

ON SOME MALLOPHAGA FROM TRINIDAD, W.I. AND BRITISH
GUIANA IN THE COLLECTIONS OF THE BRITISH MUSEUM
(NATURAL HISTORY).

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INTRODUCTION.

THE present paper is the result of the study of a portion of the collection of Mallophaga made in Trinidad and British Guiana by Dr. Theresa Clay of the Department of Entomology, British Museum (Natural History) and by the Regional Virus Laboratory in Trinidad (TRVL).

Dr. Clay requested my assistance in the study of these parasites, as I have studied the Neotropical forms, and had the necessary comparative material.

I take great pleasure in lending my assistance to Dr. Clay, both in appreciation of her many valuable contributions to the study of this fascinating group of insects, and especially of her great labour, in collaboration with Dr. Hopkins, in the preparation and publication of the 1952 Checklist of Mallophaga, which has been of so great assistance to me.

In the present paper all drawings have been prepared by the author; all measurements are in millimetres. All drawings of the whole insect were made to the same scale, using a No. 10 eyepiece and 16 mm. objective, with 2 mm. on paper to one space of the micrometer. Drawings of genitalia are also all in the same scale, with No. 10 eyepiece and 4 mm. objective.

All types have been returned to the British Museum, but paratypes have been retained by the author when available.

Genus *TROCHILOECETES* Paine & Mann, 1913.

Trochiloectes rupununi sp. n. (Figs. 1-2).

Males and female from *Phaethornis s. superciliosus* (Linné), Kanaku Mts., Rupununi, British Guiana, 23.ii.1961, Clay No. 160.

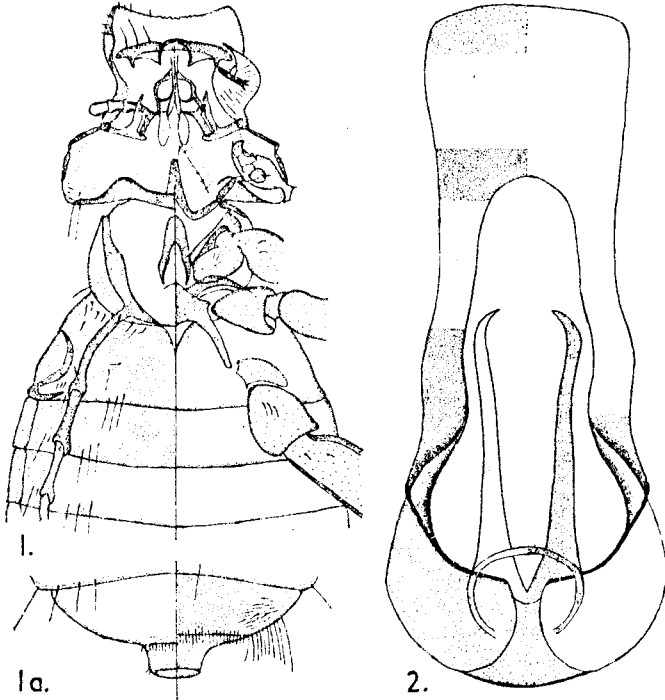
Diagnosis.—The largest of the three species described in this paper. The only species presently known from the genus *Phaethornis* is *T. grandior* Carriker (host: *P. guy coruscus*) but the present form is very different from *grandior*. The female may be recognized at once by the peculiar, tube-like projection from tip of abdomen (text-fig. 1a). There is but one other known female of the genus which possesses this character (*T. abdominalis* Carriker from *Florisuga mellivora*), but in *abdominalis* the abdomen in the female tapers rapidly from segment V to the rather narrow, truncate tip. The thoracic carinae and metasternal plate are also quite different, as well as the piercing mandibles. The ♂ of *abdominalis* is unknown, so that a comparison of the genitalia is impossible.

The male is similar to the female, except in size, and the figures presented of that sex give all necessary details. The genitalia resemble somewhat those of *insularis* n. sp., but there are striking differences (see figs.). Measurements follow the next species.

Holotype male and *allotype* female, slide no. 663 (Carriker no. 604)

Paratype : 1 ♂.

Figs. 1-2.



Trochilocetes rupinuni sp. n.

1. Male. 1a. Terminal segments of female abdomen. 2. Male genitalia.

Trochilocetes trinidadensis sp. n. (Fig. 3).

Female from *Anthracothorax n. nigricollis* (Vieillot), Vega de Oropouche, Trinidad, W.I., 22.xii.1959, TRVL No. 3805.

Diagnosis.—In size (length, 2.44) this species falls into Section C of the Key to the females (Carriker, 1960 : 314), under a, but does not agree with either of the two species in that section.

The frons is practically transverse as in *colombianus*, but the margins of the temples are uniformly circular (not irregular); the sclerites of the sucking apparatus are quite different, and it lacks entirely the numerous short, stout setae so abundant on the head, prothorax and legs of *colombianus* (1960 : 323; figs. a, b, c). The abdominal carinae and

chaetotaxy are very similar. It is also considerably larger in all measurements, excepting the length of head at both temples and occiput, which is about the same. Unfortunately, the ♂ is not known, since the genitalia in this genus form a useful diagnostic character.

Holotype female, slide no. 664 (Carriker no. 695).

Measurements of :

T. rupununi

T. trinidadensis

	♂		♀		♀		
	Length	Width	Length	Width	Length	Width	
Body	2.10	—	2.63	—	2.44	—	
Head {	frons	0.33	—	0.35	—	0.38	
	temples	0.54	0.67	0.57	0.70	0.54	0.62
	occiput	0.53	—	0.56	—	0.57	—
Prothorax	0.34	0.50	0.38	0.55	0.35	0.50	
Pterothorax	0.38	0.86	0.41	0.95	0.38	0.91	
Abdomen	1.08	0.98	1.45	1.21	1.41	1.22	
Basal plate	0.35	0.13	—	—	—	—	
Paramera and Endomera complex	0.25	0.18	—	—	—	—	

Trochiloectes insularis sp. n. (Figs. 4-5).

Males from *Glaucis hirsuta insularum* Seilern & Hellmayr, Aripo Valley, Trinidad, West Indies, 5. vii. 1960, TRVL No. 4622.

Diagnosis.—The male falls into Group C of Key with *T. grandior* Carriker, having a wide, concave frons, slightly sinuate occipital margin of head, shape of prothorax and ♂ genitalia.

There are many small differences between the new form and *grandior*. Length of ♂ slightly greater; head wider at temples and occipital margin more strongly sinuate; labral lobes unusually small; prothorax not extending beneath head, and with thickened margins; sclerites of sucking apparatus differ considerably from those of *grandior*; male genitalia also differ in several important details (see figs.).

I had expected this species to be close to *T. complexus* Carriker from *Glaucis hirsuta affinis* (Peru), but such is not the case, it resembling more nearly *grandior* (from *Phaethornis*). However, the genera *Glaucis* and *Phaethornis* are not so far apart systematically, and both have the same ecological habitat and feed on similar types of flowers.

In *grandior* the frons is uniformly and circularly concave, while in *insularis* there is a median swelling, on each side of which the margin is almost straight (not circular). The mandibles are larger; the transverse submarginal carina of frons is different, as well as the sclerites of the sucking apparatus; carinae of both pro- and pterothorax differ and the submarginal, abdominal, jointed carinae are much wider and more deeply pigmented. The male genitalia, while similar in some ways, are nevertheless quite distinct (see figs.).

Holotype male, slide no. 665 (Carriker no. 711). *Paratypes*: 2 ♂♂ (one retained by author).

Measurements of holotype:

	Length	Width
Body	2.00	—
Head {	frons	0.39
	temples	0.64
	occiput	—
Prothorax	0.35	0.48
Pterothorax	0.37	0.84
Abdomen	0.98	0.95
Basal plate	0.41	0.18
Parameres	0.12	0.18
Endomera complex	0.26	0.23

Trochiliphagus hirsutus sp. n. (Figs. 6-7).

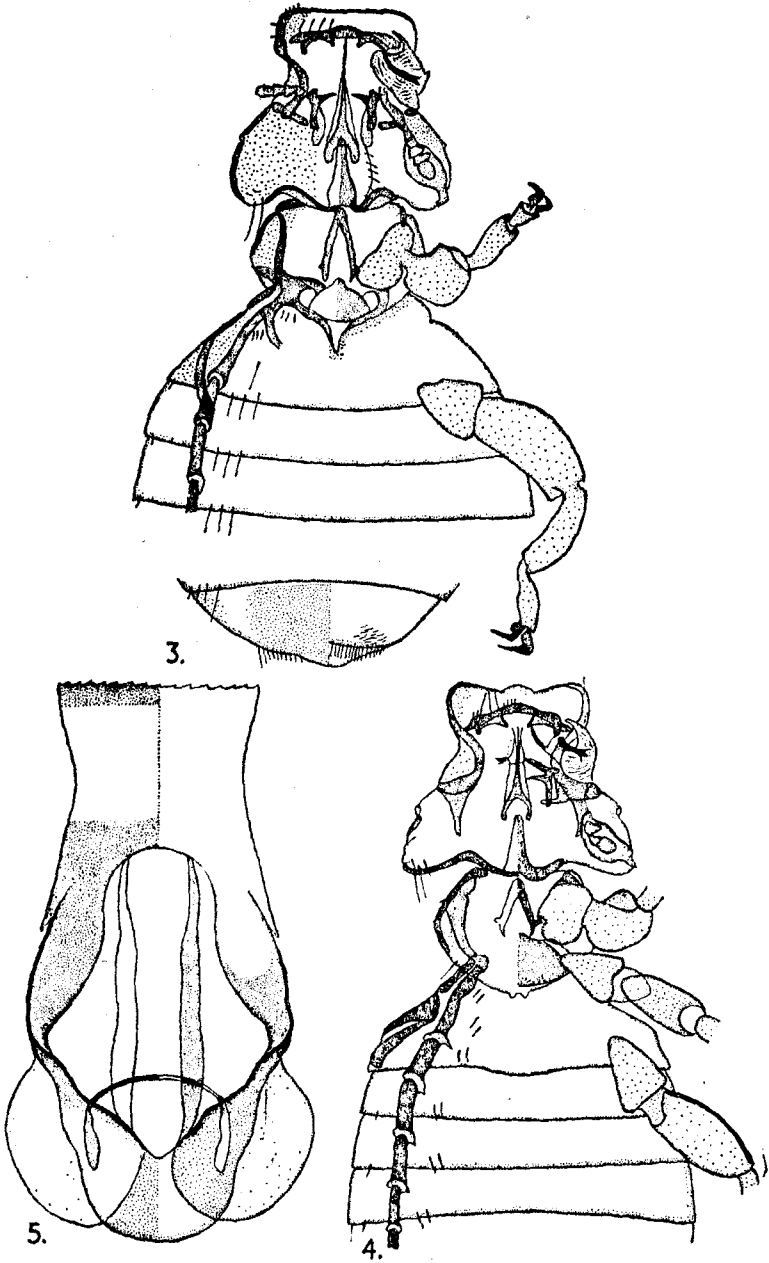
Males, females and nymphs from *Glaucis hirsuta insularis* Seilern & Hellmayr, Aripo Valley, Trinidad, West Indies, 14. VI. 1960 and 14. I. 1961, TRVL No. 4505, and Clay No. 28.

Diagnosis.—Has a rather striking resemblance to *T. mellivorus* in the head and thorax, of which species the ♂ is, unfortunately, unknown. However, there are specific differences between the females of the two forms. The jointed, submarginal carinae of the abdomen are sharply defined and heavily chitinized, with the usual prominent, swollen joints. These carinae are unusually close to the lateral margins of the abdomen, lying under the inner half of the pleurites for their entire length, ending at posterior margin of segment VII. Pleurites also heavily pigmented; tergites entire, filling segments and very faintly pigmented; sternites more deeply coloured and widely separated from pleurites, while their margins do not correspond with those of tergites, extending under the next anterior tergite. Chaetotaxy extremely sparse, fine and short, there being no setae on head and thorax other than those shown in figure. One very short, submarginal seta in postero-lateral angle of segments I-V, increasing in length posteriorly; two in segment VI and three in VII, with a marginal and submarginal row of very fine and very short setae around median portion of VIII. Two short, fine, submarginal setae on each side of posterior edge of tergites I-VII, progressively longer and closer together posteriorly, but none as long as width of segments.

Front legs very short, with slightly swollen femora; 2nd and 3rd pairs rather long and very narrow, with sides almost parallel; claws small and sharply curving.

The male is similar to female in general structure, but smaller, and with submarginal abdominal carinae covering only inner edge of pleurites; general chaetotaxy same; apical abdominal segment with circular margin and having a series of very short, fine, marginal setae in median portion.

Figs. 3-5.



3. *Trochiloeccetes trinidadensis* sp. n. Female. Figs. 4-5. *Trochiloeccetes insularis* sp. n.
4. Male. 5. Male genitalia.

Genitalia rather small and unlike any other known species of the genus, but with a slight resemblance to those of *T. mellivorus* Carriker.

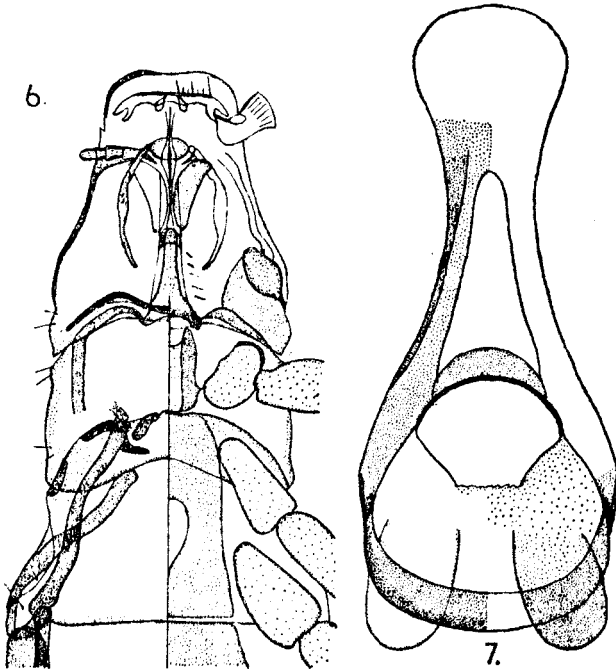
Holotype female and *allotype* male, slide no. 666 (Carriker no. 712) from type host from Aripo Valley, Trinidad, 14.iv.1960, TRVL No. 4505.

Paratypes : 3 ♂♂, 3 ♀♀ (1 ♂, 1 ♀ retained by author).

Measurements of the types :

	♂		♀	
	Length	Width	Length	Width
Body	2.84	—	3.34	—
Head {	frons	—	—	0.38
	temples	0.74	0.77	0.67
	occiput	0.69	—	0.74
Prothorax	0.48	0.65	0.50	0.74
Pterothorax	0.54	0.82	0.59	0.95
Abdomen	1.45	0.93	1.84	1.15
Basal plate	0.36	0.16	—	—
Parameres (each)	0.08	0.07	—	—
Endomera (?)	0.09	0.16	—	—

Figs. 6-7.



Trochiliphagus hirsutus sp. n.
6. Female. 7. Male genitalia.

Trochiliphagus abdominalis Carriker, 1960.

Proc. U.S. Nat. Mus. 112, No. 3438 : 338, fig. 12, b. (Host : *Anthrocothorax nigricollis* *viridescens* (Gould).)

A single ♀ of this species is in the collection, taken on *Anthrocothorax viridigula*, at Nariva Swamp, Trinidad, West Indies (TRVL No. 4988). There are some very slight differences between this ♀ and the type of *abdominalis*, but without the males from the two hosts it seems best to ignore these small discrepancies, and refer to this specimen as *abdominalis*.

Genus *HETEROMENOPON* Carriker, 1954.

Rev. Brasil Ent., 2 : 170 (type species : *H. sincipitalis* Carriker).

This genus contains Menoponidae of rather large size, parasitic only on Neotropical Parrots (Fam. Psittacidae). They have a small head, much wider than long, with meso- and metathorax distinctly separated ; large abdomen and large male genitalia. The basal plate is extremely long and narrow, with its basal portion and mesosome asymmetrical ; parameres short, straight, narrow and hyaline ; gastric "teeth" present in most specimens.

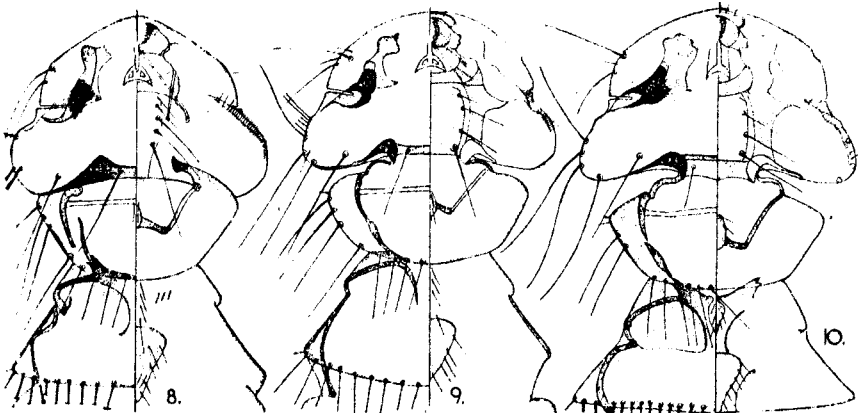
Heteromenopon sincipitalis Carriker, 1954. (Figs. 8, 11).

Rev. Brasil Ent., 2 : 171 ; figs. 26-29 (Host : *Ara ararauna* (Linné), from Todos Santos, Bolivia.)

Two males and two females of this species from the type host, Plum Mitan, Trinidad, West Indies, 27. V. 1960, TRVL No. 4427.

These specimens agree perfectly with the types of *sincipitalis*. A new figure is presented of the head and thorax of this species, and of the male genitalia. In the original figure of the species the frons is shown as more conical than it should be, and the genitalia are incorrect, being shown as symmetrical as I had assumed that it was distorted in the type. Fig. 8 was made from the ♀ allotype of the species, and is correctly drawn.

Figs. 8-10.

*Heteromenopon* spp., head and thorax, female.

8. *H. sincipitalis* Carriker. 9. *H. laticapitis* sp. n. 10. *H. clayac* sp. n.

Heteromenopon clayae sp. n. (Figs. 10, 12, 14).

Males and females from *Ara manilata* (Boddaert), near Lethem, Rupununi, Brit. Guiana, ii. 1961, Clay Nos. 138, 141.

Diagnosis.—Differs from *sincipitalis* in having a more or less quadrilateral-shaped head, with the frons not quite flatly circular, and with the sides of the head anterior to the ocular slit almost straight and parallel-sided, very much as in *sincipitalis*, and quite different from the next species, which has the whole anterior margin of the head, anterior to the ocular slits, uniformly circular (see figs.). Head shorter, but of same width and with the temples much narrower longitudinally; prothorax slightly longer and meso-metathorax different, the two segments being of about equal length, while in *sincipitalis* the mesothorax is much shorter than the metathorax; the sternal thoracic plates are also different, both in shape and chaetotaxy.

The abdomen of the female is much more pointed apically, segment IX being very narrow and bluntly pointed; comb of fine setæ absent from sternite IV; a single row of short setæ across median portion of the tergites II-VII, which is absent in *sincipitalis*. The movable sclerite of the male genitalia is very different from that of *sincipitalis* and the next species, being a small, V-shaped sclerite, enclosed in a large, hyaline, spicule-covered sac (fig. 12); internal supporting struts of sac also differ from the other species. Measurements follow the next species.

Holotype male, *allotype* female, slide no. 667 (16.ii.1961, no. 138; Carriker no. 696) *Paratypes*: 4 ♂, 4 ♀ (1 ♂, 1 ♀ retained by author).

Heteromenopon laticapitis sp. n. (Figs. 9, 13, 15, 16).

Males and females from *Ara n. nobilis* (Linné), near Lethem, Rupununi, Brit. Guiana, 11.ii.1961, Clay No. 105.

Diagnosis.—Head short and temples but slightly expanded laterally; ocular slit covered by a membrane from above; pronounced pitchy black markings at inner edge of antennary fossæ and at sides of occiput; as in *sincipitalis*, the median row of short setæ across tergites II-VII is missing, also comb of setæ on sternite IV. On the third femora there are the usual three combs of setæ, with an additional two short setæ at both ends of the three combs; metasternum shorter than in *sincipitalis* but with similar chaetotaxy (quite different from that of *clayae*); nine strong setæ on each side of posterior margin of metathorax (dorsal) as in *sincipitalis*, while in *clayae* there are 12; temples rounded as in *sincipitalis* but narrower (longitudinally), being about midway between *sincipitalis* and *clayae* in width; sides of prothorax strongly convex, in contrast to the other two species, where they are almost straight; the carinæ joining the prothorax with mesothorax different from both of the other species, with attachment of head to prothorax nearer to *clayae* (see figs.).

Parameres much shorter than endomerale sac; internal, movable sclerite large, being an elongated, somewhat distorted V; internal endomerale struts also quite different.

Holotype male and *allotype* female, slide no. 668 (Carriker no. 697).
Paratypes: 5 ♂, 1 ♀ (1 ♂, 1 ♀ retained by author).

Measurements of :

*H. clayae**H. laticapilis*

	♂		♀		♂		♀	
	Length	Width	Length	Width	Length	Width	Length	Width
Body	2.46	—	2.60	—	2.06	—	2.53	—
Head { frons	—	0.51	—	0.52	—	0.47	—	0.51
temples	0.38	0.63	0.38	0.65	0.35	0.57	0.37	0.63
Prothorax	0.29	0.47	0.28	0.50	0.25	0.44	0.30	0.50
Mesothorax	0.15	0.41	0.15	0.43	0.12	0.37	0.14	0.43
Metathorax	0.18	0.56	0.21	0.65	0.17	0.55	0.19	0.63
Abdomen	1.56	0.80	1.69	0.93	1.24	0.72	1.70	0.87
Basal plate	0.71	0.11	—	—	0.64	0.13	—	—
Parameres	0.12	0.01	—	—	0.14	0.02	—	—
Endomerale sac	0.16	0.11	—	—	0.15	0.12	—	—

Note: I have found a rather unusual variation in measurements in this genus, even in series from the same individual host, so that the slight differences in measurements present between those of the type series of *H. sincipitalis* and the specimens from Trinidad, are of no particular significance, especially in insects of this size.

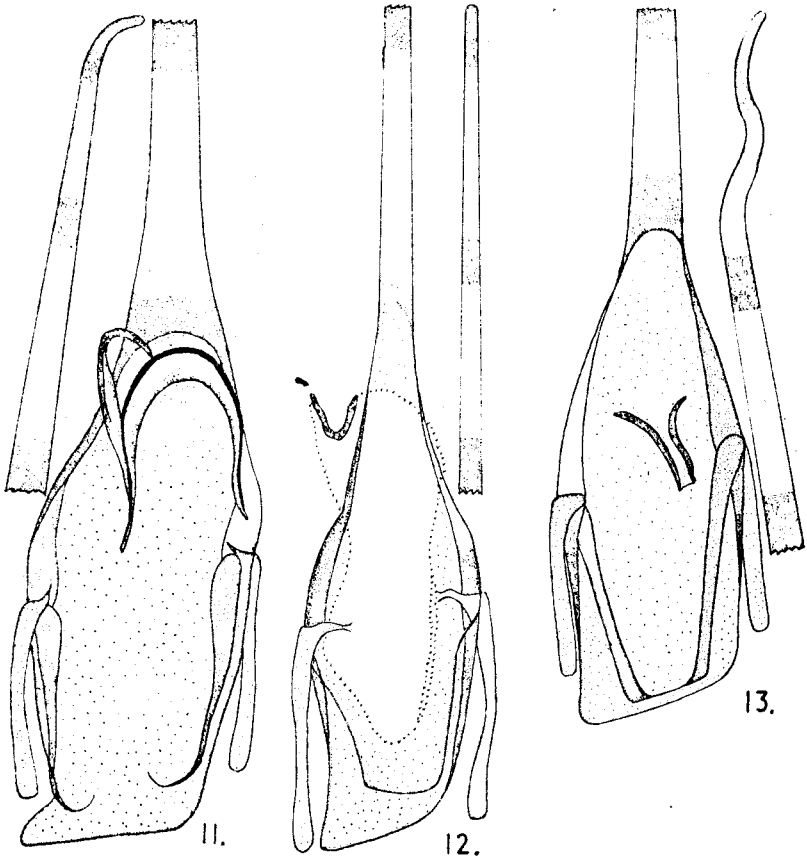
Genus *PSITTACOBROSUS* Carriker, 1954.

Rev. Brasil Ent., 2:150 (Type species: *P. burmeisteri kelloggi* Carriker).

The species of this genus parasitic on the avian genus *Ara* are very closely related, and perhaps should be treated as conspecific, but for the present I prefer to treat them as separate species. They all possess the same type of chaetotaxy and more or less the same form of body segments, while the internal, movable sclerite of the endomerale sac in all of the species here treated is also of the same type, but they differ in detail, as may be seen from the figures presented.

In the present collection are three species from the genus *Ara*, the type species of the genus (from *Ara ararawana*) and two new species from *A. manilata* and *A. n. nobilis*. There have been described three forms from the genus *Ara*, viz.: *burmeisteri* (Kellogg); *burmeisteri kelloggi* Carriker and *ambigua* Carriker, while in my collection are specimens from three other species of *Ara*, undescribed. No further remarks regarding the genus are necessary, since it has been fully described and the type species figured. There follows the descriptions of the two new species from *A. n. nobilis* and *A. manilata*, and another from *Amazona* and records of two of the other known species.

Figs. 11-13.

*Heteromenopon* spp., male genitalia.

11. *H. sincipitalis* Carriker. 12. *H. clayae* sp. n. 13. *H. laticapitis* sp. n.

Psittacobrosus burmeisteri (Kellogg), 1906. (Figs. 17-18).

Colpocephalum burmeisteri Kellogg, 1906, *Journ. N.Y. Ent. Soc.*, 14 : 48 ; plate 2, fig. 5.
(Host : *Ara chloroptera* G. R. Gray.)

Psittucomenopon burmeisteri (Kellogg) Hopkins & Clay, 1952, Checklist of Mallophaga : 304 (same host).

Psittacobrosus burmeisteri (Kellogg) Carriker, 1954, *Rev. Bras. Ent.*, 2 : 153-4.

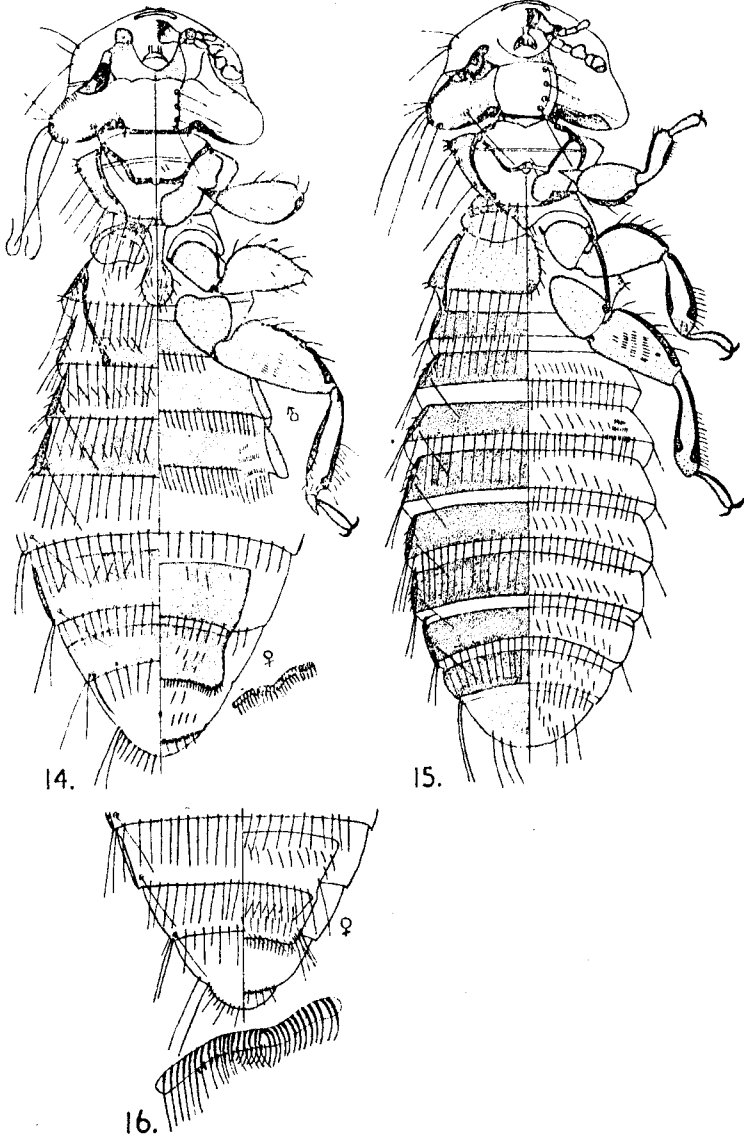
The present status of this species has been adequately treated by the present author. Kellogg's figure of the female is small and shows few details, but it is similar to the female of *P. b. kelloggi*, which was figured in Carriker, 1954. I here present a figure of the male and of the ♂ genitalia (figs. 17 and 18), which are necessary for comparison in the study of other species from the genus *Ara*.

Psittacobrosus burmeisteri kelloggi Carriker, 1954.

Rev. Brasil Ent., 2 : 151 ; figs. 6-8. (Host : *Ara ararauna* (Linné).)

In the present collection are 1 ♂, and 3 ♀♀ of this species from the type host, Plum Mitan, Trinidad Id., 27.v.1960, TRVL No. 4427. They agree in all respects with the types of this subspecies in the author's collection.

Figs. 14-16.



14. *H. clayae* sp. n., male head, thorax and abdominal segments I-III and female terminal segments of abdomen and gastric teeth. 15. *H. laticapitis* sp. n., male. 16. *H. laticapitis* sp. n., terminal segments of female abdomen and gastric teeth.

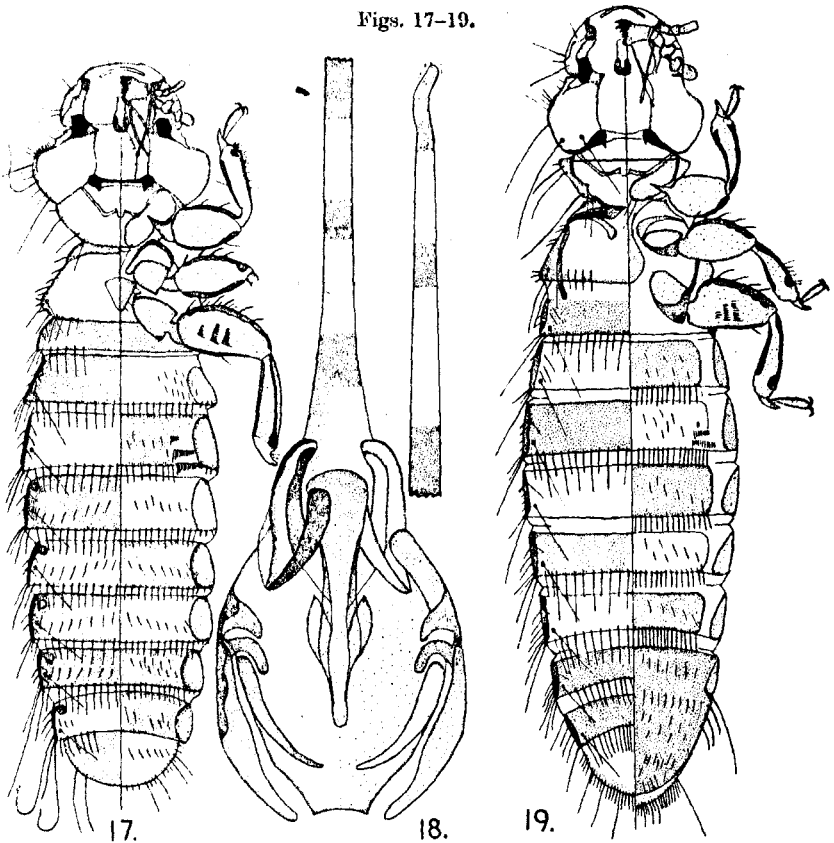
Heteromenopon spp.

Psittacobrosus genitalis sp. n. (Figs. 19-21).

Males and females from *Ara manilata* (Boddaert), Abary River, Brit. Guiana, 3.ii.1961, Clay No. 89.

Diagnosis.— Considerably smaller than *P. b. kelloggi* in all measurements; temples noticeably narrower in both sexes, with almost no sexual dimorphism in shape of head; apical abdominal segment in the female more rounded. In the male there are prominent, deeply pigmented, round tubercles extending inward from the anterior end of pleurites in segments IV-VIII. These tubercles are but faintly indicated in *kelloggi* and do not extend beyond the inner edge of the pleurites, while in *burmeisteri* they are obsolete.

Figs. 17-19.

*Psittacobrosus* spp.

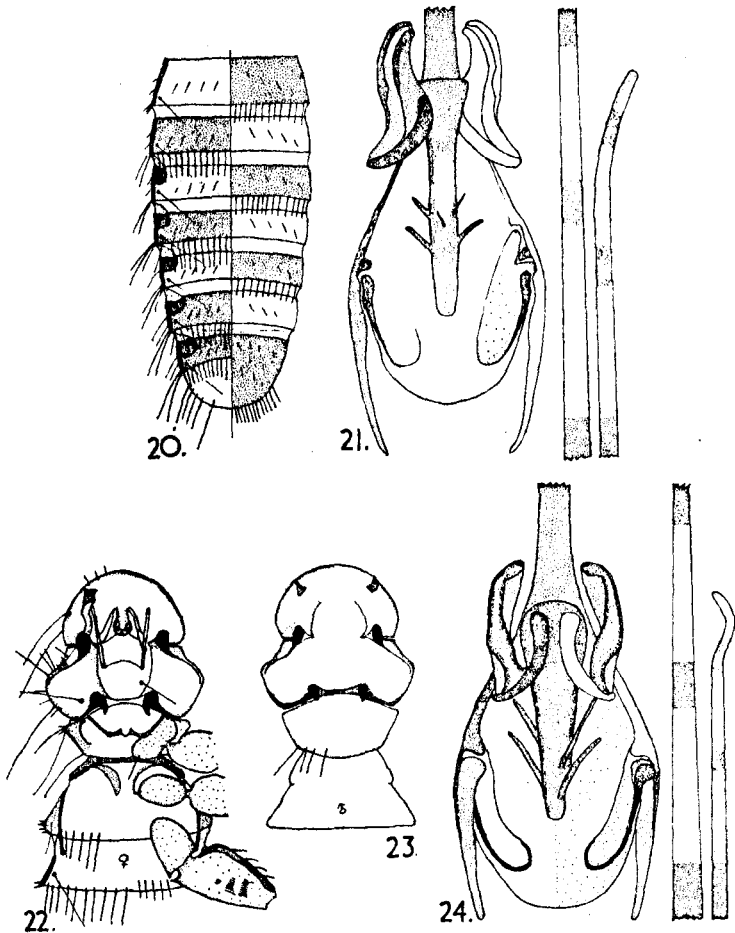
17-18. *P. burmeisteri* (Kellogg). 17. Male. 18. Male genitalia. 19. *P. genitalis* sp. n., female.

The male genitalia are of the same type as in *burmeisteri* and *kelloggi*, but much smaller than those of the former, and the shape of the penis and internal endomerical struts are quite distinct (see figs.). The genitalia also differ from those of *kelloggi*, being shorter, and the penis

has four to five slender prongs instead of two; shape of endomerol sac and its internal struts also distinct. Measurements follow the next species.

Holotype male and *allotype* female, slide no. 669 (Carriker no. 698).
Paratypes: 12 ♂, 12 ♀ (1 ♂, 1 ♀ retained by author).

Figs. 20-24.

*Psittacobros* spp. n.

20-21, *P. genitalis*. 20. Male abdomen. 21. Male genitalia. 22-24. *P. nobilis*. 22. Female. 23. Male. 24. Male genitalia.

Psittacobrosus nobilis sp. n. (Figs. 22-24).

Males and females from *Ara n. nobilis* (Linné), near Lethem, Rupununi, Brit. Guiana, 2.ii.1961, Clay No. 105.

Diagnosis.—Same general type as *burmeisteri*, *kelloggi* and *genitalis*,

but differs in several important characters. There is a decided sexual dimorphism, not present in the three species mentioned above, the head of the male being narrower at the temples than in the ♀, with anterior portion of head wider and more uniformly circular (see figs.). There is a slight tendency towards this difference in *genitalis*, but much less noticeable.

Male genitalia basically similar, but with penis very distinct, it being provided with four slender lateral spikes (two in *kelloggi*) as in *genitalis*, but they are much longer, while the penis itself is shorter and thicker. Parameres are but slightly longer than endomerale sac, much shorter than in *genitalis* and more slender than in *kelloggi*.

Holotype male and *allotype* female, slide no. 670 (Carriker no. 699).
Paratypes : 2 ♂, 2 ♀ (1 ♂, 1 ♀ retained by author).

Measurements of :

P. genitalis

P. nobilis

	♂		♀		♂		♀	
	Length	Width	Length	Width	Length	Width	Length	Width
Body	1.79	—	2.09	—	1.85	—	2.19	—
Head { frons	—	0.33	—	0.34	—	0.34	—	0.36
Head { temples	0.38	0.42	0.39	0.43	0.38	0.43	0.40	0.45
Prothorax	0.17	0.33	0.17	0.36	0.18	0.33	0.20	0.36
Mesothorax	0.09	0.29	0.07	0.30	0.09	0.30	0.09	0.31
Metathorax	0.16	0.41	0.18	0.48	0.15	0.43	0.17	0.48
Abdomen	1.12	0.46	1.41	0.59	1.16	0.48	1.38	0.60
Basal plate	0.71	0.13	—	—	0.63	0.13	—	—
Parameres	0.11	0.01	—	—	0.12	0.02	—	—
Endomerale sac	0.09	0.12	—	—	0.17	0.12	—	—

Psittacobrosus amazonicus sp. n. (Figs. 25-27).

Males and females from *Amazona a. amazonica* (Linné), Abary River, Brit. Guiana, 4.ii.1961, Clay No. 90.

Diagnosis.—Easily distinguished from the preceding species by its large size, wide head at temples and structure of apical abdominal segment of female; also by its chaetotaxy and male genitalia. Four well-developed combs of spines on sternite III (none on IV) and three long and one short combs on third femora; metasternum small with four short setae on each side; slight sexual dimorphism in shape of anterior half of head, that of the male being more circular.

The deeply pigmented tubercles projecting from the pleurites in the male are well developed, more widely separated from pleurites and are present on segments II-VIII; short, curved, spine-like setae abundant on lateral portion of sternites V-VII.

Male genitalia very different from the species infesting *Ara*. The basal plate is similar, but parameres, endomerale sac, movable sclerite and internal struts of sac are all different. The movable sclerite is large and unique (see fig.). Measurements follow the next species.

Holotype male and *allotype* female, slide no. 671 (Carriker no. 700).
Paratypes : 4 ♂, 4 ♀ from British Guiana (1 ♂, 1 ♀ retained by author) ; also 2 ♀♀ in the Carriker collection from the type host from Norosi, Dept. Bolivar, Colombia.

Psittacobrosus anduzei (Stafford) 1943.

Colpocephalum anduzei Stafford, *Bol. Ent. Venezol.*, 2, No. 1 : 43 ; figs. 18-28. (Host : *Aratinga pertinax* = *A. pertinax aeruginosus*.)

Carriker, 1955, *Bol. Ent. Venezol.*, 11, Nos. 1/2 : 13.

Psittacomenopon anduzei (Stafford), Hopkins & Clay, 1952, Checklist of Mallophaga : 304 (same host).

There are 1 ♂, 1 ♀ of this species taken from the type host near Lethem, Rupununi, British Guiana, 11.ii.1961, Clay No. 120. These have been compared with a small series of paratypes of *anduzei* in the Carriker collection, and found to be identical. No proper figures of this species have been published, but it is typical of the genus in all respects. The ♂ genitalia are large, with a large endomerale movable sclerite which I have not been able to delineate, due to the fact that in all of the males I have seen this sclerite is badly twisted and distorted. Measurements for the species are appended.

Measurements of :

P. amazonicus

P. anduzei

	♂		♀		♂		♀	
	Length	Width	Length	Width	Length	Width	Length	Width
Body	2.57	—	3.01	—	2.24	—	2.32	—
Head { frons	—	0.46	—	0.44	—	0.36	—	0.36
{ temples	0.51	0.65	0.52	0.67	0.40	0.46	0.40	0.46
Prothorax	0.25	0.46	0.25	0.48	0.21	0.37	0.22	0.38
Mesothorax	0.11	0.41	0.15	0.43	0.11	0.30	0.10	0.33
Metathorax	0.22	0.57	0.20	0.62	0.19	0.49	0.22	0.46
Abdomen	1.57	0.66	1.98	0.80	1.44	0.58	1.55	0.67
Basal plate	0.84	0.14	—	—	0.80	0.14	—	—
Parameres	0.07	0.02	—	—	0.08	0.02	—	—
Endomerale sac	0.08	0.13	—	—	0.19	0.14(?)	—	—

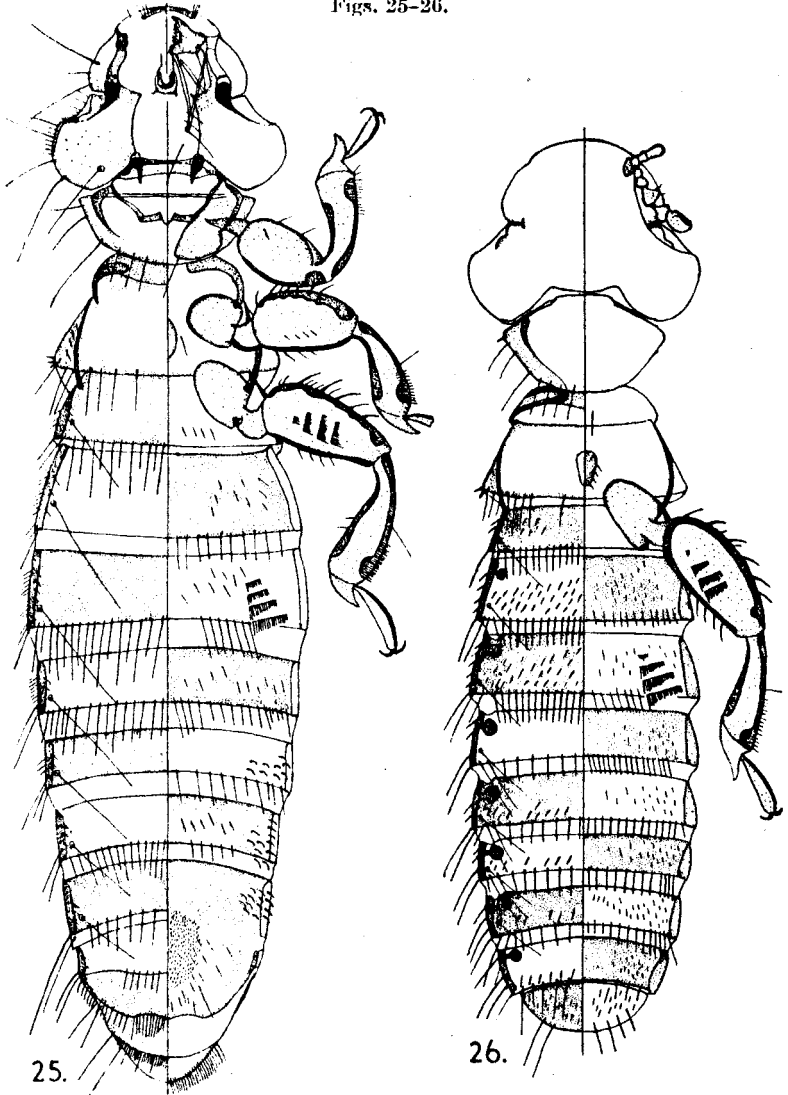
Genus FURNARICOLA Carriker, 1944.

Bol. Ent. Venez., 3, No. 2 : 83. (Type species : *F. acutifrons* Carriker.)

Rallilicola Johnston & Harrison, 1911, Hopkins & Clay, 1952, Checklist of Mallophaga : 112.

The original description of this genus is complete, but requires two slight corrections. There is, apparently, always present a narrow hyaline band around the frons, which is sometimes completely destroyed in clearing. A re-examination of the type of *F. chunchotambo* Carriker reveals clearly traces of this band, which were omitted from the original figure. The other correction refers to the sternites which are, apparently, not continuous across the abdomen, as previously stated, but are widely separated from the pleurites. These sclerites are often difficult to distinguish, being faintly pigmented and lying directly under the tergites. They are clearly visible in the three species here described.

Figs. 25-26.

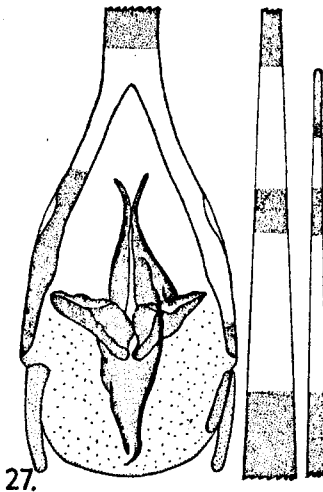


Psittacobrosus amazonicus sp. n.
25. Female. 26. Male.

I still maintain my former opinion on the validity of this genus, and that while it closely resembles, superficially, the genus *Rallicola*, it is not possible that the two are congeneric. There are several important morphological differences, as previously pointed out, as well as the matter of their hosts which are so very far removed systematically from the hosts of *Rallicola* that it is impossible to conceive how the two could ever have had the same progenitors.

A final note should be given regarding the possible incorrectness of the host of *F. heterocephala* Carriker. It was given as *Gymnocichla c. cheiroleuca* (Formicariidae). A check on the species of birds collected at Jimenez, Costa Rica, shows that this Antbird was not taken there, neither is there any Dendrocolaptidae or Furnariidae recorded from that locality. The label on the slide says: "near Jimenez", which may mean either Guacimo or Guapilis, so that it is quite impossible to trace the correct host of this parasite. I am convinced, however, that it is a straggler from some species of Furnariidae, since the genitalia are very similar to those of *F. laticephala* (*Cranioleuca subcristata*), and entirely different from any known genitalia of the Antbird parasites.

Fig. 27.

*Psittacobrosus amazonicus* sp. n. Male genitalia.*Furnaricola certhia* sp. n. (Figs. 28, 29, 33).

Males and females from *Dendrocolaptes c. certhia* (Boddaert), Kanaku Mts., Rupununi, Brit. Guiana, 21.ii.1961, Clay No. 151.

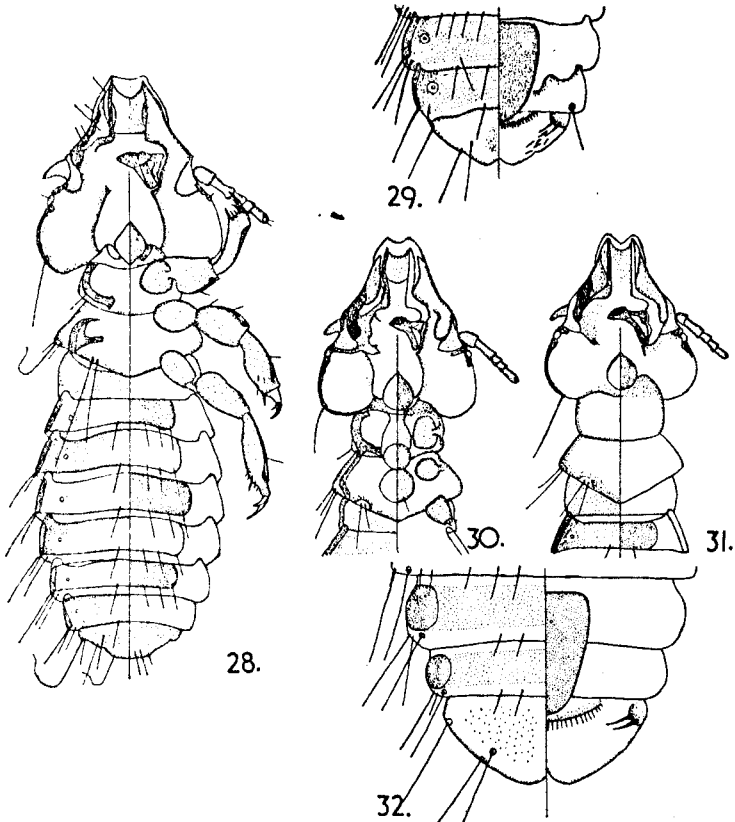
Diagnosis.—Closely related to *F. chunchotambo* Carriker. Unfortunately, the male of that species is unknown, otherwise the genitalia would form conclusive proof of its nomenclatural status. However, *F. certhia* is much larger than *chunchotambo* in all measurements while both thoracic segments differ decidedly in shape, as well as the apical segment of the abdomen.

The male genitalia are quite large (see fig. 33), with the parameres and endomera of the same type as the two species described below, also similar to those of *F. cephalosa* Carriker (from Dendrocolaptidae). There is no trace of a split in the parameres of these three species or of a

projection of any sort on the inner margin of the prongs. Measurements follow the next species.

Holotype male and *allotype* female, slide no. 672 (Carriker no. 701).
Paratypes : 10 ♂, 9 ♀ (1 ♂, 1 ♀ retained by author).

Figs. 28-32.



Furnaricola spp. n.
 28. *F. certhia*, male. 29. *F. certhia*, female. 30. *F. guttata*, male. 31. *F. fuliginosa*, male.
 32. *F. guttata*, terminal segments of female abdomen.

Furnaricola guttata sp. n. (Figs. 30, 32, 34).

Male and female from *Xiphorhynchus guttatus polystictus* (Salv. and Godman), Kanaku Mts., Rupununi, Brit. Guiana, 21.ii.1961, Clay No. 150.

Diagnosis.—Superficially resembling *F. certhia*, but head narrower at both temples and frons; prothorax is parallel-sided as in *chunchotambo*, but pterothorax same shape as in *certhia*. The peculiar, clear, sternal sclerites of the thoracic segments are unusual. In size it approaches *chunchotambo*, being smaller than *certhia*.

The male genitalia are quite different from *certhia*, but of the same type, being much smaller, especially the basal plate, while the parameres differ in shape (see figs.).

Holotype male, slide no. 673, and *allotype* female, slide no. 674 (Carriker no. 702).

Measurements of :

	<i>F. certhia</i>				<i>F. guttata</i>			
	♂		♀		♂		♀	
	Length	Width	Length	Width	Length	Width	Length	Width
Body	1.59	—	2.00	—	1.50	—	1.74	—
Head { frons	—	0.10	—	0.10	—	0.11	—	0.11
{ temples	0.54	0.52	0.58	0.56	0.48	0.45	0.51	0.47
Prothorax	0.16	0.28	0.18	0.29	0.17	0.26	0.18	0.28
Pterothorax	0.22	0.41	0.24	0.43	0.20	0.35	0.21	0.37
Abdomen	0.84	0.53	1.17	0.62	0.76	0.49	1.00	0.56
Basal plate	0.25	0.11	—	—	0.19	0.08	—	—
Parameres	0.11	0.09	—	—	0.10	0.08	—	—
Endomera	0.06	0.05	—	—	0.06	0.04	—	—

Furnaricola fuliginosa sp. n. (Figs. 31, 35).

Male from *Dendrocincla fuliginosa meruloides* (Lafresnaye), Bush Bush Forest, Trinidad Id., 15.xii.1960, TRVL No. 5027.

Diagnosis.—Head similar in shape to that of *certhia* but much smaller, this species being the smallest of the three described in this paper. The anterior plate extends further beyond the pre-antennary carinæ than in the other species and is narrower. Thoracic segments same shape as in *guttata*, but male genitalia smaller and with both basal plate and endomera quite distinct in structure (see figs.).

It may be noted that the size of the genitalia in these three species corresponds with the size of the parasites and also to the size of the hosts, *certhia* being parasitic on a much larger host than the other two, while that of *fuliginosa* is the smallest of the three birds.

Measurements of holotype :

	♂	
	Length	Width
Body	1.41	—
Head { frons	—	0.09
{ temples	0.44	0.42
Prothorax	0.14	0.25
Pterothorax	0.18	0.34
Abdomen	0.74	0.46
Basal plate	0.17	0.06
Parameres	0.09	0.07
Endomera	0.05	0.04

Holotype male, slide no. 675 (Carriker no. 703).

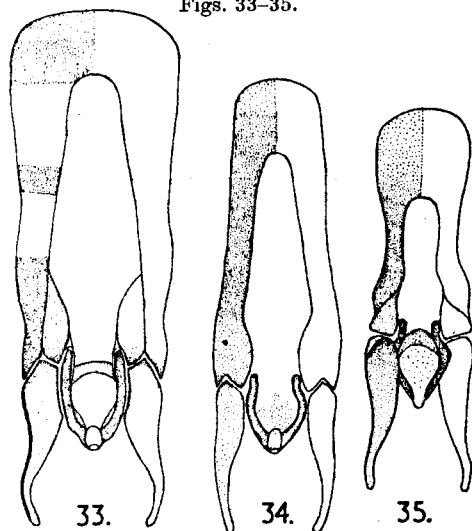
Genus HEPTARTHROGASTER Carriker, 1936.

Heptarthrogaster parvulus (Taschenberg, 1882).*Goniodes parvulus* Taschenberg, *Die Mallophagen*, 1882 : 38 ; pl. 1, figs. 4-4b.*Heptarthrogaster parvulus* (Tasch.) Carriker, 1936, *Proc. Acad. nat. Sci. Philad.* : 134 ; pl. 20, figs. 1-1b (*Tinamus major castaneiceps*).*Heptapsogaster parvulus* (Tasch.) Hopkins & Clay, 1952, *Checklist of Mallophaga* : 170. (*Tinamus (major) robustus* = *T. major castaneiceps*.)

Individuals of this species from *Tinamus m. major* are inseparable from populations taken on three other subspecies of *T. major*, and from *T. t. tao* (Carriker, 1944 : 178). As previously stated, there are slight differences in measurements, but I do not consider these differences sufficient for nomenclatural separation.

1 ♂, 2 ♀♀ from *Tinamus m. major*, Kanaku Mts., Rupununi, Brit. Guiana, 22.ii.1961, Clay No. 154.

Figs. 33-35.

*Furnaricola* spp. n., male genitalia.33. *F. certhia*. 34. *F. guttata*. 35. *F. fuliginosa*.*Heptarthrogaster m. minutus* (Carriker) 1903.*Goniodes minutus* Carriker, *Univ. Neb. Stud.*, 3, No. 2 : 155 ; pl. 4, figs. 1-2. (Host : *Tinamus robustus* = *T. major castaneiceps*.)*Heptarthrogaster minutus* (Carriker, 1936) *Proc. Acad. nat. Sci. Philad.* : 135 ; pl. 20, figs. 2-2b (same host).*Heptapsogaster minutus* (Carriker) Hopkins & Clay, 1952, *Checklist of Mallophaga* : 169 (same host).

1 ♂, 2 ♀♀ from *Tinamus m. major*, Kanaku Mts., Rupununi, Brit. Guiana, 22.ii.1961, Clay No. 154.

Measurements of these specimens are very close to those of the nominate race, some being exactly the same, others differing slightly in length or width. No differences in genitalia. None of the measurements is as great as those for *H. m. mexicanus* Carriker.

Like the preceding species it has remained unchanged on the different subspecies of *Tinamus major*, the Mexican population from *T. major robustus* being the only one differing sufficiently in measurements to merit its recognition as a distinct subspecies (based on larger size).

Heptarthrogaster grandis Carriker, 1936. (Fig. 36).

Proc. Acad. nat. Sci. Philad., 88 : 136 ; pl. 10, fig. 3 (*Tinamus major peruvianus*).

Heptapsogaster grandis (Carriker) Hopkins & Clay, 1952, Checklist of Mallophaga : 168.

One male of this species from *Tinamus m. major*, Kanaku Mts., Rupununi, Brit. Guiana, Clay No. 154.

There are absolutely no structural differences between this male and a male from *Tinamus tao septentrionalis*, but there are considerable differences in their measurements, as follows: body, 1.41 against 1.46; head, 0.37×0.51 against 0.40×0.53 ; frons, 0.37 against 0.39; prothorax, 0.19×0.37 against 0.18×0.41 ; mesothorax, 0.14×0.58 against 0.16×0.63 ; metathorax, 0.16×0.52 against 0.24×0.58 ; abdomen, 0.76×0.74 against 0.82×0.89 ; parameres, 0.13×0.08 against 0.15×0.08 ; endomera about equal. In a species of this small size the differences above noted are well worth consideration.

The type host of *H. grandis* is *Tinamus major peruvianus* and the holotype is a ♀, with the ♂ unknown from that host, while we have no ♀ from *T. m. major* (see Carriker 1944 : 185).

It will be seen from the table of measurements that the ♀ holotype is slightly smaller in all its measurements than the ♀ from *T. tao septentrionalis*, so that it seems logical to consider the present male from *T. m. major* as the male allotype of *H. grandis*, and that the specimens from *T. tao septentrionalis* should have subspecific recognition, providing the ♀ from *T. m. major*, when taken, shows the same differences in its measurements as the males.

However, until such a female is available for study, it seems best to leave the decision in abeyance and consider all the populations from *T. m. major*, *T. m. peruvianus* and *T. tao septentrionalis* as *Heptarthrogaster grandis* Carriker.

A figure is here presented of the genitalia of the male from *T. m. major* from British Guiana, which, it may be seen, differ considerably from that of the ♂ taken on *Tinamus tao septentrionalis* (Carriker, 1944 : 185). In case the measurements of the females show the same differences as the males, taken in connection with the differences in the male genitalia, there would be ample grounds for giving the population from *Tinamus tao septentrionalis* subspecific rank.

Kelloggia brevipes venezolensis Carriker, 1958.

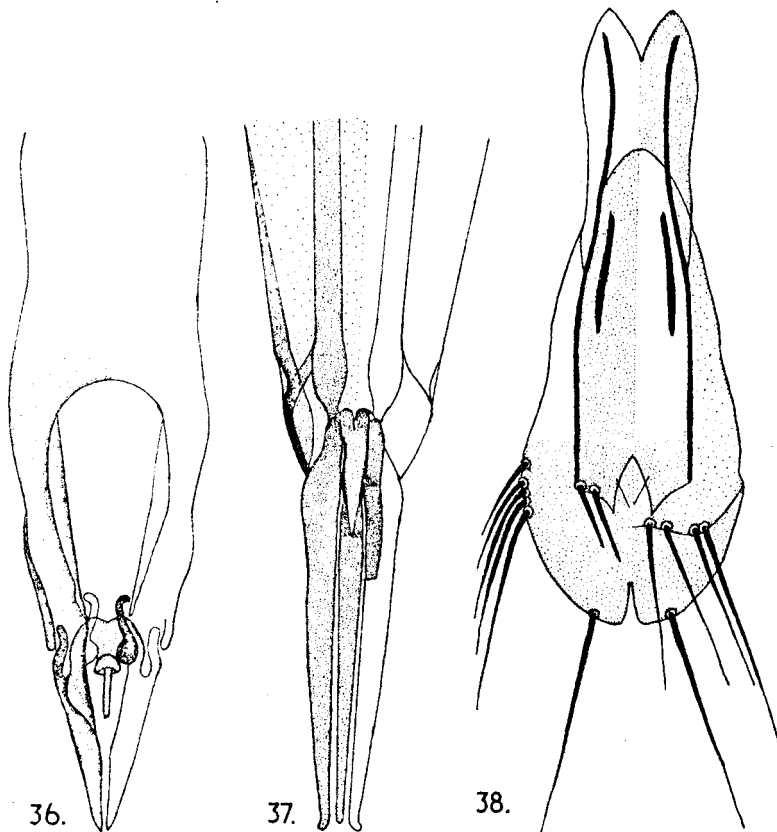
Acta Biologica Venezuelica, Univ. Cent. de Venez., 2, Art. 18, Apr. 1958 : 175 ; fig. 2.
(Host : *Tinamus m. major* (Gmelin).)

1 ♂, 1 ♀ of *Kelloggia brevipes* from *Tinamus m. major*, Kanaku Mts., Rupununi, Brit. Guiana, 22.ii.1961, Clay No. 154.

The types of this species are not available for comparison with this pair from Brit. Guiana, but from the description and figures of the types there can be no doubt that it is the same species.

Taken with the types of *K. b. venezolensis* were specimens of *Ornicholar olfersi* and *Strongylocotes cordiceps* (Carriker), both originally described from *Tinamus m. major*, so that there can be no doubt of the correctness of this identification.

Figs. 36-38.



36. *Heptanthrogaster grandis* Carriker, male genitalia. 37-38. *Pterocotes aberrans tinami* subsp. n., genitalia. 37. Male. 38. Female.

Genus PTEROCOTES Ewing, 1929.

Pterocotes aberrans tinami subsp. n. (Figs. 37-38).

Males and females from *Tinamus m. major* (Gmelin), Kanaku Mts., Rupununi, Brit. Guiana, 22.ii.1961, Clay No. 154.

Diagnosis.—The various races of *Pterocotes aberrans* do not differ strikingly *inter se*, but a careful analysis of measurements and proportions of the body segments, together with the ♂ and ♀ genitalia, will invariably show decided differences, but not always in the same characters.

The new subspecies is nearest to *colombianus* Carriker (*Tinamus major colliensis* of eastern Colombia) in the ♂ genitalia. The scent glands in the two races from *Tinamus tao* are obsolete, but in all of those from *T. major* they are well developed, especially so in the present race.

The new form is much smaller than the nominate subspecies in all its measurements, while from *colombianus* it differs in the longer abdomen in the ♂ (0.26 longer) and longer and wider in the ♀ (1.15 × 0.60 against 0.98 × 0.61); the basal plate is shorter and slightly narrower (0.31 × 0.16 against 0.38 × 0.17); parameres longer (0.28 against 0.25) and endomera about the same, but differing from all the presently known races in having the apical end truncate (see fig.). The first segment of antenna of ♂ is longer and narrower (0.24 × 0.11 against 0.19 × 0.13).

The head of the male is the same, but that of ♀ is shorter and narrower (0.51 × 0.76 against 0.55 × 0.78), while the frons is wider in both sexes.

If detailed comparisons are made between those of the new form and the other races there will be found the same type of differences as cited above.

Holotype male and *allotype* female, slide no. 676 (Carriker no. 704).
Paratypes: 10 ♂, 9 ♀ (1 ♂, 1 ♀ retained by author).

Measurements of the types:

	♂		♀	
	Length	Width	Length	Width
Body	1.87	—	2.25	—
Head { frons	—	0.33	—	0.47
{ temples	0.48	0.62	0.51	0.76
Prothorax	0.19	0.43	0.21	0.48
Meso-metathorax	0.24	0.56	0.28	0.63
Abdomen	1.18	0.60	1.56	0.67
Basal plate	0.31	0.16	—	—
Parameres	0.28	0.06	—	—
Endomera	0.11	0.04	—	—
Antennæ (seg. 1)	0.24	0.11	—	—

Genus ORNICHOLAX Carriker, 1903.

Ornicholax alienus major subsp. n. (Fig. 39).

Males and females from *Tinamus m. major* (Gmelin), Kanaku Mts., Rupununi, Brit. Guiana, 22.ii.1961, Clay No. 154.

Diagnosis.—The species of *Ornicholax* presently known from this host is *O. olfersi* Guimarães, of which I have a fine male taken on the type host at Eldorado, Rio Cuyuni, east Venezuela. This male agrees perfectly with the description and figures given by Guimarães for the species, and is easily recognized by the shape of the metathoracic plates and the ♂ genitalia, which are quite distinct from those of *O. alienus* and its races.

These specimens collected by Dr. Clay should logically be *olfersi* but they are *not*, but are closely allied to *O. a. robustus* and *mexicanus*, differing from both in the ♂ genitalia and measurements (see Carriker, 1944 : 217).

O. a. major is larger than *robustus* (♂) in all measurements, with a much wider frons (0.68 against 0.50). It is even larger than *mexicanus*, the largest race of *O. alienus* presently known, but the genitalia are different. I append comparative measurements of *O. a. robustus* (for complete measurements see Carriker, 1944 : 217).

Holotype male and *allotype* female, slide no. 677 (Carriker no. 705).
Paratypes : 2 ♀ (1 ♀ retained by author).

Measurements of :

Types of *O. a. major**O. a. robustus*.

	♂		♀		♂	
	Length	Width	Length	Width	Length	Width
Body	2.67	—	2.91	—	2.43	—
Head { frons	—	0.68	—	0.69	—	0.50
{ temples	0.87	0.90	0.82	0.94	0.76	0.85
Prothorax	0.23	0.52	0.23	0.52	0.22	0.50
Mesothorax	0.35	0.95	0.37	0.99	0.33	0.90
Metathorax	0.35	0.63	0.35	0.65	0.31	0.57
Abdomen	1.52	1.32	1.78	1.38	1.39	1.19
Basal plate	0.59	0.13	—	—	—	0.14
Parameres	0.22	0.11	—	—	0.21	0.11
Endomera	0.12	0.07	—	—	0.11	—

Genus PSEUDOLIPEURUS Carriker, 1936.

Pseudolipeurus tinami kanakui subsp. n. (Figs. 40-41).

Males and females from *Tinamus m. major* (Gmelin), Kanaku Mts., Rupununi, Brit. Guiana, 22.ii.1961, Clay No. 154.

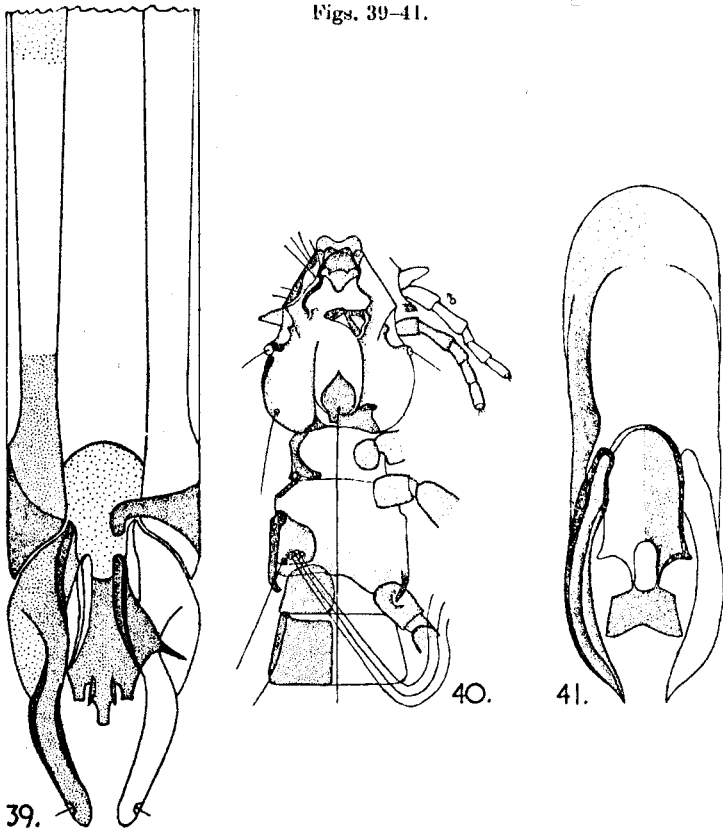
Diagnosis.—This is the first record of the taking of *Pseudolipeurus* from *Tinamus m. major*. There are only two known species of the genus which have the ♂ genitalia approximating the new form, viz. : *P. tinami serrati* (*T. major peruvianus*) and *P. t. ruficeps* (*T. m. zuliensis*). The genitalia of the new race is very close to that of *P. t. serrati*, which would be logically expected since the ranges of their hosts probably touch.

While the genitalia are similar, especially the endomera, there are differences in the parameres and basal plate. The antennæ of the males also differ, there being no trace of an appendage on the third segment, which is present, though small, on both *serrati* and *ruficeps*.

There are other small differences in measurements and proportions of body segments, but the two characters mentioned above are sufficient for its recognition.

Holotype male and *allotype* female, slide no. 678 (Carriker no. 706).
Paratypes : 4 ♂, 3 ♀ (1 ♂, 2 ♀ retained by author).

Figs. 39-41.



39. *Ornicholax alienus major* subsp. n., male genitalia. 40-41. *Pseudolipeurus tinami kanakui* subsp. n. 40. Female and male antenna. 41. Male genitalia.

Genus RHOPALOCERAS Taschenberg, 1882.

Rhopaloceras genitilis intermedius subsp. n. (Figs. 42-43).

Males and females from *Tinamus m. major* (Gmelin), Kanaku Mts., Rupununi, Brit. Guiana, 22.ii.1961, Clay No. 154.

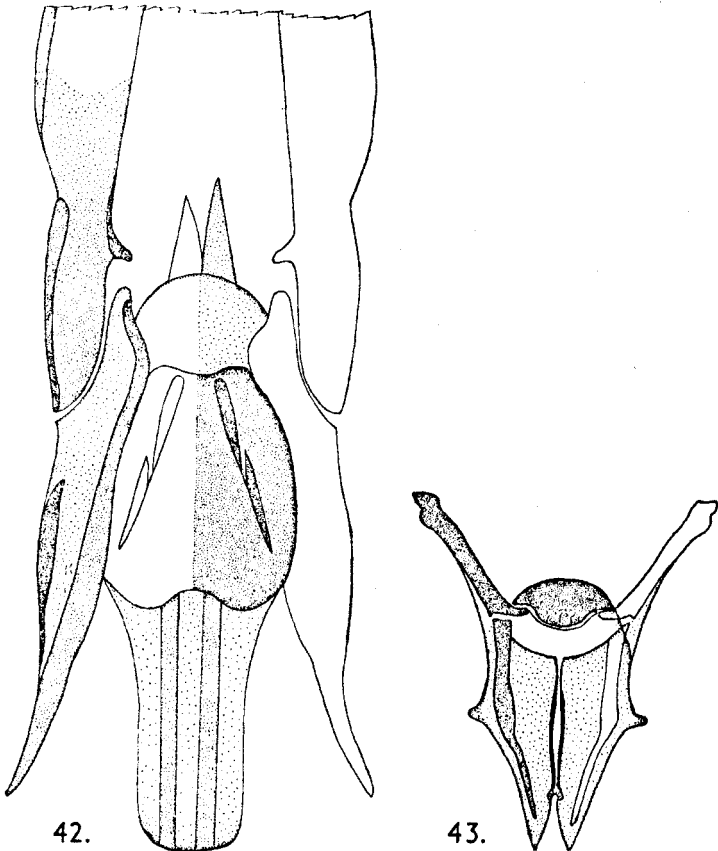
Diagnosis.—The new form is clearly conspecific with *R. genitilis* Carriker, possessing the same type of genital armature in both sexes.

The *Rhopaloceras* species parasitic on *Tinamus tao* and its races is quite different and need not be considered. *R. oniscus* probably came from *T. solitarius*, and if Taschenberg's figure and measurements are correct, and he actually had specimens from *T. solitarius*, then *oniscus* may also be eliminated. The only subspecies of *Tinamus major* from which this genus has been taken are *T. m. zuliensis* (*R. genitilis*) and *T. m. castaneiceps* (*R. simplex*); the genital armature of the new race, in both sexes, resembles more those of *genitilis*, especially in the basal portion, but there are well-marked differences between the two, as may

be seen by a comparison of the figures of the genitalia (Carriker, 1936 : 201). The parameres of the new race differ from both of the above forms, also the basal portion of sclerite and the penis, the latter being narrower and very transparent and difficult to observe in cleared specimens. The number of teeth in the abdominal combs of the males are also the same in *genitalis* and *simplex*, while in the new race the number is much greater, viz. :

	I=22-21		I=22-22		I=27-26
<i>genitalis</i>	II=17-17 ;	<i>simplex</i>	II=17-17 ;	<i>intermedius</i>	II=22-23 .
	V= 8- 8		V= 8- 7		V=10-10

Figs. 42-43.



Rhopaloceras genitalis intermedius subsp. n., genitalia.
42. Male. 43. Female.

The differences in the abdominal combs and in the genital armature of both sexes is ample for the recognition of this subspecies.

Holotype male and *allotype* female, slide no. 679 (Carriker no. 707).
Paratypes : 2 ♂, 2 ♀ (1 ♂, 1 ♀ retained by author).

Measurements of :

Pseudolipeurus tinami kanakui *R. g. intermedius*

	♂		♀		♂		♀	
	Length	Width	Length	Width	Length	Width	Length	Width
Body	1.91	—	2.02	—	4.10	—	5.08	—
Head { frons	—	0.13	—	0.13	—	1.08	—	1.26
{ temples	0.50	0.41	0.52	0.43	1.43	2.21	1.56	2.69
Prothorax	0.19	0.26	0.23	0.28	0.54	1.04	0.61	1.15
Pterothorax	0.32	0.41	0.30	0.41	0.59	1.69	0.78	1.71
Abdomen	1.08	0.46	1.20	0.43	2.04	1.74	3.23	2.11
Basal plate	0.22	0.11	—	—	1.24	0.23	—	—
Parameres	0.15	0.11	—	—	0.33	0.20	—	—
Endomera	0.13	0.05	—	—	0.26	0.13	—	—

Genus PECTENOSOMA Ewing, 1929.

Pectenosoma v. verrucosa (Taschenberg), 1882.

Gonicotes verrucosus, *Nova Acta Leop.-Carol.*, 44 : 94 ; pl. 3, fig. 4. (Host : *Tinamus variegatus* = *Crypturellus v. variegatus* (Gmelin)).

Two males and two females of this well-known species are present in the collection, from the type host, Abary River, Brit. Guiana, Clay No. 94. They have been carefully compared (including measurements) with my series of *verrucosa* from the type host, collected at Puerto Venecia, Caquetá, Colombia, and were found to be identical.

The number of papillæ on segments III–V in the ♀ has been used in the classification of the different subspecies of *verrucosa*, but I have previously stressed the fact that the number of these papillæ is not always exactly the same in a series of specimens even from the same individual host, and often differ by one or two on the two sides of the abdomen in the same segments, as shown by the following table. However, making due allowances for such differences, they form a useful index for the separation of subspecies in this genus. Almost no differences are found in the ♂ genitalia.

TABLE OF PAPILLÆ.

	♀ from Puerto Venecia		♀ from British Guiana
Segment III =	6—5	against	5—5
	6—6		6—5
Segment IV =	5—4	"	6—5
	5—6		6—5
Segment V =	3—4	"	6—5
	5—5		4—5

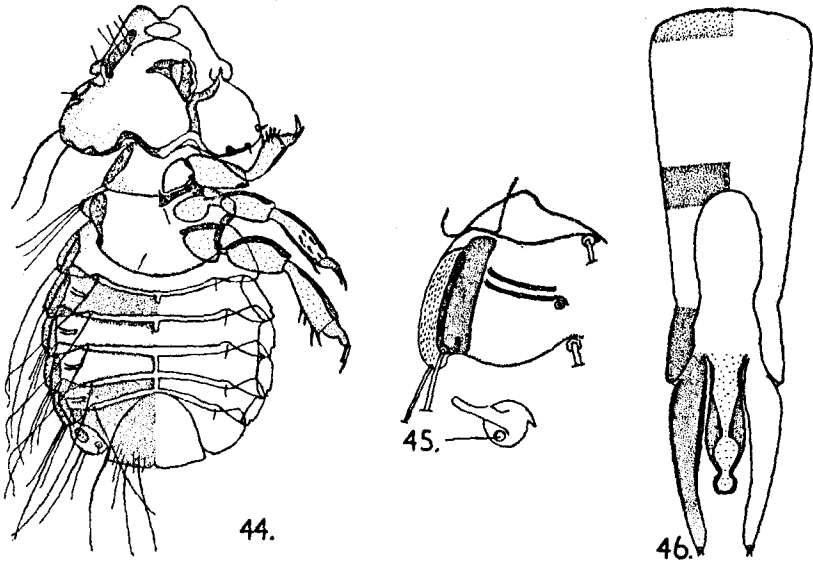
(Genus *STRONGYLOCOTES* Taschenberg, 1882.

Strongylocotes interruptus caquetae Carriker, 1953.

Rev. Brasil Biol., 13 (4) : 327 ; figs. 1-5. (Host : *Crypturellus v. variegatus* (Gmelin).)
Strongylocotes complanatus fimbriatus Clay, of Stafford's List. Carriker, 1955, *Bol. Ent. venezol.*, 11 : 54.

A single ♀ of this species was collected from the type host, Abary River, Brit. Guiana, and agrees exactly with the description and figure of *caquetae*, as well as the ♀ allotype of the race.

Figs. 44-46.



Megaginus tessellatus simplex subsp. n.
 44. Female. 45. Pleurite II and scent gland on segment VI. 46. Male genitalia.

Genus *MEGAGINUS* Carriker, 1936.

Megaginus tessellatus simplex subsp. n. (Figs. 44-46).

Males and females from *Crypturellus v. variegatus* (Gmelin), Abary River, Brit. Guiana, 5.ii.1961, Clay No. 94.

Diagnosis.—Like *tessellatus*, this is one of the larger species of the genus, being but slightly smaller than the nominate form in all measurements except length of abdomen, thus having a longer and narrower abdomen than *tessellatus* (0.70×0.65 against 0.67×0.67).

Resembles *tessellatus* in shape of head and also has the clear, outer portion of the abdominal pleurites I-VI "tessellated", but this area is much narrower than in the nominate form, in fact the whole pleurite is very much narrower than in *tessellatus*.

The male of *tesselatus* is unknown, so that the genitalia cannot be compared. Out of 11 known forms of *Megaginus*, the males of but five are presently known, but these five all follow the same pattern and differ but slightly, either in the basal plate or the endomera.

As previously stated (*in litt.*), in insects as small as *Megaginus* the differences between closely related species or races are minute, as a rule, and great care must be taken in localizing and evaluating them, while in larger insects the differences are easily recognized.

Holotype female and *allotype* male, slide no. 680 (Carriker no. 708).
Paratypes : 11 ♂, 10 ♀ (1 ♂, 1 ♀ retained by author).

Measurements of the types :

	♂		♀	
	Length	Width	Length	Width
Body	1.17	—	1.30	—
Head { frons	—	0.11	—	0.12
{ temples	0.41	0.56	0.42	0.57
Prothorax	0.12	0.30	0.13	0.30
Pterothorax	0.24	0.42	0.26	0.43
Abdomen	0.61	0.63	0.70	0.65
Basal plate	0.24	0.08	—	—
Parameres	0.11	0.07	—	—
Endomera	0.07	0.02	—	—

Genus *PHYSCONELLOIDES* Ewing, 1927.

Physconelloides ceraticeps Ewing, 1927.

Jour. Wash. Acad. Sci., 17 : 94. (Host : *Leptotila ochroptera chlorauchenia* = *L. verreauxi chlorauchenia* (Salv. & God.).)

In the collection are 2 ♂♂ and 4 ♀♀ of what seems to be this species, taken on *Leptotila r. rufaxilla*, Kanaku Mts., Rupununi, Brit. Guiana, Clay No. 61.

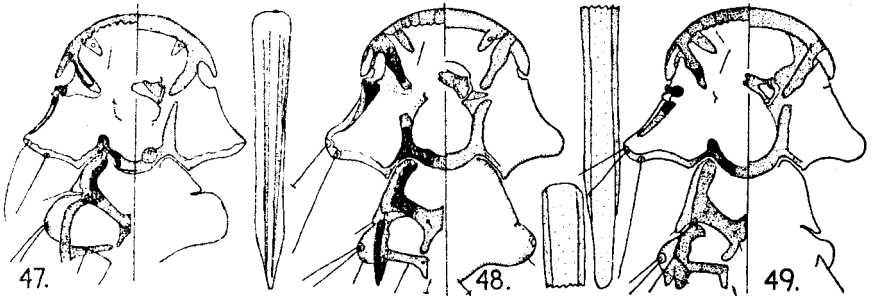
I have examined 9 ♂♂ and 11 ♀♀ of this genus from three subspecies of *L. verreauxi*, two subspecies of *L. rufaxilla* and from *L. cassini*. With few exceptions the genital plates in both sexes have been visible, with their corresponding setæ. They are remarkably uniform, with only occasional slight differences in the number or length of the setæ, and agree well with the figures for *ceraticeps* given by Emerson, 1960 : 123. If we accept this morphological character as a reliable criterion for the classification of the various species or subspecies of *Physconelloides*, it is then possible that in the avian genus *Leptotila* there is but the one species of this parasite, at least in the six species and subspecies examined, and that is *P. ceraticeps* Ewing. However, *Leptotila* is a large genus and Mallophaga from only a small percentage of its species and subspecies have been collected, so that it would be highly presumptuous on my part to assert that *ceraticeps* is the only species of *Physconelloides* found on it. It would be necessary to examine material from many more of its forms

in order to be quite certain that this character may always be relied upon. In the following pages further remarks will be made regarding this problem.

Measurements of *P. ceraticeps* from *Leptotila r. rufaxilla* :

	♂		♀	
	Length	Width	Length	Width
Body	1.19	—	1.65	—
Head {	frons	0.37	—	0.47
	temples	0.51	0.44	0.62
Prothorax	0.13	0.32	0.17	0.39
Pterothorax	0.15	0.41	0.21	0.52
Abdomen	0.65	0.59	0.98	0.75
Genitalia	0.43	—	—	—

Figs. 47-49.



Physconelloides spp.

47-48. Female head and thorax and male genitalia. 47. *P. rubripes* sp. n. 48. *P. talpacoti* sp. n.
49. ? *P. matlogrossensis* (Guimarães), head and thorax of male from *Columbigallina minuta* from Brit. Guiana.

Physconelloides rubripes sp. n. (Figs. 47, 50).

Males and females from *Zenaida auriculata stenura* = *Z. auriculata rubripes* (Lawrence)* near Lethem, Rupununi, Brit. Guiana, 15.ii.1961, Clay Nos. 135-136.

Diagnosis.—Quite different from *P. wisemani* Emerson, 1960 (*Zenaida asiatica*). The head measurements alone are sufficient to separate it specifically. *P. rubripes*, ♂: head, 0.33 × 0.46; ♀: 0.43 × 0.63 against ♂: 0.33 × 0.52; ♀: 0.33 × 0.53.

There are also differences in size and shape of the spine-like processes of the head, as well as the carinae of the thorax. There is also a striking disparity in size between the sexes in *rubripes*: ♂: 1.00 × 0.52; ♀: 1.52 × 0.79 against ♂: 1.21 × 0.58; ♀: 1.40 × 0.63. The shape and

* Peters has placed *auriculata* in the genus *Zenaidura*, and says that: "*Z. a. stenura* has never been satisfactorily identified." The only species of the genus he gives for Brit. Guiana is *Z. a. rubripes* (Lawrence).

chaetotaxy of the ♀ genital plate resembles that of *wisemani*, but is not the same, while that of the ♂ ano-genital opening is quite different. Measurements follow the next species.

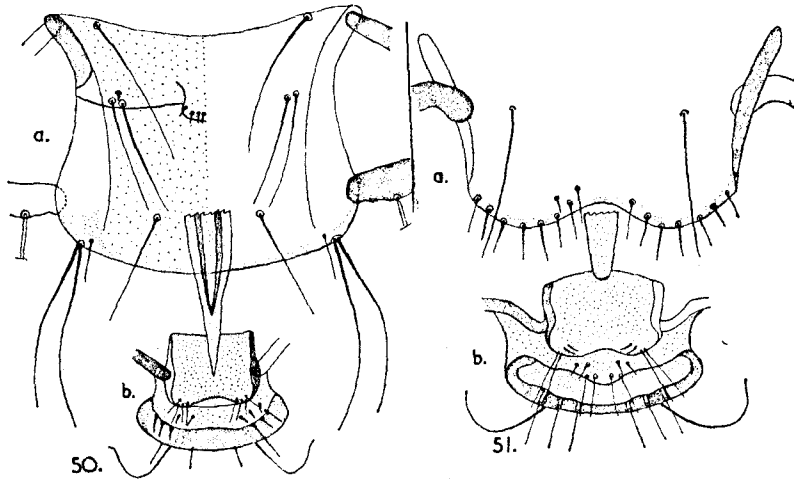
Holotype male and *allotype* female, slide no. 681 (Carriker no. 709).
Paratypes : 2 ♂, 3 ♀ (1 ♂, 1 ♀ retained by author).

Physconelloides talpacoti sp. n. (Figs. 48, 51).

Males and females from *Columbigallina talpacoti rufipennis* (Bonaparte), Trinidad, W. Indies.

Diagnosis.—The chaetotaxy of the ♀ genital plate differs greatly from that of *passerinae* Emerson, 1957, while the chaetotaxy of the ♂ ano-genital opening differs from all other species which I have seen (see fig. 51). Emerson has not used in his classification either the

Figs. 50-51.



Physconelloides spp. n. a. Female vulva. b. Male ano-genital opening.
 50. *P. rubripes*. 51. *P. talpacoti*.

shape or chaetotaxy of the marginal carina of the terminal abdominal segment which lies just posterior to the genital opening, which I believe is useful, as may be seen from the figures given in this paper, no two being quite the same.

An examination of the figures here given of the head and thorax of the several species treated will show the differences between them. Undoubtedly *talpacoti* is closest to *passerinae*. However, the measurements of the types of *talpacoti* are very close to those of *matogrossensis* (?) from *C. m. minuta* of British Guiana, Emerson has given no measurements of *passerinae*. I give, under that species, the measurements of my ♂ and ♀ paratypes from Pine Cay, Bahamas, together with remarks on the species. It will be seen that the differences between *talpacoti* and

passerinae are great, not only in actual measurements but in proportions. Unquestionably *talpacoti* is specifically distinct from *passerinae*.

Holotype male and *allotype* female, slide no. 682 (Carriker no. 710) from type host, near Arena, Trinidad, 2.viii.1960, TRVL No. 4740. *Paratypes*: 12 ♂, 9 ♀ (1 ♂, 1 ♀ retained by author) from the type host from various localities in north Trinidad.

Measurements of the types of :

P. rubripes

P. talpacoti

	♂		♀		♂		♀	
	Length	Width	Length	Width	Length	Width	Length	Width
Body	1.00	—	1.52	—	1.45	—	1.68	—
Head { frons	—	0.32	—	0.46	—	0.46	—	0.48
temples	0.33	0.46	0.43	0.63	0.46	0.67	0.48	0.67
Prothorax	0.11	0.24	0.14	0.37	0.20	0.40	0.19	0.40
Pterothorax	0.12	0.34	0.21	0.52	0.24	0.49	0.22	0.49
Abdomen	0.54	0.52	0.95	0.79	0.83	0.69	1.05	0.76
♂ genitalia	0.33	0.05	—	—	0.43	0.04	—	—

Physsonelloides mattogrossensis Guimarães, 1936. (Figs. 49, 52, 53, 54, 56).

Goniocotocanthus mattogrossensis Guimarães, *Rev. Mus. Paul.*, 20 : 226 ; figs. 8, 9 and photograph no. 2. (Host : *Columbigallina m. minuta* (Linné).)

The material available for study is entirely too scanty to arrive at any definite conclusion as to its systematic status, and its relationships with *P. passerinae* Emerson. I have examined only two ♂ paratypes of *mattogrossensis* Guimarães and two ♂ and two ♀ from the type host, collected near Lethem, Rupununi, Brit. Guiana, Clay No. 130, and the six specimens are certainly not conspecific with *passerinae* Emerson. One ♂ and two ♀ in my own collection, which had been labelled as from *C. minuta interrupta* prove to have been taken from *C. talpacoti rufipennis* and are practically identical with the types of *talpacoti* n. sp.

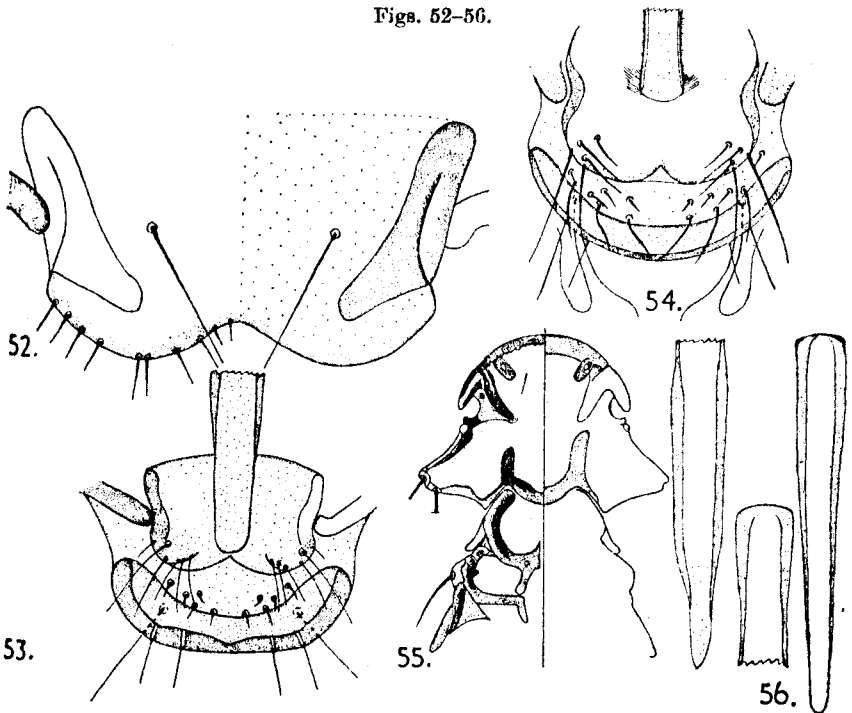
The two ♂ from British Guiana are not the same as the two ♂ paratypes of *mattogrossensis* (from Brazil) sent me by Dr. Clay. The genitalia are quite different and the measurements of the head and thorax are considerably greater in the Rupununi specimens. The male genital opening also differs very much in chaetotaxy (see figs.). I have seen no authentic female of Guimarães' species. If the criteria of the genital plates and genital openings and their chaetotaxy are to be accepted as conclusive evidence of systematic status, then we have two distinct species of this genus in the Brazil and Guiana material. There is always the possibility of a mis-identification of one of the hosts. The penis of this species (from Brazil) is quite unique, having the apical portion with sides closely set with minute setæ, longer towards the tip (see fig. 54). The genitalia are the same in both of the male paratypes of *mattogrossensis*, and entirely different from that of the British Guiana males from supposedly the same host.

Measurements of a ♂ paratype of *matlogrossensis* and ♂ and ♀ from British Guiana from same host species :

	♂		♂		♀	
	Length	Width	Length	Width	Length	Width
Body	1.42	—	1.48	—	1.67	—
Head { frons	—	0.40	—	0.46	—	0.48
temples	0.41	0.62	0.44	0.67	0.50	0.69
Prothorax	0.16	0.39	0.17	0.40	0.17	0.42
Pterothorax	0.15	0.48	0.19	0.48	0.21	0.49
Abdomen	0.83	0.71	0.84	0.72	1.01	0.73
Genitalia	0.76	0.09	0.56	0.06	—	—

Note on measurements: In this genus the length of the pro- and pterothorax is difficult to measure correctly, since their posterior margins are often impossible to define, so that there may be some errors in the above tables in those measurements.

Figs. 52-56.



Physconelloides spp.

- 52-53. *P. ? matlogrossensis* from *Columbigallina minuta*, Brit. Guiana. 52. Female vulva. 53. Male, terminal segments, dorsal. 54. *P. matlogrossensis* (Guimariões), male paratype in British Museum (N.H.) from Brazil, terminal segments, dorsal. 55. *P. passerinae* Emerson, male paratype from Salvador; head, thorax and genitalia. 56. *P. ? matlogrossensis* from Brit. Guiana, male genitalia.

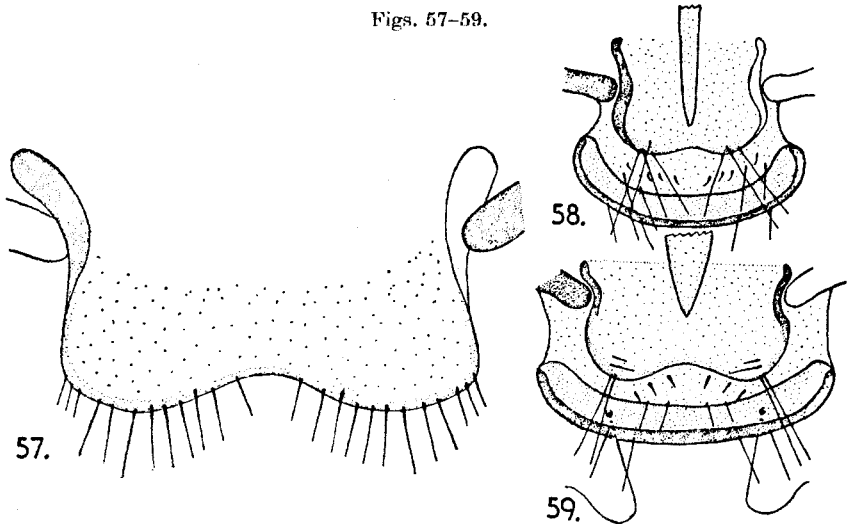
Physconelloides passerinae Emerson, 1957. (Figs. 55, 57-58).

Journ. Kan. Ent. Soc., 30, No. 2: 37. (Host: *Columbigallina p. passerina* (Linné).)

There are no specimens of this species in the Clay collection, but I wish to make certain observations concerning its status.

I have examined the following specimens: one ♂ "paratype" (*C. p. pallescens*, Salvador): one ♂ and one ♀ "paratypes" from *C. p. bahamensis* (Pine Cay, Bahama Ids.). The type host was given as the nominate race of *C. passerina*, collected at Bainbridge, Ga, U.S.A. In the list of "paratypes" are given specimens from the U.S., Cuba, British West Indies (several islands), Isle of Pines, the Bahamas, and lastly Salvador, Central America.

Figs. 57-59.



Physconelloides passerinae Emerson.

57-58. Paratypes from *Columbigallina passerina bahamensis*. 57. Female vulva. 58. Male ano-genital opening. 59. Paratype in British Museum (N.H.) from *Columbigallina passerina pallescens*, male ano-genital opening.

I cannot accept this method of designating "paratypes". The figures here presented show the fallibility of designating a heterogeneous lot of specimens as paratypes of a species, or else show that the criterion of the chaetotaxy of the posterior abdominal segments may not be used as an infallible index. I present figures of the male genital opening of the two "paratypes" cited above, with the chaetotaxy (figs. 58 and 59). I am certain that fig. 59 is correct, but there may be some small errors in the setae of 58, since they were not all clearly visible. As may be seen, the distal portion of the genitalia is quite different in the two males, and I believe that 58 lacks the two short transverse setae at each side of plate.

With so little material from which to judge, it is not possible to arrive at any definite conclusions.

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