

## A REVIEW OF SOME GENERA OF CHEYLETID MITES (ACARI: PROSTIGMATA) WITH DESCRIPTIONS OF NEW SPECIES

### ОБЗОР НЕКОТОРЫХ РОДОВ КЛЕЩЕЙ-ХЕЙЛЕТИД (ACARI: PROSTIGMATA) С ОПИСАНИЕМ НОВЫХ ВИДОВ

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#### ABSTRACT

Several species of cheyletid mites (Acari: Cheyletidae) presenting 16 of 32 known genera were revised. Eight new species and one new genus are described: *Kenyacheylus troglodytes* g.n., sp.n., *Ker afrotrropicalis* sp.n., *Cheletophyes vespae* sp.n., *Chelacaropsis kenyensis* sp.n., *Hoffmannita gersoni* sp.n., *Bak nadchatrami* sp.n., *Chelacheles algericus* sp.n. and *Prosocheyla ripkai* sp.n. Six known species are redescribed: *Cheletomorpha bakeri* Lawrence, 1954, *Hylopecheyla bunguranensis* Fain, 1972, *Cheletophyes vitzthumi* Oudemans, 1914, *Ch. eckerti* Summers et Price, 1970, *Acaropsella kinshasensis* Fain, 1972 and *Samsinakia carabae* Ramaraju et Mohanasundram, 1999. The males of five species such as *Cheletonella vespertilionis* Womersley, 1941, *Mexechesles virginensis* (Baker, 1949), *Ker bakeri* Zaher et Soliman, 1967, *Chelacaropsis terrestris* Corpuz-Raros et Sotto, 1977, and *Eutogenes frater* Volgin, 1958 as well as the female of *Pavlovskicheyla philippicana* Corpuz-Raros, 1998 are described for the first time. Twenty-one species are synonymized and 14 species are considered as species *inquirendae*. Keys are provided for all studied genera.

#### РЕЗЮМЕ

Ревизована часть видов клещей-хейлетид (Acari: Cheyletidae), относящихся к 16 из 32 родов семейства. Восемь видов и один род описаны как новые для науки: *Kenyacheylus troglodytes* g.n., sp.n., *Ker afrotrropicalis* sp.n., *Cheletophyes vespae* sp.n., *Chelacaropsis kenyensis* sp.n., *Hoffmannita gersoni* sp.n., *Bak nadchatrami* sp.n., *Chelacheles algericus* sp.n. and *Prosocheyla ripkai* sp.n. Шесть видов переописаны: *Cheletomorpha bakeri* Lawrence, 1954, *Hylo-*

*pecheyla bunguranensis* Fain, 1972, *Cheletophyes vitzthumi* Oudemans, 1914, *Ch. eckerti* Summers et Price, 1970, *Acaropsella kinshasensis* Fain, 1972 and *Samsinakia carabae* Ramaraju et Mohanasundram, 1999. Впервые описаны самцы следующих видов: *Cheletonella vespertilionis* Womersley, 1941, *Mexechesles virginensis* (Baker, 1949), *Ker bakeri* Zaher et Soliman, 1967, *Chelacaropsis terrestris* Corpuz-Raros et Sotto, 1977 and *Eutogenes frater* Volgin, 1958, а также самка *Pavlovskicheyla philippicana* Corpuz-Raros, 1998. В итоге 21 вид сведен в синоним, идентичность 14 видов сомнительна и требует дальнейшего исследования. Приводятся ключи для всех изученных родов.

#### INTRODUCTION

The family Cheyletidae Leach, 1815 (Acari: Prostigmata) includes 70 valid genera and more than 400 species [Gerson et al., 1999; Fain, Bochkov, 2001, in press].

Cheyletid mites have a worldwide distribution. They occupy a great variety of habitats. Some of them are free-living predators inhabiting plants, soil and plant debris; other groups are nidicolous predators living in nests of birds and mammals and in insect colonies. A small group of cheyletids are dwellers of the feather quills of birds. Others are parasites of wild and domestic animals (rabbits, cats, dogs, etc.). Sometimes they cause dermatitis in people, which were in contact with infested pets [Bronswijk, Kreek, 1976]. Because of the medical significance these mites were actively studied during the last decades. A few species however, e.g. *Cheyletus eruditus*, can be beneficial as agents controlling acaroid mites (Acari: Acaridae), which

are serious pests of stored food. In their review of the Cheyletidae, Summers and Price [1970] listed a total of 190 species. About 30 years later, Gerson et al. [1999] published a list that included about 440 species, which represented an increase of more than 100 per cent during a relatively short period of time.

The study of the cheyletid mites, parasitic on vertebrates, was neglected for a long time. Only recently some authors expressed an interest to this group of mites [Fain, 1979 a–e, 1980 a,b, 1981, Bochkov, Mironov, 1999, etc.]. On the other hand, no significant progress was recently achieved in the knowledge of predacious cheyletid mites.

The present work provides the descriptions of eight new species and the redescrptions of several already known species. Keys are provided to all these species. The composition of some genera of the Cheyletidae is discussed. The system of Volgin [1969] was applied to place new genera in corresponding tribes.

## MATERIAL AND METHODS

For this study we re-examined the typical material of the Cheyletidae deposited in the following institutions: ZISP — Zoological Institute, Russian Academy of Sciences (St. Petersburg, Russia); IRSNB — Institut royal des Sciences naturelles de Belgique (Bruxelles, Belgium); MRAC — Musée royal de l'Afrique Centrale (Tervuren, Belgium); NMNH — the collection of Oudemans deposited in the National Museum of Natural History (Leiden, The Netherlands).

The nomenclature of the idiosomal chaetotaxy follows Fain [1979c]. All the measurements are given in micrometers ( $\mu\text{m}$ ).

### FAMILY CHEYLETIDAE LEACH, 1815

#### TRIBE CHEYLETINI VOLGIN, 1969

#### GENUS *EUCHEYLETIA* BAKER, 1949

Twenty species were included in this genus by Gerson et al. [1999]. Actually, three of these species were transferred to other genera by different authors. *Eucheyletia nintoda* Corpuz-Raros, 1988 was included into the genus *Columbicheyla* by Corpuz-Raros [1998]. The species *E. womersley* Volgin, 1963 was considered by this author as a species *inquirenda* [Volgin, 1969]. The third species, *E. reticulata* (Cunliffe, 1962), was used as the type of a new genus, *Zachvatkiniola* [Volgin, 1969]. The validity of this genus has been confirmed recently [Fain, Bochkov, 2001].

**Remarks.** (i) The re-examination of the holotypes of three species described by Fain [1972], *E. funisciuri* Fain, 1972, *E. kivuensis* Fain, 1972 and *E. tanzaniensis* Fain, 1972, has shown that they belong to the genus *Cheyletus*.

(ii) Volgin [1963] has separated the new species *Eucheyletia asiatica* Volgin, 1963 from *E. bishoppi* Baker, 1949 on the basis of a different shape of the tibia I setae. We examined the type material of both species and were unable to find significant differences between them. We consider therefore that *E. asiatica* **syn. n.** is a junior synonym of *E. bishoppi*.

(iii) The species *E. oregonensis* Smiley et Whitaker, 1981 differs from *E. bishoppi* only by the number of teeth on palpal claws (3–4 teeth in *E. oregonensis* and 2 teeth in *E. bishoppi*) [Smiley, Whitaker, 1981]. The number of teeth on palpal claws is a variable character [Volgin, 1969], which is not sufficient for establishing a new species. Therefore, we consider *E. oregonensis* **syn. n.** as a junior synonym of *E. bishoppi*.

(iv) The re-examination of the specimens redescrbed by Oudemans (1906) as *E. flabellifera* (Michael, 1878) has shown that they are not separable from *E. taurica* Volgin, 1961. Therefore we consider *E. taurica* **syn. n.** as a junior synonym of *E. flabellifera*. As the type specimens of this species were lost it is necessary to establish a neotype.

(v) The species *E. nidicola* Delfinado et Khaing-Fields, 1976 was described from a single male. This specimen is very similar to the male of *E. bishoppi*. However, a re-examination of the holotype of *E. nidicola* is necessary before making a decision.

### KEY TO FEMALES OF THE GENUS *EUCHEYLETIA*

1. Tibia III–IV bearing 1 serrate, hair-like seta, and 3 fan-like or lanceolate ..... 8
- Tibia III–IV bearing 2 serrate, hair-like setae, and 2 fan-like or lanceolate ..... 2
2. Guard seta (*ft'*) of solenidion  $\omega I$  longer than solenidion ... 5
- Guard seta (*ft'*) of solenidion  $\omega I$  shorter than solenidion ..... 3
3. Ventral seta of palpal genu hair-like ..... 4
- Ventral seta of palpal genu narrow, lanceolate ..... *E. eoa* Volgin, 1963
4. Tibia I about 1.5–1.6 times shorter than tarsus I; its width/length proportion is 1:3 .....  
..... *E. flabellifera* (Michael, 1878)

- Tibia I and tarsus I subequal; its width/length proportion is 1:5 ..... *E. sinensis* Volgin, 1963
5. Hysterosomal shield with 3–5 pairs of lateral setae ..... 6
- Hysterosomal shield with 2 pairs of lateral setae, setae *d5*, *l4*, and *l5* are not on hysterosomal shield ..... *E. hardyi* Baker, 1949
6. Femur I–II and genu I with 2 fan-like setae ..... 7
- Femur I–II and genu I with 1 fan-like and 1 lanceolate setae ..... *E. bothrocheyla* Volgin, 1963
7. Hysterosomal shield with 5 pairs of lateral setae, setae *d5* and *l5* situated on hysterosomal shield ....
- ..... *E. pavlovskiy* Volgin, 1963
- Hysterosomal shield with 3 pairs of lateral setae, setae *d5* and *l5* are not on hysterosomal shield ..... 8
8. Propodosomal and hysterosomal shields bearing each 5 pairs of modified median setae, cloud-like or hieroglyph-like ..... 9
- Propodosomal and hysterosomal shields bearing each 3 pairs of not modified median setae ..... *E. harpyia* (Rohdendorf, 1940)
9. Guard seta (*ft'*) of solenidion  $\omega 1$  strongly barbed and removed from this solenidion. Tibia I with 4 lanceolate setae and 1 hair-like slightly serrate seta (Fig. 1A, B) ..... 10
- Guard seta (*ft'*) of solenidion  $\omega 1$  slightly serrate and situated near this solenidion. Tibia I with 3 lanceolate setae, 1 thickened, strongly barbed seta and 1 hair-like, slightly serrate seta (Fig. 1C, D) ..... *E. bishoppi* Baker, 1949
10. Hysterosomal shield with 5 pairs of lateral setae. Setae *d5* are not on hysterosomal shield ..... *E. bakeri* Volgin, 1969
- Hysterosomal shield with 6 pairs of lateral setae. Setae *d5* situated on hysterosomal shield ..... *E. sibirica* Volgin, 1963

**Material examined.** *E. bothrophila* — female holotype from the nest of *Clethrionomys glareolus*, Khustovskiy Distr., Zakarpatskaya Prov. Ukraine, 05.VIII.1958. Coll. S. Visotskaya (ZISP).

*E. flabellifera* — one female from the nest of *Talpa europaea*, Valkenburg, 12.XII.1912. Coll. Heselhaus (NMNH). One female, Berlin, X.1926. Coll. F.Zacher (NMNH). Female holotype of *E. taurica* (= *E. flabellifera*) from the nest of *Microtus arvalis*, Gursuph, Crimea, 31.VIII.1960 Coll. E. Sosnina (ZISP). Three females, 2 males and 2 nymphs from the nest of *Crocidura russula*, NL-Nijmegen, Holland, 30.I.1971. Coll. F.Lukoschus. One female from the nest of *Turdus merula*, Holland, 10.IX.1974. Coll. F.Lukoschus. One female from the house dust, NL-Den Helder, 02.X.1971.

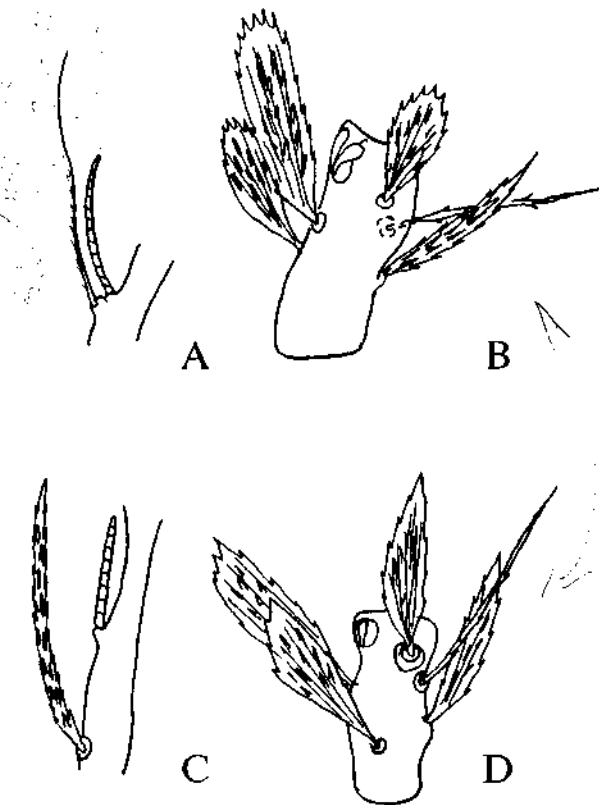


Fig. 1. *Eucheyletia*, spp., female. *E. sibirica*: A — solenidion  $\omega 1$ , B — tibia I; *E. bishoppi*: C — solenidion  $\omega 1$ , D — tibia I.

Coll. Van Bronswijk. One female from the nest of *Apodemus sylvaticus*, Nijmegen, Holland, 18.X.1968. Coll. Driessen. Two females from the nest of *Riparia riparia*, Belgium, 28.IV.1946. Coll. A.Collart. One female from *Glis glis*, Glenhausen, Germany, 26.VIII.1974. Coll. G.Krebs. Fifteen females and 4 nymphs from the nest of a bird, Bardaey Isl, Greenwood, England, 23.VII.1991. Two females from the barn dust, Poland, I.1978. Coll. W.Chmielewski.

*E. sinensis* — female holotype from the nest of *Rattus losea celsus*, Yun-nan, China, XI.1957. Coll.Si Moj (ZISP).

*E. eoa* —female holotype from the nest of *Eutamias sibirica*, Tamara, Primorskiy Prov., Russia, 19.XII.1960 (ZISP).

*E. pavlovskiy* — male holotype and paratype female from the nest of *Lagurus lagurus*, Karaganda Prov., Kazakhstan. Coll.Vorontsov (ZISP).

*E.sibirica* — female holotype from grain, Asino village, Novosibirskaya Prov., Russia, 21.VI.1939. Coll. Ratanova (ZISP).

*E. bishoppi* — one female from *Tamiops striatus*, Jow Pulaskilo, 10.X.1972. Coll. Jr.Whitaker. One female and 1 male from *Neotoma fuscipes*, San Luis, Obispo, California, IV.1981. Coll. Don Get-

tinger. Female **holotype** of *E. asiatica* (= *E. bishoppi*) from the nest of *Clethrionomys glareolus*, Zakarpatskaya Prov., 10.X.1960. Coll. S. Visotskaya (ZISP).

#### GENUS *CHELETONELLA* WOMERSLEY, 1941

This genus includes five species [Womersley, 1941; Volgin, 1969; Tseng, 1977; Smiley, 1996; Xia et al., 1999]. Only females were described. The males are unknown.

**Remarks.** (i) The species *Cheletonella juglandis* Xia et al., 1999 was described from two "females" collected from the nut, *Juglans regia*, in China [Xia et al., 1999]. Actually, the original figure given by this author [Xia et al., 1999: p. 2, fig. 3] represents the anal region of the teleonymph. The validity of the species *C. juglandis* is therefore highly questionable. We consider it as a species *inquirenda*.

(ii) The examination of the holotype of *C. caucasica* Volgin, 1955 has revealed that this species is not discernible from *C. vespertilionis* Womersley, 1941. Therefore, we consider *C. caucasica* **syn. n.** as a junior synonym of this species. We give here the first description of the male of *C. vespertilionis* (collected from the guano of *Myotis myotis* in Belgium).

#### KEY TO FEMALES OF THE GENUS *CHELETONELLA*

1. Dorsal idiosomal setae fan-like ..... 2
- Dorsal idiosomal setae lanceolate .....
- ..... *C. pilosa* Tseng, 1977
2. Guard seta (*ft'*) more than 2 times shorter than solenidion  $\omega I$ . Peritremes with 11 links .....
- ..... *C. hoffmannae* Smiley, 1996
- Guard seta (*ft'*) more than 1.3 times longer than solenidion  $\omega I$ . Peritremes with 9 links .....
- ..... *C. vespertilionis* Womersley, 1941

#### *Cheletonella vespertilionis* Womersley, 1941

**Male** (homeomorphic, Fig. 2). **Gnathosoma** as in the female, 165 long and 130 wide. Palpal femur 85 long and 50 long. Peritremes arch-like, with 12 links. Palpal claw with 3 teeth. Outer comb-like seta of palpal tarsus with 14 tines, inner comb-like seta with 15 tines. **Idiosoma** 380 long and 265 wide. Propodosomal shield 150 long and 130 wide. All dorsal setae fan-like, 25–30 long and 13–16 wide. Setae *d2* situated at level of setae *l1*; setae *d3* situated anteriorly to *l2*, distance *d3*–*l2* about 15. **Penis** 115 long. **Leg** chaetotaxy as in female, but

tibiae II–IV each with a dorsal solenidion and tarsi III–IV each with a ventral solenidion.

**Material examined.** *C. vespertilionis* — one female from the guano of *Myotis lucifugus*, Juniata Field, Huntington Co., Pennsylvania, USA, 28.VII.1981. Coll. F. Lukoschus. Eight females and the male from the guano of *Myotis myotis*, Abbaye d'Orval, Belgium, 15.09.1995. Coll. A. Fain. Three females from the guano of *Tadarida punctata*, Kuala Pilah, N. Sembilan, Malaysia 9.V.1979. Coll. F. Lukoschus. Five females from the bat guano, Nurses Hostel, Kuala Pilah, Negeri, Sembilan, Malaysia, 04.VI.1979. Coll. M. Nadchatram. Fifteen females and the male from the bird nest, Algeria, 16.XII.1958. Coll. Athias. Female **holotype** of *C. caucasica* (= *C. vespertilionis*) from *Cricetulus migratorius*, Erevan, Armenia (ZISP).

#### GENUS *PARACHEYLETIA* VOLGIN, 1955

Presently this genus includes five species [Volgin, 1969].

**Remarks.** (i) According to Volgin [1969], the species *Paracheyletia samsinaki* Volgin, 1966 differs from *P. pyriformis* (Banks, 1904) by the following characters: in the female of *P. samsinaki* the propodosomal and hysterosomal shields bear seven pairs of hieroglyph-like median setae; in the male the solenidion of tibia I is shorter than the tibia width, the width of the hysterosomal shield is 1.1 times less than that of the propodosomal shield. In the female of *P. pyriformis* the propodosomal and hysterosomal shields bear five and four pairs of hieroglyph-like median setae respectively; in the male the solenidion of tibia I is slightly longer than the tibia width, the width of the hysterosomal shield is 1.4 times shorter than that of the propodosomal shield. Summers and Price [1970] redescribed the female *P. pyriformis*. It appeared that all the differences reported in females of both species are the result of inaccuracies in the original description of *P. pyriformis*. The reported differences in males of both species are based only on variable characters. We consider therefore *P. samsinaki* **syn. n.** as a junior synonym of *P. pyriformis*.

(ii) The species *Paracheyletia hortensis* Volgin, 1969 was described from a single male in Russia [Volgin, 1969]. A re-examination of the holotype *P. hortensis* has shown that it differs from *P. pyriformis* only by the length of the palpal femur and its dorsal protrusion. We think that this species (*P. hortensis* **syn. n.**) is actually a homeomorphic form of *P. pyriformis*.

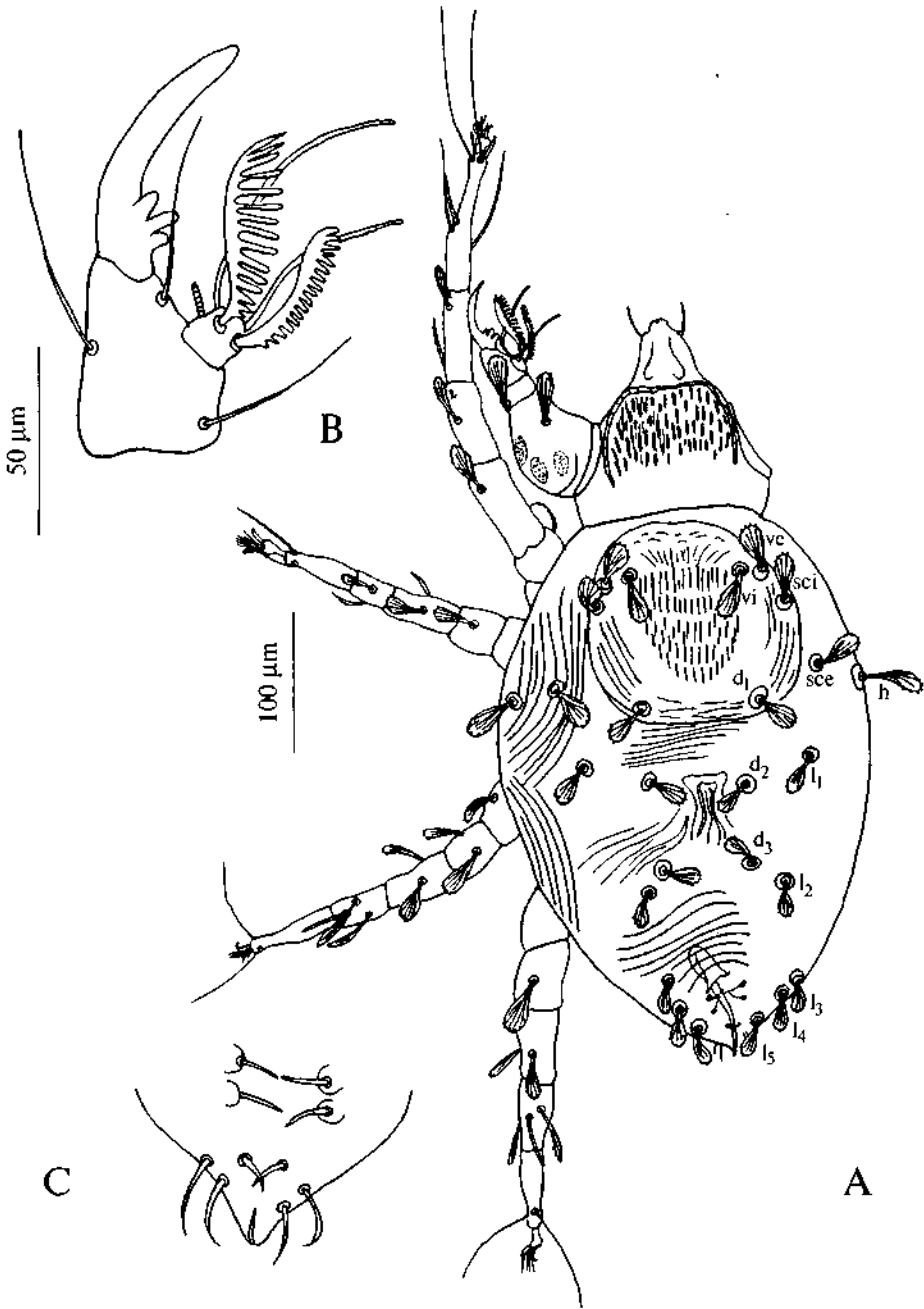


Fig. 2. *Cheletonella vespertilionis*, male: A — dorsal view, B — palpat tibia and tarsus in dorsal view, C — genital-anal region in dorsal view.

**KEY TO MALES OF THE GENUS  
PARACHEYLETIA**

1. Setae *II* situated off the hysterosomal shield ... 2
- Setae *II* situated on the hysterosomal shield .....
- ..... *P. pyriformis* (Banks, 1904)
2. Propodosomal shield with 3 pairs of median setae .....
- ..... *P. assimilis* Volgin, 1955
- Propodosomal shield with 2 pairs of median setae .....
- ..... *P. recki* Volgin, 1966

**Material examined.** *P. pyriformis* — eleven females and 3 males, Jardin d'essari, Alger, Alge-

ria, 06.IV.1961. Coll. Athias. Ten females and 10 males from the anthill, near Hamburg, Germany. The female **holotype** and the male paratype of *P. samsinaki* (= *P. pyriformis*) from *Scolytus pygmaeus*, Prague, Czech Republic (ZISP). The male **holotype** of *P. hortensis* (= *P. pyriformis*) from an apple tree, Slavansk Distr, Krasnodarskiy Kray, Russia, 7.IX.1955. Coll. N. Bregetova (ZISP).

*P. recki* — the male **holotype** from the anthill, Voronezhskaya Prov., Russia, 28.VIII,1968. Coll. V. Tanasijchuk (ZISP).

**GENUS CHELETOMORPHA OUDEMANS, 1904**

This genus presently includes seven species [Summers, Price, 1970; Qayyum, Chaudhri, 1977; Aheer et al., 1997].

**Remarks.** (i) The species *Cheletomorpha orientalis* Oudemans, 1928 was described very shortly. Its type material is lost. This species has not been recorded again since the original description. Therefore, we consider this species as a species *inquirenda* within the genus *Cheletomorpha*.

(ii) The species *Cheletomorpha opacus* Qayyum et Chaudhri, 1977 and *C. obrutus* Qayyum et Chaudhri, 1977 were described from the «females» collected in Pakistan [Qayyum, Chaudhri, 1977a]. Actually, the original figures of these species given by the author [Qayyum, Chaudhri, 1977a: p. 74, fig 2 and p. 76, fig. 3] represent the anal region of a teleonymph. The validity of these species is therefore questionable. We consider them as the species *inquirendae*, within the genus *Cheletomorpha*.

We provide here a redescription of *Cheletomorpha bakeri* Lawrence, 1954. This species was originally described from the bird nest in Uganda [Lawrence, 1954]. The male of this species is described here for the first time.

**KEY TO FEMALES OF THE GENUS  
CHELETOMORPHA**

1. Dorsal shields with 1 and 2 pairs of median setae respectively, similar in shape to the lateral setae ..... *C. bakeri* Lawrence, 1954  
— Dorsal shields without median setae similar in shape to lateral setae ..... 2
2. Dorsal shields with modified neotrichial setae; hysterosoma with a median shield ..... 3  
— Dorsal shields without modified neotrichial setae; hysterosoma with 2 lateral shields .....  
..... *C. dolosus* Aheer, Akbar et Chaudhri, 1997
3. Setae 11–15 situated on the hysterosomal shield ..... *C. lepidopterorum* (Shaw, 1794)  
— Setae 11–15 situated off the hysterosomal shield ..... *C. tenerum* Qayyum et Chaudhri, 1977

***Cheletomorpha bakeri* Lawrence, 1954**

**Female** (Fig. 3). **Gnathosoma** 215 long and 160 wide. Palpal femur 100 long and 95 wide, bearing 5 setae. Dorsal setae of palpal femur lanceolate; 100 long. Palpal genu without setae. Palpal claws with 1 tooth. Outer and inner comb-like setae of palpal tarsus with numerous tines. Peritremes arch-like, with 5–6 links at each side. Rostral shield covered with longitudinal striations.

**Idiosoma** 415 long and 285 wide. **Dorsum:** All dorsal setae, including *h*, lanceolate, barbed, similar in shape. Propodosomal shield 200 long and 233 wide, covered by a network having a granular pattern. It bears setae *vi*, *ve*, *sci* *sce* and *d1*. Setae *h* situated off propodosomal shield. Hysterosomal shield 185 long and 200 wide, bearing setae *d2*, *d4*, *d5* and *11–14*, covered with the same pattern as propodosomal shield. Setae *15* situated off hysterosomal shield. Length of setae: *vi*, *ve*, *sci* and *sce* about 130, *h* 115, *d1*, *11–13* about 100, *d4* 40, *d5* 65, *14* 90 and *15* 85. **Venter:** All setae, including coxal, intercoxal and paragenital, slightly serrate.

Two posterior pairs of anal setae thickened and strongly barbed. **Legs.** Tarsus I, excluding the pretarsus, and guard seta (*ft'*) subequal in length, about 65. Solenidion  $\omega 1$  of the tarsus I 60 long, solenidion  $\omega 2$  of the tarsus II 28 long. Leg I 250 long.

**Male** (heteromorphic, Fig. 4). **Gnathosoma** 250 long in midline and 150 wide. Palpal femur 155 long and 65 wide. Outer and inner comb-like setae of palpal tarsus with numerous tines. Palpal claws with 1 tooth. Rostrum 75 long, with 1 pair of lateral lobes. Peritremes with 5–6 links. **Idiosoma** 365 long and 250 wide. All dorsal setae lanceolate and barbed. Propodosomal shield 190 long and 220 wide, it bears setae *vi*, *ve*, *sci*, *sce* and *d1*. Setae *h* situated ventrally. Hysterosomal shield 135 long and 185, bearing setae *d3*, *d5*, *11*, *12* and *15*. Both shields with a pattern similar to that of the female. Length of setae: *vi*, *ve*, *sci*, *sce* 100–135, *h* 75, *d1* 85, *d2* 65, *11–13* 65–75, *15* 35 and *15* 50. Penis 85 long. **Legs.** Tarsus I 150 long, solenidion  $\omega 1$  90 long; solenidion of tibia I 45 long, solenidion of tarsus II 40 long. Tibiae III and IV with solenidion, 60 long and 45 long respectively.

**Material examined.** *C. bakeri* — fifteen females and 2 males from the nest of *Spermestes cucullatus*, Butare, Rwanda, 28.XII.1969. Coll. F. Aurelien. One female from the same host species and the same locality, Rwanda, 09.IV.1968. Coll. A. Fain. Four females from the nest of the same host species, Plateau, Kimrenza, Rwanda, 25.II.1965. Coll. De Bont. One female from the nest of *Passer griseus*, Butare, Rwanda, 02.VI.1965. Coll. A. Fain. One male and 1 nymph from the nest of *Lonchura cucullata*, Rwanda, 10.V.1955. Coll. A. Fain. One female from the nest of *Textor* sp., Butare, Rwanda, 07.VI.1955. Coll. A. Fain. One female from the nest of a Ploceidae, Kigali, Rwanda, 13. VII. 1967 (Coll. A. Fain). One male and 1 female from the nest of a bird, Route Kenge, Central Africa, 03. VI.



Fig. 3. *Cheletomorpha bakeri*, female: A — dorsal view, B — genital-anal region, C — gnathosoma in dorsal view.

1964 (Coll. A. Fain). Two females from the bird nest, Butare, Rwanda, 07.V.1955. Coll. A. Fain. One male and 1 nymph from the nest of *Grammomys* sp., Congo, 29.I.1961. Coll. A. Fain. One nymph from the nest of *Thammomys surdaster*, Butare, Rwanda, 09.II.1968. Coll. F. Aurelien. One female from a house in Butare, Rwanda, 15.IV.1955. Coll. A. Fain. *C. lepidopterorum* — one female from the nest of *Passer montanus*, Kuala Lumpur, Malaysia, 01.V.1979. Coll. F. Lukoschus. One female, Hamburg, Germany, 29.VIII.1961. Coll. G. Rack. One female, Basel, 14.VII.1972. Coll. Y. Mumcuoglu. One female from a butterfly, Berlin, Germany, 30.VI.1946. Coll. Richardson. One female from a

house; Pannedden, Holland, 04.VIII.1966. Coll. Lukoschus. Three females and 1 male, Strohdetritus, Nijmegen, Holland, 10.II.1969. Coll. F. Lukoschus. Two females and 1 male from a beehive, NL-Hacksbergen, Pettinga, Holland, 1978. Coll. F. Lukoschus. One female from a butterfly, Namur, Belgium, 31.V.1945. Coll. Richardson. One female, Belgium, 08.IX.1977. Coll. A. Fain. One male from the nest of *Colius striatus*, Butare, Rwanda, 08.II.1971. Coll. F. Aurelien. One female from the nest of *Cryptomys natalensis*, Walkerville, Transvaal, 24.V.1971. Three females from the house dust, Lima, Peru, 30.III.1973. Coll. A. Fain. One female, New Guinea, 01.VII.1955. Coll. J. Fine.

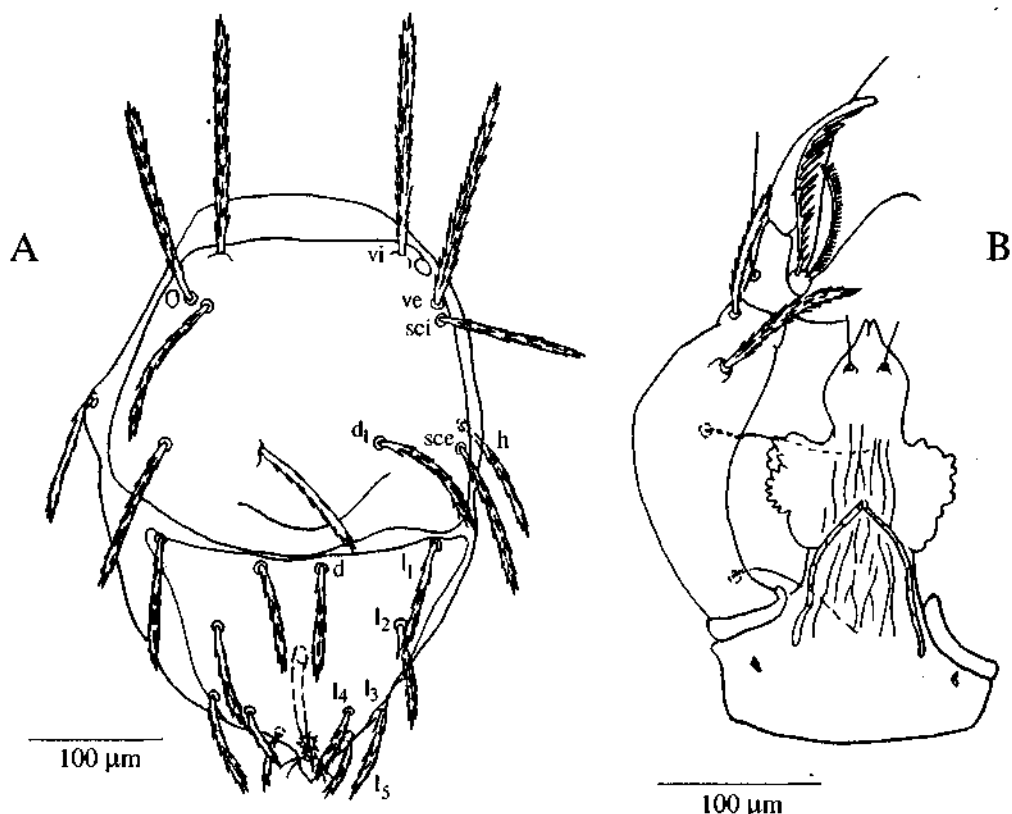


Fig. 4. *Cheletomorpha bakeri*, male: A — idiosoma in dorsal view, B — gnathosoma in dorsal view.

**GENUS NODELE MUMA, 1964**

This genus included four species [Gerson et al., 1999], but recently *Nodele simplex* Wafa et Soliman, 1968 was synonymized with *Nodele calamondin* Muma, 1964 [Bochkov et al., 2001].

**KEY TO FEMALES OF THE GENUS NODELE**

- 1. The propodosomal shield with one pair of median setae ..... *N. superba* Kuznetsov, 1977  
— The propodosomal shield with 2 pairs of median setae ..... 2
- 2. Peritremes M-shaped ..... *N. mu* Haines, 1988  
— Peritremes arch-like ..... 3
- 3. Guard seta (*ft'*) 3 times or more shorter than solenidion  $\omega 1$  ..... 4  
— Guard seta (*ft'*) 1.5 times longer than solenidion  $\omega 1$  ..... *N. calamondin* Muma, 1964
- 4. Setae *d2* 2–2.5 times longer than *d3* and *d4* .....  
..... *N. coccinae* Thewke et Enns, 1968  
— Setae *d2* 1.2–1.3 times longer than *d3* and *d4* .....  
..... *N. philippinensis* Baker, 1949

**Material examined.** *N. calamondin* — fifteen females and 5 males from grain, Corgan Prov., Iran, X.1997. Coll. F.Ardeshir.

*N. superba* — one female paratype from the nest of *Passer* sp., Crimea, 18.VI.1972. Coll. N. Kuznetsov.

**GENUS MEXECHELES DE LEON, 1962**

This genus was revised by Summers and Price [1970]. Only one new species *M. votandinii* Jeffrey, 1975 was described after this revision. Presently this genus includes seven species. Keys to the species of this genus were provided by Summers and Price [1970] and Jeffrey [1975].

A description of the male of *M. virginiensis* (Baker, 1949) is given hereinafter for the first time.

***Mexecheles virginiensis* (Baker, 1949)**

**Male (Fig. 5).** Gnathosoma 205 long and 180 wide. Palpal femur 75 long and 90 wide. Dorsal seta of palpal femur not bifurcate. Dorsal setae of palpal genu situated on nipple-like protrusion. Outer dorsal seta of palpal tarsi with numerous tines, inner dorsal seta smooth. Peritremes arch-like, with 6 links at each side. Rostral shield granulated. **Idiosoma** 365 long and 320 wide. Propodosomal shield 185 long, hysterosomal shield 165 long. Length of setae: *vi*, *ve*, *sci*, *sce* and *h* about 100, *d1*–*d4* and *N* about 50 long, *d5* 30, *l1* and *l2* about 58, *l4* and *l5* about 40. Penis 80 long. **Legs.** Solenidion  $\omega 1$  150 long,  $\omega 2$  50 long,  $\omega 3$  65 long and  $\omega 4$  75 long. Tarsus I 05 long, guard seta (*ft'*) of solenidion  $\omega 1$  very short, serrate. Leg I about 500 long.

**Material examined.** *M. virginiensis* — one female and 1 male from *Polygraphus pini*, Kash-





Fig. 5. *Mexecheles virginiensis*, male in dorsal view.

mir, India, 24.VI.1980. *M. impolitus* — one female paratype and 1 male paratype from boring dust of *Dendroctonus frontalis* in loblolly pine, Elizabeth, Louisiana, USA, 29.X.1965. Coll. C. Moser.

**GENUS LEPIDOCHEYLA VOLGIN, 1963**

This genus includes presently two species [Volgin, 1978].

**Remark.** The species *Hemicheyletia hissariensis* Mathur et Mathur, 1981 was described from the debris of the wheat straw in Hissar, India [Mathur, Mathur, 1981]. The description of this species corresponds perfectly to that of *Lepidocheylya caucasica* Volgin, 1978. Consequently we consider *H. hissariensis* **syn. n.** as a junior synonym of *L. caucasica*.

**KEY TO FEMALES OF THE GENUS LEPIDOCHEYLA**

- 1. Propodosomal shield with 8–9 pairs of setae. Posterior margin of hysterosomal shield clearly concave. Pygidial shield present ..... *L. gracilis* Volgin, 1963
- Propodosomal shield with 8 pairs of setae. Posterior margin of hysterosomal shield broadly rounded. Pygidial shield absent ..... *L. caucasica* Volgin, 1978

**Material examined.** *L. gracilis* — female holotype from the old manure, Verkhnyaya terrassa, Tadzhikistan, 31.V.1956. Coll. Tusogoi (ZISP). Nine females from a beetle, Beit Dagan, Israel, 19.VIII.1985. Coll. Y. Mumcuoglu.

*L. caucasica* — female **holotype** from the old sheep manure, Karachuk village, Nakhichevan Distr., Azerbaijan. Coll. E. Abdullayeva (ZISP).

#### GENUS *KENYACHEYLUS* GEN. NOV.

**Female. Gnathosoma.** Palps granulated. Palpal tarsi with 4 setae and a short solenidion: 2 dorsal comb-like setae with numerous teeth and 2 sickle-like ventral setae. Palpal claw with few teeth in basal part. Palpal tibia with 3 hair-like setae. Palpal genu with 1 dorsal fan-like seta. Palpal femur with 4 setae: 1 fan-like dorsal, 1 fan-like lateral and 2 hair-like. Rostral shield granulated. Peritremes arch-like. **Idiosoma** ovoid, about 3 times longer than gnathosoma. **Dorsum:** Eyes absent. Propodosomal and hysterosomal shields present, granulated. Propodosoma bearing fan-like setae *vi*, *ve*, *sci*, *sce*, *h* and neotrichial hieroglyph-like setae, hysterosoma bearing setae *ll-15*, *d4*, *d5* and neotrichial hieroglyph-like setae. **Venter:** Setae *ic1*, *ic3*, *ic4*, *pg1-pg3*, *g1*, *g2* and *a1* smooth, hair-like, setae *a2* serrate, *a3* narrow fan-like.

**Legs.** All legs granulated and very short, about 1.6 times shorter than idiosoma. All tarsi with claws and empodium. Tarsus I–II, tibia I and genu I with solenidia. Guard seta of solenidion  $\omega 1$  well developed, hair-like. Apical tarsal knobs and claw angles absent. Outer seta of coxae III lanceolate. Most setae of trochanter–tibia I–IV fan-like or lanceolate. Chaetotaxy (excluding solenidion): tarsi 9–7–7–7, tibiae 5–4–4–4, genua 2–2–2–2, femora 2–2–2–1, trochanters 1–1–2–1, coxae 2–1–2–2.

**Male.** Unknown.

Type species *Kenyacheylus troglodytes* sp. n.

**Differential diagnosis.** This new genus belongs to the tribe Cheyletini Volgin, 1969, the generic group *Cheyletus*. It differs from all the genera included in this group, such as *Cheyletus*, *Eucheyletia*, *Zachvatkiniola*, *Cheletonella* and *Camincheyletus*, by the presence of 4 setae on the palpal femur. Within this group it is closely related to the genus *Eucheyletia*. It differs from *Eucheyletia* by the following characters: in the females of *Kenyacheylus* gen. nov., the legs I are 1.6 times shorter than the idiosoma, the setae *d4* are present, the palpal femur bears 4 setae, the femur IV has 1 seta. In the females of *Eucheyletia*, the legs I are only slightly shorter than the idiosoma, setae *d4* are absent, the palpal femur bears 3 setae, the femur IV has 2 setae. The genus *Kenyacheylus* gen. nov. also differs from the genus *Zachvatkiniola* by the presence of modified median setae on dorsal shields and 5 setae on the tibia I. It differs from the other three

genera by the fan-like shape of setae *a3*, short legs and other characters.

The new genus also resembles the genus *Hemicheyletia*, but differs from the latter by the absence of eyes, a well developed guard seta of solenidion  $\omega 1$ , the fan-like anal setae *a3* and the presence of setae *d4* and a lanceolate outer seta on coxae III. In *Hemicheyletia* the eyes are present, the guard seta is very short, the anal setae *a3* are hair-like, the setae *d4* are absent and the outer seta of coxae III is hair-like.

#### *Kenyacheylus troglodytes* sp.n.

**Female (holotype, Fig. 6).** Gnathosoma 125 long and 120 wide. Palpal femur 60 long and 55 wide. Dorsal seta of palpal femur 45 long. Outer comb-like seta of palpal tarsus with 15 tines, inner comb-like seta of palpal tarsus with numerous tines. Peritremes with 5–6 links. **Idiosoma** 325 long and 245 wide. Setae series *d* and *l* and setae *h* fan-like, about 25 long and 25 wide. Propodosomal shield 135 long and 180 wide, bearing setae *vi*, *ve*, *sci*, *sce* and 3 pairs of neotrichial median hieroglyph-like setae. Setae *h* situated off propodosomal shield. Hysterosomal shield 120 long and 150 wide, bearing setae *d4*, *l2-14* and 3 pairs of neotrichial median hieroglyph-like setae. Setae *ll*, *d5* and *l5* situated off the hysterosomal shield.

**Legs.** Length of legs: I 190, II 155, III 165 and IV 200. Solenidion  $\omega 1$  58 long; guard seta (*ft'*) serrate, 40 long; solenidion  $\omega 2$  15, situated laterally. All setae of trochanters lanceolate. Femora I–II with a dorsal fan-like seta and a ventral lanceolate seta; femora III–IV with only a fan-like setae. Genua I, III–IV with fan-like setae, genua II with a dorsal fan-like seta and a ventral lanceolate seta. Tibiae I with 4 wide lanceolate setae and 1 hair-like barbed seta; tibiae II with 2 wide lanceolate setae and 2 barbed hair-like setae; tibiae III–IV with 3 wide lanceolate setae and 1 hair like barbed seta.

**Material examined.** Female **holotype** and 3 nymphs, Kimakia cave, Hunter's Lodge, Kiboko, 140 km SE Nairobi, Kenya, 27.IX.1975. Coll. P. Strinati and V. Aellen. **Holotype** is deposited in the MRAC.

#### GENUS *PAVLOVSKICHEYLA* VOLGIN, 1956

Presently this genus includes three species. A key for the identification of the males of this genus was given by Corpuz-Raros [1998].

**Remark.** The species *Pavlovskicheyla philippicana* Corpuz-Raros, 1998 was described from a single male specimen from the house dust in the

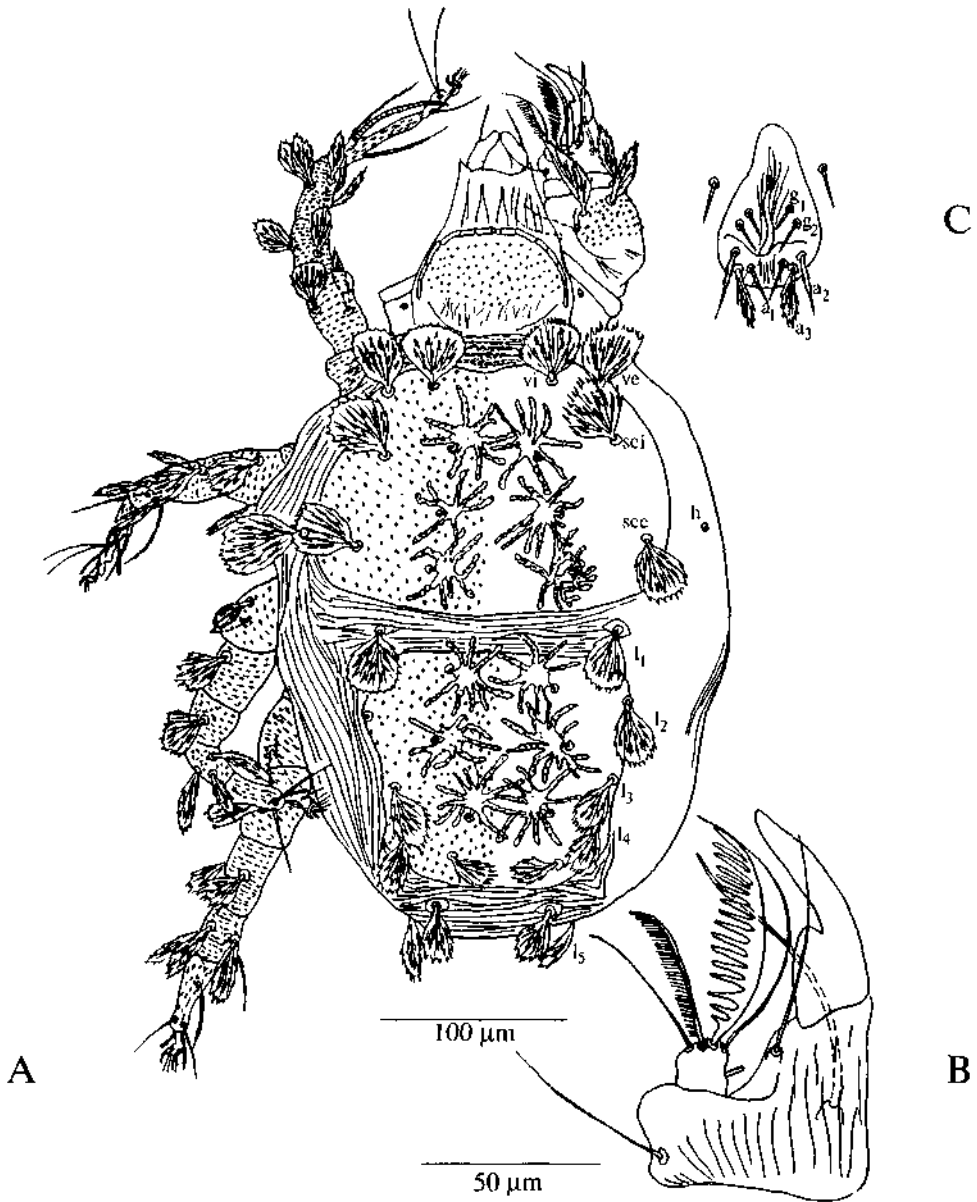


Fig.6. *Kenyacheylus troglodytes* sp.n., female: A — dorsal view, B — palpal tibia and tarsus in dorsal view, C — genito-anal region.

Philippines [Corpuz-Raros, 1998]. We have a female of *Pavlovskicheyla* sp. from Peru in our collection. This specimen possesses some characters in common with *P. philippicana*, i.e. the presence of four setae on the tibia I (excluding solenidion), the absence of lateral teeth on the rostral shield and the small size of the body. Therefore, we think that our specimen belongs to *P. philippicana*.

**KEY TO FEMALES OF THE GENUS  
PAVLOVSKICHEYLA**

1. Peritreme with 8 links. All dorsal setae of idiosoma narrowly lanceolate. Distance  $d4-d4$  1.2 times longer than  $d3-d3$ . Setae  $a3$  hair-like, barbed .....  
..... *P. semenovi* (Kuzin, 1940)

— Peritreme with 5 links. All dorsal setae of idiosoma fan-like. Distance  $d4-d4$  1.2 times shorter than  $d3-d3$ . Setae  $a3$  strongly thickened, almost fan-like ..... 2  
2. Anterior margin of rostral shield deeply concave in median part, without lateral teeth. Dorsal shield bearing a reticulate pattern. Tibia I with 4 setae and a solenidion .....  
..... *P. philippicana* Corpuz-Raros, 1998  
— Anterior margin of rostral shield not deeply concave in median part and with lateral teeth. Dorsal shield punctate without reticulate pattern. Tibia I with 5 setae and a solenidion .....  
..... *P. platydemae* Thewke et Enns, 1975

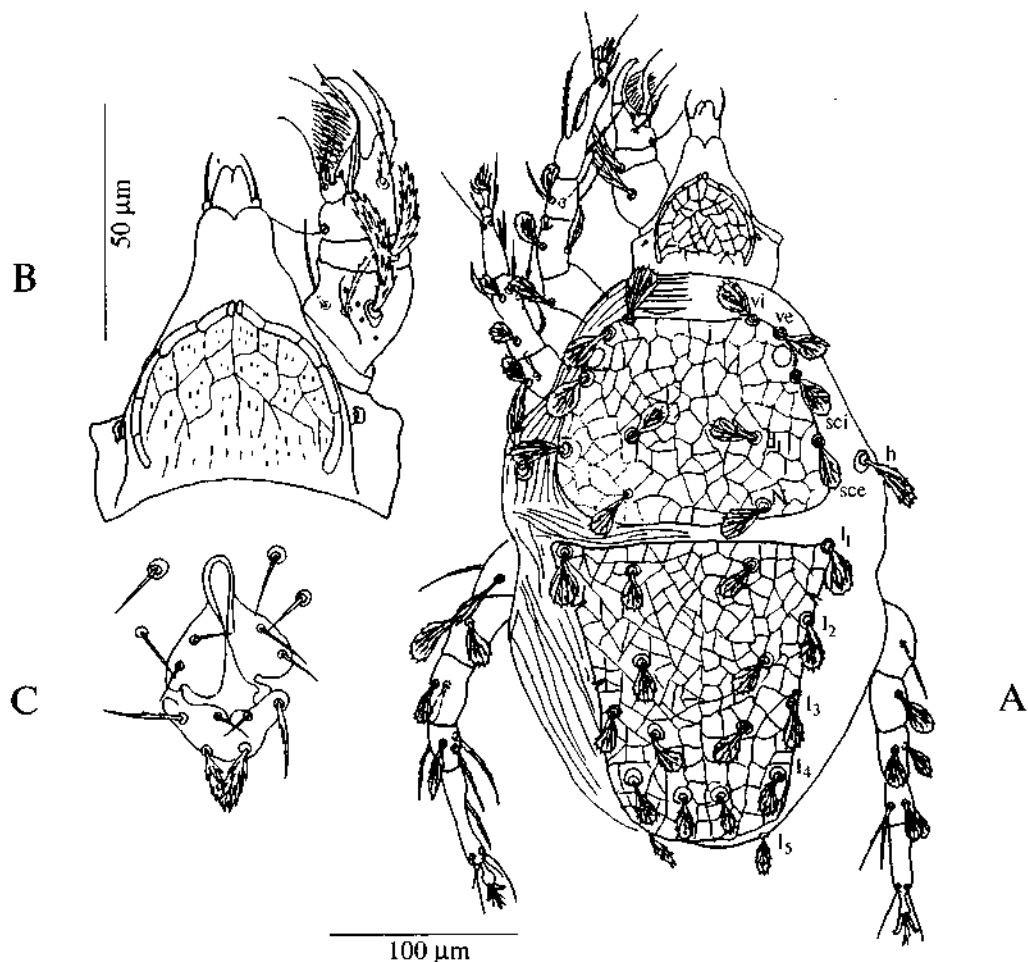


Fig. 7. *Pavlovskicheyla philippicana*, female: A — dorsal view, B — gnathosoma in dorsal view, C — genital-anal region.

***Pavlovskicheyla philippicana*  
Corpuz-Raros, 1998**

**Female** (Fig. 7). **Gnathosoma** 75 long and 60 wide. Rostral shield covered with network pattern. Anterior margin of rostral shield narrow, deeply concave. Peritremes arch-like, with 6 pairs of links. Palpal femur 25 long and 20 wide. Outer comb-like seta of palpal tarsus with 9–10 teeth, inner comb-like seta of palpal tarsus 12–14 teeth. **Idiosoma** 250 long and 180 wide. Dorsal shields covered by network pattern. All dorsal setae fan-like, about 20 long and 10 wide. Propodosomal shield 90 long and 130 wide, bearing setae *vi*, *ve*, *sci*, *sce*, *dl* and one pair of median neotrichial setae (*N*). Hysterosomal shield 125 long and 110 wide, bearing setae *l1–l4* and *d2–d5*. Distance *d4–d4* 1.2 times shorter than *d3–d3*. **Legs**. Solenidion  $\omega 1$  20 long, guard seta (*ft'*) 25 long, serrate. Tibiae I with 4 setae and a solenidion. Structure of setae as in Fig. 7.

**Material examined.** *P. philippicana* — one female, Peru, 18. IX. 1973 (Coll. A. Fain).

*P. semenovi* — female holotype and male paratype from old seeds of the cotton-plant, Andizhanskaya Prov., Uzbekistan (ZISP).

**GENUS KER MUMA, 1964**

Presently this genus includes five species [Corpuz-Raros, 1998].

**Remarks.** (i) The species *Ker mercedesae* Corpuz-Raros, 1998 differs from *K. bakeri* Zaher et Soliman, 1967 only by the striated rostral shield (this shield has a network in *K. bakeri*). However, this character seems variable, as shown by the examination of two female specimens of *K. bakeri* collected by A.F. from the same locality. A well-developed network only covers the rostral shield in one specimen, while this pattern is almost not visible in other specimens. We think, therefore, that a new examination based on more extensive material is needed before ascertaining its validity.

(ii) It should be noted that the lateral incisions of the hysterosomal shield in some species of *Ker* [Corpuz-Raros, 1998] correspond to the orifices of

the lyrifissure glands. These glands exist in all the species of *Ker*. However they are well visible only in some specimens.

We give hereinafter the description of one new species of the genus *Ker* and a description of the male of *K. bakeri* for the first time.

**KEY TO FEMALES OF THE GENUS KER**

- 1. Tibia I with 4 setae and 1 solenidion ..... 5  
— Tibia I with 5 setae and 1 solenidion ..... 2
- 2. Setae *ll* situated on the hysterosomal shield ..... 4  
— Setae *ll* situated off the hysterosomal shield ..... 3
- 3. Rostral shield covered by striations. Hysterosomal dorsum with 9 pairs of setae. Setae *a3* fan-like ..... *K. afrotropicalis* sp.n.  
— Rostral shield covered by a network pattern. Hysterosomal dorsum with 8 pairs of setae. Setae *a3* hair-like, barbed .....  
..... *K. pintoriensis* Corpuz-Raros, 1998
- 4. Guard seta 1.5 time longer than solenidion  $\omega 1$  ... *K. palmatus* Muma, 1964  
— Guard seta slightly shorter than solenidion  $\omega 1$  .....  
..... *K. caeterus* Barilo, 1984
- 5. Rostral shield striated .....  
..... *K. bakeri* Zaher et Soliman, 1967  
— Rostral shield with a network pattern .....  
..... *K. mercedesae* Corpuz-Raros, 1998

***Ker bakeri* Zaher et Soliman, 1967**

**Male** (Fig. 8). **Gnathosoma** 65 long and 55 wide. Palpal femur 20 long and 23 wide. Dorsal seta of palpal femur 20 long. Peritremes arch-like, with 5 pairs of links. Rostral shield covered by a very fine network pattern in its apical part. **Idiosoma** 175 long and 115 wide. All dorsal setae fan-like. Propodosomal shield 65 long and 100 wide, covered by a fine network pattern in anterior part. It bear setae *vi*, *ve*, *sci*, *sce*, *d1* and *d2*. Setae *h* situated off propodosomal shield. Hysterosomal shield 95 long and 85 wide, covered by a very fine network pattern, bearing setae *d3*, *d4* and *l1-l4*. Setae *l5* situated terminally, off hysterosomal shield. Length of setae: *vi*, *ve*, *sci*, *sce*, *h*, *d1-d3*, *l1* and *l2* about 20 long and 7 wide; *d4*, *l3* and *l4* about 10-12 long; setae *l5* 13 long. Penis 42 long. **Legs**. Length of solenidion of tarsi I-IV:  $\omega 1$  and  $\omega 4$  20 long,  $\omega 2$  13 and  $\omega 3$  17 long. Guard seta of  $\omega 1$  25 long. Tibia III with dorsal solenidion, 8 long.

***Ker afrotropicalis* sp.n.**

**Female (holotype, Fig. 9)**. **Gnathosoma** 90 long and 75 wide. Palpal femur 28 long and 30 wide. Dorsal seta of palpal femur 33 long. Ventral

setae of palpal femur slightly thickened and barbed. Rostral shield covered by striations. Peritremes with 5 pairs of links. **Idiosoma** 345 long and 225 wide. All dorsal setae fan-like, about 25 long and 8 wide. Dorsal shields covered by well-developed network pattern. Propodosomal shield 125 long and 175 wide, bearing setae *vi*, *ve*, *sci*, *sce*, *d1* and *d2*. Setae *h* situated off propodosomal shield. Hysterosomal shield 160 long and 135 wide, bearing setae *d3-d5* and *l2-l4*. Setae *l1* and *l5* situated off hysterosomal shield. Anal setae *a1* and *a2* hair-like, barbed, setae *a3* fan-like. **Legs**. Solenidion  $\omega 1$  and guard seta (*ft'*) subequal in length, about 25. Tibia I with 5 setae and 1 solenidion.

**Differential diagnosis.** The new species is closely related to *K. pintoriensis*. It differs by the following characters: in the female of *K. afrotropicalis* sp.n. the rostral shield is covered by striations, the hysterosomal dorsum bears 9 pairs of setae, setae *a3* are fan-like. In the female of *K. pintoriensis* the rostral shield is covered by the network, the hysterosomal dorsum bears 8 pairs of setae, the setae *a3* are barbed and hair-like.

**Material examined.** *K. afrotropicalis* — female **holotype** from the nest of *Grammomys* sp., Musha, Rwanda, 27.III.1968. Coll. A. Fain. **Holotype** in the MRAC. One female from house dust, Kinshasa, Congo, II. 1966. Coll. A. Fain.

*K. bakeri* — two females and 1 male from the house dust, Road 27 Desa Jaya (Veera's House), Kuala Lumpur, Malaysia, 20.II.1978. Coll. M. Nadchatram.

**GENUS HYLOPECHEYLA FAIN, 1972**

Presently this genus includes two species which are parasitic on small arboricolous mammals [Fain, Nadchatram, 1980].

Hereinafter we give a description and figures of the female of *Hylopecheylya bunguranensis* Fain, 1972 for the first time.

**KEY TO FEMALES OF THE GENUS HYLOPECHEYLA**

- 1. Propodosomal shield with one pair of median setae (*d1*); hysterosomal shield with 2 pairs of median setae (*d2* and *d3*). Propodosomal shield not longer than hysterosomal shield. Setae *l5* and *d5* subequal ..... *H. malayi* Fain et Nadchatram, 1980  
— Propodosomal and hysterosomal shields without median setae. Propodosomal shield 1.4 times longer than hysterosomal shield. Setae *l5* almost two times longer than *d5* .....  
..... *H. bunguranensis* Fain, 1972

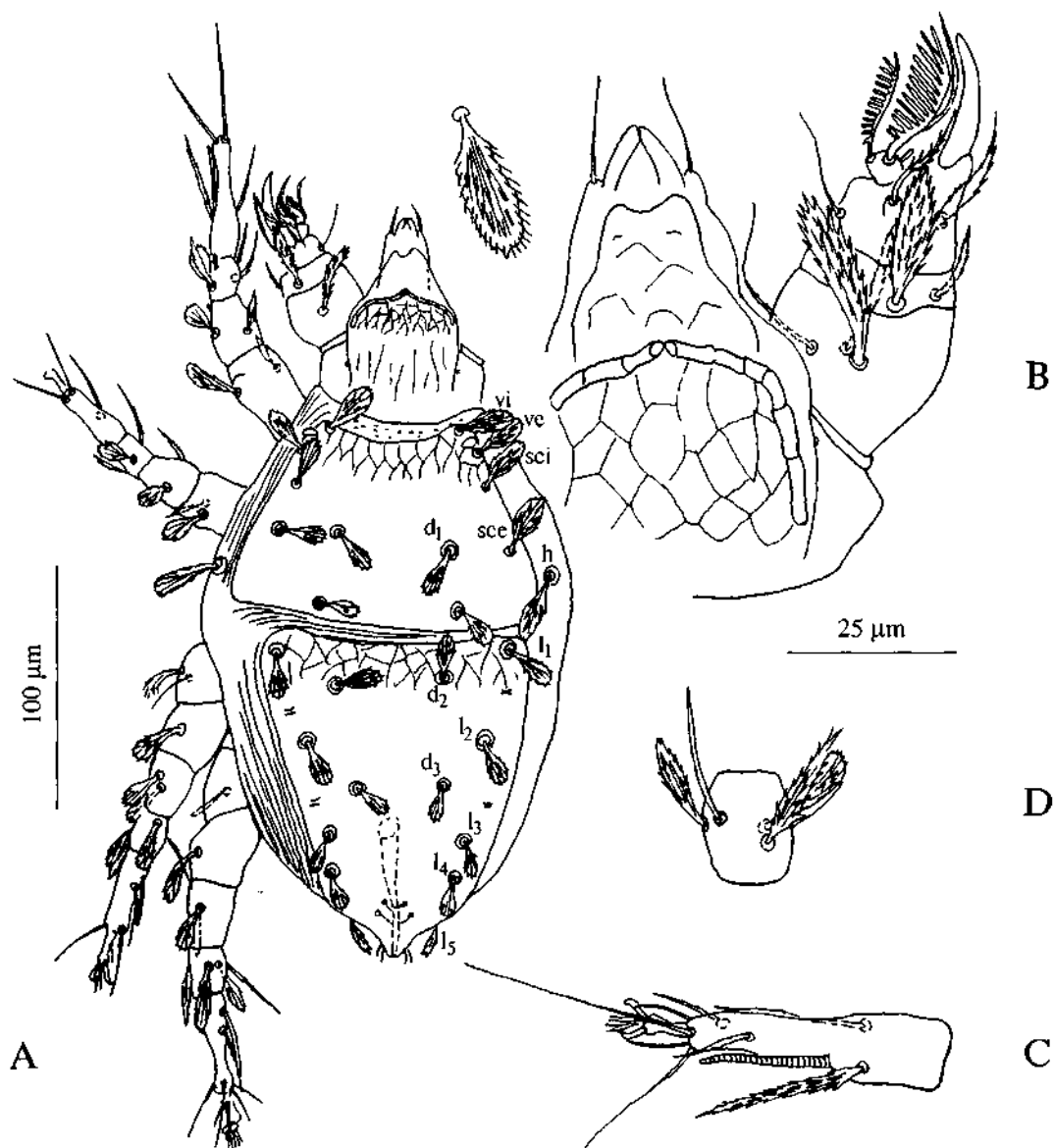


Fig. 8. *Ker bakeri*, male: A — dorsal view, B — gnathosoma in dorsal view, C — tarsus I in dorsal view, D — tibia I in ventral view, E — dorsal seta.

***Hylopecheyla bunguranensis* Fain, 1972**

**Female** (Fig. 10). **Gnathosoma** 110 long and 115 wide. Palpal claw with 7 teeth. Outer comb-like seta of palpal tarsus with 8–10 teeth. Inner comb-like seta of palpal tarsus with 5–6 teeth. Peritremes M-shaped with 11–13 pairs of links. **Idiosoma** 300 long and 240 wide. **Dorsum**: All setae hair-like, with few long tines. Propodosomal shield 130 long and 165 wide bearing setae *vi*, *ve*, *sci* and *sce*. Setae *h* situated off propodosomal shield. Hysterosomal shield 95 long and 100 wide, bearing setae *l2* and *l3*. Setae *l1*, *l4*, *l5* and *d5* situated off hysterosomal shield. Length of setae: *vi* 23, *ve* 18, *sci* 33, *sce* 17, *h* 65, *l1–l3* 25, *l4* 33, *l5* 80–100 and *d5* 50. **Venter**.

Anal setae 3 pairs — *a1* smooth, *a2* serrate, *a3* with few long tines. All other setae hair-like, smooth. **Legs**. Solenidion  $\omega 1$  and guard seta (*ft'*) subequal, about 3 times shorter than tarsus I. Chaetotaxy as in Fig. 10. Length of legs (excluding pretarsi): I 110, II 85, III 90 and IV 100.

**Material examined**. *H. bunguranensis* — male **holotype** from *Hylopetes everetti*, Bunguran Island, Natunas (IRSNB). Five females, 1 male and 7 nymphs from *Hylopetes sagitta*, Junghuhn, Java. Coll. F. Lukoschus.

*H. malayi* — female **holotype** and 5 female paratypes, *Tupaia glis*, Triangle Felda, Forest A, Pahang Jengka, Malaysia, 06.II.1979. Coll. M. Nadchatram (IRSNB).

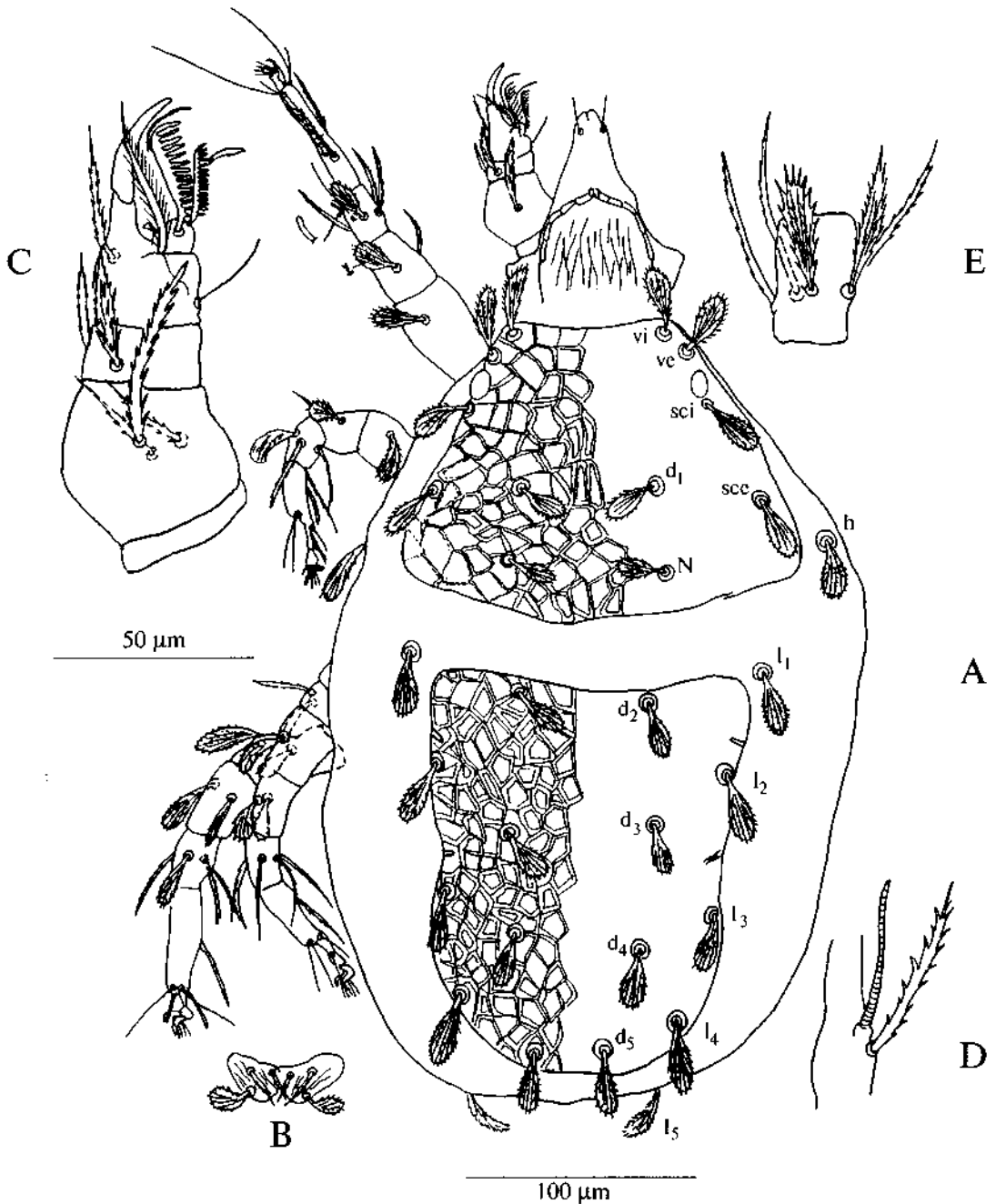


Fig. 9. *Ker afrotopicalis* sp.n., female: A — dorsal view, B — anal region, C — Palp in dorsal view, D — solenidion  $\omega_1$ , E — tibia I in dorsal view.

#### GENUS CHELETOPHYES OUDEMANS, 1914

Presently the genus includes 14 species originating from India, Malaysia and South America [Summers, Price, 1970; Fain et al., 1980; Klompen et al., 1984; Putatunda, Kapil, 1988; Ramaraju, Mohanasundaram, 1999]. All these mites live in association with carpenter bees of the subfamily Xylocopinae (Hymenoptera: Xylocopidae).

**Remarks.** (i) Seven species from the genus *Cheletophyes* i.e. *C. shendei*, *C. orientalis*, *C. deodicari*, *C. newtoni*, *C. rutneri*, *C. harnaji* and *C.*

*haryanaensis*, were described by Putatunda and Kapil [1999]. All these species were collected from the same locality (near Haryana Agricultural University, Hisar, Haryana, India) and from two host species (*Xylocopa fenestrata* and *X. pubescens*). In their descriptions the authors used only one specimen of each species. They used mainly variable characters to differentiate their species from the other species of the genus *Cheletophyes*. Besides, the figures of the species are not detailed. It is also worthy of noting that the type specimens were not available for our study. Seven species described by

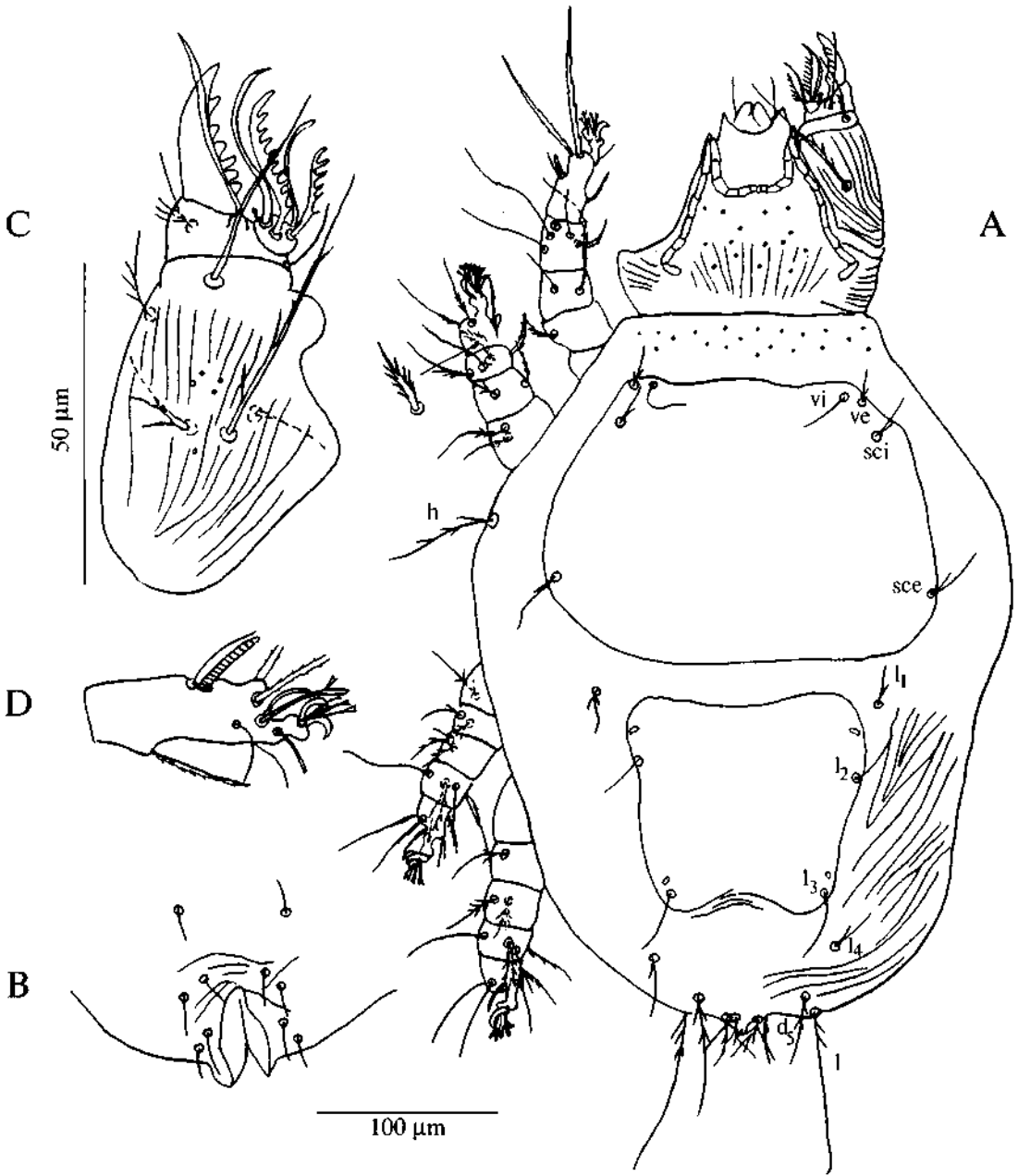


Fig. 10. *Hylopecheyla bunguranensis*, female: A — dorsal view, B — genital-anal region, C — palp in dorsal view, D — tarsus I in lateral view.

these authors resemble *C. eckerti* Summers et Price, 1970 described from India. We suggest that seven species of these authors should be considered as the species *inquirendae* within the genus *Cheletophyes*.

(ii) The species *Cheletophyes xylocopae* Ramaraju et Mohanasundaram, 1999 was described from *Xylocopa* sp. from Nadu, India [Ramaraju, Mohanasundaram, 1999]. According to the authors this species differs from *C. indiacus* Smiley et Whitaker, 1981 by the following characters: propodosomal shield slightly wider, different number of teeth on palpal comb-like setae and different shape

of the setae of genua I, II and tibiae II. Actually, the width of the propodosomal shield and the number of teeth on comb-like setae are similar in both species. Since the structure of the leg setae are stable within the genus *Cheletophyes*, it is possible, that the small differences observed in *C. xylocopae* should be imputed to inaccuracies in the figures given by these authors. We consider, therefore, *C. xylocopae* *syn. n.* as a junior synonym of *C. indiacus*.

Hereinafter we provide a redescription of the lectotype female of *C. vitzthumi* Oudemans, 1914, a redescription of the male (the first description)



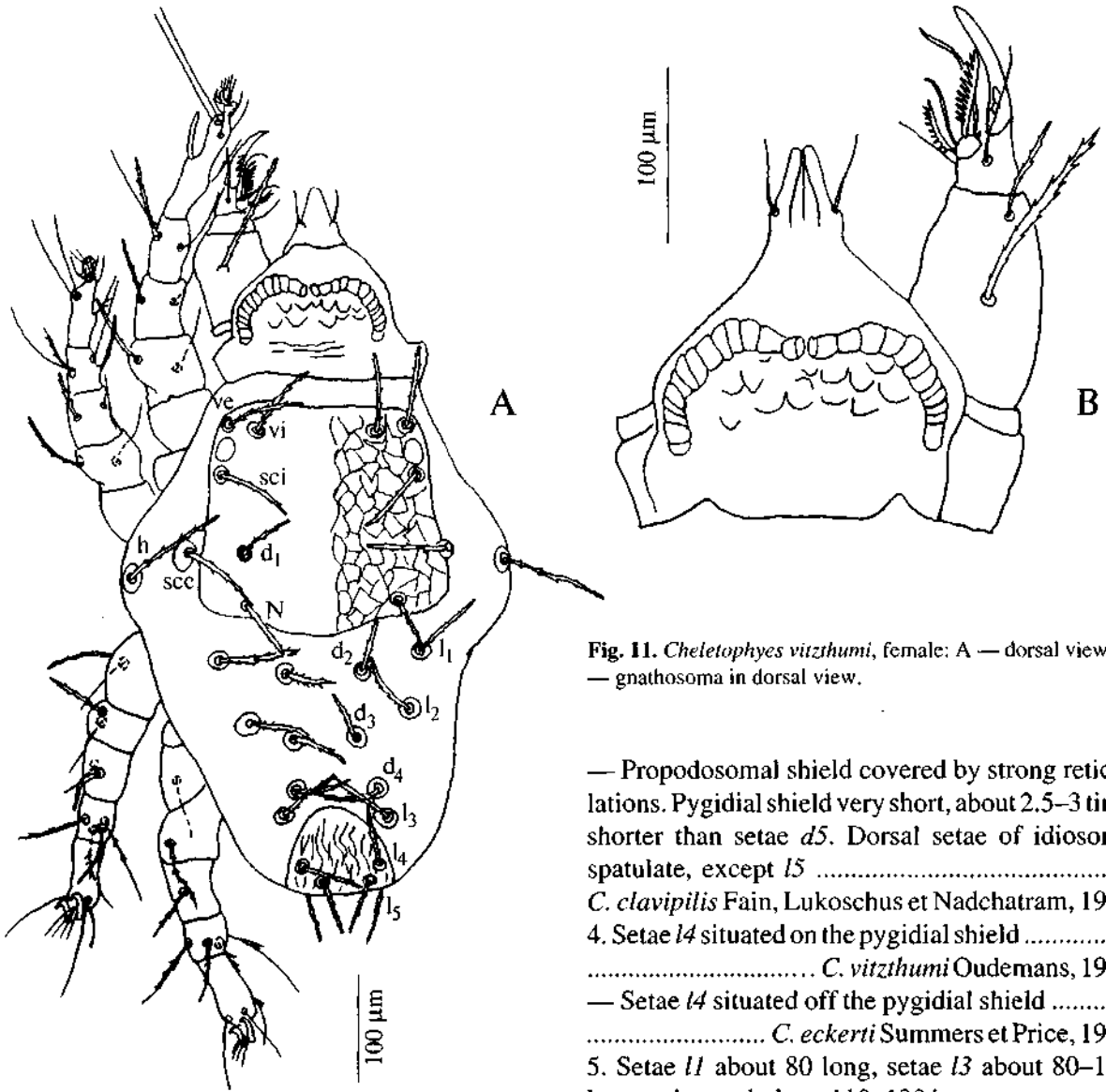


Fig. 11. *Cheletophyes vitzthumi*, female: A — dorsal view, B — gnathosoma in dorsal view.

and the female of *C. eckerti* and a description of *C. vespae* sp.n.

**KEY TO FEMALES OF THE GENUS CHELETOPHYES**

1. Propodosomal shield with 1 pair of neutrichial setae. Pygidial shield with setae. Palpal claw with 3–2 teeth ..... 2
- Propodosomal shield with 2 pairs of neutrichial setae. Pygidial shield very small, without setae. Palpal claw with 4 teeth ..... *C. panamensis* Klompen, Mendez et Lukoschus, 1984
2. Propodosomal shield without reticulations ..... 5
- Propodosomal shield with reticulations ..... 3
3. Propodosomal shield covered by fine reticulations. Pygidial shield well developed, 1.2 time shorter than setae *d*<sub>5</sub>. Dorsal setae of idiosoma not spatulate ..... 4

- Propodosomal shield covered by strong reticulations. Pygidial shield very short, about 2.5–3 time shorter than setae *d*<sub>5</sub>. Dorsal setae of idiosoma spatulate, except *l*<sub>5</sub> ..... *C. clavipilis* Fain, Lukoschus et Nadchatram, 1980
- 4. Setae *l*<sub>4</sub> situated on the pygidial shield ..... *C. vitzthumi* Oudemans, 1914
- Setae *l*<sub>4</sub> situated off the pygidial shield ..... *C. eckerti* Summers et Price, 1970
- 5. Setae *l*<sub>1</sub> about 80 long, setae *l*<sub>3</sub> about 80–100 long and setae *h* about 110–130 long ..... 6
- Setae *l*<sub>1</sub> about 58 long, setae *l*<sub>3</sub> about 50 long and setae *h* about 85 long ..... *C. vespae* sp.n.
- 6. Peritremes with 14–17 segments. Propodosomal shield 1.3 time wider than long ..... *C. apicola* Fain, Lukoschus et Nadchatram, 1980
- Peritremes with 11–12 segments. Propodosomal shield 1.1–1.2 times longer than wide ..... *C. indicus* Smiley et Whitaker, 1981

***Cheletophyes vitzthumi* Oudemans, 1914**

**Female** (Fig. 11). **Gnathosoma** 185 long and 165 wide. Peritremes with 14 segments. Outer comb-like seta of palpal tarsus with 10 tines, inner comb-like seta with 9 tines. Palpal claw with 3 teeth. Palpal femur 75 long and 65 wide. Dorsal seta of the palpal femur 95 long. Rostral shield poorly ornamented in its anterior half. **Idiosoma** 425 long and 295 wide. Both dorsal shields are covered by

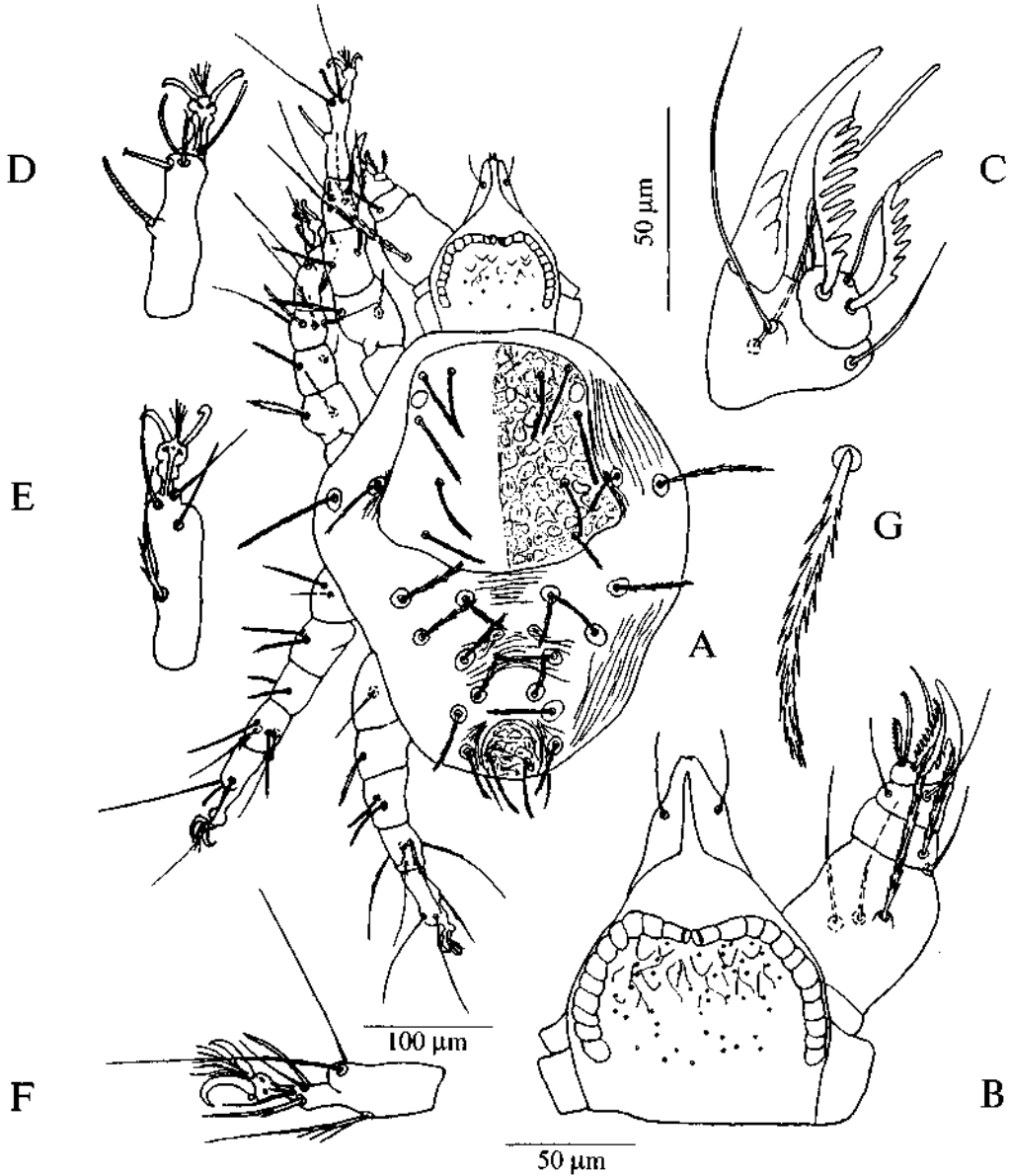


Fig. 12. *Cheletophyes eckerti*, female: A — dorsal view, B — gnathosoma in dorsal view, C — palpal tarsus and tibia I in dorsal view, D — tarsus I in dorsal view, E — tarsus II in ventral view, F — tarsus IV in lateral view, G — dorsal seta.

fine reticulations. Propodosomal shield 200 long and 210 wide. It bears setae *vi*, *ve*, *sci*, *dl* and one pair of neotrichial setae (*N*). Pygidial shield 70 long and 85 wide, it bears setae *d5* and *l4*. All dorsal setae are barbed, not spatulate. Length of dorsal setae about 50–65, *h* 100. Leg chaetotaxy as in Fig. 11.

***Cheletophyes eckerti* Summers et Price, 1970**

**Female** (Fig. 12). **Gnathosoma** 150 long and 125 wide. Peritremes with 11 segments. Outer comb-like seta of palpal tarsus with 9 tines, inner comb-like seta with 6 tines. Palpal claw with 3 teeth. Palpal femur 58 long and 50 wide. Dorsal seta of the palpal femur 90 long. Rostral shield is poorly ornamented in its anterior half. **Idiosoma** 365 long and 305 wide. Both dorsal shields are covered by

fine reticulations. Propodosomal shield 165 long and 180 wide, it bears setae *vi*, *ve*, *sci*, *dl* and one pair of neotrichial setae (*N*). Pygidial shield 40 long and 35 wide, it bears only setae *d5*. All dorsal setae are barbed, not spatulate. Length of setae: *vi*, *ve*, *sci*, *sce*, *d5* and *l1–l3* 50–60, *h* 90, *dl*, *N*, *d3*, *d4* and *l5* 33–40, *l4* 45. Leg chaetotaxy as in Fig. 12.

**Male** (Fig. 13). **Gnathosoma** 165 long and 125 wide. Peritremes with 11 segments. Outer comb-like seta of palpal tarsus with 6 tines, inner comb-like seta with 3 tines. Palpal claw with 1 tooth. Palpal femur 85 long and 40 wide. Dorsal seta of the palpal femur 65 long. Ornamentation of rostral shield as in female. **Idiosoma** 325 long and 250 wide. Propodosomal shield 135 long and 125 wide, covered by fine longitudinal striations in

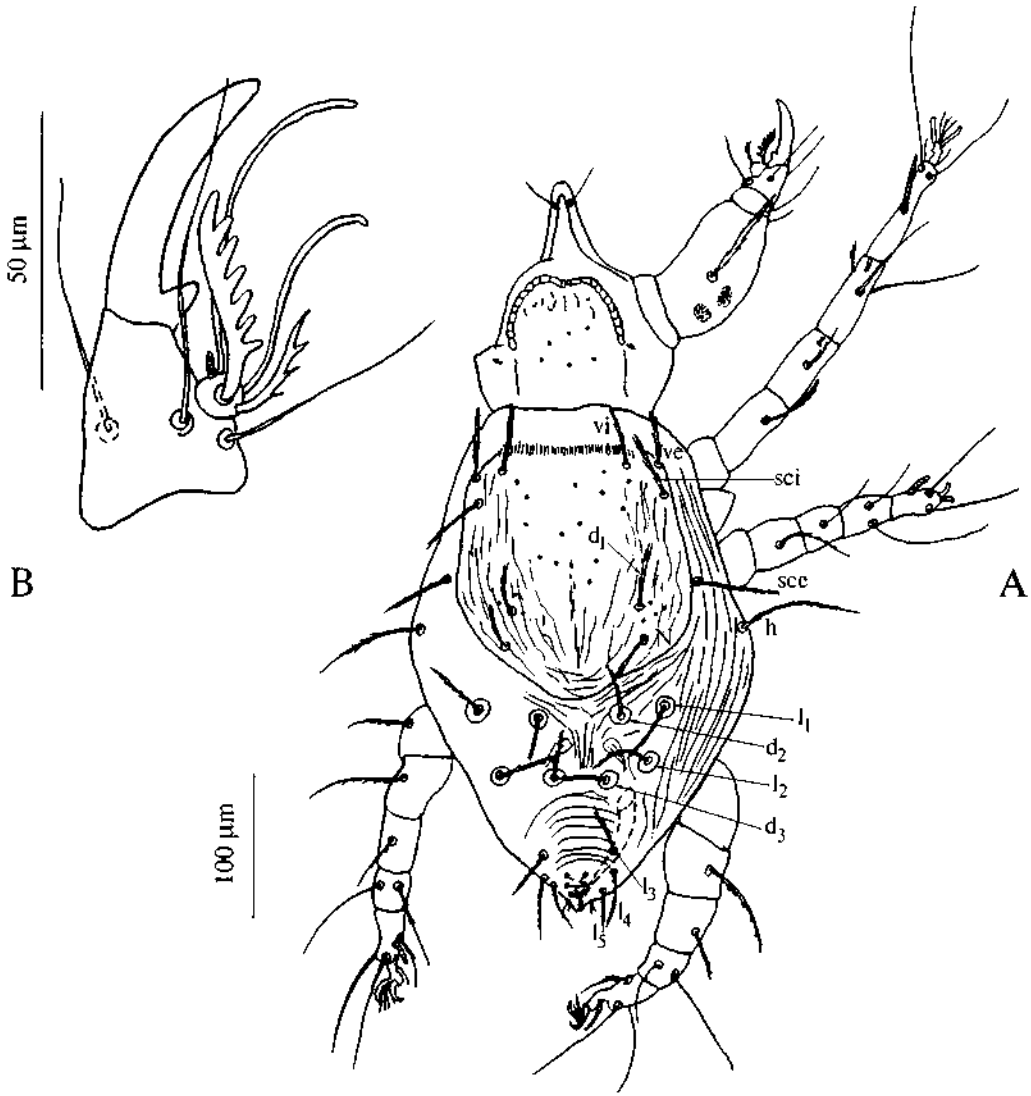


Fig. 13. *Cheletophyes eckerti*, male: A — dorsal view, B — palp tibia and tarsus in dorsal view.

lateral parts; it bears setae *vi*, *ve*, *sci*, *d1* and one pair of neotrichial setae (*N*). Length of setae: *vi*, *ve*, *sce*, *N*, *l1*, *l2*, *l4* and *l5* 32–40, *h* 65, *d1*–*d3* and *l3* 25–30. Tarsi IV with a ventral solenidion.

***Cheletophyes vespae* sp.n.**

**Female** (Fig. 14). **Gnathosoma** 150 long and 125 wide. Peritremes with 11 segments. Outer comb-like seta of palpal tarsus with 9 tines, inner comb-like seta with 6 tines. Palpal claw with 3 teeth. Palpal femur 58 long and 50 wide. Dorsal seta of the palpal femur 90 long. Rostral shield is poorly ornamented in the anterior half. **Idiosoma** 365 long and 305 wide. Both dorsal shields without reticulations. Propodosomal shield 165 long and 180 wide. It bears setae *vi*, *ve*, *sci*, *d1* and one pair of neotrichial setae (*N*). Pygidial shield 40 long and 35 wide. It bears only setae *d5*. All dorsal setae are barbed, not spatulate. Length of setae: *vi*, *ve*, *sci*, *sce*, *d5* and *l1*–

*l3* 50–60, *h* 90, *d1*, *N*, *d3*, *d4* and *l5* 33–40, *l4* 45. **Leg chaetotaxy** as in Fig. 14.

**Differential diagnosis.** This new species is closest to *C. clavipilis*. It is distinguished from this species by the following characters: in the female of *C. vespae* sp.n., the propodosomal shield is covered by fine reticulations, the pygidial shield is well developed and 1.2 time shorter than the setae *d5*, the dorsal setae of idiosoma are not spatulate. In the female of *C. clavipilis*, the propodosomal shield is covered by strong reticulations, the pygidial shield is very short, about 2.5–3 time shorter than setae *d5* and the dorsal setae of idiosoma are spatulate, except *l5*.

**Material examined.** *C. vitzthumi* — female **lectotype** from *Xylocopa caffra*, Cape Prov., S. Africa, 05.1912. Coll. Vitzthum (NMNH).

*C. eckerti* — one female from *Mesotrichia imitatortera*, Dundo, Angola, 11.II.1973. Coll.

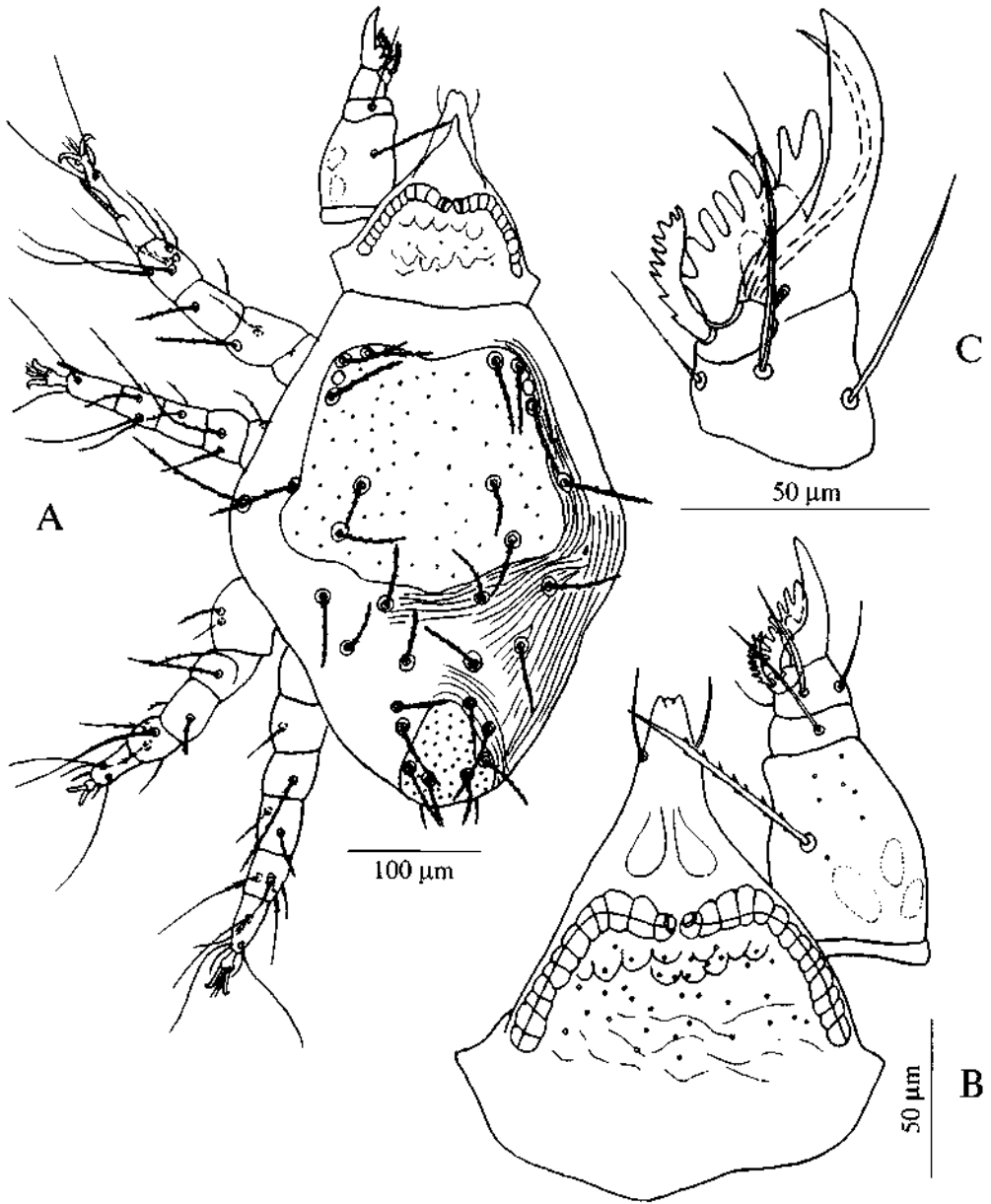


Fig. 14. *Cheletophyes vespae* sp.n., female: A — dorsal view, B — gnathosoma in dorsal view, C — palp tibia and tarsus in dorsal view.

Machado. One female and 2 male from “bees”, Stanleyville, Kisangani, Congo, 19.IV.1948. Coll. Mouchet. One female from *Bembix ugandensis*, Bambesa, Congo, 09.V.1938. Coll. P. Henrard.

*C. vespae* — female **holotype** and 1 female paratype, *Vespa tropica*, KG. Duson, Tampin, N. Sembilan, Malaysia, 13.VIII.1979. Coll. S. Ismail. **Holotype** in the IRSNB.

*C. apicola* — twenty female paratypes and 4 male paratypes from the nest of *Xylocopa latipes*, Kuala Pilah, Negri Sembilan, Malaysia. Coll. M.Nadchatram. Nine females from the same host species, Buitenzorg, Java. Coll. S.A. Prince Leopold. One female from the same host species, Palembang, Sumatra, 14.IV.1929. Coll. S.A. Prince

Leopold. Five females from *Xylocopa pentachroma*; Tondano Menado, Celebs, 26.II.1929. Coll. S.A.Prince Leopold. One female from *Rattus whiteheadi*, Subang Forest, Selangor, 10.V.1979.

*C. clavipilis* — eight female paratypes and 15 male paratypes from the nest of *Xylocopa latipes*, Kuala Pilah, Negri Sembilan, Malaysia. Coll. M. Nadchatram.

**TRIBE ACAROPSELLINI VOLGIN, 1969**

**GENUS ACAROPSELLA VOLGIN, 1969**

Presently this genus includes nine species [Gerson et al., 1999].

**Remarks.** (i) According to Volgin [1969], the species *Acaropsella aegyptiaca* (Wafa et Soliman,

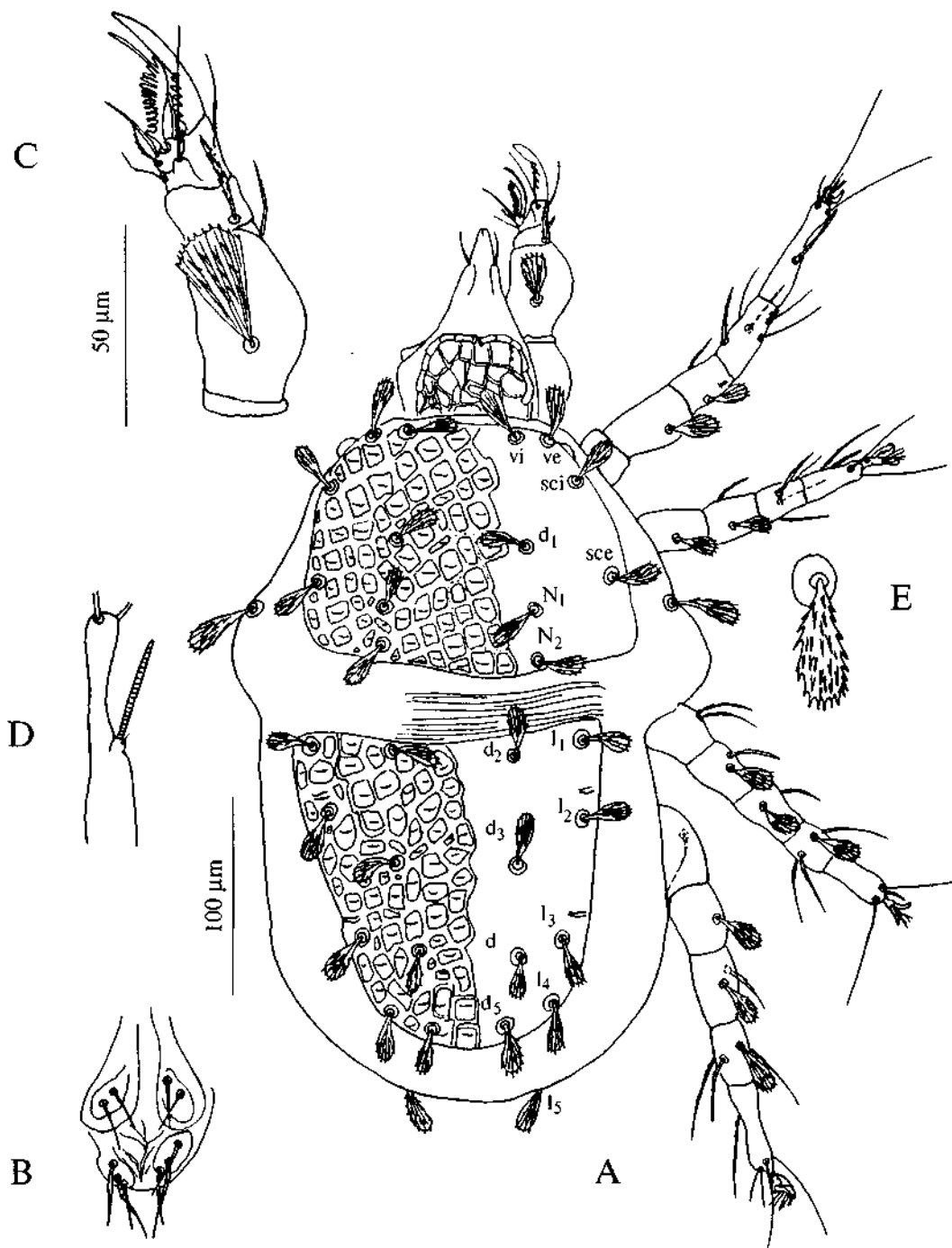


Fig. 15. *Acaropsella kinshasensis*, female: A — dorsal view, B — genito-anal region, C — palp in dorsal view, D — solenidion  $\omega_1$ , E — dorsal seta.

1968) is not separable from *A. volgini* (Gerson, 1967). A differential diagnosis of this species was not given in the original description [Wafa, Soliman, 1968]. We consider therefore *A. aegyptiaca* **syn. n.** as a junior synonym of *A. volgini*.

(ii) The species *Acaropsella filipina* Corpuz-Raros, 1988 and *A. konoi* Tseng, 1977 are not different from *A. kinshasensis* Fain, 1972. All the characters of these species, described by Corpuz-Raros [1988] and Tseng [1977] as “unique”, i.e. the retic-

ulate pattern on the stylophore and on the dorsal shields and also the fan-like dorsal seta of the palpal femur, are also present in *A. kinshasensis*. Therefore we consider *A. filipina* **syn. n.** and *A. konoi* **syn. n.** as junior synonyms of *A. kinshasensis*.

(iii) According to the original description [Xia, Zhu, 1997: figs. 4–7, p. 6], *Acaropsella nanchangensis* Xia et Zhu, 1997 bears five setae on all the tibiae. However, the tibiae II–IV bear not more than four setae in all the other cheyletids. We think that *in fact*

the tibiae in this species have only four setae, and that the additional seta should be imputed to inaccuracies in the figures of these authors. This species differs distinctly from the other representatives of this genus by the number of dorsal hysterosomal setae. Actually, the idiosomal chaetotaxy of this species corresponds more closely that of the genus *Acaropsellina*, and therefore we transfer *A. nanchangensis* into the genus *Acaropsellina* (*Acaropsellina nanchangensis* **comb. n.**).

Hereinafter we give a new description and the first figures of *A. kinshasensis*.

**KEY TO FEMALES OF THE GENUS ACAROPSELLA**

- 1. Rostral shield and idiosomal shields without network pattern ..... 2
- Rostral shield and idiosomal shields with network pattern ..... *A. kinshasensis* Fain, 1972
- 2. Setae *d2* and *l1* situated on hysterosomal shield ..... 3
- Setae *d2* and *l1* situated off hysterosomal shield ..... *A. schmidtmanni* Price, 1972
- 3. All setae on tibiae I–IV hair-like ..... 4
- One seta on tibiae I–II narrow, lanceolate and two seta on tibiae III–IV lanceolate ..... *A. rohdendorfi* (Volgin, 1962)
- 4. Dorsal seta of genu I–II narrow, fan-like ..... *A. volgini* (Gerson, 1967)
- Dorsal seta of genu I–II hair-like ..... *A. kulagini* (Rohdendorf, 1940)

***Acaropsella kinshasensis* Fain, 1972**

**Female (holotype, Fig. 15).** **Gnathosoma** 85 long and 90 wide. Palpal femur 40 long and 25 wide. Dorsal seta of palpal femur fan-like, 40 long and 13 wide. Palpal claw with 5–6 teeth. Peritremes arch-like, consisting of 5–6 pairs of links. Rostral shield covered by a well-developed network pattern. **Idiosoma** 330 long and 210 wide. All dorsal setae fan-like, lateral setae about 26 long and 9 wide, median setae about 22 long and 6 wide. Dorsal shields covered by a well-developed network pattern. Propodosomal shield 130 long and 175 wide, bearing setae *vi*, *ve*, *sci*, *sce*, *d1* and 2 pairs of median neotrichial setae (*N*). Setae *h* situated off propodosomal shield. Hysterosomal shield 165 long and 155 wide, bearing setae *d2–d5* and *l1–l4*. Setae *l5* situated off hysterosomal shield. **Legs.** Solenidion  $\omega 1$  25 long,  $\omega\omega 2$  11 long. All setae of tibia I hair-like; tibia II with 3 hair-like setae and 1 thickened seta; tibiae III–IV with 1 fan-like seta and

3 hair-like setae. Genu I–IV with 1 dorsal fan-like seta and 1 lateral hair-like seta. Dorsal seta of femur I–IV fan-like.

**Material examined.** *A. kinshasensis* — female **holotype** and 1 female paratype from manioc, Kinshasa, Zaire, II.1971. Coll. A. Fain. **Holotype** in the IRSNB.

*A. rohdendorfi* — female **holotype** from an apple tree, near Chisinau, Moldavia (ZISP).

*A. volgini* — female paratype from pine needle litter, Rehovot, Israel, 25. X. 1965. Coll. U. Gerson.

**GENUS NEOACAROPSIS VOLGIN, 1962**

Presently the genus includes two species [Corpuz-Raros, 1972].

**Remark.** The species *Neoacaropsis levis* Corpuz-Raros, 1972 presents all the characters of the genus *Acaropsellina*, i.e. four setae (excluding solenidion) on the tibia I, the tarsal claws without basal angles, the dorsal shields are smooth and without a granulated ornamentation, the anal setae *a3* are hair-like, etc. Actually, in the type species of the genus *Neoacaropsis* (*N. granulatus* Volgin, 1962), the tarsal claws have basal angles, the dorsal shields are covered by granules, the anal setae *a3* are lanceolate. It seems, therefore, reasonable to transfer this species into the genus *Acaropsellina* (*Acaropsellina levis* **comb. n.**).

**Material examined.** *N. granulatus* — female **holotype**, Sochi, Russia, 7.IV.1960. Coll. N. Bregotova (ZISP).

**GENUS CHELACAROPSIS BAKER, 1949**

Fain and Bochkov [2001] synonymized the monotypical genus *Cheletonata* with *Chelacaropsis* and gave a more complete description and the first figures of *Chelacaropsis rwandana* Fain, 1972 and *C. apus* Fain, 1972. Presently the genus includes five species. Hereinafter we provide a description of a new species, *Chelacaropsis kenyensis* **sp.n.**, and the first description of the male of *C. terrestris* Corpuz-Raros et Sotto, 1977.

**KEY TO FEMALES OF THE GENUS CHELACAROPSIS**

- 1. Hysterosomal shield present ..... 2
- Hysterosomal shield absent ..... 4
- 2. Peritremes M-shaped ..... 3
- Peritremes in an inverted U ..... *C. apicola* Fain, 1972
- 3. Setae *d2* situated slightly posteriad to *l1*; setae *d3* situated posteriad to *l2*; setae *l2* situated at level of the middle of hysterosomal shield ..... *C. kenyensis* **sp.n.**

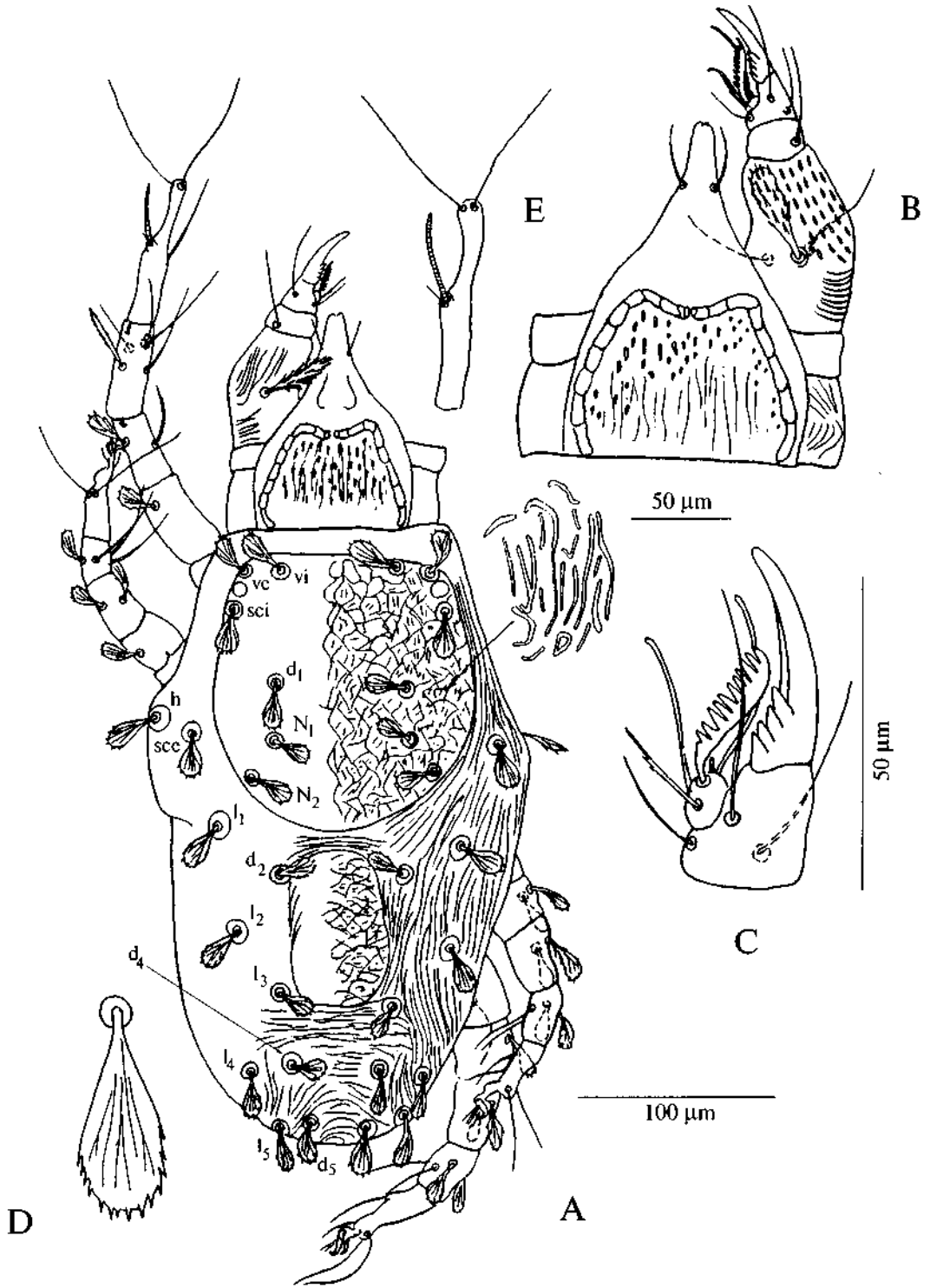


Fig. 16. *Chelacaropsis kenyensis* sp.n., female: A — dorsal view, B — gnathosoma in dorsal view, C — palpal tibia and tarsus in dorsal view, D — dorsal seta, E — tarsus I in dorsal view.

- |   |  |
|---|--|
| — Setae <i>d2</i> situated slightly anterior to <i>l1</i> ; setae <i>d3</i> situated at level of <i>l2</i> ; setae <i>l2</i> situated at level of posterior margin of hysterosomal shield ..... | <i>C. milesi</i> (Womersley, 1955)               |
| 4. Setae <i>h</i> hair-like .....   | <i>C. moorei</i> Baker, 1949                     |
| — Setae <i>h</i> fan-like .....   | 5  |
| 5. Pygidial shield present .....  | <i>C. rwandana</i> Fain, 1972                    |
| — Pygidial shield absent .....  | 6  |
| 6. Dorsal seta of palpal femur is fan-like. Palpal claw with 6 teeth. Setae <i>d4</i> situated posterior to <i>l3</i> .....   | <i>C. reticulata</i> Soliman, 1975               |
| — Dorsal seta of palpal femur is hair-like. Palpal claw with 3 teeth. Setae <i>d4</i> situated anterior to <i>l3</i> ...  | <i>C. terrestris</i> Corpuz-Raros et Sotto, 1977 |

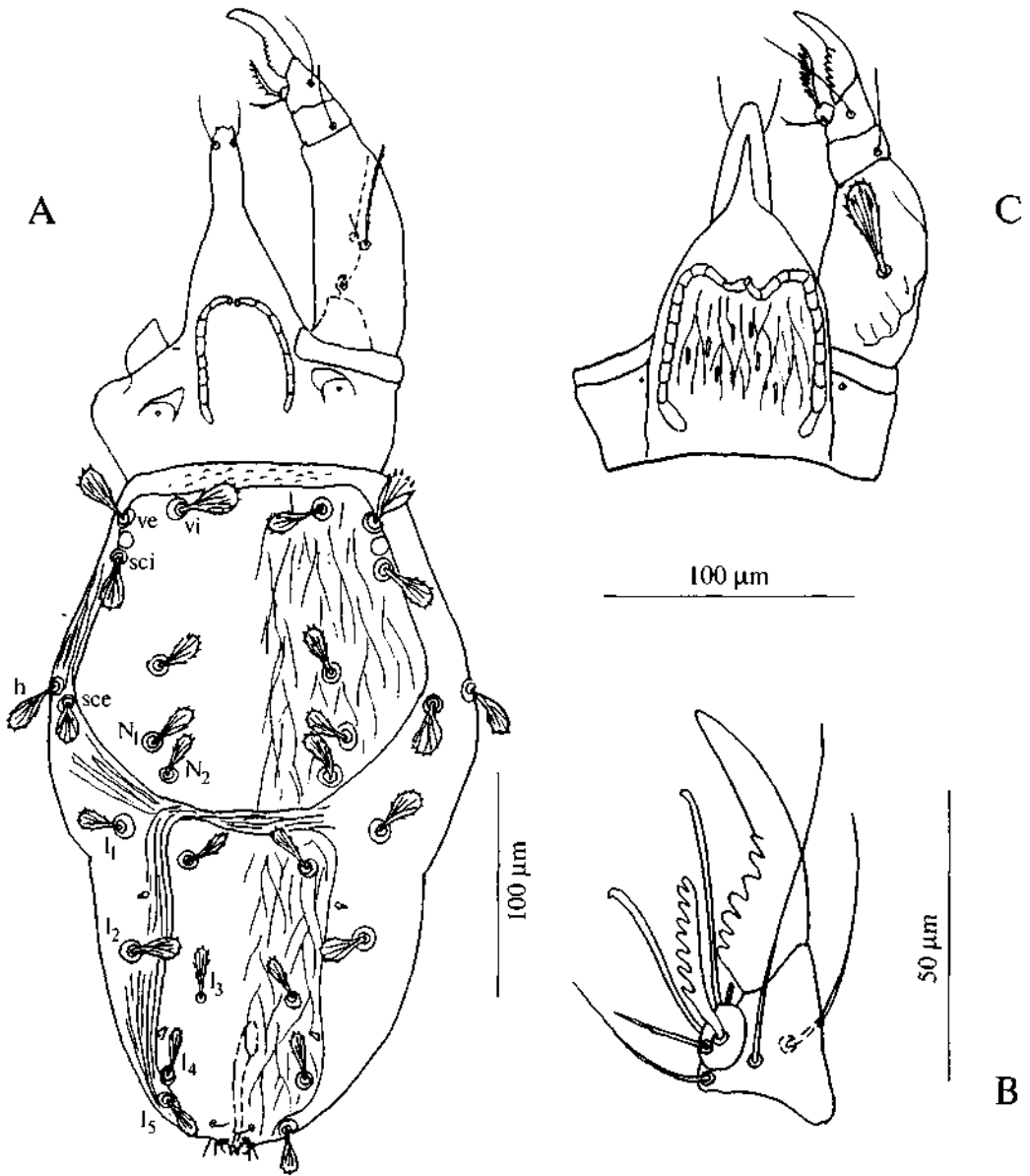


Fig. 17. *Chelacaropsis kenyensis* sp.n., heteromorphic male: A — dorsal view, B — tibia and tarsus in dorsal view; homeomorphic male: C — gnathosoma in dorsal view.

***Chelacaropsis kenyensis* sp.n.**

**Female (holotype, Fig. 16).** **Gnathosoma** 140 long and 120 wide. Palpal femur 65 long and 37 wide. Dorsal setae of palpal femur fan-like; dorsal setae of palpal tibia hair-like. Palpal claws with 4 teeth. Palpal tarsus bearing dorsally an outer comb-like seta with 10 tines and an inner seta slightly serrate. Peritremes M-shaped, with 8–10 links at each side, the most posterior link is slightly curved inside. Rostral shield covered with small granules. **Idiosoma** 345 (340–415 in 8 paratypes) long and 105 wide. All dorsal setae, including *h*, fan-like, similar in shape, 33 long and 13 wide. Propodosomal shield 145 long and 150 wide, bearing a well-

developed network pattern and granules. Margins of the shield clearly separated from striated cuticle. Hysterosomal shield 85 long and 50 wide, without setae, covered with the same pattern as propodosomal shield. The posterior margin of the hysterosomal shield situated behind the level of setae *I2*. The dorsum bears 17 pairs of fan-like setae of which 15 pairs represent the basic number of setae and 2 pairs of neotrichials (setae *N*), the latter situated on propodosomal shield. Cuticular striations as in the Fig. 16. Setae *I1* situated slightly anterior (15 µm) to *d2*, setae *I2* situated 33 anterior to *d3*, setae *I3* and *d4* situated almost at the same level.



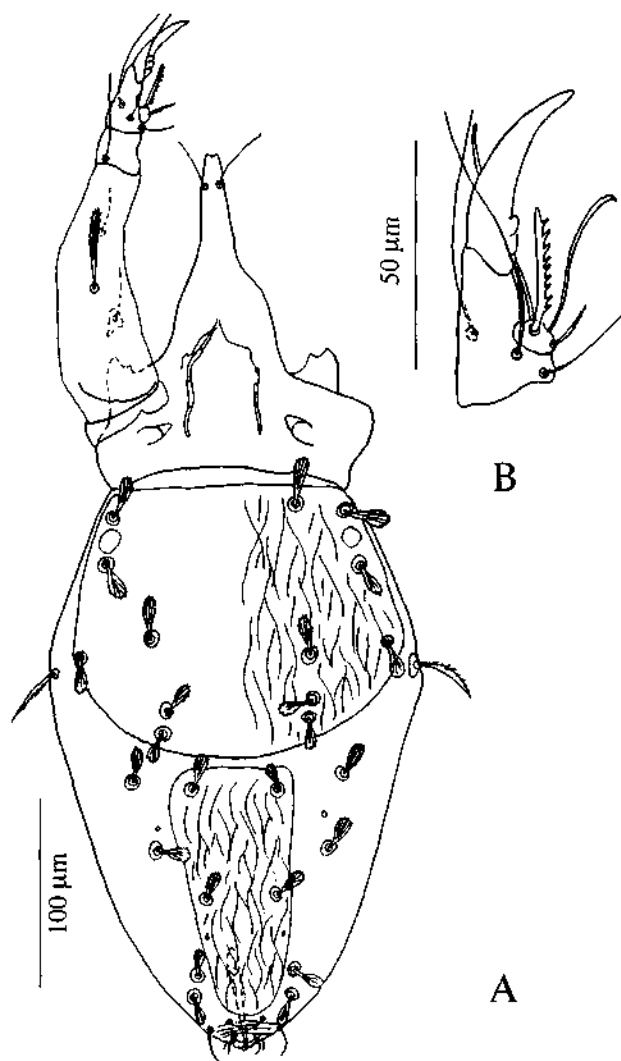


Fig. 18. *Chelacaropsis terrestris*, male: A — dorsal view, B — palpal tibia and tarsus.

**Male** (heteromorphic, Fig. 17A, B). **Gnathosoma** 160 long in midline and 125 wide. Palpal femur 75 long and 45 wide, inner ventral seta of palpal femur situated on a small protrusion, dorsal seta fan-like. Outer dorsal seta of palpal tarsus with 7 short tines, inner dorsal seta almost smooth. Palpal claws with 7 teeth. Peritremes with 6–8 links. **Idiosoma** 290 long and 90 wide. Propodosomal shield 140 long. All dorsal setae, excluding *l5*, fan-like. Setae *sce* situated off propodosomal shield. Hysterosomal shield 135 long and 55 wide, bearing setae *d2*, *d3* and *l3*. Both shields with a pattern similar to that of the female. Length of setae: *vi*, *ve*, *sci*, *sce*, *h*, *l1* and *l2* 28, *d1–d3* and *N* 25, *l4* 23 and *l5* 20. Penis 58 long. **Legs** III–IV without solenidia.

**Male** (homeomorphic, Fig. 17C). **Gnathosoma** similar to that of the female, 135 long and 105 wide. Palpal femur 58 long and 33 wide. **Idiosoma** as in heteromorphic male.

**Differential diagnosis.** This new species is most closely related to *C. milesi* and is distinguishable from the latter by the following characters: in the female of *C. kenyensis* sp.n., the setae *d2* are situated slightly posteriad to *l1*, the setae *d3* are situated posteriad to *l2* and the setae *l2* are situated at the level of the middle of the hysterosomal shield. In the female of *C. milesi* the setae *d2* are situated slightly anteriad to *l1*, the setae *d3* at level to *l2* and the setae *l2* at the level of the posterior margin of the hysterosomal shield.

***Chelacaropsis terrestris* Corpuz-Raros et Sotto, 1977**

**Male** (heteromorphic, Fig. 18). **Gnathosoma** 190 long in midline and 135 wide. Palpal femur 124 long and 42 wide, inner ventral seta of palpal femur situated on a small protrusion, dorsal seta narrow, fan-like. Outer dorsal seta of palpal tarsus with 9 short tines, inner dorsal seta almost smooth. Palpal claws with 3 teeth. **Idiosoma** 300 long and 185 wide. Propodosomal shield 150 long. All dorsal setae, excluding *h* and *l5*, fan-like. Setae *sce* situated on propodosomal shield. Hysterosomal shield 116 long and 55 wide, bearing setae *d2* and *d3*. Setae *l3* situated off hysterosomal shield. Both shields with a reticulation pattern. Setae *vi*, *ve*, *sci*, *sce*, *d1–d3*, *N1*, *N2*, *l1* and *l2* about 19 long and 8 wide, *l3* and *l4* 15 long and 6 wide, *l5* 14 long, serrate hair-like, *h* 33 long thickened and barbed. Penis 50 long. **Tarsi** III–IV each with ventral solenidia.

**Material examined.** *C. kenyensis* — female **holotype**, 8 female paratypes and 11 male paratypes, Kimakia cave, Hunter's Lodg, Kiboko, 140 km SE Nairobi, Kenya, 27.IX.1975. Coll. P. Strinati and V. Aellen. **Holotype** in the IRSNB. Female, «grotte de Similani», 10 km S. Mombasa, Kenya, 29.IX.1975 Coll. P. Strinati and V. Aellen.

*C. apicola* — female **holotype**, 27 female and 20 male paratypes from the nest of *Apus affinis*, Butare, Rwanda, 16.IV.1968. Coll. F. Aurelien (IRSNB). Six females and 3 males from the guano of *Tadarida* sp., Rwanda, 14.VI.1968. Coll. Biemans. Ten females from the guano of molossid bats, Bujumbura, Burundi, 25.III.1978.

*C. rwandana* — female **holotype** and female paratype from the nest of *Spermestes cucullatus*, Butare, Rwanda, 27.I.1970. Coll. F. Aurelien (MRAC). Six females and 2 males from the nest of *Textor xanthopus*, Rwanda, Gisagara, 9.III.1968. Coll. A. Fain. Nineteen females and 10 males from the nests of *Grammomys surdaster*, Rwanda, Rubo-

na, 10.IV.1968. Coll. A. Fain). Two females and 2 males from the nest of *Aethomys* sp., Rwanda, Musha, 30.III.1968. Coll. A. Fain.

*C. moorei* — two females and 2 males from the house dust, Kharkov, Ukraine, 22.X.1992. Coll. A. Khaustov.

*C. terrestris* — four females, Kuala Pilah, Negeri Sembilan, Malaysia, 16.I.1979. Coll. M. Nadchatram. Eleven females and 3 males from the nest of *Passer montanus malaccensis*, Kuala Lumpur, 1.V.1979. Coll. F. Lukoschus.

#### TRIBE CHEYLETIINI VOLGIN, 1969

#### GENUS NEOEUCHEYLA RADFORD, 1950

Presently the genus includes seven species [Bochkov, Mironov, 1997; Fain, Ardeshir, 2000].

**Remarks.** (i) The species *Neoeucheyla iranica* Fain et Ardeshir, 2000 was described from a single female in Iran [Fain and Ardeshir, 2000]. This species presents a unique combination of characters and differs from all the other species of this genus. Therefore the examination of new material is needed before a more precise position within the family Cheyletidae could be assigned to this species.

(ii) The species *Neoeucheyla dua* Corpuz-Raros, 1999 and *N. maysa* Corpuz-Raros, 1999 possess all the characters of the genus *Cunliffella*, i.e. numerous teeth of the palpal claws, rostral shield without lateral teeth and etc. Therefore these species are placed here in the genus *Cunliffella*.

(iii) The species *Neoeucheyla macrocorneus* Soliman, 1975 and *N. ploceus* Gupta et Paul, 1992 are inadequately described. Their types were not available for our study. Therefore, here we consider these two species as the species *inquirendae*.

#### KEY TO FEMALES OF THE GENUS NEOEUCHEYLA

1. Tarsal claws with one tooth ..... 2
- Tarsal claws with several teeth .....  
..... *N. iranica* Fain et Ardeshir, 2000
2. Dorsum with 7 pairs of median fan-like setae,  
these setae similar in shape to lateral setae .....  
..... *N. minuta* Barilo, 1985
- Dorsum with 15 pairs of median palmate setae  
dissimilar in shape to lateral setae .....  
..... *N. loricata* Berlese, 1913

**Material examined.** *N. iranica* — female holotype, Karadj, near Tehran, Iran; 35° 45'N, 50° 50' E; alt. 1312 m, VI.1998. Coll. F. Ardeshir (IRSNB).

#### GENUS CUNLIFFELLA VOLGIN, 1969

Presently the genus includes seven species [Bochkov, Mironov, 1997].

**Remarks.** (i) Two species *C. dua* comb. n. and *C. maysa* comb. n., previously described in the genus *Neoeucheyla* by Corpuz-Raros [1998], are transferred here into the genus *Cunliffella*.

(ii) The species *Cunliffella ornata* (Wafa et Soliman, 1968) is very similar to *C. mumai* (Volgin, 1969). It differs from this species only by the absence of setae *d5*. These setae are present in the other species of the genus *Cunliffella*. They often are covered by setae *l5* and are difficult to see.

(iii) According to Volgin [1969], the female of *Cunliffella tuberculicoxa* (Volgin, 1964) differs from *C. whartoni* (Baker, 1949) by the position of vesicular chambers and the ratio of the propodosomal and hysterosomal shields. However, after the redescription of the holotype of *C. whartoni* by Summers and Price [1970] it appears clearly that the position of the vesicular chambers does not differ in these species. A re-examination of the specimens from the type series of *C. tuberculicoxa* has shown that the length ratio of the propodosomal and the hysterosomal shields can vary. We consider therefore, *C. tuberculicoxa* syn. n. as a junior synonym of *C. whartoni*.

#### KEY TO FEMALES OF THE GENUS CUNLIFFELLA

The females of *C. dua* and *C. maysa* are unknown.

1. Dorsum with median palmate setae ..... 3
- Dorsum without median palmate setae ..... 2
2. Hysterosoma with 8 pairs of dorsal fan-like setae .....  
..... *C. ornata* (Wafa et Soliman, 1968)
- Hysterosoma with 9 pairs of dorsal fan-like setae .....  
..... *C. mumai* (Volgin, 1969)
3. Vesicular chambers present ..... 4
- Vesicular chambers absent .....  
..... *C. bulgarica* (Volgin, 1955)
4. Dorsal shields with only palmate median setae ....  
..... *C. whartoni* (Baker, 1949)
- Dorsal shields with palmate and fan-like median  
setae ..... 5
- Hysterosomal shield with 3–4 pairs of palmate  
median setae; these setae are relatively small and do  
not cover completely the hysterosomal shield ...  
..... *C. variegata* (Barilo, 1985)
- Hysterosomal shield with 5–6 pairs of palmate  
median setae; these setae are relatively large, and  
cover completely the hysterosomal shield .....  
..... *C. panamensis* (Baker, 1949)

**Material examined.** *C. bulgarica* — female **holotype**, Pasardjiksk Distr., Bulgaria, 8.X.1955. Coll. Z. Zankov (ZISP).

*C. whartoni* — female **holotype** of *C. tuberculicoxa* from *Aradus lugubris*, Murmansk Distr., Russia, 4.VII.1930. Coll. Fridolin (ZISP).

*C. mumai* — female **holotype** from *Pinus clausa*, Florida, USA. 3.XII.1963. Coll. Muma (ZISP).

*C. variegata* — two females, Tadjikistan, 21.IX.1971.

#### GENUS *BOTHROCHEYLA* VOLGIN, 1964

Presently the genus includes three species [Bochkov, Mironov, 1997].

**Remark.** According to the original description of Thewke and Enns [1972], the species *Bothrocheyla beeri* (Thewke et Enns, 1972) differs from *B. pavlovskiyi* (Volgin, 1964) by the number of dorsomedian palmate setae, the presence of a brush-like dorsal seta on the palpal tibia and the ornamentation on the rostral shield. Actually, the re-examination of the type series of *B. pavlovskiyi* has shown that these characters are identical in the both species. We consider therefore *B. beeri* **syn. n.** as a junior synonym of *B. pavlovskiyi*.

#### KEY TO FEMALES OF THE GENUS *BOTHROCHEYLA*

- 1. Palpal claws with several teeth .....  
..... *B. pavlovskiyi* (Volgin, 1964)
- Palpal claws with one tooth .....  
..... *B. typhosa* (Summers et Price, 1970)

**Material examined.** *B. pavlovskiyi* — female **holotype** and 10 female paratypes from the nest of *Apodemus flavicollis*, Hustskiy Distr., Zakarpat'skaya Prov., Ukraine. Coll. S. Visotskaya. (ZISP).

#### GENUS *HOFFMANNITA* PELAEZ, 1962

Presently the genus includes four species [Gerson et al., 1999].

**Remark.** The species *Hoffmannita navicula* Lin et Zhang, 1997 differs from *H. clavipes* Volgin, 1963 only by the eight median setae instead of seven in the latter species. According to our data, the number of median setae is a variable character (in limit  $\pm 1$  or 2 setae) in this genus. Therefore we consider *H. navicula* **syn. n.** as a junior synonym of *H. clavipes*.

We give here below a description of a new species, *Hoffmannita gersoni* **sp.n.**

#### KEY TO THE FEMALES OF *HOFFMANNITA*

- 1. Eyes absent ..... 3

- Eyes present ..... 2
- 2. Propodosomal shield with 2–3 pairs of median neotrichial setae, solenidion  $\omega 1$  longer than guard seta (*ft'*), palpal claw with a narrow and sharp basal tooth ..... *H. gersoni* **sp.n.**
- Propodosomal shield with 6 pairs of median neotrichial setae, solenidion  $\omega 1$  shorter than guard seta (*ft'*), palpal claw with a wide and blunt basal tooth ..... *H. mexicana* Pelaez, 1962..
- 3. Hysterosomal shield with 8 pairs of median setae ..... *H. clavipes* Volgin, 1963
- Hysterosomal shield with 2 pairs of median setae ..... *H. rimandoi* Corpuz-Raros, 1972

#### *Hoffmannita gersoni* **sp.n.**

**Female (holotype, Fig. 19).** Gnathosoma 100 long and 110 wide. Palpal femur 40 long and 55 wide. Dorsal seta of palpal femur 30 long and 20 wide. Rostral shield granulated. **Idiosoma** 315 long (300 long in paratype) and 265 wide. All dorsolateral setae and setae *d5* fan-like. Dorsal shields granulated. Eyes present. Propodosomal shield 125 long and 200 wide, bearing setae *vi*, *ve*, *sci*, *sce* and 2–3 pairs of median neotrichial setae. Setae *h* situated off the propodosomal shield. Hysterosomal shield 135 long and 165 wide, bearing setae *ll–l5*, *d5* and 2–3 pairs of neotrichial median setae. Length of setae: *vi*, *ve*, *l4* 35 long, *sci*, *sce* 45 long, *h* 50, *ll* 50, *l2*, *l3* 40, *l5* 25, *d5* 40. Setae *a3* fan-like. **Legs.** Chaetotaxy as in Fig. 19. Solenidion  $\omega 1$  60 long, guard seta (*ft'*) 45 long, tarsus I, including pretarsus, 55 long.

**Differential diagnosis.** This new species is closely related to *H. mexicana* Pelaez, 1962. It differs from this species by the following characters: in *H. gersoni* **sp.n.** the propodosomal shield bears 2–3 pairs of median neotrichial setae, the solenidion  $\omega 1$  is longer than the guard seta (*ft'*), the palpal claw with a narrow and sharp basal tooth. In *H. mexicana* the propodosomal shield bears 6 pairs of median neotrichial setae, the solenidion  $\omega 1$  is shorter than the guard seta (*ft'*), the palpal claw has a thick and blunt basal tooth. This new species differs from *H. clavipes* Volgin, 1966 and *H. rimandoi* Corpuz-Raros, 1972 by the presence of eyes.

**Etymology.** This new species is named for the distinguished acarologist, Dr. Uri Gerson (Israel).

**Material examined.** *H. gersoni* — female **holotype** from *Coenobita clypeata*, Curaco. 13.X.1967 Coll. Hummelinck. **Holotype** in the IRSNB.

*H. clavipes* — female **holotype** from the ant-hill of *Formica rufa*, Ushkovo, Leningradskaya Prov., 17.VIII.1958. Coll. V. Volgin (ZISP).

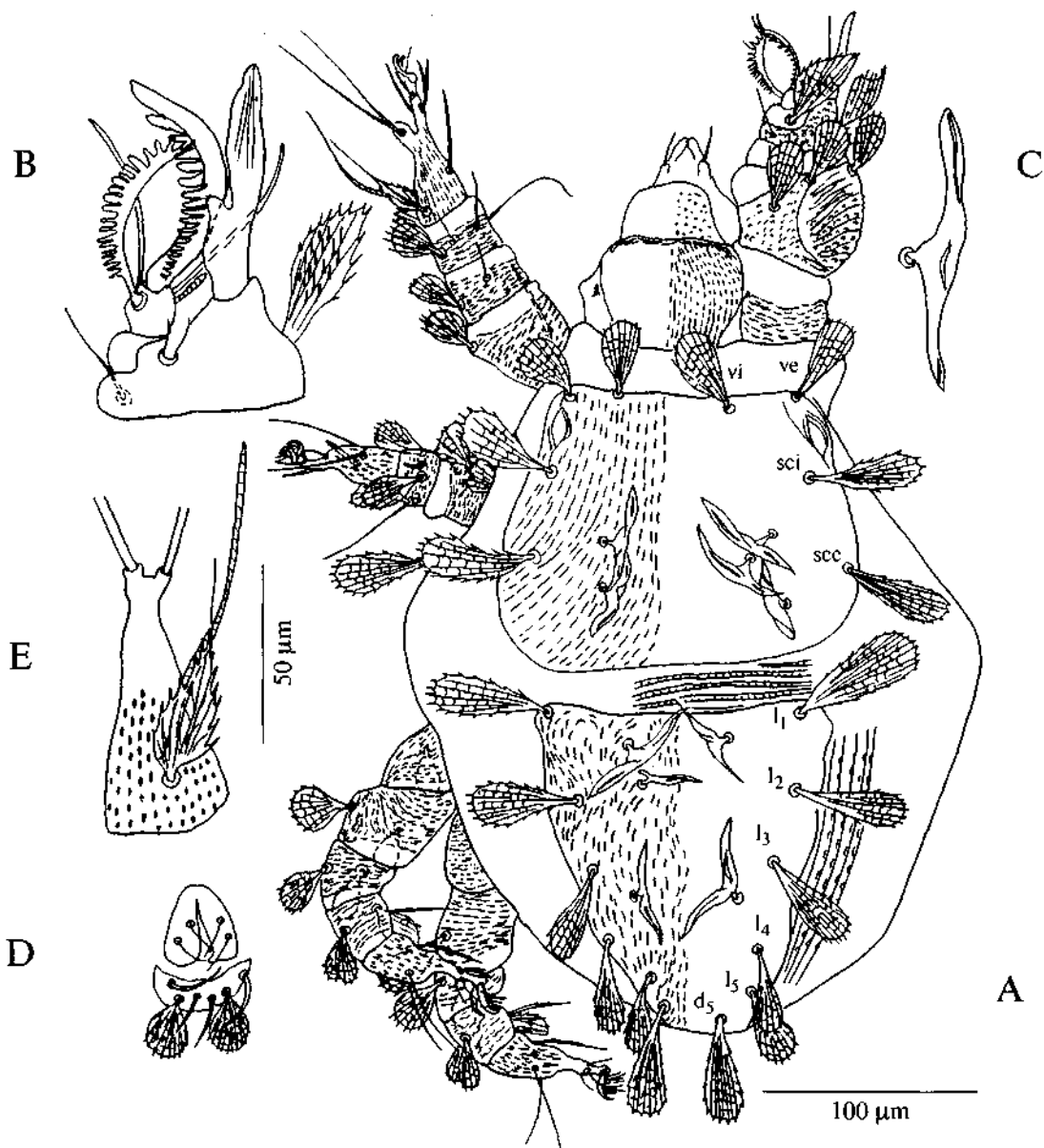


Fig. 19. *Hoffmannita gersoni* sp.n., female: A — dorsal view, B — palpal tibia and tarsus in dorsal view, C — dorsal seta, D — anal-genital region, E — tarsus I in dorsal view.

**GENUS MICROCHEYLA VOLGIN, 1966**

Presently the genus includes four species [Gerson et al., 1999].

**Remarks.** (i) The species *Microcheyla ozkani* Koc et Ayyildiz, 1995 was described from Turkey [Koç, Ayyildiz, 1995]. These authors overlooked the paper of Kuznetsov [1977], containing the description of the species *M. granifera* Kuznetsov, 1977 from Crimea. The descriptions of *M. ozkani* and *M. granifera* overlap completely. Thus, we consider that *M. ozkani* **syn. n.** is a junior synonym of *M. granifera*.

(ii) In the original description of *Microcheyla bengalensis* Gupta et Paul, 1992, the setae *d5* are absent and the setae *v1* on the tarsi II–IV present in

the female of this species [Gupta, Paul, 1992]. As the setae *d5* are usually present in the females of this genus (the tarsi II–IV were not depicted by these authors), we suppose that the diagnosis of this species should be revised.

**KEY TO FEMALES OF THE GENUS MICROCHEYLA**

- 1. Setae *l1* situated on the hysterosomal shield .... 2
- Setae *l1* situated off the hysterosomal shield .....
- ..... *M. bengalensis* Gupta et Paul, 1992
- 2. Tarsi II–IV without ventral median seta (*v1*) .....
- ..... *M. parvula* Volgin, 1966
- Tarsi II–IV with ventral median seta (*v1*) .....
- ..... *M. granifera* Kuznetsov, 1977

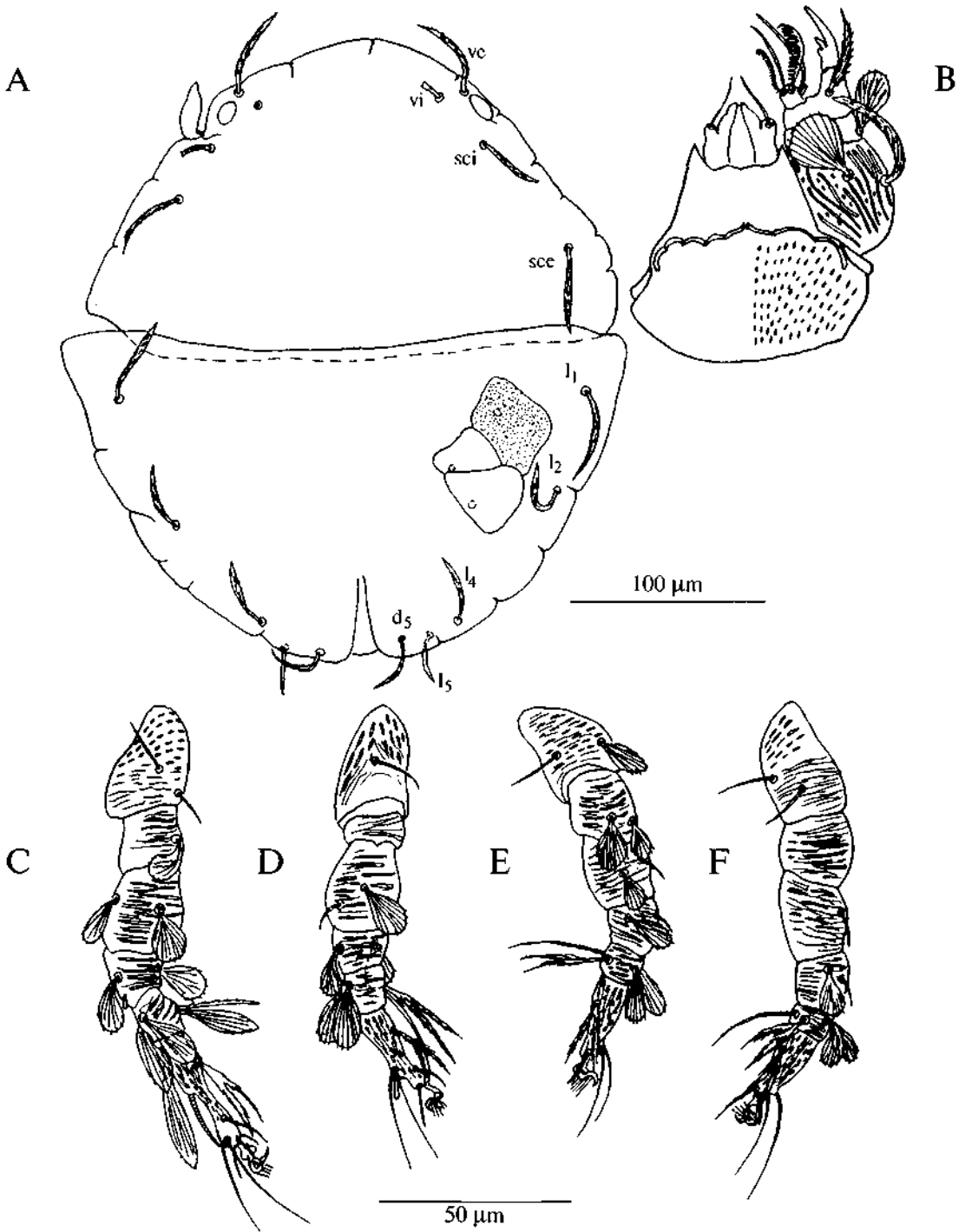


Fig. 20. *Samsinakia carabae*, female: A — dorsal view, B — gnathosoma in dorsal view, C-F — legs I-IV in lateral view.

**Material examined.** *M. parvula* — female holotype, Ramit, Tadjikistan, 28.V.1962. Coll. O. Kryzhanovskiy.

*M. granifera* — female paratype, Yalta, Crimea, 20.XII.1973. Coll. N.Kuznetsov.

**GENUS SAM SINAKIA VOLGIN, 1965**

Presently the genus includes six species [Fain, 1984; Bochkov, Mironov, 1998; Ramaraju, Mohanasundram, 1999].

**Remark.** The species *Samsinakia carabae* Ramaraju et Mohanasundram, 1999 was described from a carabid beetle (Coleoptera: Carabidae) in India. The examination of the paratype of *S. carabae* has revealed that the original description of this species contained several errors, i.e. «dorsal median setae absent», «inner comb-like seta without teeth», «tarsi I with 7 setae», etc. Hereinafter we provide a new description of this species, from a paratype female.

**KEY TO FEMALES OF THE GENUS  
SAMSINAKIA**

1. Coxae I–IV with 2–2–2–2 setae; anterior seta of coxa III simple ..... *S. pagongae* Corpuz-Raros et Sotto, 1977  
— Coxae I–IV with 2–1–2–2 setae; anterior seta of coxa III fan-like ..... 2
2. Setae *l3* absent ..... 3  
— Setae *l3* present ..... 5
3. Setae *vi*, *ve*, *sci* and *sce* fan-like .....  
..... *S. gonocephalum* Fain, 1984  
— Setae *vi*, *ve*, *sci* and *sce* cylindricoconical, curved, with inconspicuous barbs ..... 4
4. Palpal claw with 1 tooth. Tibia III with 1 fan-like seta and 3 barbed setae; tibia IV with 1 lanceolate seta, 1 barbed seta and 2 nude setae .....  
..... *S. trilobitus* Bochkov et Mironov, 1998  
— Palpal claw with 2 teeth. Tibia III with 2 fan-like setae and 2 barbed setae; tibia IV with 1 fan-like seta, 1 lanceolate seta and 2 barbed setae .....  
*Samsinakia carabae* Ramaraju et Mohanasundram, 1999
5. Guard seta (*ft'*) of solenidion  $\omega$ 1 fan-like. Tibia III and IV with at least 2 fan-like setae, 1 barbed seta and 1 nude seta. Palpal claw with 3 teeth .....  
..... *S. theodoridis* (Samsinak, 1959)  
— Guard seta (*ft'*) of solenidion  $\omega$ 1 cylindricoconical with very short barbs. All setae of tibiae III–IV thin, barbed. Palpal claw with 1 tooth .....  
..... *S. volgini* (Fain, 1972)

***Samsinakia carabae* Ramaraju et  
Mohanasundram, 1999**

**Female** (paratype, Fig. 20). **Gnathosoma** 80 long and 85 wide. Peritreme with 5 links. Rostral shield with a pair of lateral coarse cogs on front edge. Outer and inner comb-like setae of palp with numerous tines. Palpal claw with 2 teeth. **Idiosoma** 300 long and 265 wide, almost ovate. Propodosomal shield 160 long, hysterosomal shield 150 long, the hysterosomal shield overlaps slightly the posterior margin of the propodosomal shield. Both shields covered with polygonal dorsomedian setae. All dorsolateral setae and setae *h* and *d5* are cylindricoconical, curved and with inconspicuous barbs. Setae *l5* and *d5* about 20 long, all other dorsolateral setae and *h* about 40 long. Setae *h* situated ventrally, on small platelets, 50 long and 35 wide. Setae *l3* lacking. Solenidion  $\omega$ 1 20 long, guard seta (*ft'*) fan-like. **Legs.** Number and shape of leg setae, excluding solenidia: Tarsi 8–7–7–7; tibiae 4–4–4–4 (I–III with 2 fan-like setae and 2 barbed setae, tibia IV

with 1 fan-like seta, 1 lanceolate seta and 2 barbed setae), genua 2–2–2–2, (I–II with 2 fan-like setae, III–IV with 1 fan-like seta and 1 short nude seta), femora 2–2–2–1 (I with 2 fan-like setae, II–III with 1 fan-like seta and 1 short nude seta, IV with 1 nude seta), trochanters 1–0–2–0 (I with 1 fan-like seta, III with 2 fan-like setae).

**Material examined.** *S. carabae* — one female paratype from a carabid beetle, Trichy, Tamil Nadu, India, 12.II.1992. Coll. K. Ramaraju.

*S. theodoridis* — two females from *Selinus abacooides*, Tananarive, Madagascar, 19.XI.1957. Coll. K. Samsinak.

*S. gonocephalum* — female **holotype** and 8 female paratypes from *Gonocephalum simplex*, Zaire (MRAC).

*S. volgini* — female **holotype** and female paratype from the nest of *Spermestes cucullatus*, Butare, Rwanda, 27.I.1970. Coll. A. Fain. (MRAC). Two females from a tenebrionid beetle, Butare, Rwanda, IX.1954. Twelve females from *Gonocephalum simplex*, Moanda, Zaire, 28.IV.1970. Coll. A. Fain.

*S. trilobitus* — female **holotype** and 61 female paratypes from a tenebrionid beetle, South India, Anamalai Hills, Cinchora, IV.1964 (ZISP).

**GENUS COLUMBICHEYLA  
THEWKE ET ENNS, 1972**

Three species of the genus were described, i.e. *Columbicheyla macroflabellata* Thewke et Enns, 1972, *C. nindota* (Corpuz-Raros, 1988), and *C. bicicri* Lin et Zhang, 1992.

**Remark.** *C. macroflabellata* differs from the other two species by the presence of two setae (instead of 1 in the other two species) on femur IV and by the chaetotaxy of the coxae, which is 1–1–1–1 in *C. macroflabellata* instead of 2–1–2–2 in two other species. The coxal formula is very stable in the Cheyletidae [Volgin, 1969; Fain et al., 1997] and is usually 2–1–2–2. We surmise that these differences in the chaetotaxy observed in these species should be explained by inaccuracies in the original description of *C. macroflabellata* [Thewke, Enns, 1972]. Actually *C. macroflabellata* has been redescribed by Lin and Zhang [1992] from specimens collected in China and these specimens showed the same coxal and femoral IV chaetotaxy as *C. nindota* and *C. bicicri*. We have also collected one female in Malaysia that was assigned to *C. macroflabellata* and not separable from the specimens collected in China (Fig. 21). Furthermore, we consider that *C. nindota* **syn. n.** as a junior synonym of *C. macroflabellata*.

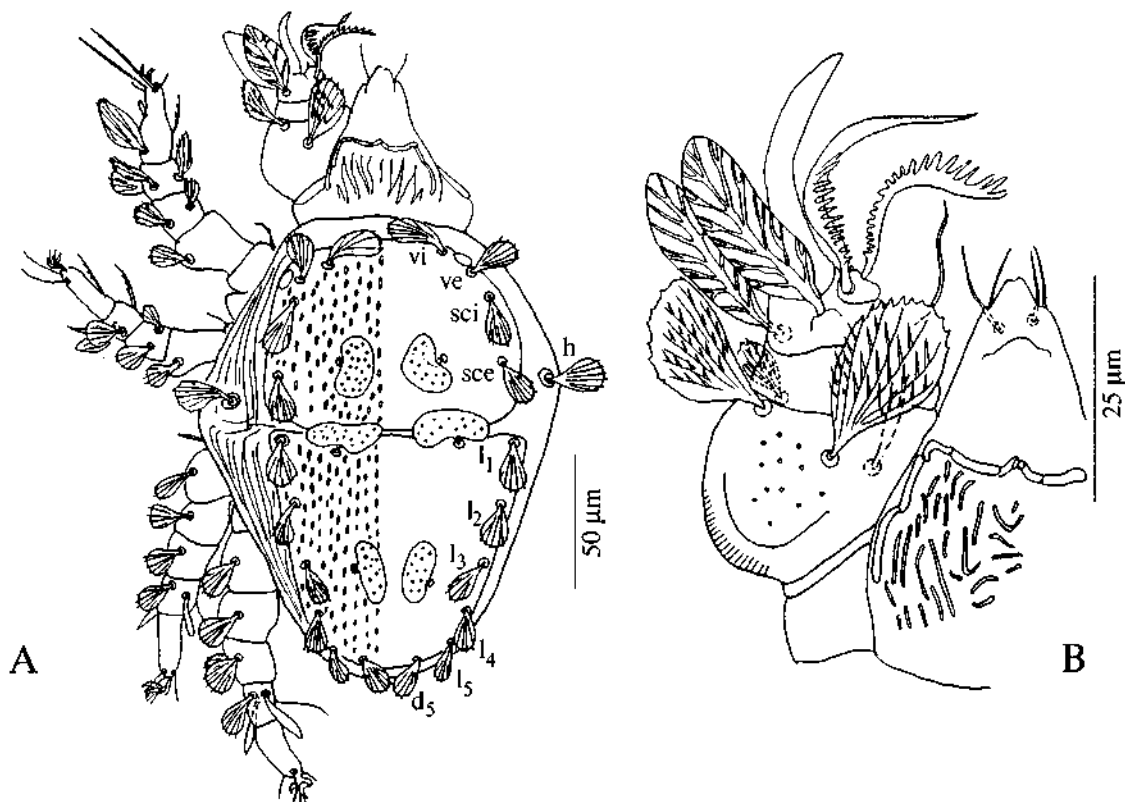


Fig. 21. *Columbicheyla macroflabellata*, female: A — dorsal view, B — gnathosoma in dorsal view.

**KEY TO FEMALES OF THE GENUS  
COLUMBICHEYLA**

- 1. Propodosomal shield with 1 pair of median setae; hysterosomal shield with 2 pairs of setae ..... *C. macroflabellata* Thewke et Enns, 1972
- Propodosomal shield with 2 pairs of median setae ..... *C. bicicri* Lin et Zhang, 1992

**Material examined.** *C. macroflabellata* — one female from Malaysia. Coll. Nadchatram.

**GENUS CAUDACHELES GERSON, 1968**

Presently the genus includes three species.

**KEY TO FEMALES OF THE GENUS  
CAUDACHELES**

- 1. Dorsal surface of idiosoma with 20–35 pairs of setae ..... 2
- Dorsal surface of idiosoma with 50 pairs of setae (Fig. 22) ..... *C. khayae* Gerson, 1968
- 2. Dorsal surface of idiosoma with 32 pairs of setae ..... *C. trigintaduae* Lin et Zhang, 1997
- Dorsal surface of idiosoma with 22 pairs of setae ..... *C. lieni* Tseng, 1977

**Material examined.** *C. khayae* — female paratype from the bark of *Khaya nyasica*, Rehovot, Israel, 15.VII.1967. Coll. U. Gerson.

**GENUS DUBINIOLA VOLGIN, 1969**

This genus was erected by Volgin [1969] for the single species *Dubininiola polylepis* Volgin, 1969. This species was depicted for the first time by Fain [Gerson et al. 1999]. Recently the genus *Polycheyletus* Vaivanjikul, 1979 represented by two species was synonymized with *Dubininiola* by Fain and Bochkov [2001, in press].

**Remark.** The species *Dubininiola batangensis* (Corpuz-Raros et Sotto, 1977) differs from *D. boonkongae* Vaivanjikul, 1979 only by the number of tritosomal dorsal setae (53 in *D. batangensis* and 56 in *D. boonkongae*). This very small difference in the number of dorsal setae seems to be not sufficient to separate these two species from each other.

**KEY TO FEMALES OF THE GENUS  
DUBINIOLA**

- 1. Dorsal surface of idiosoma with more than 50 pairs of setae ..... 2
- Dorsal surface of idiosoma with 32 pairs of setae ..... *D. polylepis* Volgin, 1969
- 2. Dorsal surface of idiosoma with 56 pairs of setae ..... *D. boonkongae* Vaivanjikul, 1979
- Dorsal surface of idiosoma with 53 pairs of setae ..... *D. batangensis* (Corpuz-Raros et Sotto, 1977)

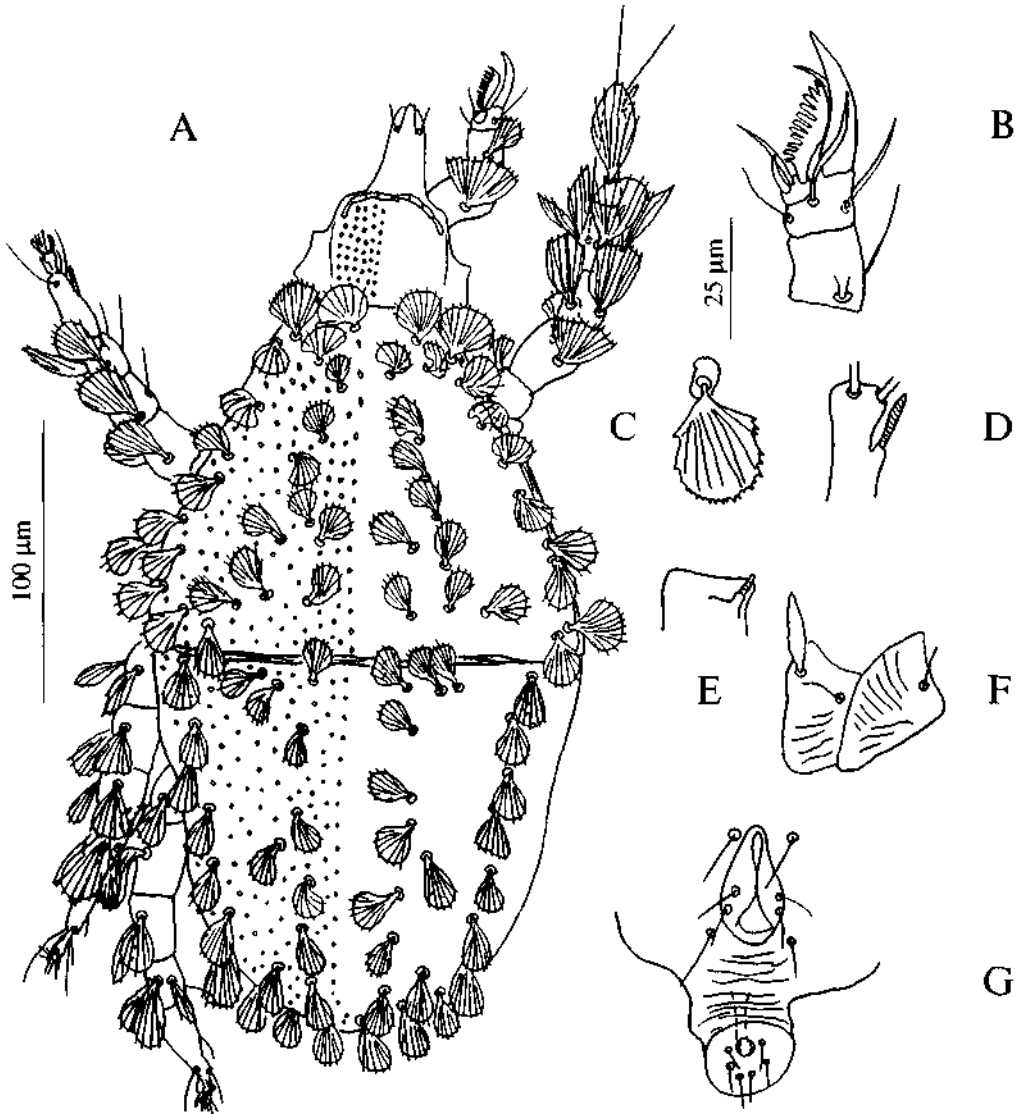


Fig. 22. *Caudacheles khayae*, female: A — dorsal view, B — palp in dorsal view, C — dorsal seta, D — solenidion  $\omega_1$ , E — solenidion of tibia I, F — coxa III, G — genito-anal region.

**Material examined.** *D. polylepis* — female holotype from the nest of a rodent, Dejnauskij Distr. Turkmenian, 15.IX.1967. Coll. A. Dgumaev (ZISP).

**GENUS GRALLACHELES DE LEON, 1962**

Presently the genus includes two species [Gerson et al., 1999].

**KEY TO FEMALES OF THE GENUS GRALLACHELES**

- 1. Hysterosomal shield with 9 pairs of setae .....  
..... *G. bakeri* De Leon, 1962
- Hysterosomal shield with 6 pairs of setae .....  
..... *G. nanfengensis* Xia, Rong et Zhimin, 1997

**Material examined.** *G. bakeri* — one female from the house dust, Kinshasa, Congo, II.1966.

Coll. A. Fain. Seven females from the house dust, Kuala Lumpur, Malaysia, 11.II.1979. Coll. M. Nadchatram. Nine females from the guano of *Molossus molossus*, Klaskreet, Suriname, 27.VII.1971. Coll. F. Lukoschus.

**TRIBE BAKINI VOLGIN, 1969**

**GENUS BAK YUNKER, 1961**

Presently 12 species are included in the genus, most of which were found in the organic debris and occasionally in the house dust in the Nearctic, Neotropical and Oriental regions [Corpuz-Raros, 2000].

**Remarks.** (i) The species *Bak ligysculanus* Flechtmann, 1971 is not valid because it was published only in a thesis [Flechtmann, 1971].

(ii) The species *Bak ozarkensis* Thewke et Enns, 1974 bears seta on coxae IV while these



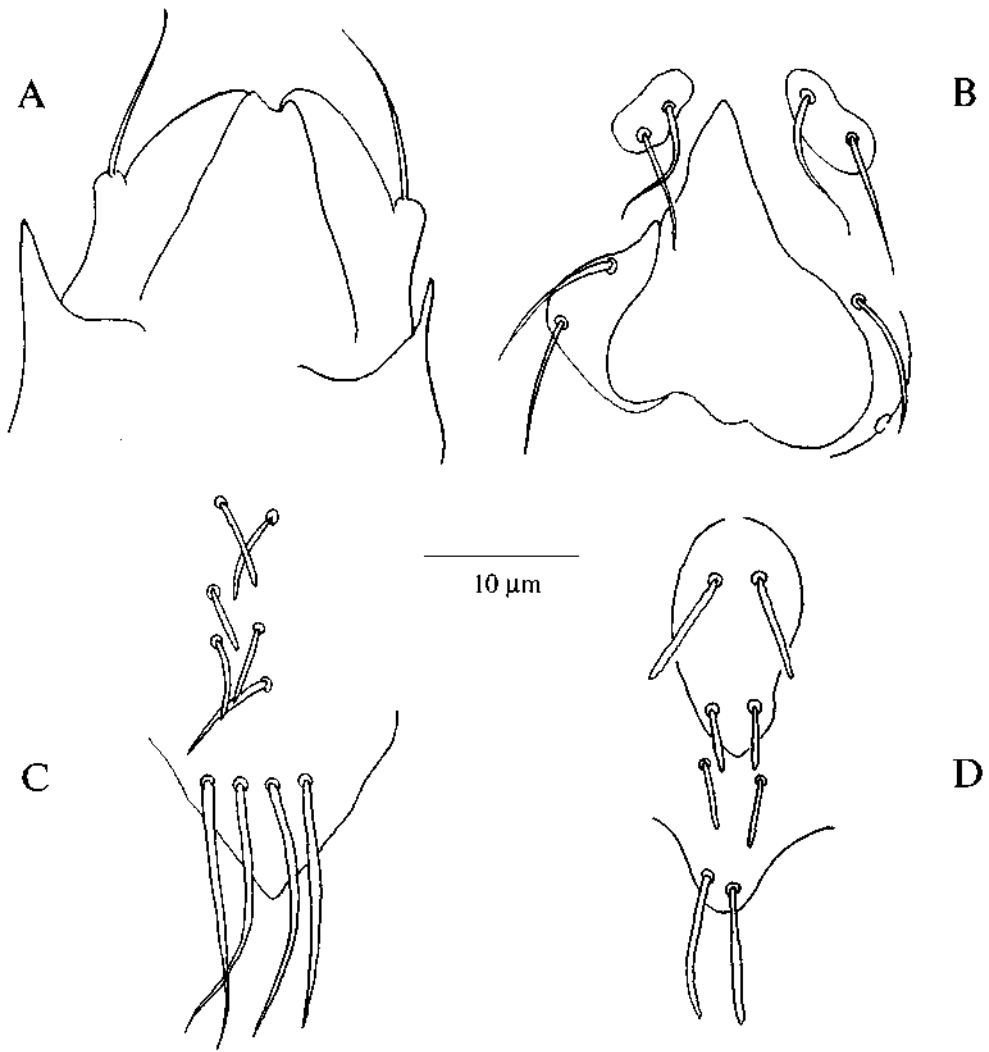


Fig. 23. *Bak* spp, female. *B. ozarkensis*: A — hypostome in dorsal view, B — genito-anal region, C — opisthosoma in dorsal view; *B. gersoni*: D — opisthosoma in dorsal view.

coxae are devoid of setae in the original description [Thewke, Enns, 1974] (Fig. 23).

Hereinafter we provide the description of a new species.

**KEY TO SPECIES OF THE GENUS BAK  
(FEMALES AND MALES)\***

- 1. Dorsal setae piliform or evenly thickened ..... 2
- Dorsal setae clavate or bifurcate ..... 8
- 2. Genu II without seta ..... 3
- Genu II with one seta ..... 6
- 3. Femoral formula 1-1-1-1 ..... 5
- Femoral formula 2-2-1-1 ..... 4
- 4. Setae *d5* and *l4*, *l5* subequal. With 2 pairs of anal setae (Fig. 23, A-C) ..... *B. ozarkensis* Thewke et Enns, 1974

- Setae *d5* 2 times longer than *l4* and *l5*. With one pair of anal setae (Fig. 23 D) ..... *B. gersoni* Corpuz-Raros, 2000
- 5. Genual formula 1-0-0-0 ..... *B. micidus* Summers et Price, 1970
- Genual formula 1-0-1-0 ..... *B. deleoni* Yunker, 1961
- 6. Dorsal setae thin, hair-like ..... *B. sanctahelenae* Yunker, 1961
- Dorsal setae thickened and serrate ..... 7
- 7. Femoral formula 2-2-1-1 ..... *B. truncatus* Corpuz-Raros et Sotto, 1977
- Femoral formula 1-1-1-1 ..... *B. payatus* Corpuz-Raros et Sotto, 1977
- 8. Trochanteral formula 1-1-1-1 ..... 9
- Trochanteral formula 1-1-0-1 ..... 10
- 9. Dorsal setae bifurcate ..... *B. furcatus* Gerson et Fain, 1991

\*In the genus *Bak* the same characters can be used for both females and males.

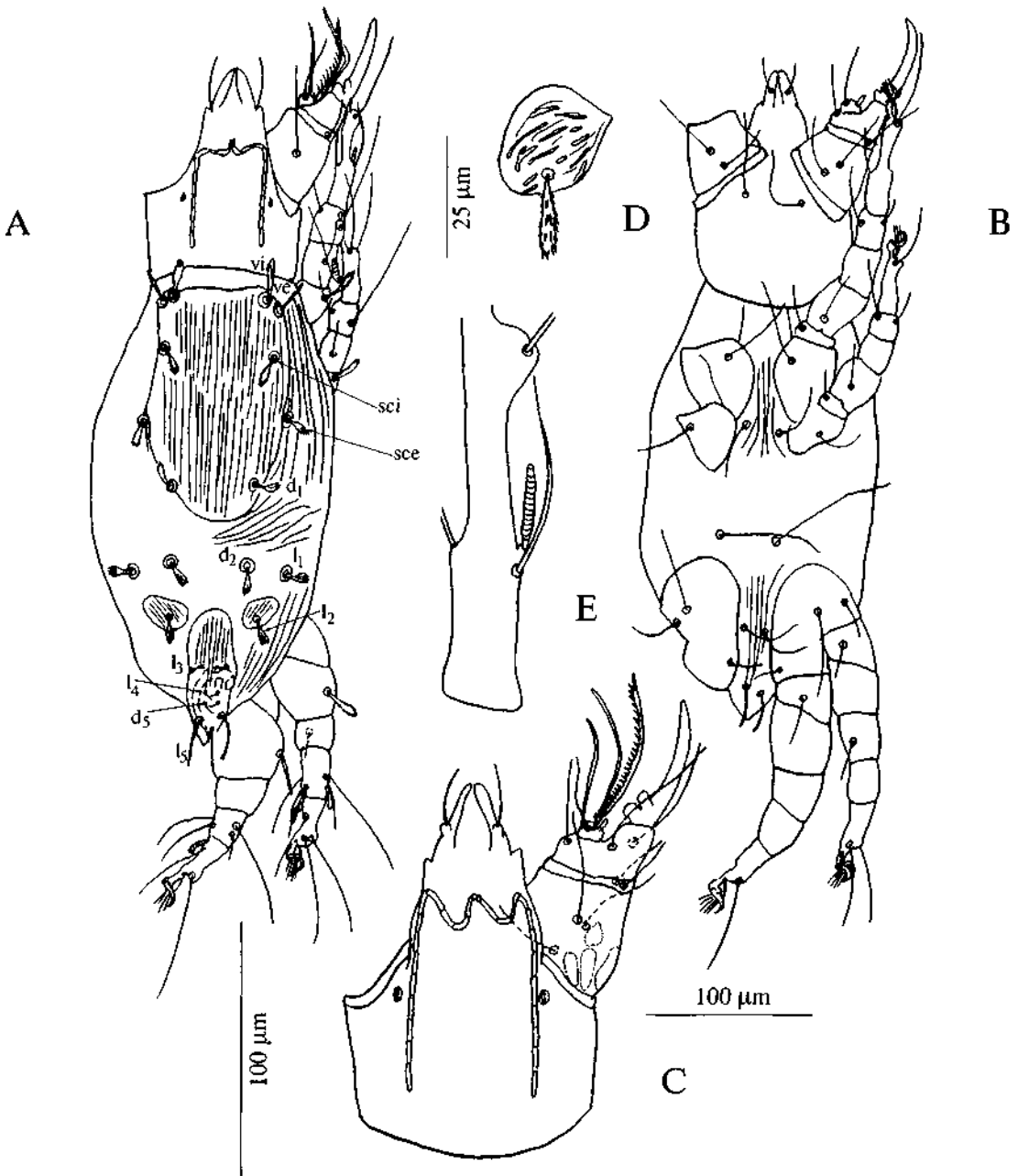


Fig. 24. *Bak nadchatrami* sp.n., male: A — dorsal view, B — ventral view, C — gnathosoma in dorsal view, D — dorsal seta, E — tarsus I in lateral view.

- Dorsal setae clavate, only *l3* bifurcate ..... *B. nadchatrami* sp.n.
- 10. Setae *vi*, *ve* and *sci* thickened and serrate, the rest of dorsal setae clavate and plumose ..... *B. faini* Corpuz-Raros, 2000
- Setae *vi*, *ve* and *sci* clavate and plumose like the rest of dorsal setae ..... *B. elongatus* Paxtot et Goff, 1985

***Bak nadchatrami* sp.n.**

**Male (holotype, Fig. 24).** Gnathosoma 150 long and 100 wide. Peritremes with 13 links. Palpal claw with 2 teeth. Idiosoma 285 long and 150 wide.

Propodosomal shield 160 long and 78 wide. Dorsal setae clavate, *vi* 27 long, other setae about 18 long, setae *h* 85 long. Setae *l3* bifurcate. Penis 50 long. **Legs.** Setal formula of legs I–IV (number of solenidia are in parentheses): tarsi 8(1)–7(1)–7(1)–7(1), tibiae 4(1)–4–4–4; genua 1(1)–0–1–0, femora 2–2–1–1, trochanters 1–1–1–1, coxae 2–1–2–1. Solenidion  $\omega 1$  13 long, guard seta (*ft'*) 33 long.

**Etymology.** This new species is named for the distinguished acarologist, Dr. M. Nadchatram, Kuala-Lumpur.

**Differential diagnosis.** This new species is closest to *B. elongatus*. It differs from the latter by

the presence of a seta on trochanters III. *B. nadchatrami* sp.n. differs also from *B. faini* by the clavate shape of the dorsal setae. In the latter species these setae are bifurcate.

**Material examined.** *B. nadchatrami* — male **holotype** from skirting of a bedroom, Belakang Pasar, Lama Kepong, Kuala Lumpur, Malaysia, 11.XII.1978. Coll. M. Nadchatram. One male from the dust of a living room, A-107, Jenka 15, Malaysia, 19.XII.1977. Coll. M. Nadchatram. **Holotype** in the IRSNB.

*B. deleoni* — one male from the house dust, Kinshasa, Congo, 12.II.1966. Coll. A. Fain.

*B. ozarkensis* — female **holotype** and female paratype from the stump wood litter, Missouri, USA XI.1972. Coll. Thewke (deposited in the collections of the University of Missouri, Columbia, USA). One female from the nest of *Glaucomys volans*, Juniata Field station, Huntington Co., Pennsylvania, USA, 28.VII.1981. Coll. J. Whitaker. *B. gersoni* — fifty-two females from the sand and debris of shells, Santa Cruz Island, Galapagos, 16.II.1978. Coll. J. Trave. One female and 1 nymph, Galapagos Isls. Coll. Y. Mumcuoglu.

#### GENUS *NEOCHELACHELES* SMILEY ET WILLIAMS, 1972

This genus is monotypical [Gerson et al., 1999].

**Remark.** According to the figure of the original description of *Neochelacheles messersmithi* Smiley et Williams, 1972 [Smiley, Williams, 1972: fig. 3, p. 313] the tibia I in the female of this species bears five setae (excluding solenidion). However, in our specimens the tibia I bears only four setae, excluding solenidion.

Hereinafter we give a description of our specimens of *N. messersmithi*. The male of the latter species is described for the first time.

#### *Neochelacheles messersmithi* Smiley et Williams, 1972

**Female** (Fig. 25). **Gnathosoma** 100 long and 75 wide. Palpal femur 35 long and 25 wide. Dorsal seta of palpal tarsus 30 long, thickened and barbed. Palpal claw with 4 teeth. Outer dorsal seta of palpal tarsus with 7 teeth, inner seta nude, hair-like. Peritremes arch-like, with 5 pairs of links. Rostral shield well-ornamented with a punctate pattern. **Idiosoma** 382 long and 140 wide. **Dorsum:** Dorsal shields covered by longitudinal thickened striations, with indistinct lateral margins. All dorsal setae thickened and barbed, about 20 long. Propodosomal shield 130 long and 50 wide, bearing setae *vi*, *ve*, *sci*, *sce* and 1 pair of median setae *d1*. Setae

*h* situated off propodosomal shield. Hysterosomal shield 140 long and 50 wide, bearing setae *d2*, *d3*, *d5* and *11-15*. Setae *11* situated off hysterosomal shield. **Venter:** Paragenital setae 3 pairs, genital setae 2 pairs and anal setae 3 pairs. **Legs.** Solenidion  $\omega 1$  36 long, guard seta very short. Tarsus I excluding pretarsus 45 long, with knobs not extending to pretarsus. Leg chaetotaxy (number of solenidia is given in parentheses): coxae 2-1-2-2, trochanters 1-1-2-1, femora 2-2-1-1, genua 2(1)-2-2-2, tibiae 4-(1)-4(1)-4-4, tarsi 9(1)-7(1)-7-7.

**Male** (Fig. 26). **Gnathosoma** 115 long and 85 wide. Palpal femur 50 long and 30 wide. Palpal claw with 3 teeth. Outer dorsal seta of palpal tarsus comb-like, with 8 tines, inner seta nude, hair-like. Peritremes arch-like, with 7 pairs of segments. Rostral shield as in female. **Idiosoma** 365 long and 150 wide. All dorsal setae thickened and barbed, about 20-25 long. Dorsal shields covered by longitudinal thickened striations, with indistinct lateral margins. Propodosomal shield 160 long and 55 wide, bearing setae *vi*, *ve*, *sci*, *sce* and 2 pairs of median setae *d1* and *N*. Setae *h* situated off the propodosomal shield. Hysterosomal shield 180 long and 55 wide, bearing setae *d2*, *d5* and *11*, *12*, *15*. Setae *11* situated off hysterosomal shield. **Leg chaetotaxy** as in female, solenidion  $\omega 1$  80 long, tarsus I 60 long, excluding pretarsus, tarsi III with a short lateral solenidion.

**Material examined.** One female and 1 male from the bracket fungi, Cedar Bog, Champaign CO, Ohio, USA, 09.V.1975. Coll. Ide.

#### GENUS *CHELACHELES* BAKER, 1959

Gerson et al. [1999] included 10 species in this genus. Another new species was described soon after this article (*C. hellenicus* Eliopoulos et Papadoulis, 2001). As the genus *Chelachelecaropsis* Attiah, 1973 (with two species) has been recently synonymized with *Chelacheles* [Fain, Bochkov, 2001], presently this genus includes 13 species.

**Remark.** *C. hellenicus* Eliopoulos et Papadoulis, 2001 differs from *C. bakeri* Attiah, 1973 only by the size of the body. A re-examination of the holotypes of these species is needed to check the validity of *C. hellenicus*.

#### KEY TO FEMALES OF THE GENUS *CHELACHELES*

1. Setae *h* more than 3 times longer than other propodosomal setae ..... 6
- Setae *h* less than 2 times longer than other propodosomal setae ..... 2

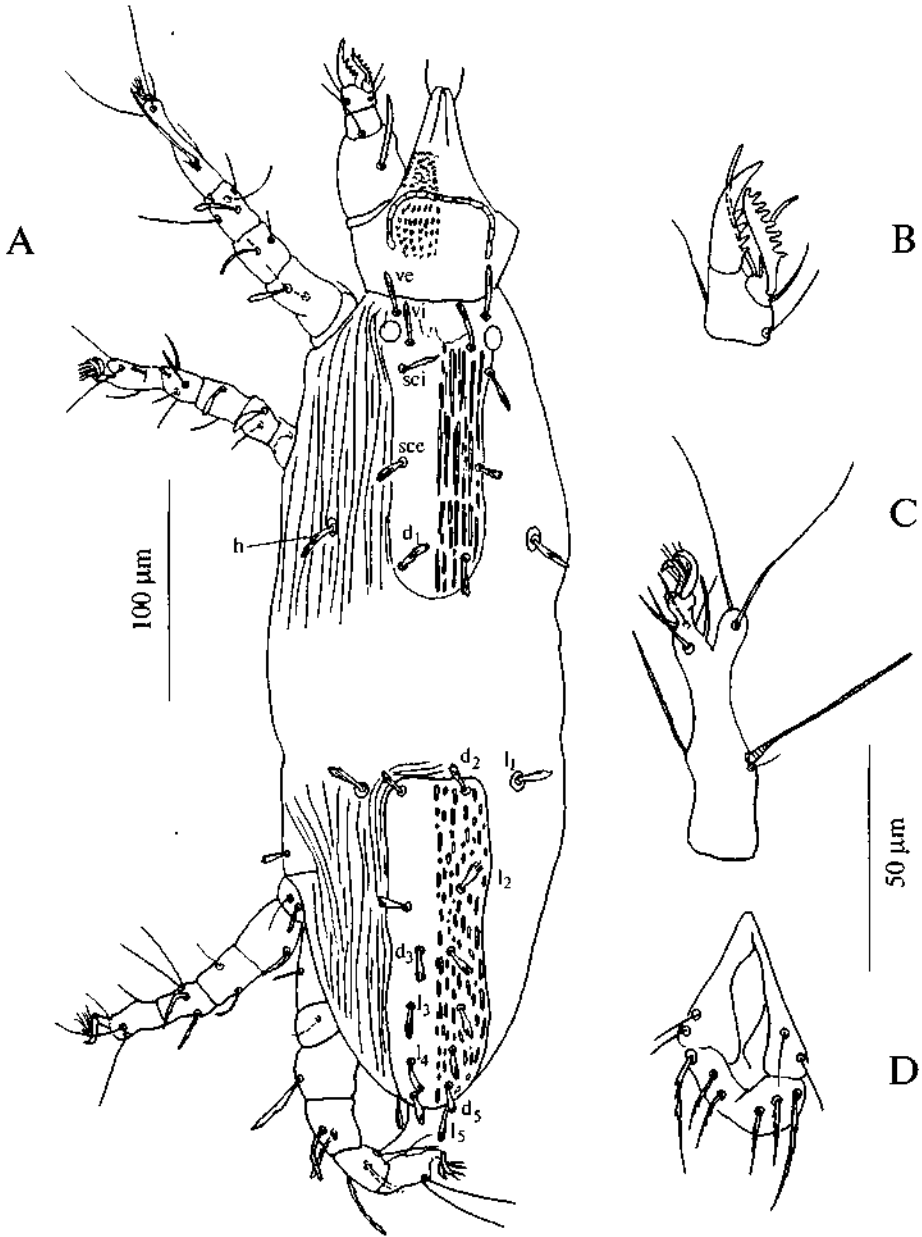


Fig. 25. *Neochelacheles messersmithi*, female: A — dorsal view, B — palpal tibia and tarsus in dorsal view, C — tarsus I in lateral view, D — genito-anal region.

- |   |                            |  |
|---|----------------------------|--|
| 2. Coxae IV with 1 or 2 setae .....                   | 3                          | — With 2 pairs of anal setae. Genua II with 1 seta,      |
| — Coxae IV without setae .....                        | <i>C. bacchusi</i>         | femora IV with 2 setae .....                             |
| Bochkoy, Haustov et Kuznetsov, 1999                   |                            |  |
| 3. Coxae III with 2 setae. Genito-anal region with    | 4                          | 6. Coxae IV with 1–2 setae .....                         |
| 5–6 pairs of setae. Genu II–IV with setae .....       |                            | — Coxae IV without setae .....                           |
| — Coxae III with 1 seta. Genito-anal region with 4    |                            | <i>C. lanceolatus</i> Tseng, 1977                        |
| pairs of setae. Genu II–IV without setae .....        |                            | 7. Coxae IV with 1 seta .....                            |
| <i>C. alexandrinus</i> Hassan et Gomaa, 1981          |                            | — Coxae IV with 2 setae .....                            |
| 4. Coxae IV with 2 setae .....                        | 5                          | 8. Coxae III with 2 setae; femora III with 2 setae ..... |
| — Coxae IV with 1 seta .....                          |                            | <i>C. robustus</i> Corpuz-Raros, 1998                    |
| <i>C. baiwanganae</i> Corpuz-Raros et Sotto, 1977     |                            | — Coxae III with 1 seta; femora III with 1 seta .....    |
| 5. With 3 pairs of anal setae. Genua II with 2 setae; |                            | <i>C. peritremaculatus</i> Thewke, 1974                  |
| femora IV with 1 seta .....                           | <i>C. algericus</i> sp. n. | 9. Coxae III with 2 setae .....                          |
|   |                            | 10   |

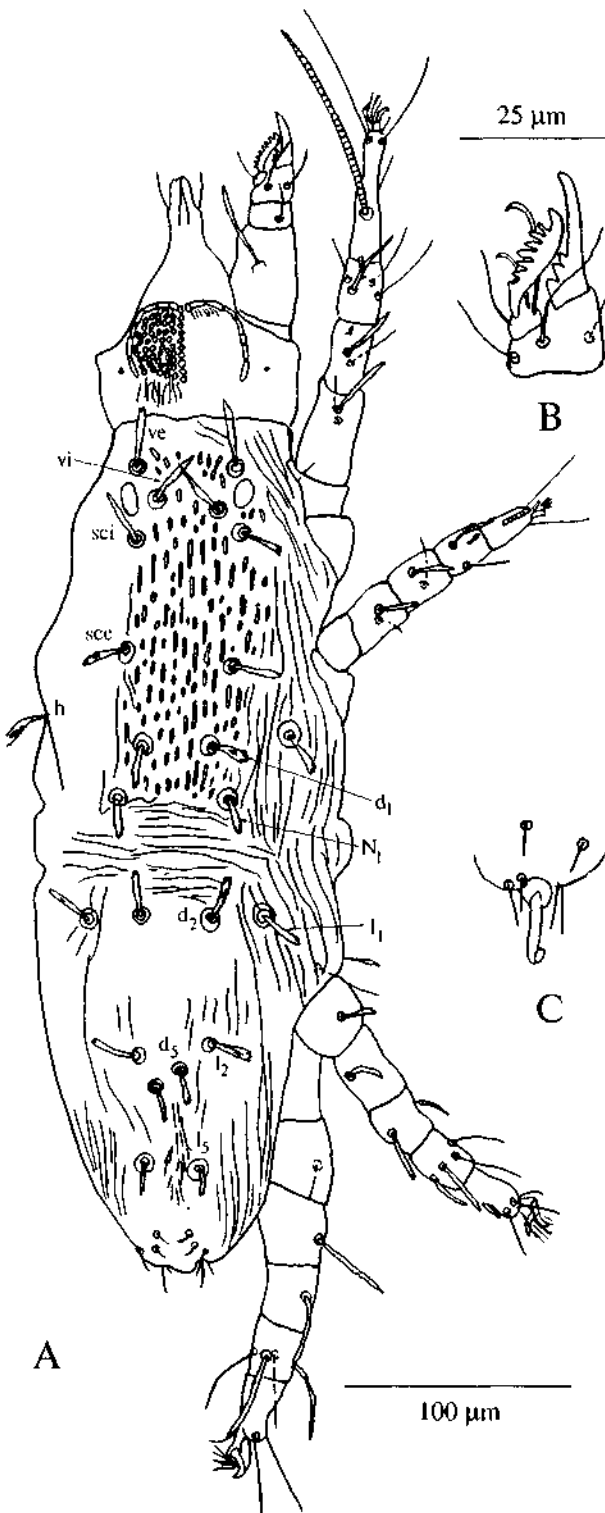


Fig. 26. *Neochelacheles messersmithi*, male: A — dorsal view, B — palpal tibia and tarsus, C — genital region in ventral view.

— Coxae III with 1 seta .....  
 ..... *C. humilis* Rasool, Chaudhri et Akbar, 1980  
 10. Propodosoma dorsally with 8 pairs of setae,  
 including setae *h* ..... 11

— Propodosoma dorsally with 7 pairs of setae,  
 including setae *h* ..... 12  
 11. Setae *h* more than 4 times longer than other  
 dorsal setae. With 2 pairs of anal setae .....  
 ..... *C. michalskii* Samsinak, 1962  
 — Setae *h* not more than 3 times longer than other  
 dorsal setae. With 3 pairs of anal setae .....  
 ..... *C. stigmaeoides* Barilo, 1989  
 12. Setae *h* about 4 times longer than *l1* ..... 13  
 — Setae *h* and *l1* subequal .....  
 ..... *C. bipanus* Summers et Price, 1970  
 13. Body length 353, width 195 .....  
 ..... *C. bakeri* Attiah, 1973  
 — Body length 300, width 130 .....  
 ..... *C. hellenicus* Eliopoulos et Papadoulis, 2001

***Chelacheles algericus* sp. n.**

**Female (holotype, Fig. 27).** Gnathosoma 85 long and 55 wide. Peritremes arch-like, with 7 pairs of links (7–8 pairs in 10 paratypes). Palpal claws with 3 teeth (3–4 in paratypes). Outer dorsal comb-like seta of palpal tarsus with 8 tines (7–8 in paratypes). Inner comb-like seta with 6 tines. **Idiosoma** 385 long (370–395 in paratypes) and 165 wide (150–170 in paratypes). **Dorsum:** Setae *h* and *l1* about 35 long, other setae about 15 long — all slightly serrate. Propodosoma with 7 pairs of setae, including *h*, setae *d3* absent. Vestiges of propodosomal shield present. Hysterosoma with 7 pairs of setae, setae *l2* present. **Venter:** Intercoxal setae: 3 pairs (*ic1*, *ic3* and *ic4*); paragenital setae: 3 pairs (*pg1*–*pg3*), genital setae: 2 pairs (*g1* and *g2*) and anal setae: 3 pairs (*a1*, *a2* and *a3*). **Leg chaetotaxy:** coxae 2–1–2–2, trochanters 1–1–2–1, femora 1–1–1–1, genua 2(1)–2–2–2, tibiae 4(1)–4(1)–4–4, tarsi 8(1)–7(1)–7–7.

**Differential diagnosis.** This new species is closely related to *C. strabismus* and distinguishable from the latter by the following characters: in the female of *C. algericus* sp. n. 3 pairs of anal setae present, the genu II bears 2 setae and the femur IV bears 1 seta. In the female of *C. strabismus* only 2 pairs of anal setae present, the genu II bears 1 seta and the femur IV bears 2 setae.

**Material examined.** *C. algericus* sp.n. — female **holotype** and 10 female paratypes from the nest of a bird, Algeria, 16.XII.1958. Coll. Athias. **Holotype** in the IRSNB.

*C. bacchusi* — female **holotype** and 2 female paratypes, Sudak, Crimea, 23.XI.1973. Coll. N. Kuznetsov. (ZISP).

*C. alexandrinus* — one female, Yalta, Crimea. Coll. N. Kuznetsov.

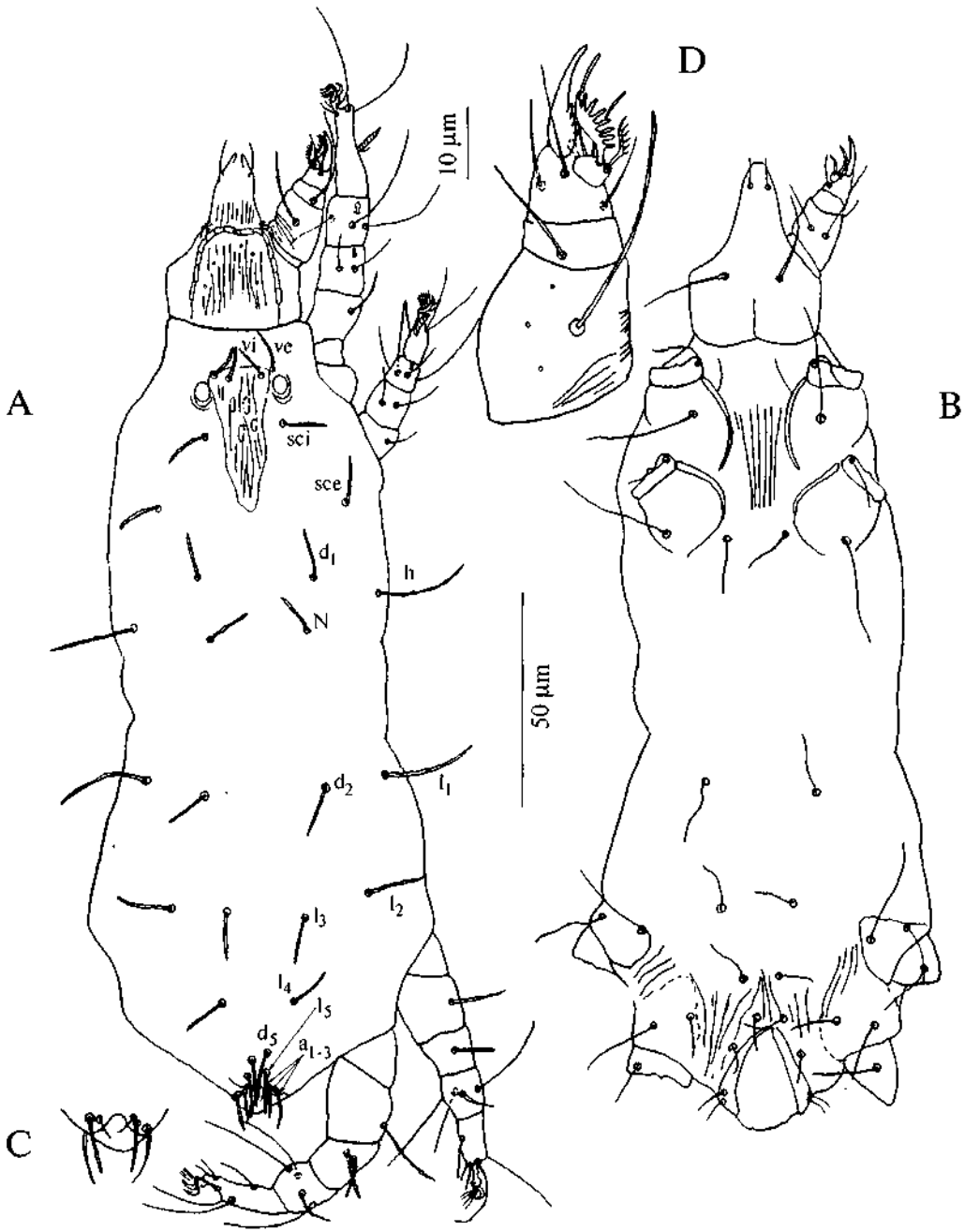


Fig. 27. *Chelacheles algericus* sp. n., female: A — dorsal view, B — ventral view, C — genital region in ventral view, D — palp in dorsal view.

**TRIBE CHELETOGENINI VOLGIN, 1969**

**GENUS CHELETOGENES OUDEMANS, 1905**

Presently the genus includes 12 species [Gerson et al., 1999].

**Remarks.** (i) Since 1977, a series of new species was described in the genus *Cheletogenes*, mostly from Pakistan [Qayyum, Chaudhri, 1977b; Rasool, Chaudhri, 1979; Akbar et al., 1988; Aheer, 1992]. Most of these species were inadequately described or based on variable characters (e.g. the number of teeth on the palpal claw, the number of

links on the peritremes in females etc.). Besides, Rasool and Chaudhri [1979] erroneously reported that there are 3 setae on the genu I of the female of *C. ornatus* Canestrini et Fanzago, 1876 (instead of 2 setae, that is the right number). The validity of these species is therefore questionable, and we think that they should be re-examined to be accepted as valid species. Our request to these authors for re-examining their species was unsuccessful.

In the meantime we propose to include these "dubious" species in a separate group or "scaber" group composed of the following species: *C. scaber*

Qayyum et Chaudhri, 1977, *C. petiginis* Qayyum et Chaudhri, 1977, *C. dissitus* Akbar, Rahi et Chaudhri, 1988, *C. vulgatus* Rasool et Chaudhri, 1979, *C. sagicis* Aheer, Akbar et Chaudhri, 1992, *C. carinatus* Aheer, Akbar et Chaudhri, 1992.

(ii) The species *Cheletogenes acerai* Khan, 1970 inadequately described is considered here as a species *inquirenda*.

#### KEY TO FEMALES OF THE GENUS *CHELETOGENES*

1. Hysterosomal shield with 2 pairs of median setae ..... 3  
— Hysterosomal shield with 1 pair of median setae or without setae ..... 2
2. Hysterosomal shield without setae .....  
..... *C. waitei* Gerson, 1994  
— Hysterosomal shield with 1 pair of median setae .....  
..... *C. monosetosus* Tseng, 1977
3. Femur IV with 1 seta ..... 4  
— Femur IV with 2 setae .....  
..... *C. ornatus* Canestrini et Fanzago, 1876
4. Propodosomal shield with 3 pairs of median setae ..... 5  
— Propodosomal shield with 4 pairs of median setae .....  
..... *C. iconis* Aheer, Akbar et Chaudhri, 1992
5. Median setae of hysterosomal shield similar in shape ..... species complex "*scaber*"  
— Second pair of median setae of hysterosomal shield 2 times narrower than setae of the first pair...  
..... *C. meihuashanense* Lin et Liu, 1994

**Material examined.** *C. ornatus* — four females, Hungary, Coll. Ripka. Two females and 2 males, Algeria. Coll. Athias. One female from *Cledistia triacanthos*, New York, N.Y. 09.I.1950. One female, Mexico, 11.V.1956. Coll. Alexander. One female, Maracay, Venezuela, 12.XII.1959. Coll. L. Knorr. One female, Chile, 14.IV.1960. Coll. J. Bache-Wijig.

#### GENUS *PROSOCHEYLA* VOLGIN, 1969

Seven species were included in this genus, which were grouped into two subgenera *Prosocheyla* (s.str.) (with 4 species) and *Reckiana* Volgin, 1969 (with 3 species) [Bochkov, Haustov, 1999].

We provide a description also one new species, *P. ripkai* sp.n.

#### KEY TO FEMALES OF THE GENUS *PROSOCHEYLA*

1. Dorsal seta of palpal tibia fan-like. Tibia I with 5 setae and 1 solenidion (subgenus *Prosocheyla*) .... 2  
— Dorsal seta of palpal tibia hair-like. Tibia I with 4 setae and 1 solenidion ..... 6

2. Median setae of propodosomal shields fan-like ..... *P. oaklandia* (Baker, 1949)  
— Median setae of propodosomal shields hieroglyph-like ..... 3
3. Dorsal seta of tibia I fan-like ..... 5  
— Dorsal seta of tibia I hair-like ..... 4
4. Hysterosoma with 6 pairs of fan-like setae. Hysterosomal shield with 6 pairs of setae .....  
..... *P. traubi* Baker, 1949  
— Hysterosoma with 7 pairs of fan-like setae. Hysterosomal shield with 7 pairs of setae .....  
..... *P. acanthi* Smiley et Moser, 1970
5. All the surface of the rostral shield covered by tubercles. Setae *l5* situated on hysterosomal shield. Propodosomal and hysterosomal shields with 8 and 7 pairs of median setae, respectively .....  
..... *P. villosa* Bochkov et Haustov, 1999  
— Only the lateral parts of the rostral shield covered by tubercles. Setae *l5* situated on hysterosomal shield. Propodosomal and hysterosomal shields with 7 and 6 pairs of median setae, respectively ...  
..... *P. ripkai* sp.n.
6. Dorsal median setae of idiosoma fan-like (subgenus *Reckiana*) ..... 7  
— Dorsal median setae of idiosoma hieroglyph-like ..... *P. citrifoliata* (Muma, 1964)
7. Dorsal seta of tibia I fan-like. Pygidial shield present ..... *P. herburni* (Lawrence, 1954)  
— Dorsal seta of tibia I hair-like. Pygidial shield absent ..... *P. buckneri* (Baker, 1949)

#### *Prosocheyla ripkai* sp.n.

**Female (holotype, Fig. 28).** **Gnathosoma** 140 long and 105 wide. Peritremes arch-like, consisting of 6 pairs of links. Surface of rostral shield covered by tubercles in the lateral parts, median part of this shield devoid of tubercles. Palpal femur 55 long and 40 wide. Dorsal seta of palpal femur 25 long. Dorsal seta of palpal tibia narrow, fan-like. Palpal claw with 7 teeth. Outer comb-like seta of palpal tarsi with 19–20 tines. Inner comb-like seta about with 15 tines. **Idiosoma** 400 long and 240 wide. **Dorsum:** All lateral setae and setae *d2* fan-like, about 20 long and 13 wide. Propodosomal shield 85 long and 105 wide, bearing setae *vi*, *ve*, *sci*, *sce* and 7 pairs of median hieroglyph-like setae. Hysterosomal shield about 80 long and 85 wide, bearing setae *l2–l4*, *d5* and 6 pairs of median hieroglyph-like setae. Setae *l1* lacking, setae *l5* situated off hysterosomal shield. **Venter:** anal setae *a1* and *a2* hair-like, setae *a3* fan-like. **Legs:** Solenidion  $\omega$  1 45 long. Tarsi I and tibia I subequal in length, about 55.



Fig. 28. *Prosocheyla ripkai* sp.n., female: A — dorsal view, B — genito-anal region, C — palpal tibia and tarsus, D — dorsomedian seta.

Tibia I with 5 hair-like setae and 1 solenidion. Shape of leg setae as in Fig. 28.

**Differential diagnosis.** This new species is closely related to *P. villosa*. It differs from the latter species by the following characters: in the female of *P. ripkai* sp.n. only the lateral parts of the rostral shield are covered with tubercles; setae *l5* are situated off the hysterosomal shield; the propodosomal and hysterosomal shields bear 7 and 6 pairs

of median setae, respectively. In the female of *P. villosa* all the surface of the rostral shield is covered by tubercles; setae *l5* are situated on hysterosomal shield; propodosomal and hysterosomal shields with 8 and 7 pairs of median setae, respectively.

**Etymology.** This new species is named for its collector, Dr. Geza Ripka, Budapest.

**Material examined.** *P. ripkai* sp.n. — female holotype, nymph paratype from a tree *Populus*



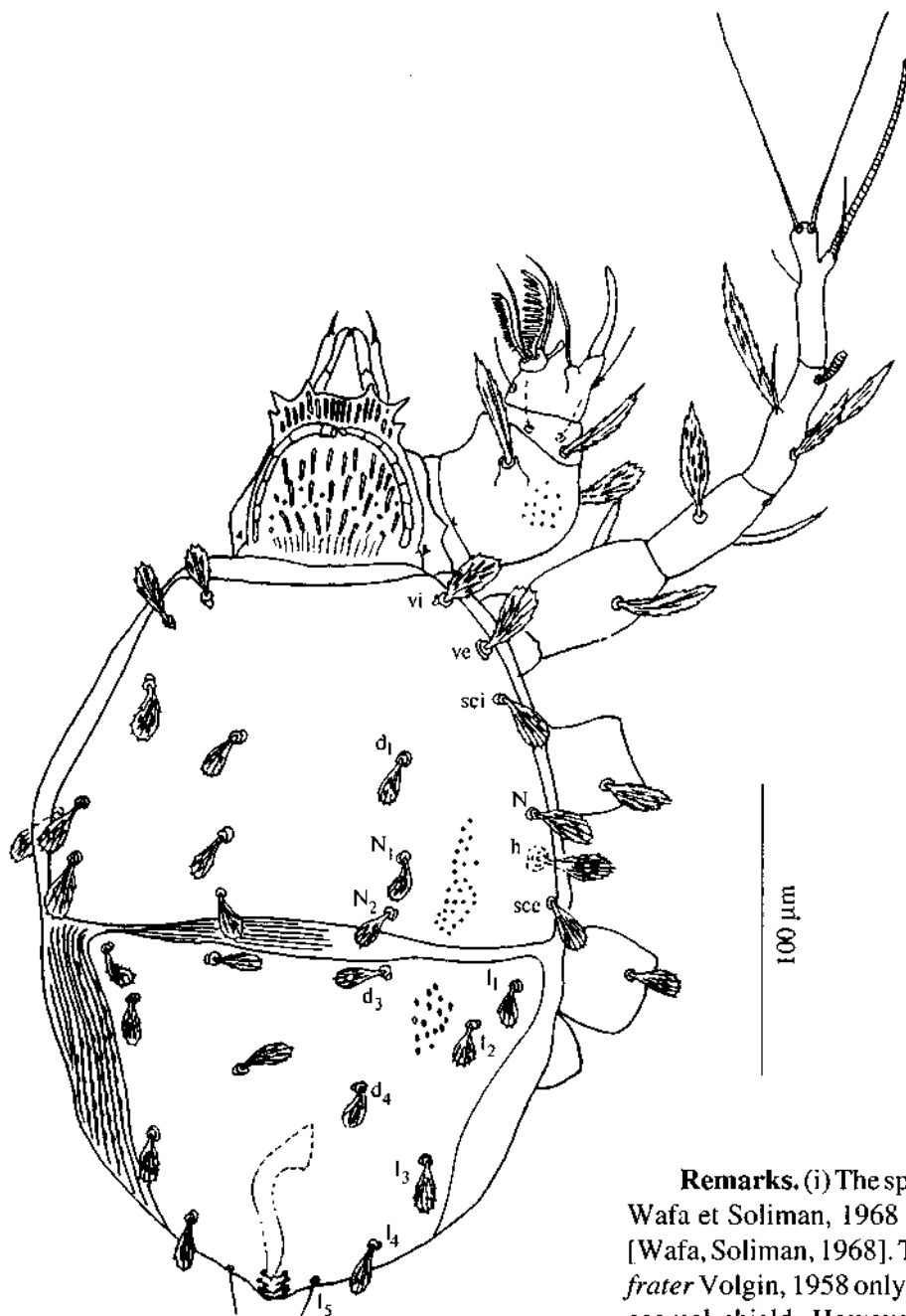


Fig. 29. *Eutogenes frater*, male in dorsal view.

*simonii*, Budapest, Hungaria, 13.IX.1991. Coll. Ripka. **Holotype** in the IRSNB.

*P. villosa* — female **holotype**, 1 female and nymph paratypes from passages of *Xylocleptes bispinus* in *Clemantis vitalba*, Crimea, Aj-Danil', 6.VI.1996. Coll. A. Khaustov (ZISP).

#### GENUS EUTOGENES BAKER, 1949

Presently the genus includes 14 species. A key to all the known species of this genus was published by Corpuz-Raros [1998].

**Remarks.** (i) The species *Eutogenes africanus* Wafa et Soliman, 1968 was described from UAR [Wafa, Soliman, 1968]. This species differs from *E. frater* Volgin, 1958 only by a slightly wider hysterosomal shield. However, an additional study of numerous specimens of *E. frater* has shown that this character is variable. Furthermore, the lateral margins of the hysterosomal shield are indistinct in some specimens. Therefore we consider *E. africanus* **syn. n.** as a junior synonym of *E. frater*.

(ii) It is possible that the male of *E. "africanus"* described by Wafa and Soliman [1968] actually belongs to the genus *Prosocheyla*.

Hereinafter we give a description of the male *E. frater*. All the males in our material were homeomorphic.

#### *Eutogenes frater* Volgin, 1958

**Male** (Fig. 29). **Gnathosoma** 120 long and 100 wide. Peritremes arch-like, with 7 pairs of

links. Rostral shield punctated, with 3 pairs of lateral teeth. Palpal femur 50 long and 45 wide. Dorsal seta of palpal femur 35 long. Outer dorsal seta of palpal tarsus with 13 tines. Inner dorsal seta of palpal tarsus with 17 tines. **Idiosoma** 235 long and 185 wide. All dorsal setae fan-like, about 25 long and 7 wide. Propodosomal shield 115 long and 165 wide, bearing 5 pairs of lateral setae and 3 pairs of median setae. Hysterosomal shield 85 long and 135 wide, bearing 4 pairs lateral setae and 2 pairs median setae. Penis 50 long. **Legs.** Tarsus I 50 long, tibia I 45 long. Length of solenidia of legs I-IV:  $\omega 1$  52,  $\omega 2$ ,  $\omega 3$  17,  $\omega 4$  20;  $\phi 1$ - $\phi 4$  about 13.

**Material examined.** *E. frater* — female **holotype**, Bulgaria (ZISP). Eighteen females and 3 homeomorphic males from *Rubus ulmifolius*, 07.X.1956. Alger, Algerie. Coll. Athias.

**TRIBE ORNITHOCHEYLETINI VOLGIN, 1969**

**GENUS BAKERICHEYLA VOLGIN, 1966**

Presently the genus includes 6 species [Fain, 1980].

**Remarks.** (i) The subspecies *Bakericheyla chanayi latior* Fain, 1972 **syn. n.** is synonymized here with *B. chanayi chanayi* (Berlese et Trouessart, 1889).

(ii) The holotype of *Bakericheyla faini* (Lawrence, 1954) was studied by the first author. This species is not distinguishable from *B. chanayi* [Fain, 1980]. Thus we consider *B. faini* **syn. n.** as a junior synonym of this species.

**KEY TO FEMALES OF THE GENUS BAKERICHEYLA**

- 1. Setae *ve* and *sci* long, at least 10 times longer than *vi* ..... 2  
— Setae *ve* and *sci* very short, not longer than *vi* .....  
..... *B. africana* Fain, 1979
- 2. Setae *d2* very short, not longer than *vi* ..... 4  
— Setae *d2* at least 3 times longer than *vi* ..... 3
- 3. Setae *d1* 70 long and *d2* 120 long .....  
.... *B. subquadrata* (Lawrence, 1959) (Fig. 31 A, B)  
— Setae *d1* 21 long and *d2* 50 long .....  
.. *B. transvaalica* (Lawrence, 1959) (Fig. 32 A, B)
- 4. Claws of legs about 10 long and not thickened .....  
.. *B. chanayi* (Berlese et Trouessart, 1889) (Fig. 30)  
— Claws of legs about 15-18 long, thickened ...  
..... *B. benoiti* Fain, 1980

**KEY TO MALES OF THE GENUS BAKERICHEYLA**

- 1. Hysterosomal shield lacking ..... 2

- Hysterosomal shield present .....  
..... *B. benoiti* Fain, 1980 (Fig. 32 D)
- 2. Setae *l1* and *l2* subequal .....  
.... *B. chanayi* (Berlese et Trouessart, 1889) and *B. transvaalica* (Lawrence, 1959) (Fig. 32 C)  
— Setae *l2* at least 3 times longer than *l1* .....  
..... *B. subquadrata* (Lawrence, 1959) (Fig. 31 C)

**Material examined** *B. chanayi* — ten females from *Carduelis carduelis*, Utrecht, Veterinary Faculty, Dorrestein. **Male holotype**, 1 male paratype and 10 female paratypes of *B. chanayi latior* (= *B. chanayi chanayi*) from *Paroaria gularis*, Zoo Anvers, 19.VII.1963. Coll. A. Fain (IRSNB).

*B. transvaalica* — four females and 2 males from *Merops apiaster*, Butare, Rwanda, 30.X.1995. Coll. A. Fain.

*B. subquadrata* — ten females and 3 males from *Merops pusillus*, Brakkloof MT 25.III.1963, 15.X.1963. Coll. Zumpt.

*B. benoiti* — female **holotype**, 18 paratypes females and 1 male paratype from *Melittophagus bulloki*, de Galim, Cameroun, 15-22.VIII.1971. Coll. M. Puylaert (MRAC).

*B. africana* — female **holotype** and female paratype from *Cypsiurus parvus*, Tzaneen, Transvaal, VII.1973. Coll. Zumpt (MRAC).

**TRIBE CHEYLETIELLINI VOLGIN, 1969**

**GENUS CHEYLETIELLA CANESTRINI, 1886**

Gerson et. al. [1999] included 7 species in this genus. Recently, Fain and Bochkov [2001] synonymized the genus *Bicheyletiella* Fain, 1972 with *Cheyletiella* and transferred its type species (*B. romerolagi* Fain, 1972) into the genus *Cheyletiella*.

**Remarks.** (i) According to the original description the species *Cheyletiella furmani* Smiley, 1970 (from the rabbit *Sylvilagus palustris*) differs from *C. parasitivorax* (Megnin, 1878) (from the rabbit *Oryctolagus cuniculus*) only by the slightly longer setae *d1* and *d2*, the straight aedeagus and the oblong solenidion on genu I [Smiley, 1970]. However, all these characters are variable. We have investigated several specimens from *Sylvilagus* spp. and *Oryctolagus cuniculus*. We did not find any difference between the mites of these host species. We consider therefore *C. furmani* **syn. n.** as a junior synonym of *C. parasitivorax*.

(ii) The species *Cheyletiella katangae* Fain, 1972 **syn. n.** is synonymized here with *C. parasitivorax*.

(iii) The species *Cheyletiella dengi* Hu et Hou, 1992 **syn. n.** described from *O. cuniculus* from

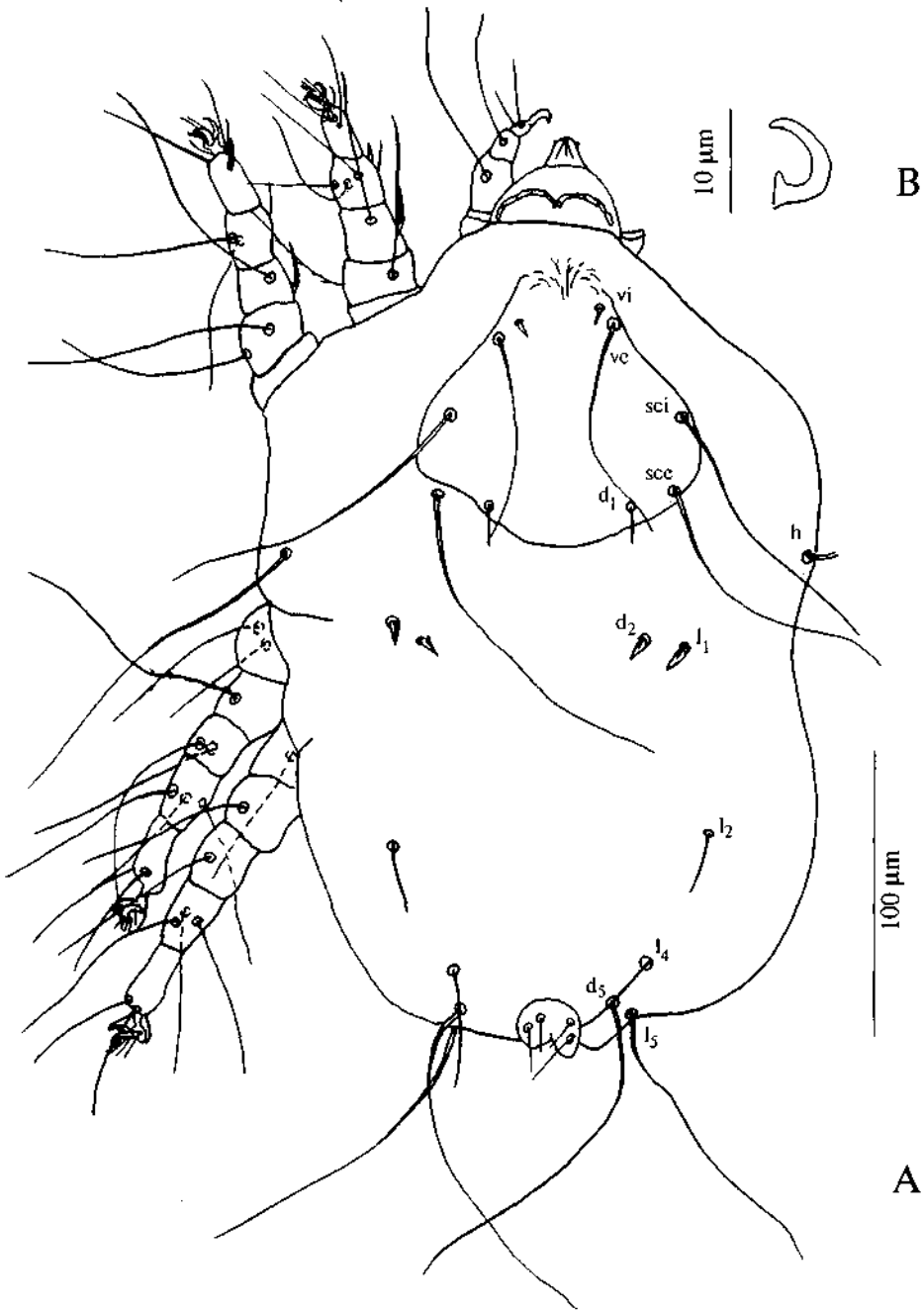


Fig. 30. *Bakericheyla chanayi*, female: A — dorsal view, B — claw of leg IV.

China is not distinctly different from *C. parasitivorax*. Therefore it is synonymized here with *C. parasitivorax*.

**KEY TO FEMALES OF THE GENUS  
CHEYLETIELLA**

1. Hysterosomal shield either completely lacking or represented by two small sclerotized plates, which present behind the setae *ll* ..... 2  
 — With a median hysterosomal shield much wider than long and devoid of setae .....  
 ..... *C. romerolagi* (Fain, 1972)

2. Without hysterosomal sclerotized plates behind setae *ll* ..... 3  
 — With a pair of hysterosomal sclerotized plates behind setae *ll* ..... *C. yasguri* Smiley, 1965  
 3. Setae *d2* subequal to *ll* or 1.4 times shorter .... 4  
 — Setae *d2* about 3 times shorter than *ll* .....  
 ..... *C. strandtmanni* Smiley, 1970  
 4. Solenidion on genu I globular or oblong .....  
 ..... *C. parasitivorax* (Megnin, 1878)  
 — Solenidion on genu I conical .....  
 ..... *C. blakei* Smiley, 1970

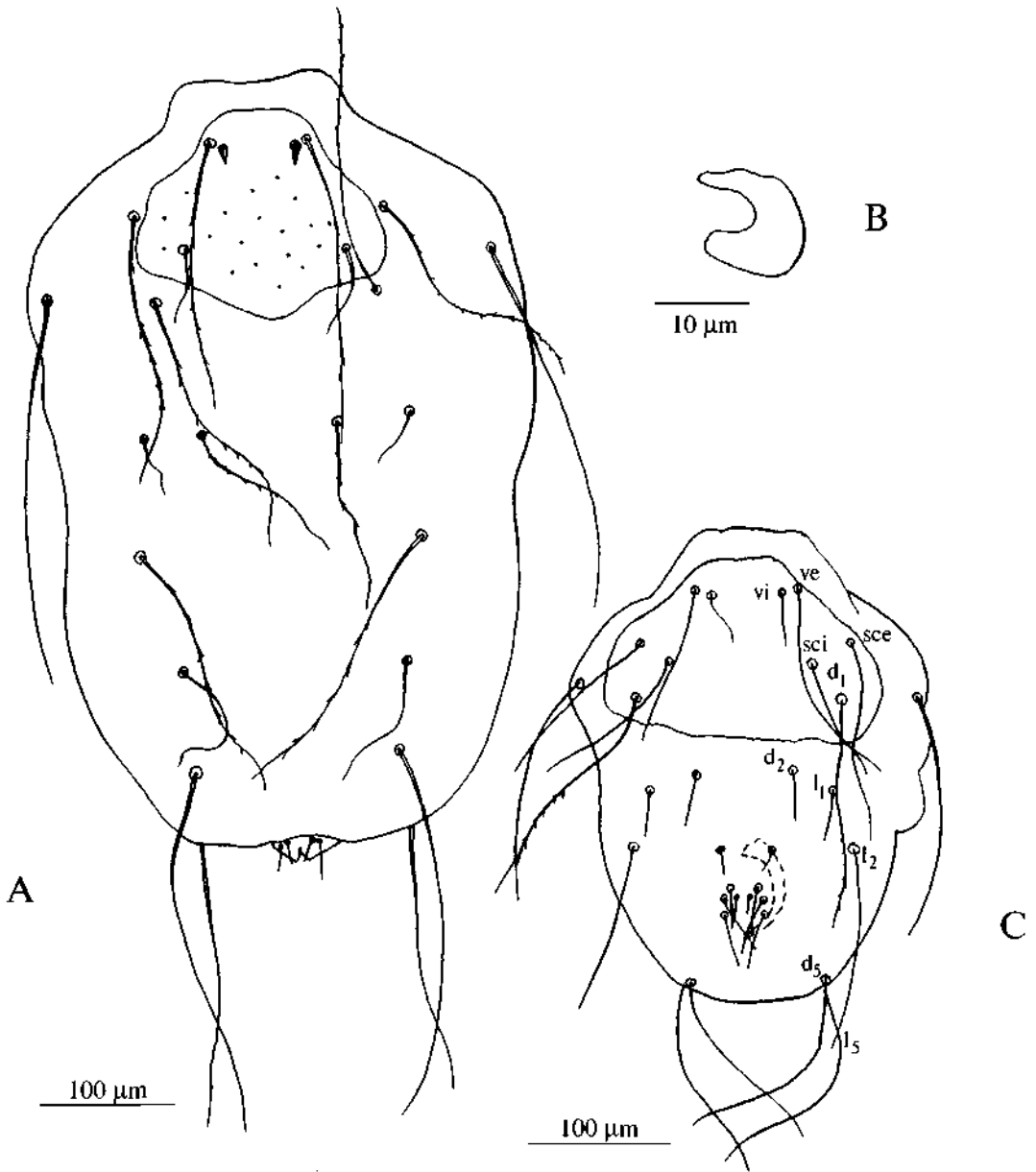


Fig. 31. *Bakericheyla subquadrata*: A — idiosoma of female in dorsal view, B — claw of leg IV of female, C — idiosoma of male in dorsal view.

**KEY TO MALES OF THE GENUS  
CHEYLETIELLA**

- 1. Solenidion on genu I not heart-shaped ..... 2  
 — Solenidion on genu I heart-shaped .....  
 ..... *C. yasguri* Smiley, 1965
- 2. Setae *d2* slightly shorter than *l1* ..... 3  
 — Setae *d2* slightly longer than *l1* .....  
 ..... *C. romerolagi* (Fain, 1972) (Fig. 33)
- 3. Solenidion on genu I globular or oblong .....  
 ..... *C. parasitivorax* (Megnin, 1878)  
 — Solenidion on genu I conical .....  
 ..... *C. blakei* Smiley, 1970

**Material examined.** *C. parasitivorax* — eight females and 3 males from *Oryctolagus cuniculus*,

NL-Sevenum, Holland, 05.XII.1972. Coll. Lukoschus. Two females and male from *Sylvilagus bachmanni*, Corvallis, Oregon, USA, 12.VII.1981. Coll. Gettinger. Two females from *S. floridanus*, Vigo-Co, Indiana, USA, 20.V.1976. Coll. N. Wilson. Female **holotype**, 3 female paratypes, 2 male paratypes and 3 nymph paratypes of *C. katangae* from *Lepus whytei*, Zaire. Coll. Poelman (MRAC).

*C. blakei* — three females and 1 male from *Felis catus*, Damchik, Russia, 25.VII.1950.

*C. yasguri* — ten females and 10 males from a dog, Holland, 14.IX.1973. Coll. Bakkers.

*C. romerolagi* — female **holotype**, 5 females and 11 males paratypes from *Romerolagus diazi*, Mexico. Coll. A. Fain (IRSNB).

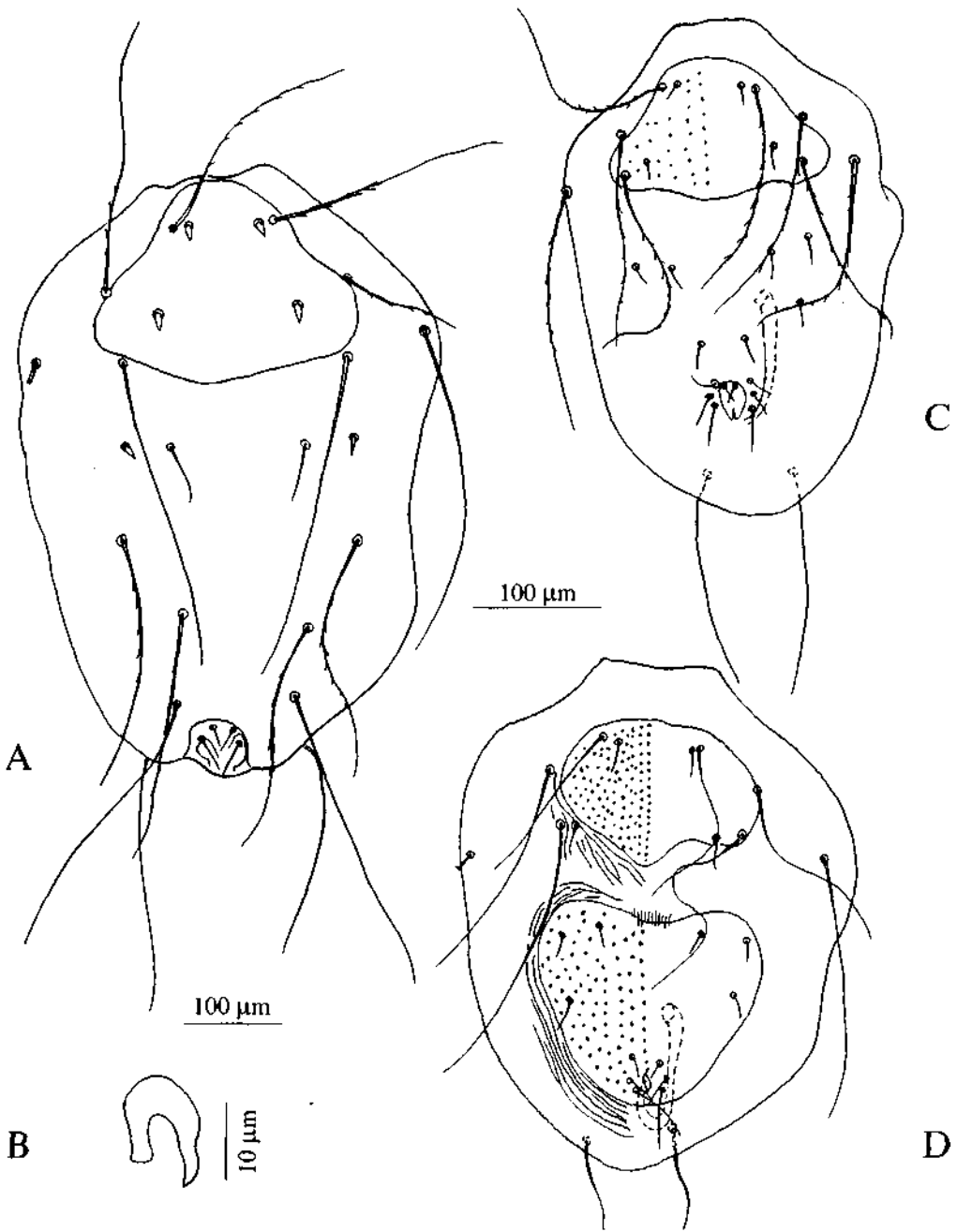


Fig. 32. *Bakericheyla* spp. *B. transvaalica*: A — idiosoma of female in dorsal view, B — claw of leg IV of female, C — idiosoma of male in dorsal view; *B. benoitii*: D — idiosoma of male in dorsal view.

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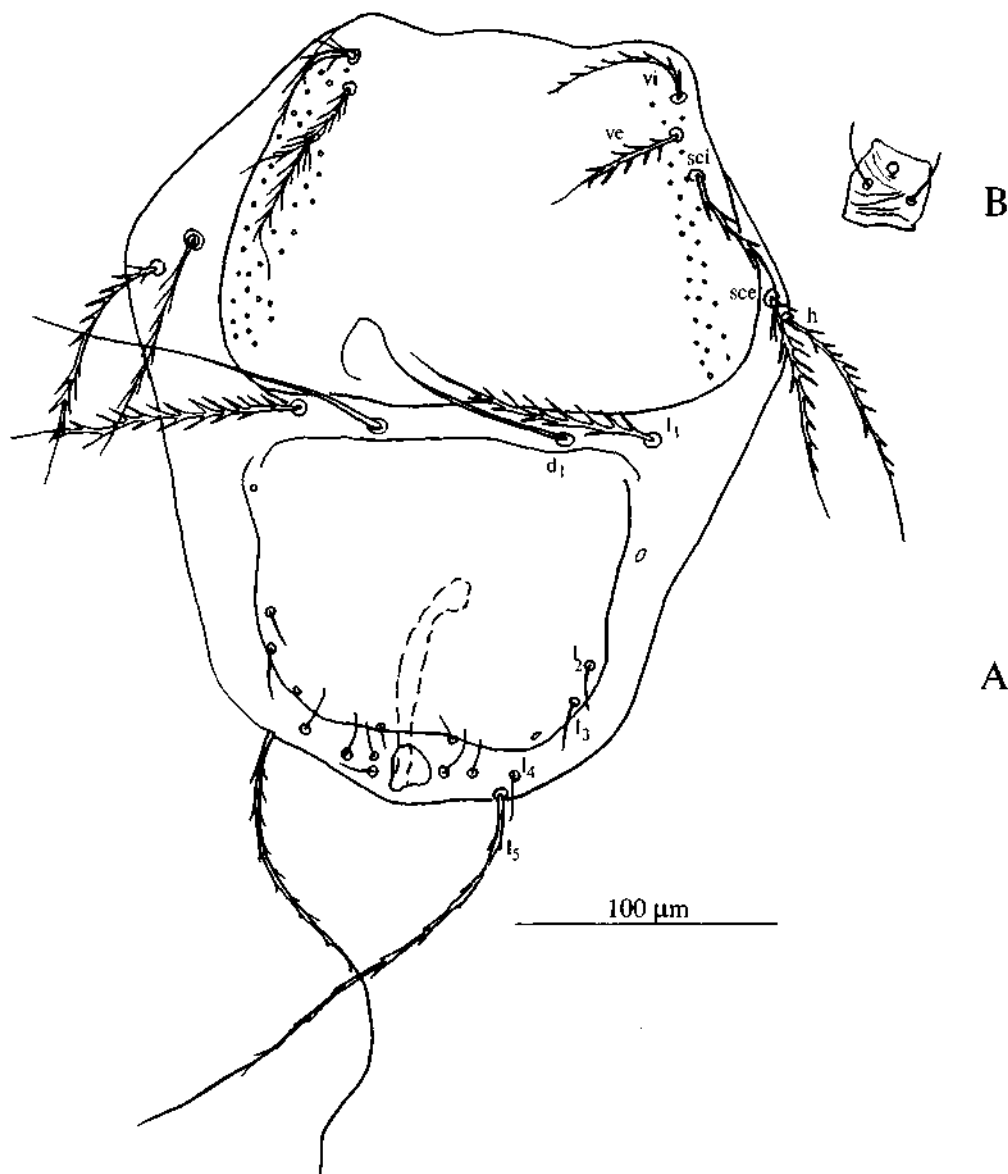


Fig. 33. *Cheyletiella romerolagi*, male: A — idiosoma in dorsal view, B — genu I.

**LIST OF TAXONOMIC MODIFICATION  
PROPOSED IN THIS PAPER**

**New species:** *Bak nadchatrami* sp.n., *Chelacaropsis kenyensis* sp.n., *Chelacheles algericus* sp.n., *Cheletophyes vespae* sp.n., *Hoffmannita gersoni* sp.n., *Kenyacheylus troglodytes* g.n., sp.n., *Ker afrotropicalis* sp.n., *Prosocheyla ripkai* sp.n.

**Redescribed species:** *Acaropsella kinshasensis* Fain, 1972, *Cheletomorpha bakeri* Lawrence, 1954, *Cheletophyes vitzthumi* Oudemans, 1914, *Cheletophyes eckerti* Summers et Price, 1970, *Hyllopecheyla bunguranensis* Fain, 1972, *Samsinakia carabae* Ramaraju et Mohanasundram, 1999.

**Males described for the first time:** *Chelacaropsis terrestris* Corpuz-Raros et Sotto, 1977, *Cheletonella vesperilionis* Womersley, 1941, *Eu-*

*togenes frater* Volgin, 1958, *Ker bakeri* Zaher et Soliman, 1967, *Mexecheles virginicensis* (Baker, 1949).

**Females described for the first time:** *Pavlovskicheyla philippicana* Corpuz-Raros, 1998.

**Synonymized species:** *Acaropsella aegyptiaca* (Wafa et Soliman, 1968) syn.n. with *Acaropsella volgini* (Gerson, 1967); *Acaropsella filippina* Corpuz-Raros syn.n. with *Acaropsella kinshasensis* Fain, 1972; *Acaropsella konoii* Tseng, 1977 syn.n. with *Acaropsella kinshasensis* Fain, 1972; *Bakericheyla chanayi latior* Fain, 1972 syn.n. with *B. chanayi chanayi* (Berlese et Trouessart, 1889); *Bothrocheyla beeri* (Thewke et Enns, 1972) syn.n. with *B. pavlovskiyi* (Volgin, 1964); *Bakericheyla faini* (Lawrence, 1954) syn.n. with *B. chanayi*

(Berlese et Trouessart, 1889); *Cheletonella caucasica* Volgin, 1955 **syn.n.** with *C. vespertilionis* Womersley, 1941; *Cheletophyes xylocopae* Ramaraju et Mohanasundaram, 1999 **syn.n.** with *C. indicus* Smiley et Whitaker, 1981; *Cheyletiella furmani* Smiley, 1970 **syn.n.** with *Cheyletiella parasitivorax* (Megnin, 1887); *Cheyletiella katangae* Fain, 1972 **syn. n.** with *Cheyletiella parasitivorax* (Megnin, 1887); *Cheyletiella dengi* Hu et Hou, 1992 **syn. n.** with *Cheyletiella parasitivorax* (Megnin, 1887); *Cunliffella tuberculicoxa* (Volgin, 1964) **syn.n.** with *C. whartoni* (Baker, 1949); *Eucheyletia asiatica* Volgin, 1963 **syn. n.** with *E. bishoppi* Baker, 1949; *Eucheyletia oregonensis* Smiley et Whitaker, 1981 **syn.n.** with *E. bishoppi* Baker, 1949; *Eucheyletia taurica* Volgin, 1963 **syn.n.** with *E. flabellifera* (Michael, 1878); *Eutogenes africanus* Wafa et Soliman, 1968 **syn.n.** with *E. frater* Volgin, 1958; *Hemicheyletia hissariensis* Mathur et Mathur, 1981 **syn.n.** with *Lepidocheyla caucasica* Volgin, 1963; *Hoffmannita navicula* Lin et Zhang, 1997 **syn.n.** with *H. clavipes* Volgin, 1963; *Microcheyla ozkani* Koc et Ayyildiz, 1995 **syn.n.** with *M. granifera* Kuznetzov, 1977; *Paracheyletia samsinaki* Volgin, 1966 **syn.n.** with *Paracheyletia pyriformis* (Banks, 1904); *Paracheyletia hortensis* Volgin, 1969 **syn.n.** with *Paracheyletia pyriformis* (Banks, 1904).

**Species inquirendae:** *Cheletogenes aceriai* Khan, 1970, *Cheletomorpha orientalis* Oudemans, 1928, *Cheletomorpha opacus* Qayyum et Chaudhri, 1977, *Cheletomorpha obrutus* Qayyum et Chaudhri, 1977, *Cheletonella juglandis* Xia et al., 1999, *Cheletophyes shendei* Putatunda et Kapil, 1999, *Cheletophyes orientalis* Putatunda et Kapil, 1999, *Cheletophyes deodicari* Putatunda et Kapil, 1999, *Cheletophyes newtoni* Putatunda et Kapil, 1999, *Cheletophyes rutneri* Putatunda et Kapil, 1999, *Cheletophyes harnaji* Putatunda et Kapil, 1999, *Cheletophyes haryanaensis* Putatunda et Kapil, 1999, *Neoeucheyla macrocorneus* Soliman, 1975, *Neoeucheyla ploceus* Gupta et Paul, 1992.

**New combinations:** *Acaropsellina nanchangensis* (Xia et Zhu, 1997) **comb.n.** transferred from *Acaropsella*; *Acaropsellina levis* (Corpuz-Raros, 1972) transferred from *Neoacaropsis*; *Cunliffella dua* (Corpuz-Raros, 1998) **comb.n.** transferred from *Neoeucheyla*; *Cunliffella maysa* (Corpuz-Raros, 1998) **comb.n.** transferred from *Neoeucheyla*.

**Invalid species:** *Bakligysculatus* Flechtmann, 1971.

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