

*Cheyletidae*  
(*Acari, Prostigmata*)  
parasitic on Afrotropical Primates,  
Carnivora and Rodents

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Mites of the family Cheyletidae have been described from various mammals in the Afrotropical Region.

The present paper deals with the species described from carnivores, primates and rodents. Two new genera and two new species are described hereunder from these hosts.

Volgin (1969) divided the Cheyletidae in several subfamilies. Smiley (1970) has given the family rank to the subfamily Cheyletiellinae. He rattached to this family several new subfamilies that he created for genera previously included in the Cheyletidae (Smiley, 1977).

The discovery of several new genera and species with intermediate characters between Cheyletidae and Cheyletiellidae makes the separation of these families more and more difficult. We prefer therefore to restrict the Cheyletiellidae to the two most evolved genera of the group (*Cheyletiella* and *Eucheyletiella*) and to maintain the other genera in the Cheyletidae.

We have proposed (Fain, 1979) a new nomenclature for the idiosomal chaetotaxy in the Cheyletidae and Cheyletiellidae. This nomenclature may be utilized in all the genera except those exhibiting neotrichia.

In the genus *Cheyletus* (females) the following setae are present on the idiosoma :

*Dorsum*: *vi*, *ve*, *sce*, *sci*, *h*, *l1* to *l5*. The *l5* is either dorso-terminal, terminal or ventral. The *d1* to *d4* are generally absent and when they exist they are generally small and modified. The *d5* are constant and situated between *l4* and *l5*.

*Venter*: There are 3 pairs of intercoxals (*ic1*, *ic3* and *ic4*), 5 pairs of genitals, of which 3 pairs are situated in front of the vulva and 2 pairs on the vulvar lips. There are 3 pairs of anals: *a1* is ventral and internal, *a2* is ventral and more external, *a3* is dorsal. Coxae with 2-1-2-2 setae.

In the genus *Cheyletiella* the chaetotaxy is similar as in *Cheyletus* but the *d* setae are complete (*d1* to *d5*).

Family **CHEYLETIDAE** Leach, 1815

Subfamily **Niheliinae** Smiley, 1977

Smiley (1977) created this subfamily for the genus *Nihelia* Domrow and Baker, 1960, attaching it to the Cheyletiellidae.

We add here two new genera to this subfamily and place the latter in the Cheyletidae.

KEY TO THE SUBFAMILY *NIHELIIINAE* SMILEY, 1977

— Females —

1. On leg I and II: tarsus with two ventral processes, genu and femur with one retrorse conical ventral process. Palp-femur with 2 simple long dorsal setae. Palp-tibia with an apical spine curved ventrally and flattened. Palp-tarsus well-developed, flattened and bifid. Peritremes forming two large lateral alveolated masses situated in the anterior half of gnathosoma. On Primates ..... Genus *Galagocheles* g. n.  
Leg I and II without retrorse processes. Palp-femur with 2 dorsal setae either simple or barbed. Palp-tibia ending in a conical spine curved ventrally. Palp-tarsus vestigial or absent. Peritre-

- mes either forming two lateral masses situated in the posterior half of gnathosoma or narrow and normally formed ..... 2
2. Peritremes forming two lateral alveolated masses. Palp-femur with 2 dorsal barbed setae. Palp-tibia thick and short with a basal triangular process. Palp-tarsus vestigial, bearing 3 setae. On Carnivora ..... *Nihelia* Domrow & Baker, 1960
- Peritreme narrow, normally formed with segments disposed in a line. Palp-femur with 2 dorsal simple setae. Palp-tibia long and narrow without basal process. Palp-tarsus and palp-tarsus setae completely absent. On Rodentia (Anomaluridae) .....  
 ..... *Smileycheles* g. n.

Genus *Nihelia* Domrow & Baker, 1960

After the removal of *Nihelia lemuricola* (Lawrence, 1948) (see above), this genus contained, so far, 2 subgenera, *Nihelia* Domrow & Baker, 1960 and *Sciurocheyla* Volgin, 1969 and 3 species, *N. (N.) calcaratus* Domrow & Baker, 1960, *N. (N.) curvidens* (Lawrence, 1948) and *N. (S.) squamosa* (Domrow & Baker, 1963).

We add here a new species from *Cynictis penicillata*, Africa.

KEY TO THE GENUS *Nihelia*

— Females —

1. Propodonotal and hysteronotal shields with 4-5 pairs of lateral simple setae and 2-3 pairs of flattened and rounded median setae. From an Asiatic Sciuridae .....  
 ..... Subgenus *Sciurocheyla* Volgin, 1969  
 (One species : *Nihelia squamosa* Domrow & Baker, 1963)
- Dorsal shields bearing only simple setae. From Carnivora (Viverridae) ..... 2
2. Dorsal setae longer, the first and third pairs of dorsomedian setae ending distinctly behind the insertion bases of the second and fourth pairs of median setae respectively. Base of gnathosoma without a network pattern. Middle part of propodonotal shield with a network. On *Cynictis penicillata* from South Africa ..... *N. (N.) cynictis* sp. n.

- Dorsal setae shorter, the tips of first and third rows of dorso-  
median setae arriving close to the bases of second and fourth  
pairs of setae respectively. Network patterns variable ..... 3
3. Peritremes very large, covering the largest part of the trian-  
gular processes. Gnathosoma and propodonotal shield with-  
out network. Hysteronotal shield with a concave posterior mar-  
gin. On *Myonax cauni punctulatus* (South Africa) .....  
..... *N. (N.) curvidens* (Lawrence, 1948)
- Peritremes small not reaching the bases of the triangular pro-  
cesses. A network is present on the gnathosoma but not on the  
propodonotal shield. Posterior margin of hysteronotal shield  
deeply incised. On *Herpestes* sp. (Thailand) .....  
..... *N. (N.) calcarata* Domrow & Baker, 1960

— Males —

(N.B. The male of *N. (Sciurocheyla) squamosa* is unknown)

1. Palp-femur bearing 2 strong processes in its apical half, an  
external directed backwards and an internal directed forwards.  
Palp-genu as long as wide. Dorsal surface of gnathosomal base  
without retrorse processes. On an Asiatic *Herpestes* .....  
..... *N. (N.) calcarata* Domrow & Baker, 1960
- Palp-femur bearing 3 or 4 processes among which 2 or 3 in its  
apical half and one in its basal half. Palp-genu wider than long.  
Dorsal surface of gnathosomal base with a pair of triangular  
retrorse processes. On African carnivores ..... 2
2. Palp-femur with 2 bare setae and 4 triangular or conical pro-  
cesses : 2 externals among which one apical directed backwards  
and one, smaller, basal directed laterally; 2 internals of which  
one apical directed forwards and one subapical and directed  
inwards and slightly forwards. Base of gnathosoma with a  
rounded basal ventral process . *N. (N.) curvidens* (Lawrence, 1948)
- Palp-femur with 2 setae, one bare and one barbed and 3 trian-  
gular processes : 2 internals of which one large apical is di-  
rected forwards and a second much smaller subapical and  
slightly ventral; the third process is ventro-lateral, a little more  
basal than the second process and intermediate in size between  
the 2 other processes. Base of gnathosoma without ventral pro-  
cess ..... *N. (N.) cynictis* sp. n.

1. **Nihelia curvidens** (Lawrence, 1948)

*Cheletiella curvidens* Lawrence, 1948 : 40.

*Nihelia curvidens* Domrow & Baker, 1963 : 226.

*Hemicheyletus curvidens* Lawrence, 1956 : 338-340; Volgin, 1969 : 226.

This species was described from *Herpestes sanguineus punctulatus* (= *Myonax cauni punctulatus*) Natal, South Africa. It has also been recorded from *Myonax sanguineus*, Transvaal.

We have seen 3 females, 3 males and 2 nymphs of that species from *Myonax sanguineus bocagei*, Parc Carrisso, Angola (Coll. Machado, 26 September 1967).

We give here a drawing of the gnathosoma or palps in both sexes (fig. 3-4) after specimens from *Myonax sanguineus bocagei*.

2. **Nihelia cynictis** spec. nov.

Male (fig. 5): Idiosoma in the holotype 330  $\mu$  long (idiosoma dorsal side) and 290  $\mu$  maximum wide. Total length, gnathosoma included 426  $\mu$ . *Dorsum* with 2 median shields. Propodonotal shield with 6 pairs of setae, the most anterior and lateral pair is barbed and situated on a conical projection, the other setae are bare. Hysteronotal shield bearing 6 pairs of thin and rather long setae and several pairs of shorter setae belonging to the genital area which is dorsal and far removed from the posterior margin of the body. *Venter*: coxa I much larger than other coxae. Coxal setae (I-IV): 2-1-2-2. *Legs*: leg I much longer than the other legs. Tarsus I bearing 7 setae and 1 solenidion: 2 setae are cylindrical and shortly barbed, apical setae 50  $\mu$  long, the other setae are shorter. *Gnathosoma*: shape of the base as in the other species. Peritremes well developed covering partly the triangular processes. Palp-femur 40  $\mu$  wide (conical processes not included) and 60  $\mu$  long (in ventral view). Palp-genu wider (30  $\mu$ ) than long (18  $\mu$ ). Palp-tarsus absent. Penis long.

Female: Allotype 360  $\mu$  long and 250  $\mu$  wide (idiosoma). Total length (gnathosoma included) 440  $\mu$ . *Dorsum*: Propodonotal and hysteronotal shields with 7 pairs and 8 pairs long setae respectively. These setae measure from 45 to 75  $\mu$  long. Propodonotal shield with a network pattern in the middle. *Venter*: coxal setae as in the male. There are 3 pairs of intercoxal setae. Opisthogaster with 4 pairs of setae, ano-

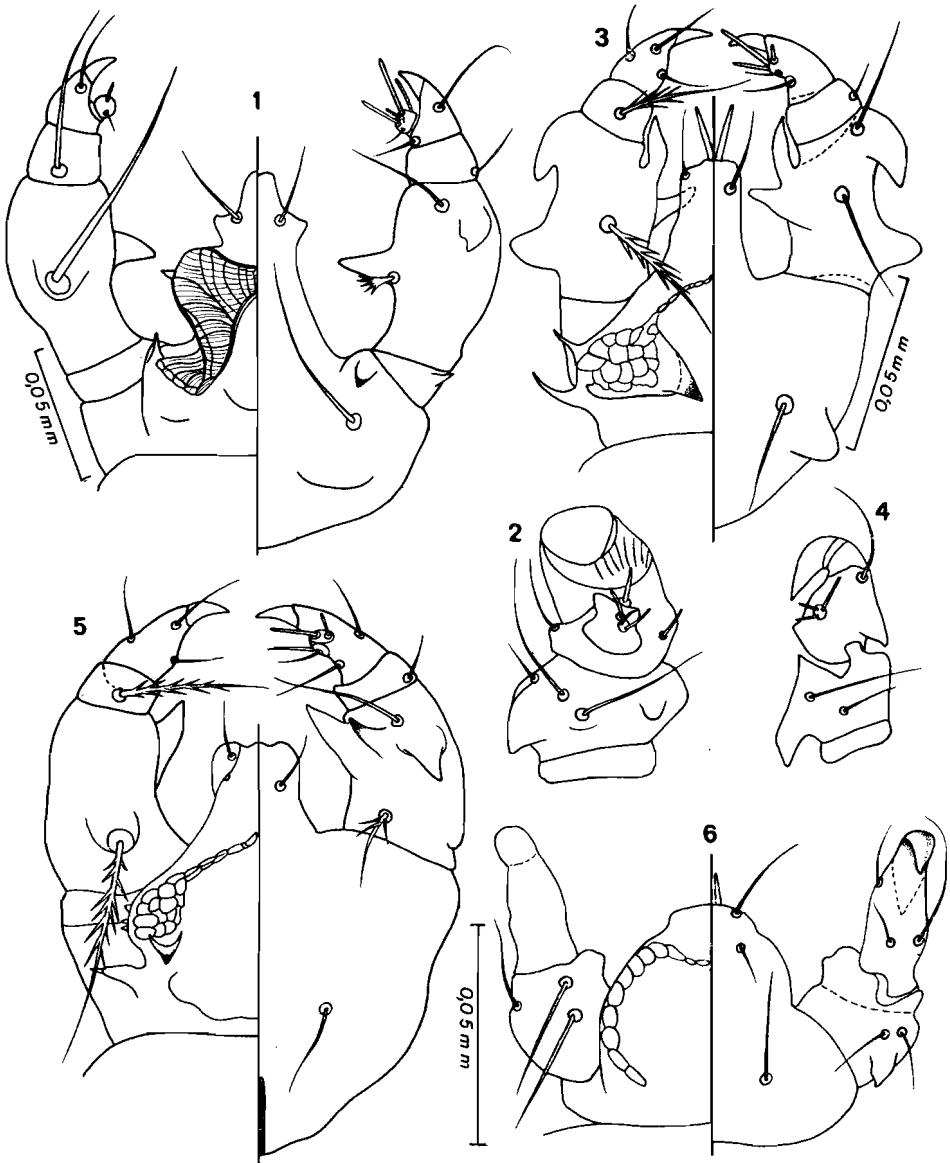


Fig. 1-6. — 1, 2. *Galagocheles lemuricola* (Lawrence, 1948). Male: gnathosoma (fig. 1). Female: palp ventrally (fig. 2) (After paratypes). - 3, 4. *Nihelia curvidens* (Lawrence, 1948). Male: gnathosoma (fig. 3). Female: palp ventrally (fig. 4). - 5. *Nihelia cynictis* sp. n. Male: gnathosoma. - 6. *Smileycheles camerounensis* sp. n. Female holotype: gnathosoma (Remark: All the gnathosoma are seen dorsally on the left and ventrally on the right).

genital area with 4 pairs of setae. *Legs* : leg I not strongly elongated. Chaetotaxy as in the other species of the genus. *Gnathosoma* : as in *Nihelia curvidens* but the peritreme is slightly narrower.

*Host and locality.*

On *Cynictis penicillata*, from Bloemhof, Transvaal, XII.1969 (Holotype and 3 male paratypes, allotype and 11 female paratypes) (Coll. F. Zumpt). Types in the Musée de Tervuren, paratypes in the South African Institute for Medical Research, Johannesburg.

Holotype MRAC n° 150912.

### Genus **Smileycheles** gen. nov.

*Definition* : Only the female is known. Gnathosoma with an elongate and narrow palp-tibia ending in a thick and strong spine curved ventrally and lacking a basal tooth. Palp-tarsus and tarsus setae completely lacking. Palp-femur with a strong ventral retrorse process. Peritremes narrow each with 12 segments. Idiosoma with two large median shields; anterior shield bearing 6 pairs of simple setae (2 pairs being broken), posterior shield with 6 pairs of simple setae. Ventral surface striated. Eyes absent. All the legs ending in 2 claws and rayed empodia. All the setae of the body, gnathosoma and legs are simple except some rare setae which may have one or two barbs.

*Type species* : *Smileycheles camerounensis* spec. nov.

This new genus is named after Mr. Robert Smiley, the well-known specialist in Cheyletid mites.

This genus resembles the genus *Nihelia* by the shape of the palp-tibia and the general aspect of the body and the legs. It differs from this genus by the complete absence of the palp-tarsus, the structure of the peritremes which are normally formed, by the shape and the disposition of the dorsal chaetotaxy.

### **Smileycheles camerounensis** spec. nov.

Only the female is known.

Female (fig. 6-12) : Holotype 295  $\mu$  long and 270  $\mu$  wide (idiosoma). Total length, including gnathosoma 378  $\mu$ . *Dorsum* : with 2 large me-

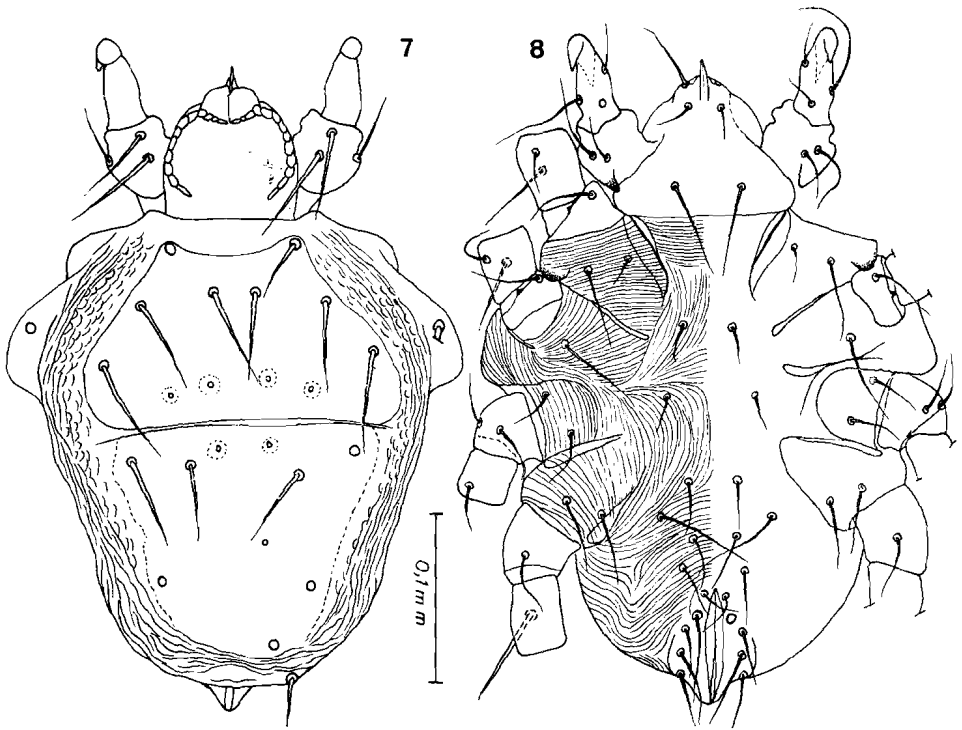


Fig. 7-8. — *Smileycheles camerounensis* sp. n. Female holotype dorsally (fig. 7) and ventrally (fig. 8).

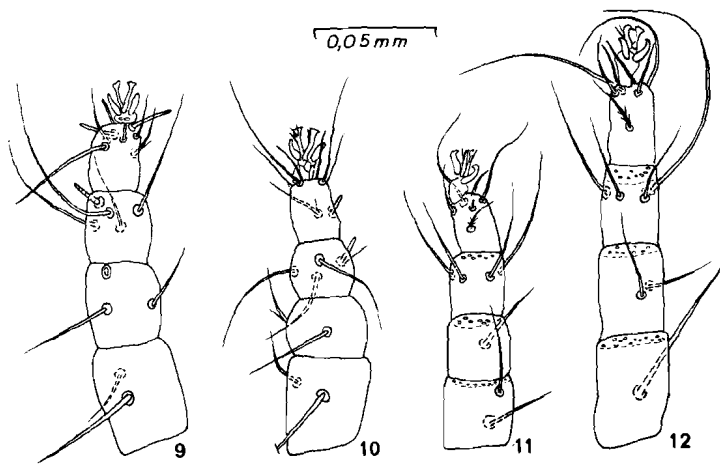


Fig. 9-12. — *Smileycheles camerounensis* sp. n. Female holotype. Dorsal surface of legs I (fig. 9) and II (fig. 10); ventral surface of legs III (fig. 11) and IV (fig. 12).



dian shields, each bearing 6 pairs of setae (some are broken and represented by their insertion base). The *h* seta is represented by its base. *Venter* completely striated (coxae included). Coxae I-IV with the usual number of setae (2-1-2-2). There are 3 pairs of intercoxal setae, 5 pairs of genital setae and 3 pairs of anal setae. Legs well developed but all are shorter than the idiosoma. Leg IV longer than leg I. Gnathosoma very wide. Palps narrow, palp-tibia long.

*Chaetotaxy of legs* (I-IV): Trochanters 1-1-2-1. Femora 2-2-2-1. Genua 2-2-2-1. Tibiae 5-4-4-4. Tarsi 7-8-7-7.

*Host and locality.*

On *Zenkerella insignis* (Rodentia, Anomaluridae), Cameroun, Foulassi (n° 28806). Animal in the Musée Royal de l'Afrique Centrale, Tervuren. Holotype female (MRAC n° 150915) in this Museum (Coll. A. Fain).

#### Genus **Galagocheles** gen. nov.

The new genus *Galagocheles* is erected here for the species *Cheletiella lemuricola* Lawrence, 1948.

Lawrence (1954) created the genus *Hemicheyletus* for two species, *Cheletiella lemuricola* and *Ch. curvidens*, that he described in 1948. This genus was not valid because the author omitted to designate a type species. In 1960, Domrow and Baker created the genus *Nihelia* with as type species *N. calcarata* sp. n. As this species was congeneric with *H. curvidens* and *H. lemuricola* this genus replaced the genus of Lawrence for this group of species. In 1963, Domrow and Baker described two new species in this genus, *N. squamosa* and *N. quinta*. Volgin (1969) erected for *N. quinta* a new genus *Criokeron* and for *N. squamosa*, a new subgenus *Sciurocheyla* in the genus *Hemicheyletus*, the latter being revalidated by this author.

In this paper we create a new genus *Galagocheles* for *Nihelia lemuricola* (= *Cheletiella lemuricola* Lawrence) parasitic on the African Lorisidae. As a matter of fact *N. lemuricola* is distinguished from the species living on Carnivores by several important characters that we summarize here.

1. Presence in the females of *Galagocheles* of retrorse sclerotized processes on the ventral surface of legs I-II (tarsus, genu and femur) and on the idiosoma (one pair near lateral margins between legs II-III and one pair between legs I-II ventrally). In the females of *Nihelia* (species from Carnivores), the legs and the idiosoma are devoid of these processes. In the females of these species the dorsal surface of gnathosoma bears a pair of strong triangular processes which is absent in *Galagocheles*.
2. The structure of the palps in females is strongly different in the two genera. In *Galagocheles* the apical spine of palp-tibia is flattened and striated inside, and the palp-tarsus is well-developed and flattened. In *Nihelia* the apical spine of palp-tibia is conical and pointed and the palp-tarsus is rounded and quite vestigial.
3. The shape of the gnathosoma and the peritremes in both sexes are very different in shape in both genera. In *Galagocheles* the peritremes consist of elongate cells and are situated in the anterior half of gnathosoma while in *Nihelia* these peritremes contains numerous small cells situated in the posterior half of gnathosoma.
4. The dorsal surface of palp-femur and palp-genu in *Galagocheles* bears, each, one long simple seta, while in *Nihelia* these articles bear a thick, and strongly barbed seta.
5. In the male of *Galagocheles* the palp-tarsus is rounded and well-formed and the opisthosoma is strongly pointed backwards. In *Nihelia* the palp-tarsus is vestigial or absent and the opisthosoma is rounded.

*Definition of Galagocheles*: With the characters defined above.

*Type species*: *Cheletiella lemuricola* Lawrence, 1948 (= *Nihelia lemuricola* (Lawrence, 1948)).

**Galagocheles lemuricola** (Lawrence, 1948) comb. nov.

*Cheletiella lemuricola* Lawrence, 1948 : 39.

*Nihelia lemuricola*, Domrow & Baker, 1963 : 226.

*Hemicheyletus lemuricola* Lawrence, 1954 : 74; Volgin, 1969 : 378.

This species was described from *Otolemur crassicaudatus garnetti* (= *Galago crassicaudata garnetti*), Natal, South Africa,

We found new specimens of that species in the following hosts and localities: 1) *Galago crassicaudatus monteri*, Lubumbashi, Zaïre, 24. VIII.1964. The mites (12 females and 3 males) were fixed to the skin of the abdomen; 2) *Galago senegalensis moholi*, from 3 localities in Zaïre, Bukama (mites (6 females) fixed to the ears); Lubumbashi, in 1961 (mites (2 females and 1 male) fixed to the back) and Akanyaru River, Rwanda, October 1954 (3 females and 2 males).

We give here a figure of the gnathosoma of the male (fig. 1) and the female (fig. 2), after paratypes.

Subfamily **Teinocheylinae** Fain, 1975

(= *Teinocheylini* Fain, 1975)

Fain (1975) described the monotypic genus *Teinocheylus* for a species (*T. longissimus* Fain, 1975) found on the skin of a rodent. He created for this genus a new tribe Teinocheylini that he placed in the Cheyletidae, subfamily Cheyletinae. Smiley (1977) gives this taxon the subfamily rank in the Cheyletiellidae.

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