

# Mallophaga from Birds of Formosa.

By

Seinosuke Uchida.

With Plate X and One Text-Figure.

The descriptions of new, and determinations of old, species of Mallophaga, presented in this paper are based on the first collection that has ever been made of specimens of this ecto-parasitic insect found on Formosan birds. This small but interesting collection of Mallophaga is composed of specimens which were taken by Mr. NAGAMICHI KURODA, research scholar on ornithology, Tokyo Imperial University, during the spring of this year (1916), from the host specimens shot by himself. Mr. KURODA was kind enough to give this collection of parasites to the writer. The identification of the birds themselves, however, is his own.

The collection includes 8 genera and 21 species out of 13 host species of birds. Of the above number, 7 seem to me to be new to science and are here described for the first time. In addition, one new variety is recognized.

The list of host species with their parasites is given below :

<i>Nannocnus cinnamomea</i> . . . . .	<i>Laemobothrium loomisi</i> Kellogg & Chapman.
<i>Accipiter virgatus</i> . . . . .	{ <i>Lipeurus variabilis</i> Nitzsch. <i>Nirmus vittatus</i> Giebel.
<i>Milvus ater govinda</i> . . . . .	<i>Colpocephalum osborni</i> Kellogg.
<i>Pandion haliaetus</i> . . . . .	<i>Colpocephalum pachygaster</i> Giebel. <i>Nirmus ovatus</i> n. sp. <i>Lipeurus variabilis</i> Nitzsch. <i>Lipeurus intermedius</i> var. <i>major</i> n. var. <i>Goniodes intermedius</i> Neumann. <i>Menopon productum</i> Pinget. <i>Menopon mikadokiji</i> n. sp.
* <i>Calophasis mikado</i> . . . . .	

	{ <i>Lipeurus formosanus</i> n. sp. <i>Lipeurus rubrifasciatus</i> Piaget. <i>Goniocotes microcephalus</i> n. sp. <i>Menopon pallescens</i> Nitzsch. <i>Menopon longipectum</i> n. sp.
* <i>Arboricola crudigularis</i> .....	
<i>Tringa subminuta</i> .....	
	<i>Colpocephalum umbrinum</i> var. <i>trilobatum</i> Giebel.
<i>Tringa ruficollis</i> .....	<i>Nirmus incensis</i> Kellogg & Chapman.
<i>Turtur chinensis</i> .....	<i>Lipeurus baculus</i> Nitzsch.
	{ <i>Lipeurus baculus</i> Nitzsch. <i>Goniocotes kurodai</i> n. sp.
<i>Sphenocercus sororius</i> .....	
<i>Pericrocotus griseigularis</i> ..	<i>Docophorus communis</i> Nitzsch.
	{ <i>Lipeurus baculus</i> Nitzsch. <i>Goniocotes kurodai</i> n. sp.
<i>Graucalus rex-pineti</i> .....	
* <i>Urocissa caerulea</i> .....	<i>Menopon urocissae</i> n. sp.

Of the thirteen bird species, forming the list of the hosts, three, marked with asterisks, are species peculiar to this Island and many of the parasites found on them are new species.

The mikado pheasant, *Calophasis mikado* of Mt. Arisan, the most interesting species of all Formosan birds, is parasitized by six Mallophagan species of which two are new species and the other four common to several other pheasants except one which differs so considerably from the type that it must be referred to as variety. From *Arboricola crudigularis* (Phasianidæ) which is found throughout the Island at higher altitudes, five Mallophagan species were obtained, of which three were new species and two were known species, *i. e.*, *Menopon pallescens* Nitzsch and *Lipeurus rubrifasciatus* Piaget.

None of the Mallophagan parasites of Campephagidæ have hitherto been recorded. Of this family our list contains two species, *i. e.* *Pericrocotus griseigularis* and *Graucalus rex-pineti*, and the former was found to be parasitized by *Docophorus communis* Nitzsch, the most widely spread species among Passeriforme hosts. From the latter were taken two parasites, one of them being *Lipeurus baculus* common to doves and the other a new *Goniocotes* which was also found in the wedgetailed pigeon, *Sphenocercus sororius*. This unusual distribution may be due either to the fact that these two host species have a similar

habitat or it may be caused by the parasites straggling in the game-bag from one bird to another.

The present collection is too small, so until a greater number of hosts and of Mallophagan species are investigated, it is scarcely worth while to attempt any general remarks concerning the bird-infesting Mallophaga of this interesting Island.

It is my pleasant duty here to express my cordial thanks to Mr. NAGAMICHI KURODA whose kindness enabled me to examine not only the present collection, but also some of the important materials in my studies of Japanese Mallophaga.

Gen. DOCOPHORUS Nitzsch.

1. *Docophorus communis* Nitzsch.

Germer's Mag. f. Ent., 1818, III, p. 290; Kellogg, New Mallophaga II, 1896, p. 486.

Three females and four young were collected from *Pericrocotus griseigularis* at Suisha, Distr. Nantô, May 3.

Gen. NIRMUS Nitzsch.

2. *Nirmus vittatus* Giebel.

Giebel, Insecta Epizoa, 1874, p. 127; Piaget, Les Pediculines, 1880, p. 132, pl. XI, fig. 2; Waterston, Ann. South Afr. Mus. x, 1914, p. 288.

Three females of this species were collected from *Accipiter virgatus* at Shûshû, Distr. Nantô, May 4.

3. *Nirmus incœnis* Kellogg and Chapman.

Kellogg and Chapman, New Mallophaga, III, 1899, p. 81, pl. VI, fig. 5.

Four female specimens were taken from *Tringa ruficollis* at Enteishô, Distr. Tainan, May 9.

4. *Nirmus ovatus* n. sp.

(Pl. X, Fig. 3.)

Two specimens, both males, obtained from *Calophasis mikado* Mt. Arisan, May 2.

## Measurements.

	♂	♂
	mm.	mm.
Length of body .....	1.50	1.50
Width of body .....	0.60	0.60
Length of head .....	0.49	0.49
Width of head .....	0.42	0.42
Length of thorax .....	0.27	0.26
Width of thorax .....	0.36	0.36
Antenna .....	0.24	0.24

*Description of Male*:—Body short and broad, sub-docophoroid in form; ground colour of body pale yellowish brown, showing brownish marginal markings.

Head somewhat conical; front broadly parabolic, with five rather long marginal hairs, three of which on the margin of clypeus, the other two hairs in front of the trabeculae; two dorsal hairs, one between first and second marginal hairs and the other between second and third; trabeculae large, conical, uncoloured. Antennae well developed, with the second segment longest and the fourth shortest; the basal segment much thickened and second in length, about equal to the last segment; colour of antennae a little paler than the head and the last two segments darker. Eyes clear, prominent, each with a long hair; temples wide behind the eye; temporal margins convex, converging posteriorly, each with two long hairs and two short spines, occipital margin straight with a prickle near each temporal angle. Colour of head pale yellowish in median region; frontal bands broad, yellowish brown, continuous around the front, sides darker; as usual the bands turn inward before the base of antennae, forming an oblong, dark brown antennal blotch on either side; ocular blotches small, distinct, reddish brown; very narrow brownish marginal band completely encircles each of the temples; occipital band chestnut brown with two prominent, roundish blotches of the same colour.

Prothorax short, width greater than length, somewhat hexagonal; lateral

margins short, each with a coloured swelling and a long hair; posterior margin truncate; marginal bands irregular, brownish. Metathorax short, trapezoidal; lateral margins bare and diverging posteriorly; posterior angles rounded, each bearing a hair and a fine prickle; posterior margin convex, angulated in middle, with eight long pustulated hairs in four pairs; marginal bands broad, present only on the lateral borders. Legs paler than body, with brownish marginal markings and a few scattered hairs.

Abdomen oval, broadest at the fourth segment, posterior angles protruding, bearing one to three hairs on segments III-VIII. Dorsal surface of abdomen with four rows of short hairs in the median portion of segments I-VII, and one row of long hairs behind the spiracles on the posterior margin of segments II-VIII. Segments I-V approximately equal in length, then successively shorter; the last segment round, entire, with numerous hairs. Lateral marginal bands brownish, well chitinized, entering into the segment preceding and curving directly backward to the posterior margin of the same; transverse blotches, broad, pale yellowish brown, entirely across all segments, leaving uncoloured stigmatal spots and a narrow pale line along each posterior margin of segments. Genitalia distinct, reaching to the fifth abdominal segment, and the posterior end consists of a triangular median part and two short chitinous movable hooks.

Gen. GONIOCOTES Burmeister.

5. *Goniocotes kurodai* n. sp.

(Plate X, Fig 4.)

One male specimen was taken from *Sphenocercus sororius*, killed at Suisha, Distr. Nanto, May 3, and another from *Graucalus rex-pineti* shot at the same locality, May 4.

This new species somewhat resembles Rudow's *Goniocotes carpophaga*,\* but may be distinguished from that species chiefly by its larger head and broader abdomen.

Measurements.

	♂ mm.	♂ mm.
Length of body .....	1.07	1.07
Width of body .....	0.63	0.61

\* In Taschenberg's Die Mallophagen, p. 99, Taf. II, Fig. 10, 10a.

	♂	♀
	mm.	mm.
Length of head .....	0.41	0.41
Width of head .....	0.51	0.51
Length of thorax .....	0.19	0.19
Width of thorax .....	0.37	0.37
Antenna .....	0.13	0.13

*Description of male*.:—Ground colour of head and thorax yellowish orange, with well-defined, chestnut-brown markings; abdomen very pale, curved marginal bands pale yellowish.

Head with laterally projecting temples; front very broad, convex, with five very fine marginal hairs on each side, the second from the most anterior being somewhat longer; trabeculae absent; antennae short; the first segment long, extending beyond antennal sinus, the second longest, the fifth longer than the third or the fourth which is shortest and both are about equal. Eyes inconspicuous, a fine prickle behind each eye on lateral margin; temples expand laterally, each forming a protuberance which has a long, stout hair; a little behind the hair, another long one present; posterior portion of the temples slightly extended and angulated, with a very fine prickle; occiput convex. Ground colour of head yellowish orange; frontal band reddish brown, broadest in the centre and with irregular internal border; just in front of each antenna, a long chestnut-brown antennal blotch, running backward from the end of the frontal band; along the posterior margin of the frontal band, a well-defined, transverse, semitransparent space; ocular blotches large, rounded, reddish brown; a broad, yellow band runs along the temple from the eye to the posterior angle; occipital band, distinct, reddish brown, with two chestnut brown occipital blotches.

Prothorax short, narrow, trapezoidal; almost entirely included between the two posterior angles of the head; lateral margins diverging posteriorly, the posterior margin almost straight; lateral posterior angles slightly projecting, each with a long hair; with broad, distinct reddish brown submarginal bands. Metathorax with rounded lateral angles, each bearing two long hairs; posterior margin convexly abutting on abdomen, with two weak hairs on each side nearer to lateral angle than to the middle. Each lateral band broad, reddish brown, bending inward along anterior margin and uniting with the prothoracic band. Legs short and stout, paler than thorax, with pale brownish marginal markings and some scattered spines.

Abdomen very short and broad, width greater than length; entire surface almost clear, except the lateral and transverse bands; posterior angles slightly protruding, bearing one hair on segments II-IV; two hairs on segments V and VI and four hairs on segment VII; the last segment broad, entire with four weak hairs on posterior margin. Dorsal surface of the abdomen with a hair on each side of segments V and VI, just above the lateral bands; and four short hairs on the median portion of segments II-V and two on segments VI and VII. Lateral marginal bands yellowish, well chitinized, entering into the segment preceding and curving inward; transverse blotches short, indistinct, pale yellowish. Genitalia slender with weakly chitinized rods reaching to the second abdominal segment.

### 6. *Goniocotes microcephalus* n. sp.

(Plate X, Fig. 1.)

Six females and two young individuals were taken from *Arboricola erudigularis* shot on Mt. Arisan.

This form somewhat resembles *Goniocotes eurygaster* Piaget from the same host species, and is distinguished from that species through difference in size, shape of abdomen, and in chaetotaxy of head and thorax.

Measurements of the female specimens on hand :

	♀ mm.	♀ mm.	♀ mm.	♀ mm.	♀ mm.	♀ mm.
Length of body .....	1.30	1.25	1.25	1.30	1.29	1.27
Width of body .....	0.69	0.66	0.66	0.69	0.68	0.67
Length of head .....	0.38	0.36	0.36	0.38	0.38	0.38
Width of head .....	0.45	0.44	0.43	0.45	0.44	0.44
Length of thorax .....	0.24	0.23	0.23	0.24	0.23	0.23
Width of thorax .....	0.38	0.37	0.37	0.38	0.38	0.38
Antenna .....	0.15	0.15	0.15	0.15	0.15	0.15

*Description of female*:—Ground colour of head and thorax pale yellowish, with yellowish marginal markings and reddish brown blotches; abdomen paler, marginal bands and transverse blotches yellowish.

Head somewhat resembles that of *Goniocotes megalcephalus* Uchida\*; front very broad, convex, with six fine hairs on each side, and a short prickle just before each antenna; trabeculae wanting; antennae short, the first

\* Annot. Zool. Jap. vol. IX, p. 88.

segment broad, as long as the second or fifth segment, the third and fourth segments about equal and half the length of the other segments. Eyes large, but indistinct, each with a short spine on its posterior margin; another short spine behind eye on lateral margin; temples rounded and more expanded than those of *G. megalocephalus*, bearing two long, strong, hairs and two very fine prickles; posterior parts slightly expanded, terminating in two rounded projections, each bearing a short prickle; occiput sinuous, occipital margin nearly straight. Dorsal surface of head with four short hairs, two shorter ones on the clypeus and the other two near the bases of antennæ. Ground colour of the head pale yellowish; frontal band yellow, terminating in reddish brown antennal blotch, in front of each antenna; temporal bands narrow, clear yellowish, broadening posteriorly; occipital band distinct, with two dark brown occipital blotches.

Prothorax short, narrow, trapezoidal; anterior margin concave; posterior margin slightly convex; lateral margins diverging posteriorly; with pale, indistinct submarginal bands; lateral angles slightly protruded, bearing a longish hair. Metathorax triangular, with apex forming an obtuse angle on the abdomen; anterior margin straight; lateral angles rounded, much protruded, each bears two long, pustulated hairs; and a short hair on the dorsal surface of each angle; anterior lateral margins with broad yellowish marginal bands which end in round, reddish brown blotches. Legs short, paler than the body, with a few spines.

Abdomen broadly elliptical; widest at third and fourth segments; the first segments longest at side but short in middle, due to the backward projecting angle of the thorax; other segments almost equal in length; posterior angles of segments not protruded, bearing one to three long hairs, except on the first segment; segment II with a hair, segments III and IV with two, and segments V-VII with three hairs; the last segment broadly rounded, with a slight emargination, bearing six long and several short hairs. Dorsal surface of the abdomen with two rows of short hairs on the median portion of segments I-VII and a row of long hairs behind each spiracle on segments III-VI. Ground colour of the abdomen pale yellowish; lateral marginal bands very narrow, clear yellowish; bending inward along the posterior margins of the preceding segment and ending in darker, rounded



blotches; transverse blotches yellow, narrower inward, much darker towards the lateral margins, with a clear space for the spiracles and leaving a broad whitish median space.

Gen. GONIODES Nitzsch.

7. *Goniodes intermedius* Neumann.

Neumann, Archives de Parasitologie, xv, 1913, p. 627, figs. 15-18.

Four males, two females, three young males and three young females were collected from *Calophasis mikado* from Mt. Arisan, May 11.

The present specimens agree well with Neumann's description and figures of those from Pukras pheasant *Pucrasia darwini* of Eastern China, except that in our specimens, the head of male is somewhat shorter and broader. Measurements of the specimens on hand are as follows:

	♂	♂	♂	♂	♀	♀
	mm.	mm.	mm.	mm.	mm.	mm.
Length of body .....	2.70	2.60	2.50	2.60	3.10	3.20
Width of body .....	1.50	1.40	1.32	1.40	1.50	1.60
Length of head .....	0.70	0.70	0.70	0.71	0.83	0.84
Width of head .....	0.89	0.88	0.86	0.88	1.15	1.18
Length of thorax .....	0.62	0.62	0.61	0.62	0.63	0.63
Width of thorax .....	0.83	0.81	0.77	0.83	0.84	0.86
Antenna .....	0.56	—	—	0.55	0.28	0.28

Gen. LIPEURUS Nitzsch.

8. *Lipeurus formosanus* n. sp.

(Text-fig. 1.)

A single female specimen was obtained from *Arboricola crudigularis* shot on Mt. Arisan, May 14.

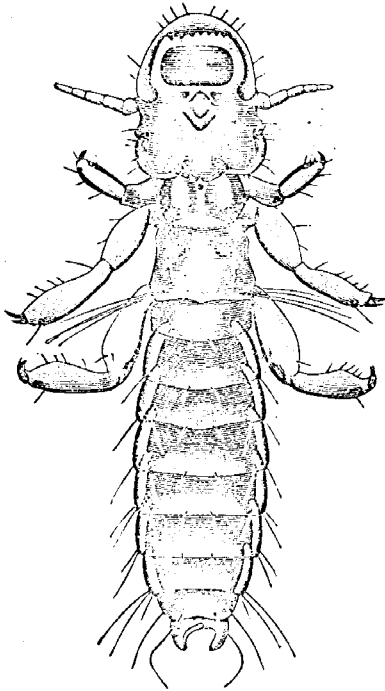
This species resembles Carriker's *L. postmarginatus*\*, but differs markedly from it in markings of head, size and shape of thorax and abdomen.

*Description of female*:—Body length 2 mm., width 0.42 mm.; ground colour of body pale yellowish, showing brownish blotches on head and thorax and yellowish marginal bands on abdomen.

\* University Studies, Nebraska, vol. VIII, 1903, p. 25, pl. III, fig. 4.

Head length 0.52 mm., width 0.40 mm.; somewhat conical; front broadly parabolic, with six fine hairs on each side, of which four being on the margin of clypeus and two in front of trabeculae; broad yellow marginal band completely encircling the front, broadest at clypeal part and showing distinct serrations on its inner margin; the lateral part of the band darker and the end bending inward in front of the base of each antenna and forming a chestnut brown antennal blotch; trabeculae very small, colourless. Antennae pale fulvous, the first segment broadest, subequal to the second or fifth segment, the third segment slightly shorter than the second and the fourth shorter than the third. Eyes distinct, colourless, each with a short hair; two spines behind eye on lateral margin of temples; temples rounded, slightly expanded, with one long, weak hair and a short spine near the angle, and

with a narrow brownish lateral band and around brownish blotch between eye and antenna; occipital margin with two short spines near each temporal angle; occiput W-shaped; occipital band clear brownish with two chestnut-brown occipital blotches.



Text-fig. 1. *Lipewus formosanus*  
n. sp., female. ca.  $\times 42$ .

Prothorax small, quadrilateral; length 0.14 mm., width 0.26 mm.; with lateral margins convex and slightly converging posteriorly; the anterior margin somewhat concave; the posterior margin straight; a short hair on each posterior angle. Lateral bands clear brownish with an indistinct chestnut-brown blotch near each posterior angle. Metathorax quadrilateral, length 0.23 mm., width 0.31 mm.; with anterior and posterior margins straight, lateral margins slightly concave in middle and somewhat diverging posteriorly; anterior angles much

protruded antero-laterally, posterior angles distinct, each with a short spine and a short hair; four very long, stout hairs on each side of the posterior margins near posterior angles. Legs paler than body, with dark brown, dorsal

markings of femora and tibiae.

Abdomen narrow, elongate, subparallel sided; widest at fourth and fifth segments; the first segment narrower and shorter than those that follow, with a large but indistinct brownish protuberance on each side; posterior angles of segments II-IV bearing one short hair; those of segments V and VI with one short and one long hair, those of segment VII with three very long hairs; the last segment conical, with the tip deeply emarginated, forming a kind of fork; and a very long hair on each lateral margin. Dorsal surface of the abdomen with two or four rows of hairs; two rows near the middle of posterior margins of segments I-IV, and additional two rows just inside of the broad yellowish lateral bands of segments III-VII.

### 9. *Lipeurus rubrifasciatus* Piaget.

(Plate X, figs. 6, 6a, 6b.)

Piaget, Les Pediculines, Supplément, 1885, p. 71, pl. VII, fig. 8.

Two males and a female were taken from *Arboricola crudigularis* shot on Mt. Arisan, May 4.

*Description of female*.:—Body larger, temporal margins more convex than those of male; the second segment of antenna longest; the first and fifth segments slightly shorter and subequal, the third segment much shorter and the fourth segment shortest; segments of abdomen nearly equal in length; the eighth and ninth abdominal segments more distinctly divided than in the male; lateral margins of the eighth segment convex, bearing a series of fine hairs; emargination of the last segment narrower.

### 10. *Lipeurus variabilis* Nitzsch.

Denny, Manogr. Anopl. Brit., 1842, p. 164, pl. XV, fig. 6; Giebel, Insecta Epizoa, 1874, p. 219, Taf. XVI, fig. 3; Piaget, Les Pediculines, 1880, p. 364, pl. XXIX, fig. 4.

A female specimen was taken from *Calophasis mikado* from Mt. Arisan, May 11, and another male specimen obtained from *Accipiter virgatus* at Shûshû, Distr. Nantô, May 4. The latter was, of course, a case of straggler from a pheasant killed by the hawk.

### 11. *Lipeurus intermedius* var. *major* n. var.

Eight males, three females and numerous young were collected on *Calophasis mikado* from Mt. Arisan, May 11.

The present variety agrees closely with Piaget's description of the type species, but is uniformly larger.

Measurements of *Lipeurus intermedius major*.

	♀	♀	♀	♂	♂	♂	♂	♂	♂	♂
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Length of body.....	3.42	3.40	3.32	2.90	2.90	3.00	2.90	2.80	3.00	2.90
Width of body.....	0.87	0.87	0.87	0.66	0.66	0.60	0.63	0.64	0.63	0.66
Length of head.....	0.64	0.67	0.68	0.66	0.64	0.63	0.64	0.63	0.66	0.64
Width of head.....	0.45	0.45	0.45	0.42	0.41	0.42	0.42	0.40	0.41	0.40
Length of thorax....	0.64	0.63	0.63	0.59	0.60	0.60	0.60	0.60	0.62	0.60
Width of thorax ....	0.52	0.54	0.55	0.49	0.49	0.49	0.50	0.49	0.50	0.49
Antenna .....	0.35	0.35	—	—	—	—	—	0.50	—	—

### 12. *Lepeurus baculus* Nitzsch.

Denny, Monogr. Anopl. Brit., 1842, p. 172, pl. xiv, fig. 3; Giebel, Insecta Epizoa, 1874, p. 216; Taschenberg, Die Mallophagen, 1882, p. 123; Kellogg, New Mallophaga II, 1896, p. 506, pl. LXVIII, figs. 4 and 6.

Four males and four females were collected from *Turtur chinensis* (Airyôshô, Distr. Nantô, May 4), from *Sphenocercus sororius* (Suisha, Distr. Nantô, May 4) and from *Graucalus rex-pineti* (Suisha, Distr. Nantô, May 3.).

Gen. COLPOCEPHALUM Nitzsch.

### 13. *Colpocephalum pachygaster* Giebel.

Giebel, Insecta Epizoa, 1874, p. 264; *Colpocephalum halicæti*, Denny, Monogr. Anopl. Brit., 1842, p. 216, pl. xix, fig. 1.

Two males and six females of this species were obtained from *Pandion halictus* shot at Tamsui, Distr. Taihoku, May 22.

### 14. *Colpocephalum osborni* Kellogg.

Kellogg, New Mallophaga II, 1896, p. 521, pl. LXXI, figs. 2 and 3.

A male and a female were collected on *Milvus ater govinda* killed at Enteishô, Distr. Tainan, May, 9.

**15. *Colpocephalum umbrinum* var. *trilobatum* Giebel.**

*Colpocephalum trilobatum* Giebel, Insecta Epizoa, 1874, p. 275; Piaget, Les Pediculines, 1880, p. 557.

Two female specimens were collected on *Tringa subminuta* from Enteishô, Distr. Tainan, May 9.

Gen. MENOPON Nitzsch.

**16. *Menopon productum* Piaget.**

Piaget, Les Pediculines, 1880, p. 461, pl. XXXVII, fig. 8; Kellogg and Paine, Rec. Ind. Mus. X, 1914, p. 231.

A female specimen obtained from *Calophasis mikado*, shot on Mt. Arisan, May 11.

**17. *Menopon mikadokiji*\* n. sp.**

(Plate X, fig. 7.)

A single male specimen was obtained from *Calophasis mikado* from Mt. Arisan, May 11.

*Description of male*:—Body length 1.27 mm., width 0.59 mm.; short, broad, pale brownish with distinct markings of blackish brown on head and indistinct transverse bands on abdomen.

Head length 0.29 mm., width 0.49 mm., widest through temples; front broadly parabolic, with indication of median angulation; several marginal hairs of different length and a few, very fine prickles on the frontal margin; a long hair on each lateral margin and two long hairs on the angle in front of each shallow ocular emargination; ocular fringe distinct, composed of stiff, curving hairs; palpi projecting by half the length of the last segment; temples round, expanded, bearing four long, pustulated hairs, several shorter hairs and a short spine; occipital margin concave, with six short hairs and

\* *Mikado* in Japanese means "Emperor," "*kiji*" "pheasant"

two fine spines. Colour of head pale brownish, with black, distinct ocular fleck and blackish brown blotches; occipital margin narrowly edged with brown, paler in the middle; mandibles and adjacent regions dark brown.

Prothorax length 0.15 mm. width 0.30 mm.; lateral angles blunt, each bearing a short spine; posterior lateral margins short, nearly straight, with two spines; the posterior margin convex, bearing three strong hairs on each side; transverse chitin bar pale but distinct, with the longitudinal bars at its ends. Metathorax length 0.2 mm., width 0.43 mm., with a faint sutural line setting off the mesothorax, which has nearly straight posterior margin; sides of metathorax straight, bare, diverging posteriorly; posterior angles bearing three spines; posterior margin truncate with a row of spines and hairs, interrupted at middle. Legs strong, slightly paler than body, with yellowish brown dorsal markings.

Abdomen oval, widest at the fourth segment, and each segment almost equal in length; posterior angles of segments projecting a little laterally, bearing one or two long hairs and two or three spines on segments I-VIII; the last segment broad, flatly rounded posteriorly, with two long hairs on each side and several short, weak hairs between them. Dorsal surface of each abdominal segment with a row of hairs of different length on each side of posterior margins. Ground colour of abdomen very pale yellowish brown, with a brownish transverse band, entirely across each segment. Genitalia distinct, of the usual *Menopon* type, longitudinal bar strong, reaching to the fifth abdominal segment and bearing two straight, sharp pointed rods.

### 18. *Menopon pallescens* Nitzsch.

Giebel, *Insecta Epizoa*, 1874, p. 293; Piaget, *Les Pediculines*, 1880, p. 470, pl. XXXVIII, fig. 6; *Menopon perdicis*, Denny, *Monogr. Anopl. Brit.*, 1842, p. 225, pl. XXI, fig. 9.

One female from *Arboricola crudigularis* taken on Mt. Arisan, May 14.

### 19. *Menopon longipectum* n. sp.

(Plate X, fig. 2.)

One female specimen of this new species was obtained from *Arboricola crudigularis* shot on Mt. Arisan, May 14.

*Description of female*.—Body length 1.75 mm., width 0.66 mm. Ground colour of body very pale brownish, with distinct light pitchy markings on head; abdomen with narrow, brownish, marginal bands.

Head length 0.29 mm., width 0.45 mm., somewhat triangular in shape; front evenly rounded, with two short hairs at middle and on each side, in front of the ocular emargination, five marginal hairs and a few very fine prickles; a long and a short hair on the angle in front of each ocular emargination which is distinct; ocular fringe prominent, composed of numerous stiff hairs; palpi projecting by nearly the whole length of the last segment; temples expanded, margins somewhat angulated in front and behind, with four long pustulated hairs and a few short hairs and spines; occipital margin concave, straight at middle, with two short and two longer hairs. Colour of head very pale brownish; ocular fleck black, distinct; curved line bounding the antennal region pitchy inward, fading into dark brown outwardly; occipital margin edged with blackish brown, paler in the middle; mandibles pitchy; a brownish spot on the margin, just in front of each palpi.

Prothorax length 0.17 mm., width 0.29 mm., with slightly produced, blunt, lateral angles, each furnished with a short hair and two spines; posterior lateral margins weakly convex, bare; posterior margin flatly convex, with four hairs; transverse and longitudinal chitin bars pale, but distinct. Metathorax length 0.25 mm., width 0.45 mm.; with lateral emarginations and sutural line between meso- and metathoracic segments; lateral margins bare, diverging posteriorly; posterior lateral angles with two spines and a short hair; posterior margin weakly convex, with a long and three short marginal hairs on each side. Legs somewhat long and slender, concolourous with thorax, bearing a few short scattered hairs.

Abdomen broad, ovate; widening posteriorly to the fifth segment; then tapering more rapidly to the end; length of segments almost equal; posterior angles projecting, furnished on segments I-VII with two or three spines and a long hair; the latter a little apart from the angles; on segment VIII with two long and two short hairs; the last segment broad, rounded posteriorly with two long and a short hair on each side and a fringe of fine hairs on the posterior margin; dorsal surface of abdomen with a regular row of short hairs of different length on the posterior margin of each segment;

those on segments I-III complete and those on segments IV-VIII interrupted at middle. Colour of abdomen very pale brownish, with broad, smoky brownish lateral bands, which become indistinct on anterior segments and end at the eighth segment; brownish transverse bands present only on the ventral surface; those of segments I and II indistinct, those of segments VII to IX form one continuous blotch covering the whole space between the lateral bands, but the posterior half of the ninth segment is clear, with a narrow submarginal brownish band.

20. *Menopon urocissae* n. sp.

(Plate X, fig. 5.)

Five females and a young were collected on *Urocissa cerulea* taken at Fumbôshô, Distr. Nantô, April 29.

Measurements.

	♀	♀	♀	♀	♀
	mm.	mm.	mm.	mm.	mm.
Length of body.....	2.00	2.15	2.00	2.00	1.90
Width of body.....	0.84	0.84	0.86	0.88	0.88
Length of head.....	0.32	0.34	0.32	0.34	0.34
Width of head.....	0.64	0.65	0.65	0.67	0.65
Length of thorax.....	0.51	0.52	0.51	0.51	0.50
Width of thorax.....	0.62	0.62	0.62	0.64	0.63

*Description of female*:—Ground colour of body clear smoky brown, with brown and pitchy markings on the head; reddish brown lateral bands and brownish transverse bands on the abdomen.

Head somewhat lunate; front broad, slightly angulated, with eight marginal hairs and several fine prickles between projecting palpi; four long marginal hairs on the lateral margin, in front of each ocular emargination; a long and two short hairs on the dorsal surface on each side of the forehead; palp, projecting by half the length of the terminal segment; ocular fringe distinct, composed of numerous short hairs; temples narrow and expanded, each bearing six long pustulated hairs and several short hairs; occipital margin concave with two short hairs at middle and two very fine spines on each side. Colour of head clear smoky brown, with black, prominent ocular fleck; curved line



bounding the antennal region pitchy inward, fading into brown outwardly; occipital margin edged with pitchy brown; two small triangular, brownish spots on the lateral margin of the front, outside of mandibles, which latter are pitchy brown, visible through the head.

Prothorax almost hexagonal in shape, with lateral angles much extended, bearing two spines and a short hair; posterior lateral margins slightly convex and bare; posterior margin convex, with three hairs on each side; transverse chitin bar clear, distinct; longitudinal bars brownish. Metathorax long, with slight lateral emarginations; indistinct sutural line separating mesothorax; lateral margins bare, strongly diverging posteriorly; posterior angles bearing three spines; posterior margin convex, furnished on each lateral part, a third of the whole in length, with a submarginal series of six or seven unequal hairs. Legs almost concolourous with thorax.

Abdomen broadly elliptical; widening posteriorly to the segment III, then tapering gradually to the end; lateral margins of segments almost equal in length, except three segments, one, two and nine, which are longer; posterior angles projecting, bearing three spines and a long hair on segments I-VI; three spines and two long hairs on segment VII and a spine and three long hairs on segment VIII; the last segment strongly rounded, with two long and two short hairs on each side and a fringe of fine hairs on the posterior margin. Posterior border of the first segment convex; of the second segment deeply concave; of third and fourth segments weakly concave and of the remaining segments almost truncate; posterior margin of the dorsal surface of each abdominal segment with a row of hairs of different length, interrupted at middle. Ground colour of abdomen paler than head and thorax; broad smoky brown lateral bands with the distinct sutures, ending at the eighth segment; no transverse bands on dorsal surface, but those of ventral surface showing through; ventral transverse bands of segments I-III indistinct; those of segments VIII and IX continuous, forming a blotch.

Gen. *LÆMOBOTHRIUM* Nitzsch.

21. *Læmobothrium loomisi* Kellogg & Chapman.

Kellogg and Chapman, Journ. New York Ent. Soc. x, 1902, p. 23, pl. III, fig. 3.

A single female specimen of this species was obtained on *Nannocnus cinnamomca* from Enteishô, Distr. Tainan, May 9.

There can be no doubt about the present specimen being this species, for it agrees quite closely with the original description and figure, except for some points of slight difference about prothorax, although the specimens which they described were taken on quite a different host, *i. e.*, *Anser albifrons gambeli* (Sanfrancisco).

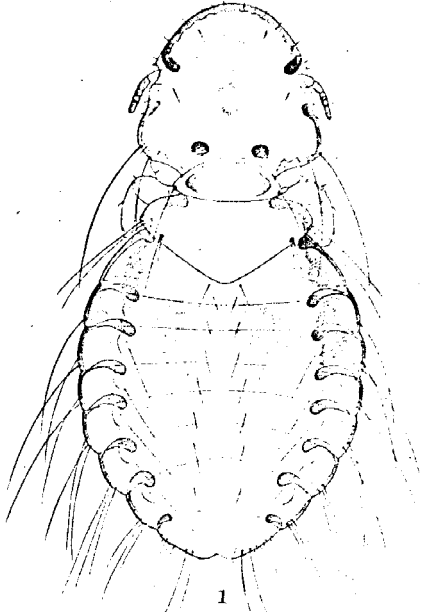
In the present specimen, the posterior margin between both posterior angles of prothorax is somewhat straight instead of being angular and anterior angles of prothorax bear four or five hairs instead of one; but these differences, of course, are not sufficient to separate it into subspecies.

Aug. 30, 1916.

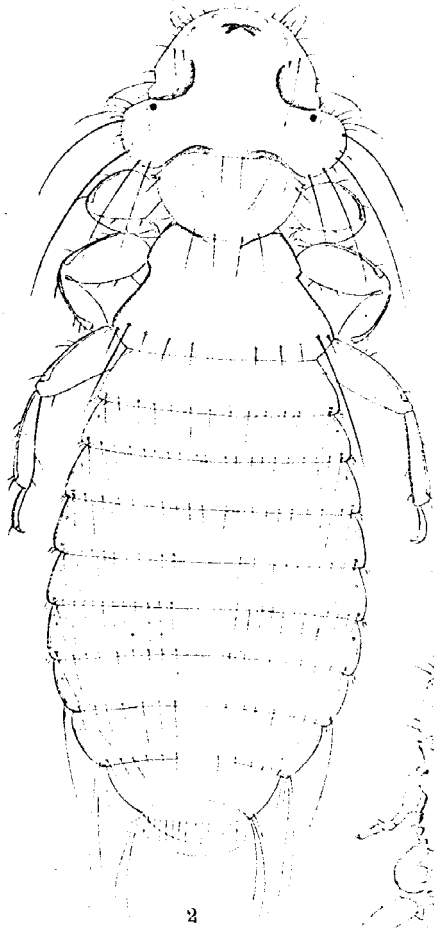
---

#### EXPLANATION OF PLATE X.

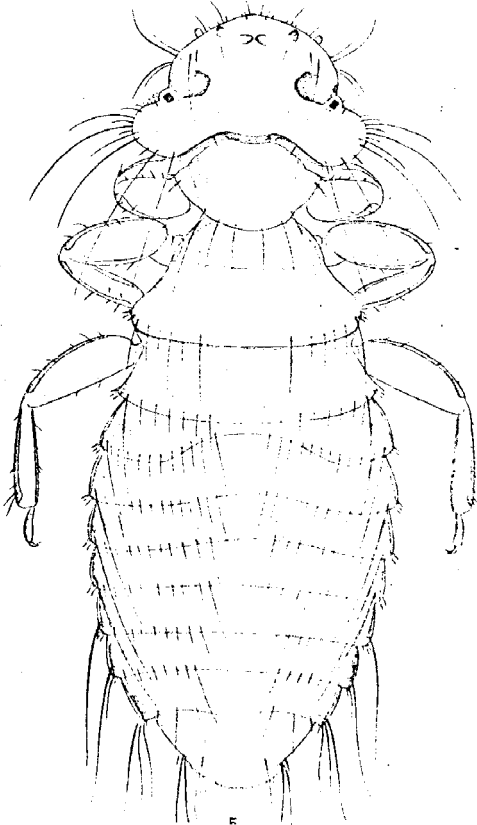
- Fig. 1. *Goniocotes microcephalus* n. sp., ♀. × 56.  
 Fig. 2. *Menopon longipectum* n. sp., ♀. × 65.  
 Fig. 3. *Nirmus ovatus* n. sp., ♂. × 70.  
 Fig. 4. *Goniocotes icurodai* n. sp., ♂. × 70.  
 Fig. 5. *Menopon urocissæ* n. sp., ♀. × 50.  
 Fig. 6. *Lipeurus rubrifasciatus* Piaget, ♂. × 50.  
 Fig. 6a. *L. rubrifasciatus* Piaget; last abdominal segments of ♀. × 50.  
 Fig. 6b. *L. rubrifasciatus* Piaget; antenna and temple of ♀. × 120.  
 Fig. 7. *Menopon mikadokiji* n. sp., ♂. × 65.
-



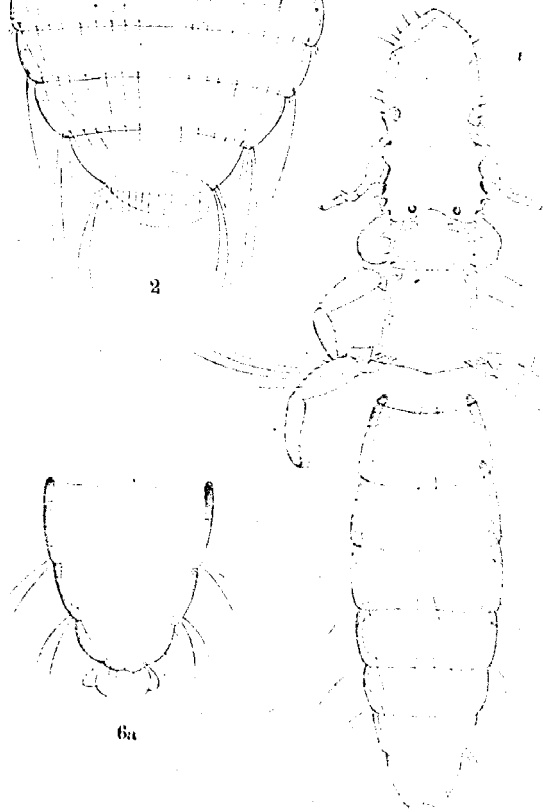
1



2



3



4a

