

STUDIES IN NEOTROPICAL MALLOPHAGA. XII

Part 2. Lice of the Tinamous¹

M. A. CARRIKER, JR.
Popayán, Colombia

(With 32 text-figures)

This is the second paper of my third report on the lice of the Tinamous, and consists of a complete review of the genus *Strongylocotes* Taschenberg. The first paper of this series, treating the genera *Menacanthus*, *Pseudolipeurus* and *Pseudophilopterus* appeared in a recent number of this publication (vol. 13, n.º 3, pp. 209-224).

Family HEPTAPSOGASTRIDAE Carriker
Subfamily STRONGYLOCOTINAE Carriker

Genus *Strongylocotes* Taschenberg

This genus has now been recorded from all of the species of the genus *Tinamus* excepting *guttatus*, from all species of *Nothocercus* and from most of the species and many subspecies of the genus *Crypturellus*, all of which are inhabitants of the dense tropical jungles, ranging from sea-level almost up to timber-line.

The only species of the savanna inhabiting forms on which it has been recorded are *Rhynchotus rufescens* (*S. lipogonus*) and *Nothura boraquira* (*S. tinami* (Rud.)). Excepting *S. lipogonus* all of the known species of the genus form a very homogeneous group. As for *S. tinami* (Rud.), (= *S. ansatus* Rud.), I am far from being convinced that its true host is *Nothura*, or if it really is *Nothura*, then *S. tinami* is not a *Strongylocotes*.

All of the evidence at present seems to prove that this genus is not present on either *Nothura*, *Nothoprocta*, *Tinamotis* or *Eudroma*. Rubow may have had some form resembling *Tinamotaecola* (from *Tinamotis*), which has a circum-fasciate head and a superficial resemblance to *Nirmus*, as it was then understood,

¹ Received for publication July 10, 1953.

and which has not since been taken. Such a type of louse may be rarely present on *Nothura*.

Since publishing my second report on the lice of the Tinamous (1944) I have been able to collect much material of this genus, some already known, others undescribed, and with this additional material for study I would make some changes in the nomenclatural status of a number of forms, raising at least one (*S. complanatus interruptus*) to specific rank and reducing others to subspecies. A complete list of the species and subspecies of the genus, as now known, appears at the end of this review.

Strongylocotes setosus (Piaget)

Goniodes setosus Piaget, Les Pedicul., 1880, p. 263, pl. XXI, fig. 9 (Host: *Crypturellus* (*Tinamus*) *variegatus*).

PIAGET described and figured this species from a single female which Miss CLAY has designated as the lectotype of the species. In 1942 HOPKINS renamed it *Strongylocotes setifer* (*nom. nov.* for *Goniodes setosus* Piaget, 1880, p. 263, nec 257) and states that it probably equals *S. complanatus variegatus* Carriker, 1944, from *C. variegatus salvini*.

I have now secured 5 ♂♂ and 3 ♀♀ of a *Strongylocotes* from *C. v. variegatus*, collected at Pto. Venecia, Int. de Caquetá, Colombia. These specimens are not only entirely different from *S. complanatus variegatus* Carriker, but have nothing in common with either the description or figure of *Goniodes setosus* Piaget (*S. setifer* Hopkins).

In my first report on the lice of the Tinamous (1936, p. 92) I listed this species of PIAGET as *Strongylocotes lipogonus setosus*, considering it to be very closely related to *S. lipogonus* (Nit.), and gave my reasons for so doing. I still maintain that I was more or less correct in my first diagnosis. I have now carefully compared immature specimens of *S. lipogonus* with PIAGET's description and figure of *setosus*, and I have one specimen which is almost an exact duplicate of PIAGET's figure of *setosus*, and I now contend that *Goniodes setosus* Piaget, 1880, p. 263, is nothing more than a nymph of *Strongylocotes lipogonus* (Nit.). How the error for the host came to pass it is impossible to say, but we do know that many such errors have taken place.

Absence of the median band projecting backwards from the *frons* in PIAGET's figure cannot be considered as proof that it is *lipogonus*, as I have previously stated, since all immature specimens of the species possessing this band are *without* it. However, the wide *frons*, shape of segment I of the abdomen and the incrossation between segments I and II are characteristic of *lipogonus* and absent in specimens from *C. v. variegatus*. Lastly, the shape of the apical abdominal segment and the sternal plate under VI are exactly as in *lipogonus* and very different from the species found on *Crypturellus*.

The specimens recently taken on *C. v. variegatus*, supposedly the host of *setosus* (Piaget) are of the type of *interruptus* Carriker, having in the males the abruptly narrowing abdomen at segment V, and in this respect differ radically from *S. complanatus variegatus* Carriker, in which there is no such abrupt narrowing of the male abdomen.

This type of *Strongylocotes* with the abrupt narrowing of the abdomen in the male sex was originally described as a subspecies of *S. complanatus*. This, I now believe to have been an error. It should have full specific rank, since there are a number of closely related forms possessing this character which are parasitic on the medium-sized species of *Crypturellus* only, such as *garleppi affinis*, *undulatus*, *v. variegatus*, *idoneus*, *boucardi*, *columbianus* and *cinnamomeus*. The following forms should, therefore be considered conspecific with *S. interruptus* Carriker, and classified as subspecies of it: *S. complanatus intermedius* Carriker, *S. c. nirmoides* (Carr.), *S. c. boucardi* Carr., *S. c. fimbriatus* Clay, *S. c. noctivagi* Clay, and *S. limai* Guimarães. I have examined a series of specimens from the type host of *S. limai* Guimarães, which was placed under the synonymy of *S. interruptus* Carriker by HOPKINS and CLAY, and find them to be subspecifically distinct, and the race worthy of recognition.

In this group I find that much care must be taken in using actual measurements for subspecific differentiation, since there is sometimes a very great individual variation, especially in specimens from different individuals of the same host species. Characters which are constant and which may be used for separation seem to be the shape of the head, amount of sexual dimorphism in head and shape of the mesothorax and shape and chaetotaxy of the apical abdominal segments. The two following forms are described as new.

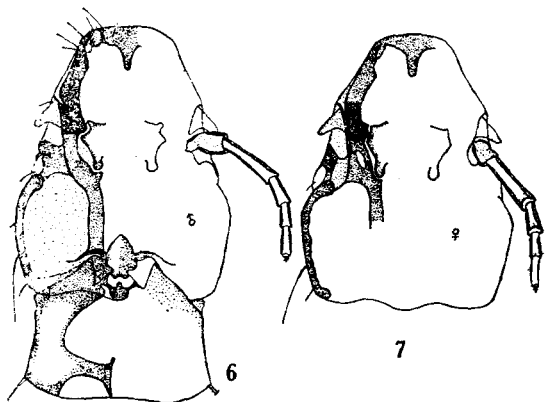
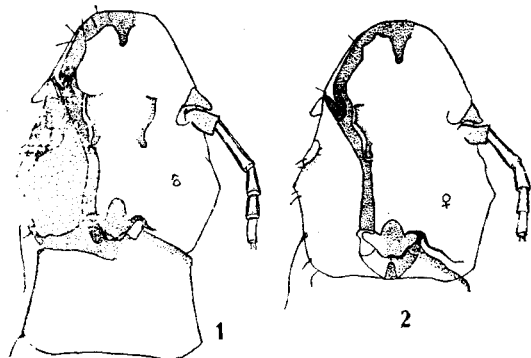
Strongylocotes interruptus caquetae n. ssp.

(Figs. 1 to 5)

Types, male and female adults, from *Crypturellus v. variegatus* (Gmelin), collected by the author at Pto. Venecia, Int. Caquetá, Colombia, June 2, 1952 (In U. S. Nat. Mus.).

Diagnosis — This is one of the smaller races, with the abrupt narrowing of abdomen in the male very marked, as in the nominate form; with the mesothorax much wider than segment I of abdomen; the marginal abdominal band narrow and submarginal band wide, sharply marked and much widened at the sutures from I to IV; pleurite V only, with slight "folded" appearance. The head is strongly dimorphic in the sexes, that of the female longer and narrower both at temples and *frons*, more rounded at *frons* and more flattened at temples. Segment VIII in male with tip *transverse*, bearing a fringe of slender setae; paramers are bent inward apically; chaetotaxy of segment VII in female distinct. The head in the male, especially, is unusually short and wide at temples. Measurements follow next species. Described from ♂ holotype,

♀ allotype, 2♂♂ and 1♀ paratypes and 2♂♂ and 1♀ from another individual of same host.



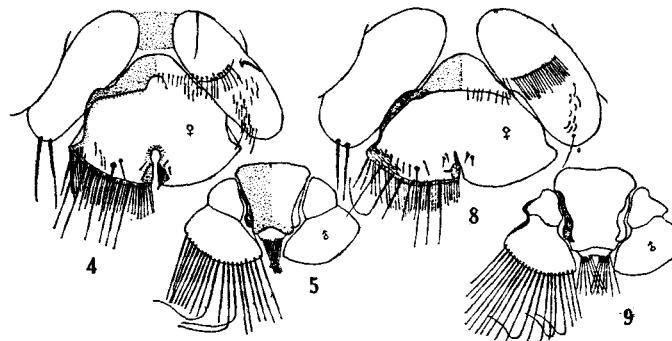
Head and prothorax of male; head of female — Figs. 1 and 2: *Strongylocotes interruptus caquetae* n.ssp.; figs. 6 and 7: *S. i. columbianus* n.ssp.

Strongylocotes interruptus columbianus n.ssp.
(Figs. 6 to 10)

Types, male and female adults, from *Crypturellus columbianus* (Salvadori), collected by the author at Socarré, Rio Sinú, Colombia, April 13, 1949 (In U. S. Nat. Mus.).

Diagnosis — This race is larger than *caquetae*, but smaller than *idoneus*. It is very close to *caquetae* n.ssp. in most of the characters listed under that

race, but the head in the male is much longer, with narrower pre-antennary region and more convex temples; in the female the *frons* is more flattened, sides of pre-antennary area *concave* and temples more convex and head wider at both temples and *coni*. Segment VIII in male is larger than in *caquetae*, ending in two rounded lobes, each bearing 6-7 long, rather coarse hairs; the paramers are uniformly rounded apically (not bent inward), and chaetotaxy of segment VII in female also differs (see figs.).



Abdominal segments VI and VII of female; VII and VIII of male — Figs. 4 and 5: *Strongylocotes interruptus caquetae* n.ssp.; figs. 8 and 9: *S. i. columbianus* n.ssp.

Described from ♂ holotype, ♀ allotype and an additional ♀ adult from another individual of the type host, also present 3 nymphs of different instars.

MEASUREMENTS OF TYPES:	<i>S. interruptus caquetae</i>				<i>S. i. columbianus</i>			
	♂		♀		♂		♀	
	Length	Width	Length	Width	Length	Width	Length	Width
Body	2.63	—	2.98	—	2.84	—	3.11	—
Head (at con.)	—	.435	—	.445	—	.456	—	.456
Head (at temples)	.74	.61	.76	.60	.80	.65	.81	.63
Prothorax	.41	.54	.45	.58	.43	.56	.456	.575
Mesothorax	.52	.76	.586	.78	.55	.80	.63	.836
Metathoracic apron	.24	.47	.26	.48	.27	.50	.31	.56
Abdomen	1.45	1.13	1.61	1.26	1.56	1.21	1.78	1.32
Antennae	.43	.07	.41	.065	.53	.065	.48	.06
Basal plate	.97	.075	—	—	1.00	.07	—	—
Paramers	.13	.072	—	—	.125	.07	—	—
Endomera	.076	.03	—	—	.077	.036	—	—

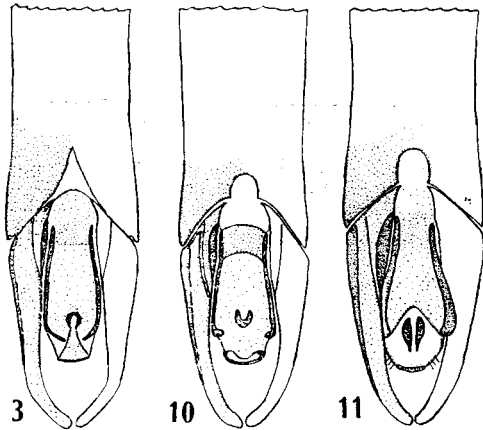
Strongylocotes interruptus idoneus n.ssp.
(Fig. 11)

Types, male and female adults, from *Crypturellus idoneus* (Todd), collected by the author at El Conejo, Dept. Magdalena, Colombia, March 22, 1945. (In U. S. Nat. Mus.).

Diagnosis — This is one of the largest races of *interruptus* (see tables of measurements). In some characters it resembles *caquetae*, in others *columbianus*, while in others it differs from both. The shape of the head in both sexes is nearest to that of *caquetae*; abdominal segment VIII in male is close to *columbianus* both in shape and chaetotaxy; the chaetotaxy of segment VI in the female is very close to that of *caquetae*, while in VII it is like *columbianus*. The inner margin of the clypeal bands is strongly corrugated, differing thus from both of the above races.

The male genitalia differs strongly from that of *caquetae* in shape of paramers and basal portion of basal plate, being similar to *columbianus* in this respect, but the endomera differs from both (see figs.), not only in shape but in the presence of three small setae on each side of the rounded apical portion.

The type series consists of the ♂ holotype, ♀ allotype, 3 ♂♂ and 9 ♀♀ paratypes, as well as several nymphs. In addition a large series was taken from several individuals of the type host, collected in different localities in the Dept. of Magdalena.



Male genitalia — Fig. 3: *Strongylocotes interruptus caquetae* n. sp.; fig. 10: *S. i. columbianus* n. sp.; fig. 11: *S. i. idoneus* n. sp.

A series of 8 ♂♂ and 6 ♀♀ were taken on the type of *Crypturellus saltuensis* Wetmore, collected by the author at Ayacucho, Santander N., Colombia, which cannot be separated from the type series of *idoneus*, and have been labelled as such. Apparently all of the Mallophagan parasites from *C. idoneus* and *C. saltuensis* are inseparable.

MEASUREMENTS OF THE TYPES:	♂		♀	
	Length	Width	Length	Width
Body.....	3.14	—	3.30	—
Head (at con.....)	—	.50	—	.50
Head (at temples.....)	.81	.705	.87	.69
Prothorax.....	.445	.59	.48	.61
Mesothorax.....	.61	.91	.65	.91
Metalboracic apron.....	.30	.62	.34	.60
Abdomen.....	1.76	1.50	1.88	1.43
Antennae.....	.13	.075	—	—
Basal plate.....	.86	.077	—	—
Paramer.....	.133	.077	—	—
Endomera.....	.081	.038	—	—

A KEY TO THE SUBSPECIES OF "STRONGYLOCOTES INTERRUPTUS"

- A. Mesothorax scarcely wider than segment I of abdomen, with sides straight and but slightly divergent; the four long hairs at postero-lateral angles set in a deep concavity; *frons* in male truncate, in female convex and narrower, with head longer *fimbriatus* Clay
- AA. Mesothorax considerably wider than abdominal segment I, with sides convex and divergent
 - B. The abrupt narrowing of abdomen at segment V in male less noticeable, the difference in width between IV and V being not more than .18, while the lateral margins of segments IV to VII form almost a straight line; marginal band on I to VI narrow, submarginal band on I to V broad in males, marginal band obsolete in females; *frons*, sides of pre-antennary area and postero-lateral margins of temples all slightly convex in both sexes
 - C. Head longer in female than male, but general shape similar (male head .76 × .705; female head .80 × .71); *frons* in male .26, in female .24, slightly more rounded at sides in female; 14 long hairs, not very thick, on each side of VII in female, with slender, intermingled setae abundant and rather long *nirmoides* (Carr.)
 - CC. Head practically the same size and shape in the two sexes; sides of *frons* in the female scarcely more rounded than in male (head, male, .78 × .69; female, .78 × .67; *frons* male, .26; female, .25); a cluster of 4 to 5 slender setae on each side of posterior margin of segment VIII in male; 10 to 11 strong hairs on each side of VII in female, thickened basally and of only medium length, the intermingled slender setae sparse and short. (This race is close to *nirmoides*) *intermedius* Carr.
 - BB. The abrupt narrowing of abdomen at segment V in male strongly marked, the difference in width between IV and V being from .26 to .37 mm.
 - C. Male with marginal band on abdomen very wide, submarginal band narrow; anterior portion of pleurites V and VI having appearance of being folded inward; difference between width of segments IV and V is .37 mm. *interruptus* Carr.

- cc. Male with marginal abdominal band narrow, submarginal band wide, increasing in width at junction of segments I to IV; pleurite V, only, with slight or no "folded" appearance
- d. Males with submarginal band not sharply defined on segment V, and narrower; segment VIII slightly biarcuated, with 6 slender setae on each lateral protuberance; head almost same size and shape in the two sexes (male, .80-.825 × .695-.73; female, .815-.87 × .675-.715); *frons* slightly narrower and more rounded and temples more flattened posteriorly in female; endomera of male with apical end broadly rounded, translucent, with a narrow, median chitinous margin, on each side of which are three minute bristles
- e. Size uniformly larger in all measurements; inner margin of band encircling pre-antennary area strongly corrugated. *idoneus* n.sp
- ef. Size uniformly smaller (see table of measurements); inner margin of clypeal band not strongly corrugated. (Very close to *idoneus*) *houcardi* Carr
- dd. Males with submarginal band of abdomen sharply defined on segment V, and wider; head strongly dimorphic in the sexes, that of female longer, narrower at both *frons* and temples, more rounded at *frons*, and more flattened at temples
- e. Abdominal segment VIII in male larger (.29 × .26), ending in two rounded lobes, each bearing 6-7 long, rather coarse setae; paramers uniformly rounded apically; chaetotaxy of segment VII in female different (see fig.) and larger (.29 × .26). *columbianus* n.ssp.
- ef. Segment VIII of abdomen in male smaller (.25 × .24), with tip transverse, bearing a fringe of slender setae; paramers bent inward apically; chaetotaxy of segment VII in female different (see fig.); head smaller, and wider at temples. *caquetae* n.ssp.

S. complanatus noctivagi Clay is, without doubt, a race of *interruptus*, but the description and measurements given are inadequate for including it in this key. The small table of measurements are quite incomprehensible to me. A male paratype of *S. complanatus variegatus* has a head measurement of .80 × .69 and *frons* .24, while *interruptus* measures .87 × .76. If the measurement given by CLAY for the head of *noctivagi* is correct (.94 × .61) it is much larger than any known race of *interruptus*, and cannot belong to the figure given by her for that species, which shows a head almost as wide as long. Females of *S. i. fimbriatus*, from *Crypturellus cinnamomeus mexicanus* have a head measurement of .78 to .82 × .63 to .65, with *frons* of .25.

Strongylocotes subconiceps Carriker

Proc. Acad. Nat. Sci. Phila., 1936, p. 90, pl. VII, figs. 1 and 1a (Host: *Crypturellus soui inconspicuus*); Proc. U.S. Nat. Mus., 1944, Vol. 95, p. 110.

This species seems to be confined to the various subspecies of *Crypturellus soui*, with the exception of a single male recorded by me from *C. obsoletus punensis*, which record I now accept with reservations, believing that there may have been an accidental mixing of specimens in the laboratory.

The species is readily recognized by the shape of the apical segments of the abdomen in both sexes, and by the shape of the head and thorax, the head being somewhat conical with rounded *frons*. There is a varying amount of sexual dimorphism in the shape of the head, that of the female being narrower and usually with flattened posterior margins of the temples, while in the males this latter margin is convex.

This flattening of the temples in the female is most noticeable in the nominate race and in *felisae* n.ssp., while in *cauae* n.ssp. it is slight and in *albigularis* the temples are strongly convex posteriorly as in the males of the other races (male of *albigularis* unknown).

In the nominate race of *subconiceps* and in *perijae* the mesothorax is narrowest, with sides scarcely diverging, almost straight and lateral angles but little wider than the first abdominal segment. In *cauae* n.ssp. the sides are much more divergent, but straight, and with angles more protruding; in *felisae* n.ssp. the sides of the mesothorax are slightly convex, with the anterior portion of the segment wider, so that the whole mesothorax extends outward considerably beyond a line drawn from prothorax to side of abdomen. In *albigularis* (♀) the mesothorax is most strongly divergent, with sides slightly concave and angles protruding very slightly beyond the abdomen.

There is also individual variation in the amount of concavity in the sides of the prothorax, some being almost straight, others strongly concave, but they are noticeably more concave in all specimens of the nominate race and in *perijae*.

Up to the present time the species has been split up into but three races, the nominate form from *Cr. s. inconspicuus*, *perijae* from *Cr. s. mustelinus*, and *albigularis* from *Cr. s. albigularis*. I have previously recorded the nominate race from five different races of *Crypturellus soui*, the material from the different hosts showing only differences too small to be recognized in nomenclature.

I have now secured abundant material from three additional subspecies of *Cr. soui*, viz: *cauae*, *caquetae* and *harterti*. The material from *cauae* and *caquetae* seems to represent two new subspecies, but that from *harterti* is not separable from the series from *caquetae*, at least the differences are, in my opinion, too small to be recognized.

In my 1936 report I listed three males of this species from *Cr. s. soui*, collected in eastern Venezuela, as the nominate race. These specimens were

not in the best condition nor was any attempt made at that time to separate the material from the different hosts into subspecies. I have now been able to examine a series of 2 ♂♂ and 6 ♀♀ of *subconiceps* from *Cr. s. soui*, collected by Dr. PABLO ANDUZE at Gran Sabana, Venezuela, and a comparison of this material with that from the other hosts shows that it is inseparable from the series taken on *Cr. s. cauae* of Colombia. It would naturally be expected that they might be the same as the material from *Cr. s. caquetae*, since the ranges of *soui* and *caquetae* are supposed to meet somewhere in eastern Colombia, and are separated from the range of *cauae* by the arid Goajira region and the eastern cordillera of the Colombian Andes, the latter region (northern section) being a portion of the range of *mustelinus*, host of *S. s. perijae*. It is even still more inexplicable that the specimens from *Cr. s. harterti*, collected near the Panama frontier, should be the same as those from *Cr. s. caquetae*, instead of agreeing with those from Costa Rica.

Strongylocotes subconiceps cauae n. ssp.

(Figs. 12 to 15)

Types, male and female adults, from *Crypturellus soui cauae* (Chapman), collected by the author at Tarazá, Dept. Antioquia, Colombia, April 25, 1948 (In U. S. Nat. Mus.).

Diagnosis — Nearest to *S. s. perijae* in the shape of the head but is uniformly larger in both sexes and there is less difference in size between the sexes, some of the measurements being the same in both sexes, others greater in the male and others in the female.²

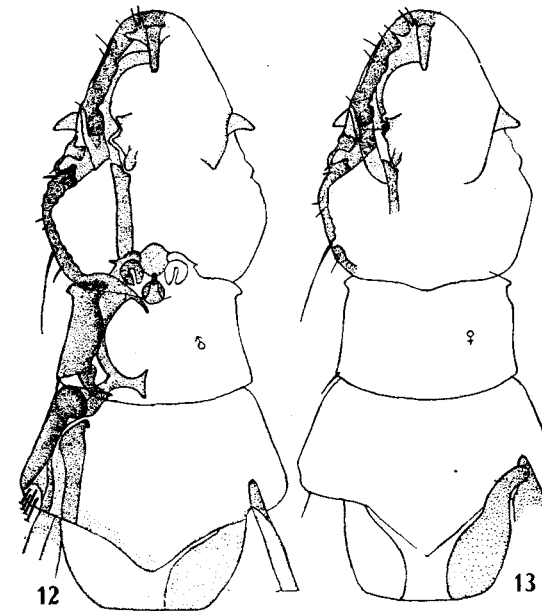
There is an unusual amount of individual variation in size in this group, in fact that is true of almost the entire genus, so that a series of measurements is necessary for establishing the averages. However, the shape and the degree of sexual dimorphism in the head are fairly consistent, also the proportions in the thoracic segments and shape and chaetotaxy of the apical abdominal segments.

In *S. s. cauae* the head of the male is shorter and narrower at the temples, as well as at the *coni*, than in *subconiceps*, but in the females the head is practically the same in all three of these dimensions. The prothorax and mesothorax are much shorter and narrower in the male, while in the female they are of about the same length but much wider than in *subconiceps*. Compared with *perijae* we have the head in the male longer and wider, in the female slightly longer and considerably wider; the prothorax is longer

² In the table of measurements given for *subconiceps* and *perijae*, on page 111, Proc. U. S. Nat. Mus., 1944, the figures given for the width of the head at the *coni* are all incorrect, and should read: *subconiceps* male, .48; female, .423; *perijae* male, .415; female, .40. Measurements given for width at *coni* are for the *frons*. Body length for male *subconiceps* should be 3.05, length for female head .80, width at temples .60.

and wider in both sexes; the mesothorax longer and wider in the male and wider in the female.

The shape of the male head is about equal to that of *perijae*, but the *coni* are much longer and narrower; in the female the sides of the pre-antennary area are more convex, the sides of the temples less protruding and the postero-lateral margins of the temples less flattened (in *perijae* this margin is slightly concave).



Figs. 12 and 13 — *Strongylocotes subconiceps cauae* n. ssp., head and thorax of male and female.

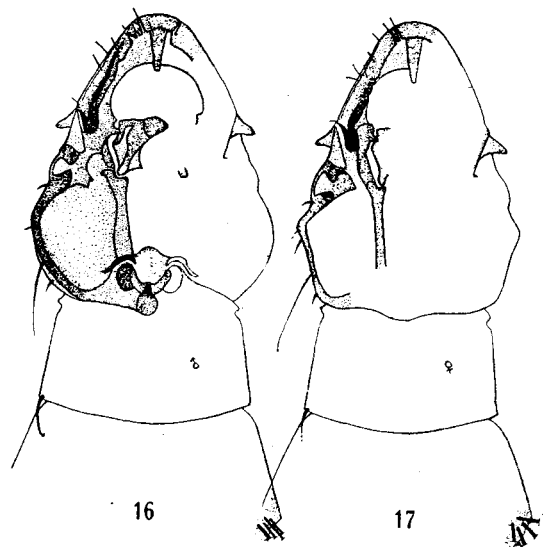
In *cauae* the pre-antennary area of the head is narrower apically and more rounded in the female than in the male; the metathoracic apron is longer and much narrower in the female than in the male, but there is very little difference in the width of the mesothorax in the two sexes.

The type series consists of the ♂ holotype, ♀ allotype and the following additional specimens from other individuals of the type host: Simití, Dept. Bolívar, 5 ♂♂ and 4 ♀♀; Norosi, Dept. Bolívar, 4 ♂♂ and 8 ♀♀. Measurements follow the next subspecies.

Strongylocotes subconiceps felisae n. ssp.

(Figs. 16 to 20)

Types, male and female adults, from *Crypturellus soui caquetae* (Chapman), collected by the author at Pto. Venecia, Int. Caquetá, Colombia, June 11, 1952 (In U. S. Nat. Mus.).

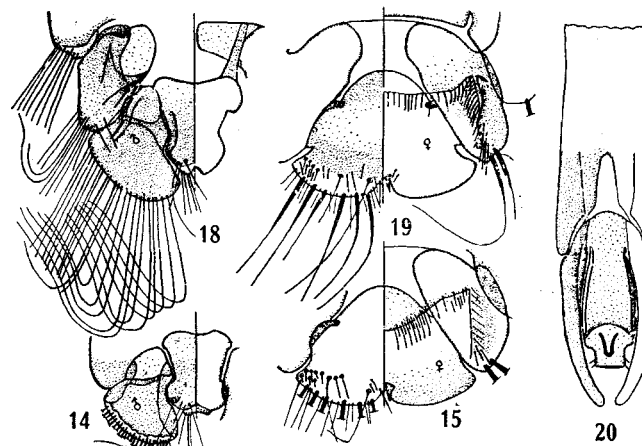


Figs. 16 and 17 - *Strongylocotes subconiceps felisae* n. ssp., head and thorax of male and female.

Diagnosis - The male sex is considerably larger than the female in all measurements; there is an unusual amount of sexual dimorphism in the shape of the head, that of the female being the same length but *much narrower* from the occipital margin to the *frons*, with the postero-lateral margins are slightly *concave* in the female and strongly *convex* in the male. There are various differences between *felisae* and *caucaae* in the shape and chaetotaxy of the terminal abdominal segments of both sexes (see figs.). The above characters, combined with the differences in measurements are sufficient to differentiate this race from all of the other known subspecies of *coniceps*.

Described from the ♂ holotype, ♀ allotype and 1 ♂ and 2 ♀♀ paratypes. There is also a series of 4 ♂♂ and 3 ♀♀ from *Crypturellus soui harterti*,

collected by the author at Acandí, Chocó, Colombia, which cannot be separated from the specimens described above as *S. s. felisae*.



Strongylocotes subconiceps caucaae n. ssp. - Figs. 14 and 15: Segments VII and VIII of male, VI and VII of female. *Strongylocotes subconiceps felisae* n. ssp. - Figs. 18 and 19: Tip of abdomen, male and female; fig. 20: male genitalia.

MEASUREMENTS OF THE TYPES:	<i>S. s. caucaae</i>				<i>S. s. felisae</i>			
	♂		♀		♂		♀	
	Length	Width	Length	Width	Length	Width	Length	Width
Body.....	2.80	—	2.84	—	2.86	—	2.60	—
Head { at cons.....	—	.44	—	.43	—	.434	—	.37
at temples.....	.78	.64	.76	.61	.78	.66	.74	.645
at occiput.....	.815	—	.79	—	.81	—	.75	—
Prothorax.....	.41	.55	.41	.54	.43	.55	.38	.46
Mesothorax.....	.52	.76	.52	.73	.56	.76	.52	.60
Metathoracic apron.....	.326	.52	.38	.51	.37	.50	.37	.41
Abdomen.....	1.50	1.04	1.57	1.13	1.55	1.04	1.43	.93
Antennae.....	.39	.054	.40	.065	.41	.054	.37	.045
Basal plate.....	.72	.07	—	—	.86	.071	—	—
Puramers.....	.13	.063	—	—	.123	.066	—	—
Endomers.....	.076	.036	—	—	.08	.04	—	—

Strongylocotes subconiceps albicularis Guimarães, 1937

Revista Museu Paulista, vol. 23, p. 19, figs. 7, 7a. (Host: *Crypturellus [Tinamus] soui albicularis*)

This species is very puzzling in several characters. It is unfortunate that the male sex was not secured, since the females of *complanatus*, *subconiceps* and *interruptus* are sometimes difficult to assign to their proper species. I am strongly inclined to think that it is not a race of *subconiceps* but of *complanatus*.

since it agrees very closely with the female of the nominate race of that species, both in the shape of the head and prothorax and in the chaetotaxy of the apical segments of the abdomen. The mesothorax is almost the same but has the sides straighter than those of *complanatus*.

If the host given for it is correct it is difficult to reconcile its being a race of *complanatus*, since for this exception, the only species thus far taken on *Crypturellus soui* have been *subconiceps*.

To further complicate the matter I have a good series of a *Strongylocotes* collected at Sta. Teresa, Espirito Santo, Brazil, which is a typical *subconiceps* in every way, and the only form of *Crypturellus soui* found in that part of Brazil is *albigularis*, supposedly the host of *S. s. albigularis* Guimarães. These specimens of *subconiceps* from Espirito Santo are very close to the nominate race of that species, collected by me in Bolivia, perhaps not separable from it. The host for *S. c. complanatus* is *Crypturellus o. obsoletus*, which, I believe, is found in the region from which came the type host of *albigularis*, and there is a bare possibility that there may have been an error in the identification of the host of *albigularis*. However, until further information is available regarding the matter, it seems best to make no change in the status of *albigularis*.

Strongylocotes spinosus spinosus (Piaget)
(Figs. 21 to 25)

Goniodes spinosus Piaget, Les Pediculines 1880. p. 261, pl. 21, fig. 7 (Host *Nothocercus [Tinamus] julius*).

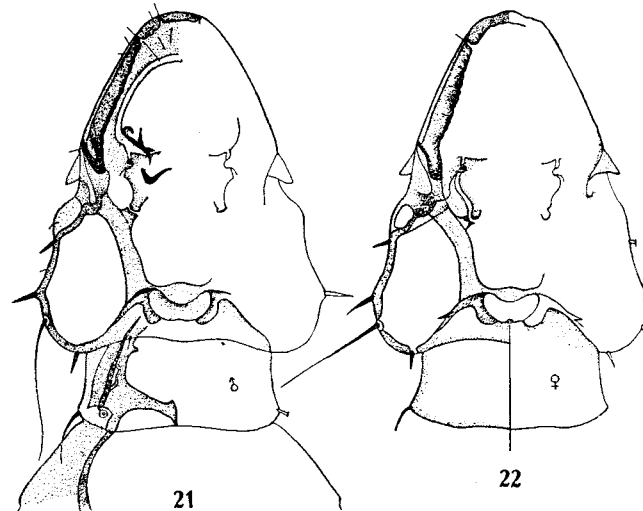
This species was described and figured from a single male³, but no description or figure of the female has ever been published, in fact I believe that the specimens collected by me in 1946 from the type host are the first taken since the type.

I have the following specimens of this interesting species: 3 ♂♂ and 2 ♀♀ from two individuals of the type host collected at Alto del Pozo, Santander N., October 17, 1946 and 8 ♂♂ and 9 ♀♀, also from two individual birds, taken at Hcda. Las Vegas, above Bucaramanga, Santander S., Colombia, August 22 and 31, 1949.

With the exception of the usual differences in size, in the shape of the head and the apical segments of the abdomen, the two sexes are very similar in appearance, even to the shape of the abdomen. In the male the head is wider at the temples and at base of *coni*, and slightly shorter than in the female. PIAGET's figure of the male is very good, the only differences between it and my specimens are that in my specimens abdominal segment VIII extends but slightly beyond VII, and is not the same shape, also the hairs at the

³ In May 1944 *Studies in Neotr. Mall.* III, p. 112, I stated that *Strongylocotes spinosus* was described from the female and figured by PIAGET and TASCHENBERG, which was an error. The type was a male and was figured only by PIAGET.

lateral angles of the abdomen are much shorter and much thicker basally, as well as those of the mesothorax, while the whole abdomen is shorter and wider, segment I having the sides concave and strongly divergent. However, there is no doubt of the correctness of the host given by PIAGET for this parasite, viz: *Nothocercus j. julius*.



Figs. 21 and 22 — *Strongylocotes spinosus spinosus* (Piaget), head and thorax of male and female.

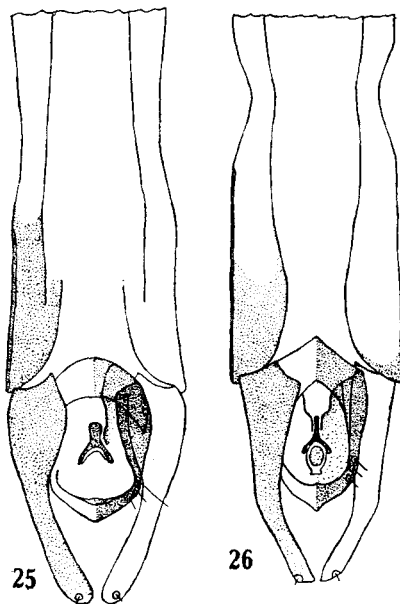
The differences between the various races of *spinosus* are small, but apparently constant and consist of differences in the shape and proportions of the head, thorax and apical abdominal segments, and to some degree in the chaetotaxy. In all of the races of *spinosus* the head of the female is narrower at the temples than in the male, but not at the *coni*. *S. spinosus* has the head shaped very similarly to that of *angulocapitis*, but the two species may be readily separated by the shape of the terminal abdominal segments of the female and the chaetotaxy of segments VII and VIII in the male.

Figures are herewith given of the head and prothorax of both sexes of *S. s. spinosus*, also the apical abdominal segments of both sexes of *spinosus*, as well as those of *S. spinosus subspinosus* (figs. 27 and 29) and *S. s. bonaparti* (fig. 28, ♂), together with the male genitalia of *spinosus*. By a comparison of these figures with those previously published of the other races of *spinosus* the differences between the races will become apparent, and further description seems unnecessary. Measurements for *spinosus* follow the next subspecies.

Strongylocotes spinosus intercedens n. ssp.

(Fig. 26)

Types, male and female adults, from *Nothocercus bonaparte intercedens* Salvadori, collected by the author above Frontino, Dept. Antioquia, Colombia, May 25, 1950 (In U. S. Nat. Mus.).



Male genitalia — Fig. 25: *Strongylocotes spinosus spinosus* (Piaget); fig. 26: *S. s. intercedens* n. ssp.

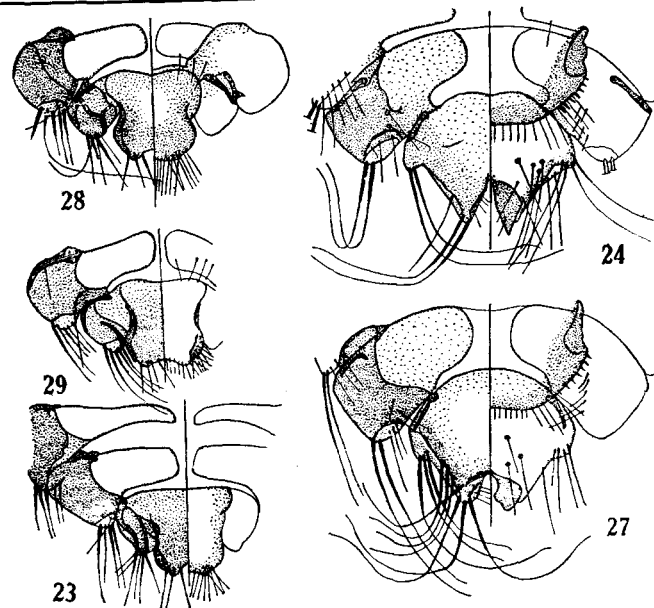
Diagnosis — Nearest to *S. s. bonaparte*, from which it differs as follows.

Almost all of its measurements are less than in *bonaparte*, but some are greater, giving different proportions to some of the segments. The apical segments of the abdomen in the male are exactly the same as in *bonaparte*; segment VII in the female is the same as in *subspinosus*, both in shape and chaetotaxy; the male genitalia is the same as in *bonaparte*. Comparing the measurements with those of *bonaparte* we have the following: Total length less in both sexes; head of male less in all measurements, of female shorter but wider at temples and *coni*; male prothorax shorter and narrower, but that of female the same size; mesothorax shorter and narrower in male, shorter and wider in female; metathoracic apron narrower in male, wider in female;

abdomen considerably narrower in both sexes and slightly shorter; basal plate, paramers and endomera shorter, but practically the same width.

In this race there are three small spines on each side of the endomera, just posterior to the widest part, set in slight pits. These spines are also present in *bonaparte*, but are not shown in the figure published of the genitalia of that species.

MEASUREMENTS OF THE TYPES:	<i>S. spinosus spinosus</i>				<i>S. spinosus intercedens</i>			
	♂		♀		♂		♀	
	Length	Width	Length	Width	Length	Width	Length	Width
Body.....	2.97	—	3.19	.565	2.73	—	3.12	—
Head (at <i>coni</i>).....	—	.60	—	.565	—	.52	—	.542
Head (at temples).....	.96	.67	.976	.565	.87	.86	.91	.845
Prothorax.....	.39	.60	.38	.59	.34	.575	.38	.597
Mesothorax.....	.47	1.01	.54	.95	.43	.91	.445	.98
Metathoracic apron.....	.315	.69	.33	.68	.32	.61	.337	.67
Abdomen.....	1.57	1.21	1.74	1.24	1.47	1.01	1.78	1.13
Antennae.....	.51	.065	.48	.065	—	—	—	—
Basal plate.....	1.04	.115	—	—	.88	.11	—	—
Paramers.....	1.55	.11	—	—	.14	.10	—	—
Endomera.....	.10	.062	—	—	.076	.054	—	—



Strongylocotes spinosus spinosus (Piaget) — Fig. 23: Abdominal segments VII-VIII of male; fig. 24: apical segments of female abdomen. *S. s. subspinosus* Carriker — Fig. 27: Apical segments of female abdomen; fig. 29: abdominal segments VI-VIII of male. Fig. 28: *S. s. bonaparte* Carriker, abdominal segments VI-VIII of male.

Strongylocotes angulocapitis Carriker

Stud. in Neotr. Mall. I, 1936, p. 89, pl. 8, fig. 3 (Host: *Tinamus* [s. serratus] major peruvianus).

In my 1944 report on this genus (*Proc. U. S. Nat. Mus.*, Vol. 95, p. 115) I reviewed the history of this species and described three new subspecies of it, *taoi*, *weddelli* and *ruficeps*, and a new species from *Tinamus major percautus*, named *pellucidifrons*.

Changes in the nomenclature of some of the hosts and errors in identification by myself necessitate the following corrections for the 1944 report: The correct name, as now applied, for the host of *Str. a. angulocapitis* is *Tinamus major peruvianus* Bonaparte, instead of *T. s. serratus* Spix, that race of *major* being restricted to N. W. Brazil.

The correct name for the host of *Str. a. taoi* becomes *T. tao septentrionalis* Brabourne & Chubb, while the host of *Str. a. ruficeps* should have been *T. major zuliensis* Osgood & Conover. I have now decided that *Str. pellucidifrons* Carriker is conspecific with *angulocapitis* Carriker, and thus becomes a subspecies of it.

No further information concerning the described forms of *angulocapitis* has been secured but a new race of it from Colombia is described below.

Strongylocotes angulocapitis bolivarensis n.ssp.

Types, male and female adults, from *Tinamus major saturatus* Griscom, collected by the author at Tarazá, Antioquia, Colombia, April 27, 1948 (In U. S. Nat. Mus.).

Diagnosis — Very similar to *Str. a. ruficeps* from *Tinamus major zuliensis* of northeastern Colombia. At first glance there seem to be insufficient differences for the separation of this form from *ruficeps*, but a comparison of the measurements of the two series of specimens reveals differences too great to be disregarded.

In most measurements *bolivarensis* is larger, but some are the same and others less. For the males of the two races we have the following: length, 3.24 against 3.18; head, 1.00 × .93 (.61 at *conus*) against .97 × .96 (.55 at *conus*); prothorax .41 × .63 against .46 × .63; mesothorax .66 × 1.04 against .67 × .94; metathoracic apron .40 × .79 against .30 × .78; abdomen 1.67 × 1.17 against 1.66 × 1.11; basal plate .79 × .11 against .87 × .10; paramers .175 × .11 against .195 × .097; endomera .11 × .065 against .097 × .066.

For the females we have: body length 3.59 against 3.36; head 1.02 × .92 (.63 at *conus*); against .95 × .87 (.56 at *conus*); prothorax .46 × .67 against .45 × .63; mesothorax .70 × 1.04 against .71 × .91; metathoracic apron

.48 × .80 against .30 × .69 and abdomen 2.01 × 1.34 against 1.84 × 1.30. Measurements for abdominal segments VII and VIII in male and VII in female are practically the same, as well as the chaetotaxy of these sclerites, although the setae are somewhat coarser in *bolivarensis*. It will be noted that the head in the male of *ruficeps* is practically an equilateral triangle, while in *bolivarensis* it is considerably longer than wide at temples but the same width at the *coni*. There are various other differences, all of which seem to be constant.

As for the male genitalia, the basal plate is considerably shorter and wider in *ruficeps*, also the paramers, while the endomera is slightly longer but of same width.

A large series of this race was collected on the type host from different localities in the departments of Bolívar, Antioquia and Chocó. The type series consists of the ♂ holotype, ♀ allotype, 1 ♂ and 7 ♀ paratypes.

Strongylocotes berlepschi n.sp.
(Figs. 31 and 32)

Type, female adult, from *Crypturellus cinereus berlepschi* (Rothschild), on a museum skin collected in Ecuador (In coll. K. C. Emerson).

Diagnosis — Apparently this species is closely related to *S. abdominalis* Carriker, from *Cr. c. cinereus*, and may possibly be conspecific with it, but without the male sex it is not possible to decide this point, since it is the apical abdominal segments in the male which are so characteristic of *abdominalis*.

S. berlepschi is very much larger than *abdominalis* in all measurements (see table); the head is of the same type, almost as wide as long, but has the *frons* flattened instead of strongly rounded as in *abdominalis*, in fact the *frons* in the female of *berlepschi* is flat as in the male of *abdominalis*, and the temples are also very flatt.

The sides of the prothorax are straight, and the posterior margin convex; the sides of the mesothorax are very slightly convex and more strongly divergent than in *abdominalis*, extending further beyond abdominal segment I, while the shape of the posterior margin is different, the median conical portion being wider; the metathoracic apron is shorter and wider.

The shape, structure and markings of the abdomen are very similar to *abdominalis*, excepting segment VII, which differs in shape and chaetotaxy, the hairs on the margin being longer and more slender, the ventral fringe on VI and VII more sparse and slender, and the structure of the median portion of the posterior margin of VII is quite distinct (see figure). The type series consists of 3 ♀♀ (one without head) all collected on a museum skin in West Germany in 1952 by Lt. Col. K. C. Emerson.

Measurements of the female of *S. abdominalis* and the type of *S. berlepschi*:

MEASUREMENTS OF:	<i>S. abdominalis</i> ♀		<i>S. berlepschi</i> ♀ type	
	Length	Width	Length	Width
Body.....	2.33	—	2.82	—
Head (at temples).....	.68	.434	.77	.477
Prothorax.....	.347	.64	.37	.74
Mesothorax.....	.48	.47	.54	.53
Metathoracic apron.....	.48	.685	.54	.86
Abdomen.....	.31	.56	.37	.62
Antennae.....	1.43	1.08	1.60	1.27
	.42	.065	.445	.067

Note — A series of both sexes of *S. abdominalis* Carriker was taken on several specimens of *Crypturellus c. cinereus* at Pto. Venecia, Int. Caquetá, Colombia in June, 1952. Compared with paratypes of *abdominalis* the only differences shown are slight variations in the measurements, but these differences are not constant.

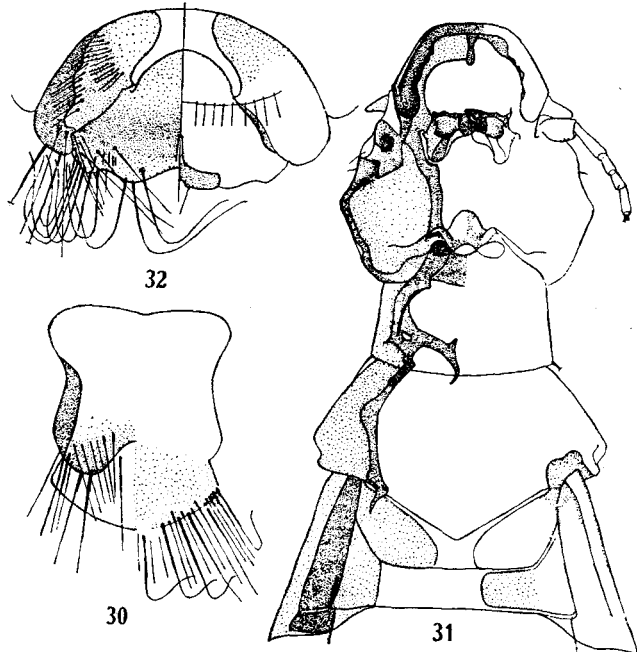


Fig. 30 — *Strongylocotes angulocapitis ruficeps* Carriker, abdominal segment VIII of male. Figs. 31 and 32 — *Strongylocotes berlepschi* n. sp., head, thorax, first and apical segments of female abdomen.

CONOVER suggest that *Crypturellus berlepschi* may very well prove to be a distinct species, and not a subspecies of *cinereus*, and gives his reasons for so thinking, while the marked differences between the two forms of *Strongylocotes* parasitic on the two birds lends strength to this suggestion.

LIST OF THE SPECIES AND SUBSPECIES OF "STRONGYLOCOTES"
WITH THEIR HOSTS

<i>Str. spinosus spinosus</i> (Piaget)	<i>Nothocercus j. julius</i> (Bonaparte)
" " <i>subspinosus</i> Carr.	" " <i>n. nigrocapillus</i> (G. R. Gray)
" " <i>peruvianus</i> Carr.	" " <i>nigrocapillus cadwaladeri</i> Carriker
" " <i>bonapartei</i> Carr.	" " <i>b. bonapartei</i> (G. R. Gray)
" " <i>intercedens</i> n. ssp.	" " <i>bonapartei intercedens</i> Salvadori
" " <i>angulocapitis angulocapitis</i> Carr.	<i>Tinamus major peruvianus</i> Bonaparte
" " <i>cordiceps</i> (Carr.)	" " <i>major</i> (Gmelin)
" " <i>bolivarensis</i> n. ssp.	" " <i>saturatus</i> Griscom
" " <i>ruficeps</i> Carr.	" " <i>zuliensis</i> Osgood & Conover
" " <i>pellucidifrons</i> Carr.	" " <i>percautus</i> Van Tyne
" " <i>taoi</i> Carr.	" " <i>tao septentrionalis</i> Brabourne & Chubb
" " <i>carrikeri</i> Guimarães	" " <i>tao</i> Temminck
" " <i>weddelli</i> Carr.	" " <i>weddelli</i> Bonaparte
" " <i>wernecki</i> Guimarães	" " <i>solitarius</i> (Vieillot)
" " <i>interruptus interruptus</i> Carr.	<i>Crypturellus noctivagi garleppi</i> (Berlepsch)
" " <i>fimbriatus</i> Clay	" " <i>c. cinnamomeus</i> (Lesson)
" " <i>boucardi</i> Carr.	" " <i>b. boucardi</i> (Sclater)
" " <i>nirmoides</i> (Carr.)	" " <i>obsoletus punensis</i> (Chubb)
" " <i>intermedius</i> Carr.	" " <i>ochraceiventris</i> (Stolz.)
" " <i>noctivagi</i> Clay	" " <i>n. noctivagus</i> (Wied)
" " <i>caquetae</i> n. ssp.	" " <i>v. variegatus</i> (Gmelin)
" " <i>idoneus</i> n. ssp.	" " <i>idoneus</i> (Todd)
" " <i>columbianus</i> n. ssp.	" " <i>columbianus</i> (Salvadori)
" " <i>limai</i> Guimarães	" " <i>undulatus vermiculatus</i> (Temminck)
" " <i>subconiceps subconiceps</i> Carr.	" " <i>soui inconspicuus</i> Carriker
" " <i>perijae</i> Carr.	" " <i>mustelinus</i> (Bangs)
" " <i>albigularis</i> Guimarães	" " <i>albigularis</i> Brabourne & Chubb
" " <i>caucae</i> n. ssp.	" " <i>caucae</i> (Chapman)
" " <i>felsiae</i> n. ssp.	" " <i>caquetae</i> (Chapman)
" " <i>complanatus complanatus</i> (Piaget)	" " <i>obsoletus obsoletus</i> (Temminck)
" " <i>variegatus</i> Carr.	" " <i>variegatus salvini</i> (Salvadori)
" " <i>orbicularis</i> (Carr.)	" " <i>parvirostris</i> (Wagler)
" " <i>glabrous</i> (Carr.)	" " <i>t. lautapa</i> (Temminck)
" " <i>paucisetosus</i> (Keler) synonym (<i>Cr. t. lautapa</i>)	
" " <i>abdominalis</i> Carr.	" " <i>c. cinereus</i> (Gmelin)
" " <i>lipogonus lipogonus</i> (Nit.)	<i>Rhynchotus r. rufescens</i> (Temminck)
" " <i>alticola</i> Carr.	" " <i>rufescens maculicollis</i> G. R. Gray

I consider that the following three species are synonyms of *Str. l. lipogonus* (Nit.): *Nirmus crassiceps* Rudow, *Goniodes setosus* Piaget, and *Str. setifer* Hopkins.

As doubtfully belonging in this genus are: *Nirmus tinami* and *Nirmus ansatus* Rudow, both supposed to be from *Nothura borraquira*, and probably male and female of the same species. I have discussed these two species in the first part of this paper.

Rev. Brasil. Biol., 13 (4): 347-353
Dezembro, 1953 - Rio de Janeiro, D.F.

NEOTROPICAL MIRIDAE, LXVIII: GENUS "EURYCHILELLA"
REUTER WITH DESCRIPTIONS OF FOUR NEW SPECIES
(Hemiptera)¹

JOSÉ C. M. CARVALHO
Museu Nacional, Rio de Janeiro, D.F.

(With 21 text-figures)

The genus *Eurychilella* Reuter, 1909 (Ann. Nat. Hofmus. Wien, 22: 159) was established for a single species from Mexico named *pallida*, which consequently is the haplotype.

While reviewing the REUTER's types in the Museum Zoologicum Universitatis, Helsinki, the author has found that *Sixeonotus discoidalis* Reuter, 1912 (Ofv. F. Vet. Soc. Förh., 54: 45) belongs to the genus and also that *Tenthecoris nanus* Carvalho, 1948 (Rev. Ent., 19 (I & II): 280) is co-specific with *discoidalis* Reuter and thus must be in synonymy. *Caulotops figueiredoi* Carvalho, 1944 (Rev. Brasil Biol., 4 (2): 243) belongs also to *Eurychilella* and must be included under this genus.

The genus *Eurychilella* Reuter is well characterized amongst the other Bryocorini by the anterior portion of pronotum somewhat projecting over the vertex and by the eyes being produced laterally and distinctly curved backwards. A key for the species included in the genus and the new ones described here is given below.

This work was undertaken in the U. S. National Museum and the author wishes to acknowledge laboratories facilities granted through Dr. REECE I. SAILER.

Eurychilella Reuter, 1909

Ann. Nat. Hofmus. Wien. 22: 159; haplotype: *pallida* Reuter, l. c. Mexico.

¹ Received for publication August 6, 1953.
John Simon Memorial Guggenheim Fellow 1953. Additional assistance was also granted by the Brazilian National Research Council.