PARASITIC MITES OF SURINAM

XVIII. Mites of the genera Notoedres and Chirnyssoides from bats [1] (Sarcoptiformes : Sarcoptidae)

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The present work is devoted to the study of a small collection of mange-producing mites from bats collected by the junior author in Surinam (see previous papers). These mites belong to two genera *Notoedres* and *Chirnyssoides*.

The holotype and allotype of the new species and specimens of the known species have been deposited in the Rijksmuseum van Natuurlijke Historie in Leiden, one paratype in the National Collection of Surinam, other paratypes in the collections of the authors.

FAMILY SARCOPTIDAE MURRAY, 1877
SUBFAMILY NOTOEDRINAE FAIN, 1968

Genus **Chirnyssoides** FAIN, 1959

a) Subgenus **Chirnyssoides** FAIN, 1959

1. **Chirnyssoides (Chirnyssoides) carolliae** FAIN, 1962

This species has been described from three different species of *Carollia,* in Panama. In Surinam we have found females and

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immatures in the typical host *Carollia perspicillata*, and in two other hosts. The mites were attached to the anterior and posterior borders of the wing membrane.

The male of that species is still unknown.

Hosts and localities in Suriname:

1. *Carollia perspicillata*, from three localities : Lelydorp, 12 December 1969 (25 females, several nymphs and larvae) ; Brokopondo, 2 February 1970 (6 females and nymphs) ; Zandery, 2-3 January 1970 (bats n° 74, 211, 212, 214, 216) (12 females and nymphs).
2. *Micronycteris megalotis*, Lelydorp 13, 28 February 1970 (bat n° 200) (1 female).
3. *Glossophaga soricina*, Brokopondo, 2 February 1970 (bat n° 302) (1 female). This bat was mixed within a large *Carollia* colony.

2. **Chirnyssoides** (**Chirnyssoides**) sp.

We have found on *Carollia perspicillata,* from Brownsweg, 9 February 1970 (bat n° 161) several nymphs and larvae that do not belong to *Ch. carolliae* and cannot be identified with certainty in absence of female specimens. The nymphs resemble those of *Chirnyssoides amazonae* FAIN, described from *Hemiderma brevicauda,* Parana, Brazil. That species is known from female, and immatures ; the male beeing unknown. We are waiting that females become available before to give a name to these specimens.

b) Subgenus **Noctiliocoptes** subgen. nov.

Definition: FEMALE as in the subgenus *Chirnyssoides* except that the body is strongly elongate and that the idiosomal hairs have another situation. There are no setae in the anal area and apparently there are no *a* setae. Are present : *sc i, sc e, h, sh, d 1, d 2, d 3, d 4, d 5, l 1, l 2, l 3, l 4, l 5, cx I, cx III.* The genital hairs are lacking. The *l 2, l 3, l 4, l 5* are completely ventral and some (*l 2, l 3, l 4*) are paramedians. MALE with a anterodorsal crest, a strong spine on trochanter III, a long and strong penis and other characters as in *Chirnyssoides*. It differs from that genus by the following characters : *sc e* are short and thin ; anus is

terminal ; the epimera IV are short and fused together in the midline. There is no solenidion on genu I. Larva with the same idiosomal chaetotaxy as the female except that two pairs are missing, probably *l 2* and *d 4*. Eggs with very short pedoncles (10 to 15 μ long).

Type species: *Notoedres* (*Bakeracarus*) *noctilionis* DUSBABEK, 1970.

1. **Chirnyssoides** (**Noctiliocoptes**) **noctilionis** (DUSBABEK, 1970) comb. nov.

FEMALE (fig. 1-2) : The female of that species has been described by Dusbabek. We are giving here a new drawing to show the very unusual chaetotaxy of this species. One of our specimens is 630 μ long and 255 μ wide, it is strongly flattened.

MALE (allotype) (fig. 3-4) : Idiosoma 279 μ long and 195 μ wide. The crest is 57 μ long and about 16 μ high. Dorsum with two large median shields and two lateral ones. Sternum and epimera II long, reaching backwards the transverse epimeral sclerite formed by the fusion of the epimera III. Epimera IV very short, united in the midline. There is a thick penis approximately 50 μ long. Gnathosoma small, with small chelicerae. Legs I, II and III strong, with big spines. Legs IV small. Other characters as described in the definition of the subgenus.

Hosts and localities:

1. The typical host is *Noctilio leporinus mastivus* from Cuba (holotype and 5 paratypes, all females).
2. In Surinam we have found numerous specimens of that species in *Noctilio labialis* from different localities : Lelydorp 22 and 23 January 1970 (bats n° 106, 109, 110, 231, 234) (6 females ; allotype male and 3 other males, numerous immatures) ; 2 March 1970 (bat n° 503) (1 larva).

c) Subgenus **Carollicoptes** subgen. nov.

Definition: FEMALE and tritonymphs presenting the same general aspect as in *Chirnyssoides* except that there are only six

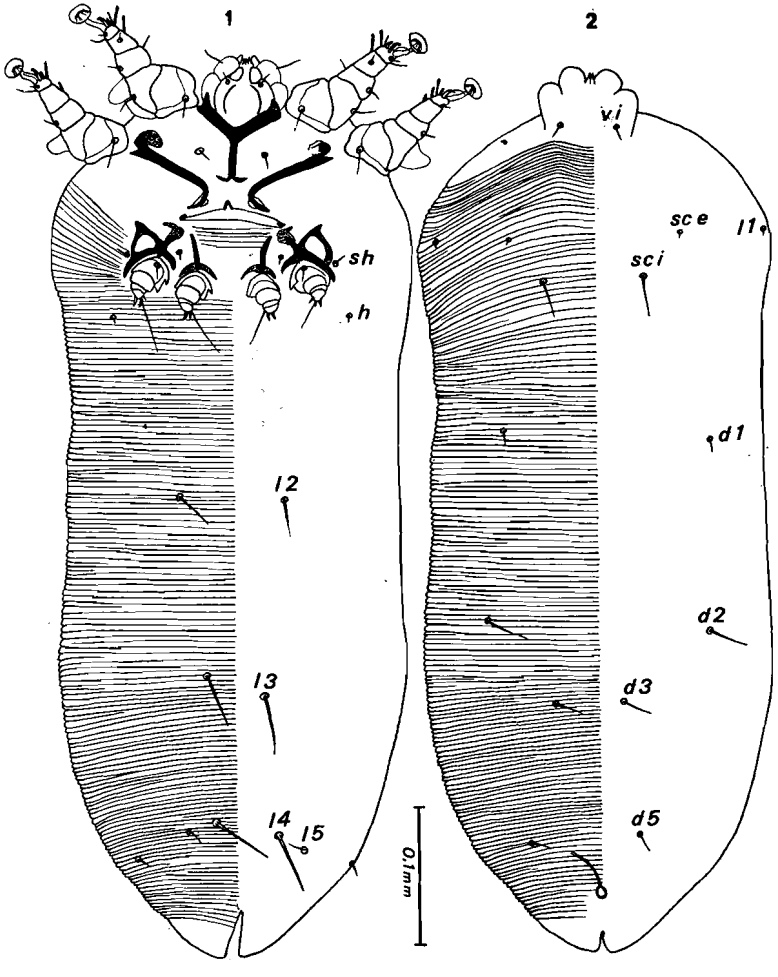

FIG. 1-2. — *Chirnyssoides* (*Noctiliocoptes*) *noctilionis* (DUSBABEK, 1970). Female in ventral (fig. 1) and dorsal (fig. 2) view.

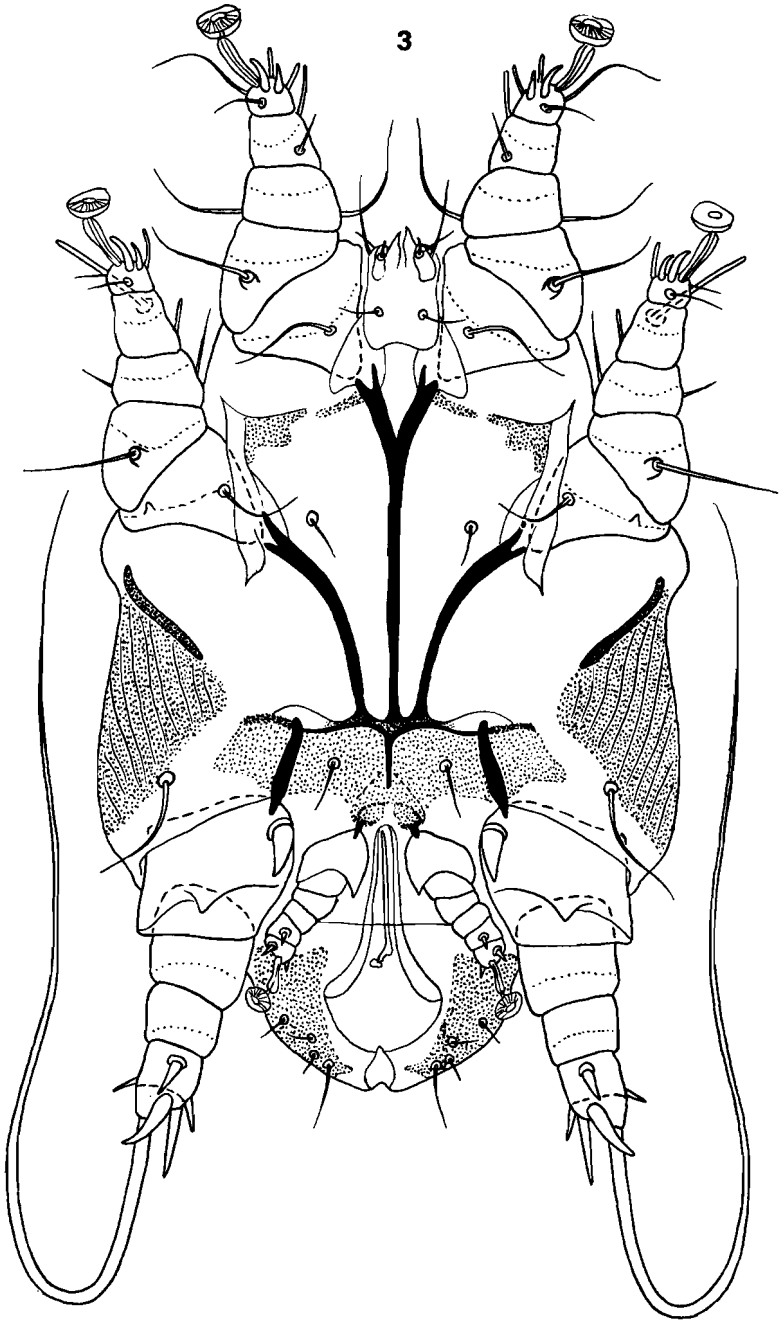

FIG. 3. — *Chirnyssoides* (*Noctiliocoptes*) *noctilionis* (DUSBABEK, 1970). Male ventrally.

pairs of setae in the posterior part of the body instead of eight in *Chirnyssoides*. Body very short, almost circular.

MALE very close to that of *Chirnyssoides caparti*: there is also an antero-dorsal crest and a ventral gnathosomal retrorse triangular process, the legs IV are much smaller than legs III,

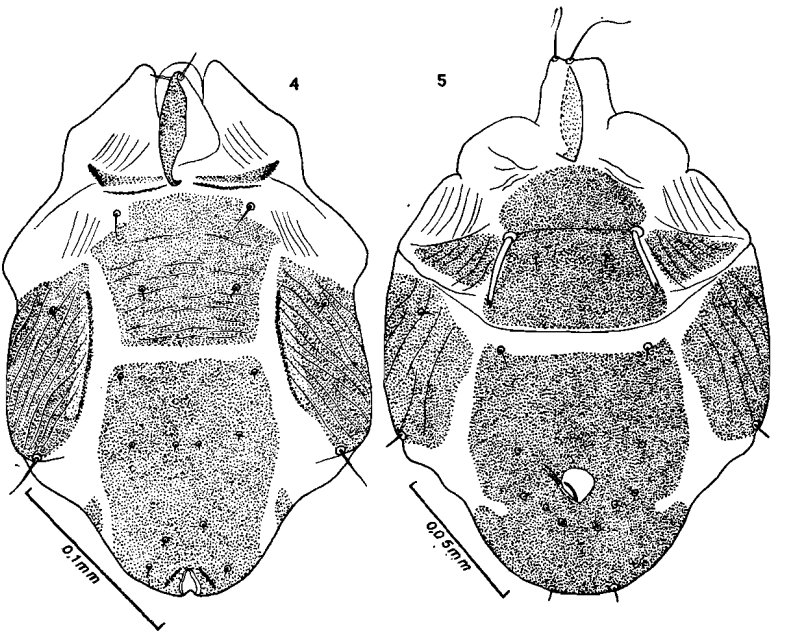

FIG. 4-5. — Dorsal surface of the males of *Chirnyssoides* (*Noctiliocoptes*) *noctilionis* (DUSBABEK, 1970) (fig. 4) and of *Chirnyssoides* (*Carollicoptes*) *surinamensis* sp. n. (fig. 5).

the setae *sc e* are very strong, the trochanteral III seta is a strong short spine, the epimera IV are fused forwards with the transverse epimeral III sclerite and are not fused in the midline, the solenidion of genu I is lacking, the anus is dorsal, the dorsal shields have the same disposition as in *Ch. caparti*. Larva with six setae in the posterior part of the body as in the adult female.

Type species: *Chirnyssoides* (*Carollicoptes*) *surinamensis* sp. n.

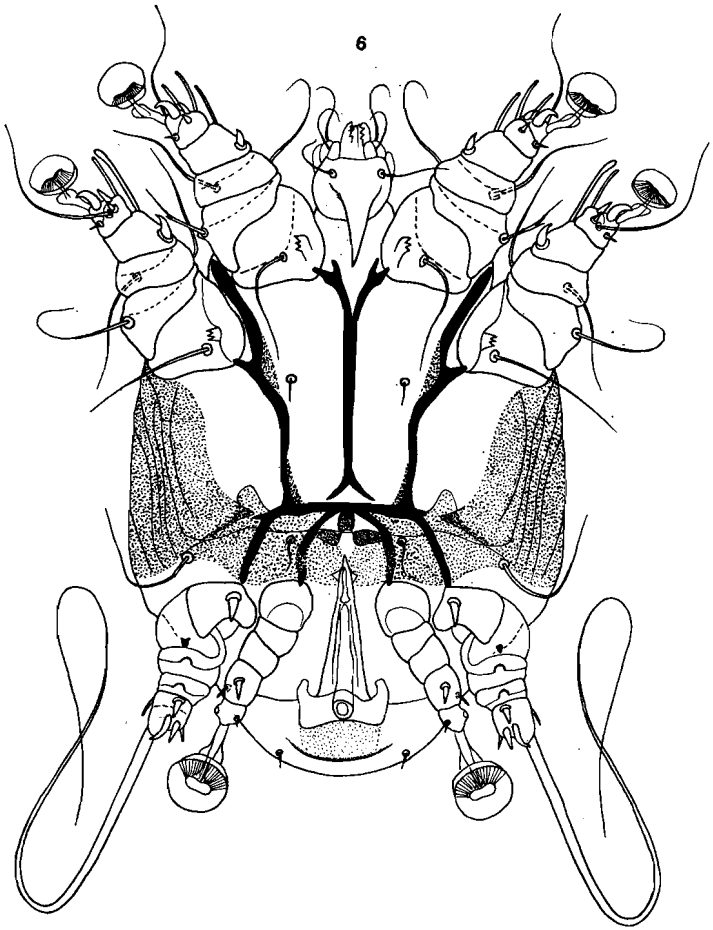

FIG. 6. — *Chirnyssoides* (*Carollicoptes*) *surinamensis* sp. n. Male, ventrally.

1. **Chirnyssoides (Carollicoptes) surinamensis** spec. nov.

All the females that we have collected have a flattened and circular or subcircular body and none of them contains eggs or larvae. We have not seen with certainty the vulva and therefore we are not completely sure that all these specimens are really females and not tritonymphs. All these specimens show a well-formed and sclerotized bursa copulatrix but the presence of this structure is not a proof that they are females for we have also seen this structure in several protonymphs (= smaller specimens with only one solenidion on tarsus I). FAIN (1959 a, p. 3) observed similar development in *Chirnyssoides amazonae*. Our determination as females is therefore provisional until new specimens become available.

FEMALE (holotype) (fig. 7-8) : Idiosoma 250 μ long, 225 μ wide. Another specimen, much inflated, is 330 μ long and 295 μ wide. Body finely striate. Anus dorsal, at 55 μ from the posterior border of the body. Bursa thick and short, its external orifice apparently opens close to the anus, in lateral position. There are 6 pairs of setae around the anus, the most internal is longer (7-8 μ) and thicker than the 5 other pairs. All the other dorsal setae very short and thin. Epimera I contiguous not really fused in the midline. Epimera IV with an internal part 58 to 60 μ long. Epimera III with a shorter internal part that is forked apically into two branches of equal length. The external part of epimera III bears a narrow recurrent branch 15 to 18 μ long. This recurrent branch is also present in *Chirnyssoides carolliae* but in that species the bursa has another shape and the internal part of the posterior epimera are much shorter.

MALE (allotype) (fig. 5-6) : Idiosoma 192 μ long, 134 μ wide. Dorsum : propodosomal crest 38 μ long. This crest is also present in *Chirnyssoides caparti* FAIN and in *Ch. brasiliensis* FAIN. Dorsal shields as in *Ch. caparti*. Anus at 33 μ in front of posterior border of body. Epimera and legs as in *Ch. caparti*. The ventral surface of the gnathosoma bears a strong sclerotized triangular retrorse process, as in *Ch. caparti*. Penis distinctly triangular, 42 μ long and 12-14 μ wide at its base, the total width, including the basal lobes is 27 μ.

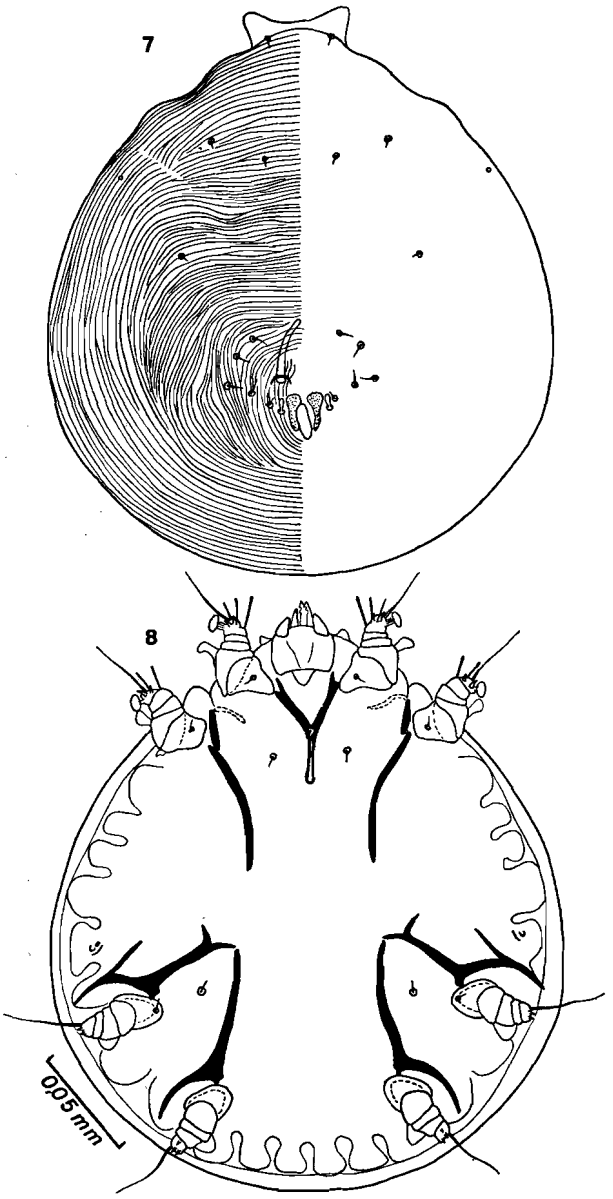

FIG. 7-8. — *Chirnyssoides* (*Carollicoptes*) *surinamensis* sp. n. Female, dorsally (fig. 7) and ventrally (fig. 8).

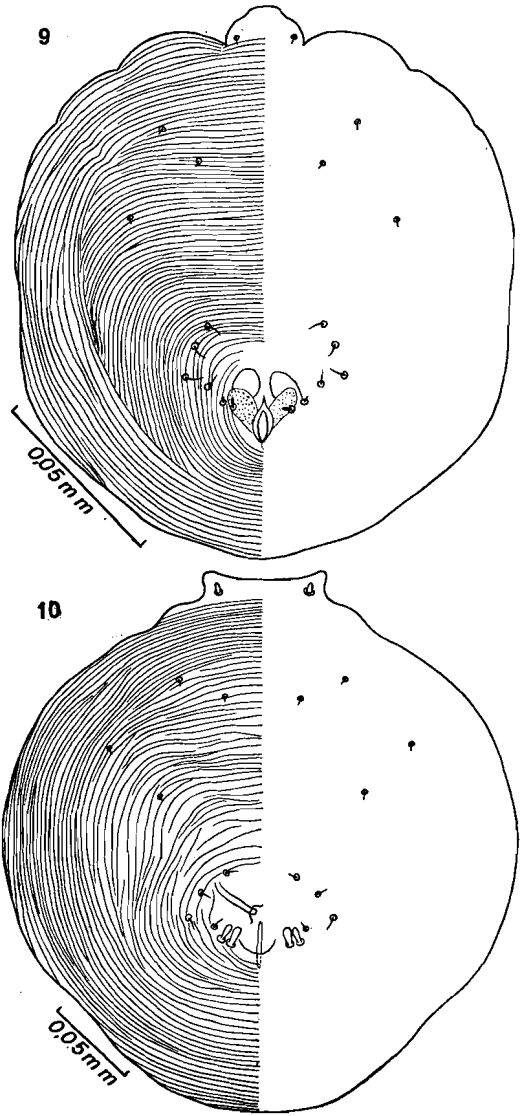

FIG. 9-10. — *Chirnyssoides* (*Carollicoptes*) *surinamensis* sp. n.
Protonymph, dorsally (fig. 9).
Chirnyssoides (*Carollicoptes*) *zanderyensis* sp. n.
Female, dorsally (fig. 10).

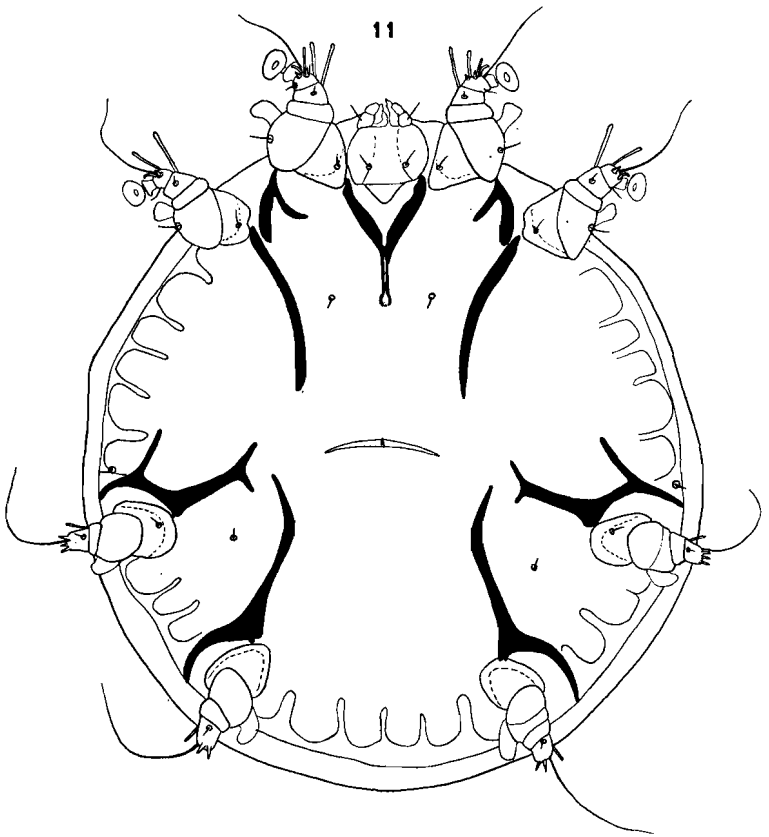

FIG. 11. — *Chirnyssoides* (*Carollicoptes*) *zanderyensis* sp. n.
Female, ventrally.

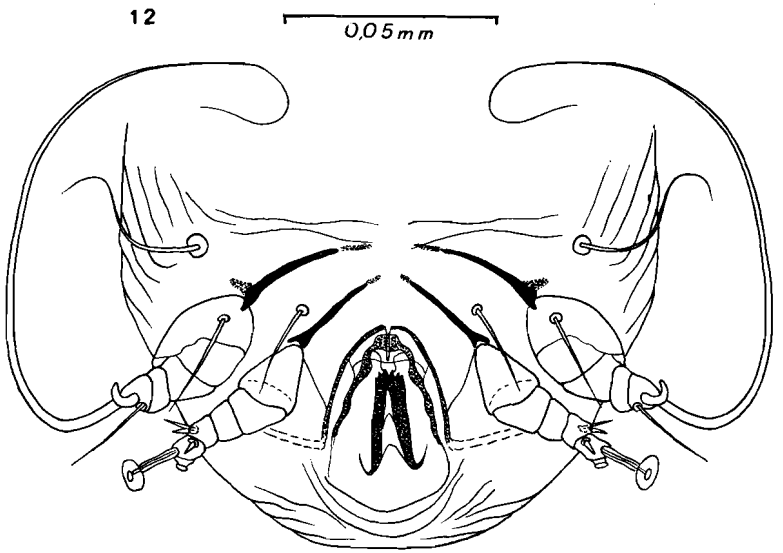

FIG. 12. — *Notoedres* (*Bakeracarus*) *lasionycteris eptesicus* ssp. n.
Male : hysterosoma, ventrally.

Chaetotaxy : differs from that of *Ch. caparti* by the size of the *h* setae which are very short and thin, the smaller development of the tarsal spines, and the different disposition of the perianal setae.

TRITONYMPH : Two tritonymphs measure respectively (length × width) 195 µ × 190 µ and 210 µ × 198 µ. They differ from the female by their smaller size, the smaller length of the epimera IV (42 to 50 µ long) and the absence of the *bursa*. These nymphs have two solenidia (*ω 1* and *ω 3*) on tarsus I. Chaetotaxy as in the female. We have 4 males that were still enclosed in a tritonymph.

PROTONYMPH (fig. 9) : Two protonymphs measure respectively 190 µ × 180 µ (specimen strongly inflated) and 160 µ × 155 µ. The epimera III are 33 to 40 µ long. Perianal chaetotaxy as in the tritonymph but smaller. The tarsi I bear only one solenidion (*ω 1*). In front of the anus there is a pair of paramedian ovalair depressions. Two of our protonymphs show a bursa copulatrix in the depth of the body.

LARVA : Same structure as in the protonymph but the body and the chaetotaxy is smaller.

Hosts and localities :

— *Carollia perspicillata,* from Zandery, 2 January 1970 (bat n° 74) (female : holotype and 8 paratypes ; male : allotype and 8 paratypes ; numerous nymphs and larvae.

— From the same host, but in another locality, Brownsweg, 9 February 1970, (bat n° 161) (4 males and 1 female, paratypes).

2. **Chirnyssoides (Carollicoptes) zanderyensis** spec. nov.

This species is distinguished from *Ch.* (*C.*) *surinamensis* in the female, by the greater size of the body, the ovoid shape of the pairs of setae situated close to the anus (*a* and *d 5*), the greater length of the epimera IV and the shape of epimera III ending apically into two distinctly unequal branches.

FEMALE (holotype) (fig. 10-11) : Idiosoma 270 µ long and 240 µ wide. Body very flat with curious internal festoons at its periphery

and bordered by a membranous fringe. Anus dorsal, at 70 μ in front of posterior border of body. Bursa opening in front of anus ; it is thick and 30 μ long. Epimera IV 75 μ long. Epimera III with a very unequal fork at its internal extremity ; its base bears a retorse band as in *Chirnyssoides carolliae* and *Ch. (C.) surinamensis.* A vulva 60 μ wide and a small epigynial sclerite are visible behind the epimera II.

Chaetotaxy : setae *v i* are short rather strong, spines ; *a* and *d 5* are ovoid (12 μ long and 6 μ wide), the other setae (*d 4, l 3, l 4, l 5*) are very thin and short (6 to 8 μ).

TRITONYMPH : Idiosoma 245 μ long and 270 μ wide. With the same characters as in the female except the absence of bursa and vulva.

Host and locality :

Carollia perspicillata, from Zandery, 2 February 1970 (bat n° 74) (female : holotype and 39 paratypes ; 2 tritonymphs, paratypes). The bat, host of that species, harboured also the preceeding species *Ch. (C.) surinamensis.*

Genus **Notoedres** RAILLIET, 1893
Subgenus **Bakeracarus** FAIN, 1961

1. **Notoedres (Bakeracarus) lasionycteris** subspec. **eptesicus** nov.

FAIN (1961), has erected the genus *Bakeracarus* to contain the species *Sarcoptes lasionycteris* BOYD and BERNSTEIN, 1950. This species was known only after the female.

This genus was separated from *Notoedres* mainly by the great elongation of the opisthosoma and the anterior migration of some dorsal and ventral setae.

Later, FAIN (1965) observed that elongation of the body may also occur in the genus *Notoedres* and he transfered therefore *Bakeracarus* as a subgenus of *Notoedres.*

Recently, DUSBABEK (1970) described two new subspecies of *Notoedres (Bakeracarus) lasionycteris* from Cuban bats, and a new species, *Notoedres (Bakeracarus) noctilionis,* collected in a bat of the genus *Noctilio,* also from Cuba. This last species was

TABLE I : CHAETOTAXY IN THE SUBGENUS BAKERACARUS

Nomenclature after FAIN, 1965)
(measurements in μ)

	Bakeracarus lasionycteris lasionycteris BOYD and BERNSTEIN		*Bakeracarus lasionycteris corynorhini* FAIN	*Bakeracarus lasionycteris minimus* DUSBABEK	*Bakeracarus lasionycteris intermedius* DUSBABEK	*Bakeracarus lasionycteris eptesicus* ssp. n.
	♀ adult (after BOYD et BERNSTEIN)	one paratype ♀ (after FAIN, 1959 b not FAIN, 1961)	paratypes	(after DUSBABEK)	(after DUSBABEK)	
Length of setae						
sc i	(D2) 13	9-12	5-6	6	5	27-31
sc e	—	7-8	2-3	5	—	3
d 1	—	7-8	5-6	—	—	7
d 4	(A1) 21	25	18-24	25-30	29-43	24
d 5	(A2) 20	38	15-20	28-35	40-43	30-35
l 3	—	—	10 μ	—	—	9
l 4	(L1) 13	—	—	—	—	9
l 5	(L2) 48	39-42	21-29	28-37	34-37	36
a i	—	—	1-2	—	—	1-2
Distance between						
sc i - sc i	—	75	60-65	51	58	67-72
sc e - sc e	—	116	93-110	88	—	93-100
l 5 - l 5	—	—	160-180	—	—	147-150
d 4 - d 4	—	—	30	—	—	24
d 5 - d 5	—	—	60-65	—	—	63-72
a - a	—	—	50	—	—	30

described only after female specimens, while one of the new subspecies was also described after the male.

In Surinam one of us collected female and male specimens of a species that seems to be identical to *N. (B.) noctilionis* DUSBABEK. The chaetotaxy of the female and the characters of the male have shown that this species does not belong in the genus *Notoedres* but to a new subgenus of the genus *Chirnyssoides* that we are describing herein.

We also collected on *Eptesicus melanopterus* a series of mites, represented by females and males, that belong to the subgenus *Bakeracarus*. The females differ from these of *Notoedres* (*Bakeracarus*) *lasionycteris* mainly by the much greater length of the *sc i* setae and by other smaller differences in the chaetotaxy. We propose therefore to erect a new subspecies for these specimens.

FEMALE (holotype) : Idiosoma 375 µ long, 240 µ long. Cuticle regularly striate, without bare areas. Epimera I very thick at their base, convergent and contiguous but not fused in the midline. Epimera II only slightly recurved outwards. Epimera III furcate apically. Other characters as in *Notoedres* (*Bakeracarus*) *lasionycteris* except with the differences in the chaetotaxy (see table).

MALE (allotype) (fig. 12) : Idiosoma 175 µ long and 123 µ wide. A coarse striation covers most of the surface of the dorsum ; some parts of the dorsum are slightly punctate. Anus termino-dorsal or dorsal. A bifid tegmen covers the dorsal face of the gnathosoma. Epimera I and II do not reaching the posterior epimera. Epimera III and IV poorly sclerotized, free, not reaching the midline. Genital organ in the shape of an inverted U. Anterior legs much stronger than the posterior ones. Legs III and IV subequal in length but the third legs thicker than the fourth.

Chaetotaxy : dorsal setae disposed as in the male of *N. (B.) lasionycteris minimus* DUSBABEK. The *v i* setae are much anterior and placed on the anterior part of the tegmen. Ventral setae as in the subspecies of Dusbabek but the *sh* setae are distinctly longer (35-40 µ). The setae of the anterior legs are also longer especially those of tarsi, genua and femora.

Solenidiotaxy : the genu I bears a solenidion 10 µ long, other genua without solenidia.

Host and locality:

On several bats *Eptesicus melanopterus,* from Lelydorp, 24, 25, 27 February 1970 (bats n° 186, 187 and 190) (females : holotype and 22 paratypes ; males : allotype and 3 paratypes ; numerous immatures).

All the females were fixed on the posterior margin of the wing. The males and the immatures were embedded in the superficial layers of the wing membrane.

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