

## NEW AND LITTLE KNOWN MALLOPHAGA FROM VENEZUELAN BIRDS

(Part II)

M. A. CARRIKER, Jr.  
Research Associate in Entomology  
of the U. S. National Museum, Washington, D.C.  
with residence in Bucaramanga, Colombia

This is the third of a series of papers (1) dealing with Mallophaga of Venezuelan birds, which will be published by the Sociedad de Ciencias Naturales La Salle de Caracas.

This series of papers will form a report on the combined collections of the Museo de Historia Natural La Salle and that portion of the Carriker collection made personally by him in Venezuela in 1909-10 and 1922. All species new to science will be described and figured.

The types from the Carriker collection will eventually be deposited in the U. S. National Museum at Washington, while those from the M. H. N. La Salle collection will be returned to that Institution. Paratypes of all new species will be exchanged whenever possible.

In the present paper all types are from Venezuelan material, excepting in a few cases where such material was in too poor a condition to be used for that purpose, and specimens from an adjoining country substituted.

Various genera are treated from both the Amblycera and Ischnocera, and two genera previously placed in synonymy in the 1952 Checklist, have been recognized and redescribed, together with new species under them.

All descriptions, measurements and drawings have been made by the author, and all measurements are in millimeters. The scientific names of the hosts follow the nomenclature of Peters, or of Hellmayr and Conover in the families upon which they have reported.

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(1) The first paper, entitled: "Lista Preliminar de Mallophaga de Venezuela" appeared in Mem. S. C. N. La Salle, Tomo XVIII, No. 51, pp. 184-208. The second paper, entitled "New and Little Known Mallophaga from Venezuelan Birds" (Part I), appeared in Novedades Científicas del Museo de Historia Natural La Salle, Caracas; Serie Zool., 20 de Abril, 1961, No. 28, pp. 3-60, both with co-authorship of M. A. Carriker, Jr. and Carlos Díaz-Ungria.

The author wishes to express his sincere appreciation of the generosity of the Sociedad de Ciencias Naturales La Salle, for making possible the publication of these papers, which it is hoped will be of value to future students of Mallophaga not only in Venezuela but wherever such studies are being carried out, and perhaps stimulate other scientists to take up the study of this fascinating family of insects, to which all too few are now dedicated.

Genus *KURODAIA* UCHIDA, 1926

Jap. Coll. Agri., Tokyo, 9, p. 50. (Type sp. = *Colpocephalum baliacti* Denny)

*Kurodaia baliacti* (Denny), 1842

(PLATE Ia, FIGS. 1, 2)

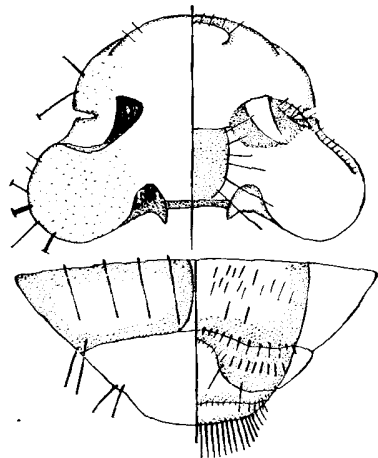


Fig. 1.—*Kurodaia baliacti* (Denny)  
(♀ head and tip of abdomen).

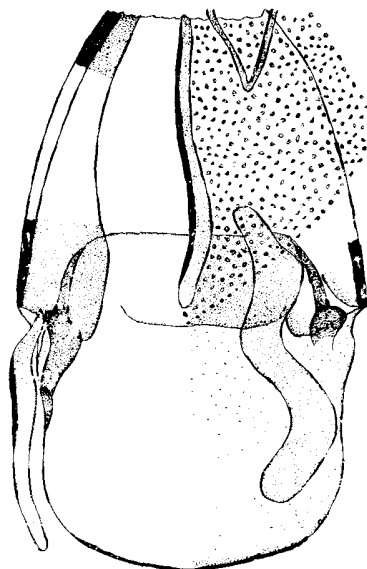


Fig. 2.—*Kurodaia baliacti* (Denny)  
(♂ genitalia).

The Fish Hawk (*Pandion baliactus*), host of *C. baliacti* Denny, and the type species of the genus *Kurodaia* has been placed in a separate family, the Pandionidae, which contains species from both the Old World and the New.

Since this Hawk is a regular winter visitor in Venezuela, from the United

States, it seems appropriate at this time to make some pertinent remarks concerning its well known Mallophagan parasite, mentioned above.

In the 1952 Checklist of Mallophaga 10 valid species of *Kurodaia* were listed, 4 from Falconiformes and 6 from Strigiformes, but the latter were allocated to the subgenus *Conciella* Eichler.

Recent workers in this group (see Note) contend that *K. baliacti* possesses a certain morphological character which is not found in most other species of Monoponidae which have been currently placed under *Kurodaia*, and wish to exclude from *Kurodaia* all such species, but to my present knowledge have not assigned such species to any other genus. They claim to have seen other species from the Falconiformes which also possess this character, but in my own researches I have seen no others of this type.

It is quite logical that the Mallophagan parasites of the Pandionidae may not be congeneric with the Menoponidae of other families of the Falconiformes and a very careful comparison of its morphology with that of many other species of so-called *Kurodaia* and closely related species of *Colpocephalum* seem, without doubt, to verify this contention.

The principal generic character upon which this is based is the presence of a conspicuous, hyaline lobe or sclerite on each side of the posterior margin of the last abdominal sternite in the female sex, and which possess a number of short, stout setae on their dorsal face.

Another character not mentioned by the other workers is the decidedly different type of male genitalia found in *K. baliacti*, a figure of which is here presented, together with a figure of the female head and the last two abdominal segments. A detailed description of the ♂ genitalia does not seem to be necessary, suffice to say that the basal plate (not entirely shown) is long and rod-like, also, that the movable sclerite and enclosing sac are usually located further backward in the basal plate than is here shown. The V-shaped structure at the right is quite long, more than half as long as the sclerite, and seems to form the sides of the opening into the sac.

The head characters of the other species of the so-called *Kurodaia* complex, parasitic on other species of the Falconiformes, vary considerably, some having the cranial carinae very similar to those of *K. baliacti*, and others quite typical of *Colpocephalum*.

The abdominal dimorphism in shape and chaetotaxy, so pronounced in the type species of *Colpocephalum* (*C. zebra*) is even present in the species found on *Rosthramus sociabilis*, and to a lesser extent in species parasitic on Hawks, but the species infesting the genus *Falco*, at least, do not have this sexual dimorphism, so that it is very difficult to draw a line between the two groups which would separate them on this character.

It seems best, at least for the present, to place all of these controversial species in the genus *Colpocephalum* until much more material is available for their study, and this I have done, both in this paper and in another treating solely the genus *Colpocephalum*, which will appear in the near future, I trust. It has been necessary

to give the above explanations so that the new species from the Falconiformes described below, will be properly placed generically.

Note.—The information regarding the presence of the two hirsute lobes in the apical segment of the female abdomen was furnished to me by Prof. Roger D. Price, of the University of Minnesota, who, together with another colleague, is now working on this group. The matter of the differences in the male genitalia is my own contribution.

Three of the new controversial species described below are from the genus *Falco*, and are so closely related that they must be considered as conspecific. I have not seen *Kurodaia macrocura* Eichler, but it seems to be specifically distinct from the *falconia* complex, but must undoubtedly be shifted to *Colpocephalum*. In these species of *Colpocephalum* the mesometasternal sclerite, together with its setae differ considerably between the species here described, whenever visible, and is a very useful character for the separation of closely related forms, as well as the movable sclerite in the male genitalia.

There is another group of *Colpocephalum*, found usually on the larger Falconiformes, which is again quite different from the *falconia* complex. They have the abdomen almost parallel-sided, or widest at segment I, with deeply pigmented pleurites and the outer portion of the tergites (see *ceciliae* and *heterospizias* n.sp.).

#### KEY TO THE FEMALES OF THE SPECIES AND SUBSPECIES OF *COLPOCEPHALUM* AND *CONCIELLA* DESCRIBED IN THIS PAPER

- a. Abdomen uniformly oval; pleurites and tergites not strongly pigmented.
  - b. Black ocular blotch round or oval, with posterior margin terminating in a black line, curving outward and backward to edge of temples; occipital blotches connected by a clearly marked brown carina.
    - c. Ocular blotches large and round; occipital blotches round and black and with black line running backward from them to lateral angle of the prothorax  
*C. ictiniæ* ♀
    - cc. Ocular blotches oval, of medium size, connected with frontal and occipital blotches by broad, light brown carinae; outer lateral margin of ocular blotches forming a straight, diagonal line; posterior margin of prothorax very flatly convex; segment IX of abdomen unusually large  
*C. falconii falconii* ♀
  - bb. Black ocular blotches either rounded or angulated, but never terminating in a black curving line; deeply pigmented brown carinae connecting frontal and occipital blotches with ocular blotches.
    - c. Ocular blotch rounded and extending laterally to encircle the ocular slit, either partially or wholly; prothorax with lateral angles acute.

- d. Prothorax with posterolateral margin flattened, the segment with a somewhat conical shape posteriorly, with rounded point; occipital blotches connected by a black carina; prothorax with posterior margin strongly convex  
*C. falconii caeruleus* ♀
- dd. Prothorax with posterior margin flatly circular between lateral angles, the whole segment very short; occipital blotches connected by a dark brown carina (not black); prothorax with posterior margin flatly convex; meso-metasternal sclerite very small, not clearly visible; carinae connecting ocular and occipital blotches widened medially, enclosing a small, oval clear spot  
*Conciella pectinata neotropialis* ♀
- cc. Ocular patches angulated, split by ocular slit and with a black, inner lobe; occipital blotch small and with a brown connecting carina; prothorax with lateral angles rounded and posterior margin circular; prothorax with posterior margin flatly convex  
*C. falconii rufigularis* ♀
- aa. Abdomen not uniformly oval, tergites strongly pigmented in at least outer half; ocular and occipital blotches large and black, both terminating posteriorly in a narrow, curving, black line
  - b. Abdomen widest at segment I, tapering slightly and uniformly to the penultimate segment; apical segment circular; pleurites narrow but black; tergites deeply pigmented brown in outer half; prothorax short and very wide (.15 x .48)  
*C. ceciliae* ♀
  - bb. Abdomen elongated oval, widest at segments III-IV and tapering rapidly from IV to the narrow, rounded IX; prothorax much narrower (.15 x .39); pleurites very narrow and same color as tergites, the outer half of which are dark brown  
*C. heterospizium* ♀

*Colpocephalum falconii falconii* n.sp.

(PLATE 1b, FIGS. 1, 3a, 4c)

Holotype, ♀ adult, from *Falco peregrina anatum* Bonaparte, collected at Restinga, Margarita Id., Jan., 1956 (Nº 1525, coll. M. H. N. La Salle) (Author's type Nº 666).

DIAGNOSIS.—Black ocular patch elongated oval, terminating posteriorly in a black, curving line reaching almost to margin of temple; prothorax wide, with lateral angles bluntly pointed; posterolateral margin straight; meso-metathoracic suture clearly defined; posterior margin of prothorax very flatly convex. Abdomen broadly oval; pleurites very narrow, brown in color; tergites almost filling segments, entire across abdomen, with outer half darker brown; combs of setae on hind femora and sternite III exceedingly fine and short.

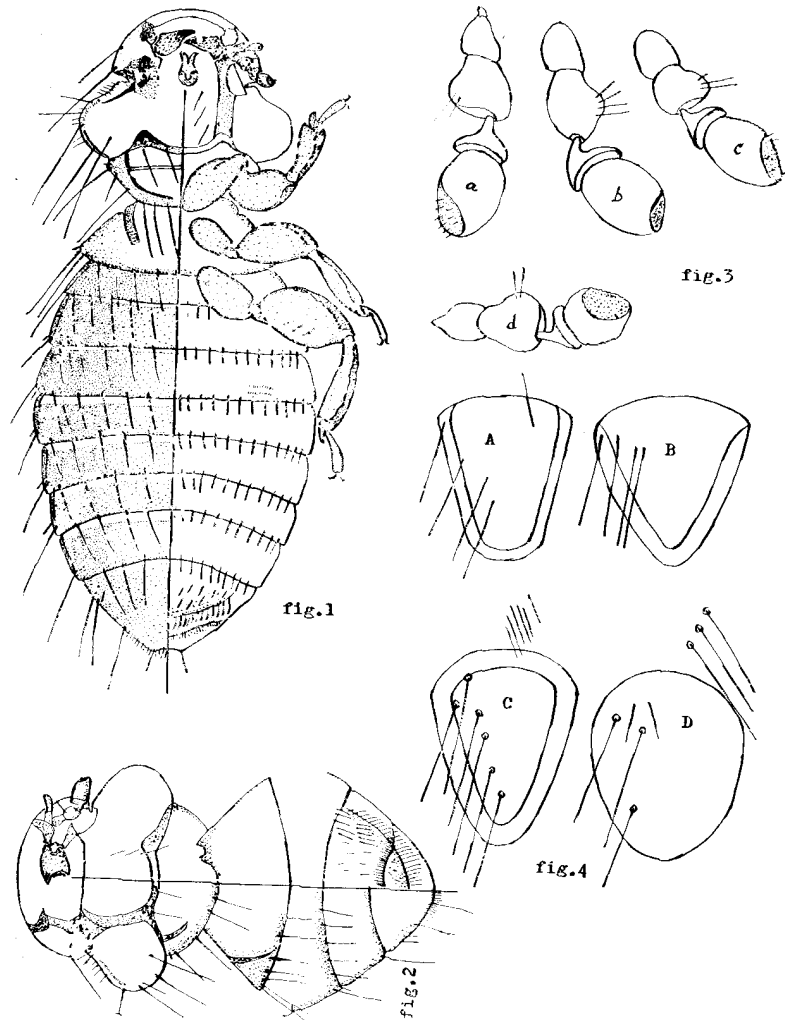


PLATE 1b

Fig. 1.—*Colpocephalum f. falconii* (♀ body).  
 Fig. 2.—*Colpocephalum falconii rufigularis* (Head, thorax and tip of abdomen).  
 Fig. 3.—*Colpocephalum* (Antennae of: (a) *falconii*; (b) *ictinia*; (c) *cecilia*; (d) *heterospizium*)  
 Fig. 4.—Meso-metasternal sclerites: (a) *heterospizium*; (b) *falconii caerulescens*; (c) *f. falconii*; (d) *Kurodaia hataeti* (Denny).

Species represented by the holotype ♀ and 2 ♀ ♀ paratypes, one of the latter remaining in author's collection. Measurements follow next species.

Note.—In the M. H. N. La Salle collection is a single ♀ (N° 1533) from Margarita Id., Jan., 1956, whose host is given as *Falco c. columbarius*. This female is identical with the 3 ♀ ♀ from *F. peregrina anatum*, described above, and it is the opinion of the author that it is a straggler from that host, the two birds probably having been shot on the same day, since their catalogue numbers are close together (1925 and 1933). Well authenticated material from *Falco columbartus* is essential to definitely determine the status of this parasite.

*Colpocephalum falconii caerulescens* n.subsp.

(PLATE IV, FIG. 4; PL. 1b, FIG. 4b)

Holotype, ♀ adult, from *Falco fusco-caerulescens* Vicillor, collected at Las Hernández, Margarita Id., Jan., 1956 (N° 1532 in M. H. N. La Salle coll.) (Carriker type N° 667).

DIAGNOSIS.—Head markings differ decidedly from those of *falconii* (see figs.), also frons is slightly wider and temples narrower; shape of both prothorax and pterothorax also differs; meso-metathoracic suture less prominent. May be distinguished from *falconii* and *rufigularis* by the shape of the occipital margin, it being uniformly concave, while in the other two occiput is convex.

Known from the holotype only.

Measurements of the holotypes of *C. f. falconii* and *C. f. caerulescens*:

	♂		♀	
	length	width	length	width
Body	1.70	—	1.56	—
Head	frons	—	.39	.41
	temples	.39	.55	.37
Prothorax	.20	.40	.17	.38
Pterothorax	.195	.51	.175	.50
Abdomen	1.08	.72	.98	.69

*Colpocephalum falconii rufigularis* n. subsp.

(Pl. 1b, FIG. 2; PL. II, FIG. 2a; PL. IV, FIG. 3b)

Types, ♂ and ♀ adults, from *Falco rufigularis petoensis* Chubb, collected by the author at Mamotoco, Magdalena, Colombia, Sept. 17, 1913 (Type in coll. of author, N° 668).

DIAGNOSIS.—Differs from *falconii* as follows: Frons slightly wider, temples

decidedly wider, but same shape; ocular blotch angulated, encircling ocular slit and with black inner lobe, and united with frontal and occipital blotches by narrow, light brown carinae; prothorax with entire posterior margin uniformly circular between

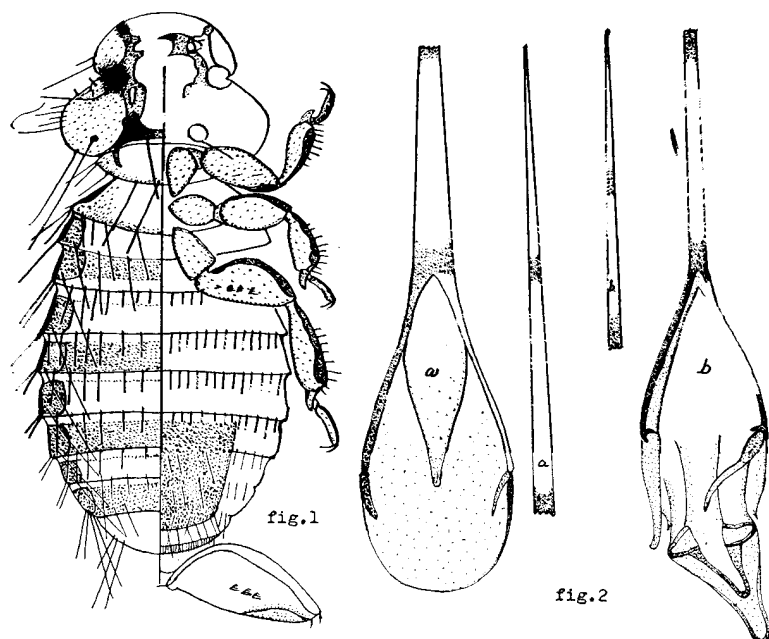


PLATE II

Fig. 1.—*Conciella pectinata neotropicalis* (♀ body).  
 Fig. 2.—Genitalia of *Colpocephalum*: (a) *falconii rufifigularis*; (b) *ceciliae*.  
 Fig. 3.—*Colpocephalum heterospizium* (♀ body).

the lateral angles, nor flattened laterally as in *falconii* and *caerulescens*. Pterothorax with strongly divergent sides, unbroken at meso-metathoracic suture.

The male differs from female but slightly, being smaller. The male genitalia as described under the generic characterization, and with *very short*, almost straight parameres; the movable sclerite, unfortunately, is missing.

Represented by ♀ holotype, ♂ allotype and 4 adults and 2 juv. ♀♀ paratypes. Measurements follow the next species.

*Colpocephalum icinia* n. sp.

(PL. Ib, FIG. 3b; PL. III, FIGS. 2 AND 3b)

Types, ♂ and ♀ adults, from *Ictinia plumbea* (Gmelin), collected by the author at La Bomba, Edo. Bolivar, Venezuela, Apr. 19, 1910. (Type N° 669 in coll. of author).

DIAGNOSIS.—May be distinguished from *falconii* and *rufifigularis* by the shape of the occipital margin, which is uniformly concave, *not* with occiput convex. Head very short and broad, with expanded temples narrow longitudinally; ocular and occipital blotches very large, black and rounded, and connected by clear brown carinae. Prothorax very short and wide, with lateral angles rounded and posterior margin almost uniformly circular (exposed sides slightly flattened); meso-metathoracic suture prominent and pterothorax long and wide; terminal abdominal segment also large.

Male: Very similar but much smaller and with apical abdominal segment of a quite different shape and chaetotaxy. Represented by the holotype ♀, allotype ♂ and 3 adult and 7 juv. ♀♀ paratypes.

Note.—A single immature ♀ of a *Gyropus* was in this vial with *Colpocephalum*. Undoubtedly the louse came from a rodent which the hawk was eating, and which had crawled up onto the head of the hawk while it devoured its prey. No other explanation offers, since the author collected no rodents at that time.

Measurements of the types of *C. f. rufifigularis* and *C. icinia*:

	♂		♀		♂		♀	
	length	width	length	width	length	width	length	width
Body	1.63	—	1.92	—	1.17	—	1.64	—
Head	frons	.39	.41	—	.34	—	.39	—
	temples	.36	.61	.40	.565	.34	.48	.36
Prothorax	.15	.33	.165	.37	.13	.31	.15	.37
Pterothorax	.22	.42	.21	.54	.13	.40	.20	.51
Abdomen	1.02	.37	1.30	.80	.65	.54	1.05	.66
Basal plate	.54	—	—	—	.44	—	—	—
Parameres	.023	—	—	—	.02	—	—	—
Endomeral sac	.077	.08	—	—	.05	.06	—	—

*Colpocephalum heterospizium* n.sp.

(PL. Ib, FIGS. 3d, 4a; PL. II, FIG. 3; PL. III, FIG. 3a)

Types, ♂ and ♀ adults, from *Heterospizius meridionalis* (Latham) collected at Coro, Falcón, Venezuela, March, 1956 (Nº 2033 in M. H. N. La Salle coll.) (Carriker type 670).

DIAGNOSIS.—Differs decidedly from all of the other species here described, in shape of abdomen, shape and markings of head and in a certain amount of sexual dimorphism. (see figs.)

Abdomen of ♀ elongated oval, widest at II-V, then tapering to rounded, narrow tip; genital plate and its setae very different; pleurites very narrow and pale; outer half only of tergites pigmented heavily, pale medially.

Male: Much smaller than ♀; head longer and narrower; heavier ocular and occipital blotches and a more oval abdomen, with apical segment wider and more circular. (see fig. for genitalia). Represented by holotype ♀, allotype ♂ and 2 ♀ paratypes. Measurements follow the next species.

*Colpocephalum ceciliae* n. sp.

(PL. Ib, FIG. 3c; PL. II, FIG. 2b; PL. III, FIG. 1; PL. IV, FIG. 3a)

Types, ♂ and ♀ adults, from *Daptrius ater* Vieillot, collected at Campo Cecilia Magdalena, Río Caura, Venezuela, May, 1957 (Nº 2759 in M. H. N. La Salle coll.) (Carriker type Nº 671).

DIAGNOSIS.—Readily recognized by the large black ocular and occipital blotches and broad frons; head comparatively narrow at temples and with very deeply concave occipital margin. Prothorax short, with posterior margin uniformly circular; pterothorax short, very wide, with straight, widely divergent sides; abdomen widest at segment I, tapering gradually to broad, rounded IX.

Sternites differ in shape from tergites, sternite II being as wide as tergites II-III combined; genital sclerite large; chaetotaxy of abdomen short but abundant.

Male: Differs from ♀ in more or less same manner as in *heterospizium*, being much smaller and with head narrower at frons and at temples, but very little shorter; abdomen decidedly oval in shape, widest at segments III-IV and with apical segment wide and circular posteriorly, and with distinct chaetotaxy; sternites of same width and shape as tergites. Represented by holotype ♀, allotype ♂ and 1 ♀ paratype.

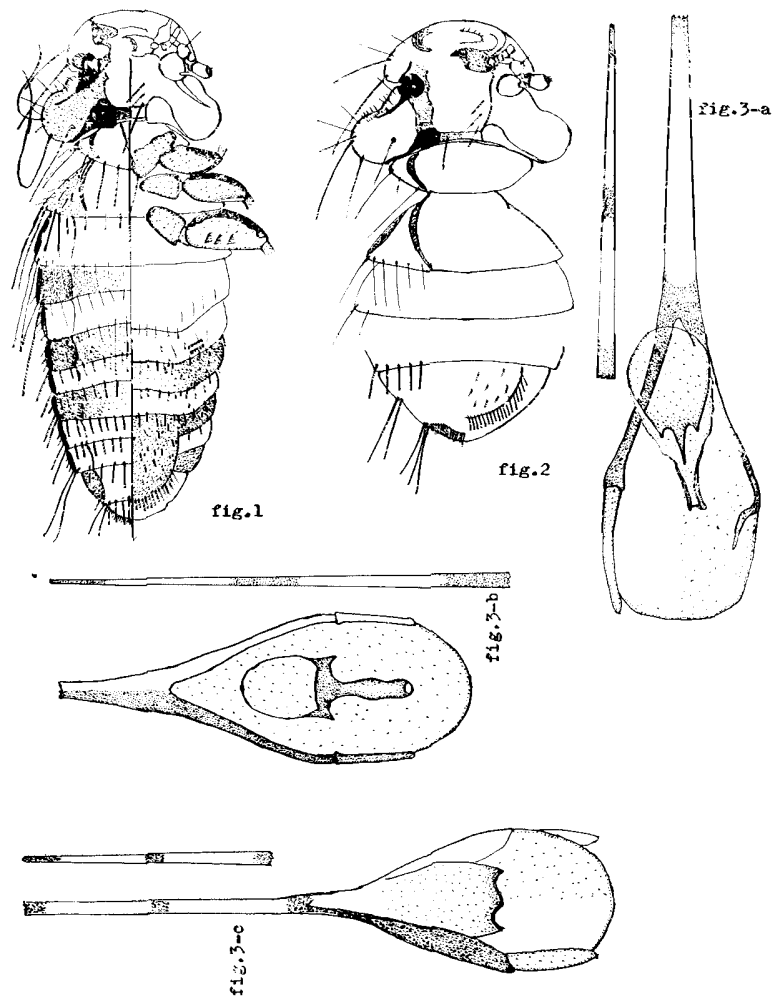


PLATE III

Fig. 1.—*Colpocephalum ceciliae* (♀ body).  
 Fig. 2.—*Colpocephalum iciniiae* (♀ body).  
 Fig. 3.—*Colpocephalum* genitalia: (a) *heterospizium*; (b) *iciniiae*; (c) *Conciella pectinata neotropicalis*.

Measurements of the types of *C. heterospizium* and *C. ceciliae*:

	♂		♀		♂		♀	
	length	width	length	width	length	width	length	width
Body	1.38	—	1.52	—	1.06	—	1.28	—
Head	frons		—		.303		—	
	temples		.38 .46		.31 .434		.326 .475	
Prothorax	.13	.29	.14	.31	.12	.29	.14	.30
Pterothorax	.12	.35	.15	.39	.15	.40	.16	.49
Abdomen	.87	.59	.89	.56	.61	.45	.78	.52

Genus *CONCIELLA* FICHLER, 1949Boll. Soc. Ent. Ital., 79, p. 11. (Type species: *Colpocephalum paucii* McGregor).*Conciella pectinata neotropicalis* n. subsp.

(PL. II, FIG. 1; PL. III, FIG. 3c)

Types, ♂ and ♀ adults, from *Speotyto cunicularia tolimae* Stone, collected by the author at Casacará, Magdalena, Colombia, May 18, 1942 (Type 672 in author's collection).

DIAGNOSIS.—The nominate race was described by Osborn from *Speotyto cunicularia hypogaea*, collected at Lincoln, Neb., U. S. A. The new subspecies has been compared with co-types of *Colpocephalum pectinatum* Osborn, as well as with specimens from Venezuela and Perú, from other subspecies of *C. cunicularia*. A ♂ and 2 ♀ ♀ from *S. cunicularia brachyptera*, endemic on Margarita Id., Venezuela, are identical with the Casacará series of *neotropicales*.

The entire series examined is very closely related and *all* are conspecific with *C. pectinata* (Osborn). The new race is slightly smaller than the nominate race in some measurements of both sexes, but not all, but the head is noticeably narrower and the abdomen considerably smaller in both sexes; the black blotches on the head are larger, with a third smaller spot on each side of the frons which is absent in *pectinata*. The chaetotaxy of the entire body is coarser; the pleurites more deeply pigmented and tergites wider, with the hyaline spaces between them narrower. The combs of spines on the 3rd. femora are *very minute* and can only be distinguished by using a 4 mm. objective; these combs, as well as those on sternite III are composed of finer setae. Represented by holotype ♀, allotype ♂ and 4 ♂ ♂ and 6 ♀ ♀ paratypes. Paratypes 1 ♂ and 3 ♀ ♀ in M. H. N. La Salle coll.

Measurements of *C. p. pectinata* (Osbn.) and types of *C. p. neotropicales*:

	♂		♀		♂		♀	
	length	width	length	width	length	width	length	width
Body	1.48	—	1.81	—	1.43	—	1.65	—
Head	frons		—		.423		—	
	temples		.358 .52		.38 .575		.355 .488	
Prothorax	.14	.314	.174	.358	.15	.31	.195	.35
Pterothorax	.16	.41	.195	.51	.17	.41	.22	.51
Abdomen	.91	.56	1.15	.69	.87	.52	1.06	.65
Basal plate	.50	.087			.42	.087		
Parameres	.043	—			.065	—		
Endomerale sac	.13	.087			.13	.087		

Genus *CICONIPHILUS* BEDFORD, 1939

*Ciconiphilus*, Bedford, 1939, Onderstepoort J. Vet. Sci., 12, p. 141 (Type species: *Colpocephalum quadripustulatum* "Nitzsch").

*Ciconiphilus femoratus* (Piaget) versus *C. maculipes* (Giebel)

(PLATE IV, FIGS. 1, 2)

*Colpocephalum femoratum* Piaget, Pediculines Suppl., 1885, p. 124; pl. 13, fig. 7 (Host: *Mycteria americana* Linné).

*Menopon maculipes* Giebel, Insecta Epizoa, 1874, p. 298 (Host: *Tamalus loculator* = *Mycteria americana* Linné).

In the 1952 Checklist of Mallophaga the host of *C. femoratus* (Piaget) is given as "probably error", and *C. maculipes* (Giebel) accredited to that host.

I have 2 ♀ ♀ and 1 ♂ of this genus, all from *Mycteria americana*, 1 ♀ collected by Pablo Anduze at Sta. Elena, Gran Sabana, Venezuela; the other ♀ collected by the author at Chaterona, Bolivia (Río Beni). The male came from San Luis Potosí, México, collected by C. Shaw, together with a second ♂ which is now in the Louisiana State Univ. Mus. Zool.

A comparison of the two ♀ ♀ shows conclusively that they are different, although superficially very similar.

The ♀ from Venezuela agrees very closely with Piaget's description and figure of his *C. femoratus*, and may provisionally be identified as that species. The measurements differ slightly but chaetotaxy of head, thorax and apical segment of abdomen all agree, as well as the abdominal sclerites as far as shown in his figure.

The ♀ from Bolivia differs in many details and is probably not conspecific, and it seems probable that it may be Giebel's *Menopon maculipes*, although there

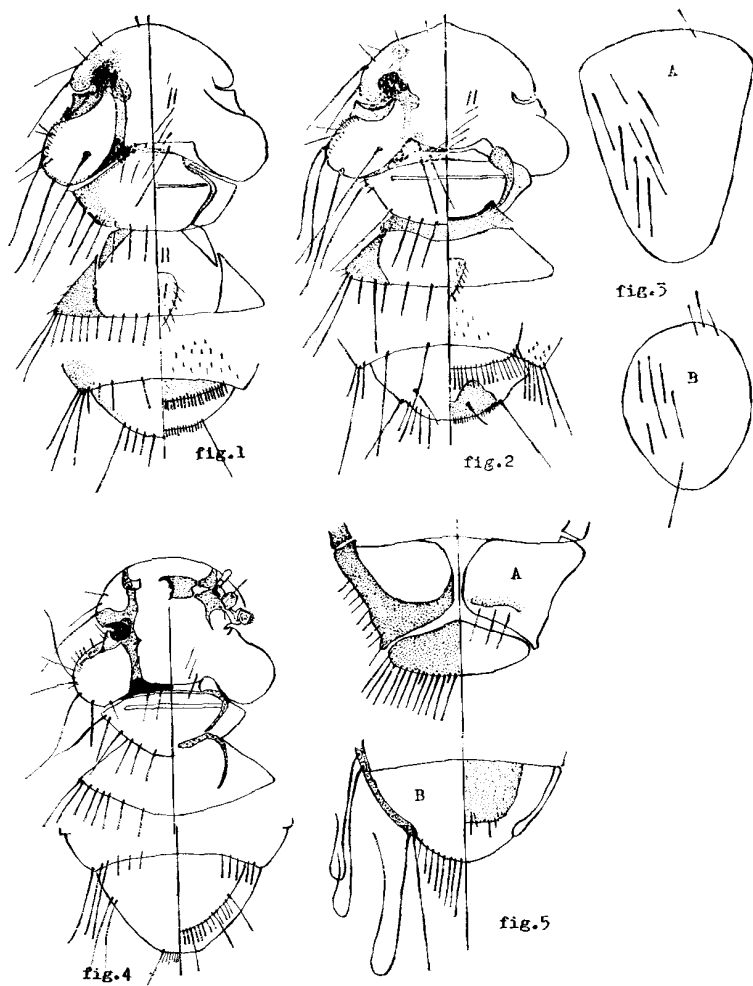


PLATE IV

Fig. 1.—*Ciconiphilus femoratus* (Piaget) (♀, head, thorax and tip of abdomen).  
 Fig. 2.—*Ciconiphilus maculipes* (Giebel) (♀, head, thorax and tip of abdomen).  
 Fig. 3.—*Colpocephalum* meso-metasternal plates: (a) *ceciliae*; (b) *falconii ruficularis*.  
 Fig. 4.—*Colpocephalum falconii caerulescens* (♀ body).  
 Fig. 5.—*Eulaemobothrion* (tip of abdomen): (a) *jabiruensis*; (b) *eursypsae*.

are almost no useful diagnostic characters given in his description for separating the two species. Apparently Piaget had no specimens of Giebel's *maculipes*.

The Bolivian ♀ (*maculipes*) differs from the Venezuelan ♀ (*femoratus*) as follows: Head wider, both at temples and ocular slit; length slightly less and entire shape different; occiput much more deeply incised and with the submarginal, occipital carina somewhat circular (transverse in *femoratus*). Attachment of prothorax with head different; mesothorax very different in structure (see figs.) and shorter, as well as metathorax.

Apical segment of abdomen much larger, with a peculiarly shaped ventral sclerite back of last sternite; chaetotaxy basically the same but the fringe of setae around posterior margin of last sternite much longer, while those of the apical, sternal fringe are shorter, finer, and more dense.

The chaetotaxy of the head and prothorax also differ. In *maculipes* there are 3 long setae on each temple, while in *femoratus* there are 2 long and 1 short setae; both have the same long, strong, dorsal setae on median portion of temples. In *maculipes* 1 long seta in each lateral angle of the prothorax (anterior and posterior), while in *femoratus* there is an additional long seta in middle of lateral margin; on the posterior margin are 3 long and 1 short setae on each side in *maculipes* and 4 long setae in *femoratus*.

The ♂ from Mexico agrees perfectly with the above mentioned characters of *maculipes* (excepting the chaetotaxy of the tip of abdomen), and should be called *C. maculipes* (Giebel).

Apparently *Mycteria americana* is the host of two distinct forms of *Ciconiphilus*, possibly conspecific, but probably not. If both females had been taken on the same bird the evidence would be conclusive that they were two distinct species. On the other hand there may possibly exist two populations of the same species on this host, but not on the same individual bird.

Considering the morphological and geographic differences of the three specimens studied, I would favor the hypothesis that they are distinct species, a conclusion strengthened by our knowledge of the very small morphological differences which exist between many closely related species of the Menoponidae. Until further material is available from this host I prefer to consider them as distinct species.

Measurements:

	<i>maculipes</i>	<i>femoratus</i>	Piaget
Body	1.93	2.01	2.40 - 2.50
Head (temples)	.41 x .64	.40 x .62	.37 x .65
Prothorax	.20 x .431	.205 x .434	
Mesothorax	.08 x .38	.37 x .55	.098 x .326
Metathorax	.15 x .55	.19 x .564	.46 x .54
Abdomen	1.28 x .81	1.32 x .87	1.69 x 1.00



Genus *EULAEMOBOTHRION* EWING, 1929*Eulaemobothrion*, Ewing, 1929. Man. Ext. Parasites: 105, 189. Type species: *Laemobothrion nigrum* Burmeister.*Eulaemobothrion jabiruensis* n. species

(PL. IV, FIG. 5a; PL. V, FIG. 1)

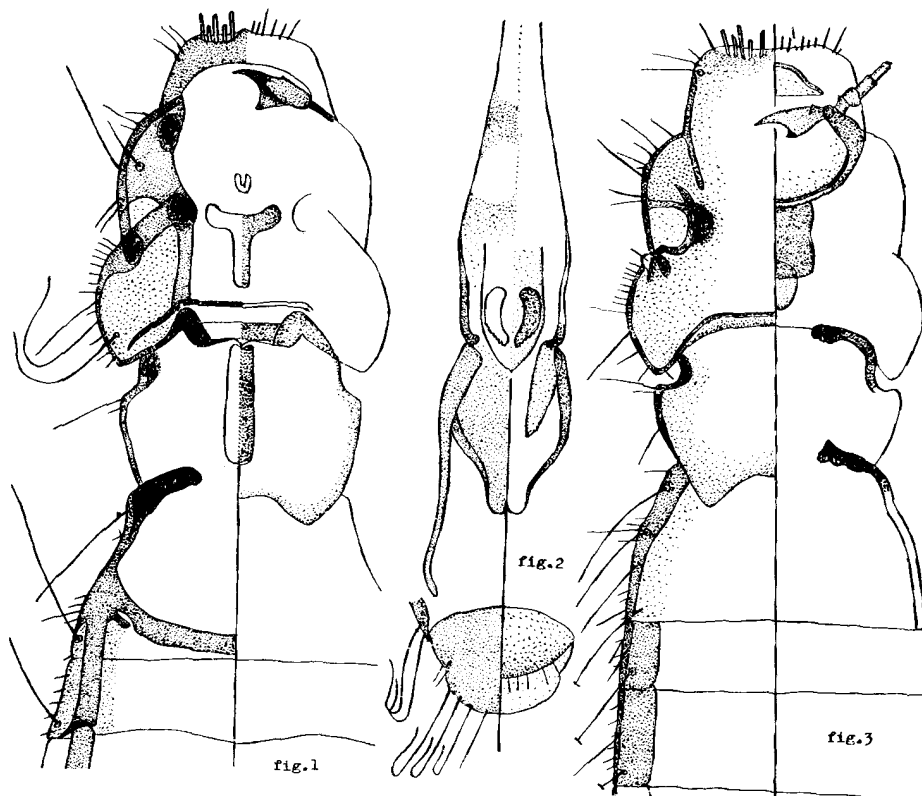
Holotype ♀, from *Jabiru mycteria* Linné, collected by the author at Maripa, Río Caura, Venezuela, Oct. 8, 1909 (in coll. author).

PLATE V

- Fig. 1.—*Eulaemobothrion jabiruensis* (♀ head, thorax and abd. segments I, II).  
 Fig. 2.—*Eulaemobothrion eurypygae* (♂ genitalia and tip of abdomen).  
 Fig. 3.—*Eulaemobothrion eurypygae* (head, thorax and abd. segments I, II).

**DIAGNOSIS.**—Compared with six species of the genus, viz: *atrum*, *cubense*, *gracile*, *kelloggi*, *opisthocomi* and *setigerum*. It is much smaller than all of the above species except *gracile* (on *Psophia crepitans*), which it resembles in the shape of the thorax, the lateral submarginal carinae of the abdomen, and the shape and chaetotaxy of the terminal abdominal segment, this segment being separated from the penultimate by a hyaline band.

Differs from *gracile* as follows: Frons truncate, with slightly rounded lateral angles and sides straight to antennary swellings, while in *gracile* the front is flatly rounded and with strongly rounded lateral angles; both species have five flat setae on each side of frons, together with several slender ones (Labial palpi are missing from both specimens).

In *jabiruensis* the abdomen is wider apically (less pointed), with terminal segment flatly rounded posteriorly and with anterior margin flatly conical, while in *gracile* it is sharply rounded posteriorly and truncate anteriorly. The abdominal pleurites are much less deeply pigmented than in *gracile*, fading in color along inner portion, while in *gracile* they are deeply and uniformly pigmented and with inner margins sharply defined.

Head measurements are close in both species, but in *jabiruensis* it is wider at the antennary swellings, which are more flatly rounded, and with the eye less pronounced. Temples less pigmented, as well as antennary swellings and wide pre-antennary carinae, but the pitchy markings are similar; there is a wide, deeply pigmented marginal carina along posterior margin of the pterothorax, absent in *gracile*; legs similar in size and color. Known only from the holotype.

## Measurements:

	♀	
	length	width
Body	4.20	—
Head	frons	.37
	temples	.87
Prothorax	.60	.72
Pterothorax	.58	.91
Abdomen	3.15	1.35

*Eulaemobothrion eurypygae* n. species

(PL. IV, FIG. 5b; PL. V, FIGS. 2, 3)

Types, ♂ adult and ♀ immature, from *Eurypyga b. belias* (Pallas) collected at Atures, Territorio Amazonas, Venezuela, Aug. 1, 1955 (in M. H. N. La Salle coll.).

**DIAGNOSIS.**—Unfortunately both females of this species are slightly immature, hence cannot be properly compared with the female of the preceding species.

Immature specimens are invariably smaller than adults, hence the smaller measurements given below for the female.

However, there is apparently very little difference in size between this species and the preceding, but the component parts are quite distinct.

A comparison of the two figures presented will show at a glance these differences much better than a long description. It resembles *jabiruensis* more closely than any other species with which it has been compared, but differs as follows: The preantennary portion of head, the antennary swellings of head and the shape of temples are all different, also the occipital plate, anterior portion of prothorax and apical abdominal segment, the last being strikingly different. Represented by the ♂ holotype, ♀ allotype, 1 ♀ and 3 ♂♂ paratypes. 1 ♂ and 1 ♀ paratypes have been retained by the author.

## Measurements:

	♂		♀	
	length	width	length	width
Body	4.37	—	3.68	—
Head {frons	—	.48	—	.326
{temples	.96	.87	.836	.803
Prothorax	.51	.725	.488	.66
Pterothorax	.58	.84	.50	.82
Abdomen	2.65	.955	2.23	.955
Basal plate	.86	.17		
Parameres	.38	.13 (at base)		
Endomerical sac	.24	.185		

Genus *CLAYIELLA* EICHLER, 1940

Zool. Anzeiger, Band 130, Nos. 5-6, p. 102. Type species: *C. schulzkampfbenkeli* Eichler.

Given as a synonym of *Philopterus* in the 1952 Checklist of Mallophaga, probably due to lack of comprehensive material for its study.

While the type species is parasitic on species of the Family Momotidae, the genus is also found, in modified form, on the Cotingidae, Bucconidae and Galbulidae.

The original characterization is of little value, nor were figures given of the type species, while the principal characters upon which the genus may be based were entirely overlooked.

A large genus, with its component species being far from homogenic. The entire complex is difficult to define, but it has several features common to all its various forms. The front of the head is enclosed by a wide hyaline band; the wide anterior plate is quadrangular, except for the rapidly tapering posterior tip,

which is much paler and is separated from the anterior portion by a transverse line; on each side of the anterior plate, at its widest portion, is a long, pointed, spine-like process lying more or less parallel to the lateral margin, while slightly posterior to it, on the curving postero-lateral angle, is set a second, sharp-pointed spine, pointing backward; the inner preantennary carinae are absent, the anterior plate being supported by a sclerite on each side, of varying shape, arising from near the base of the clavi and extending forward and inward to the anterior plate, either fused to its lateral margin or overlapping the sides.

The above characters are found on all species of the genus which I have examined, about 25 in all, from the three groups which compose the genus, and to which a key is given for their separation.

The preantennary carinae range from wide, unbroken sclerites, through narrow ones with a concavity on inner side at median portion, to those completely broken medially as in the genotype of *Philopterus*, with their broken ends joined by a slender sclerite.

Shape of abdomen and abdominal tergites resemble those of many species of *Philopterus*, while in one of the groups (on the Momotidae) the sternites are also similar, being reduced to rounded, isolated sclerites on each side of the abdomen. In the other two groups the sternites are narrow, transverse, slightly curving sclerites set in median portion of abdomen. There are 2 short spines on dorsal surface of tergites I to IV, near their inner ends, on all species from the Momotidae and Cotingidae, and which are replaced in the Bucconidae and Galbulidae by 3-6 short, slender setae on each side of posterior margin of the sternites.

## DESCRIPTIVE KEY TO THE THREE GROUPS

- a. Preantennary carinae entire, with or without a small concavity on inner margin; 2 spines on tergites I-IV near inner end and 1 on V; no inner preantennary carinae.
- b. Carinae wide and almost parallel-sided; sclerites which support anterior plate elongated oval, with the slender, apical tip fused to the edge of the anterior plate at base of lateral spine; large clavi with petiolate attachment; sternites in form of rounded, isolated sclerites on each side of abdomen; male genitalia large, the short, wide parameres with transverse tip. (Group A). Parasitic on the avian family Momotidae.
- bb. Preantennary carinae narrower, with a slight concavity on inner edge near median portion; sclerites supporting anterior plate wider, with wide, rounded tip overlaying sides of anterior plate, and with a branch extending from its base to anterior mandibular condyle; sternites transverse, in median portion of abdomen; spines on tergites as in (b); male genitalia very small, without penis or endomerical sclerites, and parameres minute or obsolete. (Group B). On the Cotingidae.
- aa. Preantennary carinae broken medially and ends united by a slender, spine-like sclerite; no spines on tergites, but with 3-6 short, slender setae on each

side of posterior margin of sternites; sclerites supporting anterior plate bend inward to plate, then forward over its sides and again outward to join the preantennary carinae anterior to the break. Male genitalia resembling those of group B, but with different type of parameres. (Group C). On Bucconidae and Galbulidae.

*Clayiella schulzkampfbenkeli* Eichler, 1940

(PL. VI, FIGS. 1 AND 2)

Zool. Anz., Band 130, p. 103. Host: *Momotus m. momota* (Linné).

The descriptive matter covering the genus, given above, together with the figures presented are ample for the recognition of this species.

The peculiar structure of tergite I and the heavy spine at base of 3rd. femora are characteristic of all of the species parasitic on the Momotidae (see fig.). Another character peculiar to Group A is the strongly petiolate clavi.

Specimens from several subspecies of *Momotus momota* are very closely related, in one case inseparable. *Docophorus dennyi* Ponton, 1871, from *Momotus mexicanus* is a *Clayiella*, closely related to the present form and represented in the author's collection by 1 ♂ and 3 ♀♀ collected at Tres Zapotes, Veracruz, México.

The male differs from female in smaller size, shape and chaetotaxy of apical abdominal segments and genital sternite; the lesser body length is entirely in the head and abdomen, the thoracic segments being the same length in both sexes, but differ in width. Species represented in the collection by 2 ♂♂ and 2 ♀♀ collected by the author at Yagual, Río Caura, Venezuela, Jan. 9, 1911, and by 1 ♀ in the M. H. N. La Salle collection from Campamento Cecilia Magdalena, Río Caura, May, 1957, all from the type host of the species. 3 ♂♂ and 2 ♀♀ from *Momotus momota ignobilis*, collected by the author at Puerto Yessup, Perú, are not separable from Venezuelan specimens.

*Clayiella cotingae* new species

(PLATE VIII, FIG. 1)

Holotype ♀ from *Pachyrhampus rufus* (Boddaert), collected by the author at Laguna de Aroa, Estado Yaracuy, Venezuela, Dec. 30, 1930 (in author's coll.).

**DIAGNOSIS.**—Like all species in Group B the present form is very much smaller than those from the Momotidae, and differs strongly in numerous characters. The hyaline frontal band is narrower and lacks the deep median depression; the anterior plate lacks the darker, V-shaped area of anterior portion and has no median depression on anterior margin; the dorsal antennary carina are narrower and are slightly incised near median portion on inner side; the sclerites supporting the anterior plate are much wider and have a basal branch extending to the anterior mandibular condyle; the bases of the clavi are attached directly to the head with no trace of a petiole as in (A); the lateral spines of the anterior

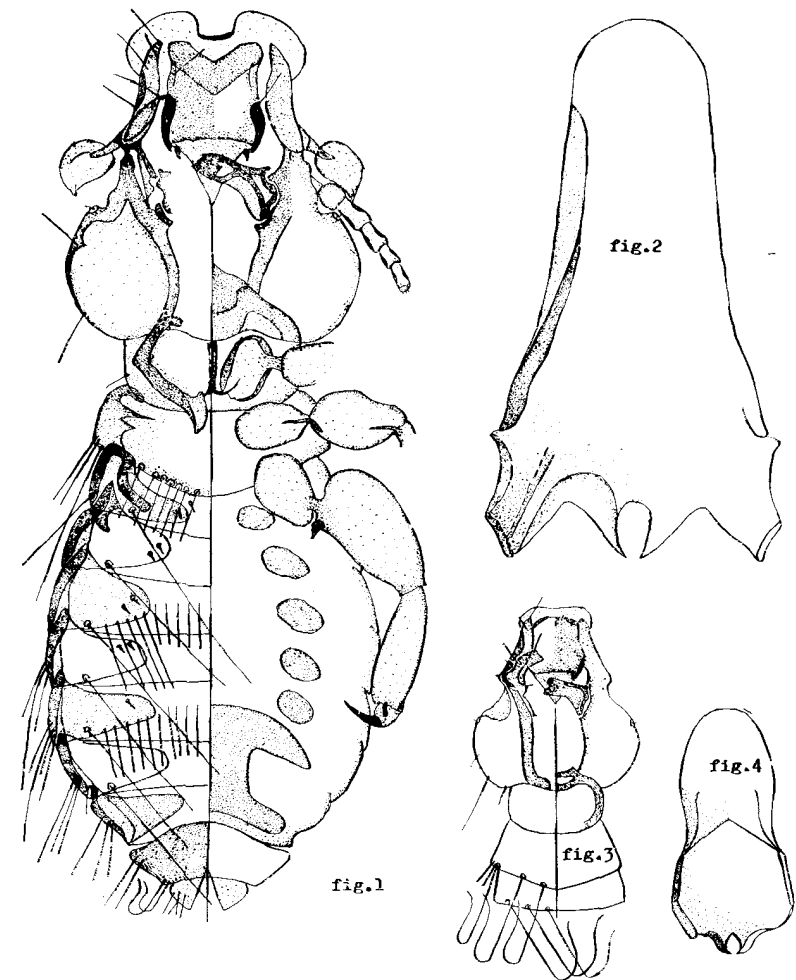


PLATE VI

- Fig. 1.—*Clayiella schulzkampfbenkeli* Eichler (♀ body)  
 Fig. 2.—*Clayiella schulzkampfbenkeli* Eichler (♂ genitalia)  
 Fig. 3.—*Clayiella festiva* (♂ head, thorax and abdominal segment 1).  
 Fig. 4.—*Clayiella festiva* (♂ genitalia).

plate are smaller and less pronounced, the posterior spine longer and slenderer; carinae of thorax very different; pterothorax pointed posteriorly and bearing fewer setae which are twice as long as in previous species and without pustules; tergite I with normal structure; sternites narrow, elongate, entire across median portion of abdomen and curving slightly backward in form of flattened crescent, but falling short of pleurites (see fig.).

The male is unknown, but is doubtless similar to the male of the following species, since they differ only subspecifically. Species represented by the ♀ holotype and 2 ♀ paratypes, also by 3 ♀ ♀ from the type host collected by the author near Bucaramanga, Colombia. A single ♀ from *Pachyrbambus polychropterus tenebrosus*, collected by the author at Puerto Venecia, Caquetá, Colombia, is inseparable from the holotype of this species.

Measurements of *C. schulzkampfbenkeli* and *C. cotingae*:

	♂		♀		♀	
	length	width	length	width	length	width
Body	1.77	—	2.24	—	1.61	—
Head	frons	—	.33	—	.37	—
	temples	.716	.67	.80	.76	.53
Prothorax	.27	.43	.28	.445	.217	.30
Pterothorax	.28	.54	.28	.61	.195	.456
Abdomen	.80	.74	1.19	.85	.90	.673
Basal plate	.47	.17				
Parameres	.077	.06				

*Clayella cotingae tristis* new subspecies

(PL. VIII, FIGS. 3 AND 4)

Types, ♂ and ♀ adults, from *Pachyrbambus polychropterus tristis* (Kaup), collected by the author at Peru Mine, Estado Bolívar, Venezuela, May 19, 1910 (in coll. author).

DIAGNOSIS.—Slightly smaller than *cotingae* in all measurements (b) and with head longer than wide in ♂ and wider than long in ♀; anterior plate similar in shape, except that anterior margin is slightly incised medially; the postero-lateral spine is smaller and the supporting sclerites are of different shape; clavi smaller and the gular sclerite rounded instead of bluntly pointed anteriorly; abdominal tergal spines similar, as well as the tergites, but sternites are transverse instead of curving backward and are much shorter; abdominal chaetotaxy without pustules.

Male: Similar to female but smaller, with proportions of head and apical abdominal segments different, with segments V-VII more curving forward than in ♀. Genitalia very different from those of the type species of the genus, being very

small and with the short, narrow, hyaline parameres folded inward across the endomeral plate (see fig.).

Subspecies represented by ♀ holotype, ♂ allotype and 1 ♀ paratype, all on the same slide. Measurements follow next species.

*Clayella festiva* new species

(PL. VI, FIGS. 3 AND 4)

Holotype, ♂ adult, from *Pipreola aureopectus festiva* (Todd), collected by the author at Las Quiguas, Estado Carabobo, Venezuela, Sept. 17, 1910. (in coll. of author).

DIAGNOSIS.—Body same length as ♂ of preceding form, but abdomen narrower; head longer than wide (.47 x .42 against .456 x .438) and with frons much narrower (.14 against .185); anterior plate similar to that of *cotingae*, as well as its supporting sclerites; preantennary carinae and clavi similar to those of *cotingae* and *tristis*; pterothorax with sides straight and less divergent, also sides of posterior margin straight and bluntly pointed medially; abdominal chaetotaxy very much longer and setae of pterothorax and tergites with small pustules.

Genitalia of same general type as in *tristis*, but much smaller, especially the basal plate; parameres similar but endomeral plate of different shape (see fig.). Species represented by the ♂ holotype and 1 ♂ paratype.

Measurements of *C. c. tristis* and *C. festiva*:

	♂		♀		♂	
	length	width	length	width	length	width
Body	1.13	—	1.52	—	1.18	—
Head	frons	—	.185	—	.20	—
	temples	.456	.438	.51	.52	.47
Prothorax	.215	.25	.195	.29	.185	.25
Pterothorax	.205	.36	.217	.434	.195	.347
Abdomen	.695	.526	.87	.61	.555	.412

*Clayella spinosa spinosa* new species

(PL. VII, FIGS. 1 AND 3)

Types, ♂ and ♀ adults, from *Bucco capensis* Linné collected by the author at La Pinta, Río Yuruán, Estado Bolívar, Venezuela, Apr. 7, 1910 (in coll. of author).

DIAGNOSIS.—A large species, about the size of *C. schulzkampfbenkeli* and much larger than the species parasitic on the Cotingidae, with which it agrees in the type and size of the ♂ genitalia. Differs from all known species of the genus pa-

rasitic on the Momotidae and Cotingidae in the structure of the preantennary carinae, the anterior plate and especially in its supporting sclerites (see fig.) and which structures seem to prevail in the families Bucconidae and Galbulidae; the preantennary carinae are narrow dorsally and completely broken medially, but joined sternally by a spine like process arising from the anterior half of the carinae and ending in a socket in the end of the posterior portion of the carinae (best understood by consulting figures).

The clavi are small and similar to those of the species on the Cotingidae; anterior plate also quadrangular, with concave anterior margin and convex sides; lateral spines large and posterior, pointed portion of the sclerite almost hyaline and much reduced in width basally. Posterior margin of head and prothorax perfectly straight (very unusual); legs short and stout with the smaller claw of all feet reduced to a very slender, straight, hyaline splinter, often difficult to observe; 3 spines on all femora and spines at tip of tarsi. Abdominal tergites with "heads" on anterior side in segments III-VII, and "heads" on posterior side in segments I-IV (see fig.); 7 long setae on posterior margins of tergites I-IV, 2 on VII, and all set in pustules; the 2 dorsal spines of the tergites are absent.

Four narrow, transverse sternites in median portion of abdomen, slightly curving and not reaching the pleurites, and bearing on each side of posterior margin 3-6 short, slender setae and 4 longer ones in median portion of the sclerites; genital sternite smaller than in previously described species (proportionately); a small, isolated sternal sclerite, with two short setae, on each side of segment VII.

Male: Smaller than female but otherwise differing little except in apical segments of abdomen (see fig.). Genitalia very small and rudimentary, with short, thick basal plate, divided medially by a curving transverse line; parameres reduced to very short, fixed and rounded sclerites (see fig.); heavily pigmented marginal carinae on endomeral plate between the parameres; no penis or endomeral sclerites.

Species represented by ♀ holotype, ♂ allotype and 3 ♂♂ and 8 ♀♀ paratypes. The measurements follow next species.

*Clayiella spinosa orinocensis* n. subsp.

(Pl. VII, Fig. 2; Pl. VIII, Fig. 2)

Types, ♂ and ♀ adults, from *Hypnellus bicinctus* (Gould), collected by the author at San Félix, Río Orinoco, Venezuela, Feb. 11, 1910 (in author's coll.).

DIAGNOSIS.—Similar to *spinosa* in general structure but smaller in most measurements (pterothorax slightly longer and narrower in ♂ and longer and of same width in ♀). Structure of preantennal portion of head very similar, but whole head smaller; the anterior plate is divided transversely by 2 curving lines in anterior half (absent in *spinosa*); clavi much larger and lateral spines of anterior plate shorter and thicker; mandibles less parallel-sided and occipital margin undulating (not straight); temporal carinae quite differently shaped; posterior margin of pterothorax with bluntly rounded median point, (not circular). Abdominal sclerites and chaetotaxy very similar to *spinosa*, but sclerites smaller and tergites differ slightly in shape; 3 spines on all femora.

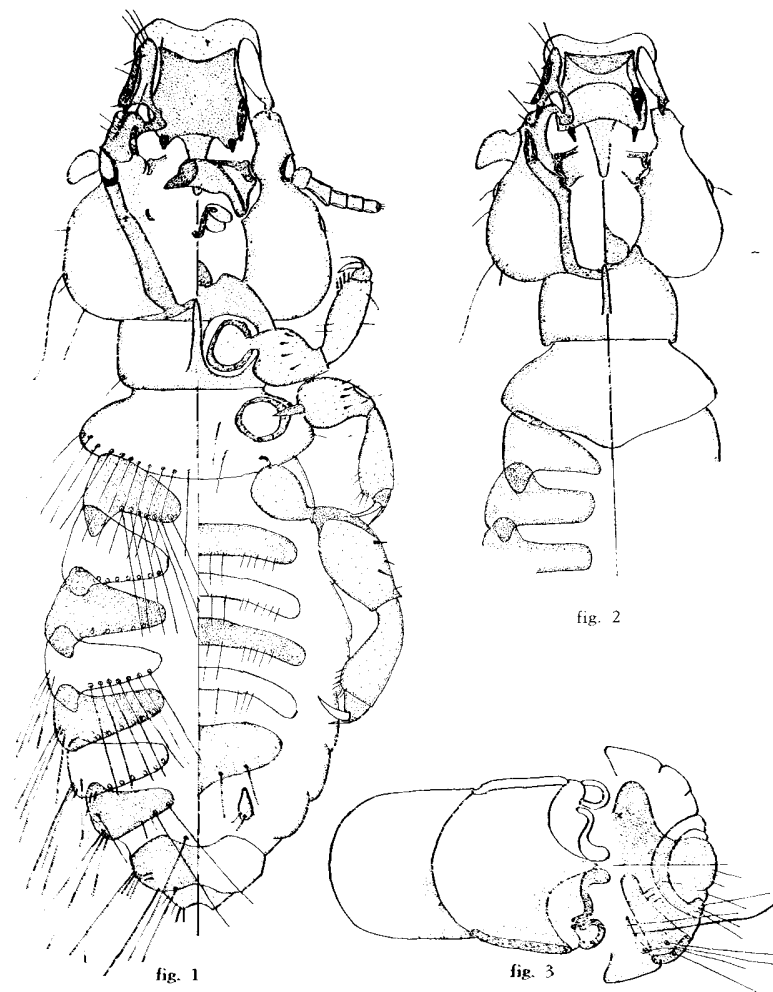


PLATE VII

Fig. 1.—*Clayiella s. spinosa* (♀ body).

Fig. 2.—*Clayiella spinosa orinocensis* (♀ head, thorax and portion of abdomen)

Fig. 3.—*Clayiella s. spinosa* (♂ genitalia and tip of abdomen).

Male: Much smaller than ♀ and with apical abdominal segments of different shape and chaetotaxy. The genitalia are similar, but basal plate longer and of different shape, with no median dividing line; parameres very small, fixed, and more elongated than in *spinosa*; there are the same heavily chitinized posterior margins of the endomeral plate, between the parameres, as in *spinosa*. Represented by ♀ holotype, ♂ allotype and 1 ♂ and 1 ♀ paratypes; also 3 ♀ ♀ from the type host collected on the Río Casanare in Colombia are inseparable.

Measurements of *C. spinosa spinosa* and *C. spinosa orinocensis*:

	♂		♀		♂		♀	
	length	width	length	width	length	width	length	width
Body	1.82	—	2.17	—	1.63	—	2.14	—
Head {								
frons	—	.24	—	.27	—	.24	—	.26
temples	.67	.60	.75	.72	.60	.56	.65	.63
Prothorax	.24	.37	.30	.41	.214	.30	.24	.35
Pterothorax	.22	.54	.24	.58	.24	.50	.26	.58
Abdomen	.83	.72	1.15	.78	.79	.63	1.39	.79
Genitalia, ♂: total	.22	.11			.26	.11		

#### ADDITIONS TO THE LIST OF MALLOPHAGA FROM VENEZUELA

*Myrsidea abidae* Ansari, 1956. Pakistan Journal of Health, vol. 5, N<sup>o</sup> 4, Jan. 1956, p. 171; text figs. 7a-f. (Host: *Turdus fumigatus aquilonalis*. Collected by M. A. Carriker, Jr., Apr. 7, 1910, at La Pinta, Estado Bolívar).

*Brüelia carrikeri* Ansari, 1955. Pakistan Journ. Health, vol. 5, N<sup>o</sup> 2, p. 51; text figs. 1a-e. (Host: [holotype] *Turdus serranus atrosericeus* and [allotype] *Turdus olivater sanctae-martae*, the former collected by M. A. Carriker, Jr. at Tabay, Venezuela, July 11, 1922).

*Brüelia pointu* Ansari, 1955. Ibid. p. 52; text figs. 2a-e. (Host: *Turdus n. nudigenys*, collected by M. A. Carriker, Jr. at Heights of Aripo, Trinidad, Aug. 25, 1909. Host later collected in the Paria Peninsula and the same species of Mallophaga taken on it).

#### Genus *FURNARICOLA* CARRIKER, 1944

Bol. Ent. Venezol., vol. 3, p. 83. (Type species: *F. acutifrons* Carriker)

#### *Furnaricola mirandae* n. species

(PL. X, FIG. 2)

Holotype, ♀ adult, from *Synallaxis unirufa castanea* Sclater, collected by the author at San Esteban, Estado Miranda, Venezuela, Nov. 2, 1910 (in coll. author).

DIAGNOSIS.—Most nearly related to *F. acutifrons* Carriker, from *Synallaxis abbescens perpallida* Todd.

It differs in wider frons and anterior plate, the latter not extending beyond the tips of the preantennary carinae; a hyaline band, concave medially, around tip of frons (absent in *acutifrons*); pterothorax with convex lateral margins strongly divergent (very slightly in *acutifrons*); dorsal portion of pleurites less deeply colored and ventral portion wider; genital plate decidedly different.

Body much shorter (1.50 x .46 against 1.71 x .48); head almost the same (.456 x .38 against .46 x .36); frons wider (.103 against .087).

Prothorax about the same but pterothorax shorter and wider (.195 x .347 against .24 x .30); abdomen much shorter (.815 x .456 against 1.04 x .48). Lateral ventral spines of last abdominal segment and the fringe of setae on genital plate about the same. Known only from ♀ holotype.

Measurements of ♀ holotype:

	length	width
Body	1.50	—
Head {		
frons	—	.103
temples	.456	.38
Prothorax	.09	.23
Pterothorax	.195	.347
Abdomen	.825	.456

*Cotingacola meridae* n. species

(PL. VIII, FIG. 5; PL. X, FIG. 5)

Types, ♂ and ♀ adult, from *Pipreola riefferi melanolaema* (Sclater), collected by the author at Tabay, Estado Mérida, Venezuela, July 10, 1922 (in coll. author, Type N<sup>o</sup> 681).

DIAGNOSIS.—Resembles slightly *C. foramina* Carriker, in structure of the head, but it is much larger, and with the male genitalia very different from all of the known species of the genus, having a complicated endomera and a very long, slender penis, without appendages. The frons is less flattened, especially in male; only 4 very small hyaline spots on each side of the preantennary portion of head; occipital sclerite, occipital carinae and attachment of prothorax with head are all different, also the lateral carinae of both segments of thorax; pterothorax with lateral margins much more divergent than in *foramina*.

Female: Very similar to male in structure and size of body segments, excepting the larger abdomen, apical abdominal segment, and with the frons slightly narrower and more pointed. Species represented by the ♂ holotype and ♀ allotype.

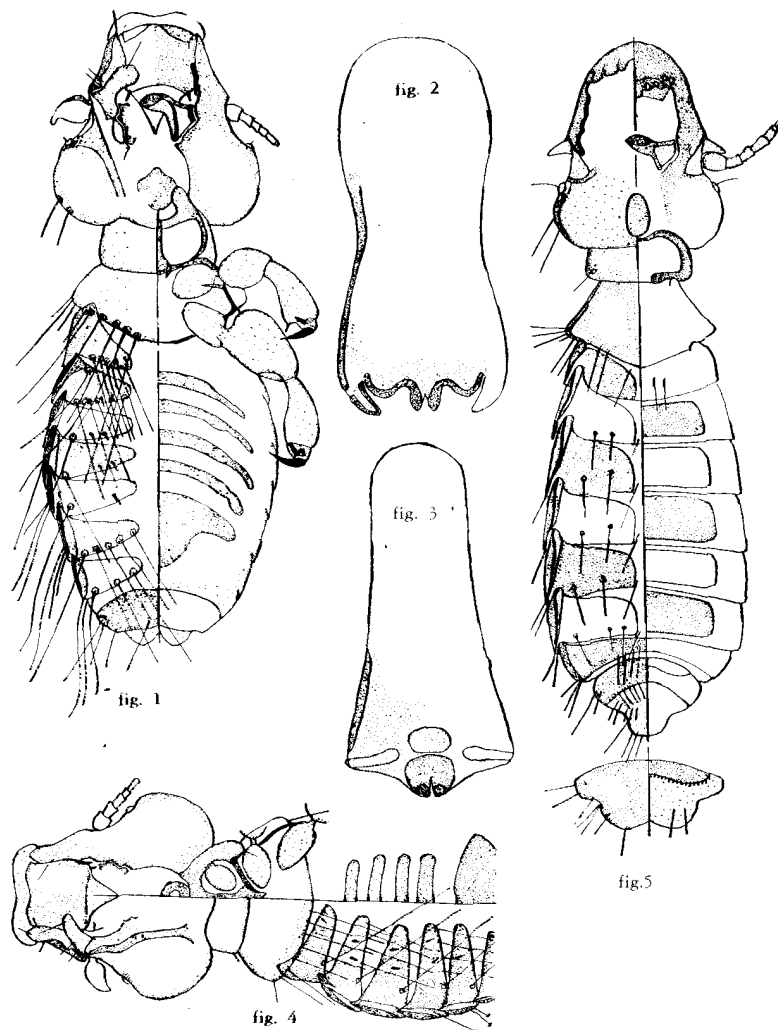


PLATE VIII

- Fig. 1.—*Clayiella c. cotingae* (♀ body).  
 Fig. 2.—*Clayiella spinosa orinocensis* (♂ genitalia).  
 Fig. 3.—*Clayiella cotingae tristis* (♂ genitalia).  
 Fig. 4.—*Clayiella cotingae tristis* (♀ body, minus tip of abdomen).  
 Fig. 5.—*Coingacola meridae* (♂ body; tip of ♀ abdomen)

## Measurements of types:

	♂		♀	
	length	width	length	width
Body	1.78	—	1.92	—
Head	frons	.265	—	.25
	temples	.532	.434	.54
Prothorax	.13	.26	.16	.27
Pterothorax	.24	.38	.24	.39
Abdomen	1.00	.52	1.20	.585
Basal plate	.24	.12		
Penis	.066	.006		

Genus *PENENIRMUS* CLAY & MEINERTZHAGEN, 1938

versus

Genus *PICOPHILOPTERUS* ANSARI, 1947

*Penenirmus* Clay & Meinertzhagen, 1938, Entomologist 71: 73. Type species: *Pediculus albiventris* Scopoli.

*Picophilopterus* Ansari, 1947. Proc. Nat. Inst. Sci. India, vol. 13, p. 265. Type species: *Picophilopterus tukola* Ansari.

In 1947 Ansari erected the genus *Picophilopterus* for a mallophagan parasite from an Indian Woodpecker, and which was placed under the synonymy of *Penenirmus* in the 1952 Checklist of Mallophaga.

If recognized, this genus would certainly contain the many species of Philopteridae found on the Picidae which are now classified as *Penenirmus*.

I have examined neoparatypes of *Penenirmus* and in my collection are specimens from the neotropical species *Troglodytes musculus* which are very closely related to the type species of *Penenirmus*.

True *Penenirmus*, from the House Wrens, differs very decidedly from the Woodpecker parasites *Pediculus auratus* Scopoli, 1763 and *Pediculus picis* J. C. Fabricius, 1798, and the vast number of Philopteridae parasitic on the Woodpeckers of the Western Hemisphere. The most outstanding differences are: The structure of the preantennary portion of the head; in the long, profuse abdominal chaetotaxy of the Wren parasite and in the structure of the penis, which in true *Penenirmus* is entirely without appendages, while in the Woodpecker parasites this organ possesses in the median portion a sharply pointed lateral projection and under these projections elongated lateral sclerites bearing three minute, spine-like setae.

In the author's collection are specimens of this parasite from at least 30 species of Woodpeckers, of many genera, from both North, Central and South America. Furthermore, it does not seem at all probable that the parasites from two families so far apart phylogenetically as the Picidae and the Troglodytidae should possess congeneric Mallophagan parasites. I strongly recommend that the genus

*Picophilopterus* Ansari should be recognized and the woodpecker parasites now known as *Penenirmus* be placed under it. There are other similar cases of parallel development, such as that found in the genera *Rallicola* and *Furnaricola*, which I still contend are generically distinct.

I have previously classed the american species of Woodpecker Philopteridae as subspecies of *Pedicularis auratus* Scopoli, but after study of the descriptions of *P. auratus* Scopoli and *P. pici* J. C. Fabricius and the figures given by Clay & Hopkins (The Early Literature on Mallophaga, Part IV, p. 7-8) and examination of the many specimens of Woodpecker Mallophaga in my collection I have decided that the latter are much closer to *P. pici* than *P. auratus*, in the shape of the preantennary portion of the head and the structure of the penis, and conspecific with *P. pici* instead of *P. auratus*.

The preantennary portion of the head in the american species is usually longer and narrower than in *auratus*, while the penis is longer and is provided with the appendages listed above, and which are present in all specimens examined of the american woodpeckers in my collection.

As previously stated, this group of Mallophaga is an exceedingly homogenic one, but there are many characters, small in themselves, but when combined make it possible to separate them subspecifically, or in some cases specifically. The best characters for their separation are the following: general shape of the head and the cephalic carinae; shape and size of the preantennary portion and the enclosed anterior plate; the shape of the coxae and their complicated supporting carinae; the apical abdominal segment of the male and the male genitalia; also, in some cases the manner of attachment of the prothorax with the head.

Proportionate measurements are useful, but other measurements must be carefully considered, since there is a great amount of individual variation throughout the group. The apical abdominal segment of the male varies greatly in shape, from flatly rounded posteriorly to circular or bluntly pointed conical and is a useful subspecific character, as well as its marginal carinae, which are variable in shape and width and sometimes wanting.

Also, special care must be taken in evaluating the shape of the preantennary portion of the head, since often the tips of the lateral prongs will be drawn together apically, giving an entirely different aspect to that region. This is caused by shrinkage during clearing and I have seen both normal and abnormal specimens on the same slide. Specimens should be cleared with much care to prevent this shrinkage.

In *Picophilopterus* (as I shall in future classify this group) the abdominal chaetotaxy is characteristic and extremely consistent, there being 4 postulated setae in median portion of posterior margin of the tergites and 1 on each side, slightly inside the pleurites. These setae never much longer than the width of the succeeding segment and are never coarse, totally different from that of *Penenirmus* on *Troglodytes*, which has a large number of very long, fairly coarse setae on the tergites.

In the present paper only two new species (rather subspecies) of the genus will be described and figured, both from Venezuelan hosts, but at some future time I hope to study the entire group, describing the new forms in my large collection and giving keys for their classifications.

Genus *PICOPHILOPTERUS* ANSARI, 1947

Proc. nat. Inst. Sci. India, 13, p. 265 (Type species: *Picophilopterus tuktolu* Ansari).

The characterization of the genus has been fully described on the preceding pages and no further remarks are necessary.

*Picophilopterus pici rivollii* new subsp.

(PL. IX, FIGS. 1 AND 3)

Types, ♂ and ♀ adults, from *Piculus rivollii meridae* (Chapman), collected by the author at La Cuchilla, Estado Mérida, Venezuela, June 6, 1922. (Type N<sup>o</sup> 682 in the Carriker coll.)

DIAGNOSIS.—Differs from all of the presently known american subspecies of *P. pici* as follows. Head longer than all others (except *caurensis*, described below), and wider than all others except *arcticus*; preantennary area longer than in *varius* and *arcticus*, shorter than in *caurensis*, *evagens* and *californiensis*; equal to *aurifrons*.

Pterothorax longer than in *aurifrons*, *evagens* and *californiensis*; shorter than in *caurensis* and equal to *varius* and *arcticus*; wider than in *aurifrons*, *varius* and *evagens*, equal to *californiensis* and *arcticus* and narrower than in *caurensis*.

Anterior plate equal in length to *caurensis* and *aurifrons*; longer than in *varius* and *arcticus* and shorter than in *evagens* and *californiensis*; wider than in all of the other subspecies except *arcticus*.

The line dividing the anterior plate transversely is very faint in all of the above forms, but visible, and varies in shape from transverse to almost circular in *evagens*.

The apical abdominal segment in the male is flatly circular, with dark, wide marginal carina, in all the races mentioned above except *evagens*, *caurensis* and *aurifrons*, where it is perfectly circular, in none of them bluntly pointed conical. The marginal carina varies in shape and pigmentation. Subspecies represented by ♀ holotype, ♂ allotype and 1 ♂ and 2 ♀ paratypes. There is a large series of specimens from *Piculus r. rivollii* and *P. r. brevirostris* which may or may not be the same thing. Measurements of the types follow the next subspecies.

*Picophilopterus pici caurensis* new subsp.

(PL. IX, FIG. 2)

Types, ♂ and ♀ adults, from *Veniliornis passerinus modestus* Zimmer, collected by the author at Maripa, Estado Bolívar, Venezuela, October 14, 1909 (in the Carriker coll.).

DIAGNOSIS.—Body in both sexes longer than in *rivollii*, and the longest of the



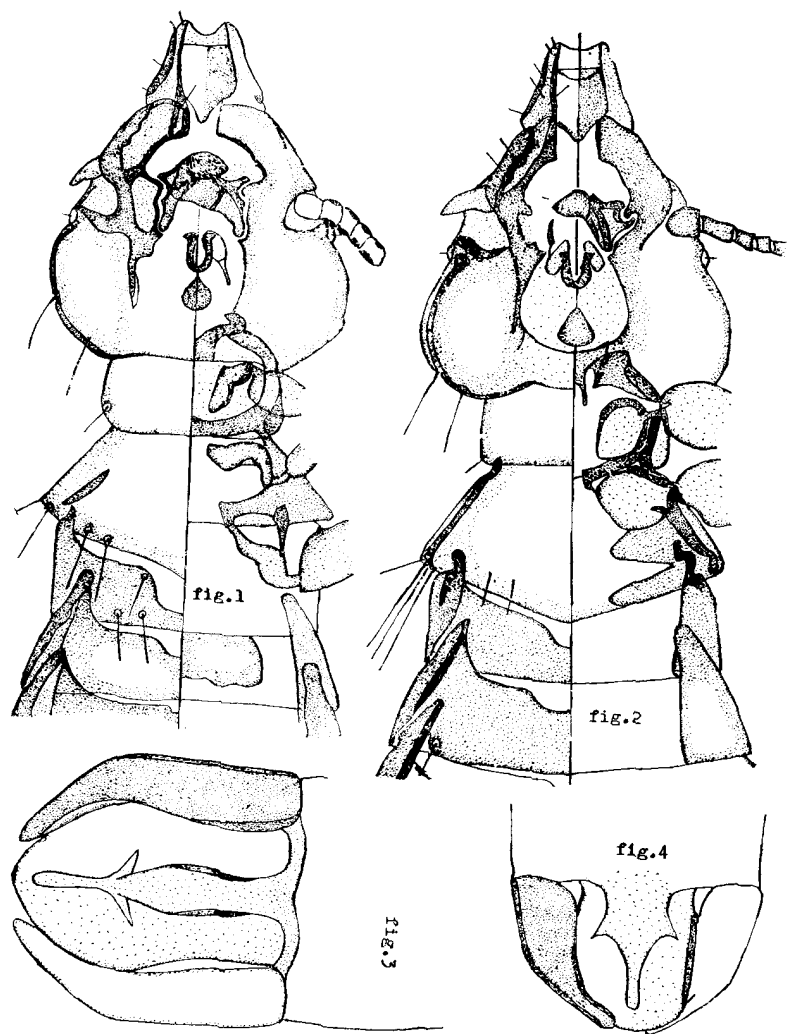


PLATE IX

- Fig. 1.—*Picophilopterus picivollii* (♀, head, thorax and abd. segments I, III).  
 Fig. 2.—*Picophilopterus picicaurensis* (♀, head, thorax and abd. segments I, III).  
 Fig. 3.—*Picophilopterus picivollii* (♂ genitalia).  
 Fig. 4.—*Picophilopterus picicaurensis* (♂ genitalia).

subspecies mentioned in this paper. (Only forms from Western Hemisphere have been considered, and of these *P. jungens* (Kellogg), *P. campephilus* (Eichler) and *P. fiebrigi* (Eichler) have not been examined, and Eichler's descriptions have not been seen). In the comparative measurements only females have been considered.

In the present race the head is much wider than in all others; in length it exceeds all others considerably except *rivollii*, which is practically the same. The preantennal area is slightly longer and slightly narrower than in *aurifrons*; longer and slightly wider than in *rivollii*; longer and narrower than in *varius*; shorter and narrower than in *evagens*; equal in length but narrower than in *californiensis* and much longer and much narrower than in *arcticus*.

The anterior plate is narrower than in *rivollii*, *varius*, *evagens* and *californiensis*, but about equal to the other two races. The pterothorax is longer than all the other races and wider than all others except *californiensis* and *arcticus* (.01 and .02 mm. wider). The divisorial line of the anterior plate is circular, curving backward from the anterior corners of the sclerite (not commonly seen).

Both the tergites and coxae of *caurensis* are quite different from those of *rivollii*, especially the latter (see figs.) The genitalia of male are obscured and cannot be compared with the other forms.

Subspecies represented by the holotype ♀, allotype ♂ and 2 ♂♂ paratypes.

Measurements of the types of *P. rivollii* and *P. caurensis*:

	♂		♀		♂		♀		
	length	width	length	width	length	width	length	width	
Body	1.71	—	2.06	—	1.74	—	2.13	—	
Head	frons	.12	.195	.13	.195	.12	.175	.163	.206
	temples	.55	.47	.61	.52	.55	.48	.62	.586
Prothorax	.16	.285	.206	.328	.162	.30	.163	.337	
Pterothorax	.195	.415	.24	.51	.24	.47	.29	.53	
Abdomen	.95	.53	1.24	.65	.955	.61	1.23	.67	
Parameres	.11	.10			.051	.98			
Basal plate	.15	.10			.163	.10			
Endomera	.065	.022			.056	.04			

Genus *PHYSCONELLOIDES* EWING, 1927

Jour. Washington Acad. Sci., vol. 17, p. 94. Type species: *P. ceraticeps*.

*Physconelloides rufaxilla* n. species

(PL. X. FIG. 1)

Holotype, ♀ adult, from *Leptotila rufaxilla bellmayri* Chapman, collected by the author at Peru Mine, Estado Bolívar, Venezuela, May 11, 1910. (Type N° 684 in Carriker coll.).

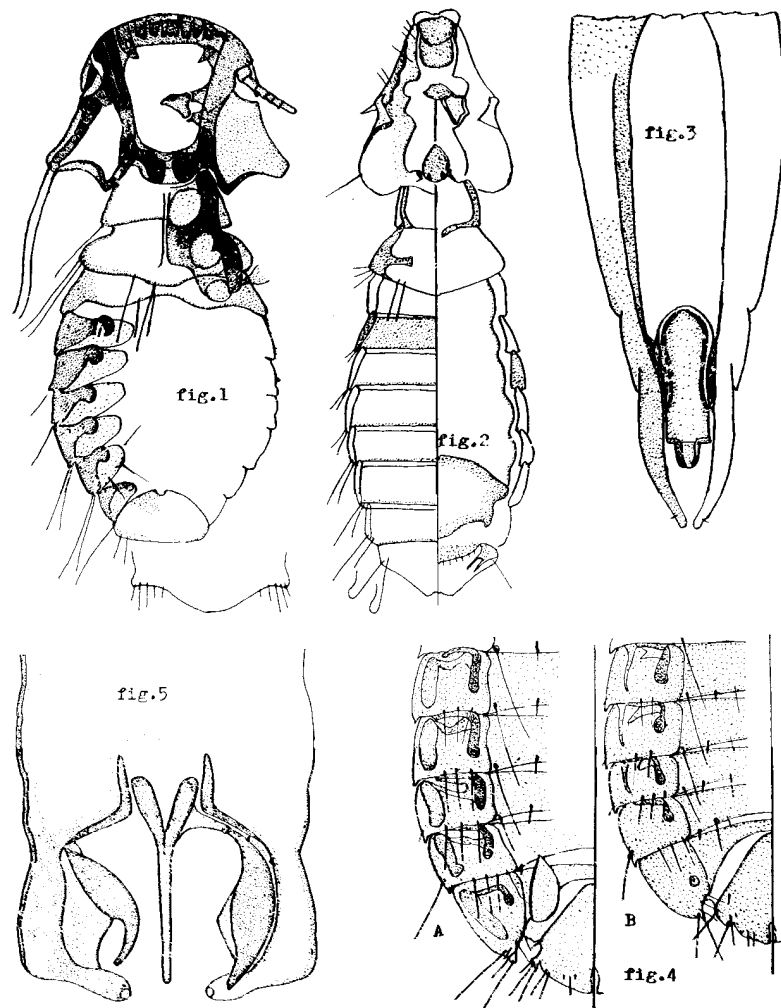


PLATE X

- Fig. 1.—*Physconelloides rufaxilla* (♀ body and genital plate).  
 Fig. 2.—*Furnaricola mirandae* (♀ body).  
 Fig. 3.—*Heptapsogaster inexpectata callaoi* (♂ genitalia).  
 Fig. 4.—*Heptapsogaster inexpectata* (abdominal sclerites: (a) *hehni*; (b) *callaoi*).  
 Fig. 5.—*Cottingacola meridae* (♂ genitalia).

This female has been compared with all of the known species of the genus excepting *P. galapagoensis* (Kellogg & Kuwana) from *Mesopelia galapagensis* and *P. wisemani* Emerson, from *Zenaida asiatica*, but with the figures and descriptions of these two, also five other species recently described by the author in paper now in press (Novedades Colombianas, vol. I, N° 6). It differs conspicuously from all of them.

DIAGNOSIS.—Nearest in structure of head to *P. perijae* and *P. perijae magdalenae* Carriker (in press), but the abdomen is shorter; head wider at frons and temples but equal in length. Agrees with *perijae* in having posterior margin of temples deeply concave (a character uncommon in the genus); in the clear line running far backward from anterior margin of head through the middle of the broad, preantennary carinae; it also has the small clear spot in basal portion of the ventral spinous processes of the head, as in *perijae*.

The frontal and lateral spinous processes are shorter in *rufaxilla*; the connecting carinae between the preantennary and occipital carinae are narrower, and the temples more deeply concave posteriorly; the tergites and pleurites are very closely fused, the line of fusion scarcely visible, while in *perijae* their junction is clearly outlined, and they also differ in shape. The plate of the vulva region is similar in shape but differs in chaetotaxy, there being 5 setae on each side instead of 2 in *perijae*, the 2nd. and 3rd. from outer side being the longest (see fig.). Abdomen oval, widest at segment III. Species known only from the ♀ holotype.

Measurements of the holotype ♀:

	length	width
Body	1.33	—
Head { frons	—	.41
Head { temples	.446	.64
Prothorax	.152	.34
Pterothorax	.14	.456
Abdomen	.72	.60

Genus *HEPTAPSOGASTER* CARRIKER, 1936

Proc. Acad. Nat. Sci. Philad., vol. 88, p. 115. Type species: *H. mandibularis* Carriker.

*Heptapsogaster inexpectata callaoi* n. subsp.

(PL. X, FIG. 3; FIG. A AND B)

Holotype, ♂ adult, from *Crypturellus s. soni* (Hermann), collected by Pablo Anduze at Sta. Elena, Gran Sabana, Venezuela, 1946.

Allotype, ♀ adult, from same host, collected by the author at El Callao, Estado Bolívar, Venezuela, May 19, 1910 (types N° 685 in Carriker coll.).

This is the second record of the taking of *Heptapsogaster inexpectata* on a race of *Crypturellus soui*, the first being *H. i. beni* from *C. soui inconspicuus* Carriker, Río Beni, Bolivia, and to which the present form is closely allied.

**DIAGNOSIS.**—Head is smaller than in *H. i. beni* (.296 x .403 against .336 x .42); the antennae is longer and slightly thicker (.178 against .16). The incassations of the abdominal pleurites are different (see figs.). The scent glands decidedly different, consisting of two pair in segments IV and V, in the form of a small rosette, surrounded by a narrow granular area. In *beni* there is but one pair of these glands, on segment V, and half-moon shaped. This is a splendid character for the separation of closely allied forms of *Heptapsogaster*.

No apparent differences in the abdominal chaetotaxy, but the ♂ genitalia differ in the endomera, it having a distinct form of tip (see fig.).

The females of *inexpectata* are difficult to separate. The only apparent differences between the females of *beni* and *callaoi* are the incassations of the pleurites (see figs.), slight differences in the apical abdominal segment, the genital sclerite and measurements of the head and abdomen. Head wider at temples but same length (.358 x .415 against .358 x .456); abdomen longer and wider (.75 x .673 against .67 x .61). Known only from the types. (For checking on rest of measurements, see: Proc. U. S. Nat. Mus., vol. 95, N° 3180, p. 156).

#### ADDENDA

I wish to take this opportunity to add something towards the elucidation of the controversial *Kurodaia*-complex.

Accepting, with some reservation, the restriction of the generic term *Kurodaia* to *Colpocephalum baliaeti* Denny, and whatever other Menoponidae which may possess the morphological characters upon which this restriction has been based, there remain a number of described species which have heretofore been placed under *Kurodaia*, but which have not been allocated to any other genus.

In 1940 Eichler erected the genus *Nosoptios*, with *Menopon fulvofasciatum* Piaget as the type species (Host: *Buteo buteo*).

This genus was placed under the synonymy of *Kurodaia* in the 1952 Checklist of Mallophaga. I have not seen a specimen of this species, but a careful study of Piaget's description and figure leaves no doubt that it is congeneric with some of the species formerly placed under *Kurodaia* and also with several new forms described above under the genus *Colpocephalum*, but with reservations.

Miss Clay (in correspondence) agrees with me that some of these species formerly placed under *Kurodaia*, should now belong under *Nosoptios* Eichler, and not *Colpocephalum*. The following species, and perhaps others, will fall into this category.

- Menopon fulvofasciatum* Piaget 1880 (*Buteo buteo*).
- Menopon macrocybe* Carriker, 1903 (*Buteo p. platypterus*)
- Kurodaia panjabensis* (Ansari) (*Athene brama indica*) (this is uncertain).
- Kurodaia j. falconia* n.sp. (*Falco peregrina anatum*) in present paper.
- Kurodaia falconia rufigularis* n.subsp. (*Falco rufigularis petoensis*) *ibid.*
- Kurodaia falconia caerulescens* n.subsp. (*Falco fusco-caerulescens*) *ibid.*

#### SUMARIO

En este trabajo, tercero de una serie sobre malófagos de aves de Venezuela, se continúa el estudio de las especies nuevas o poco conocidas pertenecientes a la colección del Museo de Historia Natural La Salle, de Caracas, así como también de las recogidas por el autor durante sus exploraciones en dicho país en los años 1909-10 y 1922.

El autor se ocupa, en este artículo, de las siguientes especies:

#### Género *KURODAIA*

1. *Kurodaia baliaeti* (Denny), 1842.  
Se discute exhaustivamente acerca del status de esta especie y sobre sus hospedadores, así como también sus relaciones con el género *Colpocephalum*. Se da también una clave para todas las especies y subespecies de este género descritas en el presente artículo.
2. *Colpocephalum falconii falconii* n. sp.  
Ha sido colectada en *Falco peregrina anatum*, de La Restinga, isla de Margarita (colección M. H. N. La Salle).
3. *Colpocephalum falconii caerulescens* n. subsp.  
Conseguida en *Falco fusco-caerulescens*, de Las Hernández, isla de Margarita (colección M. H. N. La Salle).
4. *Colpocephalum falconii rufigularis* n. subsp.  
Colectada por el autor sobre *Falco rufigularis petoensis* (Mamotoco, Magdalena, República de Colombia).
5. *Colpocephalum ictiniiae* n. sp.  
Se describe sobre ejemplares colectados por el autor en La Bomba, Edo. Bolívar.
6. *Colpocephalum heterospizium* n. sp.  
Esta nueva especie fue conseguida en *Heterospizias meridionalis* (colección M. H. N. La Salle; Coro, Edo. Falcón).
7. *Colpocephalum ceciliae* n. sp.  
Descrita basándose en ejemplares colectados sobre *Daptrius ater*, del Campamento Cecilia Magdalena, Río Caura, Venezuela (colección M. H. N. La Salle).

#### Género *CONCIELLA*

8. *Conciella pectinata neotropicalis* n. subsp.  
El autor la consiguió sobre un ejemplar de *Speotyto cunicularia tolimae* colectado en Casacará, Magdalena, Rep. de Colombia.

#### Género *CICONIPHILUS*

9. *Ciconiphilus femoratus* (Piaget) versus *C. maculipes* (Giebel)  
El autor discute detenidamente el status de estas especies.

#### Género *EULAEMOBOTHRION*

10. *Eulaemobothrion jabiruensis* n. sp.  
Fue colectada por el autor sobre *Jabiru mycteria* de Maripa, Río Caura, Venezuela.
11. *Eulaemobothrion eurypygae* n. sp.  
Conseguida sobre *Eurypyga b. helias* de Atures, Terr. Amazonas (colección M. H. N. La Salle).

Género CLAYIELLA

12. *Clayiella schulzkampfbenkeli* Eichler, 1940  
Se estudian ejemplares colectados por el autor en Yagual, y otros de la Colección M. H. N. La Salle del Campamento Cecilia Magdalena, ambas localidades del Río Caura, Venezuela, y todos conseguidos sobre *Momotus m. momota*.
13. *Clayiella cotingae* n. sp.  
Se describe basándose en ejemplares conseguidos por el autor sobre *Pachyrhamphus rufus*, de la Laguna de Aroa, Edo. Yaracuy.
14. *Clayiella cotingae tristis* n. subsp.  
Conseguida por el autor sobre *Pachyrhamphus polychropterus tristis* de El Perú, Edo. Bolívar, Venezuela.
15. *Clayiella festiva* n. sp.  
Colectada por el autor en Las Quiguas, Edo. Carabobo, sobre *Pipreola aureopectus festiva*.
16. *Clayiella spinosa spinosa* n. sp.  
Basada en ejemplares colectados por el autor sobre *Bucco capensis* de La Pinta, Río Yuruán, Edo. Bolívar.
17. *Clayiella spinosa orinocensis* n. subsp.  
Ha sido colectada por el autor sobre *Hypnellus bicinctus* de San Félix, Edo Bolívar.

Género FURNARICOLA

18. *Furnaricola mirandae*, n. sp.  
Se basa en un ejemplar conseguido por el autor sobre *Synallaxis unirufa castanea* de San Esteban, Edo. Miranda, Venezuela.

Género COTINGACOLA

19. *Cotingacola meridae* n. sp.  
Conseguida sobre *Pipreola riefferi melanolaema* de Tabay, Edo. Mérida (colección Carriker).  
El autor discute seguidamente, con mucha amplitud, el status de los géneros *Penenirmus* Clay & Meinertzhagen, 1938 y *Picophilopterus* Ansari, 1947, pasando luego a describir las siguientes nuevas subespecies del último de dichos géneros:
20. *Picophilopterus pici rivollii* n. subsp.  
Colectada por el autor en La Cuchilla, Edo. Mérida, sobre *Piculus rivollii meridae*.
21. *Picophilopterus pici caurensis* n. subsp.  
Colectada también por el autor, en esta oportunidad en Maripa, Edo. Bolívar, sobre *Veniliornis passerinus modestus*.

Género PHYSCONELLOIDES

22. *Physsonelloides rufaxilla* n. sp.  
Forma parte de la colección efectuada por el autor en El Perú, Edo. Bolívar, Venezuela; conseguida sobre *Leptotila rufaxilla bellmayri*.

Género HEPTAPSOGASTER

23. *Heptapsogaster inexpectata callaoi* n. subsp.  
Basada en ejemplares colectados por Pablo Anduze en Sta. Elena, Gran Sabana, Edo. Bolívar y por Carriker en El Cañao, Edo. Bolívar, todos ellos sobre *Crypturellus s. soui*.