

# STUDIES IN NEOTROPICAL MALLOPHAGA (IX)

AMBLYCERA OF THE NEW WORLD "GALLIFORMES". PART 1. THE GENUS MENACANTHUS NEUMANN

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## INTRODUCTION

This review treats the forms of *Menacanthus* from a comparatively small percentage of the species of the *Cracidae* and *Odontophorinae*, but all of the genera of the *Cracidae* are represented but three (*Nothocrax*, *Penelopina* and *Oreophasis*), and these are monotypic.

Of the *Odontophorinae* but two genera are represented, *Odontophorus* and *Colinus*, so that there yet remains a vast amount of labor in this group for future workers on Mallophaga, who may, or may not, corroborate the ideas incorporated in the present treatise. At all events it is a much needed beginning on a very difficult task.

In *Menacanthus* we have a remarkable example of the stability of the Amblycera, where the parasites have persisted with only minor changes in structure, while the host has evolved into numerous strikingly different genera and many species. It is also worthy of note that the genera *Oxylypeurus* and *Trichodomedea*, the most abundantly represented of the Ischnoceran genera on the *Cracidae*, have not split up into strikingly different species, although they are much more strongly differentiated than those of the Amblyceran genera *Menacanthus* and *Menopon*.

When treating with a group as large and as stable as the present one, where even specific differences are small and not always easy to recognize, the task of differentiating the subspecies is an extremely difficult one, especially where some forms are represented by but a single specimen or a pair, and others are in poor condition due to age or having been demounted and cleared, in which process many hairs are inevitably lost, and some specimens are unavoidably left too long in the clearing solution.

All material used in the preparation of this paper (with a few exceptions noted in their proper place) was collected by the author from birds shot by him or his assistants. All drawings were made by the author and the greatest care has been taken to make them mathematically correct. The scale used has been 2 millimeters to each space on the eye-piece micrometer, with a No. 10 eyepiece and 10 millimeter objective. Enlarged drawings of genitalia, antennae, etc., were made to same scale, but using a 4 mm. objective. Drawings are suppo-

sed to have been reduced one half in the reproduction of the plates. All measurements are in millimeters. I greatly appreciate the kindness of Dr. G. H. E. Hopkins in sending to me all material in his collection pertaining to these groups.

\* \* \*

## *Menacanthus* Neumann

Arch. de Parasitologie, XV, 1912, p. 353. Genotype. *Menopon robustum* Kellogg.

This genus was created by Neumann as a subgenus of *Menopon*, on the sole character of the large, strongly chitinized and pigmented spines which are attached at the base of the palpi, and curve backward under the head.

An exhaustive study of the genera *Menopon* and *Menacanthus* found on the avian family *Cracidae* and subfamily *Odontophorinae* bears out this fact, that generically speaking, there is but one character which may be safely used to separate them, namely, the ventral spines of the head. All other fundamental generic characters are the same, the type of genitalia and antennae, the pattern of the chaetotaxy of the entire body, including that of the meso and metathorax, as well as the general shape of the body segments (generically speaking).

The presence of patches of setae on the 3rd. femur and certain abdominal sternites, (characters which are apparently of considerable generic importance according to most modern authors) is the same in both genera, although there is one group in *Menacanthus* from the *Cracidae* in which these patches of setae are obsolete on the abdomen, but present in a reduced scale on the 3rd. femur.

The family Menoponidae is so large, and in many cases the generic and specific differences are so small and difficult to recognize, that any stable, easily recognized character for their separation is a great boon. At best, genera in many cases are purely artificial groups that cannot often conform to host relationships, so that the use of such characters as the presence or absence of large spines, patches of setae, combs of small spines, etc., for splitting up large groups of species belonging to the same family, seems not only advisable, but a necessity.

The head spines in the species of *Menacanthus* found on the *Cracidae* and *Odontophorinae* present

an extremely puzzling problem, one that I am not positive has been correctly solved. There are what appear to be two distinct types of spines found on the same genera of hosts, and in several instances on the same species, but so far never on the same individual. One type is usually shorter, thicker, with rounded, deeply pigmented basal portion, and extends straight backwards, with the straight sides tapering sharply to a point. The other type is usually longer, with basal portion not rounded or more deeply pigmented, and curving inward slightly from base before turning backward, so that they always lie within the hyaline median portion of the head, just back of the mandibles.

It was always found, with but two exceptions, that all specimens taken on a single host species had spines of the same type. The exceptions are a single female from *Chamaepetes sanctae-marthae* which has the long curving spines, while a series of nine specimens of both sexes from the same host (but a different individual) have the short thick spines. The same thing was found in two series of specimens taken on *Odontophorus capueira*. In all other *specific* character the two groups are the same, but the shape and length of each type of spine varies in the different subspecies of the parasite.

The idea occurred to me that the spines which appear longer and bent inward and backward, had been weakened in the clearing solution and bent in that form by pressure on the coverglass while being mounted, so that they present a *side* view instead of vertical (their dorsal and ventral outline instead of lateral). The fact that the thickened spines are most always shorter *might* be accounted for by their lying at an angle to the axis of the head, instead of being bent backward parallel to it, thus shortening the vertical perspective, but this is shown to be erroneous in that the focusing plane of base and tip differs very slightly. Unfortunately there are other objections to this theory. The single female from *Chamaepetes*, with the long curving spines differs from the short spined series from the same bird in being considerably smaller, with different proportions and in minor details of the head, while the two series from *Odontophorus capueira* are undoubtedly distinct subspecifically, disregarding the type of head spines.

I have, therefore, used this character as a specific one, *M. ortalidis* (Carriker), *M. meridionalis* (Carriker), and *M. cornutus* n. sp. representing the thick-spined group, with *M. fasciatus* and *M. falcatus* those of the long, curved spines, with *ortalidis*, *cornutus* and *fasciatus* for the species parasitic on the *Cracidae*, and *meridionale* and *falcatus* for the *Odontophorinae*. It has seemed best to treat most of the forms as conspecific with one or another of the five species mentioned above, since the differences between them are small, and of *degree*, rather than *kind*. The characters used for the se-

paration of the subspecies have been largely size, and proportion of the head and thoracic segments; size, shape and degree of pigmentation of the abdominal sclerites; the chaetotaxy of the abdomen, and lastly, but by no means the least, the male genitalia.

#### **Menacanthus ortalidis (Carriker)**

*Menopon ortalidis* Carriker, Univ. Stud. Univ. Nebraska, Vol. III, No 2, April, 1903, p. 57; plate VII, fig. 1 (Host: *Ortalis cinereiceps*, equals *O. garrula frantzii*).

The species was described from a single male, taken on the same bird with *Oxylypeurus post-emarginatus* (Carr.), collected by the author at Juan Viñas, Costa Rica, March, 1902. Strange to say, this parasite has never since been taken by the author on any other species of *Ortalis*, and were it not for the fact that many other closely related forms have been found on most genera of the *Cracidae* I would have been doubtful of the authenticity of the host record.

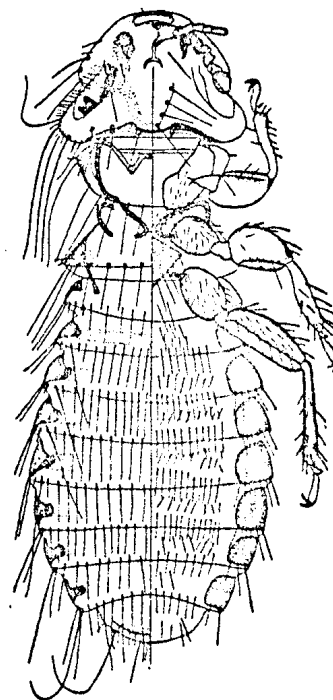


Fig. 1.  
**Menacanthus ortalidis**  
Body of ♂  
(*Ortalis garrula frantzii*)

The original description of *ortalidis* is quite correct but requires amplification. The occipital margin of the head is not *bare*, as stated, but has three long, submarginal, pustulated hairs on each side (see fig.). These hairs were missing in the type but their point of attachment is clearly visible. The ventral spines of the head are short and thick, with deeply pigmented, rounded bases. They point straight backwards and lie under a rather deeply pigmented area, and not in the median hyaline portion of the head.

The posterior, dorsal margin of the prothorax is flatly convex, with eight strong hairs set just within the edge, with practically no pustule. The ventral side extends backward *under* the prothorax, nearly to its middle, converging to a round-

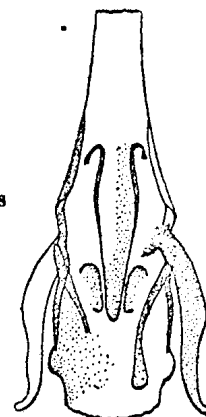
ded point. The acetabular bars which extend backward from the anterior condyle of 1st. pair of coxae, follow the lateral margins of this ventral extension, and terminate in an outward-curving hook, to which are attached the 2nd. pair of coxae. The mesosternum lies within these acetabular bars, with its sides fused to them. Along the inner edge of these acetabular bars, between their converging ends and the tips of coxae N° 1, is set a row of 4 to 5 rather strong hairs, with two others medially between the ends of the coxae. Just back of the curving ends of these acetabular bars, and often fused to them, is a large diamond-shaped plate, the metasternum, with 4 to 5 longish hairs on each postero-lateral margin and 2 shorter, median hairs. The dorsal margin of the pterothorax is nearly transverse, bearing 8 long, marginal hairs, set in small pustules. At each end of this row of hairs is set a spine, followed by another long hair, and lastly by a long hair and two small spines in the postero-lateral angle. The ventral side of the pterothorax is longer, with the integument fused to that of abdominal segment I, with point of fusion practically invisible.

The portion of the abdominal pleurites appearing on the dorsal surface is narrow and rather deeply pigmented, while the ventral portion is much larger and less chitinized (see fig.). The tergites are narrow and closely joined to the pleurites, with their outer ends sharply outlined and more deeply pigmented than the pleurites. They are obsolete on segment I, but on II they appear as a narrow, faintly pigmented band unbroken across the segment. In segments III to VIII the pigmentation is widely broken medially, only appearing as short, faintly-colored extensions of the deeply-pigmented incassations at their outer ends. The sternites are either absent or so faintly pigmented as to be invisible.

The chaetotaxy of the abdomen is characteristic of the whole group. There is a continuous row of hairs across the posterior margin of tergites I to VIII, which are about the length of the segments. On I to IV there is a spine just within the postero-lateral angle, followed by a long, pustulated hair (twice the length of segments), after which comes another spine and then the hairs previously mentioned. In V the two spines are replaced by short hairs, while in VI to VIII all hairs (except that of angle) are of the same length and thickness. On the posterior margin of the ventral pleurites are set a series of 2 to 7 short hairs (2 on VIII; 7 on V, diminishing to 4 on II). Across the middle of segments III to VII there is a row of ventral hairs (shorter and finer than those of tergites), but with a vacant space between them and the pleurites. In addition there is another shorter, median row of shorter hairs across the anterior portion of segments I to VIII (only 2 to 3 hairs on segments I, II and VIII). There are no patches of

setae on any of the abdominal sternites, the areas on which they would be normally found being almost bare of setae. However the posterior half of 1st. coxae and all of 2nd. and 3rd. are rather thickly covered with short setae, and with a rather sparse, elongated patch of 12 to 15 short hairs on the posterior face of the 3rd. femora. The outer margins of 2nd. and 3rd. femora bear 6 to 7 short bristles (some really spines), while the tibiae are well supplied with stout spines and short bristles (see fig.).

Fig. 2. — *Menacanthus ortalidis*  
♂ genitalia  
(*Ortalis garrula frantzii*)



In the genitalia we have a rather long basal plate, with slightly expanded anterior end and much expanded distal portion, at the sides of which (on ventral surface) are attached the long, slender, faintly-pigmented paramers. The large, almost hyalin, endomerale plate (or sac) is fused with the basal plate just behind the base of the paramers. Its sides are narrowly chitinized, while it is strengthened by a dorsal, endomerale rod which extends diagonally backwards from side of basal plate at base of paramers, to its apical portion. Within the

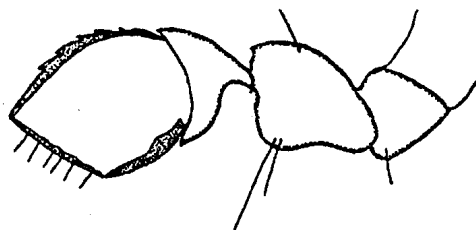


Fig. 3. — *Menacanthus ortalidis*  
♂ antenna  
(*Ortalis garrula frantzii*)

distal portion of the basal plate lies a detached sclerite (of varying shape in different species and subspecies) which is attached a large sac composed of denticulated membrane, and which is extruded completely during copulation. I have called this sclerite (for want of a better term) the "penis". On each side of the distal end of the penis lies a semi-lunar, faintly pigmented sclerite, with chitinized inner, convex side, which is also attached to the sac and extruded with it, but they are not attached to the penis.

Measurements of the type:		length	width
Body	.....	1.77	..
Head	{ antennae	....	.44
	{ temples	....	.542
Prothorax	.....	.217	.456

Pterothorax .....	.20	.51
Abdomen .....	1.08	.705
Basal plate .....	.....	.085
Paramer .....	.13	..
Endomera .....	.108	.087

**Menacanthus cornutus cornutus new species**

Types.—Male and female, adults, from *Penelope argyrotis columbianus*, collected by the author at Los Gorros, Magdalena, Colombia, April 27, 1945 (in U. S. Nat. Mus.).

Diagnosis: This species is shorter than *ortalidis*, and with a much smaller head (.347 × .495 against .375 × .542), with sides of pre-antennary area more flattened and frons more pointed, and with spines thicker basally but of same length. Both thoracic segments are much narrower, while pterothorax is shorter. The abdomen is of the same shape and chaetotaxy but the structure and pigmentation of the pleurites and tergites is distinct. The pleurites are wider dorsally and more heavily chitinized and deeply pigmented, while ventrally they are scar-



Fig. 4.

**Menacanthus cornutus cornutus**  
♂ head, thorax and abdominal  
segments I-II.  
(*Penelope argyrotis columbianus*)

cely wider than the dorsal portion and scarcely visible in many cases. Tergites I and II are widest, unbroken across the segments, and deeply pigmented, with rounded, deeply colored incrassations at their outer ends almost covered by the overlapping pleurites.

On segments III to VIII the tergites are well developed and pigmented laterally, with their distal incrassations less overlapped by the pleurites, but their median portion is very faintly colored,

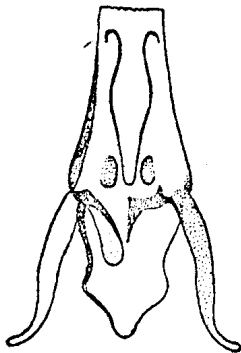


Fig. 5.

**Menacanthus cornutus cornutus**  
♂ genitalia.  
(*Penelope argyrotis columbianus*)

the uncolored portion increasing in width progressively backward until on VIII the pigmented portion is very short. There are very few setae on the coxae, and no trace of patches of setae on the abdominal sternites.

In the female the tergites are more deeply pigmented and the faintly colored median portion

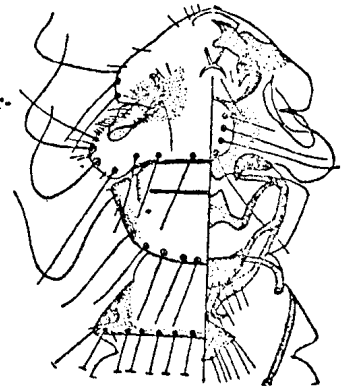
slightly reduced in length. In brief, the outstanding differences between *cornutus* and *ortalidis* are the presence of broad, continuous, deeply pigmented tergites on segments I and II in *cornutus*, while in *ortalidis* tergite I is obsolete and II to VIII are represented by the pigmented incrassations at their outer ends, from which extend short, very faintly colored bands. The dorsal pleurites and incrassations of the tergites are also more deeply colored in *cornutus*. The type series contains 5 ♂♂ and 9 ♀♀, while 4 ♂♂ and 3 ♀♀ were taken on same host on Mt. San Lorenzo back of Santa Marta. Both series are identical.

Measurements of the types:	male		female	
	length	width	length	width
Body .....	1.62	....	1.82	....
Head {	antennae. ....	.393	....	.412
	temples ..	.347	.495	.37
Prothorax .. .	.205	.395	.195	.412
Pterothorax .. .	.16	.445	.185	.49
Abdomen ... .	1.01	.66	1.17	.78
Basal plate ...	.25	.076		
Paramer ... .	.108	...		
Endomera ... .	.108	.087		

**Menacanthus cornutus chamaepetus new subspecies.**

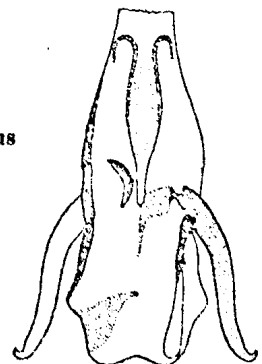
Types.—Male and female, adults, from *Chamaepetes goudoti sanctae-marthae*, collected by the author at Mt. San Lorenzo, near Santa Marta, Colombia, Sept. 13, 1945 (in U. S. Nat. Mus.).

Fig. 6.—**Menacanthus cornutus chamaepetus**  
♂ head and thorax  
(*Chamaepetes goudoti sanctae-marthae*)



Diagnosis: Considerably larger than *cornutus* and with a greater difference in size between the sexes. The head is larger (in porportion to body),

Fig. 7.  
**Menacanthus cornutus chamaepetus**  
♂ genitalia  
(*Chamaepetes goudoti sanctae-marthae*)



(.37 × .54 against .347 × .495), and the thoracic segments wider. The sides of the pre-antennary area are more flattened in the ♀, than in the ♂, with

frons more pointed (as in  $\delta$  of *cornutus*, while the gular hyaline area is smaller in the  $\varphi$ , with the rows of long ventral hairs set closer together. (In *cornutus* the front of head is the same shape in both sexes, with gular hyaline area about the same size).

The pleurites are larger, both dorsally and ventrally, with tergites more deeply pigmented medially (especially in female), so that there is less color contrast between lateral and median portion. Both dorsal and ventral hairs across abdominal segments are longer and thicker, especially those on sternites.

The paramers are considerably longer (.12 against .108), with endomera shorter and narrower. The type series consists of 4  $\delta$   $\delta$  and 5  $\varphi$   $\varphi$ .

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.71	. . . .	2.05	. . . .
Head {	antennae . . . .	.434	. . . .	.465
	temples .. . . .	.54	.39	.575
Prothorax . . . . .	.217	.434	.25	.477
Pterothorax . . . .	.174	.477	.205	.564
Abdomen . . . . .	1.03	.65	1.30	.825
Basal plate . . . . .	.26	.09		
Paramer . . . . .	.12	. . . .		
Endomera . . . . .	.087	.078		

**Menacanthus cornutus goudoti** new subspecies.

TYPES.—Male and female, adults, from *Chamaepetes goudoti rufiventris*, collected by the author at Rio Jelashte, Peru, April 11, 1932 (in coll. of the author).

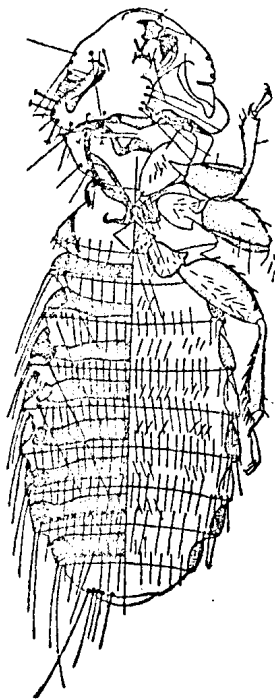
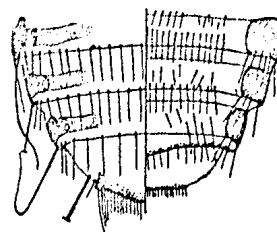


Fig. 8.  
**Menacanthus cornutus goudoti**  
Body of  $\delta$   
(*Chamaepetes goudoti*  
*rufiventris*)

**Diagnosis:** Smaller than *chamaepetus*, but larger than *cornutus*. The head is equal in length to *chamaepetus* (longer than *cornutus*), but considerably narrower at antennae and temples (.51 and .423 against .54 and .434). The pre-antennary area is differently shaped, the sides (posteriorly) being

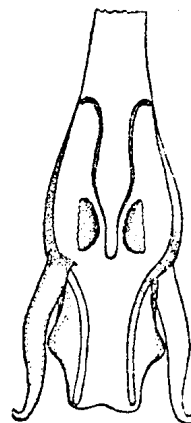
nearly parallel, with sides of frons concave, and tip rounded (see fig.). There is a conspicuous slit at sides of head in the dorsal integument which is absent in both *cornutus* and *chamaepetus*.

Fig. 9.  
**Menacanthus cornutus goudoti**  
 $\varphi$  abdomen  
(*Chamaepetes goudoti*  
*rufiventris*)



The pterothorax in male is longer than in either *cornutus* or *chamaepetus*, but same width as in *chamaepetus*. In the  $\varphi$  of *chamaepetus* the pterothorax is much shorter than the prothorax (.205 against .25), while in *goudoti* they are equal, and both are wider than in *chamaepetus*. The sides of metathorax are more convex than in either of above two races of *cornutus*.

Fig. 10.  
**Menacanthus cornutus goudoti**  
 $\delta$  genitalia  
(*Chamaepetes goudoti rufiventris*)



The pleurites are about as in *cornutus*, but the tergites are broad and more deeply pigmented than either the nominate form or *chamaepetus* (not as deeply colored medially as shown in figure). Both dorsal and ventral abdominal hairs are shorter and finer than in *chamaepetus* (about as in *cornutus*), but the long pustulated hairs set below ends of tergites are much longer and thicker than in either *cornutus* or *chamaepetus*. There are also more setae on coxae than in the other races of *cornutus*.

Genitalia differ but slightly. Paramers and endomera the same length as in *chamaepetus*, but the latter is wider. Endomeral rods long and slender. Species represented by the two types and 1  $\varphi$  paratype, slightly immature.

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.67	. . . .	1.92	. . . .
Head {	antennae . . . .	.423	. . . .	.467
	temples .. . . .	.51	.397	.597
Prothorax . . . . .	.206	.423	.217	.497
Pterothorax . . . .	.195	.477	.217	.57
Abdomen . . . . .	1.01	.64	1.22	.835
Basal plate . . . . .	. . . .	.098		
Paramer . . . . .	.12	. . . .		
Endomera . . . . .	.09	.087		

**Menacanthus cornutus dazae** new subspecies.

**TYPES.**—Male and female, adults, from *Penelope purpurescens brunnescens*, collected by the author at La Cueva, E. side Sierra Nevada Sta. Marta, Colombia, April 12, 1945 (in U. S. Nat. Mus.).

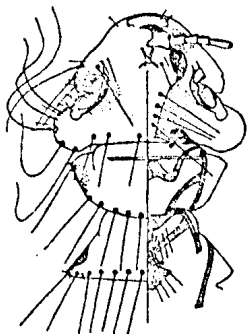


Fig. 11.  
**Menacanthus cornutus dazae**  
♂ head and thorax  
(*Penelope purpurascens brunnescens*)

**Diagnosis:** This race is recognized by the large size of the male sex, slight difference in size between the sexes, and especially by the large male genitalia, with very wide basal plate, wide endomera and proportionately short paramers. The penis is also of distinct shape, with the semilunar bodies unusually small for size of genitalia; the endomera rods are also short and slender.

The shape of the head is very similar to that of *anduzei*, but is larger, with temples about equal in size, while it lacks the peculiar dorsal plate in median portion of the head, and which has been observed *only in anduzei* (see fig. of that race). The size and proportions of the various body segments also differ from the other races of *cornutus*, the dorsal pleurites are large and very deeply pig-

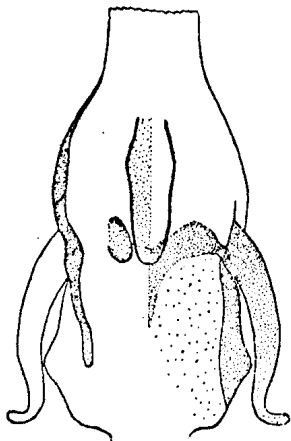


Fig. 12.  
**Menacanthus cornutus dazae**  
♂ genitalia  
(*Penelope purpurascens brunnescens*)

mented, while the incrassations at ends of tergites are small, but the tergites themselves are deeply pigmented, except in median portion. It is a handsome, well-marked race.

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.90	. . . .	1.99	. . . .
Head {	antennae . . .	.434	. . . .	.467
	temples . . .	.383	.553	.402
Prothorax . . . .	.217	.445	.239	.48
Pterothorax . . .	.195	.477	.195	.564
Abdomen . . . . .	1.18	.694	1.25	.83
Basal plate . . . .	.34	.133		
Paramer . . . . .	.142	. . . .		
Endomera . . . . .	.10	.13		

**Menacanthus cornutus anduzei** new subspecies.

**TYPES.**—Male and female, adults, from *Crax nigra*, collected by P. Anduze at San Felipe, E. Yaracuy, Venezuela, May 16, 1938 (in coll. Inst. Nacional de Higiene, Caracas, Ven.).

**Diagnosis:** These specimens were identified by Stafford (Boletín de Entomología Venezolana, Vol. II, N° 1, March, 1943, p. 40) as *Menacanthus ortalidis* (Carriker), but they are clearly a subspecies of *cornutus*, possessing the thickened head spines and prominent strongly pigmented tergites of that species.



Fig. 13.  
**Menacanthus cornutus anduzei**  
♂ head and thorax  
(*Crax nigra*)

It agrees closely with *chamaepetus* in length, while the head in the ♂ is a trifle smaller, but exactly the same proportions. The prothorax is shorter and narrower and the pterothorax longer and narrower. The same proportions are found in the head of ♀, but the prothorax is much shorter and narrower in *anduzei*, while pterothorax is narrower but of same length. The temples are wider (longitudinally) than in *cornutus*; the preantennary area about the same shape, while the head spines are larger.

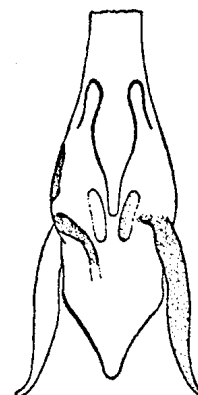


Fig. 14.  
**Menacanthus cornutus anduzei**  
♂ genitalia  
(*Crax nigra*)

The pleurites are very similar to those of *cornutus* (dorsally), but wider ventrally, while the size and pigmentation of the tergites is also very close. The abdominal chaetotaxy is longer and slightly coarser than in *cornutus*, but finer than in *chamaepetus*. The basal plate, paramers and endomera are all exactly of same length as in *chamaepetus*, but the shapes of these parts are all slightly different. Four ♂♂ and 5 ♀♀ were originally in this series, but only a single pair was found in the collection as returned to Caracas, Presumably the remainder were kept by Stafford.

Measurements of the types:	male		female	
	length	width	length	width
Body .....	1.73	....	1.97	....
Head {	antennae . . .	.42	....	.445
	temples ..	.36	.38	.585
Prothorax ...	.195	.402	.217	.445
Pterothorax ..	.185	.445	.205	.53
Abdomen ...	1.08	.63	1.28	.785
Basal plate ..	.26	.087		
Paramer .....	.12	....		
Endomera .....	.087	....		

**Menacanthus fasciatus fasciatus** new species.

Types.—Male and female, adults, from *Penelope montagnii sclateri*, collected by the author at Tomina, Bolivia, Dec. 26, 1937 (in coll. of the author).

Diagnosis: This species and its various subspecies resemble *M. cornutus* and races in most basic characters, and were not for the different type of head spines which they bear, they would undoubtedly be classed as conspecific with it.

The differences in the two types of spines have been fully explained on a previous page, and need not be repeated here, suffice to say that in *fasciatus* these spines are always slender, uniformly colored, less deeply pigmented, and curve inward and backward into the median hyaline area of the head. With one known exception they are longer than the other type of spine found on *cornutus*, *ortolidis* and *meridionale*.

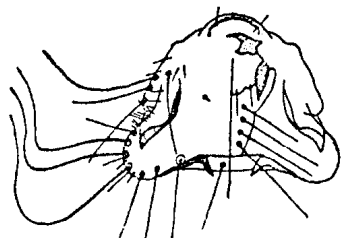


Fig. 15. — *Menacanthus fasciatus fasciatus*  
♂ head  
(*Penelope montagnii sclateri*)

The nominate race, *fasciatus*, is of medium length (♂, 1.65; ♀, 1.89), with head comparatively small; the sides of the pre-antennary area are straight, with sides of frons undulating and median portion strongly convex.

The thorax is similar to that of *cornutus*, with prothorax always longer than pterothorax and nearly as wide. The abdominal pleurites are narrower dorsally and more than twice as wide ventrally than those of *cornutus*, with the ventral portion pigmented almost as deeply as the tergites. Tergites I and II are entire and deeply pigmented for their entire width, as in *cornutus*, while the remaining tergites have the deeply pigmented, rounded incassations at their ends as in *cornutus*, but their deeply colored lateral extensions are shorter, with the pale median portion more deeply colored than in *cornutus*. In other words, there is less striking contrast in the coloring between the lateral and median portions of the tergites, especially in the female sex.

In the genitalia we have the paramers nearly parallel-sided, except for a median constriction; the endomeral plate is wide, with the dorsal rods long and narrowly spatulate at their tips; the penis is narrow distally and swollen medially, with the semilunar bodies rather strongly chitinized (see fig.). The type series consists of 8 ♂♂ and 2 ♀♀, with 1 ♂ and 2 ♀♀ from same host taken at Sandillani and Samaipata, Bolivia.

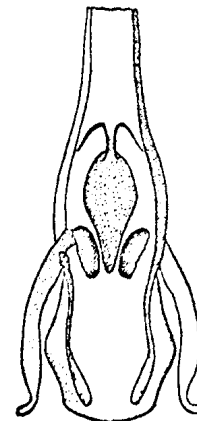


Fig. 16.  
*Menacanthus fasciatus fasciatus*  
♂ genitalia  
(*Penelope montagnii sclateri*)

Two ♂♂ from *P. montagnii plumosa*, taken at Huacapistana, Peru, are very close to the type series, and while not exactly the same, it seems best to place them with *fasciatus*.

Measurements of the types:	male		female	
	length	width	length	width
Body .....	1.65	....	1.89	....
Head {	antennae . . .	.41	....	.434
	temples ..	.358	.51	.553
Prothorax ...	.195	.423	.217	.445
Pterothorax ..	.16	.467	.195	.51
Abdomen ...	1.02	.65	1.21	.77
Basal plate ...	.26	.087		
Paramer .....	.13	....		
Endomera ...	.11	.10		

**Menacanthus fasciatus montagnii** new subspecies.

Type.—Female, adult, from *Penelope m. montagnii*, collected by the author at Cerros de Tres Tetras, Sierra Perijá, Colombia, April 24, 1942 (in coll. U. S. Nat. Mus.).

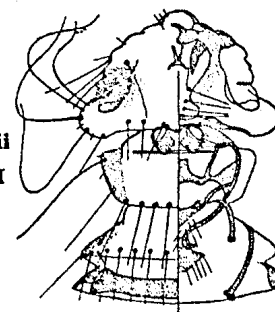


Fig. 17.  
*Menacanthus fasciatus montagnii*  
♀ head, thorax and segment I  
of abdomen  
(*Penelope m. montagnii*)

Diagnosis: Differs from female of *fasciatus* in smaller size, shorter head, wider temples, and equal width at antennae. The prothorax is much longer, with pterothorax slightly shorter and much wider. The abdomen is shorter and wider and head spines much longer (.097 against .076). Tergites I and II are wide and deeply pigmented; ventral pleurites very wide and strongly colored, while tergites III

to VII are very faintly colored medially. Known only from the type.

Measurements of the type:	female	
	length	width
Body . . . . .	1.80	. . . .
Head { antennae . . . . .	. . . .	.434
	temples . . . . .	.575
Prothorax . . . . .	.24	.455
Pterothorax . . . . .	.185	.55
Abdomen . . . . .	1.11	.835
Head spines . . . . .	.097	

**Menacanthus fasciatus samaipatae** new subspecies.

Types.—Male and female, adults, from *Penelope obscura speciosa*, collected by the author at Samaipata, Bolivia, October 26, 1937 (in coll. of the author).

Diagnosis: Larger than either of preceding races, with shorter head spine than in *fasciatus* in male sex, but much longer in female, about as long as in *montagnii*, but with spines straighter. The head is slightly smaller than in *fasciatus*, with narrower frons, while in the female it is considerably narrower at the antennae (.40 against .434), with temples equal.

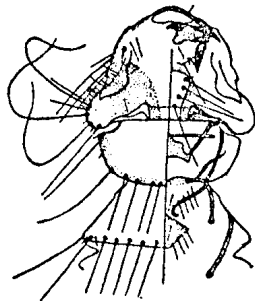


Fig. 18.  
**Menacanthus fasciatus samaipatae**  
♂ head and thorax  
(*Penelope obscura speciosa*)

Prothorax in ♂ longer and narrower; pterothorax longer and wider, while in female the differences are insignificant (compared with *fasciatus*). The shape of the head is the same as in *fasciatus*, except that the sides of the pre-antennary area are less divergent, so that the temples extend laterally beyond line of anterior portion.

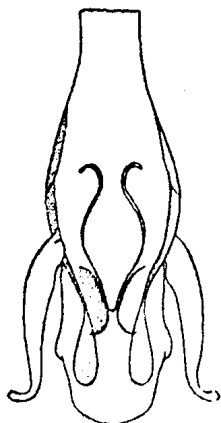


Fig. 19.  
**Menacanthus fasciatus samaipatae**  
♂ genitalia  
(*Penelope obscura speciosa*)

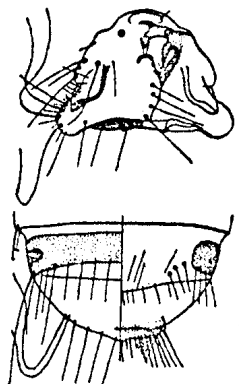
In the male genitalia the basal plate has basal portion much wider and more globular than in *fasciatus*, with penis much expanded medially and open end differently shaped; the parameres are

shorter and much thicker basally, tapering uniformly to tip; endomera longer and narrower, with dorsal rods much shorter and ends broadly spatulate; semi-lunar bodies larger and more thickly chitinized around inner margin. Represented only by the two types.

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.78	. . . .	1.92	. . . .
Head { antennae . . . . .	. . . .	.39	. . . .	.40
	temples . . . . .	.35	.50	.37
Prothorax . . . . .	.205	.412	.228	.445
Pterothorax . . . . .	.176	.477	.195	.52
Abdomen . . . . .	1.14	.65(?)	1.26	.76
Basal plate . . . . .	.225	.09		
Paramer . . . . .	.12	. . . .		
Endomera . . . . .	.12	.087		
Head spines . . . . .	.078			

**Menacanthus fasciatus chaparensis** new subspecies.

Types.—Male and female, adults, from *Penelope obscura jacquácu*, collected by the author at Todos Santos, Rio Chaparé, Bolivia, Aug. 12, 1937 (in coll. of the author).



Figures 20-21.  
**Menacanthus fasciatus chaparensis**  
♂ head  
**Menacanthus fasciatus chaparensis**  
tip of ♀ abdomen  
(*Penelope obscura jacquácu*)

Diagnosis: Length same as *fasciatus*, with head measurements of male practically equal, but in female it is wider at both antennae and temples, with length the same. The prothorax in both sexes is about equal, but pterothorax is shorter and na-

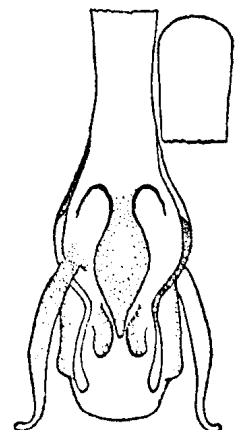


Fig. 22.  
**Menacanthus fasciatus chaparensis**  
♂ genitalia.  
(*Penelope obscura jacquácu*)

rrower (.152 × .488 against .195 by .51). Head spines are longer in both sexes than in *fasciatus* (.098 and .087 against .087 and .076), but as compared with *samaipatae* those of male are longer, of female shorter. The shape of the head is the same as in



*fasciatus*, except that the temples are much smaller. Both head and genitalia are very close to *samai-patae*, the only difference in latter is a wider endomeral rods and smaller semi-lunar bodies, with paramers slightly narrower basally.

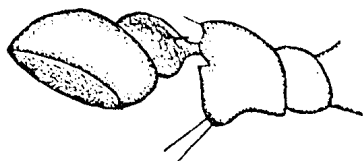


Fig. 23. — *Menacanthus fasciatus chaparensis*  
♂ antenna  
(*Penelope obscura*  
Jacquín)

It is possible that more and better material of *samai-patae* will show it to be the same as *chaparensis*, or with differences too small for recognition. Two ♂♂ and 3 ♀♀ in the type series, and 2 ♂♂ and 3 ♀♀ from same host taken at Puerto Yessup, Perú.

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.66	. . . . .	1.84	. . . . .
Head { antennae . . . . .	. . . . .	.412	. . . . .	.467
	temples . . . . .	.358	.52	.358
Prothorax . . . . .	.206	.412	.228	.445
Pterothorax . . . . .	.185	.456	.152	.488
Abdomen . . . . .	1.00	.62	1.18	.76
Basal plate . . . . .	.26	.085		
Paramer . . . . .	.115	. . . . .		
Endomera . . . . .	.087	.098		
Head spines . . . . .	.098		.087	

***Menacanthus fasciatus genitalis* new subspecies.**

**TYPES.**—Male and female, adults, from *Penelope purpurascens brunnescens*, collected by Carrier and Wetmore at Caracolicito, Dept. Magdalena, Colombia, March 27, 1941 (in U. S. Nat Mus.).

**Diagnosis:** This is one of the smallest races of *fasciatus*, except those found on *Crax* and *Mitu*, yet it has by far the largest genital armature of all the known species and subspecies of the genus found on the *Cracidae*.

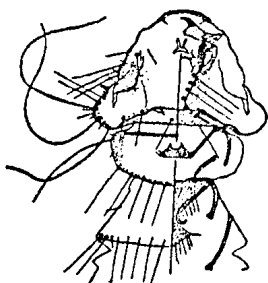


Fig. 24.  
*Menacanthus fasciatus genitalis*  
♂ head and thorax  
(*Penelope purpurascens*  
*brunnescens*)

The head is short, with wide, expanded, and slightly angulated temples. The prothorax is narrow, and pterothorax wider than most races of *fasciatus*. It is easily recognized by the size of the genitalia alone, the general shape of which resembles that of *albicaudus*, except much larger. The basal plate is much swollen and globular basally, with paramers thickened basally and tapering to tips. The endomeral plate is long and narrow, with rods short and thick and slightly spatulate apically. The penis differs in shape from all of the other races, lacking the slender filament at distal end,

while the semi-lunar sclerites are long and chitinized along both margins and lower end, instead of only along the inner convex side. Type series consists of 1 ♂ and 2 ♀♀, with 1 ♂ and 4 ♀♀ from the same host collected at La Cueva, Magdalena, Colombia.

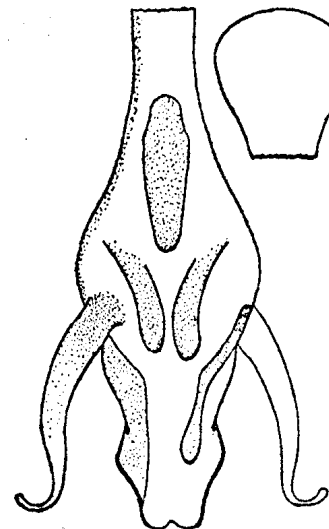


Fig. 25. — *Menacanthus fasciatus genitalis*  
♂ genitalia  
(*Penelope purpurascens*  
*brunnescens*)

A single male taken on *P. p. purpurascens*, collected by the author at Tres Zapotes, Vera Cruz, Mexico, may be provisionally placed here, although there are some discrepancies in measurements, which with more material may prove it to be subspecifically distinct. It is slightly larger in all body measurements, but the proportions are the same, except that the head is wider at the antennae, and the head spines are shorter.

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.60	. . . . .	1.76	. . . . .
Head { antennae . . . . .	. . . . .	.37	. . . . .	.40
	temples . . . . .	.347	.50	.37
Prothorax . . . . .	.195	.38	.228	.423
Pterothorax . . . . .	.174	.434	.195	.456
Abdomen . . . . .	1.000	.64	1.150	.70
Basal plate . . . . .	.27	.126		
Paramer . . . . .	.15	. . . . .		
Endomera . . . . .	.13	.076		
Head spines . . . . .	.097		.087	

***Menacanthus fasciatus albicaudus* new subspecies.**

**TYPES.**—Male and female, adults, from, *Penelope argyrotis albicauda*, collected by the author at Tierra Nueva (♂ type) and Monte Elías (♀ type),

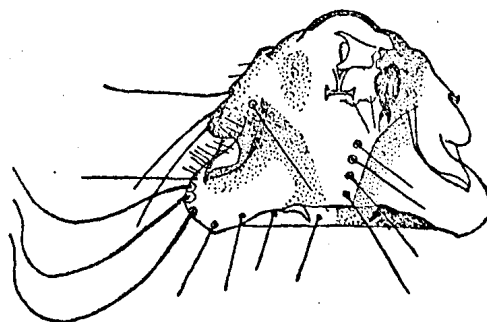


Fig. 26. — *Menacanthus fasciatus albicaudus*  
♂ head  
(*Penelope argyrotis albicauda*)

Sierra Perijá, Colombia, on July 3 and August 1, 1941 (in coll. U. S. Nat. Mus.).

**Diagnosis:** One of the smallest of the races, with head shaped much like *fasciatus*, but much smaller, with sides more divergent. Prothorax slightly and pterothorax much narrower than in *fasciatus*. The ventral abdominal pleurites are very wide.

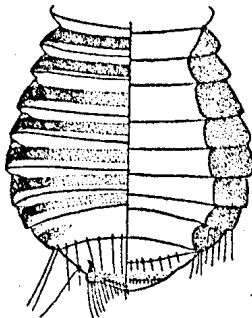


Fig. 27.

**Menacanthus fasciatus albicaudus**  
♀ abdomen  
(*Penelope argyrotis albicauda*)

The race is easily recognized by the shape of the genitalia. The basal plate is narrow basally, with short, lateral chitinized borders; paramers rather long and slender, and endomera very short and narrow, with pointed tip, while the rods are short and widely spatulate. The penis is slender and the semi-lunar bodies very small, but strongly chitinized along inner margins.

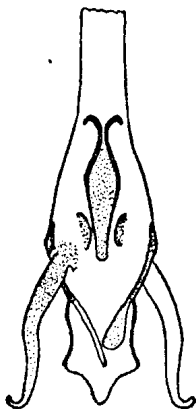


Fig. 28.

**Menacanthus fasciatus albicaudus**  
♂ genitalia  
(*Penelope argyrotis albicauda*)

Represented by the two types only.

Measurements:	male		female	
	length	width	length	width
Body .....	1.48	....	1.40	....
Head {	antennae . . . . .	.37	....	.402
	temples ..	.326	.445	.347 .50
Prothorax . . . . .	.185	.37	.205	.392
Pterothorax . . . . .	.175	.39	.152	.467
Abdomen . . . . .	.87	.55	.78	.716
Basal plate . . . . .	.228	.076		
Paramer . . . . .	.108	....		
Endomera . . . . .	.074	.047		
Head spines . . . . .	.076		.085	

**Note.**—The abdomen in both ♂ and ♀ are much compressed, especially in the ♀, so that the length here given is not the true length and deceptive.

**Menacanthus fasciatus latus** new subspecies.

**TYPE.**—Female, adult, from *Chamaepetes unicolor*, collected by the author on Volcano Turrialba, Costa Rica, October 18, 1907 (in coll. of the author).

**Diagnosis:** This race is represented by four ♀ ♀

only, so that the genitalia cannot be used in comparison. It is very short, with wide abdomen, large head and thoracic segments, and very long head spines. The pre-antennary portion of head is short and wide, with convex sides and protruding frons, while temples are wide (longitudinally). The dorsal pleurites are not deeply pigmented, but little

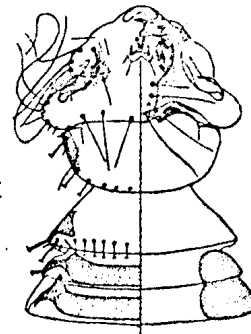


Fig. 29.

**Menacanthus fasciatus latus**  
♀ head, thorax and segments I-II  
(*Chamaepetes unicolor*)

more than the wide ventral portion, while the incassations of the tergites are strongly colored, as well as the short extensions, with their wide median portion almost uncolored, except on I and II.

Measurements of female type:	length	width
Body . . . . .	1.60	....
Head {	antennae . . . . .	.... .434
	temples . . . . .	.367 .58
Prothorax . . . . .	.228	.458
Pterothorax . . . . .	.217	.542
Abdomen . . . . .	.966	.80

**Menacanthus fasciatus cincinnatus** new subspecies.

**TYPE.**—Female, adult, from *Chamaepetes goudoti sanctae-marthae*, collected by the author on hacienda Cincinnati, Sta. Marta, Colombia, July 21, 1913 (in coll. of the author).

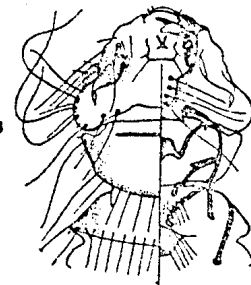


Fig. 30.

**Menacanthus fasciatus cincinnatus**  
♀ head and thorax  
(*Chamaepetes goudoti sanctae-marthae*)

**Diagnosis:** This race is smaller than *latus* in most measurements (the abdomen is extended, and measurement abnormally long). The head is shorter (.347 against .367) and much narrower than in *latus* (.38 and .532 against .434 and .58). The prothorax is longer and wider, while pterothorax is shorter and narrower. The coloration and structure of the abdominal sclerites similiar to those of *latus*.

Measurements of type:	female	
	length	width
Body . . . . .	1.75	....
Head {	antennae . . . . .	.... .38
	temples . . . . .	.347 .532
Prothorax . . . . .	.238	.467
Pterothorax . . . . .	.195	.52
Abdomen . . . . .	1.13	.76

**Menacanthus fasciatus pipilensis** new subspecies.

TYPE.—Male, adult, from *Pipilo cumanensis grayi*, collected by the author at Samaipata, Bolivia, Nov. 2, 1937 (in coll. of the author).

DIAGNOSIS: This is one of the smallest known races of *fasciatus*, about equal in size to *albicauda*, only *pauzensis* being smaller (length, 1.45).

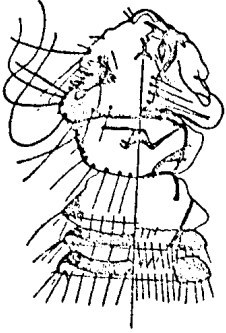


Fig. 31.  
**Menacanthus fasciatus pipilensis**  
♂ head, thorax and segments  
I-II of abdomen  
(*Pipilo cumanensis grayi*)

The head is short and narrow (.326 × .38 and .477), the same length as in *albicaudus*, but wider at antennae and temples. The prothorax is about the same size, and the pterothorax shorter and much wider than in *albicaudus*, while the abdomen is the same length and slightly wider. The parameres are longer, endomera same length, but considerably wider, while the penis is very much smaller. The single male type representing this species is not in the best of condition, but fresh material will undoubtedly show it to be quite distinct from *albicauda* and the other races of *fasciatus*.

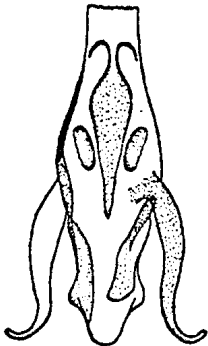


Fig. 32.  
**Menacanthus fasciatus pipilensis**  
♂ genitalia  
(*Pipilo cumanensis grayi*)

Measurements of type:

	male	
	length	width
Body . . . . .	1.45	....
Head {	antennae . . . . .	.38
	temples . . . . .	.477
Prothorax . . . . .	.174	.37
Pterothorax . . . . .	.15	.423
Abdomen . . . . .	.84	.586
Basal plate . . . . .	...	.076
Paramer . . . . .	.114	....
Endomera . . . . .	.072	.065

**Menacanthus fasciatus aburris** new subspecies.

TYPES.—Male and female, adults, from *Aburria aburri*, collected by the author at Tierra Nueva, Sierra Perijá, Colombia, July 7, 1941 (in coll. U. S. Nat. Mus.).

DIAGNOSIS: Another of the smaller races, with head more or less the size of *pipilensis* and *albicaudus*, but proportions slightly different. The pre-an-

tennal portion of head is large, with sides convex, but a slight depression at base of palpi; the temples are very small and round, with occiput *transverse*. The mandibles are set further back from frons than is usual, and there is a chitinized band running forward from each side of mandible to lateral edges of bucal cavity.

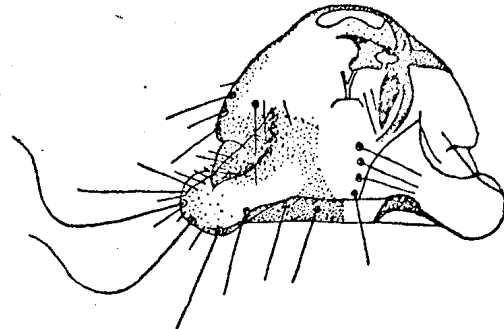


Fig. 33. — **Menacanthus fasciatus aburris**  
♂ head  
(*Aburria aburri*)

The line of the ocular fringe cuts across the anterior portion of the temples (very unusual), while the anterior line of temples is continuous with the posterior line of antennary fossa (unique in this group). The hairs of whole body are very slender, especially on abdomen. The sternal portion of pleurites is unusually wide, while the pigmented por-

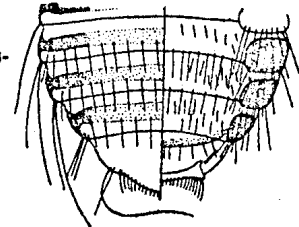


Fig. 34. — **Menacanthus fasciatus aburris**  
tip of ♀ abdomen  
(*Aburria aburri*)

tion of tergites extends inward only as far as inner edge of ventral pleurite. The rounded incrustations of the tergites are deeply pigmented. Except for large size of segment IX the female scarcely differs from the male.

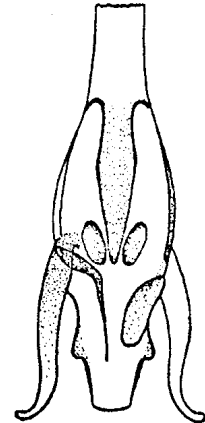


Fig. 35.  
**Menacanthus fasciatus aburris**  
♂ genitalia  
(*Aburria aburri*)

The genitalia, however, present differences from the other races, the endomerical plate being long and narrow, with long distal portion, while the rods are unique in shape (see fig.). The penis has posterior half with *sides straight*, and the semilunar bodies are small and strongly chitinized along inner margin. Species represented by 4 ♂♂ and 8 ♀♀.

Measurements of the types:	male		female	
	length	width	length	width
Body .....	1.43	....	1.59	....
Head {	antennae . . .	.38	....	.39
	temples ..	.337	.467	.347 .488
Prothorax ... ..	.185	.367	.217	.402
Pterothorax .. .	.170	.415	.162	.467
Abdomen ... ..	.83	.59	1.01	.705
Basal plate .. .	....	.088		
Paramer .....	.127	....		
Endomera ... ..	.062	.055		

**Menacanthus fasciatus annulatus** new subspecies.

**TYPES.**—Male and female, adults, from *Crax annulatus*, collected by the author at Don Diego, Dept. Magdalena, Colombia, Jan. 31, 1914 (in coll. of the author).

**Diagnosis:** In this race the male is of average size, but with the female unusually large ( $\delta$ ,  $1.60 \times .61$ ;  $\text{♀}$ ,  $1.93 \times .82$ ). The head is small and almost trapezoidal in shape, with small, short temples. The preantennary area is large, with anterior portion wide and flattened and sides fairly straight, and but slightly divergent (see fig.). The head spines are relatively small. The thoracic segments are short and wide ( $\delta$  prothorax,  $.206 \times .412$ ;  $\delta$  pterothorax  $.195 \times .467$ ).

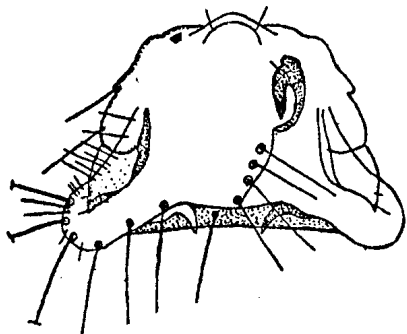


Fig. 36.  
**Menacanthus fasciatus annulatus**  
 $\delta$  head  
(*Crax annulatus*)

The abdomen is elongated oval in both sexes, with pleurites narrow dorsally and very wide ventrally, with both sides equally pigmented. The tergites are deeply colored, more so in  $\text{♀}$ , both lateral incassations and the short transverse bands, but the latter do not extend far beyond the pleurites (further in  $\text{♀}$ ), while their median portion is also more deeply pigmented than in the  $\delta$ . In the male, segment I is wider (transversely) than II, a stri-

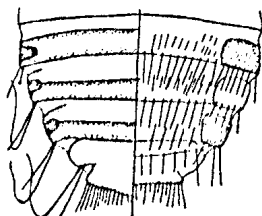


Fig. 37. — **Menacanthus fasciatus pauxensis**  
tip of  $\text{♀}$  abdomen  
(*Pauxi pauxi gillardi*)

king and unique character, but one found also in *daubentoni* and *pauxensis*. In the female this character is less noticeable, but segment I is still wider (transversely) proportionately than in the other races. Perhaps this unusual development of segment I is due to the very large 3rd. pair of coxae

being attached near the posterior margin of the pterothorax, and extend backward under anterior portion of segment II, with the acetabular bar very long, reaching almost to rear margin of segment I. This unusual abdominal structure (together with the large 3rd. coxae) may prove to be a specific character, if present on all forms of this group found on the genus *Crax*.

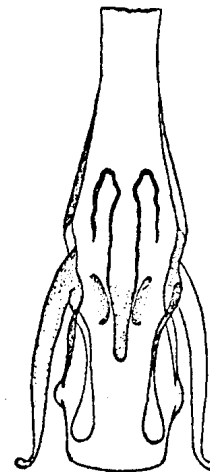


Fig. 38.  
**Menacanthus fasciatus annulatus**  
 $\delta$  genitalia  
(*Crax annulatus*)

The genitalia also present distinguishing features, the parameres and endomeres being unusually long, the former slender, the latter nearly parallel-sided (except for lateral protuberances) and with rods long, narrow basally and broadly spatulate distally.

The penis is long and slender. Represented by 1  $\delta$  and 5  $\text{♀}$ .

Measurements of types:	male		female	
	length	width	length	width
Body .....	1.60	....	1.93	....
Head {	antennae . . .	.391	....	.423
	temples ..	.337	.50	.37 .553
Prothorax ... ..	.206	.412	.24	.445
Pterothorax .. .	.195	.467	.206	.532
Abdomen ... ..	.94	.61	1.24	.825
Basal plate .. .	.26	.087		
Paramer .....	.138	....		
Endomera ... ..	.108	.09		

**Menacanthus fasciatus daubentoni** new subspecies.

**TYPE.**—Female, adult, from *Crax alberti daubentoni*, collected by the author at El Hacha, Venezuela, Jan. 6, 1910 (in coll. of the author).

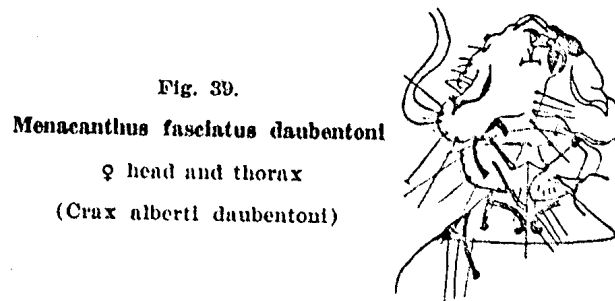


Fig. 39.  
**Menacanthus fasciatus daubentoni**  
 $\text{♀}$  head and thorax  
(*Crax alberti daubentoni*)

**Diagnosis:** This race is represented by but a single female, the type, and it is not possible to give a comprehensive diagnosis without the male. However the female is much smaller than that sex in

*annulatus*, which it closely resembles, but the head is slightly wider. It has the same small, rounded temples and large pre-antennary area, but the latter is differently shaped; the sides being sinuate, slightly convex, and with front more or less pointed (see fig.). The head spines are much thicker.

Both thoracic segments are unusually small, being shorter than in *male* of *annulatus*, with prothorax the same width but pterothorax wider (see table of measurements). The whole body is more deeply pigmented than usual, with tergites III to VIII almost as strongly pigmented as I and II, but the lateral incassations are very small and pitchy brown. The pleurites are minute dorsally, and very wide ventrally and deeply colored. Segment I is wide (transversely) as in *annulatus*, with same structure of 3 rd. coxae.

Measurements of type:	female	
	length	width
Body . . . . .	1.76	....
Head { antennae . . . . .	....	.415
	temples . . . . .	.369 .54
Prothorax . . . . .	.195	.412
Pterothorax . . . . .	.174	.50
Abdomen . . . . .	1.12	.735

**Menacanthus fasciatus pauxensis** new subspecies.

Types.—Male and female, adults, from *Pauxi pauxi gilliardi*, collected by the author at Monte Elías, Sierra Perijá, Colombia, August 9, 1941 (in coll. U. S. Nat. Mus.).

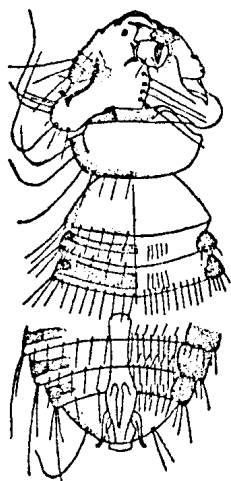


Fig. 40.  
**Menacanthus fasciatus pauxensis** ♂  
(Pauxi pauxi gilliardi)

**Diagnosis:** This is also characterized by the very small size of male and large female, as in *daubentoni*, but smaller than in *annulatus*. The head is very similar in shape to that of *daubentoni*, but the gular hairs are much longer and the mandibles are larger, with a wider bucal opening. The length is a trifle less and width at antennae slightly more, with temples the same.

The thoracic segments (in ♀) are slightly longer, with pterothorax narrower, and with abdomen narrower. The pigmentation and structure of abdominal sclerites is similar to that of *annulatus*, but coloring paler. The paramers are long in comparison to size of genitalia, with endomeral plate

much constricted laterally in median portion, and pointed distally, while the endomeral rods are distinctive. Represented by 2 ♂♂ and 1 ♀.

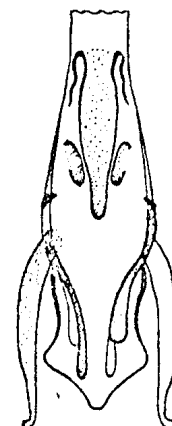


Fig. 41.  
**Menacanthus fasciatus pauxensis**  
♂ genitalia  
(Pauxi pauxi gilliardi)

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.34	....	1.78	....
Head { antennae . . . . .	....	.393	....	.423
	temples . . . . .	.347 .503	.358	.542
Prothorax . . . . .	.195	.38	.217	.412
Pterothorax . . . . .	.174	.434	.185	.48
Abdomen . . . . .	.76	.61	1.15	.608
Basal plate . . . . .	....	.079	....	....
Paramer . . . . .	.13	....	....	....
Endomera . . . . .	.087	.074	....	....

**Menacanthus mituensis** new species.

TYPE.—Female, adult, from *Mitu mitu*, collected by the author at Chifiri, Rio Kaka, Bolivia, Aug. 24, 1934 (in coll. of the author).

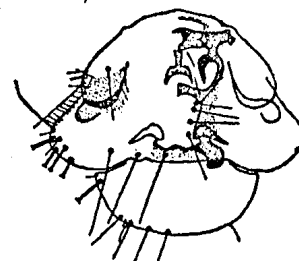


Fig. 42.  
**Menacanthus mituensis**  
♀ head and prothorax  
(Mitu mitu)

**Diagnosis:** This is the most aberrant species known from the *Cracidae*, and not at all similar to the others. Were it not for the prominent ventral spines of the head it might be almost conspecific with the *Menopon cracis* group, since it possesses the conspicuous hooks at the inner posterior corner of the ventral pleurites, as in that species, as well as the dense patches of setae on sternites II to V and on the 3rd. femur.

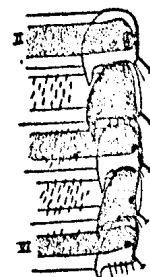


Fig. 43.  
**Menacanthus mituensis** ♀  
Abdominal pleurites and tergites II to VI  
(Mitu mitu)

It is a large species (2.06), with short, broad head, with broadly rounded frons, and wide roun-

ded temples, short palpi and minute antennae of a distinct type (see figs.).

The prothorax is attached to the head unusually far forward from the occiput, with the incrassations at point of attachment of a distinct type, while the prothorax itself is unusually small, with sides and posterior margin almost semicircular. The pterothorax is also small, not longer than prothorax, and but little wider. Unfortunately the type and only specimen is in very poor condition, the head being cracked and most of the hairs missing, while the abdomen is flattened laterally, so that neither a figure or full description of it is possible.

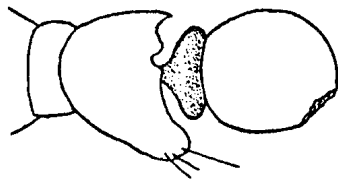


Fig. 44.  
*Menacanthus mituensisi*  
♀ antenna  
(Mitu mitu)

The pleurites are almost wholly ventral, only a narrow pigmented band appearing on the dorsal face. The tergites are broad, continuous across all segments, and all are rather deeply and uniformly pigmented, except for a small, rounded incrassation at their lateral ends, next to the pleurites. The hooks on the pleurites are of uniform size, and seem to be finely denticulated (like those of *Menopon cracis* Giebel).

It is to be hoped that fresh material of both sexes of this interesting species may be secured by some other worker on South American Mallophaga, and a complete description and figure published.

Measurements of the type:

	female	
	length	width
Body . . . . .	2.06	....
Head {	antennae . . . . .	.542
	temples . . . . .	.445 .75
Prothorax . . . . .	.282	.477
Pterothorax . . . . .	.26	.54 (?)
Abdomen . . . . .	1.26	....

***Menacanthus meridionale meridionale* (Carriker).**

*Menopon praecursor meridionale* Carriker, Univ. Studies, Univ. Nebr., Vol. III, N° 2, April, 1903, p. 60 (Hosts: *Melanerpes aurifrons hoffmani* and *Odontophorus leucolaemus*).

A re-examination of the above mentioned specimens (still in my collection) shows the following: All specimens are *Menacanthus*. There are three ♂♂ taken on *Melanerpes* and 1 ♂ and 3 ♀♀ taken on *Odontophorus*. The description of the species was therefore made from a female collected on *Odontophorus*, while the measurements given for the head of the male also correspond to specimens from *Odontophorus*.

It is important to clarify this point, since there are two species involved, the male from *Melanerpes* being a true parasite of the woodpeckers, and closely related to *M. praecursor* (Kellogg), while

those from *Odontophorus* represent a species found on that genus through Central and South America, as well as on the neotropical forms of *Colinus*.

*M. meridionale* is associated with another very closely related species which is more abundantly represented, the two being separated on the type of the heavy ventral head spines. In *meridionale* these spines are thickened basally, taper to a point, and extend straight backward from the rounded, more deeply pigmented basal portion, as in *ortaliidis* and *cornutus* (previously discussed). The other species, *falcatus*, described on a subsequent page, has spines of quite a different type, similiar to those of *fasciatus*. I have as yet seen but a single instance where both species were taken on the same host species, viz. *Odontophorus capuira*, but they were not taken from the same individual bird, although both *falcatus* and *fasciatus* were taken on the same individual of *Aburria aburris*.



Fig. 45. — *Menacanthus m.*  
*meridionale* (Carr.) ♂  
(*Odontophorus leucolaemus*)

*M. meridionale* and its subspecies may be characterized as follows: Front of head ranging from rounded to somewhat pointed, with temples rounded and comparatively small; palpi small and antennae rather long, with first joint (distal) swollen and extending beyond margin of head for almost entire length; hairs of ocular fringe rather long but not dense; four long pustulated hairs on temple and three submarginal on each side of occipital margin; four long, pustulated hairs on each side of gular area.

Prothorax well developed, with sides and posterior margin forming more or less a semicircle, with sides slightly flattened. Pterothorax but little longer than prothorax, with the meso-metathoracic suture well marked at lateral margins and the metathorax with straight, widely divergent sides and nearly transverse posterior margin, set with five strong, submarginal hairs on each side. The meso and metasternal plates are well developed but not deeply pigmented, while both bear longish hairs.

The abdomen in both sexes is oval in shape; the pleurites are well developed ventrally, uniformly but not strongly pigmented, and with 5 to 7 hairs on posterior margin (shorter than length of pleurites). The dorsal aspect of the pleurites is merely a narrow, deeply colored marginal band. The tergites are continuous transversely from pleurite to pleurite, and cover almost the entire segment, and are uniformly but not deeply pigmented.

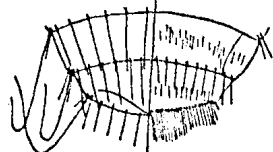


Fig. 40.  
*Menacanthus m. meridionale*  
tip of ♀ abdomen  
(*Odontophorus leucolaemus*)

There are two longish hairs in postero-lateral angles of segments I to IV, followed (internally along posterior margin) on segments I to III by a spine, then a long, strong pustulated hair, then another, longer spine, after which follows on segments I and II a series of 8 to 10 longish, rather thickened hairs. On segment IV there is no spine between angle and long pustulated hair, but a spine follows it. No spines are present on remaining segments, while the long pustulated hair is set close to the angle, and followed by a uniform series of longish hairs across entire segment. On segments III, IV and V the series of 10 stronger hairs are interspersed with alternate shorter and finer hairs, while on segments VI to VIII the hairs are mostly of uniform length, with a few shorter ones intermixed. The sternites are poorly developed, but show a slight thickening and pigmentation in median portion on segments IV to VII, more pronounced on VII.

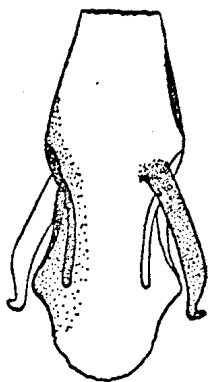


Fig. 47.  
*Menacanthus m. meridionale*  
♂ genitalia  
(*Odontophorus leucolaemus*)  
("penis" missing)

On the ventral surface we have (on segments II to VIII) a row of finer, slightly shorter, submarginal hairs, beginning a short distance inside the pleurites. On segment II this line of hairs is arched forward medially, but in each successive segment it flattens out until in segment VI it is beneath the dorsal row of hairs. In addition to the row of hairs along the posterior margin, there is another shorter row (more widely spaced) of shorter, finer hairs across anterior median portion of segments II to VIII, and lastly a patch of short setae (not finer than the other ventral hairs) on segments III to VII just inside the pleurites, and more abundant on segments IV to VII. The dorsal and ventral integuments at tip of segment IX in

male are not superimposed, the dorsal integument being bilobed, and deeply incised medially, while the ventral integument is rounded.

The legs are of medium length, with femora and tibiae rather swollen (see fig.), with almost no setae on the coxae or femora 1 and 2, but N° 3 has a large, well developed patch similar in size to those on the abdominal sternites. There are strong marginal bristles and spines on all femora and tibiae.

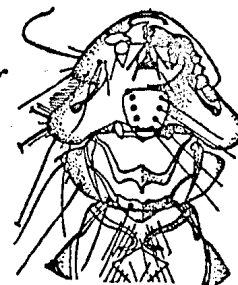
The genitalia are more or less of the same type as in *ortalidis*, *cornutus* and *fasciatus*.

Measurements of types:	male		<i>(M. m. meridionale)</i> female	
	length	width	length	width
Body . . . . .	1.60	. . . .	1.69	. . . .
Head {	antennae . . . .	.40	. . . .	.402
	temples . . . .	.347	.522	.532
Prothorax . . . .	.20	.434	.206	.434
Pterothorax . . .	.174	.467	.174	.51
Abdomen . . . . .	.97	.65	1.06	.716
Basal plate . . . .	. . . .	.095	. . . .	. . . .
Paramer . . . . .	.105	. . . .	. . . .	. . . .
Endomera . . . . .	.11	.105	. . . .	. . . .

*Menacanthus meridionale santanderianus*  
new subspecies.

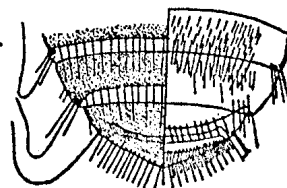
TYPES.—Male and female, adults, from *Odontophorus gujanensis polionotus*, collected by the author at Bellavista, Santander N., Colombia, July 7, 1943 (in coll. U. S. Nat. Mus.).

Fig. 48. — *Menacanthus meridionale santanderianus*  
♂ head and thorax  
(*Odontophorus gujanensis polionotus*)



*Diagnosis:* Larger than *meridionale* in every way and in both sexes. The anterior margin of the head is less circular (more elliptical); the ventral spines are much more thickened basally, and the parameres are more slender. Unfortunately the penis of the ♂ type of *meridionale* has been extruded and lost. Undoubtedly this part of the genitalia would show good subspecific differences, since they differ very much between *santanderianus* and *brasiliensis*. The genitalia of the type (and only male) of *santanderianus* is badly distorted so that

Fig. 49. — *Menacanthus meridionale santanderianus*  
tip of ♀ abdomen  
(*Odontophorus gujanensis polionotus*)



a correct figure could be made of only a paramer and the penis. The chaetotaxy of segment IX in the female is complicated, and without dissection rather difficult to correctly interpret. However, it

seems to be as follows: There is a row of 10 to 12 fairly stout, longis, dorsal hairs, with small pustules, set submarginally, on each side, between the two long, lateral, pustulated hairs. Below these hairs, around the margin of the dorsal integument, is another row of hairs of about the same length, but more thickened basally, and with a short, finer hair between them. On the ventral surface there is a flap, or merely a lateral thickening of the ventral side of the abdominal opening, the mar-

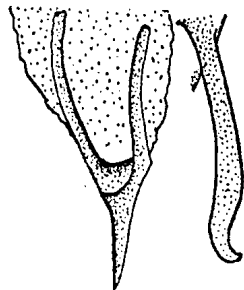


Fig. 50. — *Menacanthus meridionale santanderianus*  
♂ genitalia  
(*Odontophorus gujanensis pollionotus*)  
Right paramer and "penis"

gin of which is more flattened than the dorsal integument and is submarginal to it in the median portion. This flap bears a marginal fringe of hairs of about the same length as the dorsal rows, and also of two sizes, one set thickened basally, and between each pair of thickened hairs is set 2 short, fine setae. The posterior margin of sternite VIII extends backwards much beyond the dorsal margin, and appears as a convex line across median portion of segment IX. This margin also bears a fringe of slender setae, more sparsely set than those mentioned above, but of same length. These fringes of hairs are not shown entirely correct on smaller figure of female abdomen, but the enlarged figure is correct.

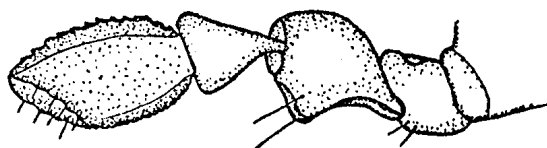


Fig. 51. — *Menacanthus meridionale santanderianus*  
♂ antenna  
(*Odontophorus gujanensis pollionotus*)

Measurements of types:	male		female	
	length	width	length	width
Body .....	1.84	....	2.01	....
Head { antennae . . .	.423	....	.423	....
temples ..	.38	.566	.39	.586
Prothorax ...	.238	.467	.24	.467
Pterothorax ...	.228	.525	.217	.553
Abdomen ...	1.13	.63	1.28	.87
Basal plate ...	.37	.098		
Paramer .....	.076	....		
Endomera ...	.054 (?)	....		

***Menacanthus meridionale brasiliensis***  
new subspecies.

TYPES.—Male and female, adults, from *Odontophorus c. capueira*, collected by Plaumann at Novo Teutonia, Brazil, May 7, 1940 (in coll. of G. H. E. Hopkins).

**Diagnosis:** Size more or less the same as *santanderianus*, slightly smaller, but the proportions of the segments are not the same. The head in the ♂ is shorter, wider at temples and narrower at antennae. In the female it is also shorter, wider at temples, but also wider at antennae. The prothorax



Fig. 52. — *Menacanthus meridionale brasiliensis*  
♂ head and thorax  
(*Odontophorus c. capueira*)

is the same, but pterothorax is longer and wider; all parts of the genitalia are longer and wider (see measurements).

The head is more pointed than in *santanderianus*, with bucal opening narrower; the occipital margin is more concave, with the condyles of tho-

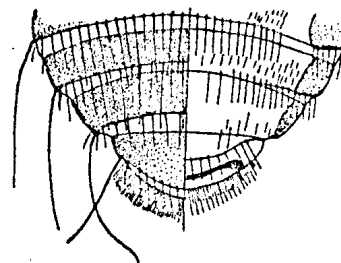


Fig. 53. — *Menacanthus meridionale brasiliensis*  
tip of ♀ abdomen  
(*Odontophorus c. capueira*)

racic attachment much larger and of a different shape. The trident-shaped body, which replaces the pharyngeal sclerite in this whole group, is of a different pattern. The prothorax has the sides more flattened and with an obvious (though broad) pos-

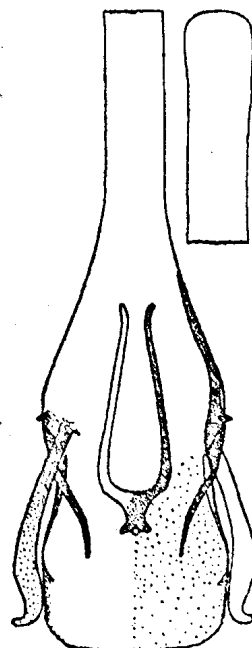


Fig. 54. — *Menacanthus meridionale brasiliensis*  
♂ genitalia  
(*Odontophorus c. capueira*)

tero-lateral angle. The sides of the pterothorax are very straight and more divergent, with the mesothoracic portion less pronounced and sides straight (convex in *santanderianus*).



The male genitalia are much longer than in *meridionale*, with endomerical plate much larger, and of quite different shape. The paramers are very close to those of *santanderianus*, but the penis is quite different (see fig.). In the female the abdo-

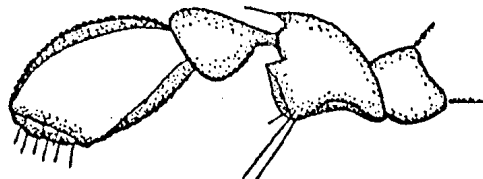


Fig. 55. — *Menacanthus meridionale brasiliensis*  
♂ antenna  
(*Odontophorus c. capueira*)

men is much broader, as well as longer, than in either *meridionale* or *santanderianus*, but the ventral margin of the vulva extends *beyond the dorsal*.

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.79	. . . . .	1.96	. . . . .
Head {	antennae . . . . .	.414	. . . . .	.435
	temples . . . . .	.37	.57	.374
Prothorax . . . . .	.24	.467	.24	.50
Pterothorax . . . . .	.24	.542	.26	.65
Abdomen . . . . .	1.15	.748	1.22	.96
Basal plate . . . . .	.445	.13		
Paramer . . . . .	.108	. . . . .		
Endomera . . . . .	.09	.13		

***Menacanthus falcatus falcatus* new species**

Types.—Male and female, adults, from *Odontophorus g. gujanensis*, collected by the author at Perú Mine, El Callao, Venezuela, May 11, 1910 (in coll. of the author).

Diagnosis: As stated above, *falcatus* and its races are very close to the *meridionale* group, but may be easily separated from that species by the type of ventral head spines, which are usually longer, always more slender, uniformly pigmented, and curve inward and backward from their bases into the hyaline median portion of the head, which is bordered on each side by a curving, heavily pigmented band.

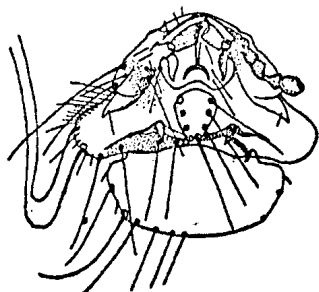


Fig. 56. — *Menacanthus falcatus falcatus*  
♂ head and prothorax  
(*Odontophorus g. gujanensis*)

In *falcatus* the head is as small or smaller than in the *meridionale* group, porportionately shorter and with anterior portion usually smaller. The temples are small, and usually rounded and not expanded laterally, so that the whole head forms an isosceles triangle, with rounded points. There are two races (*valenciae* and *longispinus*) which do not entirely conform to this description. There is no dif-

ference in the general pattern of the chaetotaxy of the head, but the hyaline gular area is more constricted laterally, the two rows of four pustulated hairs arising from it being closer together, especially posteriorly, the first pair, just within the occipital margin, being almost touching, with the two rows forming a V. The markings in the occipital area vary in the different races, but all (except in *brevispinus*) conform to a pattern distinctly different from the *meridionale* group (see figs.). The pattern of the abdominal chaetotaxy is the same as in *meridionale*, with the following exceptions.

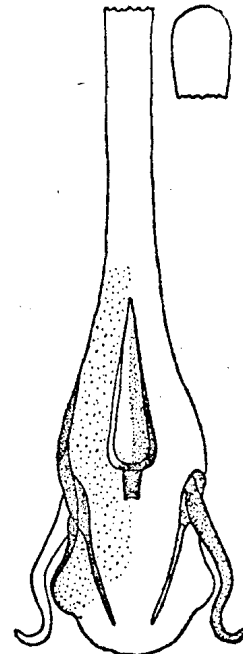


Fig. 57.  
*Menacanthus falcatus falcatus*  
♂ genitalia  
(*Odontophorus g. gujanensis*)

In the postero-lateral angles of the pterothorax there are four short spines instead of two (2 above and 2 below the long hair); the spine just outside the long pustulated hair of the postero-lateral angles of the abdomen is smaller, but is present in segments I to V (instead of I to III), while the spine *inside* the long hair is longer and is present on I to VII, that in VII being the longest.

The dorsal hairs on posterior margins of the segments are usually longer, sometimes much longer, as well as the long pustulated hairs at the lateral angles. The antennae also present good subspecific characters, no two of them seeming to be exactly alike.



Fig. 58. — *Menacanthus falcatus falcatus*  
♂ Antenna  
(*Odontophorus gujanensis gujanensis*)

The male genitalia are of the same general type as in *meridionale*, with the same style of endomerical rods, but which are more slender. The paramers are usually more sinuate, sometimes with the tips twisted to a rough figure S (see *M. f. boliviensis*). The endomerical plate, or sac, varies greatly in size and shape, as in *meridionale*, as well as the penis.

which usually presents good subspecific characters. The chaetotaxy of segment IX in the female is very similar to that of *meridionale*, differing slightly among the races as to the length, texture and number of setae in the different fringes. Four ♂♂ and 4 ♀♀.

Measurements of the types:	male		female	
	length	width	length	width
Body .....	1.50	....	1.87	....
Head {	antennae . . . . .	.36	....	.423
	temples ..	.326	.51	.38 .61
Prothorax . . . . .	.217	.40	.25	.488
Pterothorax . . . . .	.185	.467	.217	.575
Abdomen . . . . .	.87	.65	1.20	.83*
Basal plate . . . . .	.42	.098		
Paramer . . . . .	.108	....		
Endomera . . . . .	.09	.13		

\* (Abdomen unduly extended in ♀).

**Menacanthus falcatus valenciae** new subspecies.

TYPE.—Female, adult, from *Odontophorus columbianus*, collected by the author at La Cumbre de Valencia, Venezuela, October, 6, 1910 (in coll. of the author).

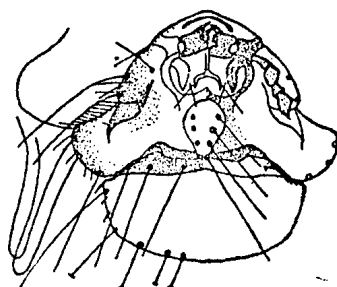


Fig. 59. — *Menacanthus falcatus valenciae*  
♀ head and prothorax  
(*Odontophorus columbianus*)

**Diagnosis:** Considerably smaller than *falcatus*, about the size of *boliviensis*, but differing from the ♀ of that race in the proportions of the head and thorax. The length is the same as in *perijanus*, but the head is much larger in all measurements, with the prothorax shorter and pterothorax narrower. Without the male it is difficult to make a complete comparison. Represented by 4 ♀♀.

Measurements of the type:	female	
	length	width
Body . . . . .	1.71	....
Head {	antennae . . . . .	.395
	temples . . . . .	.358 .564
Prothorax . . . . .	.239	.434
Pterothorax . . . . .	.185	.520
Abdomen . . . . .	1.08	.81

**Menacanthus falcatus perijanus** new subspecies.

TYPES.—Male and female, adults, from *Odontophorus atrifrons variegatus*, collected by the author at Cerros de Tres Tetras, Sierra Perijá, Colombia, Apr. 20, 1942 (in U. S. Nat. Mus.).

**Diagnosis:** In general size it is close to *falcatus*. The head of male is the same length and width at

temples, but narrower in front, with the length from ocular slit to frons greater; the frons is more circular and the occiput almost straight (sinuate in *falcatus*); the mandibles are shorter and thicker, with bucal opening narrower; the segments of the antennae are also differently shaped.

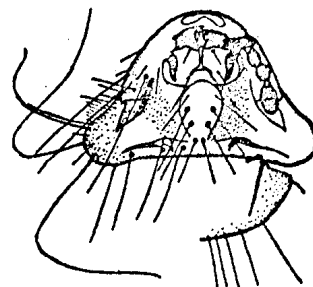


Fig. 60. — *Menacanthus falcatus perijanus*  
♂ head and prothorax  
(*Odontophorus atrifrons variegatus*)

In *falcatus* the head of the female is much larger than that of male, but in *perijanus* there is very little difference in size (see measurements). The dorsal hairs of the abdomen are longer than in *falcatus*, longer than the segments. The male genitalia are quite distinctive. The basal plate is the same length but very differently shaped distally, with wider lateral bands; the paramers are much longer, and attached to the basal plate at their inner

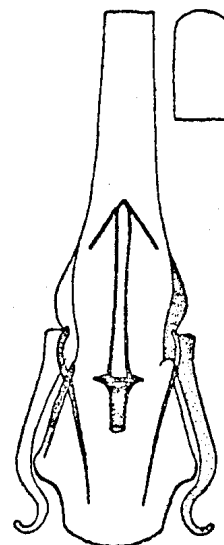


Fig. 61.  
*Menacanthus falcatus perijanus*  
♂ genitalia  
(*Odontophorus atrifrons variegatus*)

edges (not at their bases), being the only form yet seen with this type of attachment. The endomerical plate is longer and narrower, with the rods very slender and not expanded distally (as in *falcatus*), while the penis is very differently shaped.

Known from the types only.

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.52	....	1.71	....
Head {	antennae . . . . .	.347	....	.358
	temples ..	.33 .51	.326	.52
Prothorax . . . . .	.195	.402	.26	.434
Pterothorax . . . . .	.174	.456	...	.54
Abdomen . . . . .	.93	.61	1.08	....
Basal plate . . . . .	.41	.098		
Paramer . . . . .	.13	....		
Endomera . . . . .	.11	.117		

*Menacanthus falcatus boliviensis* new subspecies.

Types.—Male and female, adults, from *Odontophorus gujanensis simonsi*, collected by the author at Boca Chaparé, Río Chaparé, Bolivia, Aug. 28, 1937 (in coll. of the author).

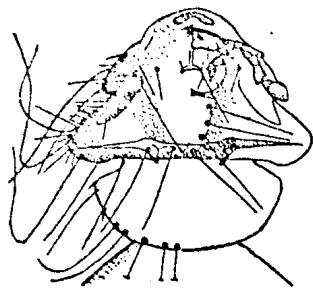


Fig. 62. — *Menacanthus falcatus boliviensis*  
♂ head and prothorax  
(*Odontophorus gujanensis simonsi*)

**Diagnosis:** This is a very distinct race. The head of male is wider at temples and antennae, with the sides of the pre-antennary area slightly incised laterally, and with its sides extended laterally much beyond the templar margin bearing the ocular fringe (see fig.). The occiput is transverse, with temples extending but slightly behind it.

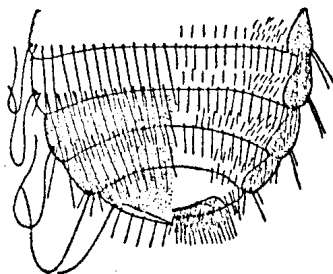


Fig. 63. — *Menacanthus falcatus boliviensis*  
tip of ♀ abdomen  
(*Odontophorus gujanensis simonsi*)

The head of the female also differs but little in size from that of the male, being slightly longer and wider at temples, but narrower at the antennae. The head spines are smaller than those of the previously described races of *falcatus*, but larger than in *brevispinus*.

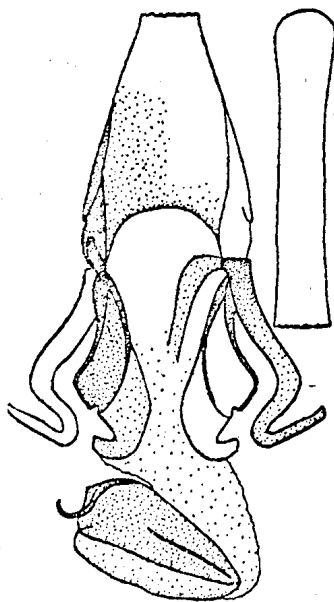


Fig. 64. — *Menacanthus falcatus boliviensis*  
♂ genitalia  
(*Odontophorus gujanensis simonsi*)

The genitalia are strikingly different. The basal plate is very similar to that of *falcatus*, but lateral bands are wider. The parameres are much distorted, with apical portion bent roughly into an S-shape. The endomeral plate is also very distinctive (see fig.), as well as the penis, although it is

difficult to figure it correctly, in as much as it is extruded in two of the males, while in the third male it is within the endomeral sac, it is not clearly visible, but appears to be as shown in figure. The shape of the paramers and penis are the most distinctive characters of the male, while in the female the head proportions and the chaetotaxy of segment IX are the dominant characters. Three ♂♂ and three ♀♀.

Measurements of types:	male		female	
	length	width	length	width
Body .....	1.66	....	1.73	....
Head {	antennae . . . . .	.39	. . . . .	.38
	temples .. . . .	.337	.532	.345
Prothorax ... ..	.206	.40	.206	.435
Pterothorax ... .	.195	.477	.195	.545
Abdomen ... ..	1.03	.694	1.09	.80
Basal plate ... .	.41	.117		
Paramer ... ..	.141	....		
Endomera ... ..	.12	.122		

*Menacanthus falcatus brevispinus* new subspecies.

Types.—Male and female, adults, from *Odontophorus balliviani*, collected by the author at Inca-chaca, Cochabamba, Bolivia, June 8, 1937 (in coll. of the author).

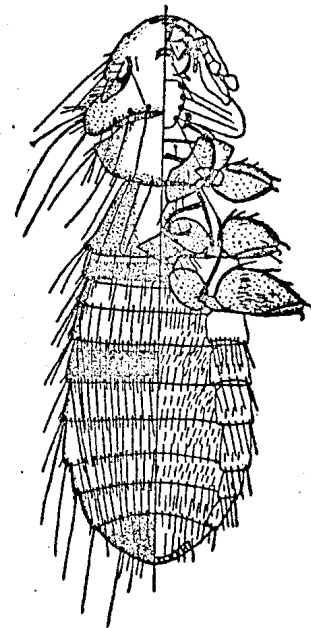
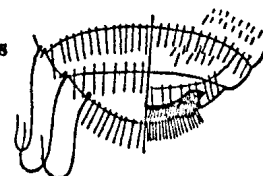


Fig. 65. — *Menacanthus falcatus brevispinus* ♂  
(*Odontophorus balliviani*)

**Diagnosis:** This is one of the smaller of the known races of *falcatus*, and is characterized by its long head, narrow at the temples and with deeply concave occiput. The apical segment of the antennae is also unique (see fig.), while the head spines are minute, and the pterothorax is longer and narrower than usual.

Fig. 66. — *Menacanthus falcatus brevispinus*  
tip of ♀ abdomen  
(*Odontophorus balliviani*)



The genitalia also presents distinctive characters (see fig.) in the shape of the basal plate, shorter,

more slender paramers and long slender endomera, with unusually wide lateral, chitinized bands and short, very slender rods. The penis is also distinctive.

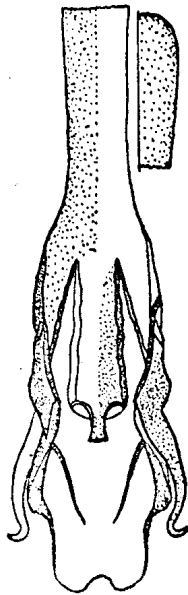


Fig. 67.  
*Menacanthus falcatus brevispinus*  
♂ genitalia  
(*Odontophorus balliviani*)

In the female we have a somewhat different arrangement of the fringes of setae on segment IX (see fig.), and with a spine inside the long, pustulated hair at postero-lateral angles of abdomen in segments I to VIII, while in the male they are absent on VII and VIII.



Fig. 68. — *Menacanthus falcatus brevispinus*  
♀ antenna  
(*Odontophorus balliviani*)

This form should, perhaps, have specific rank. The type series contains 10 ♂♂ and 14 ♀♀, while 11 ♂♂ and 11 ♀♀ were taken on the same host at San Cristobal, Bolivia.

Measurements of the types:	male		female	
	length	width	length	width
Body	1.59	....	1.66	....
Head	antennae	.358	....	.358
	temples	.34	.467	.347
Prothorax	.217	.402	.217	.414
Pterothorax	.195	.445	.20	.54
Abdomen	.95	.63	1.04	.90
Basal plate	.38	.098		
Paramer	.108	....		
Endomera	.12	.098		

***Menacanthus falcatus longispinus* new subspecies.**

TYPES.—Male and female, adults, from *Odontophorus capueira capueira*, collected by Plaumann at Nuevo Teutonia, Brazil, April 1, 1940 (in coll. of G. H. E. Hopkins).

**Diagnosis:** The largest of the known races of *falcatus*, with pre-antennary area rather wide and long, with rounder frons and wider temples (longitudinally) than usual, the latter somewhat angulated both anteriorly and posteriorly, and with the margin bearing the ocular fringe more deeply concave. There is a noticeable dimorphism in the shape of the head; that of the female being longer and wider at the temples, but same width at anten-



Fig. 69.  
*Menacanthus falcatus longispinus*  
♂ head  
(*Odontophorus capueira capueira*)

nae. Both segments of thorax are wider than usual, the prothorax a perfect semicircle posteriorly and the pterothorax very strongly divergent (see fig).

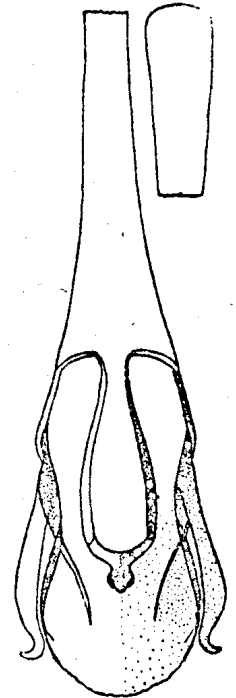


Fig. 70.  
*Menacanthus falcatus longispinus*  
♂ genitalia  
(*Oodontophorus capueira capueira*)

The genitalia are also different, the paramers being very short, with small tips and expanded median portion, while the endomeral plate is almost circular, lacking the characteristic lateral projections of the other races. The penis is large and of distinctive shape distally, while the endomeral rods are short and very slender.

The type series contains 14 ♂♂ and 7 ♀♀.



Fig. 71. — *Menacanthus falcatus longispinus*  
♂ antenna  
(*Odontophorus capueira capueira*)

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.71	....	1.84	....
Head { antennae . . . . .	. . . . .	.405	....	.40
	temples .. . . .	.358	.532	.39
Prothorax . . . . .	.239	.436	.25	.477
Pterothorax . . . . .	.215	.50	.25	.62
Abdomen . . . . .	1.06	.67	1.17	.93
Basal plate . . . . .	.456	.108		
Paramer . . . . .	.098	....		
Endomera . . . . .	.098	.108		

**Menacanthus falcatus colinus** new subspecies.

Types.—Male and female, adults, from *Colinus cristatus horvathi*, collected by the author at Tabay, Venezuela, July 8, 1922 (in coll. of the author).

Diagnosis: By far the largest of the races of *falcatus*, but with a small head, very narrow at the temples. All of the known races, except *brevispinus*, have wider temples in the male, although in the female of *colinus* the temples are wider than those of *perijanus* and *brevispinus*. The width at antennae is as wide or wider than the other races, with length the same, slightly more or slightly less than the others. The front is circular, except for the slightly protruding frons. The prothorax is flat-tend posteriorly, and with sides but slightly convex, forming noticable, though flattened, postero-lateral angles, rarely found in races of *falcatus*. The mesothoracic portion of the pterothorax is small and narrow, with the suture obsolete, and sides of whole segment uniformly straight.

The abdomen is unusually large, with the general chaetotaxy of finer texture, and with ventral hairs shorter. The fringes of hairs on segment IX in the female are very fine and very short, but the arrangement seems to be the same as in the other races. The spine which is set just within the long pustulated hair at postero-lateral angles of the abdomen is present *only* in segments I to IV.

The genital armature of the four males is not in a condition to be described or figured accurately. However, the paramers are uniformly slender and taper gradually to the short, slender tips. The penis is small and somewhat after the pattern of that of *falcatus*, except that the distal portion is longer, pointed and bent backward slightly in form of a hook. The type series consists of 4 ♂♂ and 7 ♀♀.

Measurements of the types:	male		female	
	length	width	length	width
Body . . . . .	1.73	....	1.94	....
Head { antennae . . . . .	. . . . .	.39	....	.42
	temples .. . . .	.358	.488	.358
Prothorax . . . . .	.174	.40	.217	.434
Pterothorax . . . . .	.195	.477	.217	.54
Abdomen . . . . .	1.10	.69	1.28	.87
Basal plate . . . . .	.38	.087		
Paramer . . . . .	.12	.087		
Endomera . . . . .	.11	.09		

Note.—I have the following material of this, or closely related subspecies, taken on various subspecies of *Colinus cristatus* in Colombia: *C. c. cristatus*, Riohacha, 1 ♂ and 3 ♀♀; *C. c. decoratus*, Codazzi and Camperucho, Magdalena, 3 ♂♂ and 5 ♀♀; and from *C. c. leucotis*, Ayacucho, Santander N., 1 ♂ and 1 ♀.

Unfortunately this material is all in poor condition and cannot be studied intelligently, so that for the time being I prefer to call all of this material merely: *Menacanthus falcatus colinus*. The subspecies of *Colinus cristatus* are closely related and occupy contiguous ranges, so there would be nothing revolutionary in the fact that all were infested by the same parasite. However, I am not sure that these forms of *Menacanthus* should be placed under *falcatus*, although they are very similar to it in many ways. When a careful study can be made of first class material, I believe that they will prove to be a distinct species. The differences in the chaetotaxy and the porportionately large abdomen in both sexes seem to be specific characters, but need further corroboration.

**Menacanthus falcatus setosus** new subspecies.

Types.—Male and female, adults, from *Aburria aburri*, collected by the author at Tierra Nueva, Sierra Perijá, Colombia, July 7, 1941 (in coll. U. S. Nat. Mus.).

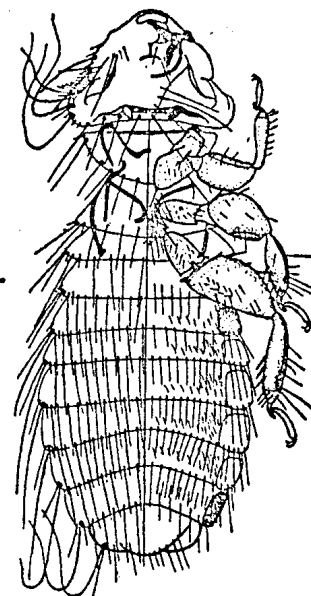


Fig. 72. — *Menacanthus falcatus setosus* ♂  
(*Aburria aburri*)

Diagnosis. This parasite was taken in company with *M. fasciatus aburris*, from the same individual host, is represented by 9 ♂♂ and 8 ♀♀ and is the only form of the *falcatus* group which has been taken thus far on any species of the family *Cracidae*.

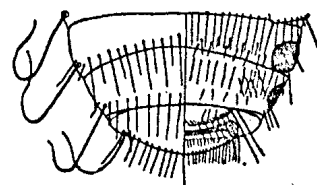


Fig. 73. — *Menacanthus falcatus setosus*  
tip of ♀ abdomen  
(*Aburria aburri*)

The differences between it and *falcatus* are no greater than those between the various races of

that species, so that it is clearly conspecific with them.

It is a small form, about the same size as the nominate race and *perijanus*, with the male differing from *falcatus* in having the head slightly longer and appreciably narrower, both at temples and at antennae, while in the female the head is

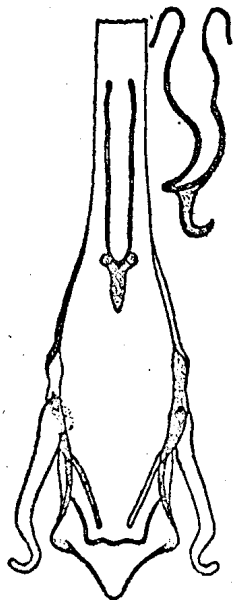
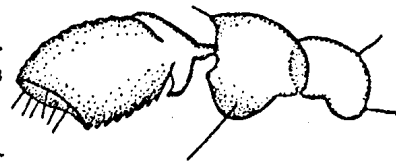


Fig. 74.  
*Menacanthus falcatus setosus*  
♂ genitalia  
(*Aburria aburri*)

shorter and much narrower both at antennae and temples, showing an unusual amount of dimorphism. This is one of the few characters which might give it specific rank. Both segments of the thorax are smaller than in *falcatus*, with the ab-

domen considerably wider in both sexes. The basal plate of the genitalia is short, with paramers longer, as in *perijanus*, but the endomera is short like in *falcatus*. The endomeral plate has a chitinized bar across the distal portion, in front of the tips of the endomeral rods (see fig.), a character absent in all other known races of *falcatus*. The penis, while resembling somewhat that of *falcatus* and *perijanus*, is different from both, a side view showing the distal portion or "head" to be in the form of a recurved hook (see fig.). The structure and chaetotaxy of segment I of the female seems to be the same as in *boliviensis*.

Fig. 75.  
*Menacanthus falcatus setosus*  
♂ antennae  
(*Aburria aburri*)



Measurements of the types:

	male ♂		female	
	length	width	length	width
Body . . . . .	1.50	....	1.80	....
Head {	antennae . . . . .	.347	....	.365
	temples . . . . .	.337	.467	.358
Prothorax . . . . .	.195	.39	.217	.402
Pterothorax . . . . .	.174	.434	.195	.50
Abdomen . . . . .	.92	.586	1.01	.72
Basal plate . . . . .	.37	.09		
Paramer . . . . .	.13	...		
Endomera . . . . .	.098	.12		

LIST OF HOSTS WITH THEIR PARASITES

- Mitu mitu* (Linné)
- Pauxi pauxi gilliardi* Wetmore & Phelps
- Craæ nigra* Linné
- Craæ alberti daubentoni* G. R. Gray
- Craæ annulata* Todd
- Penelope purpurascens purpurascens* Salvad. & Festa
- Penelope purpurascens brunnescens* Hellmyr & Conover
- Penelope montagnii montagnii* (Bonaparte)
- Penelope montagnii plumosa* Berl. & Stolz.
- Penelope montagnii sclateri* G. R. Gray
- Penelope obscura jacquáçu* Spix
- Penelope obscura speciosa* Todd
- Penelope argyrotis columbiana* Todd
- Penelope argyrotis albicauda* Gilliard
- Ortalis garrula frantzii* Cabanis
- Chamaepetes goudoti sanctae-marthae* Chapman
- Chamaepetes goudoti rufiventris* (Tschudi)
- Chamaepetes unicolor* Salvin
- Pipile cumanensis grayi* (Pelzeln)
- Aburria aburri* (Lesson)
- Colinus cristatus cristatus* (Linné)
- Colinus cristatus leucotis* (Gould)
- Colinus cristatus decoratus* (Todd)
- Colinus cristatus horvathi* (Madrász).
- Odontophorus gujanensis polionotus* Osgood & Conover
- Menacanthus mituensis* n. sp.
- Menacanthus fasciatus pauzensis* n. subsp.
- Menacanthus cornutus anduzei* n. subsp.
- Menacanthus fasciatus daubentoni* n. subsp.
- Menacanthus fasciatus annulatus* n. subsp.
- Menacanthus fasciatus genitalis* n. subsp.
- Menacanthus fasciatus montagnii* n. subsp.
- Menacanthus fasciatus fasciatus* n. sp.
- Menacanthus fasciatus fasciatus* n. sp.
- Menacanthus fasciatus chaparensis* n. subsp.
- Menacanthus fasciatus samaipatae* n. subsp.
- Menacanthus cornutus cornutus* n. sp.
- Menacanthus fasciatus albicauda* n. subsp.
- Menacanthus ortalidis* (Carriker)
- Menacanthus cornutus chamaepetus* n. subsp.
- Menacanthus fasciatus cincinnatus* n. subsp.
- Menacanthus fasciatus latus* n. subsp.
- Menacanthus fasciatus pipilensis* n. subsp.
- Menacanthus fasciatus aburris* n. subsp.
- Menacanthus falcatus setosus* n. subsp.
- Menacanthus falcatus* subsp.
- Menacanthus falcatus* subsp.
- Menacanthus falcatus colinus* n. subsp.
- Menacanthus meridionale santanderianus* n. subsp.

*Odontophorus gujanensis simonsi* Chubb  
*Odontophorus gujanensis gujanensis* (Gmelin)  
*Odontophorus gujanensis capucira* (Spix)  
*Odontophorus atrifrons variegatus* Todd.  
*Odontophorus leucolaemus* Salvin  
*Odontophorus columbianus* (Gould)  
*Odontophorus balliviani* Gould

*Menacanthus falcatus boliviensis* n. subsp.  
*Menacanthus falcatus falcatus* n. sp.  
*Menacanthus meridionale brasiliensis* n. subsp.  
*Menacanthus falcatus perijanus* n. subsp.  
*Menacanthus meridionale meridionale* (Carriker)  
*Menacanthus falcatus valenciae* n. subsp.  
*Menacanthus falcatus brevispinus* n. subsp.

\* \* \*

#### CORRECTION AND APOLOGY

In a revision of the neotropical forms of the genus *Machaerilaemus* by myself (Boletin de Entomologia Venezolana, Vol. III, N<sup>o</sup> 2, June, 1944, p. 67), under the species *M. laticorpus* (Carriker) an article by Clay and Meinertzhagen was cited in which a figure was given of the head of this species (*M. laticorpus*), with no reference as to the origin of the specimen from which it was taken. I stated that the authors of this paper had never seen the type of *laticorpus*, since it had never left my possession, and to all appearances the figure published did not represent *laticorpus*.

My statement that the authors (Clay and Meinertzhagen) had never seen the types of *laticorpus* was correct, but I had completely forgotten that some years ago a specimen of *Machaerilaemus* had been sent to me by Gordon Thopson, of the British Museum, for comparison with the type of *laticorpus*. After a somewhat cursory examination of the specimen in question I decided that it was the same as the type of *laticorpus*, and labelled it as such. It was from this specimen that Miss. Clay had drawn the head for that species, and the error was not hers, but my own, and I apologize for my unwarranted criticism of her work.

