0.32–0.35</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.27</td>
<td>0.51</td>
<td>0.25–0.26</td>
<td>0.52–0.54</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.86</td>
<td>0.92</td>
<td>1.17–1.19</td>
<td>0.97–1.05</td>
</tr>
<tr>
<td>Total</td>
<td>1.72</td>
<td></td>
<td>2.08–2.14</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td></td>
<td>1.13</td>
<td></td>
<td>1.16–1.20</td>
</tr>
</tbody>
</table>

Described from 11 males, 9 females, from skins of *Margaroperdix madagascensis* (Scopoli) from Madagascar.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 3593. **Paratypes.**—10 males, 9 females, from the same host.

Named after Dr. Kéler, who has given so much assistance in the comparing of specimens with the types in the Halle collection.
Text-figure 66.

♀ abdomen; (a) Goniodes kelii; (b) G. aoufi.

**Species Group L.**

1. Small species (males, 1·80–2·60 mm.; females, 2·40–2·85 mm.).
2–3. As in K.
4. Antennae may or may not exhibit sexual dimorphism. In the male when sexual dimorphism is present there is no process on the first segment and the third is prolonged distally at right angles to fourth.
Female as in K.
5. Thoracic sternal hairs as in K.
6. Pleurites similar to those in group K, but elongated antero-posteriorly and thickened to a greater extent.
7–9. As in K.

The elongation of the abdomen and the correlated elongation and thickening of the pleurites give the species of this group an extremely distinctive facies. However, the characters of the male genitalia and the female genital region, together with the general characters of the head, thorax, and abdomen are those
found in *keleri* of group K, thus making a generic separation unsatisfactory, as it merely obscures this relationship and does not simplify the general classification.

**Goniodes retractus** Le Souëf, 1902. (Text-fig. 67.)


This species is distinguished from *souëfi* by the size of the third antennal segment and the occipital angles of the head, and from *astrocephalus* by having the distal post-axial angle of the third antennal segment prolonged at right angles to the fourth segment. The following description and figures have been made from a single male from *Synoicus ypsilophorus rautenii*, no specimens from the type-host having been seen.
Male.—Head and thorax as shown in text-fig. 67 and characterized by the elongated head, slightly expanded temples and form of the antennae.

Abdomen as shown in text-fig. 67 and distinguished from preceding species by its elongated form, thickened and enlarged pleurites, and by segments VI and VII bearing stout elongated pleural hairs, the margin of the segment being thickened round their points of origin and, in the case of the outer hair on segment VI, the thickened margin is produced into a short point.

In the only specimen examined the distal portion of the genitalia is missing; the basal plate is similar to that found in _keleri_.

Female not examined.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length.</td>
</tr>
<tr>
<td></td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.60</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.15</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.23</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.22</td>
</tr>
<tr>
<td>Total</td>
<td>2.16</td>
</tr>
<tr>
<td>C.I.</td>
<td>....</td>
</tr>
</tbody>
</table>

Specimens examined.—1 male, from skin of *Sinoicus ypsilonus ruallenii* (S. Müller) from Timor.
Goniodes souëfii, nom. nov. (Text-figs. 66 b & 68 a.)

Goniodes elongatus Piaget (partim) 1885, p. 52, pl. v. fig. 10, nec Piaget, 1880. Host: Excalfactoria chinensis australis Gould. (Excalfactoria australis, Museum skin.)


The synonymy of the species is discussed below under astrocephalus.

This species is distinguished from retractus by the greater length of the prolongation of the distal post-axial angle of the third antennal segment of the male and by the longer and more pointed occipital angles.

Male.—Head and thorax as shown in text-fig. 68 a and characterized by the form of the third antennal segment and occipital angles.

Abdomen with general characters as in retractus but somewhat narrower. The only specimen examined, Piaget’s male, is in extremely poor condition, but, as far as can be made out, the pleurites, chaetotaxy (except that there appear to be fewer dorsal hairs), and characters of the posterior segments of the abdomen are as in retractus. The genitalia appear to be of the same general type as those of keteri and astrocephalus.

Female.—No females have been examined from the type-host, i.e., Excalfactoria chinensis australis, the following description and figures being made from a single female from E. c. chinensis.

Head with shape as in male, but somewhat larger and antennae filiform.

Thorax as in male but broader.

Abdomen with general characters as in the male, but is somewhat broader and more elongated. Chaetotaxy of segments I–VI as shown for the male of retractus, except that segments I–III have fewer dorsal hairs. Form and chaetotaxy of posterior segments as shown in text-fig. 68 b.

Measurements.

<table>
<thead>
<tr>
<th>Male. Piaget’s type.</th>
<th>Female. From E. c. chinensis.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.51</td>
</tr>
<tr>
<td>Brothorax</td>
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<td>Pterothorax</td>
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<tr>
<td>Abdomen</td>
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<td>Total</td>
<td>1.81</td>
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<td>0.90</td>
</tr>
</tbody>
</table>

Specimens examined.—1 male, labelled Gd. elongatus, from Excalfactoria chinensis australis Gould, in the Piaget collection; 1 female, from skin of Excalfactoria c. chinensis (Liné) from Bengal.

The 2 females from Frangolinus capensis mentioned by Piaget (1885, p. 53) are not in the Piaget collection of the British Museum.

Goniodes astrocephalus (Burmeister), 1838, (Text-fig. 68 b.)


Goniocotes astrocephalus Burmeister, 1838, p. 431. Host: as above.
Goniocotes astrocephalus Nitzsch, 1874 (2), p. 182, pl. xiii. figs. 3 & 4. Host: as above.
Goniodes elongatus Piaget, 1880, p. 281, pl. xxii. fig. 5 (partim). Host: as above.

It is evident from Piaget's description and figures of Goniocotes astrocephalus (1880, p. 226, pl. xix. fig. 1) that he had before him immature examples, and this is further verified by the existence of two extremely immature individuals of astrocephalus in the Piaget collection labelled Gc. astrocephalus N. As a result of this Piaget described mature specimens from Coturnix coturnix as a new species, i.e., elongatus. Taschenberg, 1882, p. 71, rightly considered Piaget's elongatus to be a synonym of astrocephalus Burmeister, but presumed that Piaget's astrocephalus must be a different species, and therefore renamed it gracilis. Piaget then obtained a male Goniodes from Exsalfactoria chinensis australis, which he considered to be conspecific with elongatus from Coturnix coturnix, and as this male showed the sexual dimorphism of the antennae, Piaget (1885, p. 52) held to his contention that elongatus was distinct from astrocephalus. However, in elongatus Piaget had two species, one represented by the male, which is conspecific with souefi (see above), and the other represented by the female, which is conspecific with astrocephalus.

Stephens (1829, p. 333) lists G. paradoxus without a description, but places Shaw's Pediculus of the Quail (1806, pl. 121, left-hand fig.) as a synonym. As this figure, however, represents unmistakably one of the Menoponidae, it seems more satisfactory to discard the name paradoxus altogether.

This species has been included in Goniocotes by previous authors owing to the absence of sexual dimorphism of the antennae, a character, however, which rarely, if at all, is of generic importance. This is well illustrated by the species retractus, souefi, and astrocephalus, which are obviously closely related, but which show both the presence and absence of this sexual dimorphism.

This species, which resembles in general appearance retractus and souefi, is distinguished in the male by the absence of sexual dimorphism of the antennae and in the female by the less pointed and shorter occipital angles.

**Male.**—Head narrow with elongated pre-antennal region and temples but little expanded. Antennae simple and unmodified.

Thorax as in retractus.

Abdomen similar to that of retractus, but somewhat narrower and more elongate. Chaetotaxy as in retractus, but there tend to be somewhat fewer dorsal hairs.

Genitalia similar to those of keleri, but differing in detail (text-fig. 68 b).

**Female.**—Head similar in shape to that of male but larger.

Thorax as in male.

Abdomen with general shape similar to that of male and with ventral chaetotaxy as in male. On the dorsal surface segment I has no lateral and 4 central hairs; segment II has 1 lateral and 4 central hairs; segments III–VII have 2 lateral and 4 central hairs. The chaetotaxy of the posterior segments and genital region as in souefi, but there tend to be fewer hairs at the lateral corners of the vulva.
Measurements.

<table>
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<tr>
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<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0-58</td>
<td>0-67</td>
</tr>
<tr>
<td>Prothorax</td>
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<td>0-31</td>
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<tr>
<td>Pterothorax</td>
<td>0-23</td>
<td>0-47</td>
<td>0-36</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-31</td>
<td>0-71</td>
<td>1-78</td>
</tr>
<tr>
<td>Total</td>
<td>2-60</td>
<td></td>
<td>2-82</td>
</tr>
<tr>
<td>C.I</td>
<td>0-95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specimens examined.—11 males, 11 females, from Coturnix c. coturnix (Linne) from Morocco and Afghanistan; 2 females, from C. c. africana Temminck and Schlegel from Kenya; 5 males, 1 female, from C. coromandelica (Gmelin) from Deccan India; 1 female, from C. d. delegorguei Delegorgue from Kenya.

Piaget Collection.—British Museum, 1 female, labelled G. elongatus from Coturnix coturnix; 2 females, labelled G. elongatus from Picus major (a woodpecker); 2 males, labelled G. ortygis from Ortyx virginianus. Leiden Museum, 1 female, from Coturnix coturnix.

Lectotype of elongatus designated by present author.—Female in the Piaget collection, slide no. 158, from Coturnix coturnix.

Species Group M.

1. Species small to medium in size (males, 1-10-2-84 mm.; females, 2-05-2-85 mm.).
2. Temples widely expanded and similar in the two sexes.
3. Clavi of diverse shape, size, and thickness.
4. Antennae may or may not exhibit sexual dimorphism.
5. Meso- and metasternal hairs absent.
6. Pleurites may or may not have inner thickened area.
7. Structure not apparent in abdomen.
8. Vulva with lateral concentration of hairs at corners and with or without marginal hairs. Spinous process of genital region absent.
9. Male genital opening unmodified.

This group contains a number of rather diverse species, all of which are found on the Megapodiidae, and which have no special distinctive characters except for the widely expanded temples in both sexes and the absence of the spinous process on the genital region of the female. It is probable that new species will be found on the Megapodiidae, which will necessitate the further division of the group.

Goniodes minor minor (Piaget), 1880. (Text-figs. 69 & 70a.)


The Piaget collection contains a number of slides labelled Gc. minor from different species of Megapodus with specimens of at least three closely related species. As Piaget presumably considered these three species to be one, there is no indication in the original description of minor as to which the name should apply, the differences only being apparent in the male genitalia and chaetotaxy,
which are neither described nor figured. It has been difficult to designate the lectotype and type-host of minor, as it seems probable that at least one of Piaget's slides is labelled with the wrong host, and there is insufficient evidence from other material to settle the host distribution of these species finally. However, minor as described below, and the type-host as designated, appear to be the most compatible with the evidence from material outside the Piaget collection.

This species is distinguished from confusio in the males by the somewhat broader head, the longer and broader basal plate, and the greater breadth of the parameres. The females are apparently indistinguishable except that those

Text-figure 69.

*Coniothes m. minor*: (a) ♀ head and thorax; (b) ♀ genitalia.

of minor tend to be larger. From *biordinatus* the males are distinguished by the absence of a continuous row of hairs on segment IV of the abdomen and the females by the chaetotaxy of the genital region.

**Male.**—Head with broad clypeal band and expanded temples, the lateral margins below the eye being somewhat concave; ventral lateral temple spine borne on small process. Clavi small and not produced posteriorly to any great extent; antennae filiform and unmodified (text-fig. 69a)

Thorax with breadth of prothorax similar to that of pterothorax, the former bearing an elongate hair at each postero-lateral point. Pterothorax with short flattened lateral margins, bearing 2 long dorsal hairs each side; postero-lateral
Margins sloping inwards towards short posterior margin, the former bearing 2 elongate lateral hairs each side, the latter one fine hair at each lateral corner. Dorsal surface of ptero thorax with fine hair each side.

Abdomen somewhat elongated with broad pleurites (as shown for biordinatus); lateral margins of segment VIII extremely small and segment IX with rounded posterior margin.

Text-figure 70.

♀ abdomen: (a) Geniodes m. minor; (b) G. biordinatus.

Genitalia simple with elongated pointed paramere continuous with outer margin of basal plate, and with left paramere shorter than right; sac present and armed with minute teeth (text-fig. 69 b).

Female.—Head and thorax as in male, the latter not exhibiting the sexual dimorphism as shown in Piaget's figure.
Abdomen similar to that of male but somewhat larger. Posterior margin of valve flattened and bearing hairs with a lateral lobe each side; whole genital region covered with minute spines and with faint striations (text-fig. 70 a).

Abdominal Chaetotaxy.

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<th>S.</th>
<th>P.</th>
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<td>0, 0</td>
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<td>2</td>
<td>2</td>
<td>1, 1</td>
</tr>
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<td>2</td>
<td>2, 2</td>
<td>1, 2, 1</td>
<td>2</td>
<td>2, 2</td>
</tr>
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<td>2, 2</td>
<td>1, 2, 1</td>
<td>2</td>
<td>2, 2</td>
</tr>
<tr>
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<td>4-6</td>
<td>3, 3</td>
<td>1, 2, 1</td>
<td>4</td>
<td>3, 3</td>
</tr>
<tr>
<td>VI</td>
<td>2, 0, 2</td>
<td>2</td>
<td>3, 3</td>
<td>1, 2, 1</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>VII</td>
<td>2, 0, 2</td>
<td>2</td>
<td>3, 3</td>
<td>1, 2, 1</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>VIII</td>
<td>Fig.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>IX</td>
<td>Fig.</td>
<td></td>
<td></td>
<td></td>
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Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0-46-0-53</td>
<td>0-74-0-88</td>
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<tr>
<td>Prothorax</td>
<td>0-17-0-20</td>
<td>0-47-0-58</td>
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<tr>
<td>Pterothorax</td>
<td>0-22-0-29</td>
<td>0-55-0-60</td>
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<tr>
<td>Abdomen</td>
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<td>0-94-1-08</td>
</tr>
<tr>
<td>Total</td>
<td>1-74-2-05</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>1-59-1-68</td>
<td></td>
</tr>
</tbody>
</table>

Ratio of length of abdomen to length of genitalia = 1:0-76-0-92.

Specimens examined.—2 males, 1 female, in the Piaget collection, labelled minor from M. duperreyii (= M. r. reinwardt); 10 males, 5 females, from skins and fresh specimens of Megapodius r. reinwardt Dumont from New Guinea; 5 males, 4 females, from skins of M. reinwardt yorkei Mathews from N. Queensland; 2 males, from M. r. tumulus Gould (no data); 9 males, 6 females, from skins and fresh specimens of M. nicobariensis cunningii Dillwyn from Labuan and S.E. Celebes; 1 male, 2 females, from skin of M. nicobariensis pusillus Tweeddale from Philippine islands.

Lectotype designated by present author.—Male in Piaget collection, slide no. 85, labelled Gc. minor from M. r. reinwardt. Paratypes.—1 male, 1 female, in the Piaget collection from the same host.

GONITIDES MINOR CONFUSIO, subsp. n.

This subspecies is only distinguishable from minor in the males and differs in the following characters:

1. All measurements tend to be smaller and the C.I. is less, due to the narrower expansion of the temples.
2. The genitalia are both proportionally shorter and narrower than in minor.
 Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
<td>Length. mm.</td>
</tr>
<tr>
<td>Head</td>
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</tr>
<tr>
<td>Prothorax</td>
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<td>0-40-0-42</td>
<td>0-16-0-18</td>
</tr>
<tr>
<td>Pterothorax</td>
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<td>0-51-0-53</td>
<td>0-24-0-26</td>
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<tr>
<td>Abdomen</td>
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<tr>
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<td>2-09-2-14</td>
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<tr>
<td>C.I. Ratio</td>
<td>1-47-1-54</td>
<td></td>
<td>1-92-1-90</td>
</tr>
</tbody>
</table>

Described from 20 males, 16 females, from skins of Megapodius n. nico-bariensis Blyth from Nicobar; 1 male, 1 female, from the same host, probably collected from a fresh bird.

Holotype.—Male in the British Museum, slide no. 3007. Paratypes.—20 males, 17 females, from the same host.

Goniodes biordinatus, sp. n. (Text-figs. 70 b & 71.)

This species is at once distinguished from the two preceding species in the male by the dorsal chaetotaxy of segment IV, and in the female by the chaetotaxy of the genital region.

Description of Male.—Head similar to that of minor, but tends to be somewhat narrower across the temples.

Thorax as in minor.

Abdomen similar to that of minor, but with tergite of segment IV bearing 8–12 hairs each side of the mid-line instead of the usual 2 central hairs (text-fig. 71).
Species of Mallophaga Occurring on Gallinaceous Hosts. 107

Genitalia with elongated basal plate continuous with the parameres, which are pointed distally, the right being slightly shorter than the left.

Description of Female.—Characters as in minor except for the chetotaxy of the genital region, in which there are a greater number of hairs (text-fig. 70b).

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.52</td>
<td>0.81</td>
<td>0.64</td>
</tr>
<tr>
<td>Pterothorax</td>
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<td>0:15</td>
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<td>Pterothorax</td>
<td>0:24</td>
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<tr>
<td>Abdomen</td>
<td>1:08</td>
<td>1:00</td>
<td>1:28</td>
</tr>
<tr>
<td>Total</td>
<td>1:97</td>
<td>...</td>
<td>2:14</td>
</tr>
</tbody>
</table>

C.I: 1:54

Ratio of length of abdomen to length of genitalia 1:0.86.

Described from 2 males, 3 females, in the Piaget collection labelled Gc. minor from Megapodius rubripes duparreii (=M. r. reinwardt Dumont); 1 male, from M. r. tumulus Gould (Harrison collection, no data); 5 males, 3 females, from skins of M. affinis decollatus Oustalet from New Guinea.

Holotype.—Male in the Piaget Collection, slide no. 87, from M. r. reinwardt.

Paratypes.—1 male, 3 females, in the Piaget collection from the same host.

In addition to the species described above there are a number of specimens from Megapodius sp. which are closely related but apparently not conspecific with these species. These, however, have not been described either owing to insufficient material or to doubt about the authenticity of the host. Included among these are specimens in the Piaget collection labelled Gc. minor as follows:

2 males, 3 females, from M. nicobariensis gilbertii G. R. Gray.
1 male, from M. reinwardt forstenii G. R. Gray.

Goniodes major (Piaget), 1880. (Text-figs. 72 & 73.)

Goniocotes major Piaget, 1880, p. 239, pl. xxi. fig. 1. Host: Megapodius nicobariensis gilbertii Gray (Megapodius rubripes var. gilbertii. Museum skin).

This species is distinguished from minor by its much greater size, and from both fissus and minor by the shape of the head and terminal segments of male and female.

Male.—Head large with widely expanded temples and lateral temple spine borne on small process; partial indistinct bands passing anteriorly from occiput. Clavi pointed and projecting somewhat posteriorly; antennae filiform and unmodified (text-fig. 72a).

Thorax with lateral pterothoracic margins diverging posteriorly but not prolonged so far laterally as in minor; long hair on each pterothoracic margin. Pterothorax as shown in text-fig. 72a, and similar to that of minor.

Abdomen similar to that of minor in the character of the pleurites and shape of segments VIII-IX, but differs considerably in size and chetotaxy. The presence of numerous short hairs on the dorsal surface of segment IX being a distinctive character of the species (text-fig. 73a).

Genitalia with elongated basal plate and with paramera and mesosome.
but little chitinized; these latter parts become somewhat distorted in the mounting in Canada balsam, so that an accurate figure from specimens treated in this manner is not possible (text-fig. 72b).

Text-figure 72.

Goniodes major: (a) ♂ head and thorax; (b) ♂ genitalia.

Female.—Head and thorax as in male. Abdomen similar in size and shape to that of male. Posterior margin of valve convex in outline with a sparse row of marginal hairs (text-fig. 73b).

*Abdominal Chastotaxy.*

<table>
<thead>
<tr>
<th></th>
<th>T.</th>
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<td></td>
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<td>8</td>
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<tr>
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<td>2,10,2</td>
<td>6-8</td>
<td>2,2</td>
<td></td>
<td>2,6,2</td>
<td>8</td>
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<tr>
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<td>6-8</td>
<td>2,2</td>
<td></td>
<td>2,8,2</td>
<td>8</td>
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<td></td>
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</tr>
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<td>VII.</td>
<td>Fig.</td>
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<td></td>
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<tr>
<td>VIII.</td>
<td>Fig.</td>
<td>Fig.</td>
<td>1,1</td>
<td></td>
<td>Fig.</td>
<td>Fig.</td>
<td>Fig.</td>
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</tbody>
</table>

In the male the central sternal hairs are irregular in size.
Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0-75-0-77</td>
<td>1-18-1-26</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0-28</td>
<td>0-87</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0-40</td>
<td>0-89</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-57</td>
<td>1-50</td>
</tr>
<tr>
<td>Total</td>
<td>2-82</td>
<td>1-56-1-64</td>
</tr>
</tbody>
</table>

Specimens examined.—3 males, 3 females, labelled Gc. major in the Piaget collection, British Museum, from Megapodius nicobariensis gilbertii Gray; 1 male, 1 female, apparently this species from the same host in Piaget’s collection,

Text-figure 73.

Leiden Museum; 7 males, 4 females, from skins of M. nicobariensis cumingii Dillwyn from Labuan and Luzon; 1 male, 3 females, from skin of M. nicobariensis pusillus Tweeddale from Philippine Island; 1 female, from skin of
Miss Theresa Clay: A Revision of the Genera and

*M. nicobariensis* tabon Hachisuka from Mindanao; 1 male, from skin of *M. nicobariensis sanghirensis* Schlegel from Talaut; 1 male, from skin of *M. freycinet geelvinkianus* A. B. Meyer from Numfor. 1 imm. (Piaget collection) from *M. freycinet* and 2 females from skin of *M. affinis decollatus* Oustalet, from N. Guinea, should probably be referred to this species.

*Lectotype* designated by present author.—Male in Piaget collection, slide no. 62, from *M. nicobariensis gilbertii*. *Paratypes.*—2 males, 3 females, in the Piaget collection from the same host.

Specimens from the following species of *Megapodius* do not appear quite typical of *major*:

*Megapodius tenimberensis* Sclater.
*M. e. eremita* Hartlaub.
*M. r. reinwardt* Dumont.
*M. r. forsteni* G. R. Gray.
*M. r. yorki* Mathews.

In the case of specimens from *M. r. reinwardt* in addition to 3 males, 4 females examined which are not typical, there are 2 males, 3 females, in the Piaget collection from the same host (*M. rubripes duperreyii*) which are apparently indistinguishable from true *major*.

**Goniodes fissus** (Rudow), 1869. (Text-figs. 74 & 75.)


Rudow’s description does not give much indication as to what this species might be, but Taschenberg (1880, p. 84, pl. ii. fig. 7) re-described and figured what was presumably Rudow’s specimen. This species is not closely related to any other but resembles somewhat *major*, from which it is distinguished by the shape of the head, genitalia of the male, and chaetotaxy of the terminal segments of the abdomen in both sexes.

**Male.**—Head with broadly expanded temples and lateral ventral spine borne on small process; posterior occipital thickening dark and conspicuous without occipital bands. Antennae filiform with segments unmodified (text-fig. 74a).

Thorax with lateral prothoracic margins diverging but slightly and bearing a hair some little way anterior to each postero-lateral angle. Pterothorax with shape and chaetotaxy as in text-fig. 74a.

Abdomen short and broad with segment VIII small, and segment IX with rounded protruding posterior margin.

Genitalia with the rather leaf-like parameres continuous with the outer margins of the basal plate, the right being somewhat shorter than the left (text-fig. 74b).

**Female.**—Head and thorax as in male.

Abdomen similar in shape to that of male, but somewhat more elongate. Posterior margin of last segment with median indentation. Valve with flattened posterior margin and a number of submarginal hairs, the majority of which are concentrated at the lateral corners (text-fig. 75).
Text-figure 74.

*Goniodes fuscus*: (a) ♂ head and thorax; (b) ♂ genitalia.

### Abdominal Chaetotaxy.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>T. 4-6, 7, 4-6</td>
<td>S. 2</td>
</tr>
<tr>
<td>II</td>
<td>2, 10-12, 2</td>
<td>2, 1, 1</td>
</tr>
<tr>
<td>III</td>
<td>2, 8, 2</td>
<td>2, 2</td>
</tr>
<tr>
<td>IV</td>
<td>2, 2-4, 2</td>
<td>2, 2</td>
</tr>
<tr>
<td>V</td>
<td>2, 2</td>
<td>5-7, 3, 3</td>
</tr>
<tr>
<td>VI</td>
<td>2, 2</td>
<td>2, 3, 3</td>
</tr>
<tr>
<td>VII</td>
<td>Fig.</td>
<td>3, 3</td>
</tr>
<tr>
<td>VIII</td>
<td>Fig.</td>
<td>3, 3</td>
</tr>
</tbody>
</table>

In the male the central hairs in the first tergal segment are arranged in an irregular clump.

### Measurements.

#### Male.

<table>
<thead>
<tr>
<th></th>
<th>Length. mm.</th>
<th>Breadth. mm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.62-0.67</td>
<td>1.06-1.10</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.16-0.18</td>
<td>0.43-0.44</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.29-0.33</td>
<td>0.68-0.73</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.25-1.37</td>
<td>1.36-1.49</td>
</tr>
<tr>
<td>Total</td>
<td>2.24-2.40</td>
<td>1.63-1.70</td>
</tr>
</tbody>
</table>

#### Female.

<table>
<thead>
<tr>
<th></th>
<th>Length. mm.</th>
<th>Breadth. mm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.68-0.70</td>
<td>1.10-1.19</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.18-0.20</td>
<td>0.45-0.47</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.30-0.31</td>
<td>0.68-0.74</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.54-1.67</td>
<td>1.41-1.56</td>
</tr>
<tr>
<td>Total</td>
<td>2.60-2.78</td>
<td>1.90-1.69</td>
</tr>
</tbody>
</table>
Specimens examined.—7 males, 5 females, from skins of Alectura l. lathami J. E. Gray from N.S. Wales; 4 males, 1 female, from skins and fresh specimens of Alectura l. purpureicollis (Le Souef) from N. Queensland; 4 males, 1 female, from skin of Alectura lathami subsp. from Queensland; 6 males, 7 females, from skins of A. purpureicollis (Le Souef) from Kaiser Wilhelm Island; 4 males, 1 female, from skins of A. lathami from Queensland; 6 males, 7 females, from skins of Mpypodius arfakianus (Salvadori) from Kaiser Wilhelm Island; 12 males, 13 females, from skins of Mpypodius bruignii (Oustalet) from Waigou.

**Goniodes ocrea** Piaget, 1880. (Text-figs. 76 & 77.)


There is no slide labelled *G. ochrea*, nor any with the host label *Megapodium rubripes* (wallacei) in the Piaget collection either in the British Museum or the Rijksmuseum van Natuurlijke Historie, Leiden; the information concerning the latter was kindly supplied by Dr. Blöte. However, a male labelled minor from *M. rubripes* var. duperreyii (=*M. r. reinwardt*) in the Piaget collection agrees with the original figure and description of *ochrea*, and is most probably the specimen from which the male was described, the slide being wrongly labelled, as is so often the case in the Piaget collection. The description of the female was presumably based on the two female specimens on the same slide as the male *ochrea*; these, however, appear conspecific with *biordinatus*. The host name as given by Piaget is not traceable to any known bird, but it is suggested that *Eulipoa wallacei* is meant, especially as a somewhat immature male from this host in the British Museum collection appears conspecific with *ochrea*.

*G. ochrea* is distinguished in the male from the previously mentioned species occurring on the Megapodiidae by the prolongation of the distal post-axial angle of the third antennal segment.

**Male.**—Head with temples expanded and somewhat pointed laterally; lateral temple margins concave; lateral temple spine borne on small protuberance. Clavi small and pointed. Antennae with first segment not greatly enlarged and distal postaxial angle prolonged into short process lying at right angles to fourth segment (text-fig. 77).
Thorax with lateral prothoracic margins flattened and but little divergent posteriorly; long postero-lateral hair present. Pterothorax with shape and chetotaxy as shown in text-fig. 77. Abdomen with shape as shown in Piaget's
figure, and characterized by the reduction of segment VIII and the elongated somewhat pointed appearance of segment IX (text-fig. 76).

Genitalia in the only male examined have the distal parts missing. Basal plate with two strongly thickened lateral rods probably continuous with the paramera. Sac with prominent chitinized teeth present.

Female unknown (for discussion of Piaget’s description of female see above).

**Abdominal Chaetotaxy.**

<table>
<thead>
<tr>
<th>T.</th>
<th>S.</th>
<th>P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>1, 2, 1</td>
<td>2</td>
</tr>
<tr>
<td>II.</td>
<td>1, 2, 1</td>
<td>2</td>
</tr>
<tr>
<td>III.</td>
<td>1, 8, 1</td>
<td>2</td>
</tr>
<tr>
<td>IV.</td>
<td>1, 12, 1</td>
<td>2</td>
</tr>
<tr>
<td>V.</td>
<td>1, 14, 1</td>
<td>2</td>
</tr>
<tr>
<td>VI.</td>
<td>2, 2</td>
<td>2</td>
</tr>
<tr>
<td>VII.</td>
<td>1, 1</td>
<td>2</td>
</tr>
<tr>
<td>VIII.</td>
<td>Fig.</td>
<td>...</td>
</tr>
<tr>
<td>IX.</td>
<td>Fig.</td>
<td></td>
</tr>
</tbody>
</table>

**Measurements.**

<table>
<thead>
<tr>
<th>Male.</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length.</td>
<td>Breadth.</td>
<td></td>
</tr>
<tr>
<td>mm.</td>
<td>mm.</td>
<td></td>
</tr>
<tr>
<td>Head</td>
<td>0.45</td>
<td>0.72</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.19</td>
<td>0.33</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.20</td>
<td>0.49</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.13</td>
<td>0.93</td>
</tr>
<tr>
<td>Total</td>
<td>1.90</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>1.60</td>
<td></td>
</tr>
</tbody>
</table>

Specimens examined.—1 male on slide labelled Gc. minor from Megapodius rubripes var. duperreyii (=M. r. reinwardt) in the Piaget collection; 1 male (immature), from Eulipoa wallacei (G. R. Gray), no data.

Holotype.—Male in the Piaget collection, slide no. 88, as described above. Probable type-host: Eulipoa wallacei.

**Goniodes discogaster** (Taschenberg), 1882. (Text-fig. 78.)

**Goniocotes discogaster** Taschenberg, 1882, p. 86, pl. ii. fig. 12. Host: Megapodius freycinet (Museum skin).

This is a distinctive species recognized in the male by its small size, expanded temples with the ventro-lateral spine borne on small protuberance, and by the large truncated clavi. No females have been seen, but Taschenberg’s figure of the female indicates that there is little doubt as to the identity of the males described below.

**Male.**—Head with widely expanded temples with definite ventral protuberance bearing the temple spine; clavi large, thickened, and prolonged posteriorly as a truncate process (text-fig. 78); antennae filiform.

Prothorax widely expanded with lateral margins drawn out into point each side and bearing elongate hair. Pterothorax somewhat wider than prothorax with flattened posterior margin. Apodemes of thorax large and greatly thickened.
Abdomen short and rounded with segment VIII greatly reduced and segment IX comparatively large with rounded posterior margin.

Genitalia with elongated basal plate having a thickened marginal band, each side continuous with parameres, which are pointed distally and not greatly thickened. The whole structure except for the size is similar to that of fissus.

**Abdominal Chaetotaxy.**

<table>
<thead>
<tr>
<th></th>
<th>T.</th>
<th>S.</th>
<th>P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>2–3, 5, 5, 2–3</td>
<td>2</td>
<td>0, 0</td>
</tr>
<tr>
<td>II.</td>
<td>2–3, 4, 4, 2–3</td>
<td>2</td>
<td>1, 1</td>
</tr>
<tr>
<td>III.</td>
<td>2, 4, 4, 2</td>
<td>2</td>
<td>2, 2</td>
</tr>
<tr>
<td>IV.</td>
<td>3, 2–3, 2–3, 3</td>
<td>2</td>
<td>2, 2</td>
</tr>
<tr>
<td>V.</td>
<td>2–3, 2, 2, 2–3</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>VI.</td>
<td>3, 1, 1, 3</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>VII.</td>
<td>3, 0, 3</td>
<td>2</td>
<td>3, 3</td>
</tr>
<tr>
<td>VIII.</td>
<td></td>
<td></td>
<td>1, 1</td>
</tr>
<tr>
<td>IX.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The central tergal hairs are short and almost spine-like in appearance forming a diagnostic character of the species.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length.</td>
</tr>
<tr>
<td>Head</td>
<td>0·49–0·50</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0·15</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0·26</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0·96</td>
</tr>
<tr>
<td>Total</td>
<td>1·75</td>
</tr>
</tbody>
</table>

*Specimens examined.—* 2 males, from skin of *Megapodius f. freycinet* Gaimard from Malacca.

**Goniodes crassipes** (Piaget), 1888.  (Text-fig. 79.)

**Goniocotes crassipes** Piaget, 1888, p. 154, pl. iii. fig. 7. Host: *Tallegalla cuvieri* Lesson.

This species is distinguished by its small size, shape of head, and male genitalia.

**Male.**—Head with somewhat flattened anterior margin; temples expanded and with ventro-lateral temple spine borne on small thickened process. Clavi thickened and produced posteriorly as small pointed lobes. Antennæ unmodified. Inner parts of clypeal, antennal, and occipital thickening deeply coloured.

Thorax with lateral prothoracic margins short and rounded. Pterothorax with rounded, diverging, lateral margins and somewhat pointed posteriorly. Pro- and mesothoracic apodemes deeply coloured.

Abdomen short and rounded with segment VIII prolonged somewhat posteriorly, and segment IX large with rounded posterior margin. Chaetotaxy as shown in text-fig. 79, and peculiar in having no lateral post-spiracular tergal hairs on segments II–IV.
Text-figure 78.

Goniodes discogaster, ♀ head and thorax.

Text-figure 79.

Goniodes crassipes, ♀.
Species of Mallophaga Occurring on Gallinaceous Hosts.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Breadth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.34</td>
<td>0.53</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.10</td>
<td>0.27</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>0.16</td>
<td>0.41</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.58</td>
<td>0.65</td>
</tr>
<tr>
<td>Total</td>
<td>1.12</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td></td>
<td>1.55</td>
</tr>
</tbody>
</table>

Specimens examined.—1 male in the Piaget collection labelled Gc. crassipes from Tallegalla cuvieri Lesson.

Holotype.—Male, slide no. 31, as described above.

5 males, from skins of Tallegalla cuvieri from Dutch New Guinea, and 3 males, from skin of T. fuseirostris Salvadori differ from Piaget’s type in the curvature of the anterior margin of the head, in the shape and thickening of the clavi, and in the chaetotaxy of the abdomen. However, these specimens have not been described as new, as it was thought to be more satisfactory to wait until further evidence had been collected as to the correct host distribution of these forms, and as to whether Piaget’s type is merely an abnormal individual.

Goniodes macrocephalus (Taschenberg), 1882.

Goniocotes macrocephalus Taschenberg, 1882, p. 87, pl. ii. fig. 11. Host: Alectura lathami (Tallegallus lathami).

No specimens of this species have been examined, but it is probable from the original description and figure that macrocephalus is related to crassipes.

References.

Dr. Keler’s extensive bibliography of the literature on Mallophaga (1938, p. 487) makes a full list of references unnecessary. In the present paper the references are given under the author and date, and where there is more than one paper of that author for the date the position of the paper as listed in Keler, 1938, is placed in brackets. Some difficulty arises over the references to Nitzsch and Giebel, as the species standing under the former author where published by Giebel, and Dr. Keler has listed some of these papers under the name of Nitzsch and some under Giebel. Therefore, for purposes of reference, Nitzsch and Giebel have been treated as synonyms, and a species referred to Nitzsch 1866 (1), for example, is found under Giebel, 1866, and a species referred to Giebel 1874 (2) is found under Nitzsch, 1874.


Species mentioned or described in the present Paper with Type-Hosts. (Synonyms in brackets.)

Goniodes Nitzsch, 1818.

*agelastes*, nom. n. .......................... *Agelastes meleagrides* (p. 36).
  (*latifasciatus* (Piaget), 1885 nec Piaget, 1883.)

*ammoperdix*, sp. n. .......................... *Ammoperdix griseogularis* ([p. 93].

*antennatus*, sp. n. .......................... *Pternistis l. leucoscepus* (p. 84).

*assimilis* Piaget, 1880 .......................... *Pternistis swainsonii* ([p. 93].
  (*Pternistis Bedford, 1929*

*biodinatus*, sp. n. .......................... *Megapodius r. reinwardii* (p. 106).

*biuberculatus* Rudow, 1869 .......................... *Tetrao u. urogallus* (p. 37).
  (*chelicornis* Denny, 1842, nec Children.

*centrocerci* Simon, 1938 .......................... *Centrocercus urophasianus* (p. 42).

*cervecini* Giebel, 1874 .......................... *Gennseus nycthemerus* (p. 71).

*chrysophili*, sp. n. .......................... *Chrysolophus anthericus* (p. 51).

*colchei* Denny, 1842 .......................... *Phasianus colchicus* (p. 50).

*coronatus* (Giebel), 1874 .......................... *Rollulus roulroul* (p. 19).
  (*obscurus* (Giebel), 1874, nec Giebel, 1874.)


*latifasciatus* (Piaget), 1883 .......................... *Cinclosoma bicolor*.

*corporulentus* Kellogg & Mann, 1912 .......................... *Canachites canadensis* (p. 48).

*crassipes* (Piaget), 1888 .......................... *Talegalla curvirostris* (p. 115).

*crospilon*, nom. n. .......................... *Crossoptilon auritum* (p. 58).
  (*major* Piaget, 1880, nec Piaget, 1880.)

*cupido* Rudow, 1870 .......................... *Tympanuchus cupido* (p. 45).

*dentatus* (Rudow), 1870 .......................... *Gennseus nycthemerus lineatus* (p. 53).

*diardi*, sp. n. .......................... *Diardigallus diardi* (p. 70).


*disp* Burmeister, 1838 .......................... *Perdix p. perdix* (p. 87).

*(flaviceps* Rudow, 1869 .......................... *Alectoris r. rufa*.

*truncatus* Giebel, 1874 .......................... *Alectoris r. rufa*.

*brevianennatus* Piaget, 1885 .......................... *Alectoris graeca chukar*.

*dissimilis* Denny, 1842 .......................... *Gallus domesticus* (p. 62).
  (*dissimilis* var. *bankiva* Piaget, 1880 )

*dolani* Eichler, 1937 .......................... *Gallus g. bankiva*.

*eurygaster* Piaget, 1885 .......................... *Crossoptilon c. crossoptilon* (p. 59).

*extraneus*, sp. n. .......................... *Leophorus impeyanus* (p. 16).

*fimbriatus* Neumann, 1913 .......................... *Francolinus gularis* (p. 79).

*finnari* (Rudow), 1869 .......................... *Numida meleagris galeata* (p. 29).

*gigas* (Taschenberg), 1879 .......................... *Gallus domesticus* (p. 33).

*(holgaster* Denny, 1842 .......................... *Gallus domesticus*.

*abdominalis* (Piaget), 1880 .......................... *Gallus domesticus*.

*hopkinsi*, sp. n. .......................... *Alectura lathami* (p. 110).

*indicus* (Kellogg & Paine), 1914 .......................... *Gallus edouardi seth-smithi*.

*intermedius* Neumann, 1913 .......................... *Syrmaticus h. humiae* (p. 67).

*isogenos* Nitzsch, 1866 .......................... *Arborophila r. rufogularis* (p. 21).

*francolinus* (Kellogg & Paine), 1914 .......................... *Pucrasia macrolopha darwinii* (p. 65).

*isogenos* Nitzsch, 1866 .......................... *Francolinus africanaus* (p. 91).
**SPECIES OF MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.**

**Ithaginis, sp. n.**

**keleri, sp. n.**

**lagopi (Linne), 1758.**

**lagopodis (Gmelin), 1790.**

**chelicornis** Children, 1836

**longus Rudow, 1869.**

**pallepidus Giebel, 1877.**

**latifasciatus** Piaget, 1880

**macrocephalus (Taschenberg), 1882.**

**major (Piaget), 1880.**

**nammillatus Rudow, 1870.**

**megaceros** Kellogg & Paine, 1914

**meinertzhageni, sp. n.**

**merriamanus** Packard, 1873

**minor minor (Piaget), 1880.**

**minor confusio, subsp. n.**

**numidae Mjoberg, 1910.**

**ocrea Piaget, 1880.**

**oreophilus, sp. n.**

**ortygis Denny, 1842.**

**(dispar var. minor Piaget 1880.**

**pavonis** (Linne), 1758

**(tetraganocephalus (Olfers), 1816.**

**perlatus, sp. n.**

**processus Kellogg & Paine, 1914.**

**retractus Le Souéf, 1902.**

**scleroptilus** Bedford, 1929

**sectus Kellogg & Paine, 1914.**

**securnger** Nitzsch, 1866

**simoni, sp. n.**

**souéfi, nom. n.**

**(elongatus Piaget, 1885, nec Piaget, 1880.**

**longus Le Souéf, 1902, nec Rudow, 1869.**

**spincicornis** Nitzsch, 1866

**(bicuspidatus Piaget, 1880.**

**tetragalile** , sp. n.

**tetraonis** (Linne), 1761

**(tetraonis Denny, 1842.**

**? homocerus Nitzsch, 1861, nom. nud.**

**heteroceros Nitzsch, 1874.**

**tragopan, sp. n.**

**wilsoni Clay, 1938.**

**Ithaginis c. cruens (p. 48).**

**Margaroperdix madagarensis (p. 95).**

**Lagopus l. lagopus (p. 46).**

**Lagopus l. lagopus.**

**Lagopus l. lagopus.)**

**Lophura ignita (p. 68).**

**Lophura ignita.)**

**Alectura latihani (p. 117).**

**Megapodius nicobariensis gilbertii (p. 107).**

**Lophotylyx californica (p. 60).**

**Lophophorinae impexans (p. 13).**

**Pavo cristatus (p. 9).**

**Dendragapus obscurus richardsonii (p. 48).**

**Megapodius r. reinwardt (p. 102).**

**Megapodius n. nicobariensis (p. 105).**

**Numida m. melagris (p. 29).**

**Eulipoa wallacei (p. 112).**

**Francolinus shelleyi theresse (p. 77).**

**Colinus virginianus (p. 91).**

**Lophotylyx californica.)**

**Pavo cristatus (p. 5).**

**Pavo cristatus.)**

**Numida m. melagris major (p. 31).**

**Arborophila r. rufogularis (p. 23).**

**Synoicus ypsilophorus australis (p. 98).**

**Francolinus gariepensis juglaris (p. 86).**

**Calidris wallachii (p. 56).**

**Alectoris b. barbara (p. 90).**

**Dendragapus o. obscurus (p. 44).**

**Excalfactoria chinensis australis (p. 100).**

**Excalfactoria chinensis australis.**

**Excalfactoria chinensis lineatula.**

**Tragopan sutry (p. 11).**

**Tragopan sutrya.)**

**[p. 74).**

**Tragopan sutrya.)**

**Tetragallus h. himalayensis**

**Lyrurus t. tetric (p. 40).**

**Lyrurus t. britanicus.**

**Lyrurus t. tetric**

**Lyrurus t. tetric.)**

**Tragopan melanocephalus (p. 13).**

**Afropavo cngensis (p. 26).**
Note.—Last summer (1939) Dr. Kéler had a paper in the press describing and figuring the Goniodes species in the Halle Collection and also erecting several new genera. In the present paper, therefore, in order to avoid duplication, some of these species have not been fully figured (e.g., spinicornis, gigas, isogenos, etc.). Dr. Kéler's paper has never been published, and no news has been received from Dr. Kéler since the German invasion of Poland, but it is sincerely hoped that Dr. Kéler may be able to continue his work and that his paper on the Halle Collection may be published. Information has been received that the valuable Nitzsch and Giebel collections were returned to Halle just before the outbreak of war.
A REVISION OF THE GENERA AND SPECIES OF MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.—PART I. LIPEURUS AND RELATED GENERA. BY THERESA CLAY, B.Sc. F.Z.S.


[Published July 26th, 1938.]
A Revision of the Genera and Species of Mallophaga occurring on Gallinaceous Hosts.—Part I. *Lipeurus* and Related Genera. By Theresa Clay, B.Sc., F.Z.S.

(Plates I.–XIV.; Text-figures 1–45.)

The author, while working on a large collection of Mallophaga from the gallinaceous birds, found that without a complete revision of all the known species recorded from this suborder of birds, the description of new species was impossible. The results of the revision of the species of *Lipeurus* are embodied in the present paper. It is apparent that the most useful work on Mallophaga can be carried out along these lines—that is, the revision of the genera and species of Mallophaga which are parasitic on natural groups of birds.

Through the kindness of the authorities of the British Museum (Natural History) the author has been able to examine the Piaget types and other material in the collection. Dr. S. Kéler has supplied much information concerning the Nitzsch and Giebel types in the Halle collection, without which this paper could not have been written. The author is also much indebted to Dr. Malaise of the Naturhistoriska Riksmuseum, Stockholm, Dr. W. Ludwig of the Zoologisches Institut, Halle, and Dr. Blagoveshtchensky of the Academy of Sciences, Leningrad, for the loan of types and original drawings. Rudow’s types at present must be taken as lost. The author has, where possible, kept Rudow’s names and redescribed the species from specimens from the type-hosts. Many of Rudow’s descriptions are far from adequate and could, in many cases, be interpreted to apply to any of the species of *Lipeurus* found on the respective type-hosts; but since these names have been in regular use for a considerable time, it seems undesirable to discard them in favour of new and unfamiliar names if they can possibly be retained. It is therefore hoped that subsequent workers will, where possible, adhere to the interpretations used in this paper, as it is in the interests of all that some agreement should be reached in the use of these doubtful names. At the present time Mallophaga records are, in many cases, useless, as only the author of the record knows to what species certain of the names used belong.

The author has been able to examine 1562 mounted specimens of Mallophaga from 82 species and subspecies of the Galli comprising 103 species and subspecies of Mallophaga. With such a large amount of material the author’s conception of what should constitute a genus has somewhat broadened. Descriptions of new genera based on one or two species may lead to difficulties which can only be remedied by the endless formation of new genera for subsequent new species. The author has therefore been cautious in describing new genera, and has, in some cases, placed species in genera of which they are not entirely characteristic to avoid describing monotypic genera which later, when more material is available, may be found to connect up with one of the existing genera.
A complete host-list of the known Mallophaga parasitic on the Galli will be given when this revision is completed.

The majority of the specimens on which this paper is based are in the Meinertzhagen collection, to which the author has had free access. The author is also indebted to the Zoological Society of London, Colonel F. M. Bailey, Dr. J. Bequaert (Harvard), Mr. G. A. H. Bedford (S. Africa), and Mr. G. H. E. Hopkins (Uganda) for material and to Captain W. H. Pollen for the photographs illustrating this paper.

The nomenclature and classification of the hosts are those used by J. L. Peters in 'Check-list of Birds of the World' 1934.

Key to Lipeurus and Related Genera.

1. Males with intertergital abdominal plates; elongated flattened endomeral plate (except in G. t. lauvensis and G. t. tropicalis), no free penis, sac present ........................................... 2.

Males without intertergital plates; genitalia of diverse form without above combination of characters ................................................................. 3.

2. Head with clypeal suture and short suture lateral to each antennal fossa ................................................................................................. Rhynionirmus.

Head with clypeal suture and with lateral sutures joined posteriorly to form one curved post-antennal suture .............................. Otilipeurus and (Otidaceus.

Ogalipeurus.

Gallipeurus.

Lagopaeus.

Lipeurus.

3. Head with pre-antennal chitin projections .................................................................

Head without such projections ........................................................................ 4.

4. Head with clypeal suture; thorax and abdomen short and broad; male abdomen with thickened posterior margin bearing hairs Head without sutures ..................................................................................

Lagopaeus.

5. Antennae differing in the two sexes; pleurites simple; genitalia with sac. ..............................

Antennae similar in the two sexes; pleurites complicated; genitalia with flattened endomeral plate, free penis, no sac ........................... Syrrhelopterus.

ISCHNOCERA Kellog.

PHILOPTERIDÆ Burmeister.

Lipeurus Nitzsch.


This genus, originally described by Nitzsch (1818, p. 292) to include those species of the Philopteridae with elongated bodies and sexually dimorphic antennae, was later, by Harrison (1916, p. 28), restricted to include only those species of Lipeurus found on gallinaceous hosts with Lipeurus caponis (Linné) as genotype (Johnston & Harrison, 1911, p. 326). Since the majority of the gallinaceous birds have commonly two and sometimes three or even four distinct species of Lipeurus which fall into natural groups, it seems more convenient to separate these species into genera. These genera include all the species placed in Lipeurus by Harrison (1916, p. 23) with the exception of three, together with certain species which were placed in Dasyperilla and Estiopoinerum by that author. Lipeurus dissimilaris Piaget should be placed in Otitipeurus; L. angustissimus Giebel and L. nigrolineatus Piaget, together with Estiopoinerum platychyopeatum (Piaget) from hosts belonging to the Turi- cidae, can be placed temporarily in Estiopoinerum, although ultimately they will have to be separated as a new genus.

The genus Lipeurus, as redescribed below, constitutes a homogeneous group with the exception of those species from hosts belonging to the family
Megapodiidae (L. sinuatus, L. latifasciatus, L. crassus, L. tsade, and L. meyeri) which differ from typical species of Lipeurus but do not themselves form a homogeneous group of generic value. Until further evidence is forthcoming, based on more material from the Megapodiidae, these species can be included in Lipeurus.

Description of the Genus.—Head circumfasciate; in the male usually with a marked post-antennal constriction and with breadth at temples usually less than breadth at broadest part of the pre-antennal region. The female differs in having no post-antennal constriction and in having breadth at temples equal to or greater than pre-antennal breadth. Trabecule in the male narrow finger-shaped structures curved to a greater or less extent; in the female the trabecule are shorter and triangular in outline. Antenne sexually dimorphic, in the male with first segment enlarged and bearing short thickened appendage (absent in L. raymondi described below), third segment with free thickened distal end; female antennae filiform. Pre-antennal region without suture or modification of the chitin; deeply pigmented superior ocular blotch present, usually irregularly circular in outline.

Prothorax without lateral hair or spine; meso-metathoracic junction visible on lateral margin of pterothorax.

Abdomen with pleurites without complicated re-entrant heads and similar in the two sexes. In the male tergal plates mostly transversely continuous; hairs few in number, 4 dorsal, 6 ventral, and with medium group of ventral hairs on segment VIII. Female with thickening of tergal plates of segments II–VI usually greater towards the centre, forming a central hour-glass-shaped mark (not apparent in species from the Megapodiidae).

Genitalia characteristic (except in the species from the Megapodiidae), with complicated elongated sac and ductus ejaculatorius and with paramera of characteristic form.

Lipeurus caponis (Linné). (Text-figs. 1, 2 a & b, 3 a.)


Lipeurus antennatus Piaget, 1885, p. 75, pl. viii. fig. 3. Host: Hierophasis swinhowi.


Complete figures of this species, the genotype, are given so that in describing other species of this genus they may be compared with the genotype, thus omitting needless repetition of characters of no diagnostic value.

Male.—Head as shown in text-fig. 1 a, with dorsal chaetotaxy as shown in text-fig. 1 b.

Thorax as in figure with posterior dorsal pterothoracic hairs arranged:—4, 1, 1, 4.

Abdomen with ventral view as shown in text-fig. 1 a. Tergal plate I separated medianly. Chaetotaxy of dorsal surface of segments I–VI as in female, that of the posterior segments as in text-fig. 2 b.

Genitalia as shown in text-fig. 3 a.

Female.—Head as shown in text-fig. 2 a, with ventral chaetotaxy as in the male.

Thorax as in figure.
Abdomen with dorsal view as shown in figure, ventrally with median sternal plates and posterior segments as shown in text-fig. 2b.

Text-figure 1.*

$Lipeurus caponis$: (a) $\delta$ ventral; (b) $\delta$ head dorsal;
(e) Posterior segments, $\delta$ abdomen.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.49-0.51</td>
<td>0.32-0.33</td>
</tr>
<tr>
<td>(a)</td>
<td>0.49-0.44</td>
<td>0.25-0.27</td>
</tr>
<tr>
<td>(b)</td>
<td>1.21-1.35</td>
<td>0.36-0.38</td>
</tr>
<tr>
<td>Thorax</td>
<td>2.11-2.21</td>
<td>0.65-0.67</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.47-1.48</td>
<td>0.51-0.55</td>
</tr>
<tr>
<td>Total</td>
<td>1.88-2.02</td>
<td>0.65-0.67</td>
</tr>
</tbody>
</table>

* Text-figs. 1a, 2a, 3a, 16, 16, 17, 26, 27c, 41, 42 were drawn by Mr. R. S. Pitcher.
Breadth of head, (a) is the greatest breadth of the pre-antennal region; breadth of head, (b) is the temple breadth; C.I. is the head index (breadth : length).

*Lipeurus antennatus* Piaget is represented in the Piaget collection by 1 male and 1 female, and apparently does not differ from *L. caponis* from *Gallus domesticus*.

Text-figure 2.

*Lipeurus caponis* : (a) ♀ dorsal; (b) Posterior segments, ♀ abdomen, ventral.

*Lipeurus pavo* : (c) Posterior segments, ♀ abdomen, ventral.

*Lipeurus variabilis* var. *formosanus* Sugimoto is from an examination of the figures and descriptions the same as *L. caponis*; the differences enumerated by Sugimoto being found in the majority of specimens seen by the author.

Specimens examined.—25 males, 30 females, from *Gallus domesticus* from
Great Britain: 1 male, 6 females, from skins of Gallus g. gallus from Burma and Siam; 4 males, 12 females, from skins of Gallus g. murghi from Sikkim; 8 males, 5 females, from skins of Gallus g. jabouillei from Annam; 1 male, 

Text-figure 3.

13 females, from skins of Gallus lafayetii from Ceylon; 1 male, 7 females, from skins of Gallus sonneratii from the Nilgiri Hills, India; 3 males from skins of Gallus varius from Java; 1 male, 1 female (Piaget’s types), from Hierophasis swinhoei.

**Lipeurus sarissa**, sp. n.  (Pl. I. fig. 1; text-fig. 4a.)

This species is distinguished from *L. caponis* by the shape of the head and the sharply-pointed appendage on the first antennal segment of the male.

**Description of the Male.**—Shape of head as shown in Pl. I. fig. 1. Chetotaxy as in *L. caponis*. Antennae as shown in text-fig. 4a.

Thorax as in *L. caponis*.

Abdomen as in *L. caponis*, with a shallow indentation in the posterior margin of the last segment.

Genitalia as in *L. caponis*.
Description of the Female.—Shape of head differs from that of *L. caponis* in being more pointed anteriorly.
Thorax as in *L. caponis*.
Abdomen as in *L. caponis*.

Text-figure 4.

3 antennæ of *Lipeurus* spp.: (a) *L. sarissa*; (b) *L. maculosus rheinardia*; (c) *L. keleri*; (d) *L. pavo*; (e) *L. brunneipictus*; (f) *L. fimbriatus*.

### Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head, (a)</td>
<td>0.53-0.64</td>
<td>0.35-0.36</td>
</tr>
<tr>
<td>(b)</td>
<td>0.31-0.32</td>
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</tr>
<tr>
<td>Thorax</td>
<td>0.40-0.44</td>
<td>0.36</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.11-1.13</td>
<td>0.37-0.38</td>
</tr>
<tr>
<td>Total</td>
<td>1.97-2.03</td>
<td></td>
</tr>
<tr>
<td>C.I. (a)</td>
<td>0.66-0.67</td>
<td></td>
</tr>
<tr>
<td>C.I. (b)</td>
<td>0.53</td>
<td></td>
</tr>
</tbody>
</table>

Described from 4 males, 5 females, from skins of *Rhizothera l. longirostris*, Malay; and 3 females from skins of *Rhizothera l. dulitensis*, Sarawak.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 3633, from *Rhizothera l. longirostris*. 
Lipeurus maculosus, sp. n. (Pl. I. fig. 2; text-figs. 5a & 6a.)

This species is distinguished from *L. caponis* by the chitin flecks on the temples of both sexes and in the male by the shape of the head and the emargination of the last segment of the abdomen.

*Description of the Male.*—Shape of head as shown in Pl. I. fig. 2. Antenna with rounded somewhat recurved appendage on the first segment; third segment with distal end bifid. Chaetotaxy of the head as in *L. caponis*, with occipital spines arranged as shown in text-fig. 5a.

Thorax as in *L. caponis.*

Abdomen as in *L. caponis*, with semi-lunar indentation in posterior margin of last segment. Chaetotaxy as in *L. caponis*; except in the specimens examined there are four not six ventral hairs in the central position on the last segment.

Genitalia differ from those of *L. caponis* in the shape of the basal plate and in the details of the mesosome.

*Description of the Female.*—The head is slightly more pointed than in *L. caponis* but is not easily distinguished except by the chitin flecks on the temples (text-fig. 6a).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
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<td>(mm.)</td>
<td>(mm.)</td>
</tr>
<tr>
<td>Head</td>
<td>0.44-0.45</td>
<td>0.32-0.33</td>
</tr>
<tr>
<td>(b)</td>
<td>0.26-0.27</td>
<td></td>
</tr>
<tr>
<td>Thorax</td>
<td>0.32</td>
<td>0.36</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.10-1.13</td>
<td>1.30</td>
</tr>
<tr>
<td>Total</td>
<td>1.87-1.88</td>
<td></td>
</tr>
<tr>
<td>C.I. (a)</td>
<td>0.72-0.73</td>
<td></td>
</tr>
<tr>
<td>C.I. (b)</td>
<td>0.60-0.61</td>
<td></td>
</tr>
</tbody>
</table>
Described from 5 males and 23 females from *Phasianus colchicus*, Perthshire and Hungary.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 4336, from *Phasianus colchicus*, Perthshire.

*Lipeurus maculosus rheinardia*, subsp. n. (Pl. I. fig. 3; text-figs. 5 b, 6 d.)

This subspecies is distinguished from *L. m. maculosus* by the following characters in the male:—

1. The pre-antennal region of the head is longer and more pointed (Pl. I. fig. 3).
2. The occipital spines are arranged differently (text-fig. 5 b).
3. On the last segment of the abdomen there are six ventral hairs in the centre, not four as in *L. m. maculosus*.
4. The length of the basal plate is greater.

In the female by the following characters:—

1. The head is more pointed anteriorly (text-fig. 6 d).
2. The hairs on the margin of the valve are stouter and the submarginal hairs more spine-like.

**Measurements.**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Head (a)</strong></td>
<td>0·50–0·59</td>
</tr>
<tr>
<td><strong>Thorax</strong></td>
<td>0·45–0·53</td>
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<tr>
<td><strong>Abdomen</strong></td>
<td>1·29–1·52</td>
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<tr>
<td><strong>Total</strong></td>
<td>2·20–2·30</td>
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<tr>
<td><strong>C.I. (a)</strong></td>
<td>0·69–0·71</td>
</tr>
<tr>
<td><strong>C.I. (b)</strong></td>
<td>0·59–0·62</td>
</tr>
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</table>

Described from 5 males and 26 females from skins of *Rheinardia o. ocellata*, Annam.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 4457.

*Lipeurus maculosus polyplectron*, subsp. n. (Pl. I. fig. 4; text-figs. 5 c, 6 b.)

This subspecies is distinguished from *L. m. rheinardia* by the following characters:—

1. In both sexes the pre-antennal region of the head is shorter and broader (text-fig. 6 b).
2. The occipital spines of the male head are arranged somewhat differently (text-fig. 5 c).

**Measurements.**

<table>
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<th>Male</th>
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<tr>
<td><strong>Head (a)</strong></td>
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<tr>
<td><strong>Thorax</strong></td>
<td>0·35</td>
</tr>
<tr>
<td><strong>Abdomen</strong></td>
<td>0·98–1·11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1·74–1·86</td>
</tr>
<tr>
<td><strong>C.I. (a)</strong></td>
<td>0·70–0·71</td>
</tr>
<tr>
<td><strong>C.I. (b)</strong></td>
<td>0·57–0·59</td>
</tr>
</tbody>
</table>
Described from 2 males and 21 females from skins of *Polyplectron biculcaratum* ghigii from Annam. 
Holotype.—Male in the Meinertzhagen collection, slide no. 4316.

*Lipeurus subsellatus* (Harrison). (Pl. I. fig. 6; text-figs. 3b, 5d, 6c.) *Nirmus sellatus* Rudow, 1870 (1), p. 470, nec Burmeister, 1838. Host: *Gennseus nycthemerus lineatus*.

Text-figure 6.

♀ heads of *Lipeurus* spp.: (a) *L. maculosus*; (b) *L. m. polyplectron*; (c) *L. subsellatus*; (d) *L. maculosus rheinardia*.

*Degeeriella subsellata* (Rudow) Harrison, 1916, p. 122, nom. nov. for *Nirmus sellatus*.

*? Lipeurus introductus* Kellogg, 1896, p. 500, pl. lxviii. figs. 1 & 5. Host: *Gennseus nycthemerus nycthemerus*.
Species of Mallophaga occurring on gallinaceous hosts.

Specimens have been examined from five subspecies of *Gennaeus nycthemerus* (excluding *G. n. lineatus*) and found to belong to the same species. It is therefore probable that *Lipeurus introductus* Kellogg is a synonym of *L. subsellatus* Rudow. The following description and measurements are based on specimens from *Gennaeus n. leucomelanos*.

This species is distinguished from *L. m. maculosus* by the elongated rounded last segment of the abdomen, and the shape of the basal plate in the male, and by the more pointed anterior region of the head in the female.

**Male.**—Shape of the head as shown in Pl. I. fig. 6. Antennae with first joint bearing a narrow appendage with rounded distal end; third segment with bifid distal end. Chaetotaxy normal with arrangement of occipital spines as shown in text-fig. 5 a.

Thorax normal.

Abdomen normal, except that the posterior segment is somewhat elongated with rounded termination.

Genitalia with basal plate showing distal constriction (text-fig. 3 b).

**Female.**—Shape of head as shown in text-fig. 6 c. In other respects the female is as in *L. caponis*.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Head (a)</td>
<td>0-46–0-48</td>
<td>0-32–0-33</td>
<td></td>
<td>0-55–0-56</td>
</tr>
<tr>
<td>(b)</td>
<td>0-27–0-29</td>
<td></td>
<td></td>
<td>0-41</td>
</tr>
<tr>
<td>Thorax</td>
<td>0-38–0-40</td>
<td>0-32–0-35</td>
<td></td>
<td>0-44</td>
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<td>2-52–2-54</td>
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<tr>
<td>C.I. (a)</td>
<td>0-68–0-70</td>
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<td></td>
<td>0-68–0-70</td>
</tr>
<tr>
<td>C.I. (b)</td>
<td>0-57–0-61</td>
<td></td>
<td></td>
<td>0-73–0-74</td>
</tr>
</tbody>
</table>

Specimens examined.—1 male, 8 females, from skins of *Gennaeus n. nycthemerus* from China; 1 male, 19 females, from skins of *G. n. oatesi* from Burma; 14 males, 27 females, from *G. n. leucomelanos* from Nepal; 2 males, 6 females, from *G. n. hamiltonii* from Central Himalayas; 5 females from skins of *G. n. horsfieldii* from Assam.

**Lipeurus crinitus** (Rudow). (Pl. I. fig. 5; text-fig. 7 a.)


This species is distinguished from *L. subsellatus* Rudow by the shape of the head in both sexes and by the bifid termination of the abdomen in the male.

**Description of the Male.**—Shape of the head as shown in Pl. I. fig. 5. First segment of antennae bearing large irregular appendage with flattened distal end; third segment with bifid distal end. Chaetotaxy normal, with dorsal spines of the occiput arranged as in *L. fimbriatus* (see p. 124).

Thorax normal.

Abdomen normal with posterior margin of the last segment bifid.

Genitalia with constriction in the basal plate.

**Description of the Female.**—Shape of the head as shown in text-fig. 7 a. Chaetotaxy normal.

Thorax and abdomen normal. The outer ventral hairs on segments I–III are short and fine.
Text-figure 7.

?? heads of *Lipeurus* spp.: (a) *L. crinitus*; (b) *L. kelleri*; (c) *L. bruneipictus*; (d) *L. pavo*.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>0-49</td>
<td>0-35</td>
</tr>
<tr>
<td>(b)</td>
<td></td>
<td>0-31</td>
</tr>
<tr>
<td>Thorax</td>
<td>0-40</td>
<td>0-36</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-14</td>
<td>0-46</td>
</tr>
<tr>
<td>Total</td>
<td>2-00</td>
<td></td>
</tr>
<tr>
<td>C.I. (a)</td>
<td>0-71</td>
<td></td>
</tr>
<tr>
<td>C.I. (b)</td>
<td>0-62</td>
<td></td>
</tr>
</tbody>
</table>
Described from 2 males, 3 females, from skins of *Chrysolophus pictus* from China; and 1 male and 2 females from *Chrysolophus amherstiae* from Tibet.

**Neotype.**—Male in the Meinertzhagen collection, slide no. 4427, from *Chrysolophus pictus*.

**Lipeurus brunneipictus** (Giebel). (Pl. II. fig. 1; text-figs. 4 e, 5 e, 7 e, & 9 a.)

*Nirmus brunneipictus* Giebel, 1877, p. 530. Host: Lophura rufa.

*Lipeurus intermedius* Piaget, 1880, p. 368, pl. xxix. fig. 7 a. Host: Lophura i. ignita.

Specimens of *Lipeurus* from *Lophura rufa* and *Lophura ignita* belong to the same species. Piaget's description of *L. intermedius* was based on a male of *Lipeurus* and a female of *Oxylipeurus* (1880, pl. xxix. fig. 7). In Piaget's collection in the British Museum there are three slides labelled *L. intermedius* with three males of *Lipeurus* (two of these are *L. caponis* and probably stragglers), and one male and three females of *Oxylipeurus*. Since the male is mentioned first in the description, the name *intermedius* must apply to the *Lipeurus*. The *Oxylipeurus* is renamed *Oxylipeurus piageti*, nom. nov. (see p. 179). Dr. S. Keler has sent me drawings of the type of *L. brunneipictus* Giebel, a female, which shows that *L. intermedius* is a synonym of the former species.

This species resembles *L. keleri* (see p. 122), from which it is distinguished in the male by the shape of the head, the pointed antennal appendage, and the shallower emargination of the last segment of the abdomen; in the female by the narrower pre-antennal region and the chaetotaxy of the valve.

**The Male.**—Shape of head as shown in Pl. I. fig. 1. Antennae with sharply pointed appendage on the first segment; third segment with bifid distal end (text-fig. 4 e). Chaetotaxy of the head normal, with occipital spines as in text-fig. 5 e.

**Thorax** normal.

**Abdomen** normal, with indentation in the posterior margin of the last segment.

Genitalia similar to that of *L. caponis* but with basal plate of somewhat different shape and paramera shorter.

**The Female.**—Shape of head as shown in text-fig. 7 c. Chaetotaxy normal.

Thorax and abdomen normal. The outer ventral hairs on segments III–V of the abdomen are short and fine. The chaetotaxy of the valve is somewhat different from that of *L. caponis* (text-fig. 9 a).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
</tr>
<tr>
<td>Head</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>(a)</td>
<td>0·58</td>
<td>0·44</td>
<td>0·63</td>
</tr>
<tr>
<td>(b)</td>
<td>0·55</td>
<td>0·37</td>
<td>0·51</td>
</tr>
<tr>
<td>Thorax</td>
<td>1·59</td>
<td>0·44</td>
<td>1·58</td>
</tr>
<tr>
<td>Abdomen</td>
<td>2·38</td>
<td></td>
<td>2·64</td>
</tr>
<tr>
<td></td>
<td>C.I. (a)</td>
<td>0·75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C.I. (b)</td>
<td>0·64</td>
<td></td>
</tr>
</tbody>
</table>

**Specimens examined.**—1 male, 1 female, from skin of *Lophura rufa* from Sumatra; 1 male, Piaget's type of *L. intermedius*, from *Lophura i. ignita*. 
Lipeurus kéleri, sp. n. (Pl. II. fig. 2; text-figs. 3d, 4c, 5f, & 7b.)

This species is distinguished from L. brunneipictus Giebel by the antennæ in the male and by the shape of the head in the female.

Description of the Male.—Shape of head as shown in Pl. II. fig. 2. Antennæ with first segment broad and bearing blunt-ended appendage; third

Text-figure 8.

♀ heads of Lipeurus spp.: (a) L. charitonii; (b) L. fimbriatus; (c) L. numidus; (d) L. raymondi.

segment with thickened trifid end (text-fig. 4c). Chaetotaxy normal, with arrangement of spines on occiput as shown in text-fig. 5f.

Thorax normal.

Abdomen normal, with triangular-shaped indentation in posterior margin of last segment.

Genitalia with paramera as shown in text-fig. 3d.

Description of the Female.—Shape of head as shown in text-fig. 7b.
Species of Mallophaga occurring on Gallinaceous Hosts. 123

Thorax and abdomen normal. The number of hairs on the valve are variable in number, but tend to be more numerous than in L. caponis.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male.</th>
<th></th>
<th>Female.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head, (a)</td>
<td>0·59</td>
<td>0·46</td>
<td>0·57-0·63</td>
</tr>
<tr>
<td>(b)</td>
<td>0·36-0·37</td>
<td>0·34</td>
<td>0·36-0·38</td>
</tr>
<tr>
<td>Thorax</td>
<td>1·33</td>
<td>0·48</td>
<td>1·61</td>
</tr>
<tr>
<td>Abdomen</td>
<td>2·40</td>
<td>0·78</td>
<td>2·40</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>0·78</td>
<td>0·72</td>
</tr>
</tbody>
</table>

Described from 2 males, 7 females, from skins of Crossoptilon c. crossoptilon from Szechwan.

**Holotype.—**Male in the Meinertzhagen collection, slide no. 1814.

**Lipeurus charltonii, sp. n.** (Pl. II. fig. 3; text-figs. 8 a, 9 b.)

This species is recognized by the thick stout head, broad clypeal and marginal bands and pleurites. It is similar to L. fimbriatus (see p. 124), from which it is distinguished by the shape of the head in both sexes and by the emargination of the last segment in the male.

**Description of the Male.**—Shape of the head as shown in Pl. II. fig. 3. Antenna with first segment bearing a stout blunt-ended appendage; distal end of third segment simple. Bands of the head broader than in the preceding species. Chaetotaxy normal, but the hairs on the margins of the temples are shorter and finer. Arrangement of spines on the occiput as in L. caponis. Thorax short and stout; chaetotaxy normal.

Abdominal normal with broader pleurites. Posterior margin of last segment with shallow emargination. Chaetotaxy normal except that on segments III–V there are 4 (2, 2) not 6 (3, 3) ventral hairs, and that all the ventral hairs are shorter and finer.

Genitalia of usual type found in the genus; basal plate without constriction.

**Description of the Female.**—Shape of the head as shown in text-fig. 8 a; with broad bands as in the male. Chaetotaxy normal with hairs on the temple margins short.

Thorax as in the male.

Abdomen normal, but with broader pleurites. Posterior segments of the abdomen somewhat different from L. caponis (see text-fig. 9 b) and the hairs on the valve are fewer in number; in other respects the chaetotaxy is as in the male.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male.</th>
<th></th>
<th>Female.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head, (a)</td>
<td>0·48</td>
<td>0·34-0·35</td>
<td>0·52-0·57</td>
</tr>
<tr>
<td>(b)</td>
<td>0·36-0·37</td>
<td>0·34</td>
<td>0·41-0·44</td>
</tr>
<tr>
<td>Thorax</td>
<td>1·33</td>
<td>0·38-0·41</td>
<td>1·22-1·28</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1·89-2·07</td>
<td>0·70-0·73</td>
<td>2·11-2·20</td>
</tr>
<tr>
<td>Total</td>
<td>3·00</td>
<td>0·70</td>
<td>3·11</td>
</tr>
</tbody>
</table>
Described from 2 males, 6 females, from skins of *Tropicoperdix charltonii charltonii* from Malacca; 1 female from *T. c. tonkinensis* from Annam; 1 male from *T. chloropus olivacea* and 1 female from *T. chloropus chloropus*.

*Holotype.*—Male in the Meinertzhagen collection, slide no. 3656, from *Tropicoperdix c. charltonii*.

**Lipeurus fimbriatus**, sp. n. (Pl. II. fig. 4; text-figs. 4 f, 5 g, 8 b, & 9 c.)

This species is distinguished from *L. uncinatus* Piaget, in the male, by the smaller antennal appendage, by the flattened posterior margin of the last segment, and by the absence of the enlarged teeth on the sac of the male genitalia. In the female the anterior margin of the head is less flattened.

**Text-figure 9.**

Posterior segments, ♀ abdomen of *Lipeurus* spp.  
(a) *L. brunneipictus*;  
(b) *L. charltonii*;  
(c) *L. fimbriatus*.

*Description of the Male.*—Shape of the head as shown in Pl. II. fig. 4. Bands of the head broad as in *L. charltonii*. Antenna with short-pointed appendage; distal end of third segment bifid (text-fig. 4 f). Chaetotaxy normal with occipital spines as shown in text-fig. 5 g.

Thorax as in *L. charltonii*.

Abdomen with broad pleurites and last segment with flattened posterior margin. Chaetotaxy normal except that on segments I–IV there are 4 (2, 2) not 6 (3, 3) ventral hairs, and all the hairs are shorter and finer.

*Description of the Female.*—Shape of the head as shown in text-fig. 8 b; with bands as in male and chaetotaxy normal.

Thorax as in male.

Abdomen with broad pleurites and posterior segments of somewhat different form from *L. caponis* (text-fig. 9 c). Chaetotaxy normal, except for the ventral hairs of segments I–IV, which are as in the male. The chaetotaxy of the valve as shown in text-fig. 9 c.
**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length, mm.</td>
<td>Breadth, mm.</td>
</tr>
<tr>
<td>Head (a)</td>
<td>0.43-0.44</td>
<td>0.28-0.30</td>
</tr>
<tr>
<td>(b)</td>
<td>0.26-0.29</td>
<td>0.26-0.29</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.27-0.29</td>
<td>0.27-0.29</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.82</td>
<td>0.30-0.34</td>
</tr>
<tr>
<td>Total</td>
<td>1.62</td>
<td></td>
</tr>
<tr>
<td>C.I. (a)</td>
<td>0.64-0.65</td>
<td>0.67</td>
</tr>
<tr>
<td>C.I. (b)</td>
<td>0.55-0.58</td>
<td>0.65-0.69</td>
</tr>
</tbody>
</table>

Described from 2 males and 3 females from skins of *Melanoperdix n. nigra* from Sumatra.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 3653.

**Lipeurus uncinatus** Piaget. (Text-fig. 3 c.)


This species is distinguished from other known species of *Lipeurus* by the form of the sac of the male genitalia (text-fig. 3 c). It most resembles *L. fimbriatus*, the distinguishing characters of which are given above under that species.

C.I. (a) of male 0.64–0.65, female 0.65–0.66.
C.I. (b) of male 0.55–0.58, female 0.65–0.69.

**Specimens examined.**—2 males, 4 females (Piaget’s types), from *Rollulus roulroul*; 2 males, 8 females, from skins of *Rollulus roulroul* from Borneo.

**Lipeurus pavo**, sp. n. (Pl. IV. fig. 1; text-figs. 2 c, 4 d, 7 d, 10 a.)

This species is distinguished from other known species of *Lipeurus* by the elongated head and presence of occipital bands in both sexes and by the genitalia of the male.

**Description of the Male.**—Shape of the head as shown in Pl. IV. fig. 1. Bands of the head normal, but with well-marked occipital bands present. Antenna as shown in text-fig. 4 d. Chaetotaxy normal.

**Thorax normal.**

**Abdomen normal with posterior margin of the last segment emarginated. Chaetotaxy normal, but ventral hairs on the last segment longer.**

Genitalia as shown in text-fig. 10 a.

**Description of the Female.**—Shape of the head as shown in text-fig. 7 d. Bands of the head as in the male, but occipital bands more heavily chitinized and temples with chitin flecks. Chaetotaxy normal.

**Thorax normal.**

Abdomen normal except for the end of the abdomen, which differs somewhat in form and chaetotaxy (see text-fig. 2 c).
Text-figure 10.

\[ \begin{array}{lll}
\text{Measurements.} \\
\text{Male.} & \text{Female.} \\
\hline
\text{Head, (a)} & 0.69-0.70 & 0.77 \\
\text{(b)} & 0.45-0.46 & 0.41 \\
\text{Thorax} & 0.60-0.65 & 0.64 \\
\text{Abdomen} & 1.78-1.81 & 0.65-0.69 \\
\text{Total} & 2.99-3.10 & 2.06-3.27 \\
\text{C.I. (a)} & 0.58-0.66 & 0.67 \\
\text{C.I. (b)} & 0.58-0.61 & 0.67 \\
\end{array} \]

Described from 3 males and 4 females from Pavo cristatus from Dehli, Nepal, and Yorkshire.

Holotype.—Male in the Meinertzhagen collection, slide no. 3122, from Pavo cristatus, Dehli.

Lipeurus numidæ (Denny). (Pl. III. fig. 1; text-figs. 5b, 8c, 10b, & 11a.)

Nirmus numidæ Denny, 1842, p. 115, pl. x. fig. 5. Host: Numida meleagris domestica.

Lipeurus numidianus Mjöberg, 1910, p. 87, pl. iii. figs. 4 & 6. Host: Numida meleagris mitrata.

Denny’s specimens of L. numidæ are not in the British Museum collection, and are probably no longer in existence. Through the kindness of the
Species of Mallophaga Occurring on Gallinaceous Hosts.

Authorities of the Naturhistoriska Riksmuseum, Stockholm, the author has been able to examine Mjöberg's types of L. numidianus from Numida meleagris mitrata. It has not been possible to procure material from the domestic guinea fowl, the type-host of L. numidae, due to the universal practice of hatching the eggs under chickens; all the Lipeurus obtained from domestic guinea fowls have been L. caponis (Linné). Numida m. domestica has been derived from one or more subspecies of Numida meleagris; specimens of Lipeurus have been seen from five subspecies of Numida meleagris (including N. meleagris mitrata) and found to belong to the same species. It is presumed, therefore, that this is the species described by Denny; the rather inadequate description and figure of that author support this. L. numidianus Mjöberg is therefore considered to be a synonym of L. numidae (Denny). The description and figures given below are taken from specimens from Numida meleagris major.

Text-figure 11.

Posterior segments, ♀ abdomen of Lipeurus spp.: (a) L. numidae; (b) L. raymondi.

This species is distinguished from the preceding species by the contrast of the colouring of the chitin of the bands and plates compared to that of the rest of the body, and in having only the posterior portion of the temple bands heavily chitinized. It is distinguished from L. raymondi by the presence of an antennal appendage in the male and by the shape of the head in both sexes.

Male.—Shape of the head as shown in Pl. III. fig. 1. Antenna with elongated first segment bearing small thickened appendage with rounded distal end; third segment with thickened pointed recurved end. Bands of the head of the same general type as in L. caponis, but with well-marked occipital bands. Superior ocular blotch deeply chitinized. In the marginal bands of the temples only that part of the band that is actually at the temple corner is heavily chitinized. Chaetotaxy of the head normal, arrangement of spines on occiput as shown in text-fig. 5 h.

Prothorax short with irregular diverging sides. Chaetotaxy normal.

L 2
Pterothorax normal; on the posterior margin are two lateral dorsal clumps of hairs, 8 (4, 4); in each clump are 2 central long stout hairs, and 1 shorter finer hair each side of this couple.

Abdomen normal, with last segment with posterior margin bifid. Chaetotaxy normal, except that the ventral hairs on the last segment are all longer than is usual, and there are 8 (4, 4) not 6 (3, 3) ventral hairs in the centre of the last segment.

Genitalia show certain differences from the usual caponis type (text-fig. 10 b).

**Female.**—Shape of the head as shown in text-fig. 8 c. Bands of the head as in the male, but a greater portion of the marginal band of the temple is chitinized. Trabecule small and transparent.

Thorax as in male.

Abdomen with tergal plates on segments I–III separated medianly and with all the tergal plates thickened medianly to form an x-shaped mark. Chaetotaxy normal, except for that of the last segment (see text-fig. 11 a).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length (mm)</td>
<td>Breadth (mm)</td>
<td>Length (mm)</td>
<td>Breadth (mm)</td>
</tr>
<tr>
<td>Head (a)</td>
<td>0.53–0.55</td>
<td>0.37–0.43</td>
<td>0.55</td>
<td>0.42</td>
</tr>
<tr>
<td>(b)</td>
<td>....</td>
<td>....</td>
<td>....</td>
<td>....</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.44–0.48</td>
<td>0.42–0.45</td>
<td>0.46</td>
<td>0.44</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.40–1.45</td>
<td>0.47–0.51</td>
<td>1.39</td>
<td>0.56</td>
</tr>
<tr>
<td>Total</td>
<td>2.27–2.41</td>
<td>....</td>
<td>2.33</td>
<td></td>
</tr>
<tr>
<td>C.I. (a)</td>
<td>0.78–0.80</td>
<td></td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>C.I. (b)</td>
<td>0.66–0.67</td>
<td></td>
<td>0.76</td>
<td></td>
</tr>
</tbody>
</table>

**Specimens examined.**—2 males, 6 females, from Numida meleagris mitrata from Madagascar (Mjöberg’s specimens); 5 males, 9 females, from N. m. major from Uganda; 2 males, 3 females, from skins of N. m. reichenowi; 3 males, 6 females, from skins of N. m. maxima from Angola; 3 males, 2 females, from skins of N. m. galeata from Sierra Leone.

**Lipeurus raymondi,** sp. n. (Pl. III. fig. 2; text-figs. 8 d, 10 c, & 11 b.)

This species is similar to L. numidae Denny, from which it is distinguished by the shape of the head in both sexes, and by the absence of the antennal appendage in the male.

**Description of the Male.**—Shape of the head as shown in Pl. III. fig. 2. Trabecule more pointed than in L. numidae. Antennae with first segment considerably elongated and without appendage; third segment with thickened simple end somewhat recurved. Bands of the head as in L. numidae, but with ocular blotch smaller; an elongated occipital signature is present. Chaetotaxy normal, with arrangement of spines as in L. numidae.

Thorax as in L. numidae.

Abdomen as in L. numidae, but posteriorly the last segment is broader. Chaetotaxy as in L. numidae.

Genitalia as shown in text-fig. 10 c.

**Description of the Female.**—Shape of the head as shown in text-fig. 8 d. Bands of the head as in male. Chaetotaxy normal.

Thorax as in male.
Abdomen as in *L. numidæ*, except for the details of the posterior segments (text-fig. 11β).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head (a)</td>
<td>0.63-0.68</td>
<td>0.40-0.43</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td>0.33-0.38</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.49</td>
<td>0.47-0.48</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.71-1.82</td>
<td>0.47-0.53</td>
</tr>
<tr>
<td>Total</td>
<td>2.73-2.81</td>
<td></td>
</tr>
<tr>
<td>C.I. (a)</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>C.I. (b)</td>
<td>0.53-0.56</td>
<td></td>
</tr>
</tbody>
</table>

Described from 6 males and 8 females from *Acryllium vulturinum* from Kenya.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 6799.

**Lipeurus differens differens** Piaget.

*Lipeurus differens* Piaget, 1885, p. 76, pl. viii. fig. 4. Host: *Agelastes meleagrides*.

This species is recognized by the thickened temple bands and long pointed paramere of the male genitalia.

Male C.I. (a) 0.74-0.75. C.I. (b) 0.75-0.77.

Specimens examined.—2 males, 3 females, Piaget’s types from *Agelastes meleagrides*. (The author is not certain whether the females are the same species as the males; this point cannot be settled without further material.)

**Lipeurus differens phasidus**, subsp. n. (Pl. III. fig. 3; text-fig. 10 d.)

This subspecies is distinguished from *L. d. differens* by the shape of the head and by the different proportions of the genitalia.

**Description of the Male.**—Shape of head as shown in Pl. III. fig. 3. Marginal bands of the temples broad and occipital bands narrow and pointed distally. Chaetotaxy normal with occipital spines as in *L. numidæ*.

Thorax with shape as shown in Pl. III. fig. 3. Posterior dorsal pterothoracic hairs in two clumps with 4 hairs in each.

Abdomen normal with genitalia as shown in text-fig. 10 d.

No females have been seen.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
</tr>
<tr>
<td>Head (a)</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
</tr>
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<td>Thorax</td>
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</tr>
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<td>Abdomen</td>
<td>1.21</td>
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<td>Total</td>
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<tr>
<td>C.I. (a)</td>
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<td>C.I. (b)</td>
<td></td>
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</tbody>
</table>

Described from 1 male from skin of *Phasidus niger* from the Cameroons.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 3637.
Lipeurus sinuatus Taschenberg. (Text-figs. 5 i, 12 a & c, & 13 a.)

*Lipeurus sinuatus* Taschenberg, 1882, p. 180, pl. vi. fig. 6. Hosts: *Megapodius f. freycinet* and *Megapodius r. reinwardt*.

Taschenberg records this species from *Megapodius freycinet* and *M. reinwardt*, but specimens from *M. freycinet* are found to be distinct from those from *M. reinwardt*. Taschenberg's description and figure (1882) apply to that species found on *M. reinwardt*; the other species from *M. freycinet* being subsequently described by Piaget (1890) as *Lipeurus latifasciatus*.

**Text-figure 12.**

Posterior segments, ♀ abdomen of *Lipeurus* spp.: (a) *L. sinuatus*; (b) *L. latifasciatus*.

Genitalia of (c) *L. sinuatus*; (d) *L. latifasciatus*.

*Lipeurus sinuatus* Taschenberg is distinguished from *L. latifasciatus* Piaget in the male by the proportions of the head, the end of the abdomen, and in the form of the male genitalia.

**Male.**—Shape of head as shown in Taschenberg's figure. Antennæ with thickened appendage on the first segment and third segment with thickened simple end. Occipital spines arranged as shown in text-fig. 5 i.

Thorax normal with posterior dorsal pterothoracic hairs arranged in two clumps of 3 hairs in each.

Abdomen normal with wide pleurites and large and obvious spiracles. Posterior segments as shown in text-fig. 12 a.

**Chelotaxy of the Abdomen.**—Dorsal surface normal, but the central pair
of hairs are minute. On the ventral surface, hairs somewhat irregular in numbers, segment I has 2 (1, 1) hairs; segments II—IV have 4 (2, 2); segment V has 6 (3, 3); segments VI—VII with 4–6 (2, 2 or 3, 3); posterior segments as shown in text-fig. 12 a.

Genitalia as shown in text-fig. 12 c.

**Female.**—The head differs from that of the male in having definite occipital bands. Chaetotaxy normal.

Thorax as in the male.

Abdomen with wide pleurites and large spiracles; tergal plates with greater thickening towards the centre, but no hour-glass shaped mark, as is normal for the females of this genus.

**Chaetotaxy of the Abdomen.**—Dorsal surface normal with central pair of hairs minute. On ventral surface segment I has 2 (1, 1) hairs; segment II has 4 (2, 2) hairs; segments III—IV have 6 (3, 3) hairs; segment V has 4–6 (2, 2 or 3, 3) hairs; chaetotaxy of the posterior segments as shown in text-fig. 13 a.

Head index: males 0·60–0·64; females 0·69–0·70.

**Specimens examined.**—5 males, 10 females, from skins of *Megapodius r. reinwardt* from New Guinea; 2 males, 4 females, from *M. reinwardt tumulus* from Australia; 1 male from skin of *M. reinwardt forstenii* from Amboina, New Guinea; 5 males, 4 females, from skins of *M. reinwardt yorki* from N. Queensland; 2 males, 7 females, from skins of *M. nicobariensis cumingii*; 2 males, 2 females, from skins of *M. nicobariensis sanghirensis* from Talaut; 1 male from skin of *M. nicobariensis pusillus* from Philippine Islands; 2 males, 1 female, from *M. n. gilbertii*. Taschenberg's types are not in the Halle collection and are most probably lost.

**Lipeurus latifasciatus** Piaget. (Text-figs. 12 b & d.)

*Lipeurus latifasciatus* Piaget, 1890, p. 240, pl. ix. fig. 4. Host: *Megapodius f. freycinet*.

This species is distinguished from *L. sinatus* Taschenberg in the males by the following characters:

1. Proportions of the head are different, as shown by the head index 0·66–0·67.

2. The last segment of the abdomen is different in form (text-fig. 12 b).

3. The basal plate of the genitalia is greater in length, and there are considerable differences in the details of the mesosome (text-fig. 12 d).

The females of this species are apparently indistinguishable from those of *L. sinatus*.

**Specimens examined.**—1 male, 2 females, Piaget's types, from *Megapodius f. freycinet*; 3 males, 4 females, from skins of *M. f. freycinet* from Malacca.

**Lipeurus crassus** Rudow. (Pl. IV. fig. 2; text-figs. 13 c, 14 a & c.)

*Lipeurus crassus* Rudow, 1869, p. 31. Host: *Alectura l. lathami*.

This species, together with *L. tsade* Piaget and *L. meyeri* Taschenberg (females only seen), are somewhat difficult to place. They agree with true *Lipeurus* in the absence of sutures in the head; in the form of the trabeculae and antennae of the male; in the absence of a hair or spine on the lateral margin of the prothorax; in the presence of a lateral indication of the meso-metathoracic junction; in the tergal plates of the abdomen of the male and to a
certain extent in the ventral chaetotaxy of the posterior segments of the male. These species differ from true Lipoeurus in the presence of a posterior sternal process on the male abdomen, in the form of the male genitalia, and in the abdomen of the female. In last two characters these species are similar to L. sinuatus and L. latifasciatus.

**Male.**—Head as shown in Pl. IV. fig. 2. Antennæ with thickened narrow appendage on first segment and third segment with thickened pointed distal end. Chaetotaxy of the head normal.

Thorax as shown in Pl. IV. fig. 2. Dorsal posterior ptero thoracic hairs arranged in two lateral clumps with 5 hairs in each (one specimen with 4 one side).

![Text-figure 13.](image)

Posterior segments, ♀ abdomen of Lipoeurus spp.: (a) L. sinuatus; (b) L. meyeri; (c) L. crassus.

Abdomen with tergal plate I separated medianly. Sternal plates I-V normal; plates VI-VIII fused vertically and forming posteriorly a thickened process (text-fig. 14 a). Chaetotaxy of the dorsal surface as in L. caponis, with an extra long stout hair each side of the base of segment VIII. Ventral chaetotaxy as in L. caponis, with the exception of that of segments VIII and IX, which have a greater number of hairs (text-fig. 14 a).

Genitalia as shown in text-fig. 14 c.

**Female.**—Head similar to that of the male with temples broader; antennæ filiform and trabecula with triangular outline. Chaetotaxy normal.

Thorax as in male with dorsal posterior pterothoracic hairs in two clumps with 4 hairs in each (one specimen with 5 hairs one side).

Abdomen with tergal plates I-II separated medianly. Pleurites broader and more definite than in the male. Dorsal and ventral chaetotaxy of segments I-VI as in the male, that of posterior segments as shown in text-fig. 13 c.
**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
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</thead>
<tbody>
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<td>Length. mm.</td>
<td>Breadth. mm.</td>
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<tr>
<td>Head (a)</td>
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<td>(b)</td>
<td>0.46–0.51</td>
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<tr>
<td>Thorax</td>
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<td>0.52–0.57</td>
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<td>Abdomen</td>
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<td>Total</td>
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<td>C.I. (a)</td>
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</tr>
<tr>
<td>C.I. (b)</td>
<td>0.67–0.69</td>
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</table>

Described from 8 males, 6 females, from skins of *Alectura l. lathami* from New South Wales; 7 males, 3 females, from skins of *Alectura lathami purpureicollis* from N. Queensland.

**Neotype.**—Male in the Meinertzhagen collection, slide no. 4565, from *Alectura l. lathami*.

**Lipeurus tsade Piaget.** (Text-figs. 14 b & d.)

*Lipeurus tsade* Piaget, 1890, p. 241, pl. ix. fig. 5. Host: *Macrocephalon maleo*.

This species is distinguished from *L. crassus* by the shape of the head and by details in the posterior segments of the abdomen.

**Male.**—Shape of head similar to that of *L. crassus*, but is somewhat narrower at the temples. Piaget’s figure (1890) shows the pre-antennal region too short and broad.

Thorax and abdomen as shown in Piaget’s figure with the posterior margin of the last segment more deeply bifid than in *L. crassus* and with the shape of the posterior sternal process somewhat different (text-fig. 14 b).

Genitalia as shown in text-fig. 14 d.

**Female.**—Head similar to that of the male but somewhat broader. Thorax as in the male.

Abdomen as in *L. crassus* with ventro-lateral hairs on segment VIII neither so long nor so numerous.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
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<tr>
<td>Head (a)</td>
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<td>(b)</td>
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<td>Thorax</td>
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<tr>
<td>Abdomen</td>
<td>1.58–1.72</td>
<td>0.53–0.58</td>
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<td>Total</td>
<td>2.06–2.85</td>
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</tr>
<tr>
<td>C.I. (a)</td>
<td>0.68–0.70</td>
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<tr>
<td>C.I. (b)</td>
<td>0.65</td>
<td></td>
</tr>
</tbody>
</table>

Specimens examined.—2 males, 1 female, Piaget’s types, from *Macrocephalon maleo*; 2 males from skin of *Macrocephalon maleo* from Celebes.
Lipeurus meyeri Taschenberg. (Text-fig. 13b.)

*Lipeurus meyeri* Taschenberg, 1882, p. 175, pl. vi. fig. 1. Host: *Talegalla fucirostris*.

This species, known from the female only, is distinguished from the two preceding species by the form of the marginal bands of the temples and the end of the abdomen.

*Female.*—Head as shown in Taschenberg’s figure with marginal bands of the temples thickened with irregular internal margin.

Text-figure 14.

Posterior segments, ♂ abdomen of *Lipeurus* spp.: (a) *L. crassus*; (b) *L. tsade*. ♂ genitalia of (c) *L. crassus*; (d) *L. tsade*.

Thorax and abdomen as in Taschenberg’s figure with posterior segments of the latter as shown in text-fig. 13b.

*Specimens examined.*—4 females from skin of *Talegalla fucirostris* from New Guinea.

**Lipeurus dovei** McGregor.


*Lipeurus dovei* McGregor, 1918, p. 46, nom. nov.

No specimens of *Lipeurus* from *Colinus virginianus texanus* have been seen.
Lipeurus eurychernis Taschenberg.

Lipeurus eurychernis Taschenberg, 1882, p. 171, pl. vi. fig. 5. Host: Lophophorus impejanus.


This species, described from a female, is apparently a Lipeurus and not the female of Oxyliqueurus burmeisteri Taschenberg with which it was found. No specimens of Lipeurus from Lophophorus impejanus have been seen by the author, and the type is not in the Halle collection.

Lipeurus patatorius, as shown in a figure in the Nitzsch manuscript, is a true Lipeurus and probably the same as Taschenberg’s species.

Lipeurus hamatus Piaget.

Lipeurus hamatus Piaget, 1885, p. 77, pl. viii. fig. 5. Host: Ortyx sp.?

One female, in the Piaget collection from Colinus cristatus leucotis (Ortyx leucotis), as shown in Piaget’s figure.

*Lipeurus orthopleurus* Giebel.


The type of this species is not in the Halle collection. Since the description is inadequate the name must be discarded.

Gallipeurus, gen. n.

This is a well-defined compact genus easily distinguished from the other genera found on gallinaceous hosts. It is, however, remarkably similar to Rhynonirmus Thompson recorded from hosts belonging to the Charadriiformes and to Otilipeurus Bedford from hosts belonging to the Otidid. As to whether this similarity is due to an ancient relationship between the host orders, or whether it is a case of convergent evolution, it is impossible to form an opinion on the available evidence.

Description of the Genus.—Head circumfasciate; temples swollen. Antennae sexually dimorphic, in the male first segment enlarged generally without an appendage (present in G. tetrogallus, see below, G. l. laurenisis (Bedford), and G. l. tropicalis (Peters)), third segment produced distally into a thickened simple or bifid point. Clypeal suture indefinite and not always apparent. Occipital bands and signature present.

Prothorax short without lateral spine or hair and with postero-lateral hair elongated. Pterothorax with meso-metathoracic junction visible on the lateral margin.

Abdomen with pleurites more complicated in structure and passing further anteriorly in the female than in the male. Male with accessory intertergital plates present on a varying number of segments between II–VII. Posterior segment of male abdomen characteristic (text-fig. 13) and differing from that found in other genera from gallinaceous hosts. Female with thickening of tergites greater towards the centre of the abdomen (complete transverse thickening in G. notatus, sp. n., and G. insolitus, sp. n.).

Genitalla characteristic with flattened endomeral plate and sac present. G. l. laurenisis and G. l. tropicalis differ considerably in the form of the genitalia and also in the posterior segment of the male abdomen; these two subspecies

* A figure in Nitzsch’s MS. of the G. orthopleurus shows that this species is the small Goniodes from Argus of which G. neumannia Kellogg and Paine becomes a synonym.
have been placed here as in the majority of characters they are in agreement with the generic definition.

Genotype.—_Lipeurus heterographus_ Giebel.

_Gallipeurus heterographus heterographus_ (Giebel,) (Text-figs. 15, 16, 17, & 18 a.)

_Lipeurus heterographus_ Giebel (Nitzsch MS.), 1866, p. 381. Host: _Gallus domesticus._


Text-figure 15.


Male.—Head as shown in text-fig. 15. Dorsal chaetotaxy as in the female with the posterior occipital hairs longer.

Thorax as shown in figure with dorsal posterior pterothoracic hairs arranged: 2, 3, 1, 1, 3, 2.

Abdomen with ventral view as shown in figure. Tergal plate I separated medially, plate II may be transversely continuous or partially separated, remaining plates transversely continuous. In both sexes the number of hairs on the abdomen varies in different individuals. Dorsal chaetotaxy of segments I–VII as in the female.

Genitalia as shown in text-fig. 17.

Female.—Head and thorax as shown in text-fig. 16. Ventral chaetotaxy as in the male.

Abdomen with dorsal view as shown in figure. Sternal plates median and semi-circular in shape. Ventral chaetotaxy of segments I–V as in the male, that of the posterior segments as shown in text-fig. 18a.
Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length (mm)</td>
<td>Breadth (mm)</td>
</tr>
<tr>
<td>Head</td>
<td>0.58 - 0.62</td>
<td>0.52 - 0.56</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.41 - 0.46</td>
<td>0.55 - 0.63</td>
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<tr>
<td>Abdomen</td>
<td>1.30 - 1.30</td>
<td>0.84 - 0.90</td>
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<td>Total</td>
<td>2.33 - 2.64</td>
<td>2.28 - 2.66</td>
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<tr>
<td>C.I</td>
<td>0.87 - 0.94</td>
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</table>

The three females in the Piaget collection labelled *Lipeurus heterographus var. major* are apparently conspecific with *Gallipeurus heterographus*. It is, however, impossible to place this variety correctly without an examination of the males and further material from *Pavo muticus*.

*Goniodes eynsfordii* Theobald is a synonym of *Gallipeurus h. heterographus*, as pointed out by Mr. Thompson (1937, p. 262).
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Specimens examined.—18 males, 15 females, from Gallus domesticus from England, Canada, Roumania, and Mexico; 3 females (Piaget's types of L. heterographus var. major) from Pavo muticus.

Gallipeurus heterographus obscurus (Giebel). (Text-fig. 18 b.)
Lipeurus obscurus Giebel, 1874, p. 220. Host: Alectoris r. rufa.
This subspecies differs from G. h. heterographus in the following characters:—
1. In the head, the pre-antennal region is narrower and the temples are more angulated and narrower in both sexes (text-fig. 18 b).

Text-figure 18.

(a) Gallipeurus h. heterographus: posterior segments, ♀ abdomen; (b) G. h. obscurus, ♂ head. Third segment, ♂ antenna of (c) G. h. arabicus; (d) G. h. barbara.

The male antennæ have the first segment somewhat narrower; third segment as shown in text-fig. 18 b.
2. The posterior ventral margin of the last segment of the abdomen in the male is straight.
3. The basal plate of the male genitalia is more constricted anteriorly and the posterior margin of the endomeral plate more rounded. Measurements as those of G. h. heterographus except those of the breadth of the temples (see C.I.).

C.I. of the male: 0·80. C.I. of the female: 0·80-0·81.

Specimens examined.—1 male, 3 females (in Piaget collection), from Alectoris rufa.
Gallipeurus heterographus arabicus, subsp. n. (Pl. V. fig. 1; text-fig. 18 c.)

This subspecies is distinguished from G. h. obscurus by the following characters:
1. In the shape of the head in both sexes the pre-antennal region is somewhat wider but not so wide as in G. h. heterographus.
2. The third segment of the male antennæ is different in shape (text-fig. 18 c).
3. The posterior ventral margin of the last segment in the male is bifid.
4. The posterior margin of the female valve is shallowly concave.
5. The endomeral plate of the male genitalia has a deep constriction distally.

Described from 2 males and 2 females from skins of Alectoris melanocephala from Aden.

Holotype.—Male in the Meinertzhagen collection, slide no. 428.

Gallipeurus heterographus barbaræ, subsp. n. (Pl. V. fig. 2; text-fig. 18 d.)

This subspecies is distinguished from G. h. obscurus by the following characters:
1. The head is broader in both sexes; the shape being as in G. h. arabicus.
2. The third segment of the male antennæ is different in shape (text-fig. 18 d).
3. The posterior ventral margin of the last segment in the male is concave.
4. The posterior margin of the female valve is shallowly concave.
5. The endomeral plate of the male genitalia has practically straight sides and a flattened posterior margin (Pl. V. fig. 2).

Described from 1 male, 1 female, from skins of Alectoris b. barbaræ from Algeria.

Holotype.—Male in the Meinertzhagen collection, slide no. 410.

Gallipeurus heterographus heyi, subsp. n. (Pl. V. fig. 3; text-fig. 19 a.)

This subspecies is distinguished from G. h. obscurus by the following characters:
1. The shape of the head in both sexes (Pl. V. fig. 3).
2. The shape of the third segment of the male antennæ, which is as in G. h. arabicus.
3. The posterior ventral margin of the last segment of the abdomen in the male differs from the preceding species (text-fig. 19 a).
4. The posterior margin of the female valve is shallowly concave.
5. The endomeral plate of the male genitalia is different in shape (text-fig. 19 a).

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
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<td>Length</td>
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<td>C.I.</td>
<td>0-79-0-83</td>
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</table>
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Described from 8 males, 5 females, from skins of *Ammoperdix heyi cholmleyi* from Assouan.

Holotype.—Male in the Meinertzhagen collection, slide no. 3085.

Text-figure 19.

(a) Gallipeurus heterographus heyi, posterior segments of ♀ abdomen.

(b) G. gedgii, ♂ genitalia.

**Gallipeurus nigromarginatus** (Piaget).

*Nirmus nigromarginatus* Piaget, 1880, p. 166, pl. xiv. fig. 1. Host: *Genneus nycthemerus horsfieldii*.

This species differs in the female from *G. h. heterographus* in having a narrower more pointed head.

Specimens examined.—2 females (Piaget’s type) from *Genneus nycthemerus horsfieldii*.

**Gallipeurus cameratus** (de Haan).

*Nirmus cameratus* de Haan (Lyonet MS.), 1829, p. 267, pl. iv. fig. 6. Host: *Lyrurus t. tetrix*.

The name *Nirmus cameratus* was first published by Nitzsch (1818, p. 291) with the host *Lyrurus t. tetrix*, but with no description. Later it was applied by de Haan to the *Lipeurus* described and figured in Lyonet’s manuscript. Lyonet’s figure shows a typical *Gallipeurus* similar to *G. h. heterographus* with the anterior margin of the head somewhat more rounded. Burmeister (1839, p. 430) described a *Nirmus cameratus* from the same host which is

apparently a *Lagopæcus*, and later Giebel (1874, p. 152) described Nitzsch’s original specimens, which are true *Lagopæcus*. The name *cameratus*, therefore, must be used for Lyonet’s figure, as Nitzsch originally published the name as a nomen nudum, and Burmeister’s *Lagopæcus* must be renamed (see *Lagopæcus lyrurus* below).

**Gallipeurus heterogrammicus** (Giebel). (Pl. VI. fig. 1; text-figs. 20, 22 a.)


This species and the following species of *Gallipeurus* parasitic on species of *Francolinus* differ from the heterographus group in the elongated paramera and endomeral plate of the male genitalia, and the complete separation of tergal plates VII–VIII in the female abdomen.

Text-figure 20.

---

**Gallipeurus heterogrammicus**, posterior segments of abdomen.

(a)♂; (b)♀.

**Male.**—Shape of head as shown in Pl. VI. fig. 1. Third segment of the antennæ with bifid distal end. Occipital signature of somewhat different shape from that of *G. h. heterographus*. Chaetotaxy normal.

Thorax with shape as shown in Pl. VI. fig. 1. Posterior dorsal pterothoracic hairs in two clumps each side, arranged: —2, 4–5, 4–5, 2.

Abdomen with tergal plates I–II separated medially; accessory dorsal plates present in segments I–VI, being transversely continuous in segments III–IV and medially divided in segments I–II and V–VI. Posterior margin of last segment straight ventrally, and shallowly concave dorsally (text-fig. 20 a).

Genitalia with elongated paramera and endomeral plate (text-fig. 22 a).

**Female.**—Head similar to that of *G. h. heterographus*, but is somewhat narrower at the temples.
Thorax and abdomen as in *G. h. heterographus*, except that tergal plate VII is interrupted medianly and there is no connecting strip between the two halves of plate VIII; posterior segments differ somewhat ventrally (text-fig. 20b).

### Measurements.

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
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<td><strong>Thorax</strong></td>
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<td>Breadth. mm.</td>
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<td>Thorax</td>
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<td>C.I.</td>
<td>0.80-0.85</td>
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</table>

Specimens examined.—14 males, 10 females, from *Perdix p. perdix* from Hungary; 1 female from *P. p. perdix* from England. 1 female of the above compared with type-specimen in the Halle collection by Dr. Keler.

This species is the rarest of any of the Mallophagan species found on *Perdix perdix*; out of 21 specimens of *Perdix p. perdix* and 17 of *Perdix p. lucida* examined only three individuals were parasitized by this species.

**Gallipeurus Rosalindae**, sp. n. (Pl. VI. fig. 2; text-figs. 21c, 22b.)

This species is distinguished from *G. heterogrammicus* by the more rounded anterior margin of the head in both sexes and in the genitalia of the male.

**Text-figure 21.**

Posterior segments of abdomen of *Gallipeurus* spp.: (a) ♂; (b) ♂ of *G. hungerfordi*; (c) ♂ of *G. rosalindae*.

**Description of the Male.**—Shape of the head as in Pl. VI. fig. 2. Antennae with distal end of third segment simple. Chaetotaxy as in *G. h. heterographus* with 10 (5, 5) extra dorsal hairs in the median lateral region of head.

Thorax as shown in Pl. VI. fig. 2; dorsal posterior pterothoracic hairs arranged: —2, 2. 2, 2.
Abdomen with tergal plates I–II divided medianly; accessory dorsal plates present on segments II–V, being divided medianly in segments II and V. Dorsal and ventral hairs fewer in number than in previously mentioned species of this genus. On the dorsal surface segment I with 10 hairs, 2 anterior and 8 posterior; segment II with 10 and 2 (1, 1) post-spiracular hairs; segments III–IV with 8 and 2 (1, 1) post-spiracular hairs; segment V with 6 and 2 (1, 1) post-spiracular hairs; segment VI with 4 and 2 (1, 1) post-spiracular hairs; segment VII with 2 and 2 (1, 1) post-spiracular hairs. On the ventral surface segments I and IV with 8 hairs; segments II–III with 10 hairs; segments III–IV with 8 and 2 (1, 1) post-spiracular hairs; segment V with 6 hairs; segment VI with 2 hairs; segments VIII and IX as shown in text-fig. 21 c.

Genitalia as shown in text-fig. 22 b.

Description of the Female.—Shape of head as that of male. Trabeculae smaller than those of male with triangular outline.

Thorax as in male.

Abdomen as in G. hungerfordi (see below).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0-66-0-78</td>
<td>0-57-0-70</td>
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<tr>
<td>Thorax</td>
<td>0-53-0-66</td>
<td>0-64-0-80</td>
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<tr>
<td>Abdomen</td>
<td>1-43-2-06</td>
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<tr>
<td>Total</td>
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</tr>
<tr>
<td>C.I.</td>
<td>0-87-0-90</td>
<td></td>
</tr>
</tbody>
</table>

Described from 12 males, 11 females, from Francolinus shelleyi theresa from Mt. Kenya, and 1 male from Francolinus shelleyi elgonensis from Kenya.

**Holotype.**—Male in the Meinertzhagen collection from Francolinus shelleyi theresa, slide no. 6587*.

**Gallipeurus hungerfordi**, sp. n. (Pl. VI. fig. 3; text-figs. 21 a & b, 22 c.)

This species is distinguished from G. heterogrammicus and G. rosalindi by the narrower head in both sexes and in the form of the male genitalia.

Description of the Male.—Shape of head as shown in Pl. VI. fig. 3. Antennæ with third segment having thickened simple distal end. Chaetotaxy as in G. rosalindi.

Thorax with shape as shown in Pl. VI. fig. 3; posterior dorsal pterothoracic hairs arranged 2, 2, 2, 2.

Abdomen with tergal plates I–II separated medianly; accessory dorsal plates present on segments II–VI, being divided medianly in segment VI. Number of hairs on segments I–VII variable but similar to those of G. rosalindi; posterior segments as in text-fig. 21 b. Post-spiracular hairs on segments II–IV long, those on the remaining segments shorter and finer.

Genitalia as shown in text-fig. 22 c.

Description of the Female.—Shape of head similar to that of male but somewhat broader. Chaetotaxy normal.

Thorax as in male.

Abdomen normal with chaetotaxy of segments I–VI as in male; posterior segments as in text-fig. 21 a.

* This species is named after Mrs. Pollen, who assisted in the collection of the parasites,
Text-figure 22.

\[ \delta \text{ genitalia of Gallipeurus spp.: (a) } G. \text{ heterogrammious; (b) } G. \text{ rosatindae; (c) } G. \text{ hungerfordi.} \]

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.56-0.57</td>
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<tr>
<td>Thorax</td>
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<tr>
<td>Abdomen</td>
<td>1.07-1.23</td>
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<tr>
<td>Total</td>
<td>2.98-3.14</td>
<td>2.24-2.42</td>
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<tr>
<td>C.I.</td>
<td>0.79-0.82</td>
<td>0.84-0.86</td>
</tr>
</tbody>
</table>

Described from 12 males and 14 females from *Francolinus j. jacksoni* from Kenya, and 1 male and 5 females from *Francolinus jacksoni pollenorum* from Mt. Kenya. This species is named after Captain W. H. Pollen, to whom the author is much indebted for the photographs illustrating this paper.

**Holotype.**—Male in the Meinertzhagen collection from *Francolinus j. jacksoni*, slide no. 7506.

**Gallipeurus pternistis pternistis** (Bedford).


This species is a typical *Gallipeurus*.

**Specimens examined.**—1 female (holotype), 1 male (allotype), from *Pternistis swainsonii* from Zoo, Pretoria. (Specimens kindly lent by G. H. A. Bedford.)
Gallipeurus pternistis maranensis, subsp. n. (Pl. VI. fig. 5.)

This subspecies is close to G. p. pternistis, from which it can be distinguished by the shape of the head.

Description of the Male.—Shape of the head as shown in Pl. VI. fig. 5, with pre-antennal region somewhat shorter and the anterior margin more rounded than in G. p. pternistis. Chaetotaxy of the head normal, with 3–4 hairs on the dorsal surface of the postero-lateral region of the hind head as in G. p. pternistis.

Thorax with shape as shown in Pl. VI. fig. 5. Posterior dorsal pterothoracic hairs arranged: —2, 2, 2, 2.

Abdomen with tergal plates I–II separated medianly; accessory dorsal plates present on segments II–VI, being separated medianly in segments V and VI. Chaetotaxy as in G. p. pternistis.

Genitalia narrower and finer than in G. p. pternistis, with paramera and endomeral plate elongated, the former reaching further posteriorly than the latter.

Described from 3 males from Francolinus squamatus maranensis from Kenya.

Holotype.—Male in the Meinertzhagen collection, slide no. 6971.

Gallipeurus pternistis placentella, subsp. n. (Pl. VI. fig. 4.)

This subspecies is distinguished from G. p. maranensis, in the male by, the following characters:—

1. The shape of the head is more pointed anteriorly.
2. In the abdomen tergal plate II may be transversely continuous or separated medianly. The accessory dorsal plates are continuous in all segments.
3. The genitalia are similar to those of G. p. maranensis, but the endomeral plate reaches further posteriorly than do the paramera.

Description of the Female.—Shape of the head similar to that of male but somewhat broader.

Thorax as in the male but broader.

Abdomen normal, with hairs on the posterior margin of the valve, and the spines on the ventral surface of the last segment somewhat elongated.

Measurements as in G. gedgii (see below).

Described from 3 males, 8 females, from skins of Francolinus griseostriatus from Angoland.

Holotype.—Male in the Meinertzhagen collection, slide no. 3583.

Gallipeurus gedgii, sp. n. (Pl. V. fig. 4; text-fig. 19 b.)

This species is distinguished from G. pternistis placentella by the genitalia in the male and by the presence of fewer hairs on the posterior margin of the valve in the female.

Description of the Male.—Shape of the head as shown in Pl. V. fig. 4. Chaetotaxy of the head as in G. rosalindæ.

Thorax with shape as shown in Pl. V. fig. 4. Dorsal posterior pterothoracic hairs arranged: —2, 2, 2, 2.

Abdomen with tergal plates I–III separated medianly; accessory dorsal plates present in segments I–VI, being separated medianly in segments I–II and V–VI. On the dorsal surface segment I has 8 hairs, 2 anterior and 6 posterior; segments II–III have 6 hairs each; segments IV–VII have 4 hairs each; segment VIII has 2 hairs; segment IX has 6 anterior hairs (3, 3)
and 6 posterior hairs (3, 3). Post-spiracular hairs are present on segments II–VI. On the ventral surface segment I has 6 hairs; segments II–IV have 8 hairs each; segment V has 6 hairs; segment VI has 4 hairs; segment VII has 2 hairs; segments VIII and IX have together 24 hairs (12, 12).

Genitalia as shown in text-fig. 19 b.

Description of the Female.—Shape of the head similar to that of the male but broader.

Thorax as in the male but broader.

Abdomen normal with all tergal plates separated medianly. Dorsal chaetotaxy as in the male. Ventrally segments I–VI have 6 hairs each; posterior hairs normal with 12–14 hairs on the margin of the valve.

### Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.57–0.59</td>
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<tr>
<td>Thorax</td>
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<td>0.42–0.47</td>
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<tr>
<td>Abdomen</td>
<td>1.13–1.36</td>
<td>0.57–0.65</td>
</tr>
<tr>
<td>Total</td>
<td>2.06–2.15</td>
<td>1.29–1.42</td>
</tr>
<tr>
<td>C.I</td>
<td>0.70–0.72</td>
<td>0.68–0.76</td>
</tr>
</tbody>
</table>

Described from 5 males, 2 females, from skins of *Francolinus clappertoni gedgii* from Mt. Elgon; 1 male, 7 females, from skins of *Francolinus clappertoni sharpei* from Abyssinia; 1 female from skin of *Francolinus clappertoni heuglini*, S. Sudan.

Holotype.—Male in the Meinertzhagen collection from *Francolinus clappertoni gedgii*, slide no. 3570.

**Gallipeurus cinereus cinereus** (Giebel). (Pl. VII. fig. 1; text-figs. 23 a & b.)


*? Nirmus argentatus* “Schilling,” Gurtt, 1878, p. 188. Nom. nud. Host: *Coturnix c. coturnix*.

It is apparent from the published descriptions, and from figures in Nitzsch’s manuscript, that *Lipeurus cinereus* recorded from *Chelidon u. urbica* is the same species as that recorded from *Coturnix c. coturnix*, the former record being that of a straggler.

This species is characterized by its small form and pointed anterior margin of the head. It is distinguished from *G. c. japonicus* (see below) by its narrower form and from *G. synoicus* (see below) by the form of the last segment of the abdomen.

**Male.**—Shape of the head as shown in Pl. VII. fig. 1. Chaetotaxy and bands of the head normal.

Thorax with shape as shown in Pl. VII. fig. 1. Posterior dorsal pterothoracic hairs arranged:—2, 2, 1. 1, 2, 2, where the hairs are in pairs, one is shorter and finer than the other.

Abdomen with tergal plates I–II separated medianly; accessory dorsal plates present on segments II–VII, being separated medianly on segments V–VII.
Chaetotaxy of the Abdomen.—On the dorsal surface segment I has 8 hairs, 2 anterior and 6 posterior; segments II–IV have 6 hairs each and 2 (1, 1) post-spiracular hairs; segments V–VI have 6 hairs each and 2 (1, 1) post-spiracular hairs; segment VII has 6 hairs and 2 (1, 1) post-spiracular hairs; posterior segments of the abdomen as shown in text-fig. 23a. On the ventral surface segment I has 4 hairs; segments II–V have 6 hairs each; segment VI has 4 hairs; segment VII has 2 hairs; posterior segments as shown in text-fig. 23a. Lateral hairs normal.

Genitalia with elongated paramera and endomeral plate, the former being shorter than the latter.

Female.—Shape of head and thorax as in the male. Abdomen with all tergal plates separated medianly; chaetotaxy as in the male except for that of the posterior segments (text-fig. 23b).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.47-0.48</td>
<td>0.29-0.30</td>
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<tr>
<td>Thorax</td>
<td>0.26-0.31</td>
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<tr>
<td>Abdomen</td>
<td>0.52-0.95</td>
<td>0.33-0.39</td>
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<tr>
<td>Total</td>
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</tr>
<tr>
<td>C.I.</td>
<td>0.60-0.61</td>
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</table>
Specimens examined.—1 male, 11 females, from Coturnix c. coturnix, Egypt (London Market); 1 male from Coturnix c. coturnix (Piaget collection). 1 male and 4 females compared with type in Halle collection by Dr. Kéler.

**Gallipeurus cinereus japonicus**, subsp. n. (Pl. VII. fig. 2.)

This subspecies is distinguished from *G. c. cinereus* by the following characters:

1. The head, thorax, and abdomen are broader in both sexes.
2. The male genitalia are of the same type as those of *G. c. cinereus*, but are somewhat broader.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td></td>
<td></td>
<td>Length</td>
</tr>
<tr>
<td>Head</td>
<td>0-32</td>
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<tr>
<td>Thorax</td>
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<td>1-22</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-12</td>
<td>0-51</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1-91</td>
<td></td>
<td>2-07</td>
</tr>
<tr>
<td>C.I</td>
<td>0-70</td>
<td></td>
<td>0-78</td>
</tr>
</tbody>
</table>

Described from 2 males, 4 females, from *Coturnix coturnix japonica* from Chabarowsk, Russia.

*Holotype.*—Male in the British Museum collection, no. 1912–373.

**Gallipeurus maculipes** (Piaget).


In Piaget’s collection is a slide labelled *Lipeurus heterogrammicus* from Colinus v. virginianus, on which are three females; these are presumably the types of Piaget’s variety *maculipes*. These females do not differ from specimens of *G. c. cinereus* examined by the author, except that they are somewhat larger in size. It is possible that these are true *G. c. cinereus* and that Colinus v. virginianus is not the correct host, but without further material including males it is impossible to place this variety of Piaget’s in its correct position.

**Gallipeurus acuminatus** (Piaget).

*Lipeurus acuminatus* Piaget, 1885, p. 70, pl. 7, fig. 6. Host: *Excalfactoria chinensis australis*.

This species is recognized by the elongated pointed anterior margin of the head.

*Female.*—Shape of head as shown in Piaget’s figure. Chaetotaxy of the head normal with fourth (from anterior margin) dorsal marginal hair unusually long. Thorax with shape as in Piaget’s figure. Dorsal posterior pterothoracic hairs arranged:—2, 2, 2, 2, with one hair of each pair being shorter and finer than the other.

Abdomen with tergal plate VII transversely continuous.

*Chaetotaxy of the Abdomen.*—On the dorsal surface segment I has 6 hairs, 2 anterior and 4 posterior; segments II–V have 6 hairs each and 2 (1, 1) post-spiracular hairs; segment VI–VII have 4 hairs each and 2 (1, 1) post-spiracular
hairs; segments VIII-IX with chaetotaxy normal. On the ventral surface segment I has 4 hairs; segments II-V have 6 hairs each; segment VI has 4 hairs; segment VII has 2 hairs and a variable number of spines; segment VIII with numerous small spines and 6 hairs on the posterior margin of the valve; posteriorly there are 6 spines (3, 3) as in G. c. cinereus.

Head index:—0·62.

Specimens examined.—2 females (Piaget's types) from Excalfactoria chinensis australis.

**Gallipeurus synoicus**, sp. n. (Pl. VII, fig. 3; text-figs. 23 c, 24 a.)

This species is distinguished from G. c. cinereus by the form of the posterior segment of the male abdomen and by the transversely continuous tergal plates of segments VII-VIII of the female abdomen.

**Text-figure 24.**

![Text-figure 24](image-url)

**Description of the Male.**—Shape of head as shown in Pl. VII, fig. 3. Trabeule well developed with rounded distal end; antenna with segments narrow and third segment with pointed thickened end. Chaetotaxy normal.

Thorax with shape as shown in Pl. VII, fig. 3. Posterior dorsal pterothoracic hairs arranged:—4, 1, 1, 4; in the clumps containing 4 hairs the outer are shorter and finer than the two central hairs.

Abdomen with tergal plates I–II separated medianly. Accessory dorsal plates present on segments II–VI, being divided medianly on segment VI. The posterior segment is considerably narrowed ventrally (see text-fig. 23 c).

**Chaetotaxy of the Abdomen.**—On the dorsal surface segment I has 4 hairs, 2 anterior and 2 posterior; segment II has 4 hairs and 2 (1, 1) post-spiracular
hairs; segments III–VI have 6 hairs each with 2 (1, 1) post-spiracular hairs; segment VII has 4 hairs and 2 (1, 1) post-spiracular hairs; segments VIII and IX normal. On the ventral surface segment I has 4 hairs; segments II–V have 6 hairs each; segment VI has 4 hairs; segment VII has 2 hairs; hairs of segments VIII and IX as shown in text-fig. 23 c.

Genitalia of usual type found in the genus with length of basal plate long compared with that of the mesosome (text-fig. 24 a).

Description of the Female.—Shape of head similar to that of male but broader. Chaetotaxy normal.

Thorax as in the male but somewhat broader; pterothoracic hairs arranged : 2, 2, 2.

Abdomen considerably broader than that of male. Tergal plate I separated medianly; plates II–VI joined by narrow median basal band; plates VII and VIII partially joined. Chaetotaxy of segments I–VI as in the male; that of the posterior segments is as in G. c. cinereus.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.46–0.47</td>
<td>0.27–0.29</td>
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<tr>
<td>Thorax</td>
<td>0.27–0.28</td>
<td>0.23–0.29</td>
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<tr>
<td>Abdomen</td>
<td>0.96–1.01</td>
<td>0.36–0.37</td>
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<tr>
<td>Total</td>
<td>1.72–1.73</td>
<td></td>
</tr>
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</table>

Described from 4 males and 1 female from skins of *Synoicus ypsilophorus australis* from Victoria, and 2 females from *Synoicus y. raaltenii* from Timor.

Holotype.—Male in the Meinertzhagen collection, slide no. 3617, from *Synoicus y. australis*.

**Gallipeurus spinicaudatus**, sp. n. (Pl. VII. fig. 4; text-fig. 23 e.)

This species is easily distinguished from other known Gallipeurus species by the form of the last segment of the male abdomen.

Description of the Male.—Shape of the head as shown in Pl. VII. fig. 4. Trabecula short and stout; antennae with first segment not greatly enlarged, and third with thickened pointed end. Chaetotaxy normal.

Thorax with shape as shown in Pl. VII. fig. 3. Posterior dorsal pterothoracic hairs arranged : 2, 2, 1, 1, 2, 2.

Abdomen with tergal plates I–II separated medianly; accessory dorsal plates present on segments III–VI, being interrupted medianly in segments V–VI. Last segment, ventrally, somewhat narrowed and with flattened posterior margin set with stout spines (text-fig. 23 e).

Chaetotaxy of the Abdomen.—On the dorsal surface segment I has 8 hairs, 2 anterior and 6 posterior; segments II–V have 6 hairs each and 2 (1, 1) post-spiracular hairs; segments VI–VII have 4 hairs each and 2 (1, 1) post-spiracular hairs; hairs of segments VII and IX normal. On the ventral surface segments I–V have 6 hairs each; segment VI has 4 hairs; segment VII has 2 hairs; hairs on segments VIII and IX as shown in text-fig. 23 c. Lateral hairs normal.

Genitalia of usual type found in the genus, with mesosome broadened proximally, endomeral plate elongated and narrowed distally and paramera curved.

Description of the Female.—Shape of head as that of male. Trabecula
somewhat smaller than those of male and triangular in outline. Chaotaxy normal.

Thorax as in male.

Abdomen with tergal plates VII–VIII joined transversely. Chaotaxy of segments I–VI as in the male; that of the posterior segments is as in G. c. cinereus with the 6 (3, 3) posterior ventral spines shorter and finer.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.46</td>
<td>0.30</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.29</td>
<td>0.32</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.01</td>
<td>0.43</td>
</tr>
<tr>
<td>Total</td>
<td>1.72</td>
<td></td>
</tr>
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</table>

C.I. 0.64

Described from 1 male and 1 female from skin of Perdicula a. asiatica from Rajputana.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 4772.

**Gallipeurus madagascariensis** (Mjöberg). (Pl. VII. fig. 5; text-fig. 23 d.)

**Oxylipeurus madagascariensis** Mjöberg, 1910, p. 92, 2 figs. Host: Margaroperdix madagarensis.

**Lipeurus madagascariensis** (Mjöberg) Harrison, 1916, p. 84.

This species is distinguished from G. spinicaudatus by the shape of the head in both sexes and the absence of spines on the posterior segment of the male abdomen.

**Male.**—Shape of the head as shown in Pl. VII. fig. 5. Trabecula short and pointed; third segment of the antennae with thickened pointed end. Chaotaxy normal with the addition of 10 (5, 5) hairs on the dorsal postero-lateral area of the head.

Thorax with shape as shown in Pl. VII. fig. 5. Posterior dorsal pterothoracic hairs arranged:—2, 2, 1, 1, 2, 2; one hair in each of the pairs being shorter and finer than the other.

Abdomen with tergal plates I–II separated medially; accessory dorsal plates present on segments III–VII, being divided medially in segment VII.

**Chaotaxy of the Abdomen.**—On the dorsal surface segment I has 6 hairs, 2 anterior and 4 posterior; segments II–IV have 6 hairs each and 2 (1, 1) post-spiracular hairs; segments V–VII all have 4 hairs each and 2 (1, 1) post-spiracular hairs; segments VIII and IX with chaotaxy normal. On the ventral surface segment I has 4 hairs; segments II–V have 6 hairs each; segment VII has 4 hairs; chaotaxy of segments VIII and IX as shown in text-fig. 23 d.

Geminalia of the usual type found in the genus (general shape as shown in text-fig. 23 d).

**Female.**—Shape of head as that of male. Trabeculae somewhat narrower than in male. Chaotaxy normal.

Thorax as in male.

Abdomen with tergal plates I–VI and VIII–IX separated medially; plate VII partially joined. Chaotaxy of segments I–VI as in the male; that of posterior segments is as in G. c. cinereus, but with 4–6 (2, 2 or 3, 3 or 2, 3) hairs on the posterior margin of the valve.
Measurements.

<table>
<thead>
<tr>
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<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
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</tr>
<tr>
<td>Thorax</td>
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<td>0.33-0.37</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.02-1.03</td>
<td>0.45-0.48</td>
</tr>
<tr>
<td>Total</td>
<td>1.83-1.95</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td></td>
<td>0.64-0.65</td>
</tr>
</tbody>
</table>

Specimens examined. — 3 males (Mjöberg’s types, lent by the Naturhistoriska Riksmuseum, Stockholm); 1 male, 3 females, from skins of Margaroperdix madagarensis from Madagascar.

**Gallipeurus notatus**, sp. n. (Pl. VIII. fig. 1; text-figs. 24 b, 25 b.)

This species is distinguished by the form of the male genitalia.

**Description of the Male.** — Shape of the head as shown in Pl. VIII. fig. 1. Trabeculae stout with pointed ends; third segment of the antennae with thickened prolonged distal end. Chaetotaxy normal.

Thorax with shape as shown in Pl. VIII. fig. 1. Posterior dorsal pterothoracic hairs arranged: — 2, 3, 2, 3.

Abdomen with tergal plates I-III separated medianly; accessory dorsal plates present on segments II-VII, being divided in segments VI and VII.

**Chaetotaxy of the Abdomen.** — On the dorsal surface segment I has 6 hairs, 2 anterior and 4 posterior; segments II-VII have 4 hairs each and 2 (1, 1) postspiracular hairs; segments VIII and IX with chaetotaxy normal. On the ventral surface segment I has 4 hairs; segments II-IV have 6 hairs each; segment V has 4 hairs; segment VII has 2 hairs; segments VIII and IX with 18 (9, 9) hairs. Lateral hairs normal.

Genitalia as shown in text-fig. 24 b.

**Description of the Female.** — Shape of the head as that of male. Trabeculae smaller and more pointed. Chaetotaxy normal.

Thorax with shape as in male. Posterior dorsal pterothoracic hairs arranged: — 2, 2, 2, 2.

Abdomen with only tergal plate VII transversely continuous. Chaetotaxy as in male with the exception of the posterior segments, which have the hairs arranged as shown in text-fig. 25 b.

Measurements.

<table>
<thead>
<tr>
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<tr>
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<td>C.I</td>
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Described from 2 males and 6 females from skins of *Ptilopachus petrosus petrosus* from Portuguese Guinea.

**Holotype.** — Male in the Meinertzhagen collection, slide no. 3614.
**Gallipeurus tetraogallus**, sp. n. (Pl. VIII. fig. 2; text-figs. 24 c, 25 a.)

This species is distinguished by the size and shape of the head in both sexes, by the presence of an appendage on the first segment of the male antennæ, and by the form of the male genitalia.

*Description of the Male.*—Shape of the head as shown in Pl. VIII. fig. 2. Trabeculae stout and irregular in shape; antennæ with small pointed thickened appendage on the first segment, third segment with thickened bifid distal end. Chaetotaxy of the head normal, but hairs on the eyes and temple margins longer than are usually found in this genus.

**Text-figure 25.**

*Posterior segments of abdomen of Gallipeurus spp.:* (a) ♂ of *G. tetraogallus*; (b) ♀ of *G. notatus*; (c) ♀ of *G. insolitus.*

Thorax with shape as shown in Pl. VIII. fig. 2. Posterior dorsal pterothoracic hairs arranged: -- 2, 3, 1, 1, 3, 2, all being long and stout.

Abdomen with tergal plates I–II separated medianly; accessory dorsal plates present on segments II–VI, being separated medianly on segments II and VI.

*Chaetotaxy of the Abdomen.*—On the dorsal surface segment I has 10 hairs, 2 anterior and 8 posterior; segments II–IV have 10 hairs each and 2 (1, 1) post-spiracular hairs; segment V has 8 hairs, segment VI has 6–7 hairs, segment VII has 4 hairs, each with 2 (1, 1) post-spiracular hairs; segments VIII and IX with chaetotaxy normal. On the ventral surface segment I has 10 hairs; segment II has 11–12 hairs; segment III has 12 hairs, segment IV has 9–10 hairs; segment V has 8 hairs; segment VI has 6 hairs; segment VII
has 2 hairs; segment VIII and IX with hairs as shown in text-fig. 25 a. Lateral hairs normal.

Genitalia as shown in text-fig. 24 c.

Description of the Female.—Shape of head as that of male but somewhat broader. Trabeculae pointed and project but little beyond the lateral margin of the head. Chaetotaxy normal with hairs on the eyes and temple margins longer than in the male, also the two dorsal hairs in the centre of the pre-antennal region are unusually long.

Thorax with shape as in male. Posterior dorsal pterothoracic hairs arranged :—2, 2, 2, 2.

Abdomen with tergal plate VII transversely continuous. Pleurites with "heads" prolonged less far anteriorly than is normal for females of this genus.

Chaetotaxy of the Abdomen.—Dorsal surface as in male. On the ventral surface segment I has 14 hairs; segments II–III have 12 hairs each; segments IV–V have 10 hairs each; segment VI has 7–8 hairs; segment VII has 2 hairs and 8 spines; posterior margin of the valve with 8–10 hairs and the usual stout submarginal spines.

Measurements.

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</tr>
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<tr>
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Described from 2 males, 1 female, from skins of Tetraogallus h. himalayensis from Ladak; 3 females from skins of Tetraogallus h. koslowi from Koko-nor; 1 male from skin of Tetraogallus a. altaicus (bought in London market); 1 male from skin of Tetraogallus tibetanus tibetanus from Sikkim.

Holotype.—Male in the Meinertzhagen collection from skin of Tetraogallus h. himalayensis, slide no. 3259.

Gallipeurus insolitus, sp. n. (Pl. VII. fig. 6; text-fig. 25 c.)

This species is distinguished from all other known species of Gallipeurus by the flattened anterior margin of the head, the thickened clypeal bands, and the broad pleurites.

Description of the Male.—Head as shown in Pl. VII. fig. 6. Antennae with third segment prolonged into narrow thickened point. Chaetotaxy normal.

Thorax with shape as shown in Pl. VII. fig. 6. Dorsal posterior pterothoracic hairs arranged :—2, 2, 1, 1, 1, 2, 2.

Abdomen with wide pleurites. Tergal plates separated medially in segments I–III; accessory dorsal plates faint but present in segments II–VI, being separated medially in segment VI. On the dorsal surface segment I has 6 hairs, 2 anterior and 4 posterior; segments II–VI have 4 hairs each and 2 (1, 1) post-spiracular hairs, those on segments II–IV being long and stout, those on segments V–VI being shorter and finer; segment VII has 2 hairs; segments VIII and IX have 6 hairs each. On the ventral surface segment I has 4 hairs; segments II–IV have 6 hairs each; segment V has 4 hairs;
segments VI–VII have 2 hairs each; segments VIII and IX have together 14 hairs.

Genitalia of the usual type found in this genus with narrow elongated paramera and endomeral plate; the sac is small.

*Description of the Female.*—Head as in the male but is somewhat broader; trabeculae narrower and more pointed; antennae filiform.

Thorax as in the male with posterior dorsal pterothoracic hairs arranged:—1, 2, 2, 2, 1.

Abdomen with wide pleurites, the heads being somewhat more complicated than in the male, as is usual in this genus. Tergal plates I–VIII separated medianly. Dorsal chaetotaxy of segments I–VII as in the male; segment VIII with 4 hairs. Ventral chaetotaxy of segments I–VI as in the male; posterior segments as shown in text-fig. 25c.

**Measurements.**

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<td>Length</td>
<td>Breadth</td>
<td>Length</td>
<td>Breadth</td>
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<tr>
<td></td>
<td>mm.</td>
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<td>mm.</td>
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<td>0·80–0·82</td>
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Described from 13 males and 8 females from skins of *Arborophila rufogularis* ticks from Lower Burma.

**Holotype.**—Male in the British Museum collection, slide no. 18.

**Gallipeurus lawrensis lawrensis** (Bedford).

*Lipeurus lawrensis* Bedford, 1929, p. 521, figs. 22–24. Host: *Numida meleagris papillosa*.

This subspecies is distinguished from *G. lawrensis tropicalis* (Peters) by its larger size and greater length of the paramera of the male genitalia. In Bedford's specimen of the male of *G. l. lawrensis* (kindly lent by the author) the head appears somewhat shrunken, and it seems possible that in fig. 22 (Bedford, 1929) the anterior margin of the head is too rounded in outline. The female (Bedford's specimen) has the anterior margin of the head angulated as in *G. l. tropicalis*; males from the following subspecies of *Numida meleagris* have the angulated margin as in the female of *G. l. lawrensis*:

- *N. m. galeata*.
- *N. m. marungensis*.
- *N. m. reichenowi*.
- *N. m. rikwe*.

It is not possible to settle this point finally until further material has been examined from *Numida meleagris papillosa*.

Length of paramera: 0·47 mm.

Specimens examined.—1 male, 1 female, from *Numida meleagris papillosa*.

**Gallipeurus lawrensis tropicalis** (Peters).


Length of paramera: 0·23–0·35.

Specimens examined.—2 males, 5 females, from *Gallus domesticus* from Liberia; 1 male, 3 females, from *Numida meleagris major* from Uganda.
OXYLIFEURUS MJÖBERG.


This genus, as originally defined by Mjöberg, included a collection of species characterized by the pointed anterior margin of the head, but with few other characters in common. The genus as here defined constitutes a large and fairly homogeneous group containing but four of Mjöberg’s original species. Within the genus the species fall roughly into six groups, all of which are inter-related to a greater or less extent. The first group contains O. inaequalis (Piaget) and O. appendiculatus (Piaget) which differ from the rest and to a certain extent from each other. The second group contains O. ischnocephalus (Taschenberg) and O. epypodius, sp. n., which differ considerably from all the other groups in certain of the male characters, while the females resemble the first group. The third group, containing O. unicolor (Piaget) and the three following species, is the most distinctive and compact group, differing from the others in the presence of elongated trabeculae in both sexes, in the form of the posterior segments of the female abdomen, and in the male genitalia. The fourth group contains at present only O. clavatus (McGregor), and the fifth group only O. postemarginatus (Carriker). The sixth and largest group contains O. h. himalayensis (Rudow) and the twenty-six following species and subspecies (see below). These groups might perhaps be placed under the heading of subgenera, a procedure of which the author disapproves. It seems more satisfactory to keep them within one genus, at least until material from a greater number of hosts has been examined and the inter-relations of their Mallophagan species ascertained.

Description of the Genus.—Head circumfasciate; trabeculae variable in size and shape, may be present or absent in the female. Antennæ sexually dimorphic, in the male first segment enlarged and bearing in some species a broad membraneous appendage not always apparent; third segment produced beyond the point of articulation with the fourth. The chitin of the anterior portion of the pre-antennal region is modified either into a number of projections or into a raised transverse line across the head. Transverse clypeal suture present, and curved indefinite post-antennal suture running posteriorly from the antennal fossae (these sutures not apparent in O. h. himalayensis (Rudow), O. k. burmeisteri (Taschenberg), O. longus (Piaget)). Occipital bands absent except in O. postemarginatus (Carriker). The female head never differs greatly in shape from that of the male, but is generally somewhat broader.

Prothorax with lateral hair or spine; lateral indication of meso-metathoracic junction rarely marked.

Abdomen with pleurites having re-entrant heads, more complicated than those of Lipurus, and with characteristic internal curved dorsal strut (not present in O. inaequalis, O. ischnocephalus, O. epypodius, and O. postemarginatus). In the male the posterior sternal plate is prolonged into a narrow thickened somewhat modified process (simple in O. inaequalis, O. appendiculatus, O. ischnocephalus, and O. epypodius); each side of this process is a clump of hairs of varying number and size. The genitalia are variable in form but, with certain exceptions, consist of a flattened endomeral plate, free penis, and no sac.

OXYLIFEURUS INAEQUALIS (Piaget). (Text-figs. 26 & 27.)

Lipurus inaequalis Piaget, 1880, p. 355, pl. xxviii, fig. 7. Host: Mega-
podurus r. reinwardt.

Oxylifeurus inaequalis (Piaget) Mjöberg, 1910, p. 92.

PROC. ZOOL. SOC., SER. B.—1938.
It is apparent from Piaget's description and figures that he had specimens of two species; the male being described from one, the female partly from one (pl. xxviii. fig. 7 b) and partly from the other (fig. 7 a). In Piaget's collection is a slide labelled *Lipeurus inaequalis* on which are specimens of *L. latifasciatus* Piaget, and on a comparison of the figure of the female head (fig. 7 a) it is probable that it was from this latter species that part of the description of the female was taken.

**Text-figure 26.**

*Oxylipeurus inaequalis*: (a) ♂; (b) ♀.

**Male.**—Head as shown in text-fig. 26 a, with dorsal sutures of the head, typical for this genus, present. Chaetotaxy of the head, ventrally as shown in text-fig. 26 a, dorsally as that of female (text-fig. 26 b); but there are in addition 4 long hairs, 2 anterior (1, 1) and 2 posterior (1, 1), on the dorsal surface of the hind head.

Thorax as shown in figure. Posterior dorsal pterothoracic hairs arranged in two lateral clumps with 5–6 hairs in each.

Abdomen with ventral surface as shown in figure. Tergal plates I–IV separated medianly. Dorsal chaetotaxy of segments I–VII as in the female (text-fig. 26 a), that of segments VIII and IX as shown in text-fig. 27 b.
Genitalia as shown in text-fig. 27 c.

**Female.**—Head as shown in text-fig. 26 b. Trabeculae small and project but little beyond the lateral margins of the head. Ventral chetotaxy as in the male.

Text-figure 27.

*Oxyleurus inaequalis*: (a) Posterior segments of ♀ abdomen; (b) of ♂ abdomen; (c) ♂ genitalia.

Thorax as shown in figure.
Abdomen with dorsal surface as shown in figure. Ventral chetotaxy of segments I–VI as in the male; posterior segments as shown in text-fig. 27 a.

**Measurements.**

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<th>Female.</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>mm.</td>
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<tr>
<td>Head</td>
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<td>Thorax</td>
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<td>C.I.</td>
<td>0.58–0.62</td>
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</table>
Specimens examined.—1 male, 1 female (Piaget's types), from Megapodius r. reinwardt; 3 males from skins of Megapodius reinwardt macgillivrayi from Louisiade Archipelago; 2 females from Megapodius reinwardt forstenii (1 from the Zoological Gardens, London, 1 from skin collected in Amboina, New Guinea).

OXYLIPEURUS APPENDICULATUS (Piaget).


Lipeurus oxycephalus Taschenberg, 1882, p. 178, pl. vi. fig. 7. Host: Megapodius f. freycinet.

Oxylipeurus oxycephalus (Taschenberg) Mjoberg, 1910, p. 92.

This species is at once distinguished from O. insequalis by its narrower more elongated form.

Male.—Shape of head as shown in Piaget's figure. Trabeclae as in O. insequalis; antennae with first segment greatly elongated otherwise as in O. insequalis. Chaetotaxy of the head as in O. insequalis, but the two dorsal hairs in the centre of the pre-antennal region are shorter and finer; the upper dorsal occipital hair is situated in a more anterior and lateral position; only one of the marginal hairs of the temple is long.

Prothorax with straight, slightly diverging sides and narrower than head. Pterothorax as in O. insequalis, but somewhat more elongated. Chaetotaxy of the prothorax as in O. insequalis. Posterior dorsal pterothoracic hairs in two lateral clumps with 4 stout elongated hairs in each; in some specimens one of these hairs each side is shorter and finer; metasternum with 4 (2, 2) not 6 (3, 3) hairs.

Abdomen with pleurites more complicated than in O. insequalis and showing curved dorsal strut typical of the genus. Tergal plates II–VII separated medianly. Chaetotaxy as in O. insequalis, but the postero-lateral corner of segment II bears a hair not a spine; clumps of hairs each side of posterior sternal process contain only 4 hairs in each.

Genitalia with paramera long and flattened.

Female.—Shape of the head differs but little from that of the male, but is somewhat broader. Chaetotaxy as in O. insequalis.

Thorax as in male with posterior dorsal pterothoracic hairs arranged:—4, 4 or 4, 3.

Abdomen with tergal plates I–VII separated medianly; chaetotaxy as in O. insequalis with hairs of the valve shorter and fewer in number.

Measurements.

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<td>Thorax</td>
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<td>Abdomen</td>
</tr>
<tr>
<td>Total .</td>
</tr>
<tr>
<td>C.I. .</td>
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</table>
**Oxylipeurus ischnocephalus** (Taschenberg). (Text-figs. 28 b & d.)


This and the following species, *O. sepypodius*, possess certain characters in the male which are not found in other species of the genus. These are the presence of a number of elongated stout hairs on the anterior margin of the head and the peculiar formation of the posterior segment of the abdomen. It is apparent, however, from other characters that the affinities of these two species lie with this genus.

**Male.**—Head with shape as shown in Taschenberg's figure. Chitin of the head as in *O. sepypodius*. Chaetotaxy of the head as in *O. insequalis* (Piaget), but along the anterior margin there are 10–14 elongated stout hairs.

Thorax with lateral and posterior margins of the prothorax straight, with median spine and elongated posterior hairs; pterothorax with rounded diverging sides and posterior dorsal hairs arranged in two clumps with 5–6 in each. Ventral hairs 4 (2, 2) in number.

Abdomen with pleurites as in *O. insequalis* and tergal plates I–VII separated medially. Posterior segments of unusual form as shown in text-fig. 28 d. Lateral chaetotaxy as in *O. insequalis* with lateral spine on segment II fine. Dorsal chaetotaxy as in *O. insequalis* with the post-spiracular hairs finer and placed in a more lateral position. Ventral chaetotaxy as in *O. insequalis*.

Genitalia as shown in text-fig. 28 b.

**Female.**—Head differs but little in shape from that of the male and has the normal chaetotaxy of the genus with the addition of 2 (1, 1) extra anterior marginal dorsal hairs. Trabeculae absent.

Thorax as in male with posterior dorsal pterothoracic hairs in two clumps with 5 hairs in each.

Abdomen as that of *O. insequalis* but with narrower pleurites. Chaetotaxy as that of *O. insequalis*, but there are a greater number of hairs on the posterior margin of the valve.

**Measurements.**

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</tr>
</thead>
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<tr>
<td>Abdomen</td>
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<tr>
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</tr>
<tr>
<td>C.I.</td>
<td>0.58–0.58</td>
<td>..........</td>
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</tbody>
</table>

**Specimens examined.**—1 male from skin of *Alectura lathami* purpureicollis from N. Queensland (compared with type of *O. ischnocephalus* in the Halle collection by Dr. S. Kéler); 3 males, 2 females, from skins of *Alectura l. lathami* from New South Wales.
OXYLIEPHERUS SEPYPODIUS, sp. n. (Pl. IX. fig. 1; text-figs. 28 a & c.)

This species is distinguished by the shape of the head and the formation of the pre-antennal chitin, and the form of the last segment of the abdomen.

Text-figure 28.

OXYLIEPHERUS SEPYPODIUS ♂: (a) Head; (c) Posterior segments of abdomen. O. ischnocephalus: (d) Posterior segments of ♂ abdomen; (b) ♂ genitalia.

**Description of the Male.**—Head as shown in text-fig. 28 a. In the only specimen examined the anterior hairs are broken, but from their thickened proximal ends it is presumed that these hairs are elongated as in O. ischnocephalus.

Thorax with shape as shown in Pl. IX. fig. 1. Posterior dorsal pterothoracic hairs arranged: —♂, 5.
Abdomen as in *O. ischnocephalus* with the exception of the posterior segments (text-fig. 28 c).

Genitalia of the same type as *O. ischnocephalus* (material inadequate for detailed figure).

Female unknown.

**Measurements.**

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Described from 1 male from skin of *Aepyodius arfakianus* from New Guinea.

**Holotype.**—Male in the British Museum collection, slide no. 3067.

**Oxylipeurus unicolor** (Piaget). (Text-fig. 29 d.)

*Lipeurus unicolor* Piaget, 1880, p. 354, pl. xxviii. fig. 6. Host: *Arborophila juvanica*.

*Lipeurus rubrifasciatus* Piaget, 1885, p. 71, pl. vii. fig. 8. Host: *Arborophila crudigularis*.


This and the four succeeding species are distinguished from other species of *Oxylipeurus* by the thickened elongated trabecula in both sexes, by the genitalia of the male, and by the form of the posterior segments of the abdomen of the female. *O. unicolor* is distinguished from the following species by the pointed anterior margin of the head.

**Male.**—Shape of head as shown in Piaget's figure (also see Uchida, 1917 (1) pl. x, fig. 6). Chaetotaxy as in *O. tropicoperdix* (see below).

Prothorax rectangular in shape; chaetotaxy as in *O. inaequalis*, but postero-lateral hairs shorter. Pterothorax with straight sides diverging but little posteriorly; posterior margin angulated over abdomen. Dorsal hairs on posterior margin in two clumps, 8 (4, 4); ventral hairs as in *O. appendiculatus*.

Abdomen with pleurites as in *O. appendiculatus*; tergal plates I–VI separated medianly; posterior sternal process thickened and pointed, not projecting beyond end of abdomen. Dorsal and lateral hairs of the abdomen as in *L. inaequalis*. Ventral segments I–VII have but 2 (1, 1) hairs. Chaetotaxy of posterior segments as in *O. tropicoperdix*.

Genitalia as shown in text-fig. 29 d.

**Female.**—Head as in male but with filiform antennae.

Thorax and abdomen, with the exception of the posterior segments, as in male. Chaetotaxy of segments VIII and IX as in *O. tropicoperdix*, but with hairs on the valve and lateral margins of the segments less numerous.
Measurements.

<table>
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<th>Female</th>
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<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td></td>
<td>0.47-0.51</td>
<td>0.25-0.29</td>
<td>0.53-0.54</td>
<td>0.27-0.32</td>
</tr>
<tr>
<td>Thorax</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td></td>
<td>0.40-0.42</td>
<td>0.24-0.30</td>
<td>0.41-0.44</td>
<td>0.32-0.35</td>
</tr>
<tr>
<td>Abdomen</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td></td>
<td>1.14-1.17</td>
<td>0.29-0.33</td>
<td>1.39-1.41</td>
<td>0.41-0.45</td>
</tr>
<tr>
<td>Total</td>
<td>1.97-2.12</td>
<td></td>
<td>2.21-2.35</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>0.53-0.56</td>
<td></td>
<td>0.58-0.59</td>
<td></td>
</tr>
</tbody>
</table>

Piaget's types of *L. unicolor* and *L. rubrifasciatus* have been examined and found to be the same species.

*Specimens examined.*—4 males, 3 females, from *Arborophila javanica* (Piaget's types); 2 males, 3 females, from *Arborophila crudigularis* (Piaget's types). Also specimens collected from skins of the following species of *Arborophila*:

2 ♀, 6 ♂, from *A. javanica*, Java.
1 ♀, 2 ♀, ♂, *A. crudigularis*, Formosa.
4 ♀, 4 ♂, ♂, *A. t. torqueola*, Sikkim.
3 ♀, ♂, ♂, *A. r. rufogularis*, Sikkim.
1 ♀, ♂, ♂, *A. r. annamensis*, Annam.
1 ♀, 4 ♀, ♂, *A. r. intermedia*, Burma.
1 ♀, 3 ♀, ♂, *A. r. tickelli*, Tenasserim.
2 ♀, ♂, ♂, *A. atrogularis*, Assam.
1 ♀, 5 ♀, ♂, *A. b. brunneopectus*, Siam.
1 ♀, 2 ♀, ♂, *A. b. albigula*, S. Annam.
1 ♀, 3 ♀, ♂, *A. b. henrici*, Laos.
1 ♀, 3 ♀, ♂, *A. rubrirostris*, Sumatra.
2 ♀, 4 ♀, ♂, *A. erythrophrys*, Borneo.

OXYLIFERUS TROPICOPERDIX, sp. n. (Pl. IX. fig. 2; text-figs. 29 a-c.)

This species is distinguished from *O. unicolor* by the rounded not pointed anterior margin of the head, and from *O. connectens* (see p. 106) by the presence of a partial suture in the lateral marginal band of the pre-antennal region.

Description of the Male.—Head as shown in Pl. IX. fig. 2, with elongated thickened trabeula; antennae with first segment narrow and elongated, third segment recurved with thickened distal end. Chaetotaxy of the head normal with all marginal hairs shorter and occipital spines as shown in text-fig. 29 c.

Thorax as in *O. unicolor* with lateral hair of prothorax fine, and lateral sides of pterothorax more divergent posteriorly.

Abdomen as in *O. unicolor* but with broader pleurites. Posterior sternal process short and not projecting beyond posterior margin of abdomen (text-fig. 29 b). Chaetotaxy of segments I–VII as in *O. inaqualis*, with all dorsal hairs minute with the exception of the post-spiracular hairs on segment III; ventral hairs on segments I–III minute. Chaetotaxy of segments VIII and IX as shown in text-fig. 29 b.
Genitalia are approximately the same as those of *O. unicolor* (material inadequate for detailed figure).

Description of the Female.—Shape of the head as that of male but somewhat broader.

Text-figure 29.

*Oxylipeurus tropicoperdix*: (a) Posterior segments of ♀ abdomen; (b) of ♂ abdomen; (c) ♂ occiput; (d) *O. unicolor* ♂ genitalia.

Thorax as in the male.
Abdomen as that of *O. unicolor*, with certain differences in the chaetotaxy of the posterior segments (text-fig. 29 a).

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>♂ Head</td>
<td>0.44–0.46</td>
<td>0.25–0.36</td>
</tr>
<tr>
<td>♂ Thorax</td>
<td>0.41–0.44</td>
<td>0.27–0.34</td>
</tr>
<tr>
<td>♂ Abdomen</td>
<td>1.28</td>
<td>0.36–0.38</td>
</tr>
<tr>
<td>♂ Total</td>
<td>2.16–2.17</td>
<td>0.55–0.60</td>
</tr>
</tbody>
</table>

Described from 2 males and 1 female from skins of *Tropicoperdix chloropus chloropus* from Burma.

Holotype.—Male in the Meinertzhagen collection, slide no. 3662.
OXYLIPEURUS CONNECTENS, sp. n. (Pl. IX. fig. 3.)

This species agrees with the *O. unicolor* group in the thorax, the genitalia of the male, and the posterior segments of the female abdomen, and with *O. clavatus* (McGregor) in the thorax and the chitinous formation of the pre-antennal region of the head. It is distinguished from *O. tropicoperdix* by having a complete marginal band to the pre-antennal region and from *O. clavatus* by the absence of an elongated posterior sternal process in the male and in the form of the posterior segments of the female abdomen.

Description of the Male.—Head as shown in Pl. IX. fig. 3. Trabecule thickened and elongated as in *O. tropicoperdix*; antennae with first segment elongated and third with short free recurved end. Chaetotaxy as in *O. tropicoperdix*, but with anterior marginal hairs short.

Pro- and pterothorax with straight lateral margins, those of the latter being somewhat divergent. Dorsal hairs of the posterior margin of pterothorax in two clumps of four, the inner hair of each clump being somewhat finer and shorter than the rest.

Abdomen as in *O. tropicoperdix* except for the posterior sternal process, which is short, unthickened, and inconspicuous. Chaetotaxy as in *O. tropicoperdix* except that there are fewer hairs in the ventral clumps each side of the sternal process.

Genitalia of the same type as *O. unicolor*, but the paramera are shorter and stouter, and there are small differences in the detail of the mesosome (material inadequate for detailed figure).

Description of the Female.—Shape of the head as that of the male but somewhat broader. Trabecule of the same type as those of the male but shorter and less pointed.

Thorax and abdomen as in *O. tropicoperdix* except for the chaetotaxy of the posterior segments of the abdomen. The hairs on the margin of the valve are fewer in number, and the lateral hairs on segments VIII and IX are finer and fewer in number, 7–8 each side.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.38 mm.</td>
<td>0.24 mm.</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.25 mm.</td>
<td>0.23 mm.</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.01</td>
<td>0.24</td>
</tr>
<tr>
<td>Total</td>
<td>1.69</td>
<td></td>
</tr>
</tbody>
</table>

Described from 1 male and 1 female from skin of *Galloperdix s. spadica* from Nilgiris.

Holotype.—Male in Meinertzhagen collection, slide no. 3621.

OXYLIPEURUS MEGALOPS (Piaget). (Pl. IX. fig. 4; text-figs. 30 & 366.)


This species agrees with the *O. unicolor* group in having the thickened elongated trabecule present in both sexes; it differs considerably from other members of this group in the pattern of the chitin formation of the pre-antennal
region, in having large protruding eyes, and in the form of the posterior sternum
process of the male.

**Male.**—Shape of head as shown in Pl. IX, fig. 4. Chaetotaxy as in \textit{O. tropicoperdix}, with a greater number of minute lateral dorsal occipital spines.

Prothorax as in \textit{O. unicolor}. Pterothorax with concave lateral sides diverging strongly posteriorly.

Abdomen normal with tergites narrowing centrally and with strongly

![Text-figure 30](image)

\textit{Oxylipeurus megalops}: (a) Posterior segments of \( \varphi \) abdomen;
(b) of \( \delta \) abdomen.

chitinized pleurites. Chaetotaxy normal, with the post-spiracular hairs minute
on segments V–VI. Sternal process and end of abdomen as shown in text-
fig. 30 b.

Genitalia of the same type as \textit{O. unicolor}, differing in details of mesosome
and shape of paramera (text-fig. 36 b.)

**Female.**—With general form as shown in Piaget’s figure. Posterior segments
of the abdomen as shown in text-fig. 30 a.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.46–0.47</td>
<td>0.26–0.29</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.45–0.46</td>
<td>0.38–0.40</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.01–1.06</td>
<td>0.35–0.36</td>
</tr>
<tr>
<td>Total</td>
<td>1.88–1.98</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>0.58–0.62</td>
<td></td>
</tr>
</tbody>
</table>

**Specimens examined.**—2 females from \textit{Rollulus roulroul} (Piaget’s types);
3 males, 18 females, from skins of \textit{Rollulus roulroul} from Borneo.
OXYLIPEURUS CLAVATUS (McGregor). (Pl. IX. fig. 5.)

Lipeurus clavatus McGregor, 1917, p. 115, pl. vii. fig. 3. Host: Colinus virginianus texanus.

No specimens have been examined from the type-host; specimens from Colinus v. virginianus and C. v. floridanus, from a comparison of the females with McGregor's description and figure, are apparently this species. The original description was made from the female only. The male is characterized by the elongated sternal process (Pl. IX. fig. 5).

Specimens examined.—2 males, 2 females, from skins of Colinus virginianus floridanus from Florida; 1 female from skin of Colinus v. virginianus from Washington, D.C.

OXYLIPEURUS POSTEMARGINATUS (Carriker).

Lipeurus postemarginatus Carriker, 1903, p. 25, pl. iii. fig. 4. Host: Ortalis garrula cinereiceps.

No specimens from the type-host have been seen; specimens from Ortalis veleta pallidiventris are apparently near or identical with O. postemarginatus, and show the chitin projections of the preantennal area and the elongated posterior sternal process of the male typical of this genus.

OXYLIPEURUS HIMALAYENSIS HIMALAYENSIS (Rudow). (Text-fig. 32 b.)

Lipeurus himalayensis Rudow, 1869, p. 33. Host: Tragopan melanocephalus.

This and the next subspecies are characterized by having the chitin of the head and body thickened with a tessellated appearance. The sutures of the head characteristic of this genus are not apparent in these two subspecies.

Male.—Shape of the head near that of O. h. burmeisteri (text-fig. 31), but tends to be proportionally narrower across the temples. Bands, antennae, and chaetotaxy of the head as in O. h. burmeisteri.

Prothorax rectangular in shape; lateral margins anteriorly somewhat concave, posteriorly convex, with a spine dividing the two regions. Pterothorax with concave lateral margins and posterior margin straight with median point. Dorsal posterior marginal hairs in two lateral clumps arranged: 3–5, 2, 2, 4–5.

Abdomen with segment I small; tergal plates I–VI divided medially; sternal plate I bell-shaped, sternal plates I–VII median and rectangular; sternal plates VII–IX fused vertically in the mid-line, plate IX prolonged into thickened projecting posterior process (see text-fig. 33 a of O. h. burmeisteri). Pleurites with characteristic dorsal strut as in O. appendiculatus. Dorsal and lateral chaetotaxy of segments I–VII as in O. inaequalis; ventral surface of segments I–V with 2 (1, 1) central hairs, segment VI with 4 (2, 2) hairs, segment VII with 2 (1, 1) hairs, segments VIII–IX with hairs somewhat variable in number and position, similar to those of O. h. burmeisteri (text-fig. 33 a).

Genitalia as shown in text-fig. 32 b.

Female.—Shape of head similar to that of male, but is somewhat broader. Trabeculae transparent and projecting but little beyond the lateral margin. Chaetotaxy as in male, but lacks hair at base of antennae.

Thorax as in male, but dorsal posterior hairs of pterothorax tend to be fewer in number.

Abdomen with tergal plates I–VIII divided medially; sternal plates I–VI median and rectangular, sternal plates VII and VIII fused and partially divided
medianly forming a butterfly-shaped genital plate. Last segment of the abdomen as in *O. h. burmeisteri* (text-fig. 32a).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.62–0.64</td>
<td>0.41–0.42</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.52–0.56</td>
<td>0.44–0.54</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.41–1.48</td>
<td>0.55–0.61</td>
</tr>
<tr>
<td>Total</td>
<td>2.50–2.63</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>0.65–0.67</td>
<td></td>
</tr>
</tbody>
</table>

*Specimens examined.*—12 males, 16 females, from skins of *Tragopan melanoccephalus* from Kashmir.

*Neotype.*—Male in the Meinertzhagen collection, slide no. 3762.

**OXYLIPEURUS HIMALAYENSIS BURMEISTERI** (Taschenberg). (Text-figs. 31, 32a, 33a.)

*Lipeurus burmeisteri* Taschenberg, 1882, p. 170, pl. vi. fig. 4. Host: *Lophophorus impejanus*.

**Text-figure 31.**

![Text-figure 31](image)

**Oxylipeurus himalayensis burmeisteri.** ♀ head.

*Lipeurus castaneus* Piaget, 1885, p. 73, pl. viii. fig. 2. Host: *Lophophorus impejanus*.

The type of this species is not in the Halle collection and is most probably lost; from a comparison of Taschenberg’s figure with Piaget’s type of Lipeurus castaneus it is apparent that this latter species is a synonym of L. burmeisteri.

Text-figure 32.

(a) Oxylipeurus himalayensis burmeisteri, posterior segments of ♀ abdomen;
(b) O. h. himalayensis, ♂ genitalia.

This subspecies is distinguished from O. h. himalayensis Rudow by the head in both sexes tending to be somewhat broader, and in the male by sternal plates VII and VIII being free not fused together medially.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0-66–0-74</td>
<td>0-46–0-54</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-54–1-98</td>
<td>0-61–0-77</td>
</tr>
<tr>
<td>Total</td>
<td>2-79–3-41</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>0-67–0-73</td>
<td></td>
</tr>
</tbody>
</table>

*Lipeurus stygius* as shown in a figure in the Nitzsch manuscript is a synonym of O. h. burmeisteri.

**Specimens examined.**—2 males, 2 females, from Lophophorus impejanus (Piaget’s specimens); 12 males, 1 female, from skins of Lophophorus impejanus from Nepal and Sikkim. Specimens have been examined from the following hosts, and although a slight variation of the head shapes of specimens from different hosts has been found in some cases, it does not seem sufficient to warrant the description of new subspecies:—

7 ♂, 8 ♀, from Lophophorus sclateri, Yunnan.
2 ♂, , L. thysii, Upper Minho.
2 ♂, 5 ♀, , Tragopan b. blythii, Assam.
3 ♂, , T. i. temminckii, Szechwan.
1 ♂, 1 ♀, , T. caboti, Fokien.
OXYLIPÆRUS LONGUS (Piaget). (Text-figs. 33 b, 35 a.)


This species is recognized by the form of the last segment in both sexes and by the male genitalia.

Male.—Shape of head as shown in Piaget’s figure (Pl. xxix. fig. 8). Antennæ with first segment bearing a transparent appendage not visible in all specimens;

Text-figure 33.

![Diagram](image)

Posterior segments of ♂ abdomen of Oxylipeurus spp.:
(a) O. himalayensis burmeisteri; (b) O. longus.

third segment prolonged with thickened rounded point and basal tubercle. Chaetotaxy of the head as in L. h. burmeisteri (see text-fig. 31).

Thorax with dorsal posterior hairs of the pterothorax in lateral clump each side, containing 6–7 hairs in each.

Abdomen normal except for posterior segment (text-fig. 33 b).

Genitalia as shown in text-fig. 35 a.

Female.—Shape of head as in male, but somewhat broader. Trabeculae small and not protruding beyond the lateral margin of the head.

Thorax as in the male.

Abdomen with last segment deeply bicleft (see Piaget, 1880, pl. xxix. fig. 8 b).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0·80–0·84</td>
<td>0·55–0·59</td>
</tr>
<tr>
<td>Thorax</td>
<td>0·52–0·56</td>
<td>0·44–0·46</td>
</tr>
<tr>
<td>Abdomen</td>
<td>2·22–2·63</td>
<td>0·78–0·82</td>
</tr>
<tr>
<td>Total</td>
<td>3·87–4·23</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>0·69–0·71</td>
<td></td>
</tr>
</tbody>
</table>
Specimens examined.—1 female from *Tragopan satyra* (Piaget's specimen). Piaget also has 1 male from *T. temminckii* and 1 male from *T. megalcephalus* (*T. melanocephalus*). It is impossible to say whether this species normally occurs on these two hosts or whether Piaget's specimens are stragglers.

3 males, 4 females, from skins of *Tragopan satyra* from Sikkim.

**Oxylipeurus baileyi**, sp. n.  (Pl. X. fig. 4; text-fig. 34.)

This species is recognized by its large size, shape of the head, and the presence of post-spiracular hairs on segment II of the abdomen.

**Description of the Male.**—Shape of the head as shown in Pl. X. fig. 4. Antennae with first segment bearing triangular appendage and third segment with small basal tubercle. Pre-antennal suture apparent. Chaetotaxy as in *O. h. burmeisteri* (Rudow), with only 2-3 dorsal occipital spines each side of head.

**Text-figure 34.**

![Text-figure 34](image)

**Oxylipeurus baileyi**, posterior segments of abdomen (a) ♂; (b) ♀.

Thorax as in *O. h. himalayensis*. Dorsal posterior clumps of hairs on the pterothorax with 8-9 (4-5 in each clump) long stout hairs.

Abdomen normal with sternites VII-VIII fused vertically. Chaetotaxy, except for last segment, as in *O. h. himalayensis*, but the post-spiracular hair is present on segment II. Posterior segment as shown in text-fig. 34a.

Genitalia with paramera narrower and more elongated than those of *O. h. himalayensis*.

**Description of the Female.**—Shape of the head resembles that of the male,
but is somewhat larger and broader at the temples. Trabeculae small transparent structures on the ventral surface of the head, not projecting beyond the lateral margins.

Thorax and abdomen as in L. h. himalayensis, except for the posterior segments of the latter (see text-fig. 34b.).

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.77-0.79</td>
<td>0.53-0.56</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.70-0.88</td>
<td>0.71-0.75</td>
</tr>
<tr>
<td>Abdomen</td>
<td>2.01-2.25</td>
<td>0.79-0.88</td>
</tr>
<tr>
<td>Total</td>
<td>3.52-3.82</td>
<td>............</td>
</tr>
<tr>
<td>C.I</td>
<td>0.69-0.71</td>
<td>............</td>
</tr>
</tbody>
</table>

Described from 12 males, 13 females, from skins of *Crossoptilon auritum* from Kansu.

**Holotype.**—Male in Meinertzhagen collection, slide no. 3627 *.

**OXYLIPEURUS BAILEYI CROSOPTILON, subsp. n.** (Pl. X. fig. 1.)

This subspecies is distinguished from *O. b. baileyi* by the shape of the head in both sexes (Pl. X. fig. 1) and by the posterior segment of the female abdomen having fewer lateral submarginal hairs, 3-4 each side, instead of 7-8. Described from 4 males, 2 females, from skins of *Crossoptilon c. crossoptilon* from Szechwan.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 1814.

**OXYLIPEURUS BAILEYI ITHAGINIS, subsp. n.** (Pl. XIII. fig. 1.)

This subspecies differs from *O. b. baileyi* in the following characters:

1. The shape of the head in both sexes.
2. The ptero-thorax is narrower, the lateral margins being less divergent.
3. The posterior segment of the abdomen in the male is somewhat different, having fewer ventral hairs each side of the posterior sternal process; in the female it is narrower and more pointed than in *O. b. baileyi*.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.64-0.67</td>
<td>0.46-0.48</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.60-0.62</td>
<td>0.55-0.57</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.16-1.58</td>
<td>0.62-0.83</td>
</tr>
<tr>
<td>Total</td>
<td>2.88-3.77</td>
<td>............</td>
</tr>
<tr>
<td>C.I</td>
<td>0.70-0.72</td>
<td>............</td>
</tr>
</tbody>
</table>

Described from 15 males, 14 females, from skins of *Ithaginis cruentus cruentus*; 3 males, 1 female, from skins of *Ithaginis cruentus clarkei*.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 64, from *Ithaginis c. cruentus*.

* This species is named after Colonel F. M. Bailey, who has collected a number of these parasites.

OXYLIFERUS BAILEYI PUCRASIA, subsp. n. (Pl. IX. fig. 6.)

This subspecies is distinguished from O. b. ithaginis by the following characters:

1. The shape of the head in both sexes (Pl. IX. fig. 6).
2. Posterior dorsal hairs of the pterothorax are arranged in one lateral clump of 4 hairs each side, not in two lateral clumps of 2 hairs each side as in O. b. ithaginis.
3. Trabecule of the female project beyond the lateral margin of the head.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0-35-0-55</td>
<td>0-37-0-41</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-61-1-67</td>
<td>0-57-0-60</td>
</tr>
<tr>
<td>Total</td>
<td>2-72-2-86</td>
<td>2-92-3-05</td>
</tr>
<tr>
<td>C.I</td>
<td>0-64-0-66</td>
<td>0-65-0-66</td>
</tr>
</tbody>
</table>

Described from 3 males and 5 females from skins of Pucrasia m. macrolopha from Himalayas.

Holotype.—Male in the Meinertzhagen collection, slide no. 2718.

OXYLIFERUS MESOPELIOS MESOPELIOS (Giebel). (Pl. XI. fig. 1; text-figs. 35 b & d.)


Lipeurus mesopelias Giebel, 1866, p. 379. Host: Chrysophus pictus.

This species is distinguished from the previously mentioned species by its smaller size and in having the chitin projections of the pre-antennal region fewer in number and by the absence of post-spiracular hairs on segment II of the abdomen.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0-55</td>
<td>0-34</td>
</tr>
<tr>
<td>Thorax</td>
<td>0-45</td>
<td>0-43</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-33</td>
<td>0-46</td>
</tr>
<tr>
<td>Total</td>
<td>2-30</td>
<td>...</td>
</tr>
<tr>
<td>C.I</td>
<td>0-62</td>
<td>0-65</td>
</tr>
</tbody>
</table>
Specimens examined.—Male from skin of Chrysolophus pictus from China (compared with type of O. mesopelios (Giebel) by Dr. S. Kéler); 3 males, 12 females, from skins of Chrysolophus amherstiae from Tibet.

Text-figure 35.

♂ genitalia of Oxylipeurus spp.: (a) O. longus; (d) O. m. mesopelios. Posterior segments of ♂ abdomen: (b) O. m. mesopelios; (e) O. tetraonis.

OXYLIPEURUS MESOPELIOS HIEROPHASIC, subsp. n. (Pl. XI. fig. 2.)

This subspecies is distinguished from O. m. mesopelios (Giebel) by the following characters:

1. Head narrower in both sexes (Pl. XI. fig. 2).
2. In the male the posterior sternal process is shorter and more bulbous distally.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0·52</td>
<td>0·29</td>
<td>0·53</td>
<td>0·33</td>
</tr>
<tr>
<td>Thorax</td>
<td>0·44</td>
<td>0·34</td>
<td>0·48</td>
<td>0·35</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1·26</td>
<td>0·41</td>
<td>1·61</td>
<td>0·49</td>
</tr>
<tr>
<td>Total</td>
<td>2·23</td>
<td>....</td>
<td>2·57</td>
<td>....</td>
</tr>
<tr>
<td>C.I.</td>
<td>0·55</td>
<td>....</td>
<td>0·61</td>
<td>....</td>
</tr>
</tbody>
</table>

Described from 2 males, 2 females, from skins of Hierophasis edwardsii from Annam.

Holotype.—Male in the Meinertzhagen collection, slide no. 3841.
OXYLIPEURUS MESOPELIOS REEVESI, subsp. n. (Pl. XI. fig. 5.)

This subspecies is distinguished from O. m. mesopelios by the following characters:

1. The shape of the head in both sexes (Pl. XI. fig. 5).
2. The segments of the male antennae are narrower.
3. Male abdomen with 3–4 long and 4 short hairs each side of posterior sternal process.
4. The last segment of the abdomen in the female is not so deeply bifid.

Measurements as in O. m. mesopelios.
Described from 7 males, 4 females, from skins of Syrmaticus reevesi from China.

Holotype.—Male in the Meinertzhagen collection, slide no. 4435.

OXYLIPEURUS MESOPELIOS SOEMMERRINGII, subsp. n. (Pl. XI. fig. 4.)

This subspecies is distinguished from O. m. mesopelios by the following characters:

1. The head is broader in both sexes (Pl. XI. fig. 4).
2. Male abdomen with fewer hairs each side of posterior sternal process (5–6 each side).

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male.</th>
<th>Female.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.51–0.54</td>
<td>0.44–0.48</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.40–1.44</td>
<td>0.57–0.58</td>
</tr>
<tr>
<td>Total</td>
<td>2.44–2.57</td>
<td></td>
</tr>
</tbody>
</table>

C.I. 0.65–0.67 0.71

Described from 6 males, 1 female, from skins of Syrmaticus s. soemmerringii from Japan.

Holotype.—Male in the Meinertzhagen collection, slide no. 4434.

OXYLIPEURUS MESOPELIOS UCHIDA, nom. nov. (Pl. X. fig. 3.)


Uchida (1917) states that his specimens from Syrmaticus mikado agree closely with Piaget's description of Lipeurus intermedius except in size. As has been shown on p. 121, Piaget described the male of a Lipeurus and the female of an Oxylipeurus. The measurements given by Uchida agree with those of specimens of Oxylipeurus from the type-host; it is presumed, therefore that the specimens described and figured below are Uchida's variety of L. intermedius.

This subspecies is distinguished from O. m. mesopelios (Giebel) by the following characters:

1. The head is broader in both sexes (more so than in O. m. soemmerringii)
2. In the antennae of the male the first segment is broader.
3. The posterior sternal process of the male abdomen is broader and has a more bulbous end; the last segment of the abdomen is less deeply bifid.

4. The chaetotaxy of the posterior segments of the female abdomen is as in *O. b. baileyi*, but there are fewer hairs on the posterior margin of the valve.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0:66</td>
<td>0:42</td>
</tr>
<tr>
<td>Thorax</td>
<td>0:64</td>
<td>0:55</td>
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<tr>
<td>Abdomen</td>
<td>1:64</td>
<td>0:66</td>
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<tr>
<td>Total</td>
<td>2:93</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>0:04</td>
<td></td>
</tr>
</tbody>
</table>

Specimens examined.—1 male, 1 female, from skins of *Syrmaticus mikado* from Formosa.

**OXYLIPEURUS MESOPELIOS ROBUSTUS (RUDOW).** (Pl. X. fig. 2.)

*Lipeurus robustus* Rudow, 1869, p. 32. Host: *Gennaeus nycthemerus lineatus*.

No material from the type-host has been seen, the following description, measurements, and figure have been taken from specimens from *Gennaeus n. nycthemerus*. This species is distinguished from *O. m. mesopelios* by the following characters:

1. The shape of the head in both sexes (Pl. X. fig. 2).
2. The antenna of the male has the third segment more elongated and with a more pointed end.
3. Posterior segments of abdomen of male as in *O. m. mesopelios*, with sternal process more bulbous posteriorly.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0:65-0:67</td>
<td>0:39-0:41</td>
</tr>
<tr>
<td>Thorax</td>
<td>0:62-0:64</td>
<td>0:49-0:52</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1:76-1:78</td>
<td>0:63-0:66</td>
</tr>
<tr>
<td>Total</td>
<td>3:02-3:04</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>0:58-0:62</td>
<td>0:65</td>
</tr>
</tbody>
</table>

Specimens examined.—4 males, 4 females, from skins of *Gennaeus n. nycthemerus* from Fokien, China.

**OXYLIPEURUS MESOPELIOS COLOCHICUS, subsp. n.** (Pl. XI. fig. 3.)

This subspecies is distinguished from *O. m. mesopelios* by the following characters:

1. The head in both sexes is different in shape (Pl. XI. fig. 3).
2. The segments of the male antennae are narrower.
3. The sides of the thorax are less divergent.
4. The last segment of the male abdomen is less deeply bifid.
Described from 4 males, 9 females, from Phasianus c. colchicus from England.

Holotype.—Male in the Meinertzhagen collection, slide no. 4336.

OXYLIPERUS RHIZOTHERA, sp. n. (Pl. XI. fig. 6; text-fig. 36 c.)

This species is recognized by the form of the head.

Description of the Male.—Shape of the head as shown in Pl. XI. fig. 6. First segment of antennae without appendage, third segment with basal tubercle and short free end. Chitin of pre-antennal region with straight edge and no projections. Chaetotaxy as in O. b. baileyi.

Thorax with lateral margins practically straight. Posterior dorsal pterothoracic hairs arranged in a clump of 4 hairs each side.

Abdomen normal, with chaetotaxy of the posterior segments as in O. m. mesopelios; segment IX not so deeply bifid posteriorly as in this species. Segment II has no post-spiracular hairs.

Genitalia with paramera of somewhat different shape from those of O. m. mesopelios (text-fig. 36 c).

Description of the Female.—Shape of head similar to that of male but somewhat broader. Trabeculae of same shape as those of male but smaller and do not project so far laterally.

Thorax as in male.

Abdomen normal with posterior segments similar to those of O. b. baileyi, but the last segment is more deeply bifid, and there are a greater number of hairs on the posterior margin of the valve and the lateral margins of segments VIII and IX.

Measurements.

| Measurements | Male | | | Female |
|--------------|------|------------------|------------------|
| Head         | 0-49-0-52 | 0-31-0-33 | 0-53 | 0-34 |
| Thorax       | 0-41-0-42 | 0-32-0-35 | 0-45 | 0-34 |
| Abdomen      | 1-32-1-36 | 0-42-0-46 | 1-39 | 0-53 |
| Total        | 2-26-2-31 |            | 2-59 |
| C.I.         | 0-56-0-65 |         | 0-65 |

Described from 7 males, 4 females, from skins of Rhizothera l. longirostris from Malay; 3 males, 3 females, from skins of Rhizothera longirostris dulitensis from Sarawak.

Holotype.—Male in the Meinertzhagen collection, slide no. 3633, from Rhizothera l. longirostris.
OXYLIPÆRUS PIAGETI, nom. nov. (Text-figs. 36 a & d.)

Lipeurus intermedius (partim) Piaget, 1880, p. 368, pl. xxviii. fig. 7. Host: Lophura ignita.

As has been explained on p. 121, Piaget's original description of Lipeurus intermedius was based on the male of one species and the female of another; the name intermedius is retained for the male Lipeurus described by Piaget, the female Oxylipeurus is here renamed O. piageti.

This species is characterized by the pointed anterior margin of the head and the prominence of the superior ocular blotches.

Male.—Head as shown in text-fig. 36 a, and noticeable for the straight posterior margin of the modified chitin of the forehead instead of the usual toothed appearance and the prominence of the superior ocular blotches.

Thorax with pterothorax somewhat divergent posteriorly. Posterior dorsal pterothoracic hairs in two lateral clumps containing four hairs in each.

Abdomen normal with post-spiracular hair on segment II absent. Chototaxy of posterior segments as in O. m. mesopelios.

Genitalia with shape of paramera as shown in text-fig. 36 d.

Female as shown in Piaget's figure (1880, pl. xxxix. fig. 7). Trabeclae triangular-shaped and projecting beyond the lateral margin to the same extent as in the male.

Thorax as in the male.

Abdomen normal with last segment deeply bicleft.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0·61</td>
<td>0·32</td>
</tr>
<tr>
<td>Thorax</td>
<td>0·58</td>
<td>0·41</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1·65</td>
<td>0·47</td>
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<tr>
<td>Total</td>
<td>2·79</td>
<td></td>
</tr>
<tr>
<td>C.I</td>
<td>0·53</td>
<td></td>
</tr>
</tbody>
</table>

Specimens examined.—1 male, 3 females (Piaget's specimens), from Lophura ignita.

OXYLIPÆRUS TETRAONIS (Grube). (Text-figs. 35 c & 36 e.)

Lipeurus tetraonis Grube, 1851, p. 485, pl. xxxii. fig. 1. Host: Lagopus l. lagopus.


No specimens of Oxylipeurus have been seen from the type-host; Grube also recorded this species from Tetrao urogallus, and, as Waterston (1922, p. 102) suggests, Grube's specimens recorded from Lagopus l. lagopus may have been stragglers. Specimens from Tetrao urogallus agree with Grube's description and figure; it is presumed, therefore, that these are O. tetraonis Grube.

This species is recognized by the broad pre-antennal region of the head.

Male.—Head as shown in Piaget's figure (1880, pl. xxx. fig. 1). Trabeclae short and rounded; first segment of the antennæ without appendage.

Thorax with pterothorax short and broad; posterior dorsal marginal hairs arranged: —2, 2, 2, 2.
Abdomen short and broad for this genus; segment II without postspiracular hair. Posterior segments shown in text-fig. 35 c.

Genitalia with paramera longer and thicker than in the previous species (text-fig. 36 e).

*Female.*—Shape of head similar to that of male but somewhat broader.

Text-figure 36.

(a) Oxylipeurus piageti, ♂ head. Paramera of genitalia of Oxylipeurus spp.:
(b) O. megalops; (c) O. rhizothera; (d) O. piageti; (e) O. tetraonis.

Trabecule triangular in shape and projecting to the same amount as those of the male.

Thorax as in male.

Abdomen normal, with posterior segments as shown in Piaget, 1880, pl. xxx. fig. 1 a; valve showing two circular structures of unknown function which are apparently spine-filled pits.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0·57–0·64</td>
<td>0·40–0·44</td>
</tr>
<tr>
<td>Thorax</td>
<td>0·52–0·58</td>
<td>0·45–0·48</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1·42–1·44</td>
<td>0·62–0·61</td>
</tr>
<tr>
<td>Total</td>
<td>2·51–2·56</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>0·68–0·70</td>
<td></td>
</tr>
</tbody>
</table>

*Specimens examined.*—52 males, 35 females, from Tetrao u. urogallus from Scotland and Estonia; 2 males, 3 females, from skins of Tetrao urogallus uralensis from Central Urals; 1 female from skins of Tetrao urogallus aquitanicus from the Pyrenees; 4 males from skins of Tetrao urogallus lugens from Finland.
**OXYLIPEURUS FORMOSANUS** (Uchida).

*Lipeurus formosanus* Uchida, 1917, p. 179, fig. 1. Host: *Arborophila crudigularis*.


This species is distinguished in the female from other known species by the form of the last segment of the abdomen, which is broadly pincer-shaped (see Uchida’s description).

*Specimens examined.*—5 females from skins of *Arborophila crudigularis*.

**OXYLIPEURUS DENTATUS** (Sugimoto).

*Lipeurus dentatus* Sugimoto, 1934.

*Lipeurus denticlypeus* Sugimoto, 1934 (changed to this name in reprint of original paper *).

*Host:* *Gallus domesticus*.

The original description of this species is in Japanese, but from the figures and measurements given it is apparent that it is the same as *L. angularis* Peters. It is at once recognized by the pointed anterior margin of the head in both sexes and by the shape of the posterior sternal process of the male. For description and figures see Peters, 1935, p. 101.

*Head index:—Male, 0-72; female, 0-76 (from Sugimoto’s measurements).*

*Specimens examined.*—1 male, 2 females, from skins of *Gallus gallus murghi* from Sikkim.

**OXYLIPEURUS POLYTRAPEZIUS POLYTRAPEZIUS** (Burmeister). (Pl. XII. fig. 4; text-figs. 37 a & c, 39 b.)


Harrison (1916, p. 83) and other authors have placed *Pediculus gallipavonis* Geoffroy (1762, p. 600) in the genus *Lipeurus*, making *L. polytrapezius* Burmeister a synonym of the former species. But Geoffroy’s description is apparently that of a *Goniodes*; also this author states that his species is the same as that found by Redi (1668, pl. i. fig. 2), the figure of which is obviously that of a *Goniodes*. *Pediculus gallipavonis* Geoffroy must therefore be placed in the genus *Goniodes*.

On examining 47 specimens of *Oxylipeurus* from *Meleagris gallopavo* and *M. g. merriami*, it was found that there were two distinct species. One, *O. p. polytrapezius* (Burmeister), with elongated narrow head and abdomen and smaller genitalia; the other, *O. corpulentus* (see below), with shorter, broader head and abdomen, and larger more complicated genitalia. Among 41 specimens of *Oxylipeurus* from *Agriocharis ocellata* the same was found, i. e., two distinct species, the narrow-headed one being a subspecies of *O. p. polytrapezius*; the other being similar to *O. corpulentus*, but owing to certain considerable differences in the genitalia of the male it must be given specific rank.

Through the kindness of Dr. Keler it has been ascertained that the type of *polytrapezius* is the narrow-headed species.

*Male.—Shape of head as shown in Pl. XII. fig. 4. Antennae with first segment bearing a transparent rounded appendage; trabeoulæ short and stout. Chaetotaxy normal.*

* There seems to be no valid reason for changing the original name *dentatus*
Thorax as shown in Pl. XII. fig. 4, with dorsal posterior pterothoracic hairs in two clumps, each side arranged:—3—2, 2, 3—2.

Abdomen narrow and elongated with post-spiracular hair absent on segment II. Posterior segments shown in text-fig. 37a, genitalia in text-fig. 37c.

**Text-figure 37.**

Posterior segments of $\delta$ abdomen of *Oxylipeurus* spp.: (a) *O. p. polytripesius*; (b) *O. corpulentus*. $\delta$ genitalia: (c) *O. p. polytripesius*.

**Female.**—Shape of head similar to that of male but broader at the temples. Trabeculae triangular in shape and projecting laterally.

Thorax as in the male.

Abdomen normal with posterior segments as shown in text-fig. 39 b.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0.70–0.76</td>
<td>0.43–0.51</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.74–0.75</td>
<td>0.56–0.57</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.90–2.10</td>
<td>0.73–0.76</td>
</tr>
<tr>
<td>Total</td>
<td>3.41–3.48</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>0.61–0.68</td>
<td></td>
</tr>
</tbody>
</table>

*Specimens examined.*—1 male, 2 females, from *Meleagris gallopavo domestica* from Yorkshire; 12 males, 16 females, from skins of *Meleagris gallopavo merriami* from Texas.
OXYLIPEURUS POLYTRAPEZIUS AGRIOCHARIS, subsp. n. (Pl. XII. fig. 3.)

This subspecies is distinguished from O. p. polytrapezius by the following characters:—

1. The shape of the head in both sexes (Pl. XII. fig. 3).
2. The posterior sternal process in the male has the distal end rounded not square.
3. Abdomen of female as in O. p. polytrapezius, but with posterior margin of sternal plate VII more pointed and with 6 (3, 3) ventral hairs on segment VII not 4 (2, 2).

**Measurements.**

<table>
<thead>
<tr>
<th>Species</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0-63-0-68</td>
<td>0-44-0-47</td>
</tr>
<tr>
<td>Thorax</td>
<td>0-68-0-69</td>
<td>0-54-0-56</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-92-2-03</td>
<td>0-65-0-71</td>
</tr>
<tr>
<td>Total</td>
<td>3-23-3-36</td>
<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>0-69-0-72</td>
<td></td>
</tr>
</tbody>
</table>

Described from 5 males, 7 females, from skins of *Agriocharis ocellata* from Yucatan.

*Holotype.*—Male in the Meinertzhagen collection, slide no. 3150.

OXYLIPEURUS CORPULENTUS, sp. n. (Pl. XII. fig. 1; text-figs. 37 b, 38, & 39 a.)

*Description of the Male.*—Shape of the head as shown in Pl. XII. fig. 1. Trabeculae and antennae as in O. p. polytrapezius.

Thorax as shown in Pl. XII. fig. 1, with posterior dorsal hairs arranged:—

2, 2, 2.

Abdomen somewhat shorter and stouter than in O. p. polytrapezius: with differences in the last segment (text-fig. 37 b).

Genitalia larger and more complicated than in O. p. polytrapezius (text-fig. 39 a).

*Description of the Female.*—Shape of head similar to that of male, but post-antennal constriction not so marked. Trabeculae absent.

Thorax as in male.

Abdomen with the shape of the genital plate different from that of O. p. polytrapezius and with the horn-shaped structures associated with the valve always more strongly developed than in the females of O. p. polytrapezius (text-fig. 38).

**Measurements.**

<table>
<thead>
<tr>
<th>Species</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length. mm.</td>
<td>Breadth. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0-69-0-73</td>
<td>0-52-0-55</td>
</tr>
<tr>
<td>Thorax</td>
<td>0-73-0-78</td>
<td>0-56-0-58</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1-79-1-84</td>
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<tr>
<td>Total</td>
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<td></td>
</tr>
<tr>
<td>C.I.</td>
<td>0-72-0-79</td>
<td></td>
</tr>
</tbody>
</table>
Text-figure 38.

*Oxylipeurus corpulentus*, posterior segments of ♀ abdomen.

Text-figure 39.

(a) *Oxylipeurus corpulentus*, ♂ genitalia; (b) *O. p. polytrapezius*, posterior segments of ♀ abdomen.
Described from 11 males, 5 females, from skins of Meleagris gallopavo merriami from Texas.

Holotype.—Male in the Meinertzhagen collection, slide no. 3148.

**Oxylipeurus ocellatus, sp. n.** (Pl. XII. fig. 2.)

This species is distinguished from *O. p. agriocharis* by the shape of the head in both sexes and from *O. corpulentus* by the genitilia of the male and the posterior segments of the abdomen of the female.

**Description of the Male.**—Shape of the head as shown in Pl. XII. fig. 2. Trabecula and antennae as in *O. p. polytrapezius* with first segment somewhat narrower. Marginal bands of the temples narrower and less thickened than in *O. corpulentus*.

Thorax as shown in Pl. XII. fig. 2, with posterior dorsal pterothoracic hairs as in *O. corpulentus*.

Abdomen normal (Pl. XII. fig. 2), with posterior sternal process more elongated and pointed than in *O. corpulentus*.

Genitalia similar to those of *O. p. polytrapezius*.

**Description of the Female.**—Shape of the head similar to that of male, but with post-antennal constriction less marked. Trabeculae absent.

Thorax as in male.

Abdomen with sixth sternite without distal projection.

**Measurements.**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm.</td>
<td>mm.</td>
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<tr>
<td>Head</td>
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<td>Thorax</td>
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<td>Abdomen</td>
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<tr>
<td>C.I</td>
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<td></td>
<td>0.84-0.85</td>
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</tbody>
</table>

Described from 11 males and 13 females from skins of *Agriocharis ocellata* from Yucatan.

Holotype.—Male in the Meinertzhagen collection, slide no. 3151.

**Oxylipeurus penelope, sp. n.** (Pl. XIII. fig. 2.)

This species resembles *O. ocellata*, from which it is distinguished by the shape of the head.

**Description of the Male.**—Head as shown in Pl. XIII. fig. 2. Trabeculae small and rounded; antennae without appendage on the first segment, third segment recurved with free distal end. Bands of the head normal with posterior inturned end of antennal band enlarged and thickened. Chaetotaxy normal.

Thorax with shape as shown in Pl. XIII. fig. 2. Posterior dorsal pterothoracic hairs arranged: 2, 2, 2.

Abdomen normal with post-spiracular hair absent on segment II. Posterior segments similar to those of *O. p. polytrapezius*, but with posterior sternal process somewhat more elongated.

Genitalia similar to those of *O. ocellatus* (material inadequate for detailed figure).
Measurements.

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<td>Abdomen</td>
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<tr>
<td>C.I</td>
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Described from 1 male from skin of *Penelope purpurascens purpurascens* from Honduras.

*Holotype.*—Male in the Meinertzhagen collection, slide no. 3205.

**Oxylipeurus concolor** (Rudow).

*Lipeurus concolor* Rudow, 1869, p. 33. Host: *Crax globulosa.*

*Oxylipeurus quadrinus* Giebel (Nitzsch MS.), 1874, p. 222. Host: *Crax globulosa.*

No material has been examined from the type-host, but from information received from Dr. S. Kéler it is apparent that specimens from *Crax pinima* are close to or identical with the types of *Lipeurus quadrinus* Giebel. These specimens are typical *Oxylipeurus* resembling *O. penelope*, sp. n.

*Oxylipeurus quadrinus* Giebel is here kept as a synonym of *L. concolor* Rudow, following Taschenberg (1882, p. 175).

**Oxylipeurus rhynchoti** (Carriker).

*Oxylipeurus rhynchoti* Carriker, 1936, p. 63, pl. i. fig. 1. Host: *Rhynchotus r. rufescens* (Tinamido).

This species was described from a single example and is almost certainly a straggler from one of the gallinaceous birds. From the figure this species is apparently near *O. concolor* (Rudow).

**Oxylipeurus tetraophasis**, sp. n. (Pl. XIII fig. 3; text-fig. 40.)

This species is distinguished by the shape of the head in both sexes and the male genitalia.

*Description of the Male.*—Shape of head as shown in Pl. XIII. fig. 3. Trabeculae short and broad; antennae with first segment bearing a short transparent appendage, free portion of third segment short. Each side of the temples there is an area of thickened perforated chitin. Chetotaxy normal.

Thorax with shape as in Pl. XIII. fig. 3; hair on posterolateral corner of prothorax longer than is usual for this genus; dorsal posterior pterothoracic hairs arranged: —2, 2, 2, 2.

Abdomen normal with sternal plates VII—IX fused to form broad genital plate. Posterior sternal process elongated and narrow with 7–8 hairs in clump each side.

Genitalia as shown in text-fig. 40.

*Description of the Female.*—Shape of head as that of male. Trabeculae short and stout and not projecting beyond the lateral margin of the head. Chetotaxy normal.

Thorax with the sides of the prothorax somewhat more rounded than in the male. Chetotaxy as in the male.
Abdomen normal with genital plate not so deeply bifid anteriorly or posteriorly as in O. b. baileyi, and with fewer more spine-like hairs on the posterior margin of the valve and a greater number of hairs in the lateral clumps of segments VIII and IX, i.e., 10–12 hairs in each.

Text-figure 40.

Oxylipeurus tetraophasis, 3 genitalia.

Measurements.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Length</td>
<td>Breadth</td>
<td>Length</td>
</tr>
<tr>
<td>Head</td>
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<td>0.78</td>
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<tr>
<td>Thorax</td>
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<td>0.74</td>
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<tr>
<td>Abdomen</td>
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<td>Total</td>
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<td>C.I</td>
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<td>0.74</td>
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</table>

Described from 2 males, 1 female, from skins of Tetraophasis o. obscurus, from Yunnan; 1 male, 2 females, from skins of Tetraophasis o. szechynyi from Szechuan and Yunnan.

Holotype.—Male in the Meinertzhagen collection, slide no. 3118, from Tetraophasis o. obscurus.

LAGOPCECUS Waterston.

Lagopæcus Waterston, 1922, p. 159. Genotype: Lagopæcus lyrurus, nom. nov.

This genus was defined by Waterston to include a small closely related group of species; the present author has widened the definition somewhat to include several species which cannot satisfactorily be separated from Waterston’s original genus. L. californicus (Kellogg and Chapman), L. docophoroides (Piaget), and L. meintzhangen (see below) show the typical clypeal suture and thorax and abdomen of Lagopæcus; the male genitalia differ somewhat from typical Lagopæcus, but not fundamentally. L. docophoroides, L. meintzhangeni, and L. numidianus are the only known species in which the antennae are sexually dimorphic, but this character alone is seldom of generic importance. Goniodes numidianus Denny has been placed here as it agrees with Lagopæcus in certain of its characters, but is not at all typical of the genus,
Lagopocesus lyrurus, nom. nov. (Text-figs. 41, 42, 43a & b.)

Host: Lyrurus t. tetrix.

As has been shown above Burmeister's name is invalidated by de Haan's Nirmus cameratus, which is a Gallipeurus not a Lagopocesus.

Text-figure 41.

Male.—Head as shown in text-fig. 41a, with chaetotaxy of the dorsal surface as of that of the female, having in addition a number of minute occipital spines.

Thorax as shown in text-fig. 41a, with dorsal posterior ptero thoracic hairs arranged:—2, 2, 2, 2.

Abdomen with ventral view as shown in text-fig. 41a. Dorsally tergal plates I–VI separated medianly, VII sometimes and VIII always transversely continuous.
SPECIES OF MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.

Ventral chaetotaxy as shown in text-fig. 41a. Dorsal chaetotaxy of segments I–VII as that of female (text-fig. 42); that of segments VIII and IX as shown in text-fig. 43a.

Genitalia as shown in text-fig. 41b.

Text-figure 42.

*Laepusus lyurus* ♀.

**Female.**—Head and thorax as shown in text-fig. 42, with ventral chaetotaxy as in male.

Abdomen with dorsal view as shown in text-fig. 42. Ventral chaetotaxy of segments I–V as in male; segment VI with 6 (3, 3) hairs; segment VII with 4 (2, 2) spines; posterior segments as shown in text-fig. 43b.

Lagopocus lyrurus, posterior segments of the abdomen: (a) ♂; (b) ♀. ♂ genitalia of (c) L. heterotypus; (d) L. docrophoroides.

**Measurements.**

<table>
<thead>
<tr>
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<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
<td></td>
</tr>
<tr>
<td>Head</td>
<td>0.46-0.48</td>
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<tr>
<td>Thorax</td>
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<td>0.89-0.96</td>
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Specimens examined.—5 males, 6 females, from *Lyrurus tetrix tetrix* from Germany, Norway, and Estonia; 3 females from *Lyrurus tetrix britannicus* from Scotland. Through the kindness of Dr. Kéler it has been ascertained that there are in the Halle collection of the Nitzsch and Giebel types, 29 specimens labelled *cameratus* which are all true *Lagopocus*.

**Lagopocus affinis** (Children). (Pl. XIV. fig. 1.)

*Nirmus affinis* Children, 1836, p. 537. Host: *Lagopus l. lagopus.*


*Lagopocus affinis* (Children) Waterston, 1922, p. 102,
This species is distinguished from *L. lyrurus* by the following characters:

1. Shape of the head in both sexes. Head index in male: 1-02-1-08; in female: 1-04-1-09.
2. In the male abdomen tergal plates I-VIII are separated medianly; chaetotaxy as in *L. lyrurus*, but hairs on the dorsal surface somewhat irregular in number on different specimens.
3. In the male genitalia the inner lateral edge of the mesosome is angulate (see Waterston, 1922, p. 102).

*Specimens examined.*—Lectotype, male, cotypes, 2 males, 5 females, in the British Museum collection from *Lagopus l. lagopus* from Arctic America; 12 males, 38 females, from *Lagopus l. lagopus* from Churchill, Canada; 25 males, 26 females, from *Lagopus lagopus scoticus*; 2 males, 4 females, from *Lagopus mutus hyperboreus* from Spitzbergen; 2 males, 5 females, from *Lagopus mutus millaisi* from Scotland; 1 male, 4 females, from *Lagopus mutus rupestris* from Repulse Bay, N. America.

**Lagopcecus pallidovittatus** (Grube). (Pl. XIV. fig. 2.)

*Nirmus pallidovittatus* Grube, 1851, p. 474, pl. xxxi. fig. 3. Host: *Tetrao urogallus urogallus*.

*Nirmus quadrulatus* Giebel (Nitzsch MS.), 1866, p. 370. Host: *Tetrao urogallus urogallus*.

**Lagopcecus pallidovittatus** (Grube) Waterston, 1922, p. 102.

This species is distinguished from *L. affinis* by the shape of the head and the chaetotaxy in both sexes, and by the male genitalia.

**Male.**—Shape of the head as shown in Pl. XIV. fig. 2; in other respects the head is as in *L. lyrurus*.

Thorax with shape as shown in Pl. XIV. fig. 2; with 4-6 hairs on the metasternum instead of 2 as in *L. lyrurus*.

Abdomen with tergal plates I-VII separated medianly, VIII transversely continuous.

**Chaetotaxy of the Abdomen.**—On the dorsal surface segment I with 2 anterior hairs (1, 1) and 5-6 posterior hairs (2-3, 2-3); segments II-VII with 8 hairs each (4, 4); segment VIII has 6-8 hairs (3-4, 3-4); segment IX with hairs as in *L. lyrurus*, but with a greater number of hairs on the posterior margin of the segment. On the ventral surface segment I has 4 hairs (2, 2); segments II-IV have 6 hairs each (3, 3); segments V-VI have 4 hairs each (2, 2); segments VII-IX and lateral hairs as in *L. lyrurus*.

Genitalia with penis reaching to the posterior margin of the mesosome.

**Female.**—Head and thorax as in male.

Abdomen as in *L. lyrurus* with the exception of the dorsal chaetotaxy of segments I-VII, which is as in the male, and the ventral chaetotaxy of segment I, which has 4 hairs (2, 2), and segments II-VI, which have 6 hairs each (3, 3).

### Measurements.

<table>
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<tr>
<th></th>
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<th></th>
<th>Female</th>
</tr>
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<tbody>
<tr>
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<td>Length. mm.</td>
<td>Breadth. mm.</td>
<td>Length. mm.</td>
</tr>
<tr>
<td>Head</td>
<td>0-51-0-53</td>
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<td>0-56-0-58</td>
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<tr>
<td>Thorax</td>
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<td>0-32-0-33</td>
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<td>1-00-1-01</td>
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</table>

p 2
Specimens examined.—1 male, 1 female, from Tetrao u. urogallus from Estonia (compared with types of L. quadrulatus by Dr. Kéler); 14 males, 13 females, from Tetrao u. urogallus from Scotland and Estonia; 1 female from skin of Tetrao urogallus aquitanicus from the Pyrenees.

LAGOPCECUS HETEROTYPUS (Méginin). (Pl. XIV. fig. 4; text-fig. 43c.)

Nirmus heterotypus Méginin, 1880, p. 87. Host: Lophophorus impejanus.


This species is distinguished by the shape of the head in both sexes and by the genitalia of the male.

Male.—Head as shown in Pl. XIV. fig. 4, with chaetotaxy as in L. lyrurus. Thorax with shape as shown in figure. Dorsal posterior pterothoracic hairs arranged:—2, 2, 2.

Abdomen with tergal plates I—VIII separated medianly. On the dorsal surface segment I has 8 hairs, 2 anterior and 6 posterior; segments II—VII have 6 hairs each; segment VIII with 10 hairs, 4 anterior and 6 posterior; segment IX with 10–12 hairs. On the ventral surface segments I—VIII with chaetotaxy as in L. lyrurus; segment IX with 4 hairs.

Genitalia as shown in text-fig. 43c.

Female.—Head and thorax similar to male but somewhat broader.

Abdomen with tergal plates I—VII separated medianly. On the dorsal surface chaetotaxy of segments I—VII as in the male; segment VIII with 4 hairs. On the ventral surface segments I—V have 2 hairs each, segment VI with 6 hairs; segments VII—IX as in L. lyrurus with 4–6 long hairs each end of posterior margin of valve, with remainder of hairs on valve short and 12–15 in number.

Measurements.

<table>
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<tr>
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<th>Female</th>
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<tbody>
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<td>Length</td>
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<td>Head</td>
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<td>0.50—0.60</td>
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<td>Thorax</td>
<td>0.50—0.61</td>
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<tr>
<td>Abdomen</td>
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<td>Total</td>
<td>1.63</td>
<td>1.02</td>
</tr>
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</table>

Specimens examined.—3 males, 4 females, from skins of Lophophorus impejanus from Nepal and Sikkim; 2 males, 1 female, from skins of Lophophorus sclateri from Yunnan and Tibet; 1 female from skin of Lophophorus thysii from Upper Minho.

LAGOPCECUS CEMENTICUS (Giebel).

Nirmus cementicus Giebel (Nitzsch MS.), 1861, p. 117. Host: Lophophorus impejanus.

The type of this species is not in the Halle collection and is most probably lost. The description, however, is obviously not that of the Lagopaceus usually found on Lophophorus impejanus (see L. heterotypus), but is nearer that of L. lyrurus. A drawing in Nitzsch's manuscript confirms this.
LAGOPÆCUS PROTERVUS (Kellogg).
Lipeurus protervus Kellogg, 1899, p. 31, pl. iii. fig. 4. Host: Lagopus lagopus alexandriæ.
No specimens from the type-host have been seen; from the figure the head is more pointed than in females of L. affinis Children.

LAGOPÆCUS PÆRPLEXUS (Kellogg).
Lipeurus perplexus Kellogg, 1899, p. 103, pl. vii. fig. 5. Host: Pedicetes phasianellus columbianus. 
Esthiopterum perplexum (Kellogg) Harrison, 1916, p. 139.
No specimens of this species have been seen.

LAGOPÆCUS OVATUS (Uchida).
Nirmus ovatus Uchida, 1917, p. 174, pl. x. fig. 3. Host: Syrmaticus mikado.
No specimens of this species have been seen, but from Uchida’s figure it is a Lagopæcus.

LAGOPÆCUS SINENSIS (Sugimoto).
Degneriella sinensis Sugimoto, 1930, p. 132, fig. 1. Host: Gallus domesticus from Wenchow, S. China.
No specimens of this species have been seen, but from the figures it is a typical Lagopæcus.

LAGOPÆCUS WATERSTONI (Bedford).
Lipeurus waterstoni Bedford, 1930, p. 165, fig. 8. Host: Francolinus gariepensis pallidior (see below).
Host name corrected to Francolinus gariepensis jugularis (Bedford), 1932, p. 317.
This species is a typical Lagopæcus.
Specimens examined.—1 male, 1 female, from Francolinus gariepensis jugularis (specimens kindly lent by G. H. A. Bedford); 1 male from skins of Francolinus g. gariepensis from Bechuanaland.

LAGOPÆCUS KOZUII (Sugimoto). 1934.
The description of this species is in Japanese, but the figures show that it was described from a somewhat immature female of what is apparently a Lagopæcus.

LAGOPÆCUS CALIFORNICUS (Kellogg and Chapman). (Pl. XIV. fig. 5; text-fig. 44 a.)
Lipeurus docophoroides var. californicus Kellogg and Chapman, 1899, p. 103. Host: Oreortyx picta picta.
This species was first described as a variety of L. docophoroides Piaget from female specimens only. An examination of males from the type-host shows that they differ considerably from those of L. docophoroides in the genitalia.
and in having the antennae simple as in the female. It is distinguished from the previously mentioned species of *Lagopoeus* by the shape of the head and the form of the male genitalia.

**Male.**—Shape of head as shown in Pl. XIV, fig. 5. Chaetotaxy as in *L. lyrurus* with the third anterior submarginal ventral hair stout and elongated. Thorax with shape as shown in Pl. XIV, fig. 5, and posterior dorsal pterothoracic hairs arranged:—2, 1, 1, 1, 1, 1, 1, 1, 2.

Abdomen normal with tergal plates I–VIII separated medianly.

**Chaetotaxy of the Abdomen.**—On the dorsal surface segment I has 2 anterior and 4 posterior hairs (2, 2); segments II–III have 8 hairs each (4, 4); segment IV has 10–12 hairs; segment V has 8 hairs; segment VI has 6 hairs; segment VII

Text-figure 44.

(a) Paramer of *Lagopoeus californicus*; *L. meinertzhagenii*; (b) ♂ genitalia; (c) posterior segments of ♀ abdomen.

has 4 hairs; segments VIII and IX and postspiracular hairs as in *L. lyrurus*. On the ventral surface segment I has 4 hairs; segment II has 6 hairs; segments III–V have 8 hairs each; segments VI–VII have 4 hairs each; segments VIII and IX as in *L. lyrurus*, but there are fewer hairs on the posterior margin of segment IX. Lateral hairs as in *L. lyrurus*.

Genitalia with paramera short and broad and penis longer than mesosome, the latter differing considerably from that of the previously mentioned species of *Lagopoeus* (text-fig. 44 a).

**Female.**—Head and thorax as in male, the former being somewhat more elongated.

Abdomen normal with chaetotaxy of segments I–VII apparently as in male (only specimen somewhat damaged); segments VIII and IX as in *L. lyrurus*. 
Head index of male: 0.80–0.86; of female: 0.85.

*Specimens examined.*—1 male, 1 female, from skins of *Oecortyx picta picta* from Nevada; and 1 male from skins of *Oecortyx picta palmeri* from California.

**Lagopocerus docophoroides** (Piaget). (Text-fig. 43d.)


This species is distinguished from *L. californicus* by the shape of the head in both sexes, and in the male by the enlarged antennæ and the form of the genitalia.

**Male.**—Head and thorax as shown in Piaget's figure. Chaetotaxy of the former as in *L. californicus*. Posterior dorsal pterothoracic hairs arranged:—2, 2, 1, 1, 1, 1, 2.

Abdomen normal, with number of hairs somewhat variable. On the dorsal surface segment I has 2 anterior hairs and 12 posterior; segment II has 14 hairs; segments III–IV have 20 hairs each; segment V has 16–18 hairs; segment VI has 12 hairs; segment VII has 8 hairs; segments VIII and IX and post-spiracular hairs as in *L. lyrurus*. On the ventral surface segment I has 8–10 hairs; segment II has 12 hairs; segment III has 10 hairs; segment IV has 6 hairs; segment V has 4 hairs; segments VI–VII have 2 hairs each; segments VIII and IX and lateral hairs as in *L. lyrurus*, but there are fewer hairs on the posterior margin of segment IX.

Genitalia as shown in text-fig. 43d.

**Female.**—Head and thorax as in male, with the shape of the former somewhat more elongated. Dorsal posterior pterothoracic hairs arranged:—2, 1, 1, 1, 1, 1, 1, 1, 1, 2.

Abdomen normal. Chaetotaxy of the dorsal surface with 2 anterior and 12 posterior hairs on segment I; with 18–22 hairs on each of segments II–V; 12–14 hairs on each of segments VI–VII; chaetotaxy of segments VIII and IX and post-spiracular hairs as in *L. lyrurus*. On the ventral surface segment I with 5–6 hairs; segments II–V have each 10–12 hairs; segment VI has 4–5 hairs; segment VII has 2 hairs; segments VIII and IX and lateral hairs as in *L. lyrurus*.

Head index of males: 0.74–0.80; of females: 0.79–0.82.

*Specimens examined.*—2 males, 2 females (Piaget's types), from *Lophoryx Californica*; 1 male, 1 female, from skins of *Lophoryx c. californica*.

*Lipeurus docophoroides* var. *minhaensis* Kell. & Chap., which was presumably a straggler from some gallinaceous bird on to the Passerine from which it was recorded, was described purely on account of its size. This variety is here placed as a synonym of *L. docophoroides*, as the measurements given by Kellogg and Chapman fall within the range of measurements for Piaget's species.

**Lagopocerus Meinertzhageni**, sp. n. (Pl. XIV. fig. 3; text-figs. 44b & c & 45.)

This species differs markedly from all the other known species of *Lagopocerus* in the chaetotaxy of both sexes and in the form of the male genitalia.

**Description of the Male.**—Head shown in Pl. XIV. fig. 3. Antennæ with first segment enlarged and third with bifid distal end. Pharyngeal sclerite
of unusual form with central part reduced. Chaetotaxy as in *L. lyrurus* with one extra dorsal anterior hair and all hairs longer and stouter.

Thorax with shape as shown in Pl. XIV, fig. 3, with number of hairs greater than normal. Prothorax with 6 (3, 3) postero-lateral and posterior dorsal hairs. Pterothorax with 32 (16, 16) posterior dorsal hairs arranged in two irregular rows. Mesosternum with 2-3 (1, 1 or 1, 2) hairs; metasternum with 2 hairs (1, 1).

Abdomen with tergal plates I-VIII separated medianly.

**Chaetotaxy of the Abdomen.**—Postero-lateral corners of segment I have 10 hairs (5, 5); segment II has 2 hairs (1, 1); segments III, V, VII have 6 hairs each (3, 3); segments IV and VI have 8 hairs each (4, 4); lateral hairs of segments VIII and IX as shown in text-fig. 45. On the dorsal and ventral surface the number of hairs are variable and are arranged in two irregular rows. Dorsally segment I has 40 hairs; segments II–III have 28–30 hairs; segments IV–V have 34 hairs each; segment VI has 24 hairs; segment VII has 10; segments VIII and IX as shown in text-fig. 45. Post-spiracular hairs present on segments II–VI. On the ventral surface segment I has 18 hairs; segment II has 20–22 hairs; segment III has 30 hairs; segments IV–V have 29–32 hairs each; segment VI has 10–12 hairs; segment VII has 8 hairs; segments VIII and IX as shown in text-fig. 45.

Genitalia as shown in text-fig. 44b.

**Description of the Female.**—Head as that of male but is somewhat more pointed anteriorly and the antennae are filiform.

Thorax with shape as in male and with dorsal posterior pterothoracic hairs 13–14 in number.

Abdomen with tergal plates I–VII separated medianly; plates VII and VIII transversely continuous. Sternal plates normal for genus. Hairs of the abdomen variable in number but always greater than in the male. Posterior segments as shown in text-fig. 44c.
Measurements.

**Male.**

<table>
<thead>
<tr>
<th></th>
<th>Length (mm)</th>
<th>Breadth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>0.64-0.87</td>
<td>0.84-0.88</td>
</tr>
<tr>
<td>Thorax</td>
<td>0.57-0.69</td>
<td>0.73-0.81</td>
</tr>
<tr>
<td>Abdomen</td>
<td>1.14-1.31</td>
<td>1.12-1.15</td>
</tr>
<tr>
<td>Total</td>
<td>2.32-2.57</td>
<td></td>
</tr>
</tbody>
</table>

**Female.**

<table>
<thead>
<tr>
<th></th>
<th>Length (mm)</th>
<th>Breadth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.75-0.78</td>
<td>0.76-0.87</td>
</tr>
<tr>
<td></td>
<td>0.80-0.86</td>
<td>0.82-0.86</td>
</tr>
<tr>
<td></td>
<td>1.54-1.74</td>
<td>1.26-1.35</td>
</tr>
<tr>
<td></td>
<td>2.87-3.05</td>
<td></td>
</tr>
</tbody>
</table>

C.I. .......... 1.0-1.01 ........ 0.92-0.97

Described from 8 males, 3 females, from skins of *Lerwa lerva* from Sikkim.

**Holotype.**—Male in the Meinertzhagen collection, slide no. 42.

**Lagopcecus numidianus** (Denny).

*Goniodes numidianus* Denny, 1842, p. 163, pl. xiii. fig. 7. Host: *Numida meleagris domestica*.


Denny's specimens (2 males) have been examined and compared with McGregor's description and figure and with specimens from *Colinus virginianus* subspecies and found to be the same. There is no doubt, therefore, that *L. aberrans* is a synonym of *G. numidianus*. This species does not resemble closely any of the *Lagopcecus* species but is apparently nearest to *L. docophoroides* Piaget. It is distinguished by its large head and by the form of the male antennae and genitalia. No females have been seen.

**Specimens examined.**—Lectotype, male and 1 male from *Numida meleagris domestica* (Denny collection); 1 male from skin of *Colinus v. virginianus* from Washington D.C.; 1 male from skin of *Colinus virginianus floridanus* from Florida.

**Genera and Species mentioned or described in the present Paper with Type-Hosts.** (Synonyms in brackets.)

*Lipeurus* Nitzsch.

- *caponis* (Linne)................. *Gallus domesticus*.
  - *variabilis* Burmeister
  - *antennatus* Piaget
  - *variabilis var. formosanus* Sugimoto
- *sarissa*, sp. n.
- *maculosus*, sp. n.
  - *maculosus rheinardia*, subsp. n.
  - *maculosus polyplectron*, subsp. n.
- *subsellatus* (Harrison)
  - *subsellatus* (Harrison)
  - * introductus* Kellogg
  - *criitus* Rudow
  - *brunneipictus* (Giebel)
  - *intermedius* Piaget
- *keleri*, sp. n.
- *charltonii*, sp. n.

*Gallus domesticus.*

*Hierophasis swinhooii.*

*Gallus domesticus.*

*Rhizothera l. longirostris.*

*Phasianus c. colchicus* (Britain).

*Rheinardia o. ocellata.*

*Polyplectron bicalcaratum ghigi.*

*Gennaeus nycthemerus lineatus.*

*Gennaeus n. nycthemeru.*

*Chrysolophus pictus.*

*Lophura rufa.*

*Lophura s. ignita.*

*Crossoptilon c. crossoptilon.*

*Tropicoperdix c. charltonii.*
Lipeurus (Nitzsch) (con.).

fimbriatus, sp. n. ........................................ Melanoperdix n. nigra.
uncinatus Piaget ........................................ Holilulus rouilloul.
pavo, sp. n. ............................................... Pavo cristatus.
umidie (Denny) ........................................ Numida meleagris domestica.
(numidianus Mjöberg) ................................ Numida meleagris mirtara.)
raymondii, sp. n. ........................................ Acrilycmum vulturinum.

differens differens Piaget ................................ Agelastes meleagrides.
differens phasidus, subsp. n. .......................... Phasidus nigcr.
sinuatus Taschenberg .................................. Megapodius r. reinwardi.
latifasciatus Piaget .................................. Megapodius j. freycinet.
crassus Rudow .......................................... Alectura l. lathami.

tsade Piaget ........................................... Macropelphon maleo.
meyeri Taschenberg ................................... Tulegala fuscochirostra.
dovei McGregor .......................................... Colinus v. virginianus.
eurycnemis Taschenberg (petatorius Giebel) ........ Lophophorus impejanus.
hamatris Piaget .......................................... Lophophorus impejanus.

*orthopleurus Giebel (name discarded) .............. Argusianus a. argus.

Gallipeurus, gen. n.

heterographus heterographus Giebel ................. Gallus domesticus.
(burnetti (Packard)) .................................... Gallus domesticus.

eheterographus var. major (Piaget) .................. Pavo muticus.
eynsfordii (Theobald) .................................. Gallus domesticus.

heterographus obscurus (Giebel) ..................... Alectoris v. rufa.

heterographus arabicus, subsp. n. .................... Alectoris melanocephala.

heterographus barbara, subsp. n. ..................... Alectoris b. barbara.

heterographus hegi, subsp. n. ........................ Ammoperdix hegi chomleyi.
nigromarginatus (Piaget) .............................. Genneius nycthemerus hor-sfeldii.
cameratus (de Haam.) ................................... Lyrurus t. tetrix.
heterogrammicus (Giebel) .............................. Perdix p. perdix.
rosalinde, sp. n. ........................................ Francolinus shelleyi theresa.
hungerfordi, sp. n. ...................................... Francolinus j. jacksoni.

pternistis pternistis (Bedford) ...................... Pternistis scawinsonii.

pternistis maranensis, subsp. n. ...................... Francolinus squamatus maranensis.

pternistis placentella, subsp. n. ...................... Francolinus gracirostriatus.
gedgii, sp. n. ........................................... Francolinus clapperti gedgii.
cinerus cinereus (Giebel) ............................. Coturnix c. coturnix.
(1 argentatus (Gurlt) ..................................... Coturnix c. coturnix.)

maculipes (Piaget) ...................................... Coturnix coturnix japonica.
acuminatus (Piaget) ..................................... Colinus v. virginianus.

synoicus, sp. n. .......................................... Synoicus ypsilopliorus australis.

spinicaudatus, sp. n. .................................... Perdilcula a. asiatica.
madagascariensis (Mjöberg) .......................... Margaroperdix madagarensis.
notatus, sp. n. ........................................... Ptilopachus petrosus petrosus.

* See footnote on p. 135.
Species of Mallophaga occurring on gallinaceous hosts.

Gallipeurus, gen. n. (con.).

- *tetraogallus*, sp. n. .................................. Tetraogallus h. himalayensis.
- *insolitus*, sp. n. .................................. Arborophila rufogularis tickellii.
- *lawrensis laurenensis* (Bedford) ................... Numida meleagris papillosa.
- *lawrensis tropicalis* (Peters) ...................... Gallus domesticus.

Oxylipeurus Mjöberg.

- *insequalis* (Piaget) ................................ Megapodius r. reinwardt.
- *appendiculatus* (Piaget) ........................... Megapodius r. reinwardt.
- (oxycephalus (Taschenberg)) ......................... Megapodius f. freycineti.
- *ischnocephalus* (Taschenberg) ..................... Alectura l. lathami.
- *apypodius*, sp. n. .................................. Arboptilus arfakianus.
- *unicolor* (Piaget) .................................. Arboptilus javanicus.
- (rubrifasciatus (Piaget) ............................ Arboptilus crucigularis.
- *tropicoperdix*, sp. n. .............................. Trropicoperdix c. chloropus.
- *connectens*, sp. n. ................................. Galloperdix s. spadica.
- *megalops* (Piaget) .................................. Rollulus roulroul.
- *clavatus* (McGregor) ............................... Colinus virginianus texanus.
- *postemarginatus* (Carriker) ......................... Orthalis gurryla cinereiceps.
- *himalayensis himalayensis* (Rudow) .............. Tragopan melanoccephalus.
- *himalayensis burmeisteri* (Taschenberg) ....... Lophophorus impeianus.
- (castaneus) (Piaget) ................................ Lophophorus impeianus.
- *stygius* (Giebel) .................................. Lophophorus impeianus.
- *longus* (Piaget) ................................... Tragopan satyra.
- *baileyi*, sp. n. .................................... Crossoptilon auritum.
- *baileyi crossoptilon*, subsp. n. ................ Crossoptilon c. crossoptilon.
- *baileyi ithaginis*, subsp. n. ...................... Ithaginis c. cruentus.
- *baileyi pucrasia*, subsp. n. ....................... Pucrasia m. macrolopha.
- *mesopelios mesopelios* (Giebel) .................. Chrysolophus pictus.
- *mesopelios hierophasis*, subsp. n. ............... Hierophasis edwardsi.
- *mesopelios reevesii*, subsp. n. ................... Syrmaticus revesii.
- *mesopelios semmerringii*, subsp. n. ............. Syrmaticus s. semmerringii.
- *mesopelios mikado* ................................ Syrmaticus mikado.
- *mesopelios robustus* (Rudow) ..................... Gymnema nuchmerus lineatus.
- *mesopelios colchicus*, subsp. n. ................ Phasianus c. colchicus.
- *rhizothera*, sp. n. ................................ Rhizothera l. longirostris.
- *piageti*, nom. nov. ................................ Rhizothera l. lignita.
- *tetraonicis* (Grube) ................................ Lagopus l. lagopus.
- (ochraces) (Giebel) ................................... Tetrao urogallus.
- *formosanus* (Uchida) ............................... Arborophila crucigularis.
- *dentatus* (Sugimoto) ............................... Gallus domesticus.
- *corpulentus* (Giebel) ................................ Meleagris gallopavo domesticus.
- *polytrapezius polytrapezius* (Burmeister) ........ Agrocharis occelata.
- *ocellata*, sp. n. .................................. Agrocharis occelata.
- *penelope*, sp. n. ................................... Penelope p. purpurascens.
- *concolor* (Rudow) .................................. Crax globulosa.
- (quadrichus) (Giebel) ................................ Crax globulosa.
- *rhynchotis* (Carriker) ................................ Rhynchotis r. rufescens.
- *tetraophasis*, sp. n. ................................ Tetraophasis a. obscurus.
Lagopæcus Waterston.

_lyrurus_, nom. nov. .............................................. _Lyurus t. tetrix._
_affinis_ (Children) ............................................. _Lagopus l. lagopus._
_pallidovittatus_ (Grube) ........................................ _Tetrao u. urocalles._
_heterotypus_ (Mégnin) ......................................... _Lophophorus impejanus._
_(nirmoides_ (Kellogg & Paine) .......................... _Lophophorus impejanus._
_cementicus_ (Giebel) ........................................... _Lophophorus impejanus._
_proterus_ (Kellogg) ............................................. _Lagopus lagopus alexandrse._
_perplexus_ (Kellogg) .......................................... _Pediæctes phasianellus columbiales._

_ovyatus_ (Uchida) ............................................... _Syrmaticus mikado._
_sinensis_ (Sugimoto) ............................................ _Gallus domesticus._
_waterstoni_ (Bedford) .......................................... _Francolinus gariepensis pallidior._

_kozuii_ (Sugimoto) .............................................. _Domestic Duck, Formosa._
_californicus_ (Kellogg and Chapman) ...................... _Oreortyx p. picta._
_docophoroides_ (Piaget) ....................................... _Lophortyx c. californica._
_(docophoroides var. minthaels_ (Kellogg and Chapman) ...
_meinertzhageni, sp. n. ..........................................._Lerwa lerwa._
_numidianus_ (Denny) ............................................ _Numida melanagris domestica_ (in error).
_(aberrans_ (McGregor) ......................................... _Colinus virginianus texanus._

List of species erroneously recorded from Gallinaceous Hosts.

Lipeurus dissimilis Piaget.
_Lipeurus dissimilis_ Piaget, 1880, p. 359, pl. xxix. fig. 1. Host: _Colinus v. virginianus._
This species is represented in the Piaget collection by a male and female. The figure shows the head more pointed than it is in the specimens; these are typical Otilipeurus.

Esthiopterum platyclypeatum (Piaget).
_Esthiopterum platyclypeatum_ Piaget, 1880, p. 678, pl. lvi. fig. 5. Host: _Perdix sp._
_Esthiopterum platyclypeatum_ (Piaget) Harrison, 1916, p. 140.
This species is represented in the Piaget collection by one female, which is almost certainly from one of the Turnicidae.

Degeeriella abrupta (Osborn).
_Nirmus abruptus_ Osborn, 1896, p. 229, pl. ii. fig. c. Host: _Colinus v. virginianus._
From the description and figure this species is most probably a straggler from one of the Passeres.

Degeeriella anchorata (Giebel).
_Nirmus anchoratus_ Giebel (Nitzsch MS.), 1866, p. 370. Host: _Ortalis m. motmot._
It is apparent from Giebel's figure (1874, pl. viii. fig. 10) that this species is a straggler from one of the Charadriiformes.
DEGEERIELLA Arcella (Piaget).

Nirmus arcella Piaget, 1885, p. 31, pl. iv. fig. 1. Host: Agelastes meleagrides.

In the Piaget collection are one male from Agelastes meleagrides and three males and two females from Ortyx leucotis (Colinus cristatus leucotis) labelled Nirmus arcella; these are most probably stragglers from one of the Bucerotide (Hornbills).

Philopterus communis var. rotundatus (Piaget).

Docophorus communis var. rotundatus Piaget, 1880, p. 60, pl. iv. fig. 7 a, nec Piaget, 1880, p. 21. Host: Chrysophorus pictus.

This is apparently a straggler from one of the Passeres.

Philopterus bilineatus (Rudow).


Rudow’s description apparently applies to a true Philopterus, which is therefore most probably a straggler.

Philopterus hospes (Rudow).


This species, as the one above, is most probably a straggler.

SUMMARY.

1. The known species of Lipoeurus and related genera are discussed fully and new species and subspecies described.

2. Four genera are recognized of which one is new.

3. One hundred and three species and subspecies are recognized of which forty-two are new.

4. A list of species of Mallophaga erroneously recorded from gallinaceous hosts is given.

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MCGREGOR. 1917. Psyche, Boston, xxiv. no. 4, pp. 105–117.
MCGREGOR. 1918. Psyche, Boston, xxxv. no. 3, p. 46.
RUDOW. 1869. Beitrag zur Kenntnis der Mallophagen oder Pelzfresser, Diss., Halle.
SUGIMOTO. 1934. Taiwan no Chikusan, ii.

EXPLANATION OF THE PLATES.

PLATE I.

Fig. 1. Lipeurus sarissa, sp. n. × 35.
2. Lipeurus maculosus, sp. n. × 35.
3. Lipeurus m. reinaudia, subsp. n. × 35.
4. Lipeurus m. polyplectron, subsp. n. × 35.
5. Lipeurus crinitus (Rudow). × 35.

PLATE II.

Fig. 1. Lipeurus brunneipictus (Giebel). × 35.
2. Lipeurus keleri, sp. n. × 35.
3. Lipeurus charltonii, sp. n. × 35.
4. Lipeurus junebristus, sp. n. × 35.

PLATE III.

Fig. 1. Lipeurus numidus (Denny). × 35.
2. Lipeurus raymondi, sp. n. × 35.
3. Lipeurus differens phasidus, subsp. n. × 35.
SPECIES OF MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.

PLATE IV.

Fig. 1. Lipeurus pavo, sp. n. \( \times 35 \).
2. Lipeurus crassus Rudow. \( \times 35 \).

PLATE V.

Fig. 1. Gallipeurus heterographus arabicus, subsp. n. \( \times 35 \).
2. Gallipeurus heterographus barbara, subsp. n. \( \times 35 \).
3. Gallipeurus heterographus heyi, subsp. n. \( \times 35 \).
4. Gallipeurus gulyi, sp. n. \( \times 35 \).

PLATE VI.

Fig. 1. Gallipeurus heterogrammicus (Giebel). \( \times 35 \).
2. Gallipeurus rosalindae, sp. n. \( \times 35 \).
3. Gallipeurus hungerfordi, sp. n. \( \times 35 \).
4. Gallipeurus pterinistis plantai, subsp. n. \( \times 35 \).
5. Gallipeurus pterinistis maranensis, subsp. n. \( \times 35 \).

PLATE VII.

Fig. 1. Gallipeurus cinereus cinereus (Giebel). \( \times 35 \).
2. Gallipeurus cinereus japonicus, subsp. n. \( \times 35 \).
3. Gallipeurus synicus, sp. n. \( \times 35 \).
4. Gallipeurus spinicaudatus, sp. n. \( \times 35 \).
5. Gallipeurus madagascariensis (Mjöberg). \( \times 35 \).
6. Gallipeurus insolitus, sp. n. \( \times 35 \).

PLATE VIII.

Fig. 1. Gallipeurus notatus, sp. n. \( \times 35 \).
2. Gallipeurus tetrogallus, sp. n. \( \times 35 \).

PLATE IX.

Fig. 1. Oxylipeurus zygochmus, sp. n. \( \times 35 \).
2. Oxylipeurus tropicoperdix, sp. n. \( \times 35 \).
3. Oxylipeurus connectens, sp. n. \( \times 35 \).
4. Oxylipeurus megalopus (Piaget). \( \times 35 \).
5. Oxylipeurus alavatus (McGregor). \( \times 35 \).
6. Oxylipeurus baileyi pucrasia, subsp. n. \( \times 35 \).

PLATE X.

Fig. 1. Oxylipeurus baileyi crossoptilon, subsp. n. \( \times 35 \).
2. Oxylipeurus mesopelios robustus (Rudow). \( \times 35 \).
3. Oxylipeurus mesopelios schidde, nom. nov. \( \times 35 \).
4. Oxylipeurus baileyi, sp. n. \( \times 35 \).

PLATE XI.

Fig. 1. Oxylipeurus mesopelios mesopelios (Giebel). \( \times 35 \).
2. Oxylipeurus mesopelios hierophasis, subsp. n. \( \times 35 \).
3. Oxylipeurus mesopelios celebicus, subsp. n. \( \times 35 \).
4. Oxylipeurus mesopelios sommerringi, subsp. n. \( \times 35 \).
5. Oxylipeurus mesopelios reevesi, subsp. n. \( \times 35 \).
6. Oxylipeurus rhizothera, sp. n. \( \times 35 \).

PLATE XII.

Fig. 1. Oxylipeurus corpulentus, sp. n. \( \times 35 \).
2. Oxylipeurus ocellatus, sp. n. \( \times 35 \).
3. Oxylipeurus polytrapezius agricola, subsp. n. \( \times 35 \).
4. Oxylipeurus polytrapezius polytrapezius (Burm.). \( \times 35 \).
SPECIES OF MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.

**Plate XIII.**

Fig. 1. *Oxylipeurus baileyi ithaginis*, subsp. n.  x 35.
2. *Oxylipeurus penelope*, sp. n.  x 35.
3. *Oxylipeurus tetraophasis*, sp. n.  x 35.

**Plate XIV.**

Fig. 1. *Lagopococcus affinis* (Children).  x 35.
2. *Lagopococcus pallidovittatus* (Grube).  x 35.
3. *Lagopococcus meinertzhageni*, sp. n.  x 35.
5. *Lagopococcus californicus* (Kell. & Chap.).  x 35.
MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.
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MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.
A NEW GENUS OF ISCHNOCERA (MALLOPHAGA).

By Theresa Clay, F.R.E.S.

(British Museum (Natural History).)

While making a key to the genera and generic groups of the Ischnocera it was found that *Lipeurus docophorus* Giebel, 1874, could not be included in any of the described genera and it is, therefore, here made the type species of the following new genus.

**Bucorvellus** gen. n.

Ischnocera with marginal carina interrupted laterally by transverse dorsal pre-antennal suture; ventral carinae interrupted medially, each carina with flattened internal parallel margin to which is attached a lobe of the pulvinus. Prothorax with one dorsal marginal seta each side; two central mesosternal and two, more laterally placed, metasternal setae. Abdominal terga II–VIII with posterior row of stout flattened setae (fig. 7), and, in addition, segment II has two extra rows, and segments III–VIII one extra row in the middle of the segment; there may also be one or two extra setae lying between these two rows. At least one tergum (usually more) has an irregular sclerite lying between the divided tergal plates; tergites II–VI or VII in the male and II–VIII in the female divided in the mid-line. In the male sternal plates II–IV are lateral, V–VI central and the remainder fused to form.
the genital plate; in the female all the sternal plates are lateral and there is no genital plate. Posterior margin of abdomen bilobed in both sexes; male genital opening ventro-terminal; female with ventral vertical line of long stout setae each side of segment IX-X (fig. 6).

Type species: *Lipeurus docophorus* Giebel, 1874.
The gender of the genus is masculine.

Figs. 4-7.—*Bucorrivins docophorus* (Giebel). (4) Male genitalia. (5) Outline of female head. (6) Terminal segments of female abdomen. (7) Flattened abdominal seta.

Distribution.—At the present time this genus is known from the two species of *Bucorvus* (Bucerotidae).
Affinities.—Throughout the Ischnocera the nearest affinities of a genus are usually to be found with the other genera parasitic on the same host order. Examples of this widespread rule are the related genera Cumningsiella, Quadra- 

ces, Lunaceps and Saemundssonia on the Charadriiformes; the Ischnocera on the Procellariiformes, which, with the exception of Saemundssonia and Docophoroides, are probably all related to each other; and the Gonoides-complex on the Galliformes. These cases are probably the result of divergence from a single ancestral stock which became parasitic on the ancestral host stock. The affinities of Bucorvellus conform to this rule; this genus appearing to be most nearly related to Paroncophorus, also parasitic on the Bucerotidae. The relationship is shown especially by the characters of the female genital region. Bucorvellus can at once be distinguished from this latter genus by the characters of the head and the presence of two or more rows of stout blade-like setae on the terga. The presence of more than one row of tergal setae is rare in the Ischno-
cera, but is found in Struthiolipeurus, Meinertzhageniella and Falcolipeurus.

Bucorvellus docophorus (Giebel).

Lipeurus docophorus Giebel, 1874. Insecta epizoa: 214. Type host: Buceros abyssinicus = Bucorvus abyssinicus (Boddaert).


As this species has apparently never been figured1 nor re-described, the following figures and description may be of use. In the Nitzsch manuscript there is a drawing of one of the specimens on which Giebel based his description, which shows that L. docophorus is the following species.

<table>
<thead>
<tr>
<th>Table I.—Abdominal Chaetotaxy.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male.</td>
</tr>
<tr>
<td>Tergal.</td>
</tr>
<tr>
<td>II. Row 1</td>
</tr>
<tr>
<td>II. Row 2</td>
</tr>
<tr>
<td>III. Row 1</td>
</tr>
<tr>
<td>IV. Row 1</td>
</tr>
<tr>
<td>IV. Row 2</td>
</tr>
<tr>
<td>V. Row 1</td>
</tr>
<tr>
<td>V. Row 2</td>
</tr>
<tr>
<td>VI. Row 1</td>
</tr>
<tr>
<td>VI. Row 2</td>
</tr>
<tr>
<td>VII. Row 1</td>
</tr>
<tr>
<td>VII. Row 2</td>
</tr>
<tr>
<td>VIII. Row 1</td>
</tr>
<tr>
<td>VIII. Row 2</td>
</tr>
<tr>
<td>IX-X. Row 1</td>
</tr>
<tr>
<td>IX-X. Row 2</td>
</tr>
</tbody>
</table>

| Female.                            |
| Tergal. | Lateral. | Sternal. |
| II. Row 1 | 6-10 | 0 | 18-24 |
| III. Row 1 | 17-26 | 1 | 23-30 |
| IV. Row 1 | 4 | 1 | 22-25 |
| V. Row 1 | 19-29 | . | . |
| VI. Row 1 | 17-27 | . | . |
| VII. Row 1 | 16-26 | . | . |
| VIII. Row 1 | 4 | 2 | 14-17 |
| VIII. Row 2 | 14-23 | . | . |
| IX-X. Row 1 | 2-3 | 1 | 13-17 |

1 Since going to press Taschenberg’s figures (1882, Nova Acta Leop.-Carol., pi. 4, fig. 5) of the original Nitzsch specimens have been remembered.

2 Post spiracular setae omitted. Sternite II has two irregular rows here counted as one. Tergal setae of IX-XI in male as in fig. 3.

PROC. R. ENT. SOC. LOND. (B) 24. PTS. 1-2. (FEBRUARY 1955).
Miss Theresa Clay on a new

Male.—Head as in fig. 1. Thorax with general shape as in Pl. I, fig. 1; prothorax with one dorsal seta each side of posterior margin reaching to level of base of third leg; pterothorax with group of five, mainly long stout setae each side of posterior margin, the longest reaching to segment V; two central mesosternal and two, more laterally placed, metasternal setae. Tergal and sternal plates as described for the genus; there is considerable variation in the presence or absence and extent of the sclerites lying between the tergal plates. Tergal plate VII may be entire or divided medianly. Post-spiracular setae present on segments II–VIII and with adjacent sensilli (see Clay, 1954: 716) on segments II–V; the post-spiracular setae on segments II–V and VIII long and fine, those on VI and VII long and stout. Most of the rest of the abdominal setae are stout and flattened (fig. 7) with some variation in number (see Table I). Genital region and genitalia as shown in figs. 3 and 4.

Female.—Shape of head as in fig. 5, chaetotaxy as in male; antennae simple. Shape of thorax as shown in Pl. I, fig. 2, chaetotaxy as in male. Abdomen with general characters as in Pl. I, fig. 2; tergal and sternal plates as described for genus. Post-spiracular setae as in male; see Table I for rest of abdominal chaetotaxy. Genital region as in fig. 6.

Table II.—Measurements in mm.

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td></td>
<td>Range.</td>
<td>Mean.</td>
</tr>
<tr>
<td>Head (5)</td>
<td>0.77–0.87</td>
<td>0.83</td>
</tr>
<tr>
<td>(7)</td>
<td>(0.82–0.83)</td>
<td></td>
</tr>
<tr>
<td>Prothorax (5)</td>
<td>1.62–1.74</td>
<td>3.01</td>
</tr>
<tr>
<td>Pterothorax (3)</td>
<td>2.92–3.14</td>
<td></td>
</tr>
<tr>
<td>Abdomen (4)</td>
<td>[2.70–2.86]</td>
<td>[2.76]</td>
</tr>
<tr>
<td>Total (6)</td>
<td>3.60</td>
<td></td>
</tr>
<tr>
<td>Genitalia (1)</td>
<td>0.86–0.95</td>
<td>0.90</td>
</tr>
<tr>
<td>Head index</td>
<td>[0.84–0.89]</td>
<td></td>
</tr>
<tr>
<td>Head (4)</td>
<td>0.93–0.95</td>
<td>0.94</td>
</tr>
<tr>
<td>(8)</td>
<td>[0.85–0.90]</td>
<td></td>
</tr>
<tr>
<td>Prothorax (5)</td>
<td>1.93–2.22</td>
<td>3.56</td>
</tr>
<tr>
<td>Pterothorax (5)</td>
<td>3.52–3.60</td>
<td></td>
</tr>
<tr>
<td>Abdomen (5)</td>
<td>[3.20–3.42]</td>
<td>[3.34]</td>
</tr>
<tr>
<td>Total (4)</td>
<td>0.89–0.92</td>
<td>0.90</td>
</tr>
<tr>
<td>Head Index</td>
<td>[0.86–0.90]</td>
<td></td>
</tr>
</tbody>
</table>

Notes.—Length of head taken at midline, breadth a, greatest breadth of preantennal region; b, greatest breadth of post-antennal region; head index = breadth : length; numbers in round brackets denote numbers of specimens measured; numbers in square brackets are measurements of specimens from Bucorvus leadbeateri.
Material examined.—5 males, 5 females from skins and fresh specimens of Bucorvus abyssinicus (Boddart) from Abyssinia and West Nile District, Uganda. In addition, 7 males, 9 females from skins and fresh specimens of Bucorvus leadbeateri (Vigors) (formerly B. cafer Schlegel) from Tanganyika Territory and the Belgian Congo have been examined. The measurements of these specimens are given in the table of measurements in square brackets under those of specimens from B. abyssinicus. In the male it will be seen that there is an overlap in the measurements given, except in those of the total length, where the difference is small and is an unreliable measurement as the length of the abdomen may be dependant on the pressure of the cover glass. There is a small difference in the mean of these measurements. The male also tends to have fewer sternal setae, especially in the genital region, but there are specimens which cannot be distinguished by this character from true docophorus. A comparison of the shapes of the heads in both sexes by the projection method (see Clay and Hopkins, 1954 : 230) shows that there is no constant difference in this character. In the female there is no overlap in the measurements under consideration, except in the head index, but the differences are small. A single female from B. abyssinicus from Uganda (not included in the measurements given) is smaller, except in the measurements of the abdomen, and otherwise falls within the range of specimens from B. leadbeateri. It also has fewer lateral setae each side of the genital region. It may be teneral.

It would be expected from Harrison's rule (see Clay 1951) that specimens from B. leadbeateri, the smaller host, would be smaller than those from B. abyssinicus, which is distinctly larger. In some cases (see Timmermann, 1954) related hosts are parasitised by the same species of Mallophaga, the populations of which on the different hosts differ only in size and not in proportion to the size of their hosts. It is possible, therefore, to find two populations, not necessarily the most nearly related, appearing as identical, whereas two populations which are perhaps more nearly related, may differ in size because of differences in size of the hosts. In such cases the populations containing the largest specimens may be quite distinct with no overlap, from those with the smallest, but each may overlap with the intermediate populations. Thus, there is a "host cline" in measurements analogous to the geographical cline of free-living populations, and the decision as to which populations should be named is difficult, as is the case with all species showing clines. When the full distribution of the species is known it may be useful to name the two ends of the cline, the other populations being referred to by the name of the nearest subspecies together with its host distribution as suggested by Timmermann, 1954 : 44. It is considered that names should be given only to those populations the individuals of which are recognisable, not those separable on statistical grounds only, although such facts are of interest and should be discussed in studies of the species. In the case under discussion, therefore, it is proposed to include in Bucorvus docophorus the population from B. leadbeateri, although the individuals show a tendency towards smaller size.

As the type material of Lipeurus docophorus was destroyed with the bulk of the Halle Nitzsch and Giebel collection during the 1939-45 war, and in order to prevent a subsequent and different interpretation of the name, application will be made to the International Commission on Zoological Nomenclature for the recognition of a neotype of Lipeurus docophorus Giebel, 1874, as follows:
Miss Theresa Clay on a new genus of Ischnocera (Mallophaga)

Male, as described and figured above, in the British Museum (Natural History), slide no. 620, from Bucorvus abyssinicus (Boddaert) from Abyssinia. Neoparatypes: 4♂, 4♀ from the same host species from Abyssinia and West Nile District, Uganda.

ACKNOWLEDGMENTS.

I am indebted to the authorities of the Musée du Congo Belge and of the Institut des Parcs Nationaux du Congo Belge for the specimens from the Belgian Congo and to Mr. G. H. E. Hopkins for the specimens from Uganda.

REFERENCES.


PLATE I.

Bucorvus docophorus (Giebel), specimens from Bucorvus leadbeateri.
Fig. 1.—Male. × 30.
Fig. 2.—Female. × 25.
THE EARLY LITERATURE ON MALLOPHAGA

(PART III)

THERESA CLAY

AND

G. H. E. HOPKINS

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
ENTOMOLOGY

Vol. 3 No. 6

LONDON: 1954
THE EARLY LITERATURE ON MALLOPHAGA

BY

THERESA CLAY

AND

G. H. E. HOPKINS

PART III. 1776-1786

Pp. 221-266; Pls. 10-12; 68 Text-figures.

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LONDON: 1954
THE BULLETIN OF THE BRITISH MUSEUM (NATURAL HISTORY), instituted in 1949, is issued in five series corresponding to the Departments of the Museum, and an Historical Series.

Parts appear at irregular intervals as they become ready. Volumes will contain about three or four hundred pages, and will not necessarily be compiled within one calendar year.

This paper is Vol. 3, No. 6 of the Entomological series.

THE EARLY LITERATURE OF MALLOPHAGA

By THERESA CLAY and G. H. E. HOPKINS

(PART III, 1776-1786)

SYNOPSIS

This part, the third of a series of papers in which it is intended to review the species of Mallophaga described between 1758 and 1820, deals with the twelve species described by F. Schrank in 1776 and 1771; the two species by O. F. Müller in 1776; the single species by J. C. Fabricius in 1777; the seven species by De Geer in 1778; the seven species by O. Fabricius in 1780; the three species by A. F. Fourcroy in 1785; the single species described by Mohr in 1786. As in previous instalments, the references following the headings are to the original work.

SCHRANK, 1776

(Beyträge zur Naturgeschichte, Leipzig: 113-120.)

With Schrank we reach much firmer ground than we have trodden hitherto, for all his species are quite reasonably well figured and there can be little doubt about the identity of any of them. All have, of course, been renamed (singly or in groups) by Nitzsch. The new species, all of which were published in perfectly valid form, are discussed below.

**Pediculus currucae** (p. 113, Pl. 5, fig. 1).

The host is "Motacilla curruca" (= Sylvia curruca), and the figure shows a Menoponid resembling *Menacanthus* rather than *Myrsidea*. No subsequent author has anything particularly useful to say about it, but Nitzsch (1818: 300) renamed it *Liotheum* (*Menopon*) *minutum*. As no material from the type host is available, neo-types of *Menacanthus currucae* (Schrank) cannot be erected.

**Pediculus rubeculae** (p. 115, Pl. 5, fig. 4)

No host is mentioned in the description, but the species is called "Rothkehlchenlaus," which is sufficient indication that the host was *Erithacus rubecula*; in a later work (1781: 507) Schrank gives the host as *Motacilla rubecula*. The figure is a reasonably good representation of a *Ricinus* and could not be mistaken for anything else.

---

1 In the last instalment of this series we remarked (Bull. Brit. Mus. (Nat. Hist.) Entomology, 2: 4) that "Kéler has evidently not studied the early literature at all . . . 'equi' (Linn.)," for instance, does not exist; no species having been described under this name prior to 1842, when Denny described it." This remark is clumsily worded and suggests a reproach to Dr. von Kéler that we certainly did not intend. In ascribing the authorship of *equi* to Linné he was in conformity with nearly all recent writers on Mallophaga, since, with extremely few exceptions all have either ignored or overlooked the fact that *Pediculus equi* Linné is a nomen nudum.

ENTOM. III, 6. 18
The species was again described by Olfers (1816:91) as *Nirmus pteroccephalus*, a name which covers several species but which we are restricting to *Ricinus rubeculae*, and by Nitzsch (1866:121) as *Physostomum agonum*, both from the same host as Schrank's material. Harrison (1916:18, 68) correctly restores Schrank's name for the species, but then (p. 103) wrongly mentions it in *Philopterus* as well, probably through confusion with *Philopterus rubeculae* (Denny), which Harrison omits and which is not congeneric with *rubeculae* Schrank.

This species is at once distinguished from both *dolichocephalus* (Scopoli) (Clay and Hopkins, 1951:10) and *fringillae* De Geer (see below) by the form of the mandibles (Text-fig. 4). It is further distinguished from the former species by the shape of the head (Pl. 10, figs. 1, 2), the terminal segments of the female abdomen (Text-fig. 3)

![Figs. 1, 2.—*Ricinus rubeculae* (Schrank). 1. Gular and thoracic plates, female. 2. Male genitalia.](image1.png)

![Figs. 3, 4.—*Ricinus rubeculae* (Schrank). 3. Terminal segments of female abdomen. 4. Mandible.](image2.png)

and prothorax, the form of the gular and prothoracic plates (Text-fig. 1), the male genitalia (Text-fig. 2), and by the absence of the colour pattern characteristic of *dolichocephalus*. From *fringillae* it is distinguished in the female by the shape of the head and prothorax, by the form of the gular and prothoracic plates, the number of gular setae, and by the chaetotaxy of the terminal segments of the female abdomen. No males of *fringillae* have been seen.

**Neotype** male (Pl. 10, fig. 1; Text-fig. 2) and **neotyotype** female (Pl. 1, fig. 2; Text-figs. 1, 3, 4) of *Ricinus rubeculae* (Schrank) in the British Museum (Nat. Hist.) (slide no. 562) from *Erithacus r. rubecula* from Moravia, Czechoslovakia. **Neoparatypes**: 17 males and 50 females from *Erithacus rubecula melophilus* Hart. from the British Isles.
THE EARLY LITERATURE ON MALLOPHAGA

Measurements in mm.:

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.58</td>
<td>0.55</td>
</tr>
<tr>
<td>Prothorax</td>
<td>—</td>
<td>0.45</td>
</tr>
<tr>
<td>Abdomen</td>
<td>—</td>
<td>0.70</td>
</tr>
<tr>
<td>Total</td>
<td>2.34</td>
<td>—</td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.38</td>
<td>—</td>
</tr>
</tbody>
</table>

Fig. 5.—Menacanthus alaudae (Schrank), male.
Another obvious *Menacanthus*. Although there is no explicit host-record, Schrank calls the species "Feldlerchenlaus" and in 1781 (p. 506) he gives the host as *Alauda arvensis*.

The same species was redescribed, from the same host, by Piaget (1880: 446) as *Menopon parviceps* (see Clay, 1949: 904).

![Image](image.png)

**FIG. 6.**—*Menacanthus alaudae* (Schrank), male genitalia.

**Measurements in mm.:**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head</td>
<td>0.25</td>
<td>0.39</td>
</tr>
<tr>
<td>Prothorax</td>
<td>0.12</td>
<td>0.28</td>
</tr>
<tr>
<td>Metathorax</td>
<td>—</td>
<td>0.33</td>
</tr>
<tr>
<td>Abdomen</td>
<td>0.83</td>
<td>0.55</td>
</tr>
<tr>
<td>Total</td>
<td>1.22</td>
<td>—</td>
</tr>
<tr>
<td>Genitalia</td>
<td>0.37</td>
<td>—</td>
</tr>
</tbody>
</table>

*Neotype* male (Text-figs. 5, 6) and *neallotype* female (Text-fig. 7; Pl. 1, fig. 3) of *Menacanthus alaudae* (Schrank) in the Meinertzhagen Collection (British Museum (Nat. Hist.)) (slide no. 3270a) from *Alauda a. arvensis* Linn. from Ushant, France.
Neoparatypes: 9 males and 33 females from various subspecies of *Alauda arvensis* from France, British Isles, Sweden and Yugoslavia.

**Pediculus citrinellae** (p. 116, Pl. 5, fig. 7)

The figure represents a *Philopterus*, apparently a nymph, and the host ("Ammer, Goldammer, Aimerling") is given by Schrank in 1781 (p. 507) as *Emberiza citrinella*.

---

![Figure 7](image7.png)

**Fig. 7.** — *Menacanthus alaudae* (Schrank), terminal segments of female abdomen.

---

![Figures 8 and 9](image8_9.png)

**Figs. 8, 9.** — *Philopterus c. citrinellae* (Schrank), male. 8. Anterior region of head. 9. Genitalia.

Nitzsch (1818: 290) proposed *Philopterus (Docophorus) communis* as a nomen novum for *Ricinus Emberizae* De Geer, *Pediculus curvirostrae* Schrank, *Pediculus Pyrrhulae*, *Citrinellae* and *Chloridis* Schrank, and *Nirmus globifer* Olfers. As all these names are nomenclatorially valid, the only effect of Nitzsch's action was to create confusion in the nomenclature and to compromise hopelessly the name *communis*. *Ricinus*
emberizae De Geer is a synonym of Pediculus citrinellae Schrank, and Nirmus globifer, though composite, is primarily a new name for the same species. As three of the names combined by Nitzsch under communis refer to citrinellae, we think it only reasonable to restrict communis to the Philopterus found on Emberiza citrinella; we therefore select as neotype of Philopterus communis Nitzsch, 1818, the neotype of Pediculus citrinellae Schrank, 1776. Philopterus communis Nitzsch thus becomes a synonym of P. citrinellae (Schrank), and it will only receive a bare mention under its other original components. Ricinus emberizae de Geer and Nirmus globifer Olfers, both of which are synonyms of citrinellae, will be dealt with in discussing the work of these authors. The identities of the insects described by Schrank as Pediculus
citrinellae, P. curvirostrae, P. pyrrhulae and P. chloridis will be discussed together after our account of the last-named.

Neotype male (Pl. 10, fig. 4; Text-figs. 8, 9) and neallotype female (Text-figs. 10, 11) of Philopterus citrinellae (Schrank) in the British Museum (Nat. Hist.) (slides nos. 565–6) from Emberiza c. citrinella Linn. from Saxony, Germany. Neoparatypes: 28 males and 42 females from various subspecies of Emberiza citrinella from Yugoslavia, Estonia, France and the British Isles.

**Pediculus curvirostrae** (p. 117, Pl. 5, fig. 8)

The description and figure are those of a Philopterus and the host is given as Loxia curvirostra Linn. No early author adds anything to our knowledge of the species, but it is one of the components of Philopterus communis Nitzsch, 1818. Piaget in 1880 described Docophorus compar from the same host; his syntypes, two males and two females (slides nos. 538–9), agree with our neotypes of curvirostrae.

Neotype male (as described below) and neallotype female (Text-fig. 11a) of Philopterus curvirostrae (Schrank) in the Meinertzhagen Collection (British Museum (Nat. Hist.)) (slides nos. 4112 and 4111) from Loxia c. curvirostra Linn. from Poland. Neoparatypes: 24 males and 36 females from the same host form from Poland, Estonia and England.

**Pediculus pyrrhulae** (p. 117, Pl. 5, fig. 9)

The host is “Blutfink” (= Pyrrhula pyrrhula) and the louse is a nymph of a Philopterus. It is one of the components of Philopterus communis Nitzsch. Piaget (1880:58) described independently a Docophorus communis var. pyrrhulae from Pyrrhula vulgaris (= Pyrrhula pyrrhula). Piaget’s type material in the British Museum (Nat. Hist.) (one male and two females, slide no. 536) agrees with the neotypes of Philopterus pyrrhulae (Schrank).

Neotype male and neallotype female (as described below) of Philopterus pyrrhulae (Schrank) in the Meinertzhagen Collection (British Museum (Nat. Hist.)) (slide no. 1042a) from Pyrrhula pyrrhula europaea Vieillot from France. Neoparatypes: 12 males and 36 females from various subspecies of Pyrrhula pyrrhula from France, Sweden, Estonia and the British Isles.

**Pediculus chloridis** (p. 118, Pl. 5, fig. 10)

Another Philopterus nymph, from “Grünfink,” the host given by Schrank later (1781:506) as Loxia chloris; it is also another of the components of Philopterus communis Nitzsch.

Neotype male and neallotype female (as described below) of Philopterus chloridis (Schrank) in the Meinertzhagen Collection (British Museum (Nat. Hist.)) (slide no. 290) from Chloris c. chloris (Linn.) from Norfolk, England. Neoparatypes: 32 males and 60 females from the same host form from the British Isles and Estonia.
**Philopterus citrinellae, P. curviostrae, P. pyrrhulae and P. chloridis**

These names were given to specimens of *Philopterus* taken respectively from *Emberiza citrinella, Loxia curviostra, Pyrrhula pyrrhula* and *Chloris chloris* and can be considered together. While discussing their status the names will be used to refer to populations from these hosts even though in the conclusion they may be considered as indistinguishable.

The characters on which the species of *Philopterus* from the small European Passeres can be distinguished have been discussed in Part II of the present work (Clay & Hopkins, 1951). The four forms listed above parasitize the bird family Fringillidae and the possible distinguishing characters between these populations are discussed below.

**HEAD.** This is of the typical *Philopterus* form similar to that figured in Clay & Hopkins, 1951: 7 for *P. coarctatus*, from which it differs in the median indentation of the hyaline margin (not always apparent in mounted specimens) and the somewhat deeper indentation of the anterior plate (clypeal signature) (Text-fig. 8). *P. fringillae* from *Passer domesticus* also has both the hyaline margin and anterior plate indented, but the pre-antennal region and the length of the anterior plate are proportionally shorter. Specimens from the four hosts under consideration show no constant differences in shape of the anterior plate nor in the proportions of the head. A comparison of the size of the head (as shown by the absolute breadth at the temples, Tables 1, 2) shows that there is some variation in specimens taken from one host species, but the means fall into a number of groups. Thus, in the males citrinellae, curviostrae and chloridis fall into one group, with pyrrhulae tending to be larger, but the number of specimens of the latter measured is rather small. In the females of *P. citrinellae* and *curviostrae* the mean tends to be smaller than in those of *chloridis* and *pyrrhulae*. Further material will have to be examined before it can be shown whether or not these differences are significant.

**MALE GENITALIA** (Text-fig. 9). The characters show individual variation as well as differences in appearance due to the position in which the genitalia are viewed. This individual variation affects the shape of the parameres and endomerites, number and position of the setae on the mesosome and the presence (and size) or absence of the dorsal sclerotized area on the mesosome. If sufficient specimens are examined genitalia of similar appearance will be found irrespective of the host from which the specimens were taken. However, the endomerites are minute structures and their true form can probably only be reconstructed from sections, so it may prove that these structures will show subspecific variation when more thoroughly examined. On the available material there seem to be no characters in the genitalia by which

---

1 To find the various proportions of the head (e.g., length of preantennal region to that of the post-antennal region or breadth of various parts of the preantennal region to the length of preantennal region) entails the making of a number of detailed measurements from a large number of specimens, and these measurements tend to be inaccurate owing to the difficulty of delineating the different regions of the head. However, if the image of a typical specimen from one host is projected on to a piece of paper and an outline of the head made, it is possible to project other heads on to this outline, and by adjusting the magnification to get one fixed breadth (say that of the temples) the same; from this it is possible to compare the various proportions of the head and find the variation within a number of specimens from one host and between those from different hosts.
the populations from the four hosts can be separated. The genitalia of _P. coarctatus_ (Scopoli) (see Clay and Hopkins, 1951: 6) and _P. fringillae_ (Ibid: 32) are readily separable on the characters of the mesosome.

The diagnostic characters and the type of variation found in the female genital region have been discussed under _coarctatus_ (see Clay & Hopkins, 1951: 6). Specimens from the four hosts under discussion cannot be separated by the shape of the genital plate, although the mean of the breadth of the plates of _citrinellae_ is smaller than in the other three. In general proportions the plate is similar to that of _coarctatus_ and differs from that of _fringillae_ as discussed under that species (see Clay & Hopkins, 1951: 32). There is some variation in the shape of the genital plate, as shown by the four examples taken from one host individual in Text-fig. 10, and also in the size and shape of the last sternal plate.

**Chaetotaxy.** There is some individual variation found throughout the different populations in the number of setae (especially in those on the abdomen), but there are three groups of setae which may show subspecific characters; these are the setae of the metasternum, those of the male genital plate, and the group each side of the last sternal plate of the female abdomen. In _citrinellae_ 80-4% of 46 males and females examined had 3 metasternal setae, 17-4% had 4, and 2-2% had 5. In _pyrrhulae_ 91-2% of 34 examined had 3 metasternal setae and 8-8% had 4. In _chloridis_ 84-6% of 52 specimens had 3 setae and 15-4% had 4. In _curviostrae_ 4-2% of 48 examined had 3 setae, 45-8% had 4, 45-8% had 5 and 4-2% had 6. Thus, while _curviostrae_ has 95-8% of specimens with 4 or more setae, the other three have over 80% of specimens with only three setae.

The male genital plate in _citrinellae_ has two anterior and two posterior setae as in _P. coarctatus_ (see Clay & Hopkins, 1951, fig. 4); the two anterior setae are found in 100% of specimens of _citrinellae_ (29 examined), _pyrrhulae_ (13 examined) and _chloridis_ (26 examined). In _curviostrae_, however, 100% of the 21 specimens examined had 3 (or rarely 4) anterior setae on the male genital plate.

Each side of the last sternite of the female abdomen there are in _citrinellae_ usually 2 normal setae and one spine-like seta (Text-fig. 11). In _citrinellae_ 97-2% of the 36 specimens examined had these 3 setae (rarely reduced to 2) on at least one side of the abdomen, only 2-8% had 4 setae on both sides of the abdomen. In _pyrrhulae_ 95-1% of the 41 examined had 3 or less setae on at least one side, and 4-9% had 4 setae on both sides. In _chloridis_ 100% of the 64 examined had 3 setae or less on at least one side. In _curviostrae_ 100% of the 32 examined had 4 or more setae on both sides (Text-fig. 11a). Thus, while 100% of specimens of _curviostrae_ had 4 or more setae on both sides of the abdomen, the other three had 95% or more with only 3 on at least one side.

On the evidence discussed above, populations from the four hosts obviously form a single species. The populations from _Loxia curviostrae_ can be distinguished in the male in 100% of specimens (on the material examined) on one character and in 80% of specimens on a second character; the females from this host can be distinguished in 95% of cases on one character and in 80% on a second character.

The populations from _Loxia curviostrae_ can, therefore, be recognized as a subspecies. If subsequent investigations reveal subspecific differences in the other
populations Schrank’s names are available for these, but for the present we are unable to recognize them. The host distribution of the two subspecies we recognize is as follows:

*Philopterus citrinellae citrinellae* (Schrank). Type host: *Emberiza c. citrinella*. Also occurs on *Pyrhula pyrrhula* and *Chloris chloris*.

*Philopterus citrinellae curvirostrae* (Schrank). Type host: *Loxia c. curvirostra*.

**Measurements in mm. of neotypes of *P. c. citrinellae***:

<table>
<thead>
<tr>
<th></th>
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<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
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<tr>
<td>Head</td>
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</tr>
<tr>
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<tr>
<td>Genitalia</td>
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**Pediculus sturni** (p. 118, Pl. 5, figs. 11-14)

A nymph of *Sturnidoecus* from “Staar” (given by Schrank in 1781 as *Sturnus vulgaris*). Schrank considered that his fig. 12 represented a different species, but it is merely a still younger nymph. Nitzsch (1818: 290) unnecessarily renamed the species *Philopterus* (*Docophorus*) *leontodon*, and it was usually known by this name until Harrison (1916: 104) restored the name given to it by Schrank.

**Measurements in mm.**:

<table>
<thead>
<tr>
<th></th>
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<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
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<tr>
<td>Head</td>
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<td>0.53</td>
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<tr>
<td>Prothorax</td>
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<td>0.30</td>
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<tr>
<td>Genitalia</td>
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</table>

*Neotype male* (Text-figs. 12-13; Pl. 10, fig. 5) and *neotypal female* (Text-fig. 14) of *Sturnidoecus sturni* (Schrank) in the Meinertzhagen Collection (British Museum (Nat. Hist.)), slide no. 15663, from *Sturnus v. vulgaris* Linn. from Cornwall, England. *Neoparatypes*: 138 males and 175 females from various subspecies of *Sturnus vulgaris* from the British Isles and Estonia.

O. F. MULLER, 1776


This is quite the worst of the early works, but the names contained in it are binomial and must be considered. Fortunately there are only two new names in it,
which both might be thought to apply to Mallophaga and also are accompanied by a description or an indication. Harrison (1916) adds a third, Pediculus strigis, which he considers to be a nomen nudum, but it is neither a nomen nudum nor a new name, but a reference to strigis Pontoppidan, q.v. (Clay & Hopkins, 1951, p. 29).

Fig. 12.—Sturndoeus sturni (Schrank), male genitalia. a. Distal ends of parameres in natural position.

Pediculus alcae arcticae (p. 185)

The entire description is "e cinereo caeruleascens," but in the case of both this and the following species there are references to "Isl.R." (= Olafsen, 1772). We have not been able to consult the original of Olafsen’s work but have seen a German translation dated 1774, on p. 322 of which there are much fuller descriptions of both
the species in question, under vernacular names. Olafsen's description of his "Lunda-Luus, Pediculus (Alcae arcticae)" includes a vivid account of its habits which leaves no room for doubt that it is a tick.

**Pediculus colymbi grylle** (p. 185)

Müller's entire description is "capite fusco, abdomine glauco," but Olafsen's fuller description of his "Hofu-Luus" states, among other points, that it is rather large, flat and oblong like *Hippobosca* (now *Melophagus*) *ovina*. This description could not be applied to any of the Mallophaga found on Alcidae, but would very well fit a tick.


**J. C. FABRICIUS, 1777**

*(Genera insectorum eorumque characteres naturales, etc. Chilonii, pp. 309–310)*

Of the new names proposed in this work all, with one exception, are unnecessary renamings of Scopoli's species and have already been dealt with under the latter author. The descriptions are quoted from Scopoli, and the neotypes we have erected for Scopoli's species are also neotypes of Fabricius' *nomina nova*. The single exception is dealt with below.

**Pediculus phasiani** (p. 310)

The host-record is "Habitat in Phasiano Motmot," and besides the very brief description there is a reference to "Red.Oper.I." Redi's plate I shows three species, belonging to as many genera, stated to be "Pollini dell' astore." In spite of Redi's belief that all of these were hawk-parasites, the reference has enabled us to interpret Fabricius' name, for his inadequate description does not fit the upper figure on the

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plate and the right-hand lower figure is a *Craspedorrhynchus*, a genus which does not occur on the Galliformes. But Fabricius’ description does fit the left-hand lower figure on the plate, which represents a *Chelopistes*, a genus known to occur on the Ortalidae. As we have no material from *Ortalis motmot* we are unable to erect neotypes for *Chelopistes phasiani* (J. C. Fabricius).

**DE GEER, 1778**


The descriptions in this work are good and the figures for the most part excellent, but we were inclined at first to think De Geer’s classification not binomial (though certainly binary) and the names invalid in consequence. This is because the generic name in each case is followed by a long descriptive phrase or diagnosis, with or without a comma after the name of the host (which always immediately follows the generic name *Ricinus* and is placed in the genitive case). We have, however, consulted Dr. Jordan on this point, and he kindly informs us that in his opinion the names are valid. He states: “The Latin diagnosis of the various species of *Ricinus* differs from the diagnoses of all other insects in vol. 7 and previous volumes in the trivial names of the species not being put into brackets, and in the case of *Ricinus* the genitive of the host-name is in italics like the Latin text of the diagnosis, not in Roman type. The work was issued after De Geer’s death, and the omission of the brackets and the consequent italicizing of the trivial names was probably due to the editor. The diagnosis of species 1 of *Ricinus* should read: ‘*Ricinus* (Fringillae) *pallide-fuscus, corpore*. . .” We accept Dr. Jordan’s opinion on this point with all the more pleasure because De Geer’s work is so outstandingly better than that of his contemporaries that it would be very regrettable if technical invalidity of the names he proposed should deprive him of the credit for it.

With regard to the statement of Harrison (1916: 10–20) that *Pediculus* Linn., *Ricinus* De Geer and *Nirimus* Hermann “must be treated as equivalent, inasmuch as each included all Mallophaga,” and his action in rejecting (e.g.) *Ricinus fringillae* De Geer as a homonym of *Pediculus fringillae* Scopoli, the revised Rules of Zoological Nomenclature make it clear that Harrison’s opinion was incorrect and that both these names may be used.

**Ricinus fringillae** (p. 71, Pl. 4, figs. 5–8)

The description and figures are good, and undoubtedly represent a species belonging to the genus *Ricinus s. str.* (= *Physostomum* Nitzsch). The question of the host, however, is one of some difficulty. De Geer’s description in Latin is preceded by one in French, in which he calls the louse “Ricin du Pinçon” (= *Fringilla coelebs*), but he later states that he found it in March on “l’oiseau nommé Bruant” (= *Emberiza citrinella*), and that it also lives “sur les Pinçons & d’autres petits oiseaux”; the species of *Ricinus* found on *Fringilla coelebs* and on *Emberiza citrinella*, though very closely related, are not the same, and De Geer’s figures resemble the latter rather than
the former in the proportions of the head. Nevertheless, if there were no complications we might have taken the view that De Geer's calling the louse "Ricin du Pinçon" compelled us to apply his name to the species found on Fringilla coelebs, but there is a very strong reason for reluctance to adopt this attitude: Nitzsch (1818: 302) published the name Liotheum (Physostomum) nitidissimum as a nomen novum for Ricinus fringillae De Geer, with Emberiza citrinella as host, and the name Liotheum (Physostomum) irascens (a nomen nudum) with Fringilla coelebs as host; irascens was published with a description by Burmeister (1838: 442) and all later authors have used nitidissimum and irascens for the species of Ricinus found on Emberiza citrinella and Fringilla coelebs respectively. To select Fringilla coelebs as type-host of Ricinus fringillae De Geer would mean that the host of nitidissimum Nitzsch, 1818 (whose sole claim to validity is the reference to De Geer), would of necessity be the same bird and the Ricinus of Emberiza citrinella would be left without a name. We consider that this course would cause so much confusion that we must select the species from Emberiza citrinella to bear the name that De Geer gave to the composite of both species. De Geer's species is also a component of Nirmus pterocephalus Olfers, 1816, but we consider this latter composite name to refer mainly to Ricinus rubeculae (Schrank).

The characters by which R. fringillae can be distinguished from rubeculae are given above under that species. This species is separated from others occurring on the Fringillidae by the shape of the head and prothorax (Pl. 10, fig. 6) and by the prothoracic plate (fig. 15), and from some species by the characters of the mandibles (fig. 17).
Measurements in mm.:

<table>
<thead>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
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</tr>
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<tr>
<td>Total</td>
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</table>

*Neotype* female (Text-figs. 15–17; Pl. 10, fig. 6) of *Ricinus fringillae* De Geer in the British Museum (Nat. Hist.) (slide no. 563) from *Emberiza c. citrinella* Linn. from Saxony, Germany. *Neoparatypes*: 4 females from the same host species from England, Estonia and Czechoslovakia.

![Figs. 16, 17.—*Ricinus fringillae* De Geer, female. 16. Terminal segments of abdomen. 17. Tips of mandibles.](image)

### Ricinus emberizae

(p. 74, pl. 4, figs. 9, 10)

The host is “Bruitant,” *Emberiza* or “Grönning” (= *Emberiza citrinella*), and the description and figure are those of a *Philopterus*. We consider this to be a synonym of *Philopterus c. citrinellae* (Schrank). Doubtless De Geer was misled into thinking it new by the fact that Schrank's species was described from a nymph.

*Neotype* of *Philopterus emberizae* (De Geer) a male in the British Museum (Nat. Hist.) collection (slide no. 564) from *Emberiza c. citrinella* Linn. from Yugoslavia, which agrees with the neotype of *Philopterus c. citrinellae* (Schrank).

### Ricinus cornicis

(p. 76, Pl. 4, fig. 11)

De Geer places “*Pediculus Corvi Coracis* Linn.” as a synonym, but the species has nothing to do with *Philopterus corvi* (Linn.), both figure and description very clearly referring to a *Myrsidea*. The host-record is “*Corneille*” (= *Corvus corone cornix*). Nitzsch (1818: 300) renamed the species *Liotheum ([Menopon] mesoleucum, quoting*
De Geer and giving the host-record "Corvi Cornicis." Harrison (1916: 13) erroneously considered *Ricinus cornicis* De Geer (a *Myrsidea*) to be preoccupied by *Pediculus cornicis* J. C. Fabricius (a Philopterus); he also took the erroneous view that *mesoleucum* Nitzsch, 1818, is a nomen nudum, and in consequence the species has commonly been known as *Myrsidea subaequalis* (Haan*). The neotypes we erect for *Myrsidea cornicis* (De Geer) are necessarily also neotypes of *M. mesoleuca* (Nitzsch).

Fig. 18.—*Myrsidea cornicis* (De Geer), female.

This species can be distinguished from other *Myrsidea* occurring on the European species of *Corvus* by the greater modification of tergites I–II (Text-fig. 18) in the female and by the sclerite of the genital sac in the male (Text-fig. 20). The chaetotaxy of sternite II (Text-fig. 22) in both sexes resembles most closely that of the species on *Corvus monedula*, but *cornicis* can be distinguished by the shape of the head in the male (Pl. 11, fig. 1) and by the characters given above.

* The authorship of the name is often incorrectly ascribed to Nitzsch or to Lyonet.
Measurements in mm.:

<table>
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<tr>
<th></th>
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<th>Female</th>
</tr>
</thead>
<tbody>
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</table>

Neotype female (Text-fig. 18) and neallotype male (Text-figs. 19–22, Pl. 10, fig. 1) of Myrsidea cornicis (De Geer) in the Meinertzhagen Collection (British Museum (Nat. Hist.)) (slide no. 16012a) from *Corvus corone cornix* Linn. from Sweden. Neoparaotypes: 174 males and 143 females from the same host form from Sweden, Estonia, E. Prussia, Hungary, Yugoslavia and the British Isles.


**Ricinus lari** (p. 77, Pl. 4, fig. 12)

There are references to "*Pediculus Sternae Hirundinis* Linn." and "Redi Experim. Tab. 9," though neither of these species is even congeneric with that described by De Geer, both his figure and his description being quite certainly those of a *Trinoton*. The host-record "sur les Mouettes" (= *Larus* spp.) is definitely erroneous, for neither *Trinoton* nor any genus closely resembling it occurs naturally on the Laridae.¹

¹ We considered the large type of *Actornithophilus* occurring on the Laridae, but the figure does not agree with this.
J. C. Fabricius (1781: 481) erroneously placed De Geer’s name as a synonym of *Pediculus sternae* Linn., doubtless misled by De Geer’s reference to this species. Nitzsch (1818: 300) considered De Geer’s species to be probably the same as his *Liotheum (Trinoton) lituratum* (a *nomen nudum* in 1818), from *Mergus albellus*, probably because another of De Geer’s species is from *Mergus serratus*.

We see no reason whatever to adopt Nitzsch’s belief, De Geer’s figure not being sufficiently detailed to refer to one species of *Trinoton* rather than another, and the common-sense procedure with regard to a species described from a straggler is obviously to make it a synonym of some earlier name if possible. Fortunately *Trinoton querquedulae* (Linn.) is a much earlier valid name and there is nothing in De Geer’s figure and description to suggest that this was not the species he had.

We accordingly designate as male neotype of *Trinoton lari* (De Geer) a specimen in the Meinertzhagen Collection (British Museum (Nat. Hist.)) (slide no. 8018) from *Anas c. crecca* (Linn.) from Nepal, which agrees with Text-figs. 26–28 and Pl. 2, fig. 2 (in Clay & Hopkins, 1950) of *Trinoton querquedulae* (Linn.).

*Ricinus mergi serrati* (p. 78, Pl. 4, fig. 13)

The description and figure are unquestionably those of an *Anaticola* and the host is carefully given as “le Plongeon nommé *Mergus serratus* Linn. *Faun. Ed. 2 no. 136*” (an important point, because “plongeon” normally means a member of the Gaviidae, or divers).
The species was renamed *Pediculus mergi* by J. C. Fabricius (1781:480) and *Philopterus (Lipeurus) temporalis* by Nitzsch (1818:292); both names are mere *nomina nova* for De Geer’s species and our neotypes of *mergiserrati* must also be neotypes of *mergi* and *temporalis*. De Geer’s figure seems to represent a nymph but is not so good as most of his figures. *Ricinus mergiserrati* De Geer passed under Nitzsch’s name until 1916, when Harrison (p. 138) mentioned it as *Ethiopterum mergiserrati* De Geer and correctly placed *mergi* Fabricius and *temporalis* Nitzsch as synonyms. De Geer carefully separates, but does not name, another “Ricin” from the mesa host, drawn as fig. 14 of his plate 4. This is undoubtedly an *Anatoecus*, and will be dealt with under *Philopterus icterodes* Nitzsch, 1818.

All the specimens of *Anaticola* from the Anseriformes examined are very similar, having male genitalia differing only in proportions and the female genital region in the chaetotaxy; all have the bilobed spermatheca in the female. Distinguishing characters are found in the proportions of the head, meso-metasternal plate and male genitalia, and in the chaetotaxy of the prothorax and male and female genital regions. *A. mergiserrati* (which should probably be considered as a subspecies of *A. anseris* (Linn.) or certainly of *A. crassicornis* (Scopoli)) is distinguished from *anseris* by the proportions of the head and male genitalia, by the characters of the pre-antennal region of the head, and by the presence of only one dorsal submarginal prothoracic seta each side. Both *crassicornis* and *mergiserrati* tend to have a greater number of setae on the genital region of the male (Text-fig. 25) and on the vulva of the female (Text-fig. 26) than *anseris*—too few specimens of this latter species are available for a more exact comparison. *A. mergiserrati* is distinguished from *crassicornis* with certainty only by the broader marginal carinae of the head (Text-figs. 23–24) and the longer penis. The meso-metasternal plate (Text-figs. 27, 28) is shorter and broader in *mergiserrati*.

Measurements in mm.:

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<tbody>
<tr>
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</tbody>
</table>

Length of penis in mm. (number of specimens in brackets): 0.20 (1), 0.22 (6), 0.23 (3).

*Neotype* male (Text-figs. 24, 25; Pl. II, fig. 2) and *neotypal* female (Text-figs. 26, 28; Pl. II, fig. 3) of *Anaticola crassicornis mergiserrati* (De Geer) in the Meinertzhagen collection (British Museum (Nat. Hist.)) (slide no. 19298a) from Mergus serrator Linn. from North Uist, Scotland. *Neoparatypes*: 46 males and 28 females from the same host species from the British Isles.
Ricinus gallinae (p. 79, Pl. 4, fig. 15)

The host is "Poule" (= Gallus domesticus) and the description and figure represent a Goniocotes. The name is not preoccupied by Pediculus gallinae Linn., which is a Menopon.

Nitzsch (1818: 294) renamed the species Philopterus (Goniodes) hologaster. Burmeister (1828: 431) placed it in his new subgenus Goniocotes, of which it was subsequently selected as type species.

![Image of Goniocotes gallinae]


Measurements in mm.:

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<tr>
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<th>Male</th>
<th>Female</th>
</tr>
</thead>
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Neotype male (Text-figs. 29, 30) and neallotype female (Text-figs. 31, 32) of Goniocotes gallinae (De Geer) in the British Museum (Nat. Hist.) Collection (slides nos. 567–8) from Gallus domesticus from Scotland. Neoparatypes: 4 males and 25 females from the same host species from the British Isles.
**Ricinus canis** (p. 81, Pl. 4, fig. 16)

The host is "chien" (= *Canis familiaris*), and the description and not very good figure unquestionably represent the species of *Trichodectes* commonly found on this host.

O. Fabricius (1780: 215) gives a completely independent description of a *Pediculus canis*, from *Canis familiaris*, which has given much trouble because the description is so bad. Nitzsch (1818: 296) gave a doubtful reference to *canis* Fabricius under his *Trichodectes subrostratus* (*a nonen nudum* in 1818), Harrison ignored it, and other authors who mention it mostly accept Nitzsch's suggestion that it was *subrostratus*. It must receive serious consideration because, as it is not a primary homonym of *Ricinus canis* De Geer, it could be the earliest valid name for *Felicola subrostratus* (Burmeister).
Turning to the original description of Fabricius, we find that numerous structural characters exclude any dog-parasites except Mallophaga and it is stated to occur in large numbers, excluding any likelihood that it was not a true dog-parasite. We fully agree with Kéler (1938: 422) that with one exception (the mention of a "rostrum subcylindricum") the characters agree excellently with the *Trichodectes* of the dog, this former character being certainly what led Nitzsch to suggest that it might be *subrostratus* (found on the domestic cat). But we again find ourselves in full agreement with Kéler that the other characters exclude the cat-lice, and that the "rostrum subcylindricum" must have been a portion of a hair gripped between the mandibles. Accordingly we shall select a neotype for *Trichodectes canis* (O. Fabricius) in such a way as to make it a synonym of *T. canis* (De Geer), of which it is also a secondary homonym. *Trichodectes latus* Nitzsch (1818: 296) is a nomen novum for De Geer’s species and therefore an absolute synonym, based on the same types.

![Image](image_url)

**Fig. 32.**—*Goniocotes gallinae* (De Geer), terminal segments of female abdomen, ventral.

*Neotype* male and *neallotype* female of *Trichodectes canis* (De Geer), which agree with the description and figures published by Werneck under the same name (Werneck, 1936: 502–6, figs. 130–135), in the British Museum (Nat. Hist.) (slide nos. 581–2) from *Canis familiaris* from São Paulo, Brazil. *Neoparatypes:* 32 males and 31 females from the same host species from Brazil, British Isles and Germany.

O. FABRICIUS, 1780

(Fauna Groenlandica, Hafniae & Lipsiae, pp. 215–220)

Most of the descriptions in this work are new and independent, but there are a few redescriptions. The descriptions are poor and there are no figures, but the names are in unquestionably valid form.

There is some confusion regarding the correct interpretation of the hosts from which Fabricius collected his specimens, and we are greatly indebted to Dr. Finn Salomonsen for assistance in identifying these correctly.

**Pediculus canis** (p. 215)

This species has been fully discussed under *Ricinus canis* De Geer, of which it is a synonym.
Neotype male of *Trichodectes canis* (Fabricius) in the British Museum (Nat. Hist.) (slide no. 583) from *Canis familiaris* from São Paulo, Brazil. This specimen agrees with the neotype of *Trichodectes canis* (De Geer).

*Fig. 33.—Saemundssonia grylle* (O. Fabricius), male genitalia. *a*. Head of paramere.

**Pediculus strigis** (p. 216)

Fabricius thought his species, taken from *Strix nyctea* (= *Nyctea scandia*), was the same as *P. strigis* Müller, which we have already discussed as *P. strigis* Pontoppidan. It is unlikely that this is the case, but as the name is a primary homonym we do not propose to discuss it further.
**Pediculus corvi** (p. 217)

This name is attributed to *Syst. Nat.* (i.e., Linné), and there is no need to discuss it except to note that as the description is that of a *Philopterus* and the host is *Corvus corax* it could be regarded as a restriction of Linné's name to the species found on the raven. We have already restricted *Philopterus corvi* (Linn.) in the same sense.

![Diagram](image)

**Pediculus clangulae** (p. 217)

Fabricius gave the host of this species as *Anas clangula*, but (as confirmed by Dr. Salomonsen) the species which Fabricius had must have been *Bucephala islandica* (Gmelin). In addition to the description there is a queried reference to *Pediculus querquedulae* Linn. It was doubtless this reference which led Harrison (1916: 12)
to refer clangulae to Trinoton, but the description cannot possibly apply to Trinoton or to any other duck-parasite except an Anaticola, which it fits very well. The species appears never to have been renamed or redescribed.

As we have no specimens of Anaticola from Bucephala islandica (Gmelin) we are unable to erect neotypes for Anaticola clangulae (O. Fabricius).

Pediculus grylle (p. 218)

Although this purports to be a renaming of P. colymbi grylle Müller (a tick), the brief independent description "Pediculus niger, fasciis albis, abdomine ovato" cannot apply to a tick, none of which are banded, but does apply fairly well to the Saemundssonia, which occurs on Cepphus grylle, and not at all to any other known parasite of this bird.

Denny (1842: 44, 86, Pl. 5, fig. 6) redescribed the species as Docophorus megacephalus from a teneral specimen obtained from the same host,¹ and the species was known under this name until Harrison (1916: 12, 14) restored the name given to it by Fabricius.

Specimens examined: 28 males and 38 females from Cepphus g. grylle (Linn.) from the British Isles. As we have no material of Saemundssonia from Cepphus g. arctica Brehm, the subspecies from which Fabricius took his specimens, we are unable to erect neotypes of Saemundssonia grylle (O. Fabricius). We have, however, included figures (Text-figs. 33, 34; Pl. 11, fig. 4) of what is almost certainly this form drawn from specimens taken from Cepphus g. grylle (Linn.). It should be noted that there is individual variation in the shape of the female genital plate and chaetotaxy of the genital region.

Measurements in mm.:

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Neotype of Docophorus megacephalus Denny, a male (Text-figs. 33, 34; Pl. 11, fig. 4), in the Meinertzhagen Collection (British Museum (Nat. Hist.)), (slide no. 16698), from Cepphus g. grylle (Linn.) from N. Uist, Outer Hebrides.

Pediculus bassani (p. 218)

Thompson (1940: 372–381) has dealt fully with the identity and synonymy of Pectinopygus bassani (O. Fabricius) and has erected neotypes for it (p. 380).

Denny's type material of this species is not in the Brit. Mus. (N.H.) collection.
Pediculus lari (p. 219)

Harrison (1916: 16) considered this name to be preoccupied by lari De Geer, but the latter was published in Ricinus and is now in Trinoton, so lari O. Fabricius, which is a Saemundssonia, is valid. The description is much better than the rest and mentions a triangular head, acuminate in front and with a bifid rostrum, that the insect is wholly black except for white blotches above and below, besides other
details which make it perfectly clear that Fabricius had before him a female Saemundssonia. The original host-record is "Habitat in laro glauco et quidem macro"; Larus glaucus is a synonym of L. hyperboreus Gunnerus. The species was redescribed as S. lari phaga by Timmermann (1949: 8). Docophorus lari Denny, 1842; D. lari Grube, 1851; D. lari T. Müller, 1927 and Pediculus lari Larrañaga, 1928, are all referable to Saemundssonia and are, therefore, homonyms of S. lari (Fabricius).

S. lari (O. Fabricius) is the earliest name for any species of Saemundssonia from

the genus *Larus*, and, as shown by Timmermann (1951), the *Saemundssonia* from nearly all the species of this genus must be considered as subspecies of *lari*.

In *S. l. lari* the tergal plates of abdominal segment II are joined medianly in both sexes and the dorsal abdominal setae of the female do not form a continuous line across the segment, occurring only along the posterior margins of the tergal plates. In the male genitalia there is no sclerotized cross-bar at the distal end of the basal plate (Text-fig. 37) and the endomeral projections are fused medianly.

**Measurements in mm.:**

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*Neotype* male (Text-figs. 35, 37–39, Pl. 11, fig. 5) and *neallotype* female (Text-fig. 36) of *Saemundssonia lari lari* (O. Fabricius) in the British Museum (Nat. Hist.) Collection (slide no. 569) from *Larus hyperboreus* Gunnerus from Iceland. *Neotypes*: 51 males and 48 females from the same host species from Iceland, Jan Mayen Is. and the British Isles.

**Pediculus tringae** (p. 219)

This species is stated to occur on *Tringa striata*, which at once presents us with a difficulty, because this name has been applied to the redshank and also (incorrectly) to the purple sandpiper; but the former does not occur in Greenland, so the host of *P. tringae* must have been *Erolia maritima*. The insect is described as white with a red dot on the abdomen (obviously ingested blood) and a suborbicular body, the size is that of the head of a pin, the antennae are like very minute hairs, the thorax is oval and the abdomen almost circular. Obviously the specimen was a very young nymph. Harrison regards the species as unrecognizable and we have much sympathy with this view, but it is one only to be adopted in the last resort. The mention of an almost orbicular abdomen at once rules out any genera found regularly on the Charadriiformes except *Saemundssonia*, *Austromenopon* and perhaps *Actornithophilus*, but not only are nymphs of the two latter genera brownish-yellow rather than white, but also their antennae are concealed and the palps (sometimes mistaken for antennae) far from conspicuous, so that Fabricius’ insect must have been a *Saemundssonia*; only one *Saemundssonia* appears to occur normally on *Erolia maritima*.

Through the kindness of Dr. René Malaise it has been possible to remount and examine the syntypes of *Docophorus arcticus* Mjöberg (1910: 122) said to have been taken from "*Tringa sp. (maritima?)*." The syntypes, which comprise one male and two females, are conspecific with the neotypes of *S. tringae* from *Erolia maritima*; *S. arctica* can, therefore, be considered as a synonym of *tringae* (Fabricius).
This species is distinguished from other *Saemundssonia* on the Charadrii by the size and shape of the head (Pl. II, fig. 6) and anterior plate (clypeal signature) (Text-fig. 40) and by the male genitalia (Text-figs. 42-44). The tergal plates of abdominal segment II are joined medianly in both sexes and the dorsal abdominal setae do not form a continuous line across each segment, occurring only along the posterior margins of the tergal plates. In the male genitalia there is a sclerotized cross-bar at the distal end of the basal plate and the endomeral projections are fused medianly (Text-fig. 42).

**Measurements in mm.:**

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*Neotype* male (Text-figs. 40, 42-44, Pl. II, fig. 6) and *neallotype* female (Text-fig. 41) of *Saemundssonia tringae* (O. Fabricius) in the Meinertzhagen Collection (British Museum (Nat. Hist.)), slide no. 2346, from *Erolia maritima* (Brünnich) from Scotland. *Neoparatypes*: 16 males and 16 females from the same host species from the British Isles, Spitzbergen and Finland.
Lectotype of *Saemundssonia arctica* (Mjöberg): ♂ in the Naturhistoriska Riksmuseum, Stockholm, from "*Tringa sp. (maritima?)* from Lilla Pendulum-Ön" (6.vii.1899).

*Pediculus hiaticulae* (p. 220)

The host is *Charadrius hiaticula*, and the only points of much value in the description are that the head is triangular, the oblong body sublinear and the whole insect mouse-coloured, but this description is sufficient to give us the genus at once, for the only genus occurring on the genus *Charadrius* in which the body could possibly be described as sublinear is *Quadraceps*. Two species of this genus occur on *Charadrius hiaticula*, and both are fairly common; *Quadraceps fissus* (Burmeister) is a relatively stout species, while the other is very slender. This latter species was discussed at some length by Waterston (1915: 35) without his being able to find a satisfactory name for it, but Hopkins (1942: 115) expressed the opinion that the slender species is *Quadraceps hiaticulae* (O. Fabricius). As Fabricius describes his species as sublinear we think there can be no question that this is the species he had before him,
and we reject Harrison's placing of fissus Burmeister as a synonym (Harrison: 1916: 15, 113). Harrison ascribes the authorship to Müller, but the latter only mentioned Pediculus hiaticulae as a nomen nudum, so the author is Fabricius.

**Measurements in mm.:**

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Figs. 45, 46.—Quadraceps hiaticulae (O. Fabricius), male. 45. Anterior region of head, dorsal. 46. Terminal segments of abdomen.

*Neotype* male (Text-figs. 45–50; Pl. 12, fig. 1) and *neatotype* female (Text-fig. 51, Pl. 12 fig. 2) of Quadraceps hiaticulae (O. Fabricius) in the Meinertzhagen Collection (British Museum (Nat. Hist.)), slide no. 10514, from Charadrius h. hiaticula Linn. from Ireland. *Neoparatypes*: 116 males and 159 females from the same host form from the British Isles and 17 males and 9 females from Charadrius h. tundrae (Lowe) from the Sudan.
**Pediculus lagopi** (p. 220)

This appears to be a redescription of Linné’s species of the same name and the host (*Tetrao lagopus*) is also the same.

**J. C. Fabricius, 1781**

(*Species Insectorum . . . Hamburgi & Kilonii, Vol. 2, pp. 478–484*)

This is little more than a list of names, and all the new names proposed in it have already been discussed. It need not detain us.

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![Figs. 47, 48.—Quadraceps hiaticulae (O. Fabricius). 47 Male genitalia. 48. Paramere.](image)

**Schrank, 1781**

(*Enumeratio insectorum Austriæ indigenorvm. Augustae Vindelicorum, pp. 499–507, pl. 1.*)

We must confess to a great feeling of relief in getting away from the work of J. C. and O. Fabricius to that of Schrank, for (as before) his descriptions are for the most part accurate and are nearly all accompanied by figures which enable his species to be easily recognized.

*Entom. III, 6.*
Pediculus porcelli (p. 500, Pl. 1, fig. 1)

After being mentioned by Linné without indication, definition or description, this name was copied by almost every author with whom we have dealt, still as a nomen nudum, until Schrank finally described the species. The host is *Mus Porcellus*, the description is good and the figure excellent, considering the date. Schrank himself (1803:186) renamed the species *Pediculus saviae*, Olfers (1816:83) redescribed it as *Pediculus bifurcatus*, and Nitzsch (1818:304) proposed *Gyropus gracilis* as a nomen novum for it. Later authors have either used Nitzsch’s name or referred the name *porcelli* to Linné, but the authorship of this name must be ascribed to Schrank.

![Figs. 49, 50.—*Quadriceps hiaticulae* (O. Fabricius). 49. Mesosome, ventral. 50. Distal end of mesosome, dorsal.](image)

![Fig. 51.—*Quadriceps hiaticulae* (O. Fabricius), terminal segments of the female abdomen.](image)

The species has been excellently described and figured by Werneck (1936:398-402, figs. 1-9), and our neotypes agree with his description and figures.

*Neotype* male and *nealtotype* female of *Gliricola porcelli* (Schrank) in the British Museum (Nat. Hist.) Collection (slides nos. 584-5) from tame guinea-pig, *Cavia porcellus* (Linn.), from Rio de Janeiro, Brazil. *Neoparatypes*: 14 males and 30 females from the same host species from Brazil, British Isles and S. Africa.

Pediculus ovis (p. 502, Pl. 1, figs. 8, 9)

This is a somewhat similar case to that of *porcelli*, since Linné mentioned the name without description and with only a queried reference to Redi, which does not save
the name from being a nomen nudum. In passing it seems worth mentioning that
the presence of the query suggests very strongly that what Linne had before him
was not Redi’s insect, for the latter’s figure is not at all bad; we suspect that Linne
may have had a sucking louse. In any case the authorship of ovis must be assigned
to Schrank.

The host is Ovis aries (domestic sheep) and the species is well known. Schrank
(1803 : 187) renamed it Pediculus ovisarietis, Olfers (1816 : 85) described it as Pedici-
ulus sphaerocephalus, and Nitzsch (1818 : 296) proposed the new name Trichodectes
sphaerocephalus for “Ped. Ovis Linn. Fabric.” (nomina nuda), Schrank’s species and
the left-hand figure on Redi’s pl. 22. Our neotypes of ovis Schrank are also
automatically neotypes of the nomina nova proposed by Schrank (1803) and Nitzsch
(1818), but are not neotypes of sphaerocephalus Olfers because this has an indepen-
dent description.

The species has been excellently described and figured by Werneck (1936 : 537–
540, figs. 169–174), and the neotypes agree with his figures and description.

Neotype male and neodolotype female of Damalinia ovis (Schrank) in the British
Museum (Nat. Hist.) Collection (slides nos. 586–7) from domestic sheep, Ovis aries
Linn. from Rio de Janeiro, Brazil. Neoparatypes : 29 males and 37 females from
the same host species from Brazil, E. Africa and New South Wales, Australia.

Pediculus anatis (p. 503, Pl. 1, figs. 2, 3)

The excellent description and the figures represent an Anaticola, and there is a
reference to the upper figure of Redi’s plate 10, which is Anaticola anseris (Linn.).
The host is given as Anas boschas varietas fera (= Anas p. platyrhynchos), but fig. 2
of the plate is labelled P. anseris, which perhaps means that this specimen was taken
from a goose. There can be little doubt that anatis Schrank is a mixture of Anaticola
anseris (Linn.) and A. crassicornis (Scopoli), and it is probably the basis for Olfers’
record of both Anas and Anser as hosts of the latter species and the subsequent
appearance in the literature of a non-existent “crassicornis Olfers.” In view of
Schrank’s host-record and choice of specific name, anatis must be held to apply
primarily to Anaticola crassicornis (Scopoli), of which it is a synonym.

Neotype male of Anaticola anatis (Schrank) in the Meinertzhagen Collection (British
Museum (Nat. Hist.)), slide no. 4242, from Anas p. platyrhynchos Linn. from N.E.
Poland. This specimen agrees with the description and figures (Clay & Hopkins,
1951 : 17) of A. crassicornis (Scopoli).

Pediculus ortygometrae (p. 503)

This species, from Rallus Crex = Crex crex (Linn.), is not figured and the descrip-
tion is most unsatisfactory. The species was identified by Burmeister (1838 : 428)
and by Denny with Nitzsch’s manuscript name Nirmus attenuatus, and there are
important reasons why this identification should be accepted if at all possible. The
position is that attenuatus first appeared in print (Nitzsch, 1818 : 291) as a nomen
nudum, a reference to Pediculus ortygometrae Schrank being queried. Burmeister
gave no description of the insect but included the same reference without the query,
thus making *Nirmus attenuatus* Burmeister a *nomen novum* for *P. ortygometrae* Schrank. Deny (1842: 52, 134, Pl. 10, fig. 2) described material from *Crex pratensis* (= *Crex crex* (Linn.)) as *Nirmus attenuatus* "Nitzsch," and "*N. attenuatus Nitzsch*" as subsequently described by Giebel from Nitzsch's manuscript (1874: 170, Pl. 6, fig. r) appears to be congeneric with Denny's species. To interpret *P. ortygometrae* otherwise than was done by Burmeister and by Denny would raise serious difficulties with regard to the type species of *Rallicola*.

Schrank's description of *ortygometrae* is as follows: "Insectum oblongum. Caput cordatum, parte acuminata ab abdомine aversa; antennae breves moniliformes. Thorax angustus, longus apice latior, apicis medio productiore. Abdominis segmenta, demta thorace octo setosa, utrinque spiraculis magnis maculatis instructa. Pedes thoraci affici, articulis tribus elliptoidibus constant, articulo tertio acuto, breviori. In capite varia transparent intestina; ejusque apices utrinque setam longiusculam emittunt."

We considered the possibility that the various internal structures appearing in the head might be the conspicuous gular plate of *Pseudomenopon*, but this genus is excluded by the cordate head and the fact that the "apex" of the thorax is stated to be produced in the middle. We think *Fulicoffula* to be excluded by the statement that the insect is oblong and by the cordate head. *Incidifrons* is not known from *Crex crex*, but we have examined *I. fulicae* (Linn.) and this, in common with *Pseudomenopon*, has two long setae arising from the temporal angles (Schrank's "apices" of the head), whereas *Rallicola* has only one. Summing up, the whole of the very vague description could apply to *Rallicola* and the presence of only one long temporal seta is peculiar to this genus. It is legitimate to use as confirmation the fact that *Rallicola* is common on *Crex crex* and the other genera rare or unknown.

This species is distinguished from *R. cuspidatus* (Scopoli) (see Clay & Hopkins, 1951: 25) by the shape of the head in both sexes, the absence of marked sexual dimorphism of the antennae, the male genitalia and the female genital region.

**Measurements in mm.:**

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</tbody>
</table>

Neotype male (Text-figs. 52, 53) and neotypal female (Text-figs. 54, 55) of *Rallicola ortygometrae* (Schrank) in the British Museum (Nat. Hist.) Collection (slide nos. 570–1) from *Crex crex* (Linn.)* from Scotland. Neoparatypes: 5 males and 3 females from the same host species from Scotland and France.

The material described by Denny as *Nirmus attenuatus* "Nitzsch" (one male in the British Museum (Nat. Hist.) Denny Collection) agrees with the neotype of *Ralli-
There are no specimens of "Oncophorus attenuatus N.," as described by Piaget (1880: 214, Pl. 18, fig. 1) in the Piaget Collection in the British Museum (Nat. Hist.).

FOURCROY, 1785
(Entomologia Parisiensis, Paris. Part 2, pp. 517-522)

The section of this work which deals with Anoplura and Mallophaga is in two different parts; pages 517-519 contain a list of species of Pediculus, sometimes with brief descriptions or quotations of the descriptions of other authors (whose names are not mentioned), and all the names are in valid binomial form. But on pages 520-522, under a separate heading "pediculi Rhedi & Linnaei" there is a list in which every name which is not a nomen nudum is a descriptive phrase and has a partial...
duplicate: "Pediculus accipitris, abdomine oblongo" and "Pediculus accipitris, abdomine ovato," for instance. We conclude that these phrases on pp. 520-522 are not to be taken as names and are only in Latin because the whole work is in that language. On the other hand, the names on pp. 517-519 are undoubtedly valid and must be dealt with, because in three instances Geoffroy's descriptive phrases are first shortened to valid form in this work.

\[\text{Figs. 54, 55.—}\text{Ralicola ortygometrae (Schrank).} \hspace{1em} 54. \text{Female.} \hspace{1em} 55. \text{Terminal segments of female abdomen.}\]

\textbf{Pediculus circi (p. 518)}

Proposed for Geoffroy's \textit{Pediculus circi, fuscus oblongus} . . . , the identity of which has already been briefly discussed (Clay & Hopkins, 1950: 270). Geoffroy's host-record is "Busard des marais, circus Bellon" (= Circus aeruginosus (Linn.)).

The same species was named \textit{Pediculus milvi} by Schrank (1803: 193); \textit{Liotheum (Laemobothrion) giganteum} Nitzsch (1818: 301) is composite and we shall restrict
the name to the present species. *L. nigrolimbatum* Giebel was described from specimens taken from *Circus cineraceus* (= *C. pyargus* (Linn.)) and *Circus aeruginosus*, and in view of the loss of the types is best assumed to be the same as *circi* (Fourcroy).

The species of *Laemobothrion* from the Falconiformes can be divided into three main groups as follows (see also Kéler, 1937, and Eichler, 1943):

2. Gular setae and lateral setae on prosternal plate present. *circi* (Fourcroy).
3. Majority of abdominal tergites with central uncoloured area (Text-fig. 68) (vulturis group).
4. Abdominal tergites without such areas. *maximum* group.
5. Lateral margins of anterior abdominal segments with dark, stout spine-like setae. *glutinans* N.
6. Lateral margins of anterior abdominal segments without such setae. Rest of *vulturis* group.

In addition the members of the *tinnunculi* group have the shape of the head distinctive, have only a few setae on the anterior margin of the prothorax, and never have a complete vertical line of setae along the outer edges of the patches of minute comb-like structures on abdominal sternites IV–V. The *vulturis* group is further characterized by the presence in the female of a lateral pigmented spot each side posterior to the vulva (Text-fig. 67, x), and by the presence in both sexes of dark, stout spine-like setae on the margin of the first femur and on the margin and dorsal

---

1 These are similar to those found in *Microtenia*.
surface of the proximal part of the second femur (Text-figs. 58, 61); the third femur may or may not have these setae. In general, members of the *vulturis* group tend to be larger and to have a greater number of stouter setae. In the *maximum* group some forms have (Text-figs. 57, 60) a few of these spine-like setae on the femora, smaller than those of the *vulturis* group; in the *tinnunculi* group the second femur

![Fig. 62.—*Laemobothrion circi* (Fourcroy). Male head, dorsal.](image)

![Figs. 63, 64.—*Laemobothrion circi* (Fourcroy). 63. Female prosternal and meso-metasternal plates (unmounted specimen). 64. Proximal part of prosternal plates of three individuals to show variation in shape and number of setae (mounted Canada balsam).](image)

(only) may have one or two small spine-like setae (Text-figs. 56, 59). Each of these groups will probably prove to be a polytypic species, the subspecies of which seem to be distinguished by the colour pattern (apparently correlated to a certain extent with the plumage colour of the host), the shape of the gular plate, the number and
size of the setae, and the total length in the females. There is some individual variation in the numbers of gular and lateral setae of the prosternal plate which makes these characters unreliable for the separation of related forms; similarly the shape of the prosternal plate tends to vary (Text-figs. 63, 64). The position of the setae on the meso-metasternal plate (see Eichler, 1943: 210) is also variable, due to variation in the posterior prolongation of this plate. The shape and size of the head, even where the total length is a distinguishing character, tend to be similar in related forms. It seems doubtful whether the male genitalia show any differences throughout the members of one group, but a greater amount of material is necessary in order to judge the amount of variation in the shape of the sclerites within populations from one host species.

Fig. 65.—Laemobothrion cirri (Fourcroy) male, terminal segments of abdomen.
   a. Anus (internal).

Of the four species described up to this date—1785—L. tinnunculi (Linn.) is quite distinctive (see Clay & Hopkins, 1950: 228). L. vulturis (J. C. Fabricius) was redescribed (Clay & Hopkins, 1951: 33) from a small amount of mounted material, but now through the kindness of Mr. B. K. Tandan (University of Lucknow) it has been possible to examine fresh material of this species and thus to amplify the descriptions and figures. It differs from other forms parasitizing the Aegypiinae mainly in size and possibly in colour pattern, but the available specimens of *Laemobothrion*
from this subfamily are not in a condition to show this last character fully. The number and size of the setae tend to be greater in both sexes than in *circi* (cf. Text-figs. 66 and 67), but there is considerable individual variation in this character. In our first description (1951: 34) it was suggested that the number of lateral prosternal setae was a diagnostic character, but the number of these in *L. vulturis* may vary, as shown for the following 4 males and 4 females (setae on left and right side of each prosternal plate):

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 + 5; 4 + 3; 5 + 3; 7 + 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 + 4; 4 + 6; 6 + 7; 7 + 6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This species has the form of the tergal plates (Text-figs. 68) and femoral setae (Text-figs. 58, 61) characteristic of the *vulturis* group. *L. maximum* (Scopoli) (see Clay & Hopkins, 1951: 34) and *L. circi* (Fourcroy) belong to the *maximum* group, but owing to lack of material of *maximum* the differences (if any exist) between these two forms cannot be given. *L. circi* differs from *L. titan* Piaget (host: *Milvus m. migrans*) in the lesser degree of pigmentation and in the female by the shorter abdomen. In both sexes of *circi* abdominal tergites I–IV show signs of a median division.

Fig. 66.—*Laemobothrium circi* (Fourcroy) female, terminal segments of abdomen.
**Measurements in mm.:**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Breadth</td>
</tr>
<tr>
<td>Head (midline)</td>
<td>1.44</td>
<td>—</td>
</tr>
<tr>
<td>(laterally)</td>
<td>1.70</td>
<td>1.54</td>
</tr>
<tr>
<td>Prothorax</td>
<td>—</td>
<td>1.20</td>
</tr>
<tr>
<td>Pterothorax</td>
<td>—</td>
<td>1.63</td>
</tr>
<tr>
<td>Abdomen</td>
<td>4.95</td>
<td>2.20</td>
</tr>
<tr>
<td>Total</td>
<td>8.15</td>
<td>—</td>
</tr>
<tr>
<td>Genitalia</td>
<td>2.20</td>
<td>—</td>
</tr>
</tbody>
</table>

**Fig. 67.—Laemobothrion vulturis (J. C. Fabricius), Terminal segments of female abdomen, ventral. x. Post-vulval pigmented area.**

**Fig. 68.—Laemobothrion vulturis (J. C. Fabricius), third abdominal tergite, female.**

*Neotype* male (Text-figs. 62, 65; Pl. 12, figs. 3, 4) and *neallotype* female (Text-figs. 57, 60, 63, 64, 66; Pl. 12, fig. 5) of *Laemobothrion cirri* (Fourcroy) in the British Museum (Nat. Hist.) Collection (slide no. 609) from *Circus a. aeruginosus* (Linn.) from Kenya. *Neoparatypes*: 26 males and 20 females from the same host form from Kenya, Yugoslavia and India.

**Pediculus passeris** (p. 519)

A binomial name for Geoffroy’s descriptive phrase “*Pediculus subflavescens: abdômine ovato . . .*” (see Clay & Hopkins, 1950: 270), but with a brief description which may perhaps be independent. The point is not of much importance, as
both descriptions clearly indicate a Philopterus and the host is the same: “moineau franc” (= Passer domesticus).

The earliest name for the Philopterus from Passer domesticus is P. fringillae (Scopoli) (see Clay & Hopkins, 1951: 32) and passeris, therefore, becomes a synonym of this latter name.

Neotype male of Philopterus passeris (Fourcroy) in the Meinertzhagen Collection (British Museum (Nat. Hist.)), slide no. 15778 from Passer d. domestica (Linn.) from Cornwall, England. This specimen agrees with the figures and description (Clay & Hopkins, 1951: 32; fig. 43; Pl. 3, fig. 3) of P. fringillae (Scopoli).

Pediculus corvi (p. 519)

Proposed for Geoffroy’s “Pediculus albo nigroque varius...” The host is “corbeau,” which may mean crow or raven, though usually the latter. Geoffroy’s species is certainly a Philopterus.

Philopterus corvi (Fourcroy) is preoccupied both in Pediculus and in Philopterus, for if not the same as Philopterus corvi (Linn.) it is a homonym of the latter. It is therefore unnecessary to try to fix it more closely.

MOHR (N.), 1786
(Forsøg til en Islandsk Naturhistorie. Kiøbenhavn)

Pediculus procellariae (p. 103)

There is a short Latin description but no host-record other than that provided by the name, which is preoccupied by Pediculus procellariae J. C. Fabricius, 1775.

We consider Pediculus procellariae Mohr, 1786, nec J. C. Fabricius, to be completely unrecognizable.

ACKNOWLEDGMENTS

We are indebted to the Trustees of the British Museum for permission to publish Text-figs. 12, 23, 33, drawn by Mr. A. J. E. Terzi, to the Zoological Society of London for permission to publish figures 52–55, and to Colonel Meinertzhagen for permission to publish Text-figs. 29 and 31, drawn by Mr. R. S. Pitcher. Text-figs. 5 and 18 were drawn by Mr. A. Smith, and the remaining figures by Miss T. Clay.

Table I.—Breadth (in mm.) of Head at Temples of Male Philopterus populations with Number of Specimens.

<table>
<thead>
<tr>
<th></th>
<th>0·45–0·46</th>
<th>0·47–0·48</th>
<th>0·49–0·50</th>
<th>0·51–0·52</th>
</tr>
</thead>
<tbody>
<tr>
<td>citrinella</td>
<td>. . . 3</td>
<td>22</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>curvoirostra</td>
<td>. . . 1</td>
<td>16</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>pyrrhulae</td>
<td>. . . —</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>chloridis</td>
<td>. . . —</td>
<td>18</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>
Table II.—Breadth (in mm.) of Head of Female Philopterus populations with Number of Specimens

<table>
<thead>
<tr>
<th>Species</th>
<th>0.47-0.48</th>
<th>0.49-0.50</th>
<th>0.51-0.52</th>
<th>0.53-0.54</th>
<th>0.55-0.56</th>
<th>0.57-0.58</th>
<th>0.59-0.60</th>
</tr>
</thead>
<tbody>
<tr>
<td>citrinellae</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>16</td>
<td>4</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>curvirostrae</td>
<td>—</td>
<td>1</td>
<td>11</td>
<td>4</td>
<td>1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>pyrrhulae</td>
<td>—</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>chloridis</td>
<td>—</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>8</td>
<td>12</td>
<td>—</td>
</tr>
</tbody>
</table>

List of Species

The synonymy of the following names has been established:

Specific name | Present status | Page.
--- | --- | ---
agonum Nitzsch | *Ricinus rubeculae* (Schrank) | 224
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cornicis Schrank | *Menacanthus cornicis* (Schrank) | 223
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—— 1951. Pt. II. *op. cit. 2 (1): 1–36*


