

A Review of the Family Rhyncoptidae Lawrence Parasitic on Porcupines and Monkeys (Acarina: Sarcoptiformes)⁷

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THE FAMILY RHYNCOPTIDAE has been established by Lawrence (4) for a very unusual mite (*Rhyncoptes recurvidens* new species, new genus) that was collected from the skin of an African porcupine. This very curious species was not found *in situ* on the host but was obtained by Dr. F. Zumpt after dissolving the skin of a porcupine in caustic potash and carefully examining the resultant liquid. The true situation in which the mite lives was therefore not known.

In his description Lawrence stated: "It is difficult to assign relationships to this mite which seems to differ from all other families of Sarcoptiformes. It appears to have some affinities with the Listrophoridae on the one hand, especially in the appearance of the male, with the Psoroptidae and Epidermoptidae on the other. It differs quite obviously however from all three."

The material examined by Lawrence consists of a single male and eight other specimens, apparently females, which, however, having no sexual opening, may be nymphs. Lawrence supposes that these specimens are

⁷This work has been supported by a research grant (AI-04870-02) from the Public Health Service, Institute of Allergy and Infectious Diseases, Bethesda, Maryland, U.S.A.

females whose genital opening has become invisible because of the prolonged immersion in the KOH.

In the description of this mite Lawrence insists especially on the very strong development and heavy chitination of the anterior part of the body in contrast with the weak chitination and reduction of the posterior half. He notes also the development of several specialized structures for enabling the parasite to fix itself firmly to the host, e.g. the large size of the anterior legs and the presence on some of their segments of strong hooks or recurved teeth. Another significant adaptation for attachment is the great elongation of the gnathosoma, which forms a compact tube-like structure resembling the hypostome of the Ixodidae.

In 1962, in the course of a study on mange-producing mites in primates, we found on the skin of a South American monkey (*Leontocebus rosalia*) several specimens of a mite closely resembling the species of Lawrence. All these specimens were firmly attached at the base of the hairs by means of the anterior legs and the gnathosoma, which were completely embedded into the pilous follicle (Plate 25, Figure 22). Curiously enough, the mites were fixed along the hairs with their dorsal face and not with their venter as in the other fur mites (e.g. the Listrophoridae). The mode of fixation on the hair is not clear, but it seems that a highly specialized flaplike structure on the dorsal surface of the genua I and II plays an important part in the attaching mechanism.

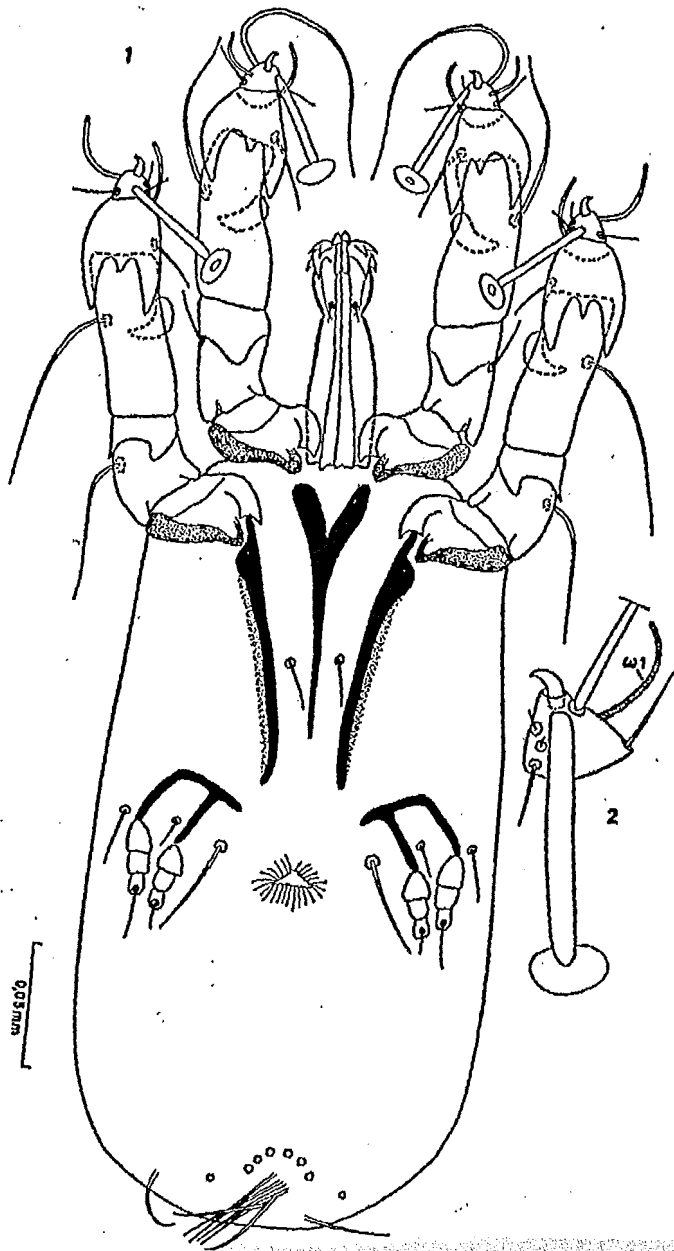
These mites, although they belonged to the Rhyncoptidae, differed in several important ways from the only genus (*Rhyncoptes*) described in this family. In all our specimens, the anterior legs ended in an ambulacrum comprising a long pedicel bearing a disclike pulvillus, while in *Rhyncoptes* all the legs were devoid of ambulacra. On the basis of this important character we erected for our specimens a new genus and new species *Rhyncoptoides anastosi* (1).

In 1964 we were able to examine a series of South American and African monkeys. On the skin of these animals we found two new species of *Rhyncoptoides*, one from *Cebus albifrons*, the other from *Cercopithecus mona campbelli*.

We had given only a short diagnosis of these three species and without any figure. Our plan was to make a revision of all the family including a new description of the typical genus and species. Unfortunately we

Plate 14. *Rhyncoptes recurvidens* Lawrence. Figure 1, female of our collection in ventral view. Figure 2, tarsus I.

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could not get the typical specimens of Lawrence's species for our study. Recently, however, we were able to obtain two female specimens of *Rhyncoptes recurvidens* by another and rather unexpected way. In a slide containing paratypes of *Psorergates hystrici* Till that we examined for a comparative study of the genus *Psorergates* we found two females of *Rhyncoptes recurvidens*. Since that material came from the same porcupine as the specimens examined by Lawrence, we can consider our two specimens as belonging to the type series. These two females are in rather poor condition and they are very transparent, having been treated by KOH as was the typical series. Nevertheless they show clearly all the main characters of *Rhyncoptes recurvidens*. Thus they can be used for our study.

RHYNCOPTIDAE LAWRENCE, 1956

Genus *Rhyncoptes* Lawrence, 1956

(Syn. *Rhyncoptoides* Fain, 1962)

Lawrence, in his original description (4), has pointed out that in all his specimens the legs are devoid of caruncules, and the cuticle is not striated. He also noticed that the genital opening is not visible in the females.

A careful examination of our two female specimens shows that these three characters are not, as Lawrence thought, negative ones, but that they really exist. In our specimens a clearly indicated vulvar aperture is present ventrally a little behind the level of the fourth coxae. We also observed long, very transparent but nevertheless distinct, pedonculate pulvilli on the anterior pairs of legs. Besides, the cuticle of the idiosoma is not smooth as indicated by Lawrence but bears a very faint transverse striation. These discrepancies can probably be explained by the fact that our specimens are in better condition than and not so much cleared by the KOH as those examined by Lawrence.

The other characters, such as the structure of the legs and the gnathosoma, have been correctly described by Lawrence except for a few minor details.

In our specimens the posterior region of the body is in a rather bad condition and therefore we cannot determine the exact location of the anus and the postero-ventral setae. In one specimen these setae are completely lacking but we can observe a number of small clear circlets which

correspond to their insertion bases. These circlets are disposed ventrally in a curved row of six paramedian and two that are disposed more laterally and are smaller than the preceding ones. The same disposition of the insertion bases is observed in our second specimen but in addition we find a number of setae, detached from the skin and driven back near the rear of the abdomen. Among them there are six stout setae (40-43 μ long) put together in a bundle. They correspond probably to the six large insertion bases. There are also four other setae in this region, two dorsal and two ventral, the latter 30-35 μ long and corresponding probably to the smaller lateral insertion bases. These observations suggest that there are eight postero-ventral setae (four pairs) and not seven as mentioned by Lawrence.

These new observations make it clear that our genus *Rhyncoptoides* is extremely close to *Rhyncoptes* Lawrence. The only characters of importance which still separate these two genera are the presence in *Rhyncoptoides* of three pairs of postero-ventral setae in the female (for four pairs in *Rhyncoptes*) and of an hysterosomal shield in the male (absent in *Rhyncoptes*). We do not believe that these characters are sufficient to separate these two genera, and we consider then that there is only one genus *Rhyncoptes* Lawrence.

In the light of these new data it is necessary to give new definitions of the family Rhyncoptidae and the genus *Rhyncoptes* Lawrence (see Table 4).

Table 4. Dimensions of the gnathosoma and chelicerae in the different species of *Rhyncoptes* (in microns) (females only).

Species	Gnathosoma (ventral view)		Chelicerae (ventral view)		Length of gnathosoma including posterior cheliceral sheet (ventral view)
	Length	Maximum width	Length	Maximum width	
<i>R. recurvidens</i> (one of our specimens)	96	25	90	8	120
<i>R. anastosi</i> (paratype)	49	16	51	5-6	67
<i>R. cebi</i> (type)	57	21	56	5-6	77
<i>R. cercopitheci</i> (type)	55	21	54	5-6	75

Definition of the family Rhyncoptidae. Small mites (idiosoma long of 210 to 350 μ in the females, 180 to 230 μ for the males) with the body flattened and elongated in the female, more ovoid and broader in the

male. Posterior border of the idiosoma rounded in the female, straight or slightly excavated in the male. Cuticle with a regular, deep and widely spaced transversal striation. Sejugal furrow very weak in the male, absent in the female. Attaching organs strongly developed in both sexes, consisting in recurved spines, backwardly directed hooks and deep longitudinal grooves situated on the anterior legs in both sexes. Gnathosoma long and narrow, slightly curved ventrally and with a deep dorsal furrow

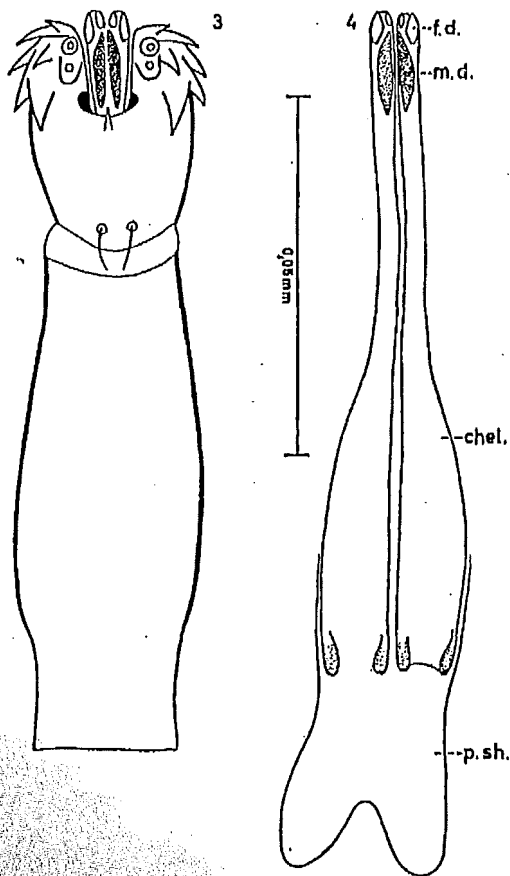


Plate 15. *Rhyncoptes recurvidens* Lawrence, female. Figure 3, Gnathosoma and chelicerae. Figure 4, ventral view (N.B., f. d. = fixed digit; m. d. = movable digit; chel. = chelicerae; p. sh. = posterior sheet of the chelicerae).

which contains the chelicerae. The palpi are provided with recurved teeth at their apex for fixation to the host. Chelicerae approximately as long as the gnathosoma and compressed laterally. They are slightly expanded basally and are terminated apically in two digits bearing very small teeth. Anterior legs very strong, directed anteriorly. Posterior legs of the female strongly reduced with only three free articles and ending in a very long and strong seta. In the male the posterior legs are normally developed. Anterior tarsi very short, ending in a recurved spine. Epimera I fused in a long sternum. Anus terminal or subterminal ventral. Fat glands not observed. Female with the vulva situated at the level or a little behind the fourth coxae. Genital aperture in the form of an inverted Y. Epigynium absent. Genital apodemes very small or absent. Copulatory pore terminal; posterior part of the bursa copulatrix with thick and sclerotized walls. On the inner part of the coxae IV there are one or two pairs of very small chitinous rings (genital discs) which are the remnants of the genital suckers (see Fain, 2). Male without genital discs.

*Chaetotaxy of the idiosoma.*⁸ In the male, the setae *sc i*; *sc e*; *h*; *sh*; *l 1*; *l 2*; *l 4*; *l 5*; *d 2*; *d 3*; *d 4*; *d 5*; *cx I*; *cx III*; *ga*; *gm*; *gp*; *ai*; *ae* are present. In the female some of these setae are always lacking: *h*; *l 1*; *l 4*; *d 2*; *gm*; *gp*; and two setae are lacking in some species: *cx III* and *ae*.

Chaetotaxy of the legs (number of setae). In the male: *tarsi* 6-6-3-3; *tibiae* 1-1-1-1; *genua* I and II with one long simple seta and another very big and boat-like; *genua* III and IV nude; *femora* 1-1-0-0; *trochantera* 0-0-1-0. In the female: *tarsi* 6-6-2-2; *tibiae* 1-1-0-0; *genua* and *femora* as in the male; *trochantera* 0-0-0-0. The anterior tarsi in both sexes bear five simple setae (one long, two short, and two very short) and a recurved apical spine which is a modified seta (Plate 14, Figure 2). Solenidiotaxy in the male: *tarsi* 2-1-0-0; *tibiae* 1-1-0-1; *genua* 0-0-0-0. In the female there is only one solenidion on tarsus I and no solenidion on tibia IV.

Type genus: *Rhyncoptes* Lawrence, 1956

Hosts. African porcupines, African and South American monkeys. In the monkeys the mites are embedded in the pilous follicle with the anterior part of the body.

Development. The female is viviparous and lays a hexapod larva. Two different types of nymphs have been observed, one of which gives rise to the adult male and the other produces the adult female. They appar-

⁸The chaetotaxy and the solenidiotaxy have been thoroughly studied only in the three species described by us. For the nomenclature of the setae, see reference (2).

ently are trito-nymphs (with two pairs of genital discs). A protonymph probably exists but has not been observed. All the immatures closely resemble the female.

Definition of the genus Rhyncoptes Lawrence. Assuming the characters given for the family Rhyncoptidae then in both sexes the anterior legs bear an ambulacrum which comprises a long pedicel ending in a disclike pulvillus. Posterior legs without ambulacra. Genua I and II deeply grooved on their internal surface. This groove bears a recurved boat-shaped hair directed dorsally and externally. Trochantera, femora and tibiae I and II with strong recurved spines or hooks. Female with a small dorsal propodosomal shield, the male may have an additional hysterosomal shield. Male with posterior legs not greatly reduced as in the female; legs III much longer than legs IV; a pair of small adanal sucker present.

Type species: *Rhyncoptes recurvidens Lawrence, 1956*

1. *Rhyncoptes recurvidens Lawrence, 1956*

(*Rhyncoptes recurvidens Lawrence, 1956: 368*)

The description that is given here is based on two female specimens that we have collected from the same skin from which the typical series was obtained. They are much cleared and flattened.

FEMALE (Plate 14, Figures 1-4). Idiosoma 330 μ long and 159 μ wide. (In the other female: 350 \times 160 μ .) Total length (including gnathosoma) 396 μ (435 in the other specimen). Cuticle with a very faint transversal striation visible specially along the lateral borders of the body. Propodosomal shield very hard to distinguish. The setae *sci* and *sc e* are respectively 25-30 μ and 75-85 μ long. In one of our specimens the cuticle of the anal region is folded and some setae are agglomerated in a bundle. There is a total of eight ventral setae in the proximity of the anus, among them six are 40 to 43 μ long, the other two are a little shorter (30 to 35 μ). This suggests that the disposition of these setae could be the same as in our *Rhyncoptoides cercopitheci* and *R. cebi*. There are several strong hooks or recurved spines on the anterior legs (Plate 4, Figure 1). On the dorsal surface of the anterior genua there is a modified recurved boat-shaped hair which probably plays a part for the attachment on the hair of the host. Anterior tarsi very short, with a pulvillus situated on a long pedicel. Gnathosoma very long (96 μ), with a long base, and a much shorter and ovoid "top" which is separated from the latter by a distinct furrow. Palpi bearing numerous recurved spines. Chelicerae 90 μ long,

with a long, slightly dilatated base, their apices terminated in two digits bearing very small teeth. Genital orifice situated at the level or a little behind the coxae IV. There is a stout *ga* seta (42 μ long).

Host and locality. Typical series (1 δ and 8 φ φ or nymphs) from the skin of the head of an African porcupine *Hystrix africae australis* Peters, Wimburg, Orange Free State (Rec. Dr. F. Zumpt, October 1955). There are two other specimens (φ φ =) from the same skin, found in a slide which contained paratypes of *Psorergates hystri* which Till described from the same animal.

Typical series in the collection of Natal Museum, Pietermaritzburg. Two additional females from the same skin, in the collection of A. Fain, Antwerp.

2. *Rhyncoptes anastosi* (Fain, 1962)

(*Rhyncoptoides anastosi* Fain, 1962: 159)

This species differs from *R. recurvidens* Lawrence in many characters: body much smaller; gnathosoma and chelicerae relatively much shorter; in the female presence of only three pairs of preanal setae and smaller length of most of the idiosomal setae; in the male by the presence of an hysterosomal shield, the much shorter seta *d* 2 etc. . . .

FEMALE (holotype) (Plate 16, Figure 5; Plate 18, Figure 7; Plate 19, Figures 9-15). Idiosoma 225 μ long and 120 μ wide. Total length (including gnathosoma) 250 μ . In four paratypes: idiosoma 240 \times 126 μ ; 234 \times 120 μ ; 230 \times 117 μ ; 210 \times 106 μ . Cuticle with a deep and widely spaced striation. This striation is interrupted dorsally in two small areas corresponding respectively with the propodosomal shield and the thickened portion of the bursa copulatrix. Propodosomal shield small, a little widened posteriorly. Epimera I fused in a very long sternum; epimera II very long; epimera III strongly curved inside; epimera IV straight and fused with the internal half of epimera III. The vulva opens a little behind the level of coxa IV. There are two very small genital apodemes and, in front of them and close to the *ga* setae, two pairs of small sclerotized discs (genital discs). Anus ventro-terminal. Bursa copulatrix opening terminally, its posterior portion with thick and sclerotized walls. In front of this thick portion the bursa is very thin and presents two loops. Anterior legs heavily sclerotized with strong hooks; the genua with a deep internal groove which bears a modified boat-like hair directed dorso-externally. Posterior legs greatly reduced, ending in a long seta (200 μ long). Gnathosoma 49 μ long, 16 μ maximum wide. Chelicerae as in *R.*

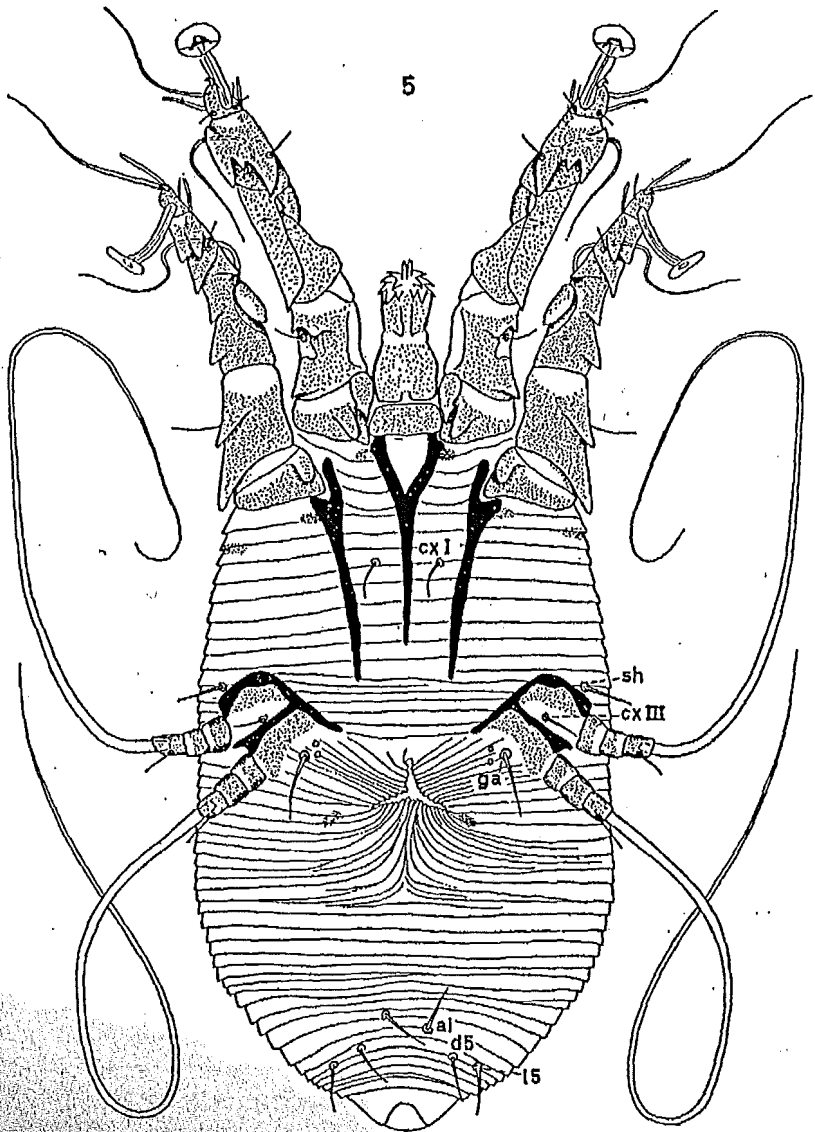


Plate 16. *Rhyncoptes anastosi* Fain. Figure 5, female in ventral view.

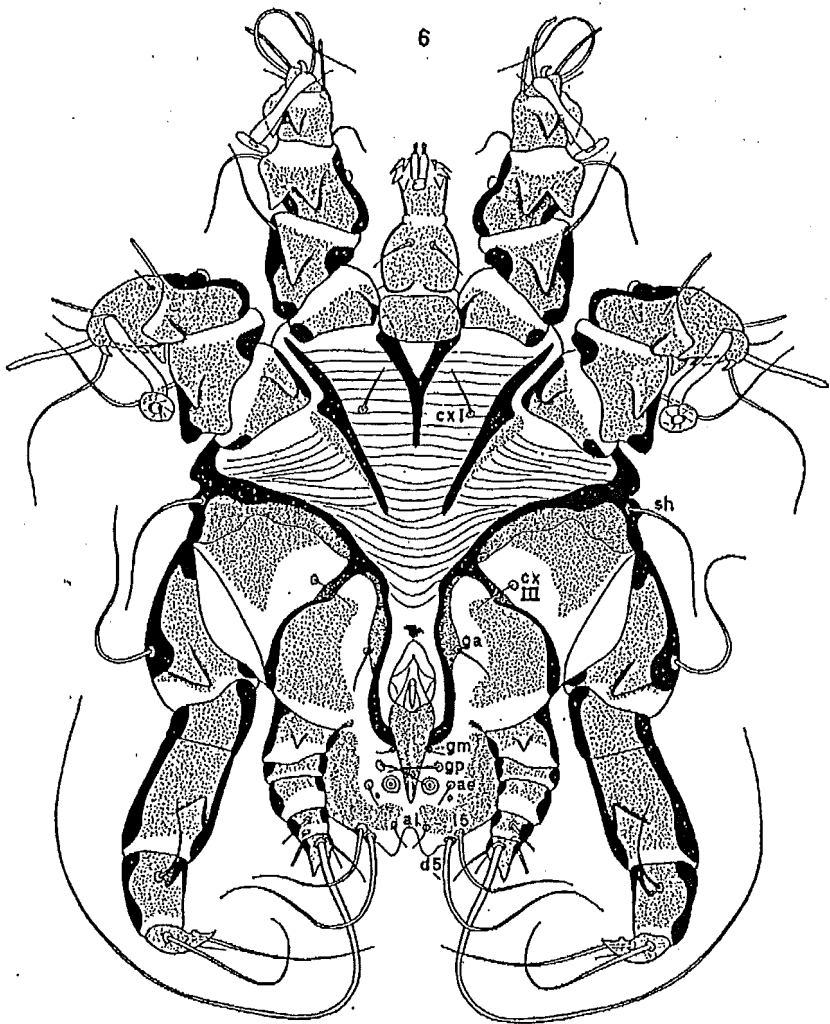


Plate 17. *Rhyncoptes anastosi* Fain. Figure 6, male in ventral view.

recurvidens, but in addition there is on the apex of the internal part of each fixed digit a small drumstick-shaped prolongation which probably is a small sensory organ (Plate 19, Figures 9-15). This structure has not been observed in *R. recurvidens*; probably it has been lost because of the prolonged immersion of these specimens in the KOH (Plate 15, Figures 3-4).

Chaetotaxy of the idiosoma. Setae *sci* much shorter ($6\ \mu$) than *sc e* ($55\ \mu$). Length of the setae *sh*, *l 2*, *l 5*, *d 3*, *d 4*, *d 5* approximately 8 to $15\ \mu$. Setae *ai* $15\ \mu$ long. Setae *a e* lacking. Setae *ga* stout ($16\ \mu$ long) situated on coxae IV.

Chaetotaxy of the legs. See in the definition of the family.

Solenidiotaxy. Tarsi I and II with only one solenidion. Tibiae I and II with one solenidion; other tibiae without solenidia. Genua without solenidia.

MALE (*allotype*) (Plate 17, Figure 6; Plate 18, Figure 8). Idiosoma $210\ \mu$ long and $162\ \mu$ wide. Total length (including gnathosoma) $243\ \mu$. In two paratypes: idiosoma $231 \times 160\ \mu$; $210 \times 163\ \mu$. Posterior border of the opisthosoma slightly excavate and ending in two small triangular membranous lobes. Propodosomal shield wider than in the female. Hysterosoma with a large (maximum width $100\ \mu$), well-sclerotized and oval-shaped shield. Epimera I as in the female but with shorter sternum. Epimera III fused with epimera IV. Sexual aperture surrounded by a sclerotized, U-shaped ring which is fused anteriorly with the epimera III. Legs I and II stronger and shorter than in the female. Legs III stronger and much longer than legs IV; trochantera III and IV with a triangular flattened ventral spine; a much stronger backwardly directed spine is present on tibiae and genua III; tarsi III and IV ending in a strong claw-like process. Tarsi I with two solenidia. Gnathosoma $61\ \mu$ long; its basal half, slightly expanded, is $28\ \mu$ wide; structure as in the female.

Chaetotaxy. Setae *sci*, *l 1*, *l 2*, *d 2*, and *d 3* respectively $14\ \mu$, $15\ \mu$, $5\ \mu$ and $12\ \mu$ long; setae *sc e* much longer ($65\ \mu$). There is a long *h* seta (about $120\ \mu$) and a shorter *sh* (45 to $50\ \mu$). Setae *d 5* and *l 5* much longer than in the female (respectively 70 - $90\ \mu$ and 40 - $50\ \mu$).

MASCULINE NYMPH. This specimen comes from *Oedipomidas oedipus*. Idiosoma $330\ \mu$ long and $195\ \mu$ wide. Body flasklike. A male already well developed is visible into the nymphal skin. General aspect as in the female but the genital aperture is lacking; there are two pairs of small genital discs (instead of one pair as in the female) situated near the median line, a little behind the level of coxae IV; the anus is distinctly

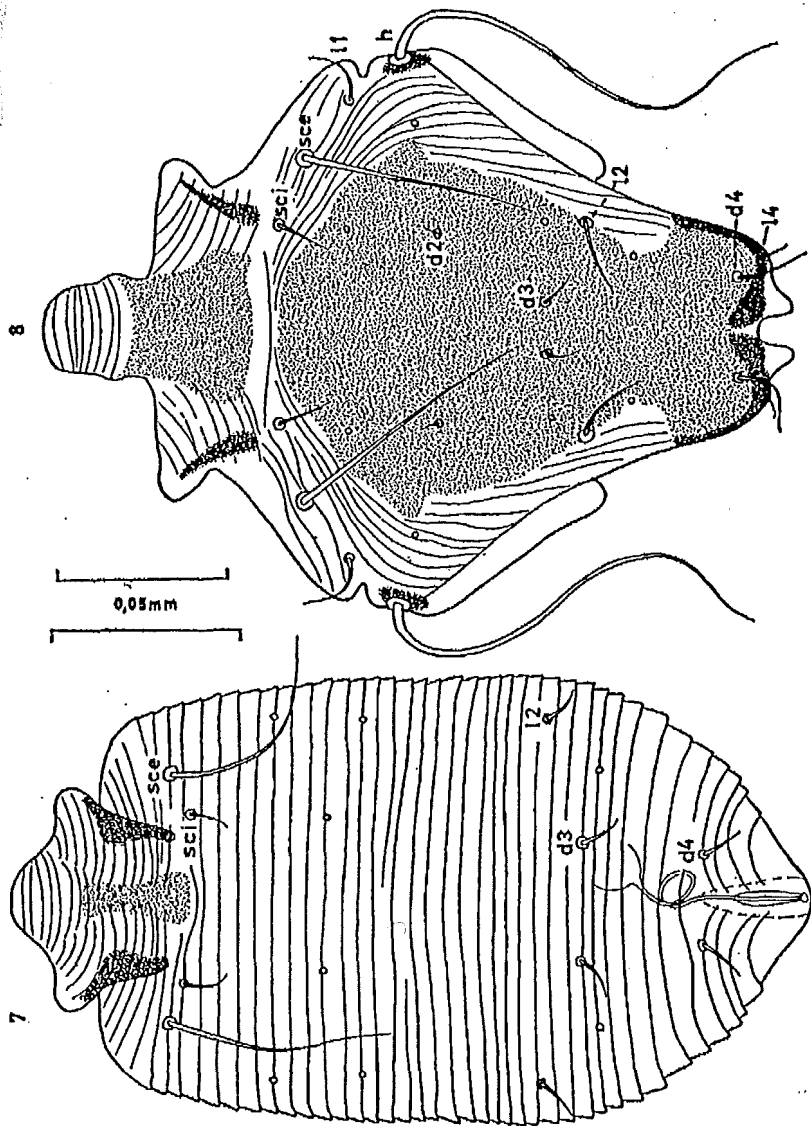


Plate 16. *Rhyncoptes anastosi* Fain. Figure 7, female. Figure 8, male. Both in dorsal view.

ventral, with five pairs of small preanal setae 10 to 14 μ long (instead of three pairs as in the female, the *ae* and *l* 4 being present in the nymphs). Other idiosomal setae as in the female, but shorter. We have a second specimen of a masculine nymph from *Leontocebus rosalia*. It is similar to the latter (idiosoma length 300 μ).

FEMININE NYMPH. Comes from *Oedipomidas*. Idiosoma 240 μ long, 130 μ wide. Body flasklike. A well developed female is visible into the nymphal skin. This nymph is very close to the masculine nymph. The only difference seems to be in the smaller length of the preanal setae which are only 5 to 8 μ long.

LARVA. From *Tamarinus* sp. Idiosoma 159 μ long, 90 μ wide. General morphology as in the nymphs but the fourth pair of legs is lacking and the chaetotaxy is more reduced. Are present, on the idiosoma, the setae *sci*, *sc* *e*, *sh*, *l* 2, *d* 3, *d* 4, *d* 5, *cx* I, *cx* III (stout and much longer than *cx* I). Anus ventral, the setae *d* 5 are situated a little in front of and externally to the anus.

Host and locality. On the skin of the body (along the hair with the mouth-parts and the anterior legs sunk in the pilous-follicle) of three South American monkeys: (1) *Leontocebus rosalia* (L.) (holotype ♀; allotype ♂; 9 paratypes ♀ ♀; 6 paratypes ♂ ♂; 2 nymphs). This monkey is in the collection (in alcohol) of the Institut des Sciences naturelles de Belgique (n°2100). (2) Found also attached on the skin of an *Oedipomidas oedipus* from South America. This monkey died in Antwerp (21 June 1963) (1 ♂, 1 ♀, 2 nymphs). (3) *Tamarinus* sp. which died in Antwerp (27 September 1963). We found only one larva that we attribute to *R. anastosi*.

3. *Rhyncoptes cebi* (Fain, 1964)

(*Rhyncoptoides cebi* Fain, 1964: 187)

This species is distinguished from the two other species of the genus by the absence of the setae of coxae III (*cx* III). Besides, it differs from *R. anastosi* by the presence of the external anal setae (*ae*); the larger size of the anterior legs and the smaller size of the posterior legs; the greater length and thickness of the preanal setae. Other characters that distinguish it from *R. recurvidens* are the smaller size of the body, the relatively much shorter gnathosoma and the smaller length of most of the setae.

FEMALE (holotype) (Plate 20, Figure 16; Plate 21, Figure 17). Idiosoma 246 μ long and 129 μ wide. Total length including gnathosoma 285 μ .

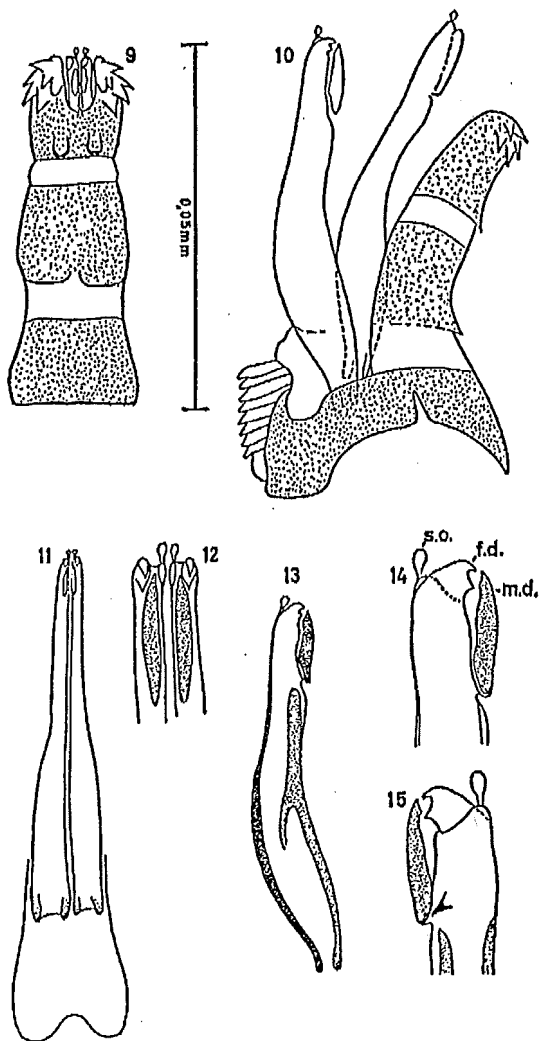


Plate 19. *Rhyncoptes anastosi* Fain, female. Figure 9, gnathosoma in ventral view. Figure 10, lateral view (the chelicerae being removed from their furrow). Figure 11, chelicerae in ventral view. Figure 12, chelicerae apices enlarged. Figure 13, chelicera in lateral view with their apices enlarged showing the two digits. Figure 14, latero-external view; Figure 15, latero-internal view. (N.B., m.d. = movable digit; s.o. = drumstick-shaped sensorial organ.)

In two paratypes: idiosoma $220 \times 111 \mu$ and $225 \times 117 \mu$. The last specimen contains a larva already well developed. General aspect as in *R. anastosi* but the anterior legs are much stronger. Propodosomal shield oval-shaped. Setae *sc e* 60μ long. Setae *l 2* and *d 3* stout, long respectively of 18 and 24μ . Setae *a i*, *a e*, *d 5* and *l 5* stout, respectively 18, 25, 30, and 18μ . There is only one pair of genital discs. Anterior legs very strong and long. Gnathosoma 57μ long, maximum width 21μ . Structure as in *R. anastosi*. Posterior portion of the bursa copulatrix strongly sclerotized. Setae *cx III* absent. Other characters as in *R. anastosi*.

LARVA. One of our females contains a young larva still enclosed in the egg shell. Only the anterior legs of this larva are visible; they are identical in structure with those of the adults. The total length of the egg shell is 150μ long, the maximum diameter of the rolled larva is 120μ .

Host and locality. On the skin (partly in the pilous-follicle) of one *Cebus albifrons* (Humboldt), from Venezuela. This monkey died in Antwerp on 30 April 1963 (holotype and 2 paratypes ♀ ♀).

Type. In the Institut Royal des Sciences naturelles de Belgique. Two female paratypes in the collection of the author.

4. *Rhyncoptes cercopithecii* (Fain, 1964)

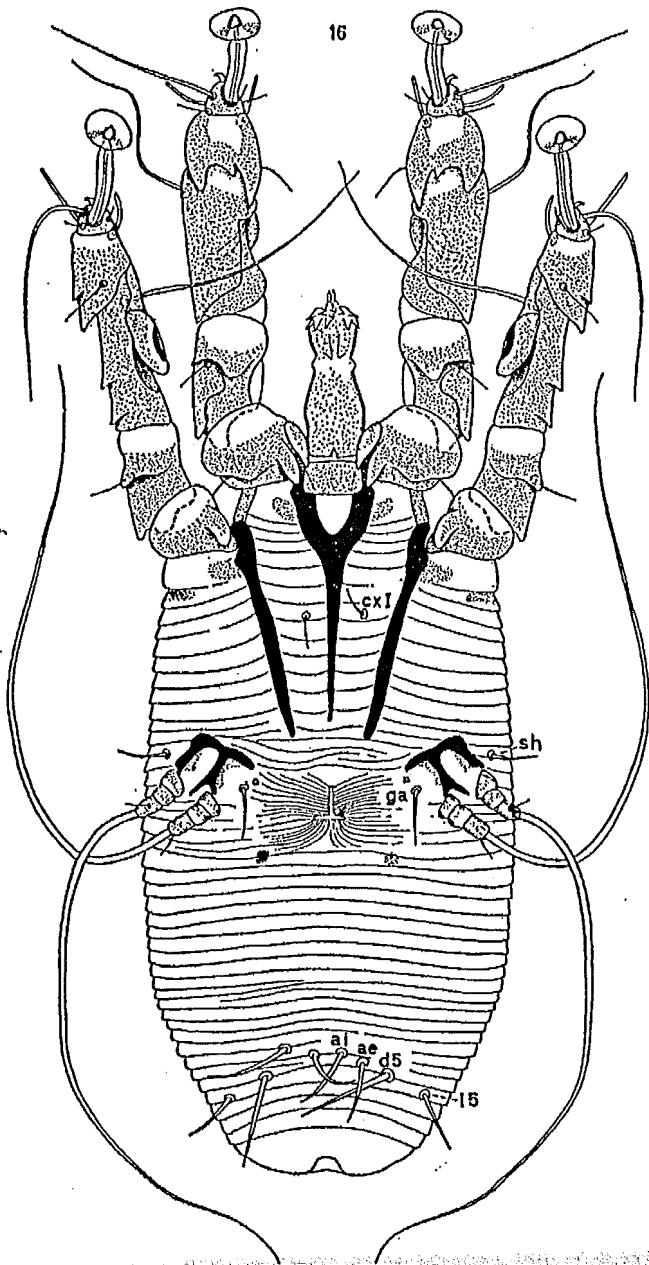
(*Rhyncoptoides cercopithecii* Fain, 1964: 187)

This species is easily distinguished from *R. anastosi*, in the female by the presence of four pairs of preanal setae (setae *a e* being present) and by the much greater length of most of the idiosomal setae; in the male by the different shape of the hysterosomal shield, the stronger and longer chaetotaxy, the presence around the genital orifice of a long U-shaped sclerotized ring which is fused anteriorly with the epimera III, the smaller thickness of the legs III, and the absence of spines on the trochantera III and IV.

This species differs from *R. recurvidens*, in the female by the relatively smaller length of the gnathosoma and of the anterior legs; in the male by the presence of an hysterosomal shield and the structure of the chaetotaxy. From *R. cebi* this species differs mainly by the presence of the setae *cx III*, the much smaller size of the anterior legs and the different length of the chaetotaxy.

FEMALE (holotype) (Plate 22, Figure 18; Plate 24, Figure 20; Plate 25, Figure 22). Idiosoma 258μ long and 126μ wide. Total length, in-

Plate 20. *Rhyncoptes cebi* Fain. Figure 16, female, ventral view.



cluding gnathosoma 295 μ . In two paratypes: idiosoma 240 \times 125 μ ; 245 μ long in lateral view. General aspect as in *R. anastosi* but the idiosomal setae are much stronger and longer. Setae *d* 3, *d* 4, and *l* 2 subequal, approximately 25 to 30 μ long. Preanal ventral setae 21 to 27 μ long. Gnathosoma 55 μ long, maximum width 21 μ . Structure as in *R. anastosi*. Setae *cx* III present. Other characters as in *R. anastosi*.

MALE (allotype) (Plate 23, Figure 19; Plate 24, Figure 21). Idiosoma 180 μ long, 123 wide. Total length, including gnathosoma, 210 μ . Body more elongated than in *R. anastosi*. Hysterosomal shield deeply incised along its lateral borders. Dorsal chaetotaxy longer than in *R. anastosi*. The setae *l* 1, *l* 2, *d* 2, *d* 4 are respectively 24 μ , 54 μ , 24 μ and 34 μ long. There is a chitinous U-shaped structure around the genital orifice but the arms of the U are much shorter than in *R. anastosi*. Legs III narrower than in *R. anastosi*, the genu is only 18 μ wide.

Host and locality. On a *Cercopithecus mona campbelli* Waterh. from West Africa. This monkey died in Antwerp on 2 July 1963. The specimens (3 ♀ ♀ and 2 ♂ ♂) were attached with the anterior legs and the gnathosoma which were sunk in the hair-follicle of the host.

Types. Holotype and allotype in the Institut Royal des Sciences naturelles de Belgique. Paratypes in the collection of the author.

REMARKS ON THE HOSTS OF THE RHYNCOPTIDAE

Up to now the family Rhyncoptidae has only been found in an African porcupine and in African and South American monkeys. The four species known at present in this family are very close to each other and there is no doubt that they belong to the same genus. These mites show a high degree of specialization which suggests that they are very old parasites. The finding in two so widely separated groups of mammals (Primates and Hystricomorpha) of so closely related and at the same time so highly specialized mites is at first surprising. It may suggest the existence of some relationships between these groups. This opinion is reinforced by the fact that these hosts are also parasitized by two other very evolved mite genera belonging to the Trombidiformes and the Mesostigmata.

The first is the genus *Psorergates* Tyrrel which inhabit the skin of mammals. This genus comprises three subgenera: *Psorergates* (three species) parasitic on Muridae, *Psorergatoides* (seven species) living on insectivorous bats, and *Psorobia* (four species) which is found on the sheep, the ox, the African porcupine, and the African monkeys (*Cercop-*

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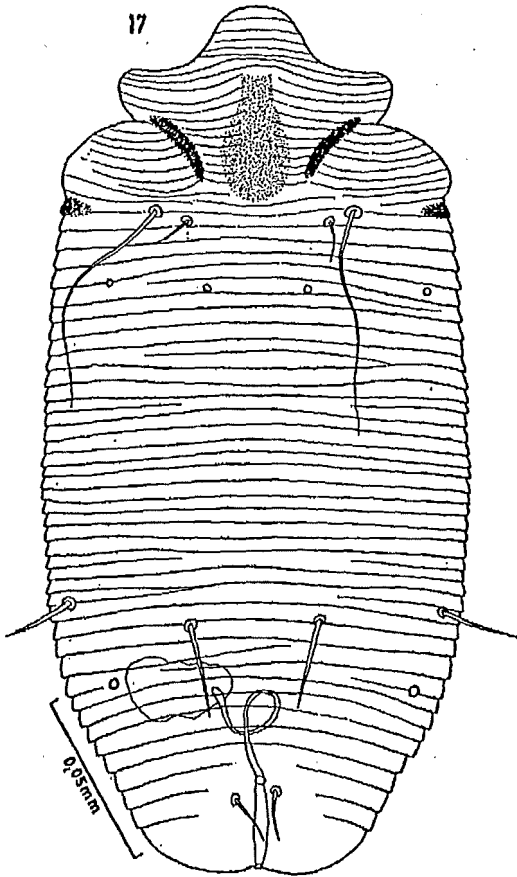


Plate 21. *Rhyncoptes cebi* Fain. Figure 17, female, dorsal view.

pithectus). The second genus is *Rhinophaga* Fain. This genus is represented by seven species all parasitic in the nasal cavities of mammals. Four species parasitized monkeys, one species has been found in the African porcupine, and two species in an African rodent (*Atherurus*).

As a matter of fact some of these similarities could be explained by convergence. But the similarities may also suggest that there exists a true affinity between some of these hosts, especially between the porcupines and the monkeys. The true nature of these affinities is not known. Apparently they are not morphological nor ecological (f.i. similarity of the biotopes). Perhaps they are chemical, depending on the presence in these hosts of a common protein that is needed for the metabolism of the mite. Further investigations in that direction are needed in order to throw more light on that interesting problem.

KEY TO THE GENUS *RHYNCOPTES*

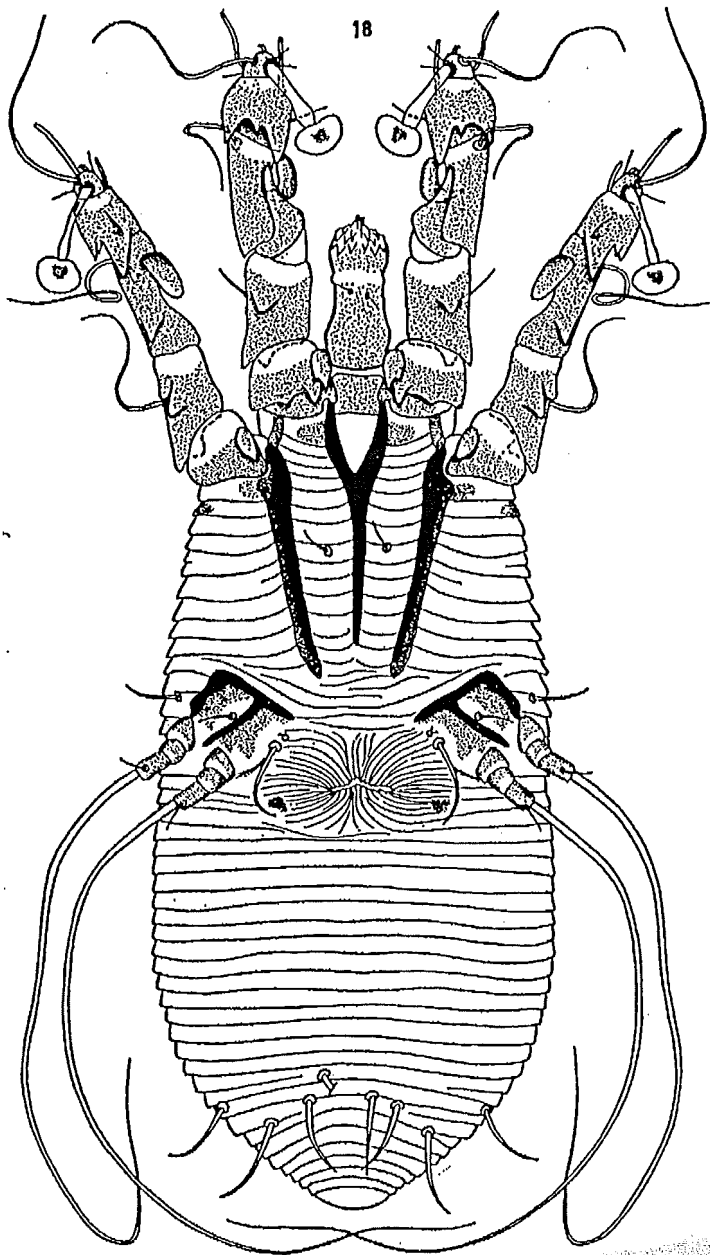
Females

1. Four pairs of stout postero-ventral setae 2
 Three pairs of smaller postero-ventral setae (setae *a e* are lacking)
 *R. anastosi* Fain
2. Seta coxal III lacking *R. cebi* Fain
 Seta coxal III present 3
3. Gnathosoma 3-8 times longer than its maximum width and reaching
 approximately the middle of genu I *R. recurvidens* Lawrence
 Gnathosoma about 2-5 times longer than its maximum width and
 reaching approximately the base of the genu I .. *R. cercopitheci* Fain

Males

(*N.B. the male of R. cebi is not known*)

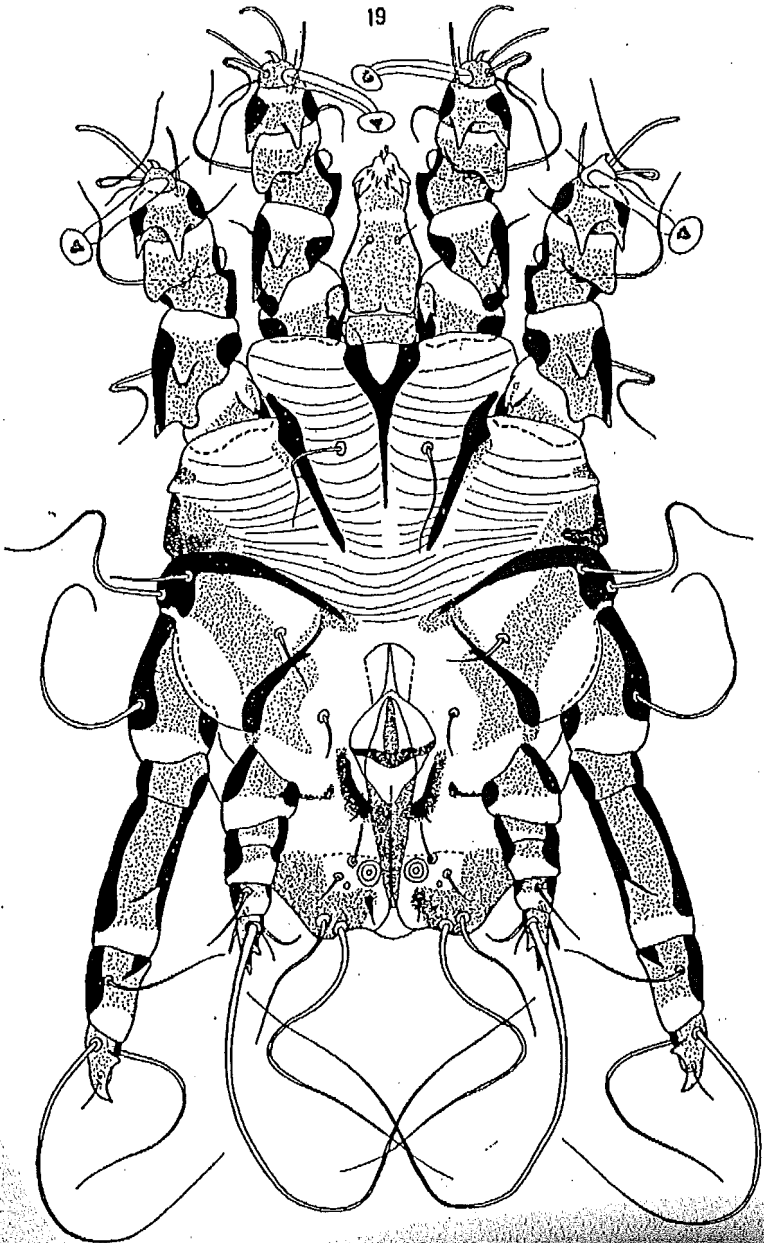
1. Presence of a large hysterosomal shield 2
 Absence of hysterosomal shield *R. recurvidens* Lawrence
2. Sexual orifice surrounded by a long sclerotized U-shaped ring which
 is fused anteriorly with the epimera III; trochantera III and IV with
 a triangular flattened ventral spine; genu III much thicker (approx-
 imately 47 μ long and 27 to 30 μ thick); all the dorsal setae shorter
 and weaker except *sc e* and *h* which are longer *R. anastosi* Fain
 Sclerotized U-shaped ring around the sexual orifice very short, not



reaching the epimera III; trochantera III and IV without spines; genu III narrower (42μ long and 18μ wide); dorsal setae longer and thicker except *sc e* and *h* which are shorter . . . *R. cercopitheci* Fain

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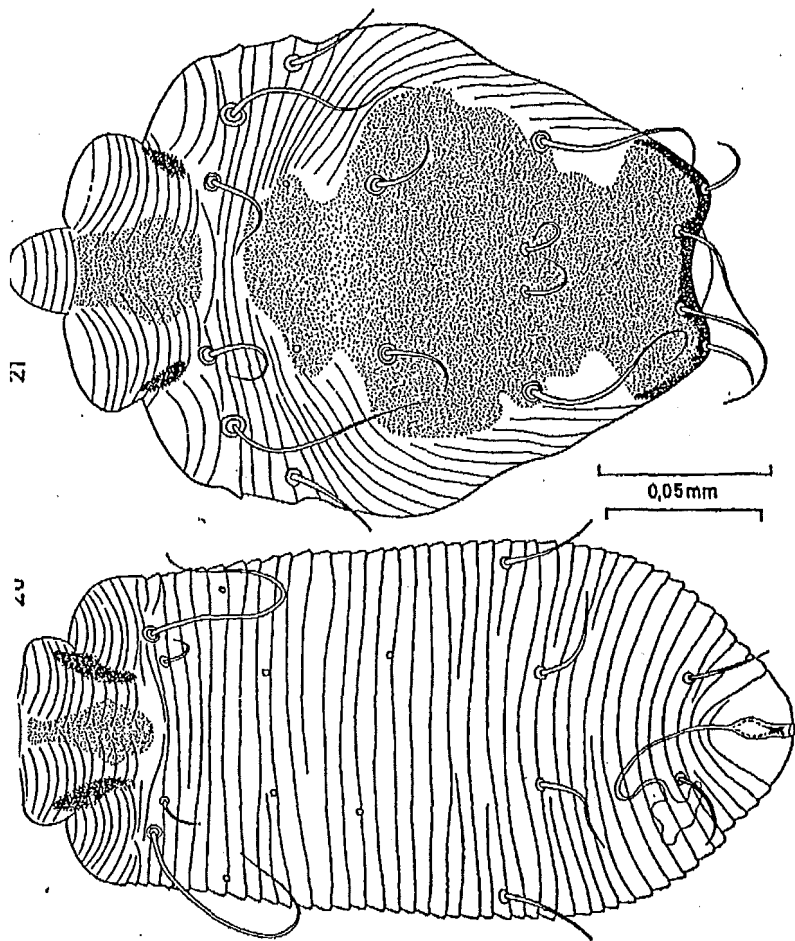


Plate 24. *Rhyncoptes cercopitheci* Fain. Figure 20, female. Figure 21, male.
Both in dorsal view.

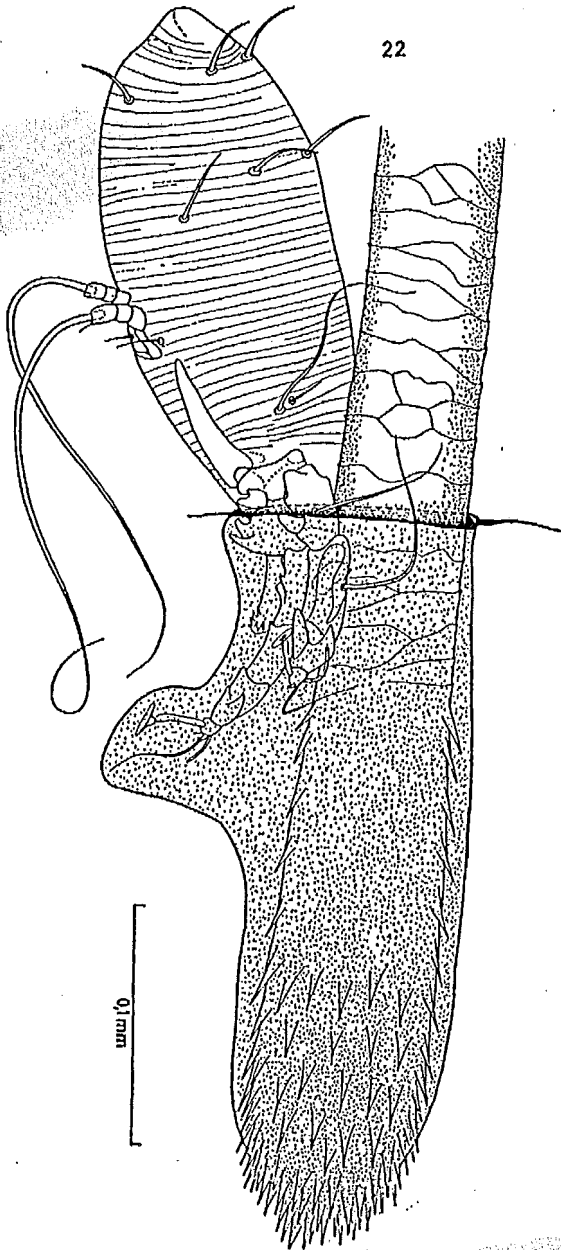


Plate 25. *Rhyncoptes cercopitheci* Fain. Figure 22, female *in situ*, with the anterior legs and the gnathosoma sunk in the hair-follicle and the dorsum flat along the hair.