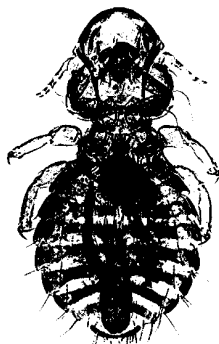


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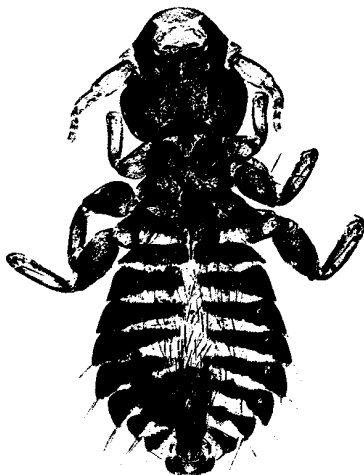
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9. A Revision of the Genera and Species of Mallophaga occurring on Gallinaceous Hosts.—Part I. *Lipeurus* and Related Genera. By THERESA CLAY, B.Sc., F.Z.S.

(Received May 3, 1937; Read November 9, 1937.)

(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.

PROC. ZOO. SOC., SER. B.—1938.

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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 <i>G. l. laurensis</i> and <i>G. l. tropicalis</i>), 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 | | <i>Rhynonirmus</i> . |
| Head with clypeal suture and with lateral sutures joined posteriorly to form one curved post-antennal suture | | <i>Otilipeurus</i> and
<i>Otidæus</i> . |
| Head with indefinite clypeal suture and no posterior sutures | | <i>Gallipeurus</i> . |
| 3. Head with pre-antennal chitin projections | | <i>Oxylipeurus</i> . |
| Head without such projections | 4. | |
| 4. Head with clypeal suture; thorax and abdomen short and broad; male abdomen with thickened posterior margin bearing hairs | | <i>Laqopæcus</i> . |
| Head without sutures | 5. | |
| 5. Antennæ differing in the two sexes; pleurites simple; genitalia with sac | | <i>Lipeurus</i> . |
| Antennæ similar in the two sexes; pleurites complicated; genitalia with flattened endomeral plate, free penis, no sac | | <i>Syrphopterus</i> . |

ISCHNOCERA Kellogg.

PHILOPTERIDÆ Burmeister.

LIPEURUS Nitzsch.

Lipeurus Nitzsch, 1818, p. 292. Genotype: *Lipeurus caponis* (Linné).

This genus, originally described by Nitzsch (1818, p. 292) to include those species of the Philopteridæ with elongated bodies and sexually dimorphic antennæ, was later, by Harrison (1916, p. 26), 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. 83) with the exception of three, together with certain species which were placed in *Degeriella* and *Esthiopterum* by that author. *Lipeurus dissimilis* Piaget should be placed in *Otilipeurus*; *L. angustissimus* Giebel and *L. nigrolineatus* Piaget, together with *Esthiopterum platyclypeatum* (Piaget) from hosts belonging to the Turnicidæ, can be placed temporarily in *Esthiopterum*, 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

Megapodiidæ (*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 Megapodiidæ, 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. Trabeculæ in the male narrow finger-shaped structures curved to a greater or less extent; in the female the trabeculæ are shorter and triangular in outline. Antennæ 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 antennæ 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 Megapodiidæ).

Genitalia characteristic (except in the species from the Megapodiidæ), with complicated elongated sac and *ductus ejaculatorius* and with paramera of characteristic form.

LIPEURUS CAPONIS (Linné). (Text-figs. 1, 2a & b, 3a.)

Pediculus caponis Linné, 1758, p. 614. Host: *Gallus domesticus*.

Lipeurus variabilis Burmeister (Nitzsch MS.), 1838, p. 434. Host: *Gallus domesticus*.

Lipeurus antennatus Piaget, 1885, p. 75, pl. viii, fig. 3. Host: *Hierophasis swinhoi*.

Lipeurus variabilis var. *formosanus* Sugimoto, 1929. Host: *Gallus domesticus*, nec Uchida, 1917, p. 179.

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. 1a, with dorsal chaetotaxy as shown in text-fig. 1b.

Thorax as in figure with posterior dorsal pterothoracic hairs arranged:—4, 1, 1, 4.

Abdomen with ventral view as shown in text-fig. 1a. 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. 2b.

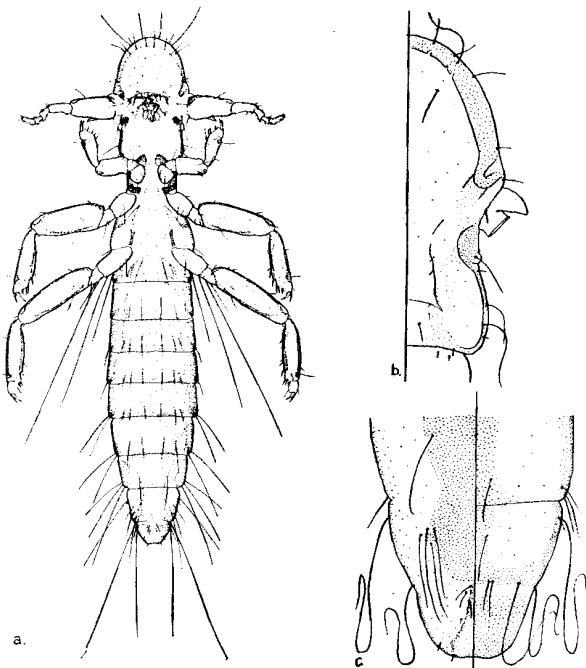
Genitalia as shown in text-fig. 3a.

Female.—Head as shown in text-fig. 2a, 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. 2 b.

Text-figure 1*.



Lipeurus caponis: (a) ♂ ventral; (b) ♂ head dorsal; (c) Posterior segments, ♂ abdomen.

Measurements.

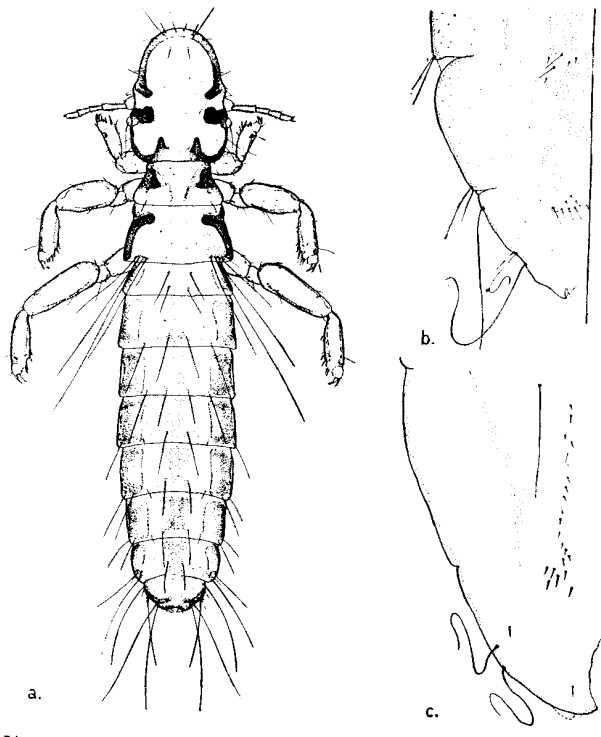
	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.49-0.51	0.32-0.33	0.54-0.55	0.38-0.39
(b) . . . . .	.....	0.25-0.27	.....	0.39-0.40
Thorax	0.40-0.44	0.33-0.34	0.43-0.46	0.41-0.44
Abdomen	1.21-1.35	0.35-0.38	1.47-1.49	0.54-0.56
Total	2.11-2.21	.....	2.41-2.48	.....
C.I. (a)	0.65-0.67	.....	0.70	.....
C.I. (b)	0.51-0.55	.....	0.72	.....

* Text-figs. 1 a, 2 a, 3 a, 15, 16, 17, 26, 27 c, 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.



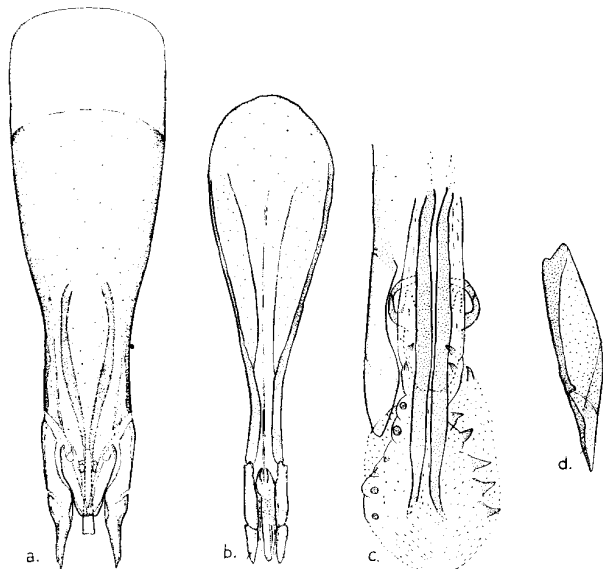
Lipeurus caponis: (a) ♀ dorsal; (b) Posterior segments, ♀ abdomen, ventral.
Lipeurus pavo: (c) Posterior segments, ♀ abdomen, ventral.

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.



♂ genitalia of *Lipeurus* spp.: (a) *L. caponis*; (b) *L. subcellatus*;
(c) *L. uncinatus*; (d) Paramer of *L. kéleri*.

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 swinhoii*.

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.

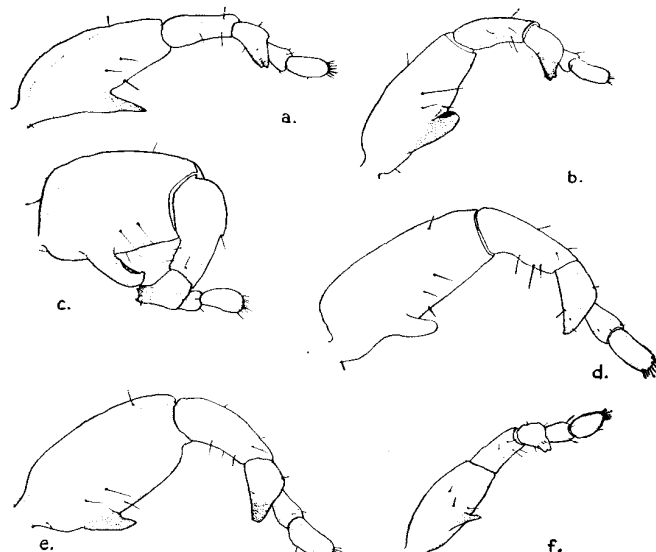
Genitalia as in *L. caponis*.

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.



♂ antennae of *Lipeurus* spp.: (a) *L. sarissa*; (b) *L. maculosus rhainardia*; (c) *L. kéleri*;
(d) *L. pavo*; (e) *L. brunneipictus*; (f) *L. fimbriatus*.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head, (a)	0.53-0.54	0.35-0.36	0.57	0.42
(b) . . . . .	...	0.31-0.32	...	0.44
Thorax	0.40-0.44	0.36	0.44	0.46
Abdomen	1.11-1.13	0.37-0.38	1.37	0.65
Total	1.97-2.03		2.29	
C.I. (a)	0.66-0.67		0.73	
C.I. (b)	0.58		0.77	

Described from 4 males, 5 females, from skins of *Rhizothera l. longirostris*, Malay; and 3 females from skins of *Rhizothera l. dulitensis*, Sarawak.

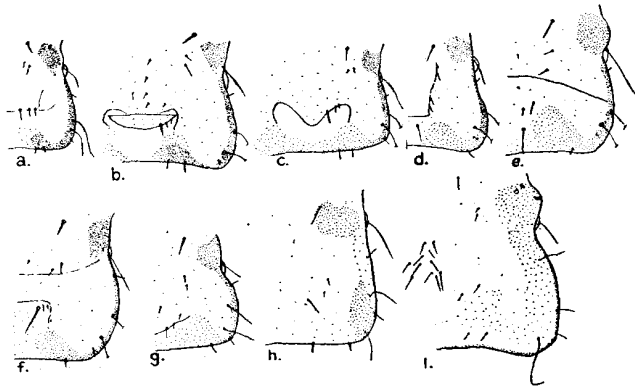
Holotype.—Male in the Meinertzhagen collection, slide no. 3633, from *Rhizothera l. longirostris*.

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. Antennae with rounded somewhat recurved appendage on the first segment; third

Text-figure 5.



Dorsal view of ♂ occiput of *Lipeurus* spp.: (a) *L. maculosus*; (b) *L. m. rheinardia*; (c) *L. m. polyplectron*; (d) *L. subsellatus*; (e) *L. brunneipictus*; (f) *L. kéleri*; (g) *L. fimbriatus*; (h) *L. numidæ*; (i) *L. sinuatus*.

segment with distal end bifid. Chaetotaxy of the head as in *L. caponis*, with occipital spines arranged as shown in text-fig. 5 a.

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. 6 a).

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.44-0.45	0.32-0.33	0.55	0.38
(b)		0.26-0.27		0.38
Thorax	0.38	0.32-0.33	0.44	0.38
Abdomen	1.10-1.13	0.35-0.36	1.30	0.55
Total	1.87-1.88		2.64	
C.I. (a)	0.72-0.73		0.70	
C.I. (b)	0.60-0.61		0.70	

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).

1. 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.50-0.59	0.36-0.40	0.59-0.60	0.42
(b)		0.30-0.36		0.45
Thorax	0.45-0.53	0.30-0.42	0.55	0.42
Abdomen	1.29-1.52	0.35-0.44	1.63-1.65	0.63-0.67
Total	2.20-2.30		2.64-2.75	
C.I. (a)	0.69-0.71		0.70	
C.I. (b)	0.59-0.62		0.75-0.76	

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.44-0.46	0.30-0.33	0.50-0.51	0.36
(b)		0.25-0.27		0.36
Thorax	0.35	0.30-0.33	0.37-0.40	0.35-0.38
Abdomen	0.98-1.11	0.36-0.34	1.30-1.34	0.53-0.71
Total	1.74-1.86		2.05-2.19	
C.I. (a)	0.70-0.71		0.69-0.73	
C.I. (b)	0.57-0.59		0.69-0.73	

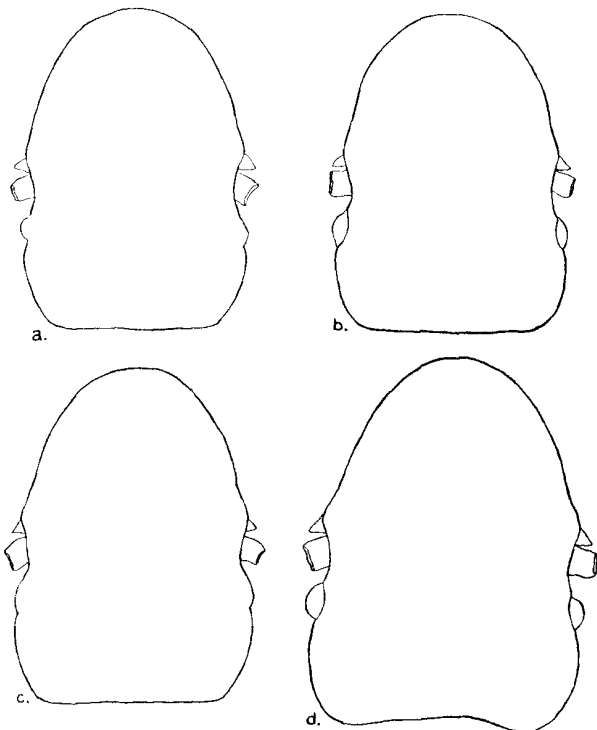
Described from 2 males and 21 females from skins of *Polyplectron bicaratum ghigii* from Annam.

Holotype.—Male in the Meinertzhagen collection, slide no. 4316.

LIPEURUS SUBSELLATUS (Harrison). (Pl. I. fig. 6; text-figs. 3*b*, 5*d*, 6*c*.)

Nirmus sellatus Rudow, 1870 (1), p. 470, nec Burmeister, 1838. Host: *Gennæus nyctemerus 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. lxxviii. figs. 1 & 5. Host: *Gennæus nyctemerus nyctemerus*.

Specimens have been examined from five subspecies of *Gennæus nyctemerus* (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 *Gennæus 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. Antennæ with first joint bearing a narrow appendage with rounded distal end; third segment with bifid distal end. Chætotaxy normal with arrangement of occipital spines as shown in text-fig. 5*d*.

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.46-0.48	0.32-0.33	0.55-0.56	0.38-0.39
(b)	0.27-0.29	0.27-0.29	0.41	0.41
Thorax	0.38-0.40	0.32-0.35	0.44	0.44-0.46
Abdomen	1.10-1.13	0.31-0.33	1.36-1.40	0.56
Total	1.18-1.20		2.32-2.34	
C.I. (a)	0.68-0.70		0.68-0.70	
C.I. (b)	0.57-0.61		0.73-0.74	

Specimens examined.—1 male, 8 females, from skins of *Gennæus n. nyctemerus* 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*.)

Nirmus crinitus Rudow, 1869, p. 19. No host.

Nirmus crinitus Rudow, 1870 (1), p. 468. Host: *Chrysolophus pictus*.

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 antennæ bearing large irregular appendage with flattened distal end; third segment with bifid distal end. Chætotaxy normal, with dorsal spines of the occiput arranged as in *L. fimbriatus* (see p. 124).

Thorax normal.

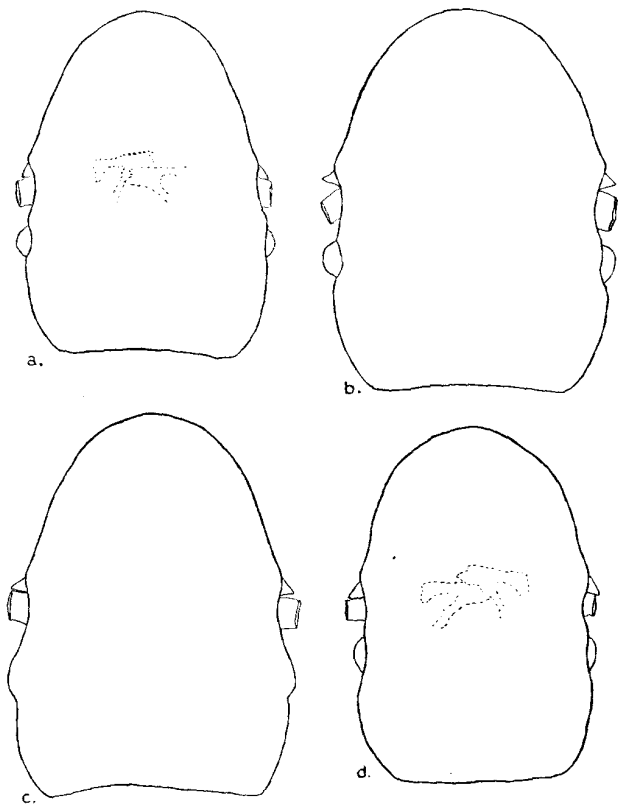
Abdomen normal with posterior margin of the last segment bifid.

Genitalia with constriction in the basal plate.

Description of the Female.—Shape of the head as shown in text-fig. 7*a*. Chætotaxy normal.

Thorax and abdomen normal. The outer ventral hairs on segments I-III are short and fine.

Text-figure 7.



♀ heads of *Lipéurus* spp.: (a) *L. crinitus*; (b) *L. kéleri*; (c) *L. brunnei-pictus*; (d) *L. pavo*.

Measurements.
Male.

	Male.		Female.	
	Length.	Breadth.	Length.	Breadth.
	mm.	mm.	mm.	mm.
Head (a)	0.49	0.35	0.57	0.42
(b) .....	.....	0.31	.....	0.42
Thorax	0.40	0.36	0.47	0.46
Abdomen	1.14	0.46	1.45	0.60
Total	2.00	.....	2.42	.....
C.I. (a)	0.71	.....	0.73	.....
C.I. (b)	0.62	.....	0.73	.....

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 c, & 9 a.)

Nirmus brunneipictus Giebel, 1877, p. 530. Host: *Lophura rufa*.

Lipéurus intermedius Piaget, 1880, p. 368, pl. xxix. fig. 7 a. Host: *Lophura i. ignita*.

Specimens of *Lipéurus* from *Lophura rufa* and *Lophura ignita* belong to the same species. Piaget's description of *L. intermedius* was based on a male of *Lipéurus* 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 *Lipéurus* (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 *Lipéurus*. The *Oxylipeurus* is renamed *Oxylipeurus piageti*, nom. nov. (see p. 179). Dr. S. Kéler 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. kéleri* (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.

	Male.		Female.	
	Length.	Breadth.	Length.	Breadth.
	mm.	mm.	mm.	mm.
Head (a)	0.58	0.44	0.63	0.44
(b) .....	.....	0.37	.....	0.45
Thorax	0.53	0.44	0.51	0.51
Abdomen	1.50	0.44	1.58	0.66
Total	2.38	.....	2.64	.....
C.I. (a) .....	.....	0.75	.....	0.70
C.I. (b) .....	.....	0.64	.....	0.72

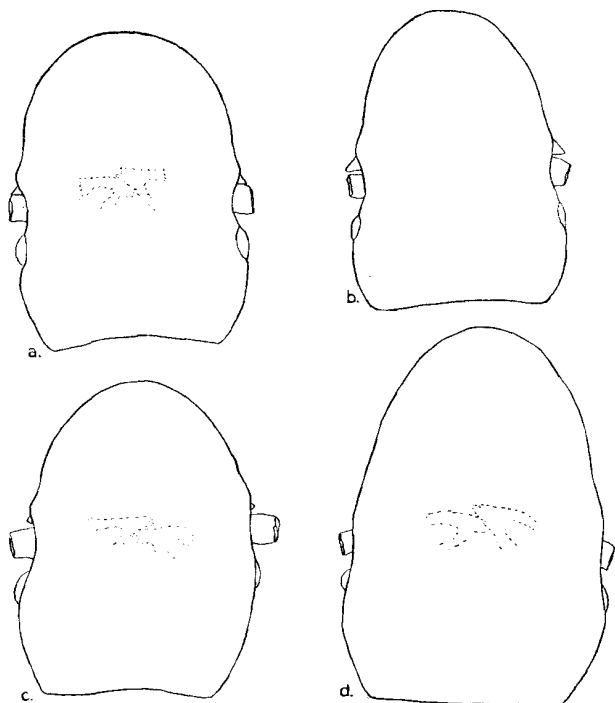
Specimens examined.—1 male, 1 female, from skin of *Lophura rufa* from Sumatra; 1 male, Piaget's type of *L. intermedius*, from *Lophura i. ignita*.

LIPEURUS KÉLERI, sp. n. (Pl. II. fig. 2; text-figs. 3*d*, 4*c*, 5*f*, & 7*b*.)

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. charltonii*; (b) *L. fimbriatus*; (c) *L. numide*; (d) *L. raymondi*.

segment with thickened trifid end (text-fig. 4*c*). Chaetotaxy normal, with arrangement of spines on occiput as shown in text-fig. 5*f*.

Thorax normal.

Abdomen normal, with triangular-shaped indentation in posterior margin of last segment.

Genitalia with paramera as shown in text-fig. 3*d*.

Description of the Female.—Shape of head as shown in text-fig. 7*b*.

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.59	0.46	0.67-0.68	0.48-0.49
(b) .....	.....	0.35	.....	0.51-0.52
Thorax	0.51	0.42	0.54	0.52-0.56
Abdomen	1.36	0.48	1.61	0.70-0.75
Total	2.40	.....	2.80	.....
C.I. (a)	0.78	.....	0.72	.....
C.I. (b)	0.59	.....	0.75-0.76	.....

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.48	0.34-0.35	0.52-0.57	0.38-0.42
(b) .....	.....	0.34	.....	0.38-0.42
Thorax	0.36-0.37	0.36-0.38	0.41-0.44	0.37-0.42
Abdomen	1.33	0.38-0.41	1.22-1.28	0.41-0.44
Total	1.89-1.97	.....	2.11-2.20	.....
C.I. (a)	0.70-0.73	.....	0.73-0.74	.....
C.I. (b)	0.70	.....	0.74-0.75	.....

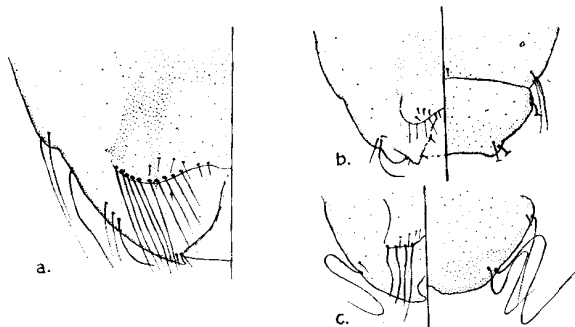
Described from 2 males, 6 females, from skins of *Tropicoperdix charltonii* charltonii from Malacca; 1 female from *T. c. tonkinensis* from Annam; 1 male from *T. chloropus olivacea* and 1 female from *T. chloropus chloropus*.

Holotype.—Male in the Meinertzhagen collection, slide no. 3656, from *Tropicoperdix c. charltonii*.

LIPEURUS FIMBRIATUS, sp. n. (Pl. II. fig. 4; text-figs. 4f, 5g, 8b, & 9c.)

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. 4f). Chaetotaxy normal with occipital spines as shown in text-fig. 5g.

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. 8b; 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. 9c). 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. 9c.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.43-0.44	0.28-0.30	0.49	0.33
(b) . . . . .	.....	0.26-0.29	.....	0.36
Thorax	0.27-0.29	0.27-0.29	0.30	0.34
Abdomen	0.42	0.30-0.34	1.14	0.46
Total	1.62	.....	1.89	.....
C.I. (a)	0.66-0.67		0.67	
C.I. (b)	0.60-0.65		0.73	

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. 3c.)

Lipeurus uncinatus Piaget, 1880, p. 677, pl. lvi. fig. 6. Host: *Rollulus roulroul*.

Esthipterum uncinatum (Piaget) Harrison, 1916, p. 143.

This species is distinguished from other known species of *Lipeurus* by the form of the sac of the male genitalia (text-fig. 3c). 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. 2c, 4d, 7d, 10a.)

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. 4d. 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. 10a.

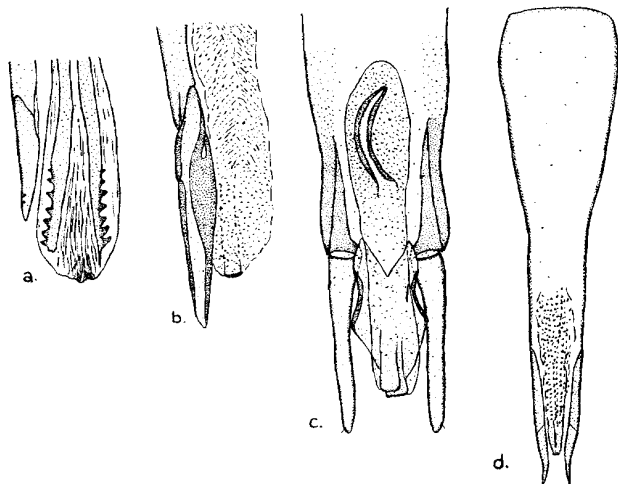
Description of the Female.—Shape of the head as shown in text-fig. 7d. Bands of the head as in the male, but occipital bands more heavily chitinized and temples with chitin flecks. Chaetotaxy normal.

Thorax normal.

Abdomen normal except for the end of the abdomen, which differs somewhat in form and chaetotaxy (see text-fig. 2c).

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Text-figure 10.

♂ genitalia of *Lipeurus* spp.: (a) *L. pavo*; (b) *L. numidæ*; (c) *L. raymondi*; (d) *L. differens phasidus*.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head, (a)	0.69-0.70	0.45-0.46	0.77	0.52
(b) . . . . .	.....	0.40-0.41	.....	0.52
Thorax	0.60-0.65	0.44-0.48	0.64	0.53
Abdomen	1.78-1.81	0.45-0.49	2.06	0.79
Total	2.99-3.10	.....	3.27	.....
C.I. (a)	0.65-0.66	.....	0.67	.....
C.I. (b)	0.58-0.61	.....	0.67	.....

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.

LIPÉURUS NUMIDÆ (Denny). (Pl. III. fig. 1; text-figs. 5*h*, 8*c*, 10*b*, & 11*a*.)

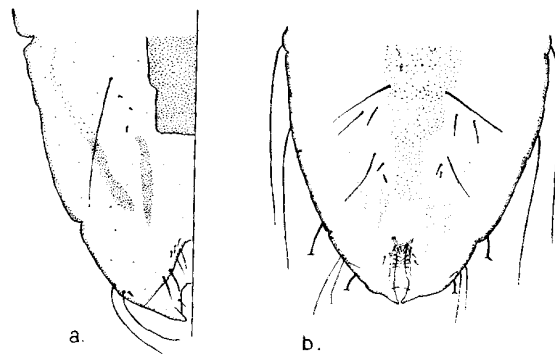
Nirmus numidæ Denny, 1842, p. 115, pl. x. fig. 5. Host: *Numida meleagris domestica*.

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

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. numidæ*, 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. numidæ* (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. numidæ*; (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. Chatotaxy of the head normal, arrangement of spines on occiput as shown in text-fig. 5*h*.

Prothorax short with irregular diverging sides. Chatotaxy normal.

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. Trabeculae 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.53–0.55	0.37–0.43	0.55	0.42
(b)	—	0.32–0.36	—	0.42
Thorax	0.44–0.48	0.42–0.45	0.46	0.44
Abdomen	1.40–1.45	0.47–0.51	1.39	0.56
Total	2.27–2.41	—	2.33	—
C.I. (a)	0.78–0.80	—	0.76	—
C.I. (b)	0.66–0.67	—	0.76	—

Specimens examined.—2 males, 6 females, from *Nunida 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 Sierre Leone.

LIPEURUS RAYMONDI, sp. n. (Pl. III. fig. 2; text-figs. 8 d, 10 c, & 11 b.)

This species is similar to *L. numidæ* 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. Trabeculae more pointed than in *L. numidæ*. Antennae with first segment considerably elongated and without appendage; third segment with thickened simple end somewhat recurved. Bands of the head as in *L. numidæ*, but with ocular blotch smaller; an elongated occipital signature is present. Chaetotaxy normal, with arrangement of spines as in *L. numidæ*.

Thorax as in *L. numidæ*.

Abdomen as in *L. numidæ*, but posteriorly the last segment is broader.

Chaetotaxy as in *L. numidæ*.

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. 11 b).

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.63–0.68	0.40–0.43	0.63	0.42
(b)	—	0.33–0.38	—	0.44
Thorax	0.49	0.47–0.48	0.49	0.44
Abdomen	1.71–1.82	0.47–0.53	1.57	0.66
Total	2.73–2.81	—	2.65	—
C.I. (a)	0.63	—	0.67	—
C.I. (b)	0.53–0.56	—	0.70	—

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.

	Male.	
	Length. mm.	Breadth. mm.
Head, (a)	0.51	0.42
(b)	—	0.41
Thorax	0.41	0.43
Abdomen	1.21	0.48
Total	2.09	—
C.I. (a)	0.83	—
C.I. (b)	0.80	—

Described from 1 male from skin of *Phasidus niger* from the Cameroons.

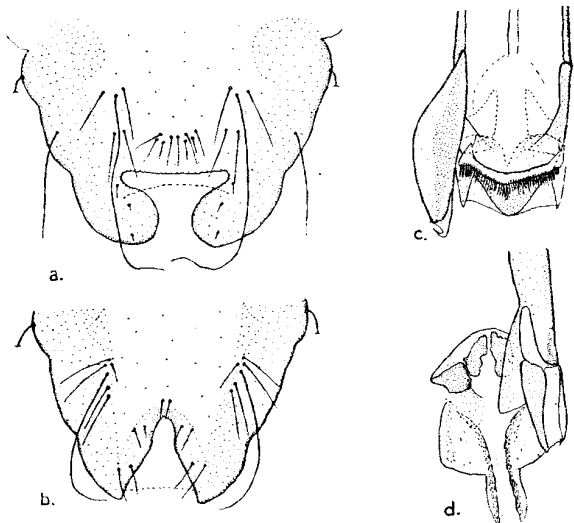
Holotype.—Male in the Meinertzhagen collection, slide no. 3637.

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. Antennae 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.

Chaetotaxy 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. sinuatus* 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. sinuatus*.

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. lathamii*.

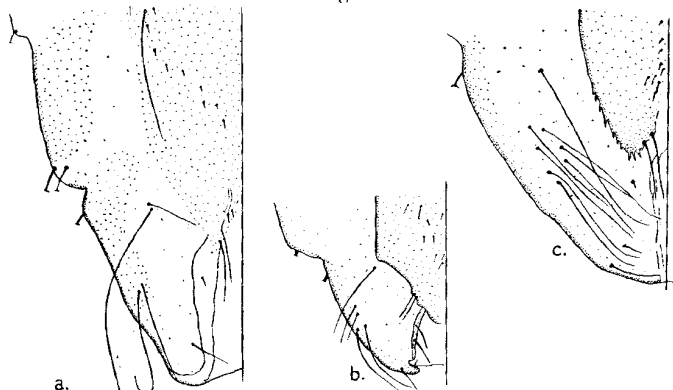
This species, together with *L. tsade* Piaget and *L. meyeri* Taschenberg (females only seen), are somewhat difficult to place. They agree with true *Lipeurus* in the absence of sutures in the head; in the form of the trabeculae and antennae of the male; in the absence of a hair or spine on the lateral margin of the prothorax; in the presence of a lateral indication of the meso-meta-thoracic 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 *Lipeurus* 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. Antennae 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 pterothoracic hairs arranged in two lateral clumps with 5 hairs in each (one specimen with 4 on one side).

Text-figure 13.



Posterior segments, ♀ abdomen of *Lipeurus* 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; antennae filiform and trabeculae 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.69-0.74	0.48-0.54	0.74-0.76	.....
(b) . . . . .	.....	0.46-0.51	.....	0.59-0.62
Thorax	0.57-0.64	0.52-0.57	0.58-0.64	0.58-0.60
Abdomen	1.51-1.68	0.58-0.70	1.75-1.79	0.83-0.85
Total	2.75-2.99	.....	3.05-3.14	.....
C.I. (a) . . . . .	.....	0.70-0.72	.....	.....
C.I. (b) . . . . .	.....	0.67-0.69	.....	0.80-0.81

Described from 8 males, 6 females, from skins of *Alectura l. lathamii* from New South Wales; 7 males, 3 females, from skins of *Alectura lathamii purpureicollis* from N. Queensland.

Neotype.—Male in the Meinertzhagen collection, slide no. 4565, from *Alectura l. lathamii*.

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head (a)	0.60-0.63	0.42-0.44	0.64	0.51
(b) . . . . .	.....	0.40-0.41	.....	0.51
Thorax	0.49-0.53	0.46-0.48	0.52	0.48
Abdomen	1.58-1.72	0.53-0.58	1.69	0.73
Total	2.66-2.85	.....	2.82	.....
C.I. (a) . . . . .	.....	0.68-0.70	.....	0.79
C.I. (b) . . . . .	.....	0.65	.....	0.79

Specimens examined.—2 males, 1 female, Piaget's types, from *Macrocephalon maleo*; 2 males from skin of *Macrocephalon maleo* from Celebes.

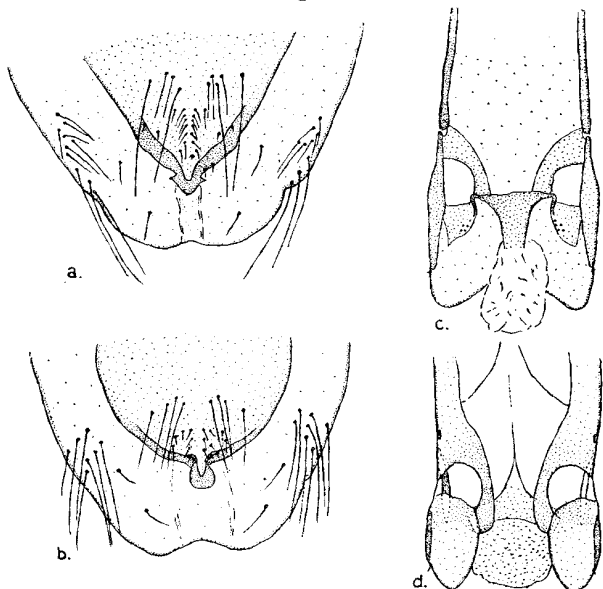
LIPEURUS MEYERI Taschenberg. (Text-fig. 13b.)

Lipeurus meyeri Taschenberg, 1882, p. 175, pl. vi. fig. 1. Host: *Talegalla fuscirostris*.

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 fuscirostris* from New Guinea.

LIPEURUS DOVEI McGregor.

Lipeurus lineatus McGregor, 1917, p. 114, pl. vii. fig. 2, nec Giebel, 1874, p. 230. Host: *Colinus virginianus texanus*.

Lipeurus dovei McGregor, 1918, p. 46, nom. nov.

No specimens of *Lipeurus* from *Colinus virginianus texanus* have been seen.

LIPEURUS EURYCNEMIS Taschenberg.

Lipeurus eurycnemis Taschenberg, 1882, p. 171, pl. vi. fig. 5. Host: *Lophophorus impejanus*.

Lipeurus patorius Giebel (Nitzsch MS.), 1861, p. 307, nom. nud. Host: *Lophophorus impejanus*.

This species, described from a female, is apparently a *Lipeurus* and not the female of *Oxylipeurus 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 patorius, 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.

Lipeurus orthopleurus Giebel (Nitzsch MS.), 1874, p. 217. Host: *Argusianus a. argus*.

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 Otidae. 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. tetraogallus*, see below, *G. l. laurensis* (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. 15) 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.).

Genitalia characteristic with flattened endomeral plate and sac present. *G. l. laurensis* 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 ♀ of *orthopleurus* shows that this species is the small *Goniodes* from *Argus* of which *G. neumannia* Kellogg and Faine becomes a synonym.

have been placed here as in the majority of characters they are in agreement with the generic definition.

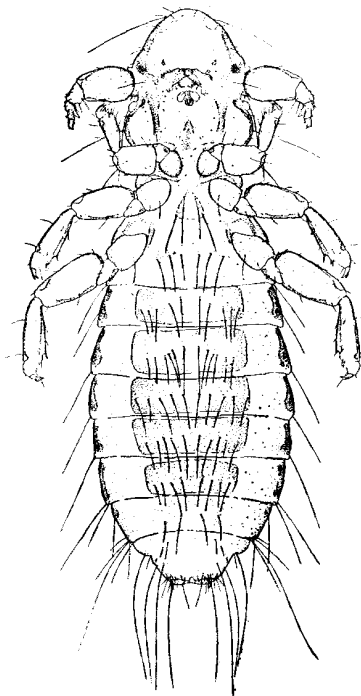
Genotype.—*Lipeurus heterographus* Giebel.

GALLIPEURUS HETEROGRAPHUS HETEROGRAPHUS Giebel. (Text-figs. 15, 16, 17, & 18 a.)

Lipeurus heterographus Giebel (Nitzsch MS.), 1866, p. 381. Host: *Gallus domesticus*.

Goniocotes burnetti Packard, 1870, p. 94, fig. 26. Host: *Gallus domesticus*.

Text-figure 15.



Gallipeurus h. heterographus ♂.

? *Lipeurus heterographus* var. *major* Piaget, 1880, p. 362, nec Piaget, 1880, p. 346. Host: *Pavo muticus*.

Goniodes eynsfordii Theobald, 1896, p. 26, fig. 8. Host: *Gallus domesticus*.

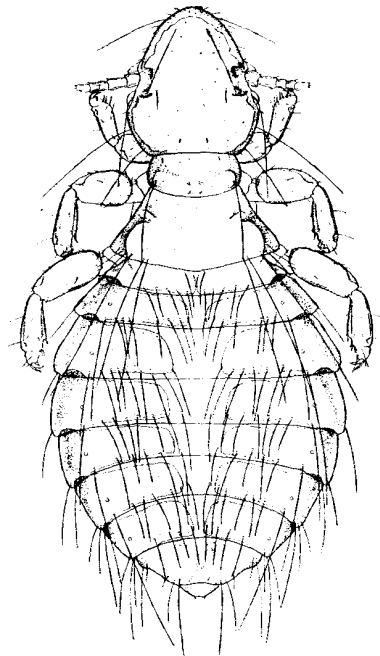
Lipeurus burnetti (Packard) Harrison, 1916, p. 83.

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 medianly, plate II may be transversely continuous or partially separated, remaining plates transversely continuous. In both sexes the number of hairs

Text-figure 16.



Gallipeurus h. heterographus ♀.

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.

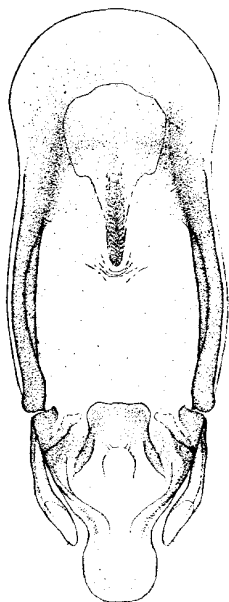
Abdomen with dorsal view as shown in figure. Sternal plates median and semi-circular in shape. Ventral chaetotaxy of segments I-V as in the male, that of the posterior segments as shown in text-fig. 18 a.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.58-0.62	0.52-0.56	0.60-0.66	0.53-0.60
Thorax.....	0.41-0.46	0.55-0.63	0.40-0.48	0.54-0.69
Abdomen.....	1.30-1.50	0.84-0.90	1.31-1.61	0.85-1.37
Total.....	2.33-2.54	.....	2.28-2.66	.....
C.I.....	0.87-0.94		0.88-0.96	

The three females in the Piaget collection labelled *Lipeurus heterographus* var. *major* are apparently conspecific with *Gallipeurus heterographus*. It is,

Text-figure 17.

*Gallipeurus h. heterographus*. ♂ genitalia.

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).

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*.

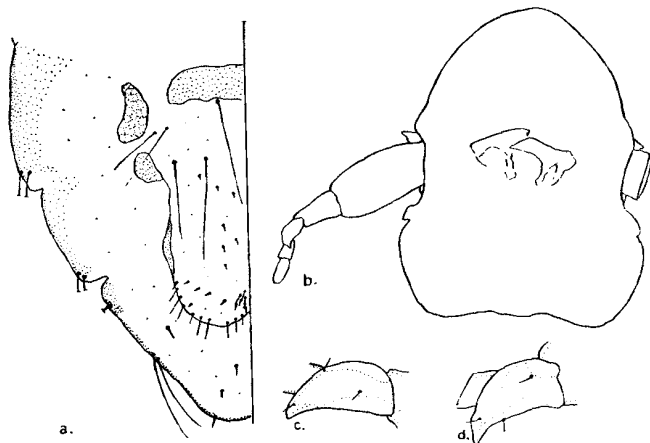
GALLIPEURUS HETEROGRAPHUS (Giebel). (Text-fig. 18 b.)

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. obacurus*, ♂ 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.

Measurements as in *G. h. obscurus*.

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 BARBARA, 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. barbara* from Algeria.

Holotype.—Male in the Meinertzhagen collection, slide no. 410.

GALLIPEURUS HETEROGRAPHUS HEYL, 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).

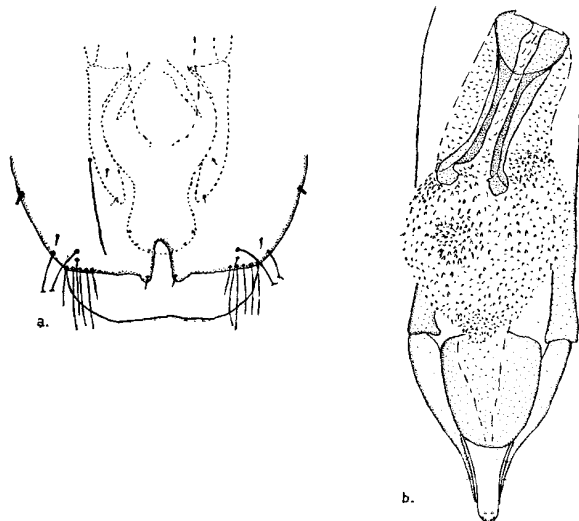
Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.52-0.53	0.41-0.44	0.53-0.57	0.44-0.47
Thorax.....	0.38-0.40	0.43-0.44	0.42-0.43	0.47-0.48
Abdomen.....	1.14-1.16	0.57-0.61	1.18-1.20	0.67-0.79
Total.....	1.98-2.10		2.11-2.13	
C.I.....	0.79-0.83		0.82-0.87	

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: *Gennæus nyctemerus 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 *Gennæus nyctemerus horsfieldii*.

GALLIPEURUS CAMERATUS (de Haan).

Nirmus cameratus de Haan (Lyonet MS.), 1829, p. 267, pl. iv. fig. 6. Host: *Lyrurus t. tetrrix*.

The name *Nirmus cameratus* was first published by Nitzsch (1818, p. 291) with the host *Lyrurus t. tetrrix*, 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

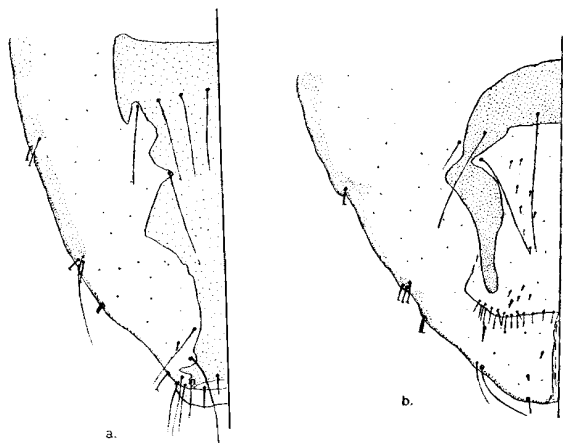
apparently a *Lagopæcus*, and later Giebel (1874, p. 152) described Nitzsch's original specimens, which are true *Lagopæcus*. The name *cameratus*, therefore, must be used for Lyonet's figure, as Nitsch originally published the name as a nomen nudum, and Burmeister's *Lagopæcus* must be renamed (see *Lagopæcus hyrurus* below).

GALLIPEURUS HETEROGRAMMICUS (Giebel). (Pl. VI. fig. 1; text-figs. 20, 22 a.)

Lipeurus heterogrammicus Giebel (Nitzsch MS.), 1866, p. 379. Host: *Perdix p. perdix*.

This species and the following species of *Gallipeurus* parasitic on species of *Francolinus* differ from the *heterographus* group in the elongated paramera and endomerall 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, 2.

Abdomen with tergal plates I–II separated medianly; accessory dorsal plates present in segments I–VI, being transversely continuous in segments III–IV and medianly 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 endomerall 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. 20 b).

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.62–0.64	0.51–0.54	0.66–0.68	0.55–0.59
Thorax.....	0.45–0.48	0.58–0.61	0.45–0.47	0.63–0.66
Abdomen.....	1.42–1.56	0.74–0.75	1.32–1.53	0.90–1.06
Total.....	2.44–2.60	.....	2.35–2.61	.....
C.L.....	0.80–0.85		0.85–0.88	

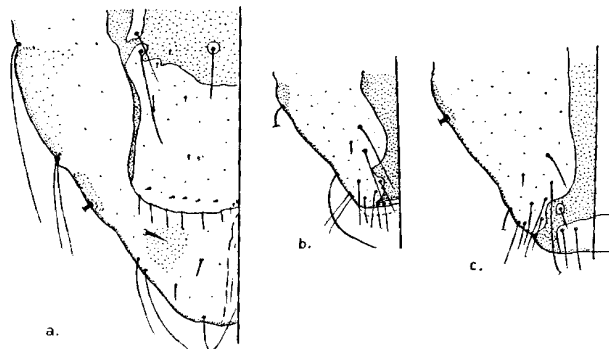
Specimens examined.—14 males, 10 females, from *Perdix p. perdix* from Hungary; 1 female from *P. p. perdix* from England. 1 female of the above compared with type-specimen in the Halle collection by Dr. Kéler.

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 ROSALINDÆ, sp. n. (Pl. VI. fig. 2; text-figs. 21 c, 22 b.)

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. rosalinde*.

Description of the Male.—Shape of the head as in Pl. VI. fig. 2. Antennæ 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 V-VI with 6 hairs; segment VII 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.66-0.78	0.57-0.70	0.69-0.73	0.65-0.67
Thorax.....	0.53-0.66	0.64-0.80	0.55-0.57	0.71-0.75
Abdomen.....	1.43-2.06	0.76-1.10	1.70-1.80	1.01-1.10
Total.....	2.55-3.45	.....	2.88-3.02	.....
C.I.....	0.87-0.90	.....	0.92-0.94	.....

Described from 12 males, 11 females, from *Francolinus shelleyi theresae* from Mt. Kenya, and 1 male from *Francolinus shelleyi elgonensis* from Kenya.

Holotype.—Male in the Meinertzhagen collection from *Francolinus shelleyi theresae*, 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. Antennae with third segment having thickened simple distal end. Chatotaxy 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.

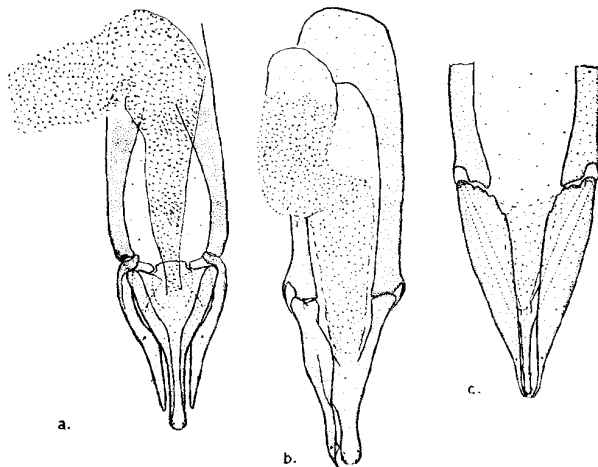
Description of the Female.—Shape of head similar to that of male but somewhat broader. Chatotaxy normal.

Thorax as in male.

Abdomen normal with chatotaxy 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.



♂ genitalia of *Gallipeurus* spp.: (a) *G. heterogrammicus*; (b) *G. rosalindi*; (c) *G. hungerfordi*.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.56-0.57	0.45-0.46	0.62-0.63	0.52-0.54
Thorax.....	0.38-0.39	0.46-0.48	0.42-0.43	0.53-0.54
Abdomen.....	1.07-1.23	0.52-0.59	1.29-1.42	0.76-0.79
Total.....	1.99-2.14	.....	2.24-2.42	.....
C.I.....	0.79-0.82	.....	0.84-0.86	.....

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).

Lipeurus pternistis Bedford, 1929, p. 522, figs. 25-26. Host: *Pternistis swainsonii*.

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 griscostratus* 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. rosaliae*.

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.57-0.59	0.41-0.43	0.59-0.61	0.45-0.47
Thorax.....	0.38-0.42	0.42-0.47	0.41-0.42	0.42-0.48
Abdomen.....	1.13-1.36	0.57-0.65	1.29-1.42	0.68-0.76
Total.....	2.06-2.15	.....	2.25-2.31	.....
C.I.....	0.70-0.72	.....	0.76-0.78	.....

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.)

Lipeurus cinereus Giebel (Nitzsch MS.), 1866 (1), p. 118. Host: *Chelidon u. urbica* (Hirundinidae).

Lipeurus cinereus Giebel (Nitzsch MS.), 1866 (2), p. 379. Host: *Coturnix c. coturnix*.

? *Nirmus argentatus* "Schilling," Gurlt, 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. synoticus* (see below) by the form of the last segment of the abdomen.

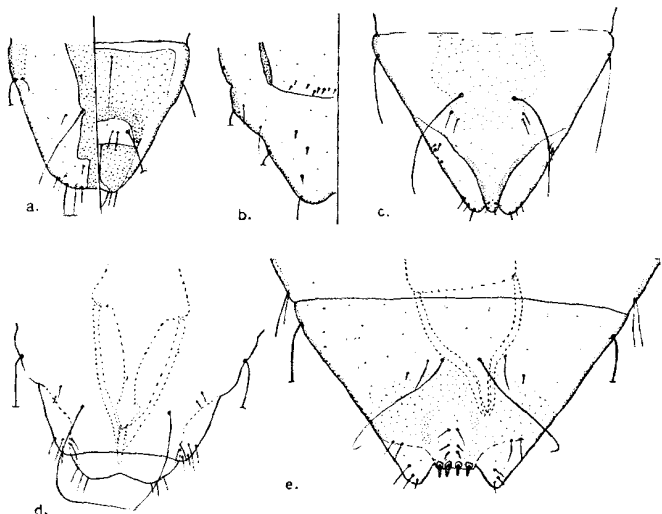
Male.—Shape of the head as shown in Pl. VII. fig. 1. Chaetotaxy and bands of the head normal.

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. 23 a. On the ventral surface segment I has 4 hairs; segments II–V have 6 hairs each; segment VI has

Text-figure 23.



Posterior segments of abdomen of *Gallipeurus* spp.: (a) ♂; (b) ♀ of *G. c. cinereus*; (c) ♂ of *G. synoicus*; (d) ♂ of *G. madagascariensis*; (e) ♂ of *G. spinicaudatus*.

4 hairs; segment VII has 2 hairs; posterior segments as shown in text-fig. 23 a. 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. 23 b).

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.47–0.48	0.29–0.30	0.47–0.49	0.32–0.33
Thorax.....	0.25–0.31	0.27–0.30	0.26–0.27	0.31–0.33
Abdomen.....	0.92–0.95	0.33–0.39	1.08–1.09	0.47–0.49
Total.....	1.64–1.74		1.82–1.83	
C.I.	0.60–0.61		0.67–0.70	

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.52	0.36	0.55	0.43
Thorax.....	0.29	0.38	0.34	0.43
Abdomen.....	1.12	0.51	1.22	0.70
Total.....	1.91		2.07	
C.I.	0.70		0.78	

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).

Lipeurus heterogrammicus var. *maculipes* Piaget, 1880, p. 353. Host: *Colinus v. virginianus*.

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: *Excofactoria 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*.

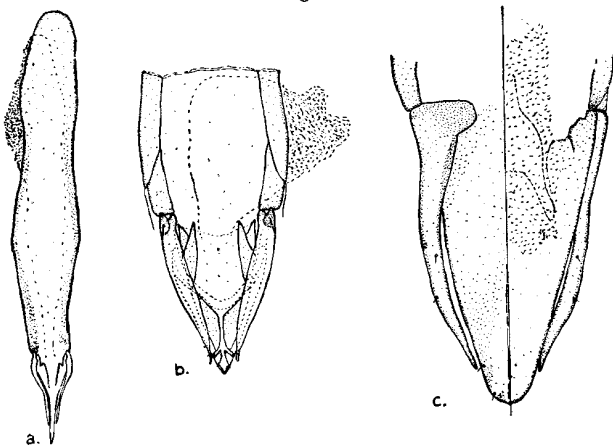
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Specimens examined.—2 females (Piaget's types) from *Excalfactoria chinensis australis*.

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.



♂ genitalia of *Gallipeurus* spp.: (a) *G. synoicus*; (b) *G. notatus*;
(c) *G. tetraogallus*.

Description of the Male.—Shape of head as shown in Pl. VII. fig. 3. Trabeculae well developed with rounded distal end; antennae 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, 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*.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head	0.46-0.47	0.27-0.29	0.52	0.35
Thorax	0.27-0.28	0.28-0.29	0.31	0.36
Abdomen	0.99-1.01	0.36-0.37	1.33	0.60
Total	1.72-1.73		2.14	
C.I.	0.59-0.60		0.68	

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. Trabeculae 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. Trabeculae

somewhat smaller than those of male and triangular in outline. Chaetotaxy normal.

Thorax as in male.

Abdomen with tergal plates VII-VIII joined transversely. Chaetotaxy 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.46	0.30	0.49	0.34
Thorax.....	0.29	0.32	0.33	0.34
Abdomen.....	1.01	0.43	0.99	0.48
Total.....	1.72	.....	1.76	.....
C.I.....	0.64		0.69	

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. Trabeculae short and pointed; third segment of the antennæ with thickened pointed end. Chaetotaxy normal with the addition of 10 (5, 5) hairs on the dorsal posterolateral 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 medianly; accessory dorsal plates present on segments III-VII, being divided medianly in segment VII.

Chaetotaxy 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 have 4 hairs each and 2 (1, 1) post-spiracular hairs; segments VIII and IX with chaetotaxy normal. On the ventral surface segment I has 4 hairs; segments II-V have 6 hairs each; segment VII has 4 hairs; chaetotaxy of segments VIII and IX as shown in text-fig. 23 d.

Genitalia 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. Chaetotaxy normal.

Thorax as in male.

Abdomen with tergal plates I-VI and VIII-IX separated medianly; plate VII partially joined. Chaetotaxy 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.52-0.55	0.33-0.36	0.49-0.50	0.35-0.36
Thorax.....	0.31-0.33	0.33-0.37	0.32-0.33	0.35-0.36
Abdomen.....	1.02-1.03	0.45-0.48	1.23-1.21	0.43-0.48
Total.....	1.83-1.95	.....	1.90-2.04	.....
C.I.....	0.64-0.65		0.71-0.73	

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 antennæ 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) post-spiracular 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.53	0.38	0.56	0.42
Thorax.....	0.36	0.41	0.36	0.43
Abdomen.....	1.28	0.52	1.30	0.70
Total.....	2.15	.....	2.18	.....
C.I.....	0.73		0.75	

Described from 2 males and 6 females from skins of *Philocapachus petrosus* from Portuguese Guinea.

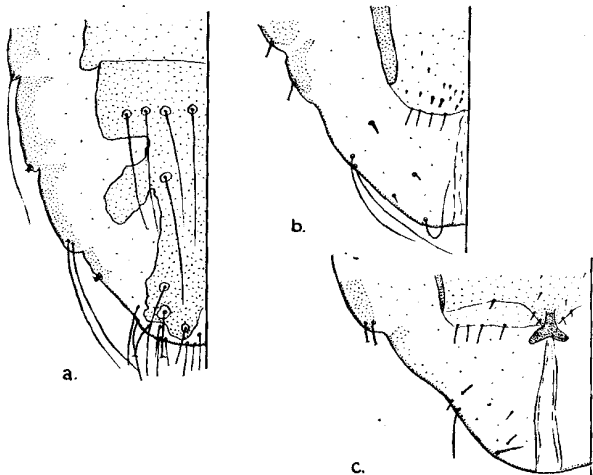
Holotype.—Male in the Meinertzhagen collection, slide no. 3614.

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. Trabeculæ stout and irregular in shape; antennæ with small pointed thickened appendage on the first segment, third segment with thickened bifid distal end. Chatotaxy 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.

Chatotaxy 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 chatotaxy 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. Trabeculæ pointed and project but little beyond the lateral margin of the head. Chatotaxy 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.

Chatotaxy 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.68–0.69	0.64–0.65	0.77	0.74
Thorax.....	0.53–0.54	0.67–0.70	0.60	0.76
Abdomen.....	1.34–1.48	0.92–0.97	1.72	1.22
Total.....	2.47–2.65	.....	2.98	.....
C.I.....	0.93–0.94		0.96	

Described from 2 males, 1 female, from skins of *Tetraogallus h. himalayensis* from Ladak; 3 females from skins of *Tetraogallus h. koslovi* 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. Antennæ with third segment prolonged into narrow thickened point. Chatotaxy normal.

Thorax with shape as shown in Pl. VII. fig. 6. Dorsal posterior pterothoracic hairs arranged:—2, 2, 1, 1. 1, 1, 2, 2.

Abdomen with wide pleurites. Tergal plates separated medianly in segments I–III; accessory dorsal plates faint but present in segments II–VI, being separated medianly 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, 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. 25 c.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.48-0.51	0.37-0.39	0.55-0.56	0.44-0.45
Thorax.....	0.29-0.31	0.36-0.39	0.34-0.37	0.44-0.46
Abdomen.....	0.90-0.93	0.48-0.49	1.15-1.22	0.63-0.65
Total.....	1.66-1.70	.....	2.03-2.11	.....
C.I.....	0.76-0.78	.....	0.80-0.82	.....

Described from 13 males and 8 females from skins of *Arborophila rufogularis tickelli* 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*:—

<i>N. m. galeata.</i>	<i>N. m. marungensis.</i>
<i>N. m. reichenowi.</i>	<i>N. m. rikwæ.</i>

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).

Lipeurus tropicalis Peters, 1931, p. 195, figs. 1-2. Host: *Gallus domesticus*.

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.

OXYLIPEURUS Mjöberg.

Oxylipeurus Mjöberg, 1910, p. 91. Genotype: *O. inæqualis* (Piaget).

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. inæqualis* (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. xypodioides*, 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. postmarginatus* (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-relationships 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. Antennae sexually dimorphic, in the male first segment enlarged and bearing in some species a broad membranous 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. h. burmeisteri* (Taschenberg), *O. longus* (Piaget)). Occipital bands absent except in *O. postmarginatus* (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-meta-thoracic junction rarely marked.

Abdomen with pleurites having re-entrant heads, more complicated than those of *Lipeurus*, and with characteristic internal curved dorsal strut (not present in *O. inæqualis*, *O. ischnocephalus*, *O. xypodioides*, and *O. postmarginatus*). In the male the posterior sternal plate is prolonged into a narrow thickened somewhat modified process (simple in *O. inæqualis*, *O. appendiculatus*, *O. ischnocephalus*, and *O. xypodioides*); 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.

OXYLIPEURUS INÆQUALIS (Piaget). (Text-figs. 26 & 27.)

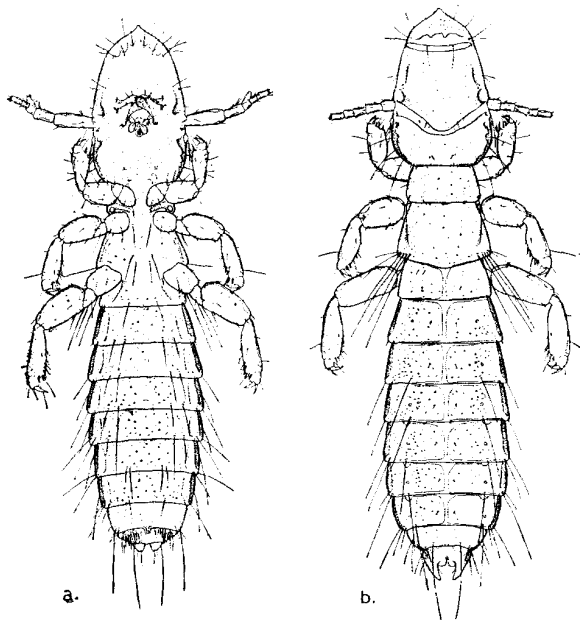
Lipeurus inæqualis Piaget, 1880, p. 355, pl. xxviii, fig. 7. Host: *Megalyptus r. reinwardti*.

Oxylipeurus inæqualis (Piaget) Mjöberg, 1910, p. 92.

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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.

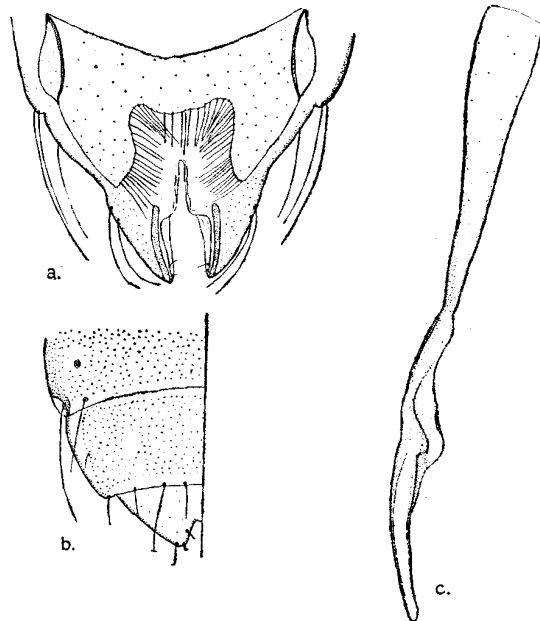
Thorax as shown in figure. Posterior dorsal pterothoracic hairs arranged in two lateral clumps with 5-6 hairs in each.

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 chaetotaxy as in the male.

Text-figure 27.

*Oxylipeurus 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 chaetotaxy of segments I-VI as in the male; posterior segments as shown in text-fig. 27 *a*.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head	0.64-0.66	0.38-0.40	0.66	0.41
Thorax	0.43-0.44	0.38-0.40	0.44	0.40
Abdomen	1.20-1.22	0.45-0.47	1.39	0.52
Total	2.16-2.27	.....	2.46	.....
C.I.	.....	0.58-0.62	.....	0.61

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 appendiculatus Piaget, 1880, p. 356, pl. xxviii. fig. 8. Host: *Megapodius reinwardt reinwardt*.

Lipeurus appendiculatus var. *major* Piaget, 1880, p. 357, nec Piaget, 1880, p. 346. Host: *Tinamus tao*.

Lipeurus oxycephalus Taschenberg, 1882, p. 178, pl. vi. fig. 7. Host: *Megapodius f. freycinet*.

Oxylipeurus oxycephalus (Taschenberg) Mjöberg, 1910, p. 92.

This species is at once distinguished from *O. inaequalis* by its narrower more elongated form.

Male.—Shape of head as shown in Piaget's figure. Trabeculae as in *O. inaequalis*; antennae with first segment greatly elongated otherwise as in *O. inaequalis*. Chaetotaxy of the head as in *O. inaequalis*, 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. inaequalis*, but somewhat more elongated. Chaetotaxy of the prothorax as in *O. inaequalis*. 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. inaequalis* and showing curved dorsal strut typical of the genus. Tergal plates II-VII separated medianly. Chaetotaxy as in *O. inaequalis*, 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. inaequalis*.

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. inaequalis* with hairs of the valve shorter and fewer in number.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head	0.55-0.57	0.29	0.57	0.33
Thorax	0.44-0.45	0.34-0.36	0.44	0.35
Abdomen	1.61-1.63	0.45-0.46	1.72	0.51
Total	2.56-2.61		2.72	
C.I.	0.51-0.52		0.57	

Specimens examined.—2 males, 1 female, from *Megapodius nicobariensis gilbertii* (Piaget's specimens); 15 males, 14 females, from skins of *Megapodius n. nicobariensis* from Katchall, Nicobar.

OXYLIPEURUS ISCHNOCEPHALUS (Taschenberg). (Text-figs. 28b & d.)

Lipeurus ischnocephalus Taschenberg, 1882, p. 173, pl. vi. fig. 8. Host: *Alectura lathamii lathamii*.

This and the following species, *O. xypodius*, 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. xypodius*. Chaetotaxy of the head as in *O. inaequalis* (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. inaequalis* and tergal plates I-VII separated medianly. Posterior segments of unusual form as shown in text-fig. 28d. Lateral chaetotaxy as in *O. inaequalis* with lateral spine on segment II fine. Dorsal chaetotaxy as in *O. inaequalis* with the post-spiracular hairs finer and placed in a more lateral position. Ventral chaetotaxy as in *O. inaequalis*.

Genitalia as shown in text-fig. 28b.

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. inaequalis* but with narrower pleurites. Chaetotaxy as that of *O. inaequalis*, but there are a greater number of hairs on the posterior margin of the valve.

Measurements.

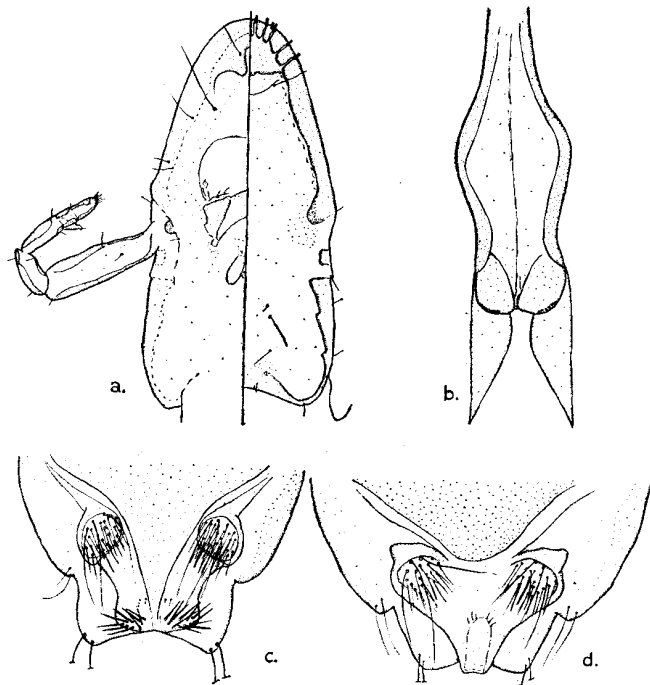
	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head	0.60-0.65	0.35-0.36	0.57	0.38
Thorax	0.44-0.43	0.37-0.39	0.41	0.41
Abdomen	1.48-1.51	0.47-0.53	1.65	0.60
Total	2.54-2.56		2.61	
C.I.	0.56-0.58		0.67	

Specimens examined.—1 male from skin of *Alectura lathamii 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. lathamii* from New South Wales.

OXYLIPEURUS ÆPYPODIUS, sp. n. (Pl. IX, fig. 1; text-figs. 28a & 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.



Oxylipeurus æpypodius ♂: (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. 28a. 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, 5.

Abdomen as in *O. ischnocephalus* with the exception of the posterior segments (text-fig. 28c).

Genitalia of the same type as *O. ischnocephalus* (material inadequate for detailed figure).

Female unknown.

Measurements.

	Male.	
	Length.	Breadth.
	mm.	mm.
Head.....	0.58	0.32
Thorax.....	0.40	0.32
Abdomen.....	1.31	0.41
Total.....	2.24	
C.I.....		0.54

Described from 1 male from skin of *Æpypodius arfakianus* from New Guinea. *Holotype*.—Male in the British Museum collection, slide no. 3067.

OXYLIPEURUS UNICOLOR (Piaget). (Text-fig. 29d.)

Lipeurus unicolor Piaget, 1880, p. 354, pl. xxviii, fig. 6. Host: *Arborophila javanica*.

Lipeurus rubrifasciatus Piaget, 1885, p. 71, pl. vii, fig. 8. Host: *Arborophila crudigularis*.

Oxylipeurus rubrifasciatus (Piaget) Mjöberg, 1910, p. 92.

Oxylipeurus unicolor (Piaget) Mjöberg, 1910, p. 92.

This and the four succeeding species are distinguished from other species of *Oxylipeurus* by the thickened elongated trabeculae 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 posterolateral 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*. Ventrally segments I–VII have but 2 (1, 1) hairs. Chaetotaxy of posterior segments as in *O. tropicoperdix*.

Genitalia as shown in text-fig. 29d.

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.47-0.51	0.25-0.29	0.53-0.54	0.27-0.32
Thorax.....	0.40-0.42	0.24-0.30	0.41-0.44	0.32-0.35
Abdomen.....	1.14-1.17	0.29-0.33	1.39-1.41	0.41-0.45
Total.....	1.97-2.12	.....	2.21-2.35	.....
C.I.....	0.53-0.56	.....	0.58-0.59	.....

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 <i>A. javanica</i> , Java.
1 ♂, 2 ♀♀	,, <i>A. crudigularis</i> , Formosa.
4 ♂♂, 4 ♀♀	,, <i>A. t. torquola</i> , Sikkim.
3 ♀♀	,, <i>A. t. batemani</i> , Burma.
5 ♂♂, 5 ♀♀	,, <i>A. t. millardi</i> , Central Himalayas.
3 ♀♀	,, <i>A. r. rufogularis</i> , Sikkim.
1 ♂	,, <i>A. r. annamensis</i> , Annam.
1 ♂, 4 ♀♀	,, <i>A. r. intermedia</i> , Burma.
1 ♂, 3 ♀♀	,, <i>A. r. tickelli</i> , Tenasserim.
2 ♀♀	,, <i>A. atrogularis</i> , Assam.
1 ♂, 5 ♀♀	,, <i>A. b. brunneopectus</i> , Siam.
1 ♂, 2 ♀♀	,, <i>A. b. albigula</i> , S. Annam.
1 ♂, 3 ♀♀	,, <i>A. b. henrici</i> , Laos.
1 ♂, 3 ♀♀	,, <i>A. rubrirostris</i> , Sumatra.
2 ♂♂, 4 ♀♀	,, <i>A. erythrophrys</i> , Borneo.

OXYLIPEURUS TROPICOPERDIX, sp. n. (Pl. IX. fig. 2; text-figs. 29 *σ-c*.)

This species is distinguished from *O. unicolor* by the rounded not pointed anterior margin of the head, and from *O. connectens* (see p. 166) 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 trabeculae; antenna 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*.

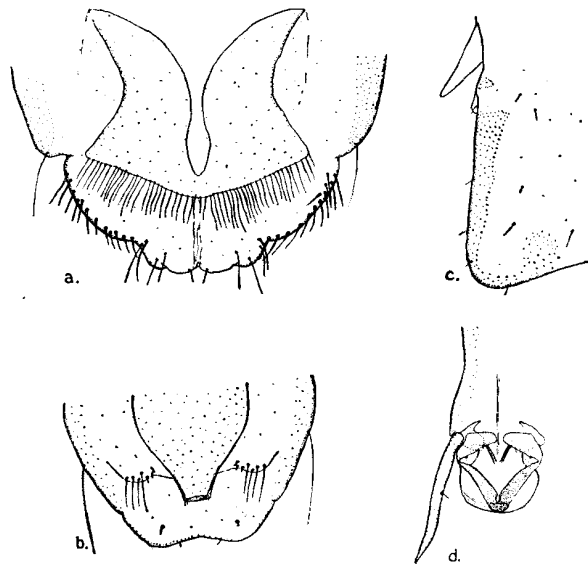
Thorax as in *O. unicolor* with lateral hair of prothorax fine, and lateral sides of pterothorax more divergent posteriorly.

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. inaequalis*, 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.44-0.46	0.25-0.26	0.49	0.31
Thorax.....	0.41-0.44	0.27-0.31	0.46	0.34
Abdomen.....	1.28	0.36-0.38	1.51	0.52
Total.....	2.16-2.17	.....	2.42	.....
C.I.....	0.55-0.60	.....	0.62	.....

Described from 2 males and 1 female from skins of *Tropicoperdix 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. Trabeculae 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. Trabeculae 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.38	0.24	0.41	0.26
Thorax.....	0.25	0.23	0.33	0.26
Abdomen.....	1.01	0.24	1.33	0.36
Total.....	1.69	.....	2.06	.....
C.I.....	0.63		0.65	

Described from 1 male and 1 female from skin of *Galloperdix s. spalica* from Nilgiris.

Holotype.—Male in Meinertzhagen collection, slide no. 3621.

OXYLIPEURUS MEGALOPS (Piaget). (Pl. IX. fig. 4; text-figs. 30 & 36b.)

Lipeurus megalops Piaget, 1880, p. 675, pl. lvi. fig. 8. Host: *Rollulus roulroul*.

Esthiopterum megalops (Piaget) Harrison, 1916, p. 138.

This species agrees with the *O. unicolor* group in having the thickened elongated trabeculae present in both sexes; it differs considerably from other members of this group in the pattern of the chitin formation of the pre-antennal

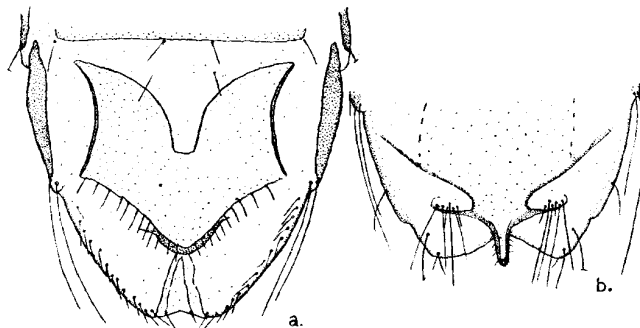
region, in having large protruding eyes, and in the form of the posterior sternal process of the male.

Male.—Shape of head as shown in Pl. IX. fig. 4. Chaetotaxy as in *O. tropicoperdix*, with a greater number of minute lateral dorsal occipital spines.

Pterothorax as in *O. unicolor*. Pterothorax with concave lateral sides diverging strongly posteriorly.

Abdomen normal with tergites narrowing centrally and with strongly

Text-figure 30.



Oxylipeurus megalops: (a) Posterior segments of ♀ abdomen; (b) of ♂ 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 *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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.46-0.47	0.26-0.29	0.49-0.52	0.27-0.31
Thorax.....	0.45-0.46	0.38-0.40	0.47-0.49	0.40-0.41
Abdomen.....	1.01-1.06	0.35-0.36	1.32-1.33	0.41-0.42
Total.....	1.88-1.98	.....	2.19-2.29	.....
C.I.....	0.58-0.62		0.55-0.60	

Specimens examined.—2 females from *Rollulus roulroul* (Piaget's types); 3 males, 18 females, from skins of *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 vetula 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 medianly; 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. inequalis*; 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 medianly; 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. 32 a).

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head	0.62-0.64	0.41-0.42	0.67-0.68	0.47-0.49
Thorax	0.52-0.56	0.44-0.54	0.59-0.60	0.55-0.56
Abdomen	1.41-1.48	0.55-0.61	1.73-1.75	0.74-0.76
Total	2.50-2.63	.....	2.95-2.98	.....
C.I.	0.65-0.67	.....	0.69-0.71	.....

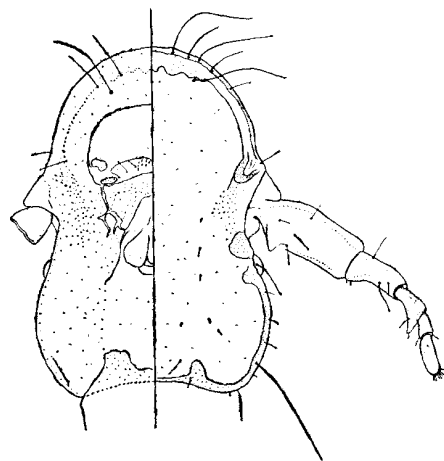
Specimens examined.—12 males, 16 females, from skins of *Tragopan melanocephalus* from Kashmir.

Neotype.—Male in the Meinertzhagen collection, slide no. 3762.

OXYLIPEURUS HIMALAYENSIS BURMEISTERI (Taschenberg). (Text-figs. 31, 32 a, 33 a.)

Lipeurus burmeisteri Taschenberg, 1882, p. 170, pl. vi. fig. 4. Host: *Lophophorus impejanus*.

Text-figure 31.



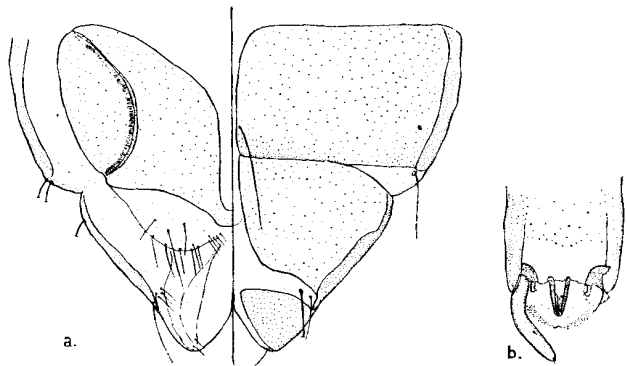
Oxylipeurus himalayensis burmeisteri. ♂ head.

Lipeurus castaneus Piaget, 1885, p. 73, pl. viii. fig. 2. Host: *Lophophorus impejanus*.

Lipeurus stygius Giebel (Nitzsch MS.) 1861, p. 307, nom. nud. 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 medianly.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.66-0.74	0.46-0.54	0.68-0.74	0.50-0.52
Thorax.....	0.62-0.72	0.53-0.63	0.58-0.66	0.52-0.62
Abdomen.....	1.54-1.98	0.61-0.77	1.79-2.06	0.71-0.84
Total.....	2.79-3.41	.....	3.02-3.45	.....
C.I.....	0.67-0.73	.....	0.71-0.73	.....

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. thuyssii*, Upper Minho.
2 ♂♂, 5 ♀♀, " *Tragopan b. blythii*, Assam.
3 ♂♂, " *T. t. temminckii*, Szechwan.
1 ♂, 1 ♀, " *T. caboti*, Fokien.

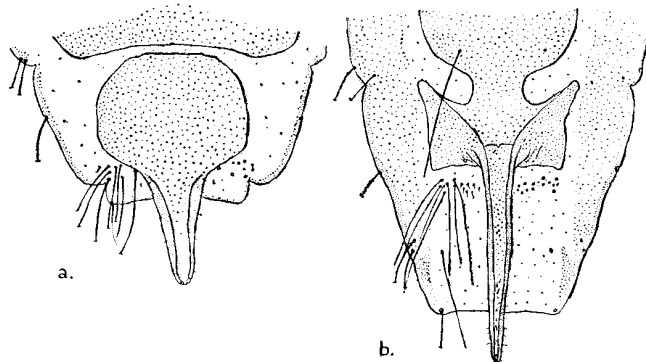
OXYLIPEURUS LONGUS (Piaget). (Text-figs. 33 b, 35 a.)

Lipeurus longus Piaget, 1880, p. 370, pl. xxix. fig. 8. Host: *Tragopan satyra*.

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). Antennae with first segment bearing a transparent appendage not visible in all specimens;

Text-figure 33.



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 bieleft (see Piaget, 1880, pl. xxix. fig. 8 b).

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.80-0.84	0.55-0.59	0.82-0.85	0.60-0.63
Thorax.....	0.52-0.56	0.44-0.54	0.59-0.60	0.69-0.76
Abdomen.....	2.22-2.63	0.78-0.82	2.29-2.31	0.88-0.97
Total.....	3.87-4.29	.....	3.88-4.07	.....
C.I.....	0.69-0.71	.....	0.73-0.74	.....

Specimens examined.—1 female from *Tragopan satyra* (Piaget's specimen). Piaget also has 1 male from *T. temminckii* and 1 male from *T. megalocephalus* (? *T. melanocephalus*). It is impossible to say whether this species normally occurs on these two hosts or whether Piaget's specimens are stragglers.

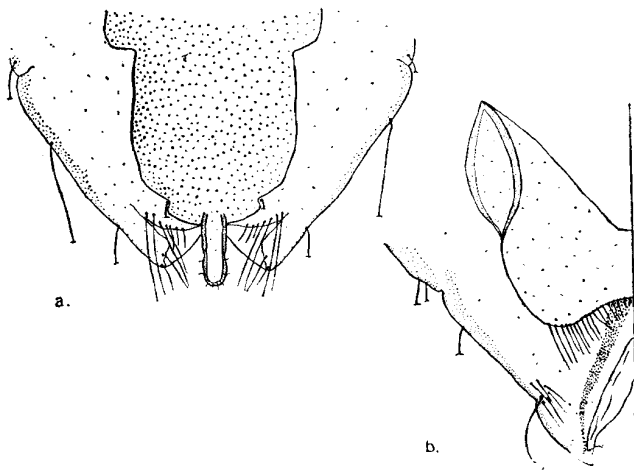
3 males, 4 females, from skins of *Tragopan satyra* from Sikkin.

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. Antennæ 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.



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. 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.77-0.79	0.53-0.56	0.79-0.82	0.56-0.57
Thorax.....	0.79-0.88	0.71-0.75	0.77-0.89	0.74-0.79
Abdomen.....	2.01-2.25	0.79-0.88	2.25-2.50	0.93-1.12
Total.....	3.52-3.82	.....	3.73-4.19	.....
C.I.....	0.69-0.71	.....	0.72-0.75	.....

Described from 12 males, 13 females, from skins of *Crossoptilon auritum* from Kansu.

Holotype.—Male in Meinertzhagen collection, slide no. 3627*.

OXYLIPEURUS BAILEYI CROSSOPTILON, 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 pterothorax 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.64-0.67	0.46-0.48	0.65-0.69	0.47-0.51
Thorax.....	0.60-0.62	0.55-0.57	0.54-0.64	0.62-0.66
Abdomen.....	1.15-1.53	0.62-0.63	1.81-1.92	0.82-0.87
Total.....	2.68-2.77	.....	3.10-3.18	.....
C.I.....	0.70-0.72	.....	0.73-0.74	.....

Described from 15 males, 14 females, from skins of *Ithaginis cruentus cruentus*; 3 males, 1 female, from skins of *Ithaginis cruentus clarki*.

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.

OXYLIPEURUS 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. Trabeculae of the female project beyond the lateral margin of the head.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.56-0.65	0.37-0.41	0.61-0.63	0.40-0.41
Thorax.....	0.60-0.62	0.49-0.52	0.55-0.59	0.48-0.50
Abdomen.....	1.61-1.67	0.57-0.60	1.77-1.87	0.69-0.70
Total.....	2.72-2.86	.....	2.92-3.05	.....
C.I.....	0.64-0.66		0.65-0.66	

Described from 3 males and 5 females from skins of *Pucrasia m. macrolapha* from Himalayas.

Holotype.—Male in the Meinertzhagen collection, slide no. 2718.

OXYLIPEURUS MESOPELIOS MESOPELIOS (Giebel). (Pl. XI. fig. 1; text-figs. 35 b & d.)

Lipeurus mesopelios Giebel (Nitzsch MS.), 1861, p. 307, nom. nud. Host: *Chrysolophus pictus*.

Lipeurus mesopelios Giebel, 1866, p. 379. Host: *Chrysolophus 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.

Male.—Shape of head as shown in Pl. XI. fig. 1. Antennae with first segment bearing triangular appendage, not always apparent, and third segment with small basal tubercle. Chatotaxy as in *O. h. burmeisteri* (see text-fig. 31).

Thorax with shape as shown in Pl. XI. fig. 1. Posterior dorsal pterothoracic hairs arranged in two clumps with 4 hairs in each.

Abdomen normal with sternal plates VII-IX fused vertically, posterior segments as shown in text-fig. 35 b. Post-spiracular hairs absent on segment II.

Genitalia as shown in text-fig. 35 d.

Female.—Shape of head resembles that of male, but is somewhat larger and broader at the temples. Trabeculae small and project but little beyond the lateral margin of the head. Chatotaxy normal.

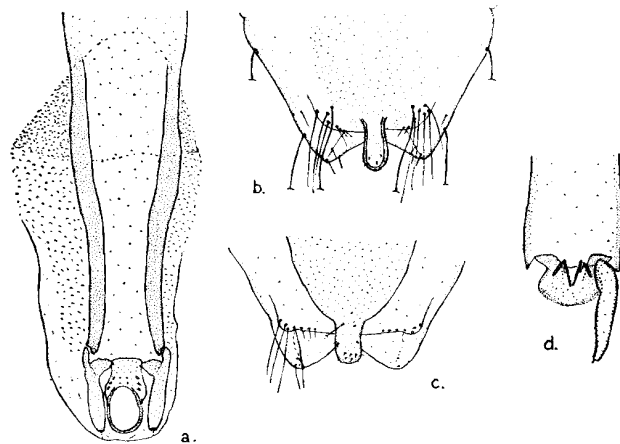
Thorax and abdomen normal; chatotaxy of the posterior segments of the latter as in *O. b. baileyi* (text-fig. 34 b).

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.55	0.34	0.56-0.57	0.36-0.37
Thorax.....	0.45	0.43	0.45-0.46	0.38-0.40
Abdomen.....	1.33	0.46	1.40-1.63	0.53-0.55
Total.....	2.30	.....	2.60-2.63	.....
C.I.....	0.62		0.65	

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 *Oxylipaurus* spp.: (a) *O. longus*; (d) *O. m. mesopelios*. Posterior segments of ♂ abdomen: (b) *O. m. mesopelios*; (c) *O. tetraonis*.

OXYLIPEURUS MESOPELIOS HIEROPHISIS, 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.52	0.29	0.53	0.33
Thorax.....	0.44	0.34	0.48	0.35
Abdomen.....	1.26	0.41	1.61	0.49
Total.....	2.23	.....	2.57	.....
C.I.....	0.55		0.61	

Described from 2 males, 2 females, from skins of *Hierophasis edwardsi* 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 antennæ 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 reevesii* from China.

Holotype.—Male in the Meinertzhagen collection, slide no. 4435.

OXYLIPEURUS MESOPELIOS SÆMMERRINGII, 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.56-0.59	0.36-0.40	0.57	0.41
Thorax.....	0.51-0.54	0.44-0.48	0.50	0.45
Abdomen.....	1.40-1.44	0.57-0.58	1.66	0.60
Total.....	2.44-2.57		2.71	
C.I.....	0.65-0.67		0.71	

Described from 6 males, 1 female, from skins of *Syrmaticus s. sæmmerringii* from Japan.

Holotype.—Male in the Meinertzhagen collection, slide no. 4434.

OXYLIPEURUS MESOPELIOS UCHIDÆ, nom. nov. (Pl. X. fig. 3.)

Lipeurus intermedius var. *major* Uchida, 1917, p. 182, nec Piaget, 1880. Host: *Syrmaticus mikado*.

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. sæmmerringii* (Pl. X. fig. 3).
2. In the antennæ 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.66	0.42	0.69	0.49
Thorax.....	0.64	0.55	0.66	0.61
Abdomen.....	1.64	0.66	2.01	0.85
Total.....	2.93		3.32	
C.I.....	0.64		0.71	

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: *Gennæus nycthemerus lineatus*.

No material from the type-host has been seen, the following description, measurements, and figure have been taken from specimens from *Gennæus 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.65-0.67	0.39-0.41	0.69-0.71	0.45-0.46
Thorax.....	0.62-0.64	0.49-0.52	0.65-0.66	0.53-0.54
Abdomen.....	1.76-1.78	0.63-0.66	2.00-2.16	0.71-0.82
Total.....	3.02-3.04		3.00-3.44	
C.I.....	0.58-0.62		0.65	

Specimens examined.—4 males, 4 females, from skins of *Gennæus n. nycthemerus* from Fokien, China.

OXYLIPEURUS MESOPELIOS COLCHICUS, 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 antennæ are narrower.
3. The sides of the thorax are less divergent.
4. The last segment of the male abdomen is less deeply bifid.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
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 4 males, 9 females, from *Phasianus c. colchicus* from England.
Holotype.—Male in the Meinertzhagen collection, slide no. 4336.

OXYLIPEURUS 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. Chatotaxy 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 chatotaxy 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.54-0.58	0.34-0.36	0.57-0.61	0.40-0.43
Thorax.....	0.46-0.47	0.33-0.36	0.48-0.52	0.38-0.41
Abdomen.....	1.34-1.47	0.36-0.41	1.79-1.87	0.55-0.57
Total.....	2.31-2.44	.....	2.86-2.94	.....
C.I.....	0.61-0.63		0.66-0.72	

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*.

OXYLIPEURUS 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. Chatotaxy 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. xxix, fig. 7). Trabeculae 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.61	0.32	0.63-0.67	0.38-0.41
Thorax.....	0.58	0.41	0.62-0.68	0.44-0.49
Abdomen.....	1.65	0.47	1.98-2.20	0.62-0.77
Total.....	2.79	.....	3.17-3.51	.....
C.I.....	0.53		0.61	

Specimens examined.—1 male, 3 females (Piaget's specimens), from *Lophura ignita*.

OXYLIPEURUS TETRAONIS (Grube). (Text-figs. 35 c & 36 e.)

Lipeurus tetraonis Grube, 1851, p. 485, pl. xxxii, fig. 1. Host: *Lagopus l. lagopus*.

Lipeurus ochraceus Giebel (Nitzsch MS.), 1867, p. 429. Host: *Tetrao wogallus*.

No specimens of *Oxylipeurus* have been seen from the type-host; Grube also recorded this species from *Tetrao wogallus*, and, as Waterston (1922, p. 102) suggests, Grube's specimens recorded from *Lagopus l. lagopus* may have been stragglers. Specimens from *Tetrao wogallus* 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). Trabeculae short and rounded; first segment of the antennae without appendage.

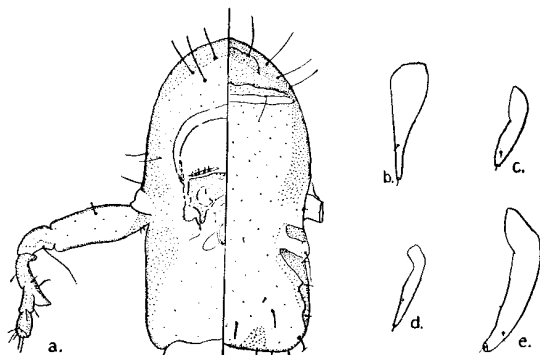
Thorax with pterothorax short and broad; posterior dorsal marginal hairs arranged 2, 2, 2, 2.

Abdomen short and broad for this genus; segment II without post-spiracular 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*.

Trabeculae 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.

	Male.		Female.	
	Length.	Breadth.	Length.	Breadth.
	mm.	mm.	mm.	mm.
Head.....	0.57-0.64	0.40-0.44	0.60-0.62	0.45-0.47
Thorax.....	0.52-0.58	0.45-0.48	0.51-0.53	0.48-0.52
Abdomen....	1.42-1.44	0.52-0.61	1.59-1.62	0.66-0.69
Total.....	2.51-2.56	.....	2.71-2.74	.....
C.I.....	0.68-0.70		0.74-0.77	

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*.

Lipeurus formosanus Uchida, 1920, p. 641. Description of male.

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*.

Lipeurus angularis Peters, 1935, p. 101, figs. 1-3. 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.)

Lipeurus polytrapezius Burmeister (Nitzsch MS.), 1838, p. 434. Host: *Meleagris gallopavo domestica*.

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. Kéler it has been ascertained that the type of *polytrapezius* is the narrow-headed species.

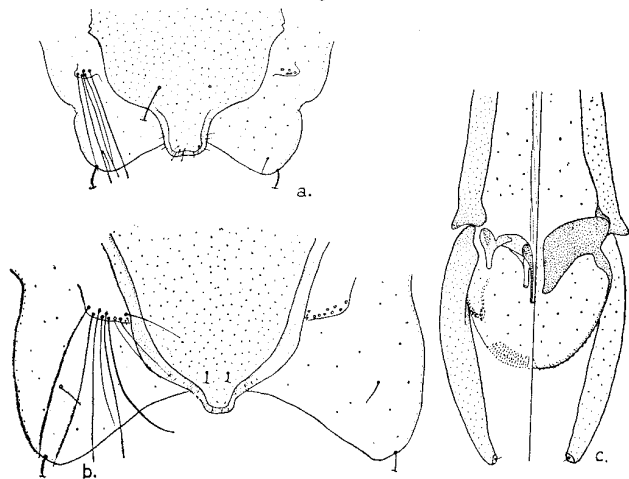
Male.—Shape of head as shown in Pl. XII. fig. 4. Antennae with first segment bearing a transparent rounded appendage; trabeculae short and stout. Chaetotaxy normal.

* 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, 2, 3—2.

Abdomen narrow and elongated with post-spiracular hair absent on segment II. Posterior segments shown in text-fig. 37 *a*, genitalia in text-fig. 37 *c*.

Text-figure 37.



Posterior segments of ♂ abdomen of *Oxylipeurus* spp.: (a) *O. p. polytrapezius*; (b) *O. p. corpulentus*. ♂ genitalia: (c) *O. p. polytrapezius*.

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.70-0.76	0.43-0.51	0.77	0.56
Thorax.....	0.74-0.75	0.56-0.57	0.71	0.63
Abdomen.....	1.99-2.10	0.73-0.76	2.25	0.99
Total.....	3.41-3.48	.....	3.57	.....
C.I.....	0.61-0.68		0.72	

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.63-0.68	0.44-0.47	0.66-0.72	0.47-0.51
Thorax.....	0.68-0.69	0.54-0.56	0.60-0.64	0.53-0.54
Abdomen.....	1.92-2.03	0.65-0.71	2.04-2.14	0.53-0.54
Total.....	3.23-3.36	.....	3.28-3.39	.....
C.I.....	0.69-0.72		0.72	

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, 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.

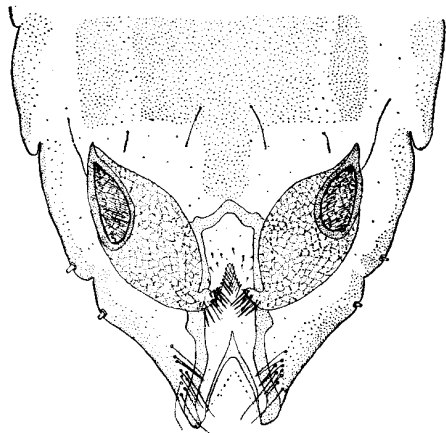
Thorax as in male.

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).

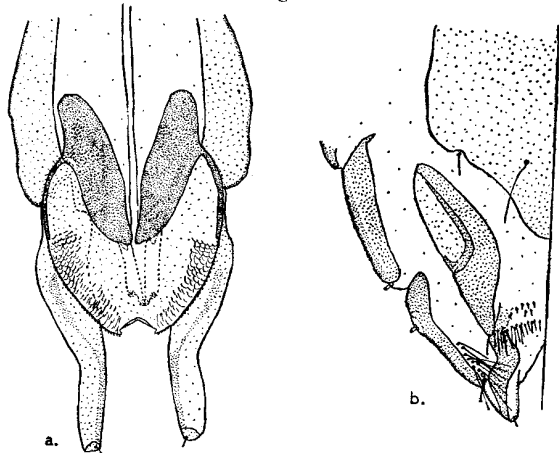
Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.69-0.73	0.52-0.55	0.72-0.74	0.57-0.58
Thorax.....	0.73-0.78	0.56-0.58	0.73-0.77	0.59-0.63
Abdomen.....	1.79-1.84	0.72-0.75	2.00-2.04	1.00-1.06
Total.....	3.28-3.00	.....	3.35-3.48	.....
C.I.....	0.72-0.79		0.78-0.79	

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 genitalia 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. Trabeculae 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.57-0.59	0.44-0.47	0.60-0.61	0.51-0.52
Thorax.....	0.52-0.53	0.44-0.51	0.51-0.54	0.49-0.51
Abdomen.....	1.40-1.44	0.55-0.58	1.58-1.67	0.74-0.78
Total.....	2.44-2.50		2.64-2.75	
C.I.....	0.76-0.81		0.84-0.85	

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 returned end of antennal band enlarged and thickened. Chatotaxy normal.

Thorax with shape as shown in Pl. XIII. fig. 2. Posterior dorsal pterothoracic hairs arranged:—2, 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.

	Male.	
	Length. mm.	Breadth. mm.
Head.....	0.60	0.48
Thorax.....	0.55	0.49
Abdomen.....	1.52	0.59
Total.....	2.62	.....
C.I.....	0.80	

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*.

Lipeurus quadrimus 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 quadrimus* Giebel. These specimens are typical *Oxylipeurus* resembling *O. penelope*, sp. n.

Lipeurus quadrimus Giebel is here kept as a synonym of *L. concolor* Rudow, following Taschenberg (1882, p. 175).

OXYLIPEURUS RHYNCHOTI (Carriker).

Lipeurus rhynchoti Carriker, 1936, p. 63, pl. i. fig. 1. Host: *Rhynchotus rufescens* (Tinamidæ).

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 TETRAOPHISIS, 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; antennæ 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. Chætotaxy normal.

Thorax with shape as in Pl. XIII. fig. 3; hair on postero-lateral 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.

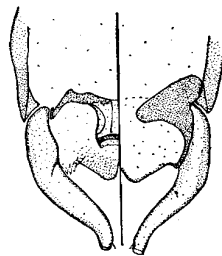
Genitalia as shown in text-fig. 40.

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. Chætotaxy normal.

Thorax with the sides of the prothorax somewhat more rounded than in the male. Chætotaxy 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 tetraophisis*, ♂ genitalia.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.76	0.53	0.78	0.60
Thorax.....	0.76	0.65	0.74	0.67
Abdomen.....	1.59	0.77	1.62	0.88
Total.....	3.08	.....	3.08	.....
C.I.....	0.69		0.74	

Described from 2 males, 1 female, from skins of *Tetraophasis o. obscurus*, from Yunnan; 1 male, 2 females, from skins of *Tetraophasis o. szechenyii* from Szechuan and Yunnan.

Holotype.—Male in the Meinertzhagen collection, slide no. 3118, from *Tetraophasis o. obscurus*.

LAGOPECUS Waterston.

Lagopæcus Waterston, 1922, p. 159. Genotype: *Lagopæcus tyrrurus*, 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. meinertzhageni* (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. meinertzhageni*, and *L. numidianus* are the only known species in which the antennæ 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.

LAGOPÆCUS LYRURUS, nom. nov. (Text-figs. 41, 42, 43 a & b.)

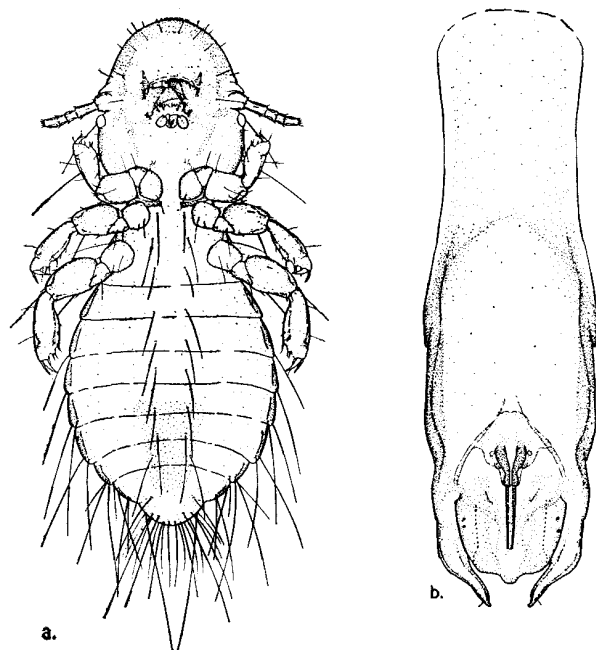
Nirmus cameratus Burmeister, 1839, p. 430, nec de Haan, 1829, p. 267.

Host: *Lyrurus t. tetrix*.

Lagopæcus cameratus (Burmeister) Waterston, 1922, p. 102.

As has been shown above Burmeister's name is invalidated by de Haan's *Nirmus cameratus*, which is a *Gallipeurus* not a *Lagopæcus*.

Text-figure 41.



Lagopæcus lyrurus: (a) ♂; (b) genitalia.

Male.—Head as shown in text-fig. 41 a, with chaetotaxy of the dorsal surface as of that of the female, having in addition a number of minute occipital spines.

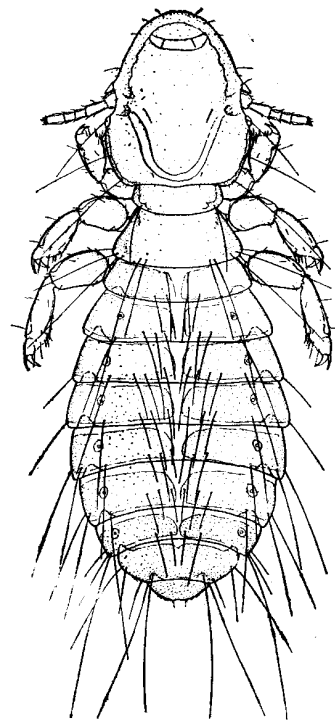
Thorax as shown in text-fig. 41 a, with dorsal posterior pterothoracic hairs arranged:—2, 2. 2, 2.

Abdomen with ventral view as shown in text-fig. 41 a. Dorsally tergal plates I–VI separated medianly, VII sometimes and VIII always transversely continuous.

Ventral chaetotaxy as shown in text-fig. 41 a. Dorsal chaetotaxy of segments I–VII as that of female (text-fig. 42); that of segments VIII and IX as shown in text-fig. 43 a.

Genitalia as shown in text-fig. 41 b.

Text-figure 42.

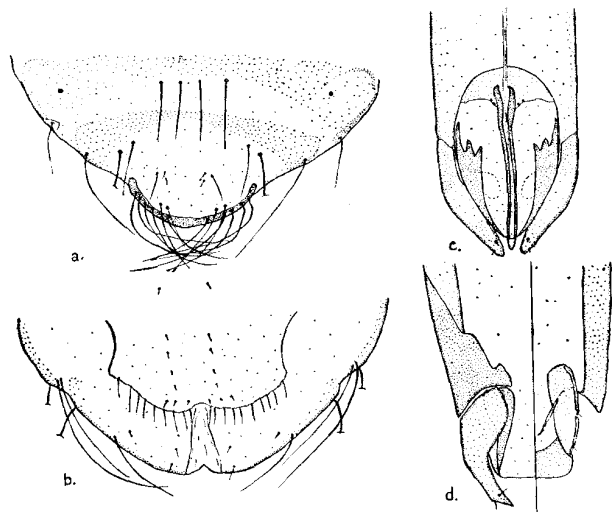


Lagopæcus lyrurus ♀.

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. 43 b.

Text-figure 43.



Lagopæcus lyrurus, posterior segments of the abdomen: (a) ♂; (b) ♀.
♂ genitalia of (c) *L. heterotypus*; (d) *L. docophoroides*.

Measurements.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head	0.46-0.48	0.43-0.44	0.49-0.51	0.44-0.48
Thorax	0.25-0.26	0.35-0.37	0.29-0.30	0.38-0.40
Abdomen	0.75-0.83	0.62-0.66	0.97-0.99	0.64-0.68
Total	1.43-1.50		1.56-1.60	
C.I.	0.89-0.90		0.89-0.96	

Specimens examined.—5 males, 6 females, from *Lyrurus tetricus tetricus* from Germany, Norway, and Esthonia; 3 females from *Lyrurus tetricus 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 *Lagopæcus*.

LAGOPÆCUS AFFINIS (Children). (Pl. XIV. fig. 1.)

Nirmus affinis Children, 1836, p. 537. Host: *Lagopus l. lagopus*.

Nirmus cameratus var. *nigrescens* Evans, 1912, p. 280. Host: *Lagopus mutus millaisi*.

Lagopæcus 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.

LAGOPÆCUS 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*.

Lagopæcus 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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head	0.51-0.53	0.52-0.53	0.56-0.58	0.56-0.59
Thorax	0.28-0.29	0.41-0.46	0.32-0.33	0.49-0.51
Abdomen	0.82-0.85	0.75-0.78	1.02-1.13	0.79-0.96
Total	1.60-1.63		1.89-2.01	
C.I.	0.99-1.04		1.00-1.01	

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.

LAGOPÆCUS HETEROTYPUS (Mégnin). (Pl. XIV. fig. 4; text-fig. 43 c.)

Nirmus heterotypus Mégnin, 1880, p. 87. Host: *Lophophorus impejanus*.

Goniocotes nirmoides Kellogg & Paine, 1914, p. 219, pl. xiv. fig. 5. 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, 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. 43 c.

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.

	Male.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.53	0.54	0.59–0.61	0.60–0.62
Thorax.....	0.31	0.47	0.35–0.36	0.50–0.52
Abdomen.....	0.80	0.79	1.02–1.11	0.89–0.94
Total.....	1.63	.....	2.00–2.04	.....
C.I.....	1.02	.....	1.00–1.03	.....

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 lhuyssii* from Upper Minho.

LAGOPÆCUS CÆMENTICUS (Giebel).

Nirmus cæmenticus 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 *Lagopæcus* 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 alexandree*.

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 PERPLEXUS (Kellogg).

Lipeurus perplexus Kellogg, 1899, p. 103, pl. vii. fig. 5. Host: *Pediocetes 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: *Syrnaticus mikado*.

No specimens of this species have been seen, but from Uchida's figure it is a *Lagopæcus*.

LAGOPÆCUS SINENSIS (Sugimoto).

Degeeriella 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 garipeensis pallidior* (see below).

Host name corrected to *Francolinus garipeensis jugularis* (Bedford), 1932, p. 317.

This species is a typical *Lagopæcus*.

Specimens examined.—1 male, 1 female, from *Francolinus garipeensis jugularis* (specimens kindly lent by G. H. A. Bedford); 1 male from skins of *Francolinus g. garipeensis* from Bechuanaland.

LAGOPÆCUS KOZUII (Sugimoto).

Philopterus kozuii Sugimoto, 1936, p. 456. Host: Domestic Duck, Formosa.

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 antennæ simple as in the female. It is distinguished from the previously mentioned species of *Lagopæcus* by the shape of the head and the form of the male genitalia.

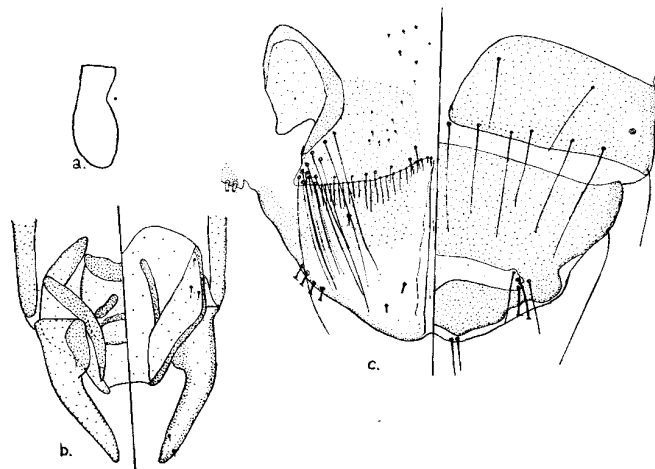
Male.—Shape of head as shown in Pl. XIV. fig. 5. Chætotaxy as in *L. lyrurus* with the third anterior submarginal ventral hair stout and elongated.

Thorax with shape as shown in Pl. XIV. fig. 5, and posterior dorsal pterothoracic hairs arranged:—2, 1, 1, 1, 1, 1, 2.

Abdomen normal with tergal plates I–VIII separated medianly.

Chætotaxy 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 *Lagopæcus californicus*: *L. meinertzhageni*; (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 *Lagopæcus* (text-fig. 44 a).

Female.—Head and thorax as in male, the former being somewhat more elongated.

Abdomen normal with chætotaxy 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 *Oreortyx picta picta* from Nevada; and 1 male from skins of *Oreortyx picta palmeri* from California.

LAGOPÆCUS DOCOPHOROIDES (Piaget). (Text-fig. 43 d.)

Lipeurus docophoroides Piaget, 1880, p. 357, pl. xxviii. fig. 9. Host: *Lophortyx californica californica*.

Lipeurus docophoroides var. *minhaensis* Kellogg and Chapman, 1902, p. 159. Host: *Acridotheres tristis* (Straggler).

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. Chætotaxy of the former as in *L. californicus*. Posterior dorsal pterothoracic hairs arranged:—2, 2, 1, 1, 1, 1, 2, 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. 43 d.

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, 2.

Abdomen normal. Chætotaxy 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; chætotaxy 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 *Lophortyx californica*; 1 male, 1 female, from skins of *Lophortyx 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.

LAGOPÆCUS MEINERTZHAGENI, sp. n. (Pl. XIV. fig. 3; text-figs. 44 b & c & 45.)

This species differs markedly from all the other known species of *Lagopæcus* in the chætotaxy 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

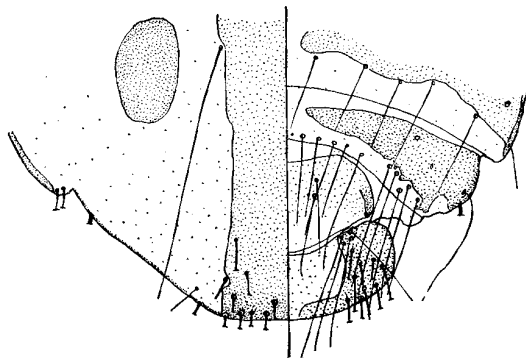
of unusual form with central part reduced. Chaetotaxy as in *L. lyrurus* with one extra dorsal anterior hair and all hairs longer and stouter.

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

Text-figure 45.



Lagopæcus meinertzhageni, posterior segments of ♂ abdomen.

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 antennæ 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.		Female.	
	Length. mm.	Breadth. mm.	Length. mm.	Breadth. mm.
Head.....	0.64-0.67	0.64-0.68	0.76-0.78	0.70-0.76
Thorax.....	0.57-0.59	0.73-0.81	0.60-0.63	0.82-0.86
Abdomen.....	1.14-1.31	1.12-1.15	1.34-1.74	1.26-1.35
Total.....	2.32-2.57		2.87-3.05	
C.I.....	1.0-1.01		0.92-0.97	

Described from 8 males, 3 females, from skins of *Lerwa lerwa* from Sikkim. **Holotype.**—Male in the Meinertzhagen collection, slide no. 42.

LAGOPÆCUS NUMIDIANUS (Denny).

Goniodes numidianus Denny, 1842, p. 163, pl. xiii. fig. 7. Host: *Numida meleagris domestica*.

Lipeurus aberrans McGregor, 1917, p. 112, pl. vii. fig. 1. Host: *Colinus virginianus texanus*.

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 *Lagopæcus* species but is apparently nearest to *L. dco-phoroides* Piaget. It is distinguished by its large head and by the form of the male antennæ 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.

<i>caponis</i> (Linné).....	<i>Gallus domesticus</i> .
(<i>variabilis</i> Burmeister.....)	<i>Gallus domesticus</i> .
<i>antennatus</i> Piaget.....	<i>Hierophasis swinhovii</i> .
<i>variabilis</i> var. <i>formosanus</i> Sugimoto ...	<i>Gallus domesticus</i> .)
<i>sarissa</i> , sp. n.	<i>Rhizothera l. longirostris</i> .
<i>maculosus</i> , sp. n.	<i>Phasianus c. colchicus</i> (Britain).
<i>maculosus rheinardia</i> , subsp. n.	<i>Rheinardia o. ocellata</i> .
<i>maculosus polyplectron</i> , subsp. n.	<i>Polyplectron bicalcaratum</i> <i>ghigi</i> .
<i>subsellatus</i> (Harrison)	<i>Gennæus nyctemerus</i> <i>lineatus</i> .
(<i>introducatus</i> Kellogg.....)	<i>Gennæus n. nyctemerus</i> .)
<i>crinitus</i> Rudow	<i>Chrysolophus pictus</i> .
<i>brunneipictus</i> (Giebel)	<i>Lophura rufa</i> .
(<i>intermedius</i> Piaget	<i>Lophura i. ignita</i> .)
<i>kéleri</i> , sp. n.	<i>Crossoptilon c. crossoptilon</i> .
<i>charltonii</i> , sp. n.	<i>Tropicoperdix c. charltonii</i> .

Lipeurus (Nitzsch) (con.).

- fimbriatus*, sp. n.
uncinatus Piaget
pavo, sp. n.
numida (Denny)
 (numidianus Mjöberg
raymondi, sp. n.
differens differens Piaget
differens phasidus, subsp. n.
sinuatus Taschenberg
latifasciatus Piaget
crassus Rudow
tsade Piaget
meyeri Taschenberg
dovi McGregor
curycnemis Taschenberg
 (palatorius Giebel
humatus Piaget
 **orthopleurus* Giebel (name discarded)

Gallipeurus, gen. n.

- heterographus heterographus* Giebel
 (burnetti (Packard)
heterographus var. *major* (Piaget)
cynsfordii (Theobald)
heterographus obscurus (Giebel)
heterographus arabicus, subsp. n.
heterographus barbara, subsp. n.
heterographus heyi, subsp. n.
nigromarginatus (Piaget)
cameratus (de Haan.)
heterogrammicus (Giebel)
rosalinda, sp. n.
hungerfordi, sp. n.
pternistis pternistis (Bedford)
pternistis maranensis, subsp. n.
pternistis placentella, subsp. n.
gedgii, sp. n.
cinereus cinereus (Giebel)
 (! *argentatus* (Gurlt)
cinereus japonicus, subsp. n.
maculipes (Piaget)
acuminatus (Piaget)
synoicus, sp. n.
spinicaudatus, sp. n.
madagascariensis (Mjöberg)
notatus, sp. n.

- Melanoperdix* n. *nigra*.
Rollulus roulroul.
Pavo cristatus.
Numida meleagris domestica.
Numida meleagris mitrata.)
Acryllium vulturinum.
Agelastes meleagrides.
Phasidus niger.
Megapodius r. *reinwardt*.
Megapodius f. *freycinet*.
Alectura l. *lathamii*.
Macrocephalon maleo.
Talegalla fuscirostris.
Colinus v. *virginianus*.
Lophophorus impejanus.
Lophophorus impejanus.)
Colinus cristatus leucotis.
Argusianus a. *argus*.

- Gallus domesticus*.
Gallus domesticus.
Pavo muticus.
Gallus domesticus.)
Alectoris r. *rufa*.
Alectoris melanocephala.
Alectoris b. *barbara*.
Ammoperdix heyi cholmleyi.
Gennæus nyctemerus horsfieldii.
Lyrurus t. *tetrix*.
Perdix p. *perdix*.
Francolinus shelleyi theresæ.
Francolinus j. *jacksoni*.
Pternistis swainsonii.
Francolinus squamatus maranensis.
Francolinus griseostriatus.
Francolinus clappertoni gedgii.
Coturnix c. *coturnix*.
Coturnix c. *coturnix*.)
Coturnix coturnix japonica.
Colinus v. *virginianus*.
Excofactoria chinensis australis.
Synoicus ypsilophorus australis.
Perdicula a. *asiatica*.
Margaroperdix madagarensis.
Ptilopachus petrosus petrosus.

Gallipeurus, gen. n. (con.).

- tetraogallus*, sp. n.
insolitus, sp. n.
lawrensis lawrensis (Bedford)
lawrensis tropicalis (Peters)

Orylpeurus Mjöberg.

- inequalis* (Piaget)
appendiculatus (Piaget)
ozecephalus (Taschenberg)
ischnocephalus (Taschenberg)
appypodius, sp. n.
unicolor (Piaget)
 (rubrifasciatus (Piaget)
tropicoperdix, sp. n.
connectens, sp. n.
megalops (Piaget)
clavatus (McGregor)
postemarginatus (Carriker)
himalayensis himalayensis (Rudow)
himalayensis burmeisteri (Taschenberg)
 (castaneus (Piaget)
stygus (Giebel)
longus (Piaget)
baileyi, sp. n.
baileyi crossopylon, subsp. n.
baileyi ithaginis, subsp. n.
baileyi pucrasia, subsp. n.
mesopelios mesopelios (Giebel)
mesopelios hierophasis, subsp. n.
mesopelios reevesi, subsp. n.
mesopelios sømmerringii, subsp. n.
mesopelios uchida, nom. nov.
mesopelios robustus (Rudow)
mesopelios colchicus, subsp. n.
rhizophera, sp. n.
piageti, nom. nov.
tetraonis (Grube)
 (ochraceus (Giebel)
formosanus (Uchida)
dentatus (Sugimoto)
 (angularis (Peters).
polytrapezius polytrapezius (Burmeister)
polytrapezius agriocharis, subsp. n.
corpulentus, sp. n.
ocellata, sp. n.
penelope, sp. n.
concolor (Rudow)
 (quadrinus (Giebel)
rhynchoti (Carriker)
tetraophasis, sp. n.

- Tetraogallus* h. *himalayensis*.
Arborophila rufogularis tickelli.
Numida meleagris papillosa.
Gallus domesticus.

- Megapodius* r. *reinwardt*.
Megapodius r. *reinwardt*.
Megapodius f. *freycinet*.)
Alectura l. *lathamii*.
Appypodius arfakianus.
Arborophila javanica.
Arborophila crudigularis.)
Tropicoperdix c. *chloropus*.
Galloperdix s. *spadica*.
Rollulus roulroul.
Colinus virginianus texanus.
Ortalis garrula cinericeps.
Tragopan melanocephalus.
Lophophorus impejanus.
Lophophorus impejanus.
Lophophorus impejanus.)
Tragopan satyra.
Crossoptilon auritum.
Crossoptilon c. *crossoptilon*.
Ithaginis c. *cruentus*.
Pucrasia m. *macrolopha*.
Chrysolophus pictus.
Hierophasis edwardsii.
Syrmaticus reevesi.
Syrmaticus s. *sømmerringii*.
Syrmaticus mikado.
Gennæus nyctemerus lineatus.
Phasianus c. *colchicus*.
Rhizophera l. *longirostris*.
Lophura ignita.
Lagopus l. *lagopus*.
Tetrao wrogallus.)
Arborophila crudigularis.
Gallus domesticus.
Gallus domesticus.)
Meleagris gallopavo domestica.
Agriocharis ocellata.
Meleagris gallopavo merriami.
Agriocharis ocellata.
Penelope p. *purpurascens*.
Crax globulosa.
Crax globulosa.)
Rhynchotus r. *rufescens*.
Tetraophasis o. *obscurus*.

* See footnote on p. 135.

Lagopæcus Waterston.

<i>lyrurus</i> , nom. nov.	<i>Lyrurus l. tetrica</i> .
<i>affinis</i> (Children)	<i>Lagopus l. lagopus</i> .
<i>pallidovittatus</i> (Grube)	<i>Tetrao u. urogallus</i> .
<i>heterotypus</i> (Mégnin)	<i>Lophophorus impejanus</i> .
(<i>nirmoides</i> (Kellogg & Paine)	<i>Lophophorus impejanus</i> .)
<i>cæmenticus</i> (Giebel)	<i>Lophophorus impejanus</i> .
<i>protervus</i> (Kellogg)	<i>Lagopus lagopus alexandriae</i> .
<i>perplexus</i> (Kellogg)	<i>Pediacetes phasianellus</i>
	<i>columbianus</i> .
<i>ovatus</i> (Uchida)	<i>Syrmaticus mikado</i> .
<i>sinensis</i> (Sugimoto)	<i>Gallus domesticus</i> .
<i>waterstoni</i> (Bedford)	<i>Francolinus garipeensis</i>
	<i>pallidior</i> .
<i>kozuii</i> (Sugimoto)	Domestic Duck, Formosa.
<i>californicus</i> (Kellogg and Chapman)	<i>Oreortyx p. picta</i> .
<i>docophoroides</i> (Piaget)	<i>Lophortyx c. californica</i> .
(<i>docophoroides</i> var. <i>minhaensis</i> (Kellogg	
and Chapman)	<i>Acridotheres tristis</i> .)
<i>meinerzhageni</i> , sp. n.	<i>Lerua lerua</i> .
<i>numidianus</i> (Denny)	<i>Numida meleagris domestica</i>
	(in error).
(<i>aberrans</i> (McGregor)	<i>Colinus virginianus texanus</i> .)

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).

Lipeurus platyclypeatus 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 arcellus 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 arcellus*; these are most probably stragglers from one of the Bucerotidae (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: *Chrysolophus pictus*.

This is apparently a straggler from one of the Passeres.

PHILOPTERUS BILINEATUS (Rudow).

Docophorus bilineatus Rudow, 1870 (1), p. 463. Host: *Alectoris r. rufa*. Rudow's description apparently applies to a true *Philopterus*, which is therefore most probably a straggler.

PHILOPTERUS HOSPES (Rudow).

Docophorus hospes Rudow, 1870 (1), p. 457. Host: *Penelopina nigra*. This species, as the one above, is most probably a straggler.

SUMMARY.

1. The known species of *Lipeurus* 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.

REFERENCES.

- BEDFORD. 1929. Rept. Div. Vet. Services, U.S. Africa, xv. pp. 501-549.
 BEDFORD. 1930. Rept. Div. Vet. Services, U.S. Africa, xvi. pp. 153-173.
 BUMMEISTER. 1839. Handbuch der Entomologie, Berlin, Bd. II, pp. 418-433.
 CARRIKER. 1903. Univ. Studies, Univ. Nebraska, iii. pp. 123-197.
 CARRIKER. 1936. Proc. Acad. Nat. Sci. Philadelphia, lxxxviii. pp. 45-218.
 CHILDREN. 1836. Appendix to Back's Arctic Land Expedition. Articulata, pl. 532-542.
 DE HAAN. 1829. Anatomie de différentes espèces d'insectes. Lyonnet's MS. Mém. du Mus. xviii. pp. 262-274.
 DENNY. 1842. Monographia Anoplurorum Britanniae. London.
 EVANS. 1912. Scottish Nat. p. 280.
 GIEBEL. 1861. Zeit. f. d. ges. Nat. xviii. pp. 289-319.
 GIEBEL. 1866 (1). Zeit. f. d. ges. Nat. xxvii. pp. 115-122.
 GIEBEL. 1866 (2). Zeit. f. d. ges. Nat. xxviii. pp. 355-400.
 GIEBEL. 1867. Zeit. f. d. ges. Nat. xxix. pp. 426-430.
 GIEBEL. 1874. Insecta Epizoa. Leipzig.
 GIEBEL. 1877. Zeit. f. d. ges. Nat. xlvi. pp. 529-530.
 GRUBE. 1851. Middendorff's Sibirische Reise, Bd. II, Th. 1, pp. 467-497. St. Petersburg.

- GURLT. 1878. Arch. f. Naturgesch. xlv. pp. 162-210.
 JOHNSTON & HARRISON. 1911. Proc. Linn. Soc. N.S. Wales, xxxvi. pp. 321-326.
 KELLOGG. 1896. Proc. Calif. Acad. Sci. vi. pp. 31-168 & pp. 431-548.
 KELLOGG. 1899. Occ. Papers Calif. Acad. Sci. vi. pp. 1-52.
 KELLOGG & CHAPMAN. 1902. Journ. N.Y. Ent. Soc. x. pp. 155-170.
 KELLOGG & PAINE. 1914. Records of the Indian Museum, x. pt. iv. pp. 217-243.
 LINNÆUS. 1758. Systema Nature, 10th edition.
 MCGREGOR. 1917. Psyche, Boston, xxiv. no. 4, pp. 105-117.
 MCGREGOR. 1918. Psyche, Boston, xxv. no. 3, p. 46.
 MÉGNIN. 1880. Les Parasites et les Maladies Parasitaires. Paris.
 MÖBBERG. 1910. Arkiv f. Zool. vi. pp. 1-296.
 NITZSCH. 1818. Germar's Magaz. d. Ent. iii. pp. 261-316.
 OSBORN. 1896. Bull. no. 5 (n. ser.), Div. of Ent. U.S. Dept. of Agric. Washington, pp. 189-249.
 PACKARD. 1870. Amer. Naturalist, iv. pp. 83-99.
 PETERS. 1931. Ent. News, Philadelphia, xlii. pp. 195-199.
 PETERS. 1935. Ohio Journ. of Sci. xxxv. no. 2, pp. 101-104.
 PIAGET. 1880. Les Pediculines. Leyden.
 PIAGET. 1885. Les Pediculines, Supplement. Leyden.
 PIAGET. 1890. Tijdschr. Ent. Amsterdam, xxxiii. pp. 223-259.
 RUDOW. 1869. Beitrag zur Kenntniss der Mallophagen oder Pelzfresser, Diss., Halle.
 RUDOW. 1870 (1). Zeit. f. d. ges. Nat. xxxv. pp. 449-487.
 RUDOW. 1870 (2). Zeit. f. d. ges. Nat. xxxvi. pp. 121-143.
 SCHRANK. 1803. Fauna Boica, Landshut, pp. 186-194.
 SUGIMOTO. 1929. Rep. Dep. Agr. Formosa, no. 43, pp. 1-59.
 SUGIMOTO. 1930. J. Soc. trop. Agric. Formosa, no. 2, pp. 129-134.
 SUGIMOTO. 1934. Taiwan no Chikusan, ii.
 TASCHEBERG. 1882. Nova Acta, Halle, xlv. pp. 1-244.
 THEOBALD. 1896. Parasitic Diseases of Poultry. London.
 THOMPSON. 1937. Ann. & Mag. Nat. Hist. ser. 10, xix. pp. 262-265.
 UCHIDA. 1917. J. Coll. Agric. Tokyo, iii. pp. 171-188.
 UCHIDA. 1920. Annot. Zool. jap. Tokyo, ix. pp. 635-652.
 WATERSTON. 1922. Scottish Nat. July-August, pp. 101-104.
 WATERSTON. 1922. Ent. Mo. Mag. London, 58, p. 159.

EXPLANATION OF THE PLATES.

PLATE I.

- Fig. 1. *Lipeurus sarissa*, sp. n. × 35.
 2. *Lipeurus maculosus*, sp. n. × 35.
 3. *Lipeurus m. rheinardia*, subsp. n. × 35.
 4. *Lipeurus m. polyplectron*, subsp. n. × 35.
 5. *Lipeurus crinitus* (Rudow). × 35.
 6. *Lipeurus subsellatus* (Harrison). × 35.

PLATE II.

- Fig. 1. *Lipeurus brunneipictus* (Giebel). × 35.
 2. *Lipeurus keleri*, sp. n. × 35.
 3. *Lipeurus charltonii*, sp. n. × 35.
 4. *Lipeurus fimbriatus*, sp. n. × 35.

PLATE III.

- Fig. 1. *Lipeurus numida* (Denny). × 35.
 2. *Lipeurus raymondi*, sp. n. × 35.
 3. *Lipeurus differens phasidus*, subsp. n. × 35.

PLATE IV.

- Fig. 1. *Lipeurus javo*, sp. n. × 35.
 2. *Lipeurus crassus* Rudow. × 35.

PLATE V.

- Fig. 1. *Gallipeurus heterographus arabicus*, subsp. n. × 35.
 2. *Gallipeurus heterographus barbara*, subsp. n. × 35.
 3. *Gallipeurus heterographus heyt*, subsp. n. × 35.
 4. *Gallipeurus qedgii*, sp. n. × 35.

PLATE VI.

- Fig. 1. *Gallipeurus heterogrammicus* (Giebel). × 35.
 2. *Gallipeurus rosalinde*, sp. n. × 35.
 3. *Gallipeurus hungerfordi*, sp. n. × 35.
 4. *Gallipeurus pternistis placentella*, subsp. n. × 35.
 5. *Gallipeurus pternistis maranensis*, subsp. n. × 35.

PLATE VII.

- Fig. 1. *Gallipeurus cinereus cinereus* (Giebel). × 35.
 2. *Gallipeurus cinereus japonicus*, subsp. n. × 35.
 3. *Gallipeurus synoicus*, sp. n. × 35.
 4. *Gallipeurus spinicaudatus*, sp. n. × 35.
 5. *Gallipeurus madagascariensis* (Mjöberg). × 35.
 6. *Gallipeurus insolitus*, sp. n. × 35.

PLATE VIII.

- Fig. 1. *Gallipeurus notatus*, sp. n. × 35.
 2. *Gallipeurus tetragallus*, sp. n. × 35.

PLATE IX.

- Fig. 1. *Orylipeurus apypodius*, sp. n. × 35.
 2. *Orylipeurus tropicoperdix*, sp. n. × 35.
 3. *Orylipeurus connectens*, sp. n. × 35.
 4. *Orylipeurus megalops* (Piaget). × 35.
 5. *Orylipeurus clavatus* (McGregor). × 35.
 6. *Orylipeurus baileyi pucrasia*, subsp. n. × 35.

PLATE X.

- Fig. 1. *Orylipeurus baileyi crossoptilon*, subsp. n. × 35.
 2. *Orylipeurus mesopeltis robustus* (Rudow). × 35.
 3. *Orylipeurus mesopeltis uchida*, nom. nov. × 35.
 4. *Orylipeurus baileyi*, sp. n. × 35.

PLATE XI.

- Fig. 1. *Orylipeurus mesopeltis mesopeltis* (Giebel). × 35.
 2. *Orylipeurus mesopeltis hierophasis*, subsp. n. × 35.
 3. *Orylipeurus mesopeltis colchicus*, subsp. n. × 35.
 4. *Orylipeurus mesopeltis saemmeringii*, subsp. n. × 35.
 5. *Orylipeurus mesopeltis reevesi*, subsp. n. × 35.
 6. *Orylipeurus rhizothera*, sp. n. × 35.

PLATE XII.

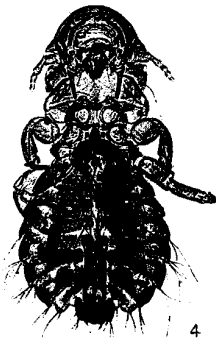
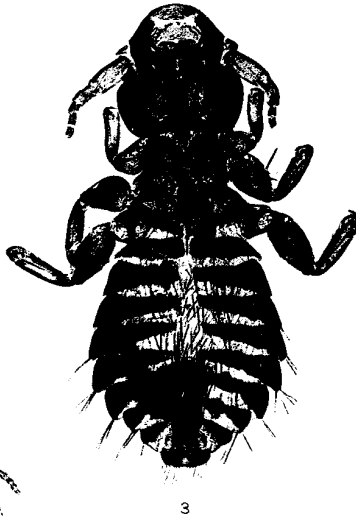
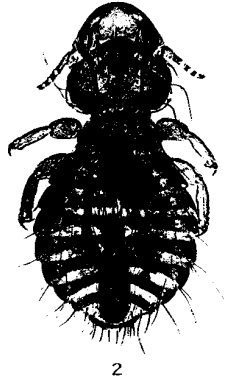
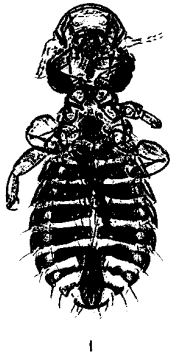
- Fig. 1. *Orylipeurus corpulentus*, sp. n. × 35.
 2. *Orylipeurus ocellatus*, sp. n. × 35.
 3. *Orylipeurus polytrapezius agriocharis*, subsp. n. × 35.
 4. *Orylipeurus polytrapezius polytrapezius* (Burm.). × 35.

PLATE XIII.

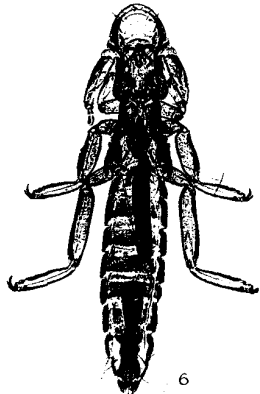
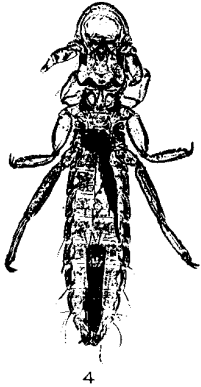
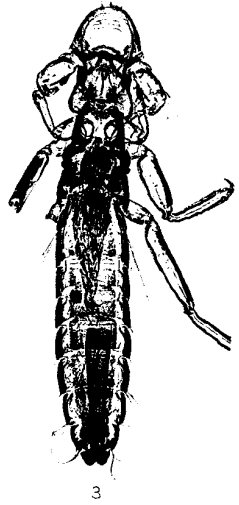
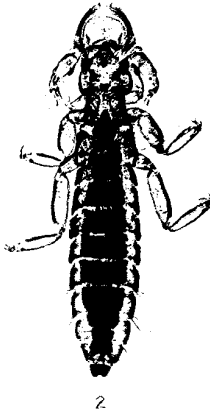
- Fig. 1. *Oxylipeurus baileyi ithaginis*, subsp. n. × 35.
2. *Oxylipeurus penelope*, sp. n. × 35.
3. *Oxylipeurus tetraophasis*, sp. n. × 35.

PLATE XIV.

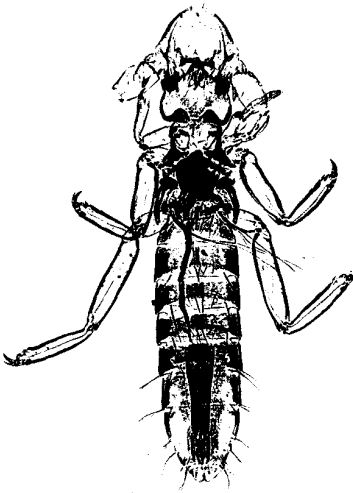
- Fig. 1. *Lagopæcus affinis* (Children). × 35.
2. *Lagopæcus pallidovittatus* (Grube). × 35.
3. *Lagopæcus meinertzhageni*, sp. n. × 35.
4. *Lagopæcus heterotypus* (Mégnin). × 35.
5. *Lagopæcus californicus* (Kell. & Chap.). × 35.



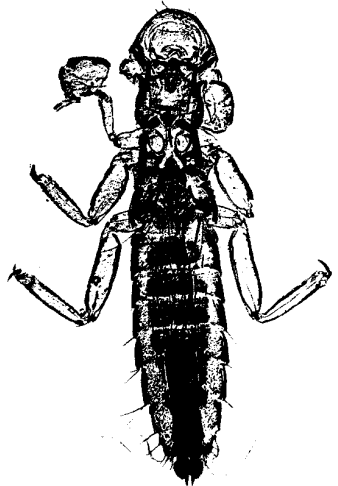
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MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.



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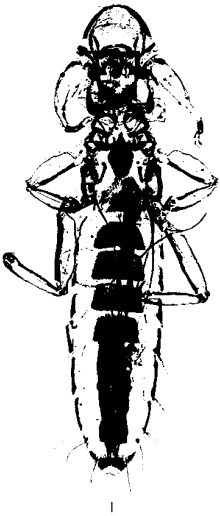
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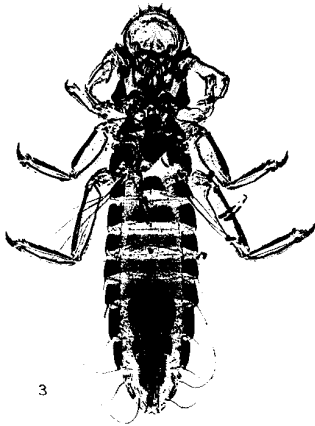
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Phyllophaga (Linn.) 1758: 143.

MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS



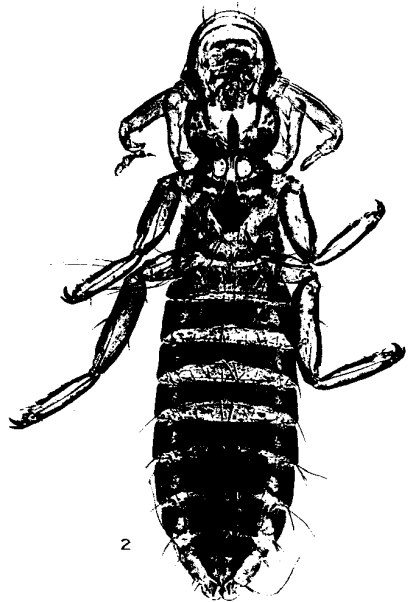
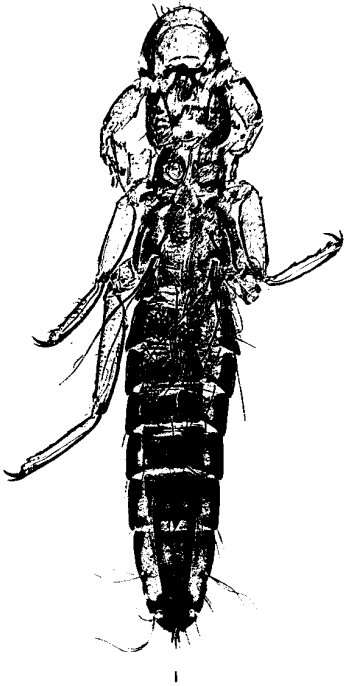
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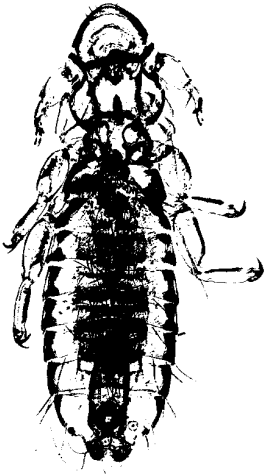
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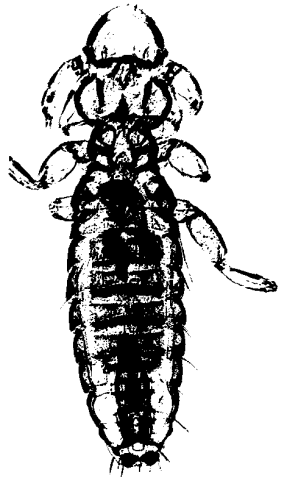
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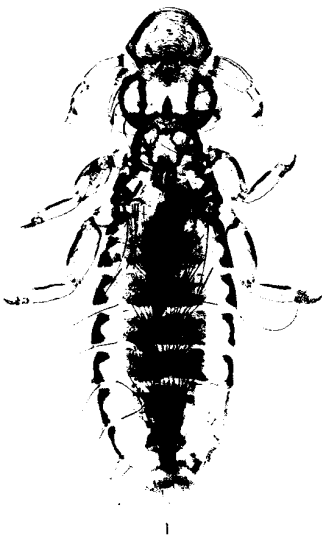
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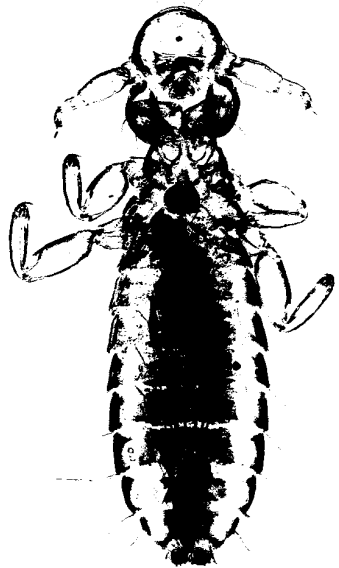
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Journal of Parasitology 28: 1-10, 1938

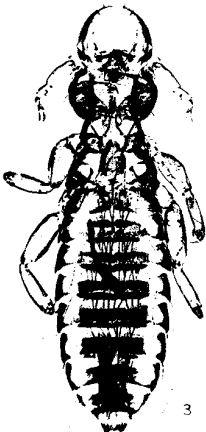
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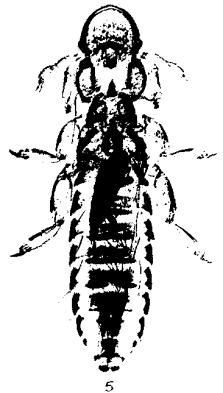
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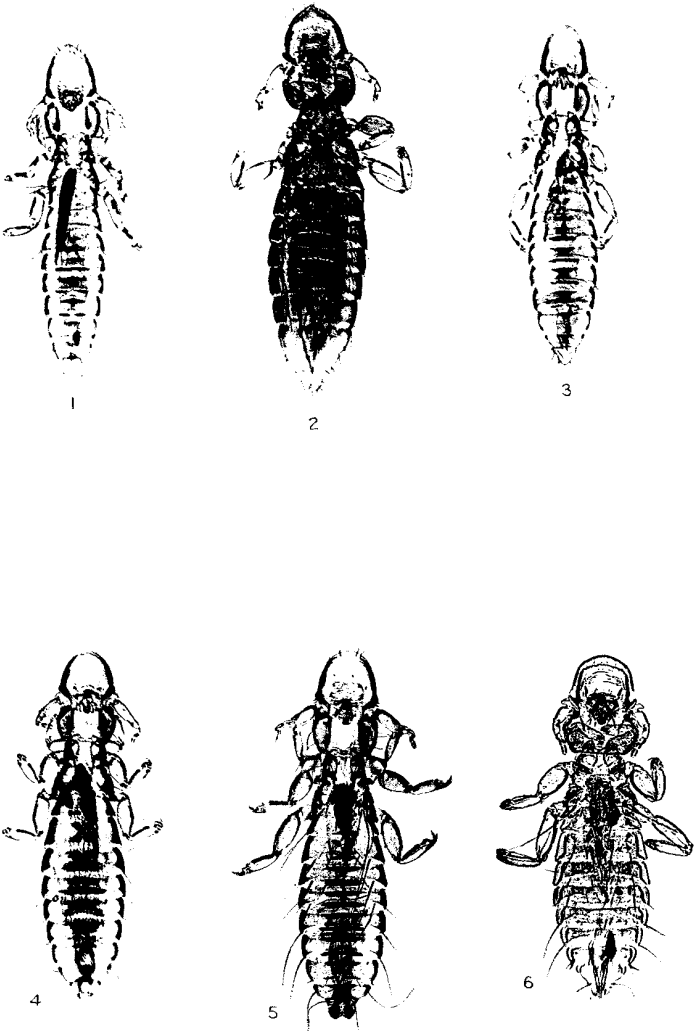


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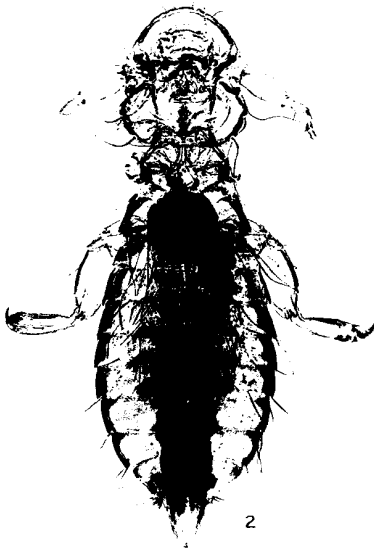
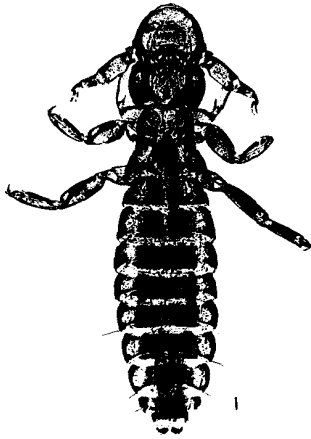
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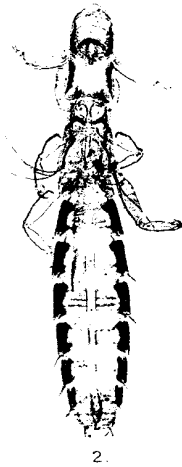


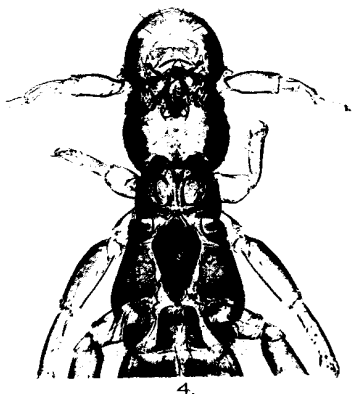
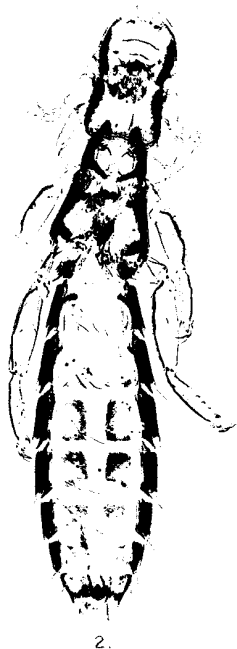
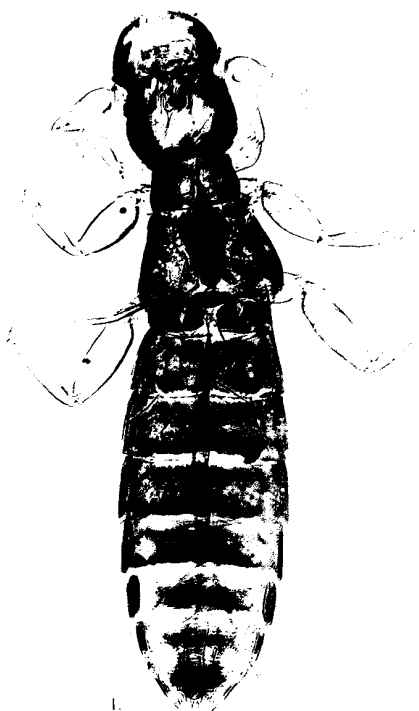
John Paul Sloss & Dietrich 1938, Pl. VII.

MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.



John R. Seely and Arthur J. M. Cooper



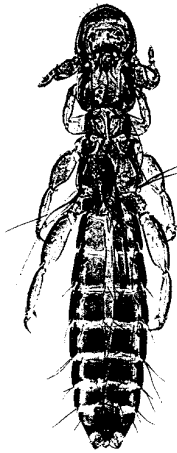


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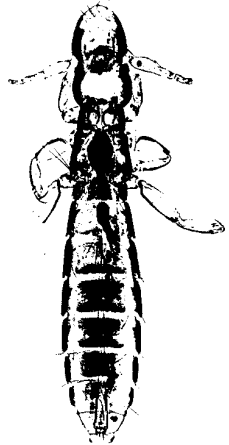
See also Plate VIII.



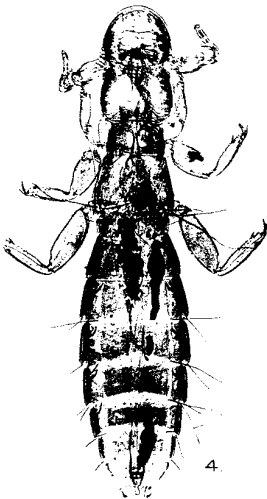
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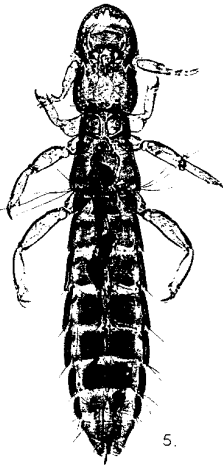
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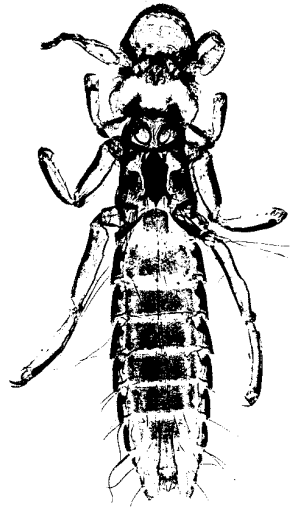
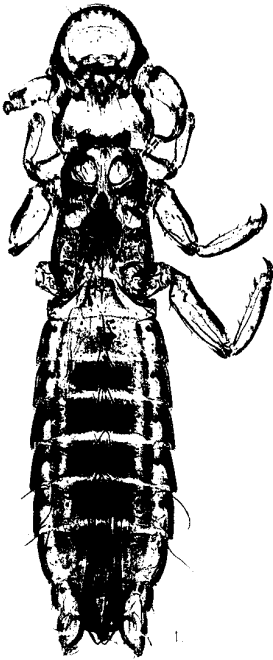
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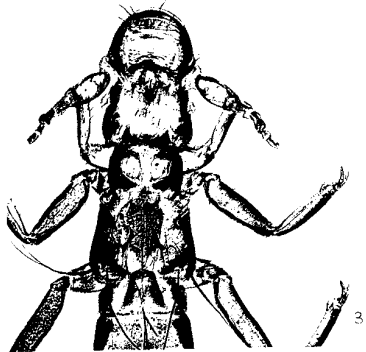
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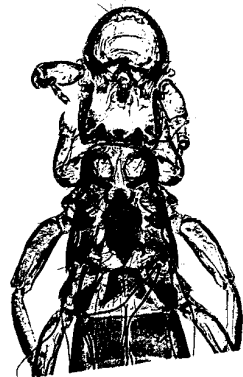
MALLOPHAGA OCCURRING ON GALLINACEOUS HOSTS.



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John R. Rose & Philip W. 1938

