

A NEW GENUS OF ISCHNOCERA (MALLOPHAGA).

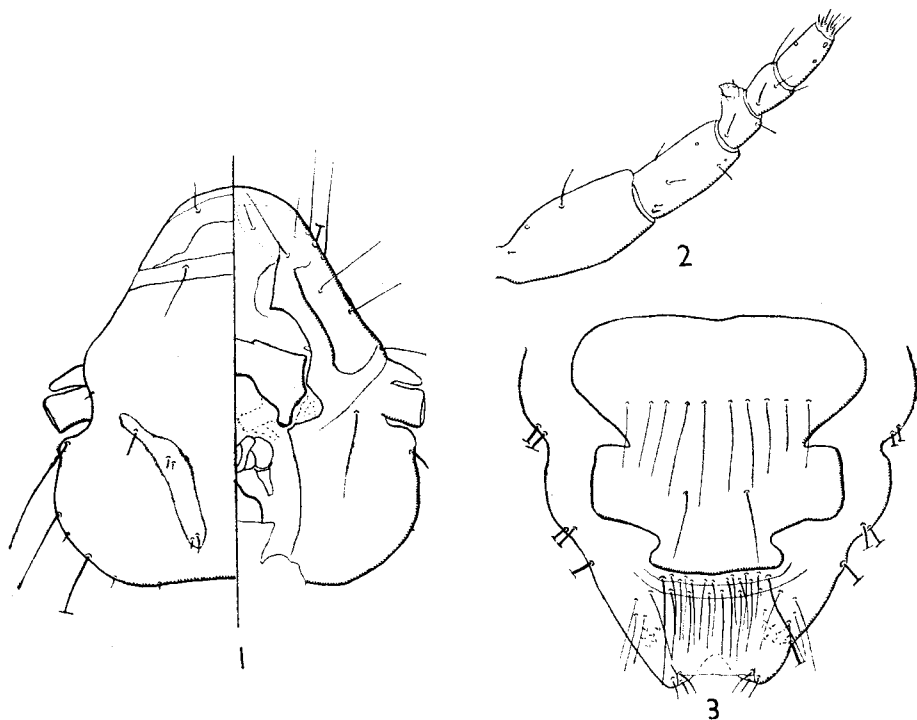
By THERESA CLAY, F.R.E.S.

(British Museum (Natural History).)

WHILE making a key to the genera and generic groups of the Ischnocera it was found that *Lipeurus docophorus* Giebel, 1874, could not be included in any of the described genera and it is, therefore, here made the type species of the following new genus.

Bucorvellus gen. n.

Ischnocera with marginal carina interrupted laterally by transverse dorsal pre-antennal suture; ventral carinae interrupted medianly, each carina with flattened internal parallel margin to which is attached a lobe of the pulvinus. Prothorax with one dorsal marginal seta each side; two central mesosternal and two, more laterally placed, metasternal setae. Abdominal terga II-VIII with posterior row of stout flattened setae (fig. 7), and, in addition, segment II has two extra rows, and segments III-VIII one extra row in the middle of the segment; there may also be one or two extra setae lying between these two rows. At least one tergum (usually more) has an irregular sclerite lying between the divided tergal plates; tergites II-VI or VII in the male and II-VIII in the female divided in the mid-line. In the male sternal plates II-IV are lateral, V-VI central and the remainder fused to form

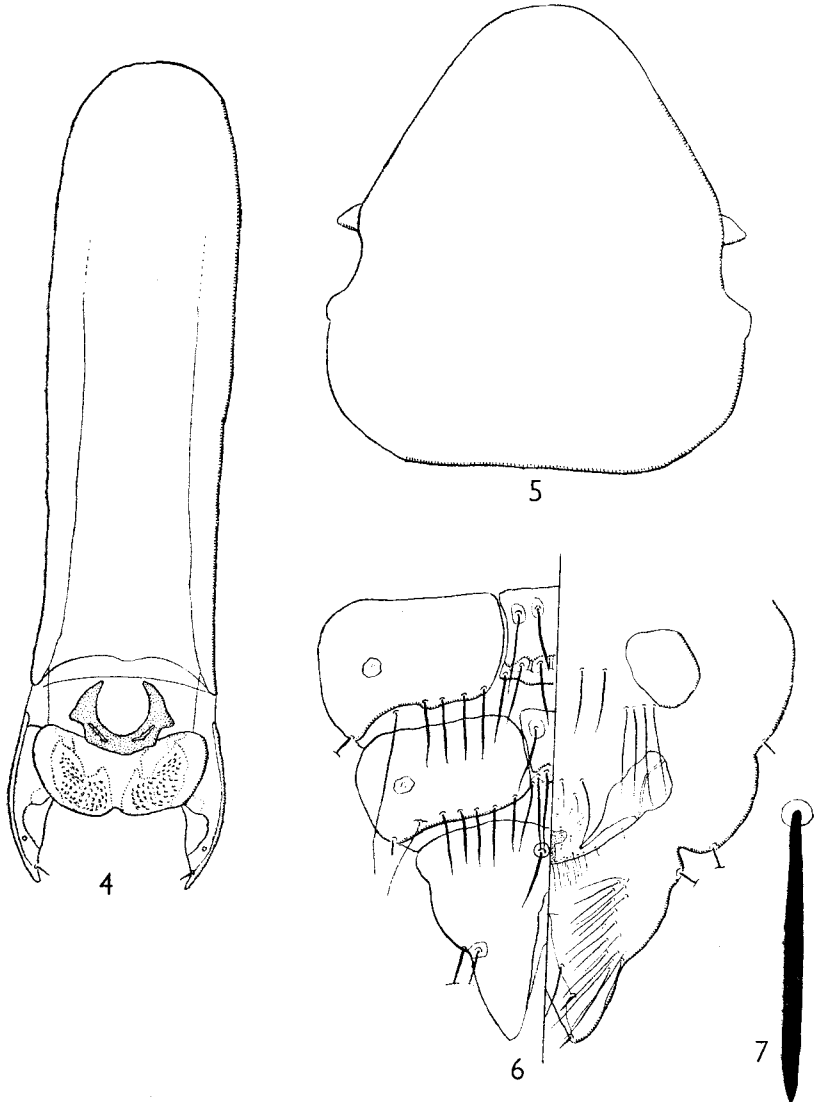


FIGS. 1-3.—*Bucorvellus docophorus* (Giebel), male. (1) Head. (2) Antenna. (3) Terminal segments of abdomen, ventral.

the genital plate; in the female all the sternal plates are lateral and there is no genital plate. Posterior margin of abdomen bilobed in both sexes; male genital opening ventro-terminal; female with ventral vertical line of long stout setae each side of segment IX-X (fig. 6).

Type species: *Lipeurus docophorus* Giebel, 1874.

The gender of the genus is masculine.



FIGS. 4-7.—*Bucorvellus docophorus* (Giebel). (4) Male genitalia. (5) Outline of female head. (6) Terminal segments of female abdomen. (7) Flattened abdominal seta.

Distribution.—At the present time this genus is known from the two species of *Bucorvus* (Bucerotidae).

Affinities.—Throughout the *Ischnocera* the nearest affinities of a genus are usually to be found with the other genera parasitic on the same host order. Examples of this widespread rule are the related genera *Cummingsiella*, *Quadrapiceps*, *Luniceps* and *Saemundssonina* on the Charadriiformes; the *Ischnocera* on the Procellariiformes, which, with the exception of *Saemundssonina* and *Docophoroides*, are probably all related to each other; and the *Gonoides*-complex on the Galliformes. These cases are probably the result of divergence from a single ancestral stock which became parasitic on the ancestral host stock. The affinities of *Bucorvellus* conform to this rule; this genus appearing to be most nearly related to *Paronocphorus*, also parasitic on the Bucerotidae. The relationship is shown especially by the characters of the female genital region. *Bucorvellus* can at once be distinguished from this latter genus by the characters of the head and the presence of two or more rows of stout blade-like setae on the terga. The presence of more than one row of tergal setae is rare in the *Ischnocera*, but is found in *Struthiolipeurus*, *Meinertzhageniella* and *Falcolipeurus*.

Bucorvellus docophorus (Giebel).

Lipeurus docophorus Giebel, 1874. *Insecta epizoa*: 214. Type host: *Buceros abyssinicus* = *Bucorvus abyssinicus* (Boddaert).

Lipeurus abyssinicus Giebel, 1874. *Insecta epizoa*: 214. Nomen novum for *L. docophorus* Giebel.

As this species has apparently never been figured¹ nor re-described, the following figures and description may be of use. In the Nitzsch manuscript there is a drawing of one of the specimens on which Giebel based his description, which shows that *L. docophorus* is the following species.

TABLE I.—*Abdominal Chaetotaxy*.²

	Male.			Female.		
	Tergal.	Lateral.	Sternal.	Tergal.	Lateral.	Sternal.
II. Row 1	6-10	0	18-22	6-10	0	18-24
" 2	4	.	.	4	.	.
" 3	18-20	.	.	17-26	.	.
III. Row 1	4	1	20-30	4	1	23-30
" 2	18-25	.	.	19-26	.	.
IV. Row 1	4-5	1	18-24	4-5	1	22-25
" 2	19-25	.	.	19-29	.	.
V. Row 1	4-5	1	15-20	4-5	1	18-22
" 2	16-24	.	.	17-27	.	.
VI. Row 1	4-5	2	12-16	4	2	14-17
" 2	15-19	.	.	16-26	.	.
VII. Row 1	4	2	9-12	4	2	7-12
" 2	13-16	.	.	14-23	.	.
VIII. Row 1	2-4	2	2	2-4	2	.
" 2	9-16	.	.	8-17	.	.
IX-X. Row 1	2	1-2	fig. 3	2-3	1	13-17
" 2	each side	1	.	1	1	each side
	each side	2-3	.			.

¹ Since going to press Taschenberg's figures (1882, *Nova Acta Leop.-Carol.*, pl. 4, fig. 5) of the original Nitzsch specimens have been remembered.

² Post spiracular setae omitted. Sternite II has two irregular rows here counted as one. Sternal setae of IX-XI in male as in fig. 3.

Male.—Head as in fig. 1. Thorax with general shape as in Pl. I, fig. 1; prothorax with one dorsal seta each side of posterior margin reaching to level of base of third leg; pterothorax with group of five, mainly long stout setae each side of posterior margin, the longest reaching to segment V; two central mesosternal and two, more laterally placed, metasternal setae. Tergal and sternal plates as described for the genus; there is considerable variation in the presence or absence and extent of the sclerites lying between the tergal plates. Tergal plate VII may be entire or divided medianly. Post-spiracular setae present on segments II–VIII and with adjacent sensilli (*see* Clay, 1954: 716) on segments II–V; the post-spiracular setae on segments II–V and VIII long and fine, those on VI and VII long and stout. Most of the rest of the abdominal setae are stout and flattened (fig. 7) with some variation in number (*see* Table I). Genital region and genitalia as shown in figs. 3 and 4.

Female.—Shape of head as in fig. 5, chaetotaxy as in male; antennae simple. Shape of thorax as shown in Pl. I fig. 2, chaetotaxy as in male. Abdomen with general characters as in Pl. I, fig. 2; tergal and sternal plates as described for genus. Post-spiracular setae as in male; *see* Table I for rest of abdominal chaetotaxy. Genital region as in fig. 6.

TABLE II.—*Measurements in mm.*

	<i>Males.</i>			
	Length.		Breadth.	
	Range.	Mean.	Range.	Mean.
Head (5) . . .	0.77–0.87	0.83	(a) 0.61–0.67	0.64
(7) . . .	[0.82–0.83]	[0.82]	(b) 0.73–0.77	0.75
			[0.70–0.73]	[0.72]
Prothorax (5)			0.48–0.55	
Pterothorax (3)			0.67–0.73	
Abdomen (4) . . .	1.62–1.74		0.80–0.85	
Total (3) . . .	2.92–3.14	3.01		
(6) . . .	[2.70–2.86]	[2.76]		
Genitalia (1) . . .	0.60			
Head index . . .	0.86–0.95	0.90		
	[0.84–0.89]	[0.87]		
<i>Females.</i>				
	Length.		Breadth.	
	Range.	Mean.	Range.	Mean.
	Head (4) . . .	0.93–0.95	0.94	(a) 0.75–0.77
(8) . . .	[0.85–0.90]	[0.86]	(b) 0.85–0.87	0.855
			[0.75–0.78]	[0.77]
Prothorax (5)			0.53–0.57	
Pterothorax (5)			0.77–0.80	
Abdomen (5) . . .	1.93–2.22		0.98–1.14	
Total (4) . . .	3.52–3.60	3.56		
(5) . . .	[3.20–3.42]	[3.34]		
Head Index . . .	0.89–0.92	0.90		
	[0.86–0.90]	[0.88]		

Notes.—Length of head taken at midline, breadth *a*, greatest breadth of preantennal region; *b*, greatest breadth of post-antennal region; head index = breadth: length; numbers in round brackets denote numbers of specimens measured; numbers in square brackets are measurements of specimens from *Bucorvus leadbeateri*.

Material examined.—5 males, 5 females from skins and fresh specimens of *Bucorvus abyssinicus* (Boddaert) from Abyssinia and West Nile District, Uganda. In addition, 7 males, 9 females from skins and fresh specimens of *Bucorvus leadbeateri* (Vigors) (formerly *B. cafer* Schlegel) from Tanganyika Territory and the Belgian Congo have been examined. The measurements of these specimens are given in the table of measurements in square brackets under those of specimens from *B. abyssinicus*. In the male it will be seen that there is an overlap in the measurements given, except in those of the total length, where the difference is small and is an unreliable measurement as the length of the abdomen may be dependant on the pressure of the cover glass. There is a small difference in the mean of these measurements. The male also tends to have fewer sternal setae, especially in the genital region, but there are specimens which cannot be distinguished by this character from true *docophorus*. A comparison of the shapes of the heads in both sexes by the projection method (see Clay and Hopkins, 1954 : 230) shows that there is no constant difference in this character. In the female there is no overlap in the measurements under consideration, except in the head index, but the differences are small. A single female from *B. abyssinicus* from Uganda (not included in the measurements given) is smaller, except in the measurements of the abdomen, and otherwise falls within the range of specimens from *B. leadbeateri*. It also has fewer lateral setae each side of the genital region. It may be general.

It would be expected from Harrison's rule (see Clay 1951) that specimens from *B. leadbeateri*, the smaller host, would be smaller than those from *B. abyssinicus*, which is distinctly larger. In some cases (see Timmermann, 1954) related hosts are parasitised by the same species of Mallophaga, the populations of which on the different hosts differ only in size and not in proportion to the size of their hosts. It is possible, therefore, to find two populations, not necessarily the most nearly related, appearing as identical, whereas two populations which are perhaps more nearly related, may differ in size because of differences in size of the hosts. In such species the populations containing the largest specimens may be quite distinct with no overlap, from those with the smallest, but each may overlap with the intermediate populations. Thus, there is a "host cline" in measurements analogous to the geographical cline of free-living populations, and the decision as to which populations should be named is difficult, as is the case with all species showing clines. When the full distribution of the species is known it may be useful to name the two ends of the cline, the other populations being referred to by the name of the nearest subspecies together with its host distribution as suggested by Timmermann, 1954 : 44. It is considered that names should be given only to those populations the individuals of which are recognisable, not those separable on statistical grounds only, although such facts are of interest and should be discussed in studies of the species. In the case under discussion, therefore, it is proposed to include in *Bucorvellus docophorus* the population from *B. leadbeateri*, although the individuals show a tendency towards smaller size.

As the type material of *Lipeurus docophorus* was destroyed with the bulk of the Halle Nitzsch and Giebel collection during the 1939-45 war, and in order to prevent a subsequent and different interpretation of the name, application will be made to the International Commission on Zoological Nomenclature for the recognition of a neotype of *Lipeurus docophorus* Giebel, 1874, as follows :

Male, as described and figured above, in the British Museum (Natural History), slide no. 620, from *Bucorvus abyssinicus* (Boddaert) from Abyssinia. Neoparatypes: 4♂, 4♀ from the same host species from Abyssinia and West Nile District, Uganda.

ACKNOWLEDGMENTS.

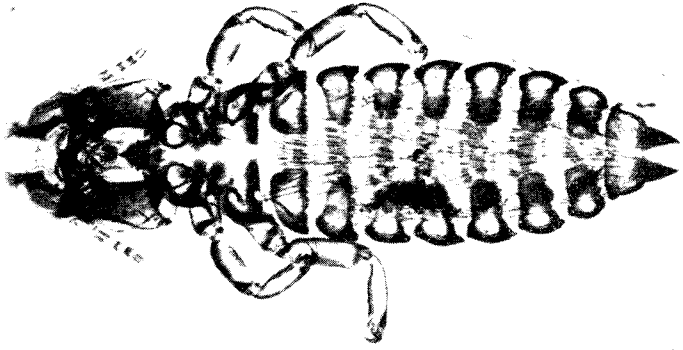
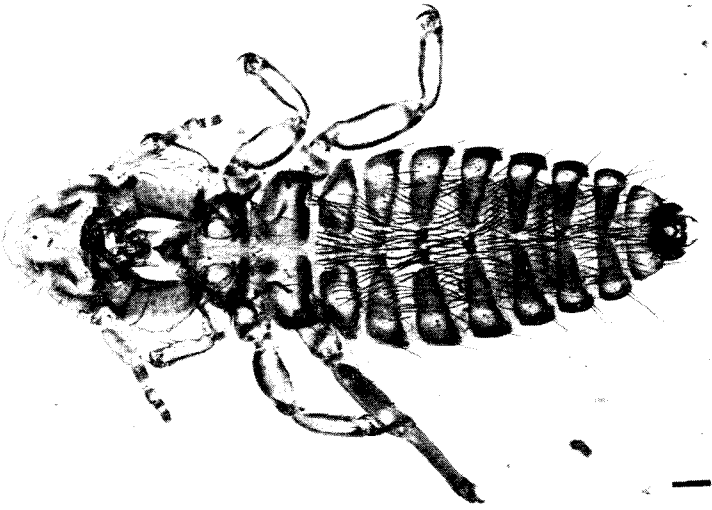
I am indebted to the authorities of the Musée du Congo Belge and of the Institut des Parcs Nationaux du Congo Belge for the specimens from the Belgian Congo and to Mr. G. H. E. Hopkins for the specimens from Uganda.

REFERENCES.

- CLAY, T., 1951, The Mallophaga as an aid to the classification of birds. *Proc. int. Congr. Ornith.* X (1950) : 207-215.
—, 1954, The post-spiracular seta and sensillus in the Mallophaga. *Ann. Mag. nat. Hist.* (12) 7 : 716-718.
CLAY, T., & HOPKINS, G. H. E., 1954, The early literature on Mallophaga. Pt. III. *Bull. Brit. Mus. (Nat. Hist.), (Ent.)* 3 : 221-226.
TIMMERMANN, G., 1954, A revision of the genus *Carduiceps*. *Ann. Mag. nat. Hist.* (12) 7 : 40-48.

PLATE I.

Bucorvellus docophorus (Giebel), specimens from *Bucorvus leadbeateri*.
FIG. 1.—Male. × 30.
FIG. 2.—Female. × 25.



T. Clay

Buccorellus dacophorus (Giebel)