

**NOTES ON SOME POORLY KNOWN SPECIES OF THE GENUS
NEOCHEYLETIELLA BAKER, 1949 (ACARI, CHEYLETIDAE)
WITH A KEY TO THE GENUS**

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Summary

The genus *Neocheylettiella* Baker, 1949 is re-defined and the following species are redescribed and figures given for the first time: *N. media* Fain, 1972; *N. avicola* Fain, 1972; *N. amandavae* Fain, 1972; *N. pittae* Fain, 1972; *N. siva* Fain, 1972. *N. oudemansi* Volgin, 1969 is placed in the synonymy of *N. microrhynchus* (Berlese & Trouessart, 1889). *N. heteropalpus* (Megnin, 1878) is presumed to belong to the genus *Apodicheles* Fain, 1979 although the type material of that species is probably lost. A new nomenclature for the idiosomal chaetotaxy is proposed for the males of *Neocheylettiella* spp. and of *Cheyletus malaccensis* Oudemans. A key is given to the females and males of the species of genus *Neocheylettiella*.

Introduction

The genus *Neocheylettiella* Baker, 1949 (type species: *N. rohweri* Baker, 1949) contains, up to now, 15 species, all parasitic on the skin of birds, mostly Passeriformes. Some of these species have been incompletely described and their status is therefore uncertain.

The purpose of this paper is to redescribe some of these species and to give the first figures for these. A key to the species is given for females and males.

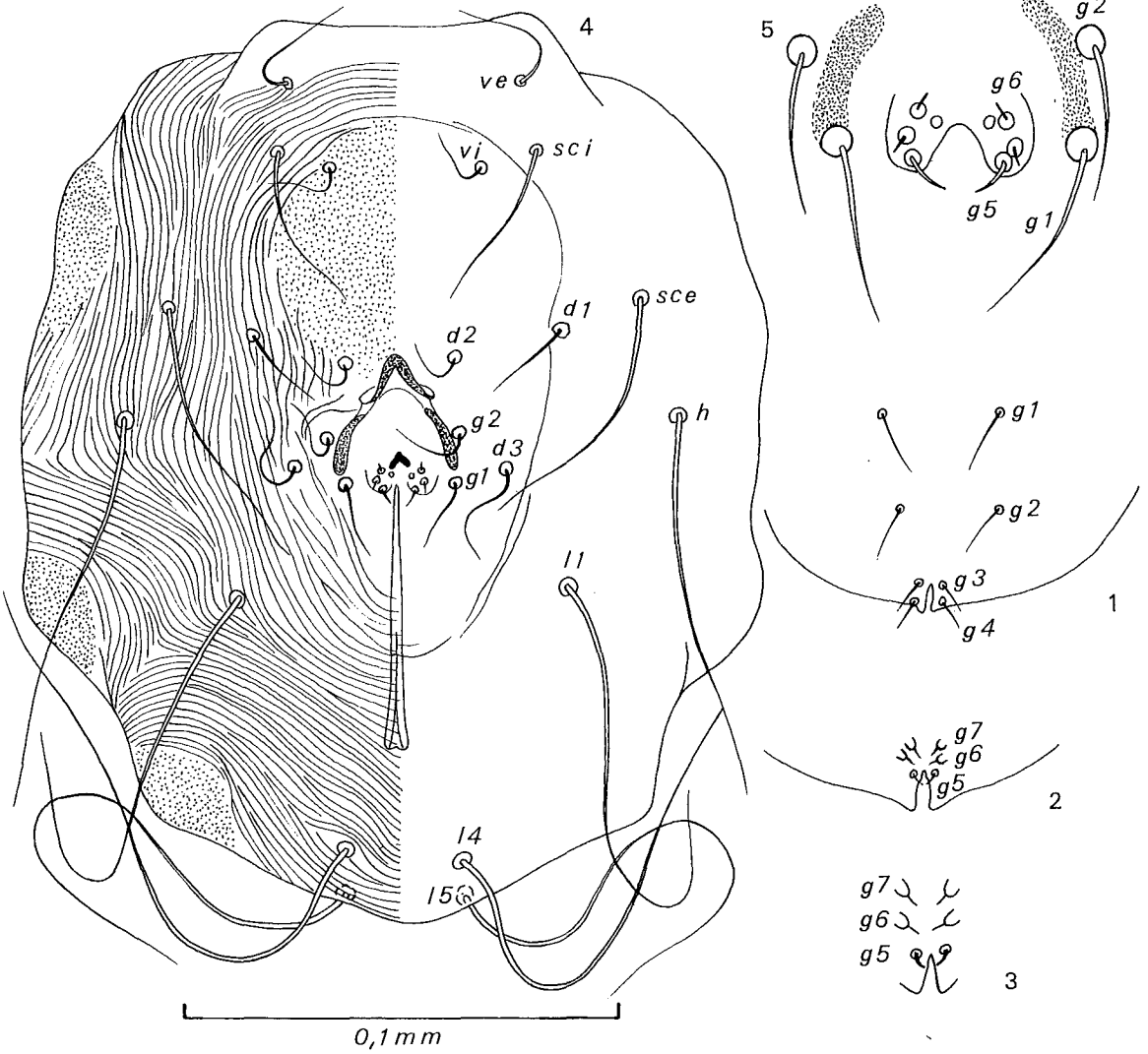
In previous papers (Fain, 1979a and 1979b) I proposed a system of nomenclature for the idiosomal setae in the females of Cheyletidae (s.l.). This system is also utilized here and, in addition, the idiosomal chaetotaxy of the males in

the genera *Cheyletus* and *Neocheylettiella* is given.

Idiosomal chaetotaxy in the males of Cheyletus malaccensis and Neocheylettiella spp.

In the male of *Cheyletus malaccensis* the following setae are present: *vi*, *ve*, *sci*, *sc e*, *h*, *l1* to *l5*, *ic 1*, *ic 3*, *ic 4*, coxals I to IV. The *d* series is nearly complete and *d1*, *d2*, *d3* and *d5* are present. There are 7 pairs of genital setae disposed as follows: two rather long pairs on opisthogaster (*g1* and *g2*), two pairs of thin setae around the genital orifice (*g3*, *g4*) and three pairs of small setae situated dorsally in the form of small curved spines (*g5*) or straight short rods (*g6*–*g7*). These three setae, *g5* to *g7*, are situated on the top of small conical cuticular papillae (Figs. 1 & 2).

In the genus *Neocheylettiella* the genital orifice, as well as the genital setae, has migrated dorsally, generally to the middle of the dorsum, and these are all situated close to the *d* setae. It is therefore sometimes difficult to distinguish between the *g* setae and the *d* setae. I consider the more anterior and external setae as *d1* to *d3*, and those situated more internally and generally more posteriorly as *g* setae. The *g5* setae are the most easily recognizable, being always small, curved and situated very close to the genital orifice. These setae are lacking in *N. megaphallos*. Setae *g1* and *g2* are generally absent but, when present, are the longest and the most external of the genital setae. Close to the *g5* setae there are two or three pairs of very small setae probably representing *g4*, *g6* and *g7*.



Cheyletus malaccensis Oudemans, Male Figs. 1-3. 1. Genital area, ventral view; 2. Genital area, dorsal view; 3. Genital area, dorsal view, enlarged. *Neocheyletiella media* Fain, Figs. 4-5. 4. Male in dorsal view; 5. Genital area.

Genus *Neocheyletiella* Baker, 1949 = *Ornithocheyla* Lawrence, 1959

Definition

Females: Cuticle finely striated. Propodonotum with a triangular area (=scutum) where the striations are different from those on the other parts of the dorsum. Hysteronotum without such an area and without a true shield. Venter: Epimeron I never fused in females. Epimera I and II well developed, sometimes

fused at apex Epimera III and IV poorly developed. All coxae are striated. Trochanters I-II close together and widely separated from trochanters III; trochanters III and IV widely separated from each other. Gnathosoma small. Palps poorly developed, palptarsus without combs, the tibia with a relatively small curved (not toothed) apical spine. All the legs ending in a pair of strong claws inflated basally and a rayed pulvillus.

Chaetotaxy: These setae are present: *ve*, *vi*,

sci, *sce*, *h*, *d1* to *d3*, *d5*, *l1* to *l5*, *g1* to *g5*, *ic1*, *ic3* and *ic4*; setae *ic4* are absent in some species. Coxae 2-1-1-1. The anal setae (*a1*, *a2*, *a3*) are lacking. Legs (I-IV): Trochanters 1-1-2-1; Femora 2-2-1-1; Genua 2-2-1-0; Tibiae 4-4-3-3 or 4-4-2-3 or 4-4-2-2; Tarsi 9-7-7-6 or 9-7-6-6. Solenidiotaxy: Tarsi 1-1-0-0; Tibiae 1-0-0-0; Genua 1-0-0-0. Males with the genital orifice dorsal; epimerae I either free or fused in the form of Y; epimera I and II fused or free. Type species: *Neocheyletiella rohweri* Baker, 1949.

Key to the genus *Neocheyletiella*

Females

Notes:

1. *N. macronycha* (Megnin, 1878), incompletely described, is not included here.
2. *N. heteropalpus* (Megnin, 1878) probably belongs to the genus *Apodicheles* Fain, 1979.
3. *N. siva* Fain, 1972 is known only from the male.
4. The characters of *N. rohweri* Baker, 1949 and *N. smallwoodae* Baker, 1949 given in this key have been checked on the type material by Mr. R. Smiley.)

1. Tibiae III and IV with three setae; two very thin and short ventrals and one long and strong dorsal. 2
The long dorsal seta absent on both tibia III and sometimes also on tibia IV 6
2. Epimera I and II free. At least the setae *ve*, *sci*, *sce*, *h* and *l1* long and distinctly barbed. 3
Epimera I and II fused. Other characters variable. 5
3. Setae *d1*, *d2*, *d3* and *l2* thin, short (20-35 μ) and smooth. On Hirundinidae.
..... *N. microrhyncha*
(Berlese & Trouessart, 1889)
(= *N. oudemansi* Volgin, 1969)
= *N. callawaye* Smiley, 1970)
Setae *d1*, *d2*, *d3* and *l2* longer and barbed 4
4. All the propodonal setae distinctly barbed. Setae *vi* as long as *ve* and *sci*. Setae *d2* and *d3* about half as long as

d1. Setae *l3*, *l4*, *l5* smooth and about twice as long as the other dorsal setae. Idiosoma 300 μ long. On *Sitta pygmaea melanotis* (Paridae, Sittinae)
..... *N. rohweri*
Baker, 1949

All propodonal setae distinctly barbed and relatively long except *vi* which is smooth and half as long as *ve* and *sci*. Setae *d2* and *d3* almost as long as *d1*. Setae *l3*, *l4* and *l5* not longer than other dorsal setae. Idiosoma 366 μ long. On *Artamus cyanopterus* (Artamidae)
..... *N. artami*
Domrow, 1966

5. Only the *ve* and *sci* are barbed, all the other dorsal setae are smooth. Setae *d1*, *d2*, *d3* and *l2* 75 to 90 μ long; other dorsal setae longer especially *l1*, *l3*, *l4* and *l5*. Setae *ic4* present. Claws large. On *Leiothrix lutea* (Timaliidae).
..... *N. media*
Fain, 1972

All propodonal setae finely barbed. Setae *l1*, *l2* long and distinctly barbed, setae *d1* short, faintly barbed; setae *l3* barbed; *l4* and *l5* long and smooth. Claws small. On *Leucosticte australis* (Fringillidae, Carduelinae).
..... *N. smallwoodae*
Baker, 1949

6. The long dorsal seta absent on both tibiae III and IV. Epimera I-II fused. All dorsal setae and palpsetae smooth. On *Amandava amandavae* (Ploceidae, Estrildinae).
..... *N. amandavae*
Fain, 1972
The long dorsal seta is present on tibia IV and absent on tibia III. 7
7. Epimera I-II fused. Setae *ve* and dorsal setae of palpfemur and palpgenu with a few barbs, other dorsal setae smooth...
..... 8
Epimera I-II free. All idionotal and palpsetae smooth. On various birds.
..... *N. avicola*
Fain, 1972
(? *N. vestergaardi*
Smiley, 1977)

8. Setae *ve*, *sci*, *d1*, *d2*, *d3* and *l2* 60 μ , 110 μ , 50–60 μ , 30 μ , 60 μ and 90 μ long respectively. (From types). On *Esttrilda erythronotos* (Ploceidae).
 *N. megaphallos*
 (Lawrence, 1959)
 Setae *ve*, *sci*, *d1*, *d2*, *d3* and *l2* 120 μ , 160–180 μ , 90 μ , 50 μ , 100–120 μ and 110 μ long respectively. On *Pitta megarhyncha* (Pittidae).
 *N. pittae*
 Fain, 1972

Males

Notes:

1. The males of *N. amandavae*, *N. rohweri*, *N. pittae* and *N. avicola* are unknown.
2. We have not seen the male of *N. smallwoodae*.
3. The characters of *N. artami* are those of the original description.)

1. Tibiae III and IV with three setae, two ventral, very thin and rather short and one dorsal long and strong 2
 Only tibia IV with three setae (one long dorsal and two short ventral); tibia III with only the two short and thin ventral setae 4
2. Epimera I fused and Y-shaped, the apex of sternum not fused with the apices of epimera II. All dorsal setae barbed except *vi* and *d2* which are smooth. Penis sinuous (80–100 μ). Seta *g1* and *d1* 100 μ long and barbed

..... *N. artami*

Domrow, 1966

Epimera I not fused in a sternum, their apices either fused with epimera II or free. Penis straight. 3

3. Epimera I–II fused, closing the coxa I. Dorsal setae smooth

..... *N. media*

Fain, 1972

Epimera I–II with apices free. Setae *sci*, *sce*, *h*, *l1* are barbed

..... *N. microrhyncha*

Berl. and Trt., 1889

(= *N. oudemansi* Volgin, 1969

= *N. callawayae* Smiley, 1970)

4. Epimera I not fused in the midline but their apices fused with epimera II. Penis very long (175 μ). Genital orifice situated on propodonotum.
 *N. megaphallos*
 (Lawrence, 1959)
 Epimera I fused in Y. Penis much shorter (75 μ). Genital orifice more posterior

..... *N. siva*

Fain, 1972

1. *Neocheyletiella media* Fain, 1972

Female (Figs. 6, 8): Holotype with idiosoma 450 μ long and 320 μ wide. *Dorsum*: Propodonotal shield triangular, small (90 μ long and 70 μ wide), with thick, interrupted and indistinct striations. Setae *vi* smooth, situated on the anterior border of the shield and 50 μ long. Setae *ve* and *sci* distinctly barbed, 75 μ long. All the other dorsal setae are smooth and long (at least 75 μ) except *d5* (30 μ), the longest being *l1*, *l3* and *l5* (130 to 150 μ). In the holotype some of these setae are incomplete. *Venter*: Epimera I–II fused. All ventral setae are smooth. Setae *ic4* are present. Coxae with 2–1–1–1 setae. Maximum width of gnathosoma (between palpi) 84 μ m. Dorsal setae of palpfemur and palpgenu barbed. Peritreme with 2×6 segments. Legs rather short with strong claws. Chaetotaxy and solenidiotaxy given previously (Fain, 1979). The tibia III and IV bear two small ventral and one long and strong dorsal setae.

Male (Figs. 4, 5): Our specimen comes from the type host but is not a paratype. Idiosoma 200 μ long, 165 μ wide. Propodonotal shield 60 μ wide. Genital orifice situated in the middle of dorsum. There are five pairs of genital setae: three internals very small and two externals longer. Penis 58 μ long, straight and rather thick. Setae *d1*, *d2*, *d3* are much shorter than setae *l1*, *l4* and *l5*. Setae *l2*, *l3*, *d4* and *d5* are missing. Tibiae III and IV bear three setae as in the female. Apparently all the dorsal setae are smooth. *Venter*: Epimera I not fused in midline but their apices are fused with epimera II.

Host and locality: On a cage-bird *Leiothrix lutea* (Passeriformes, Timaliidae), originating from the Himalayas or Southern China, and

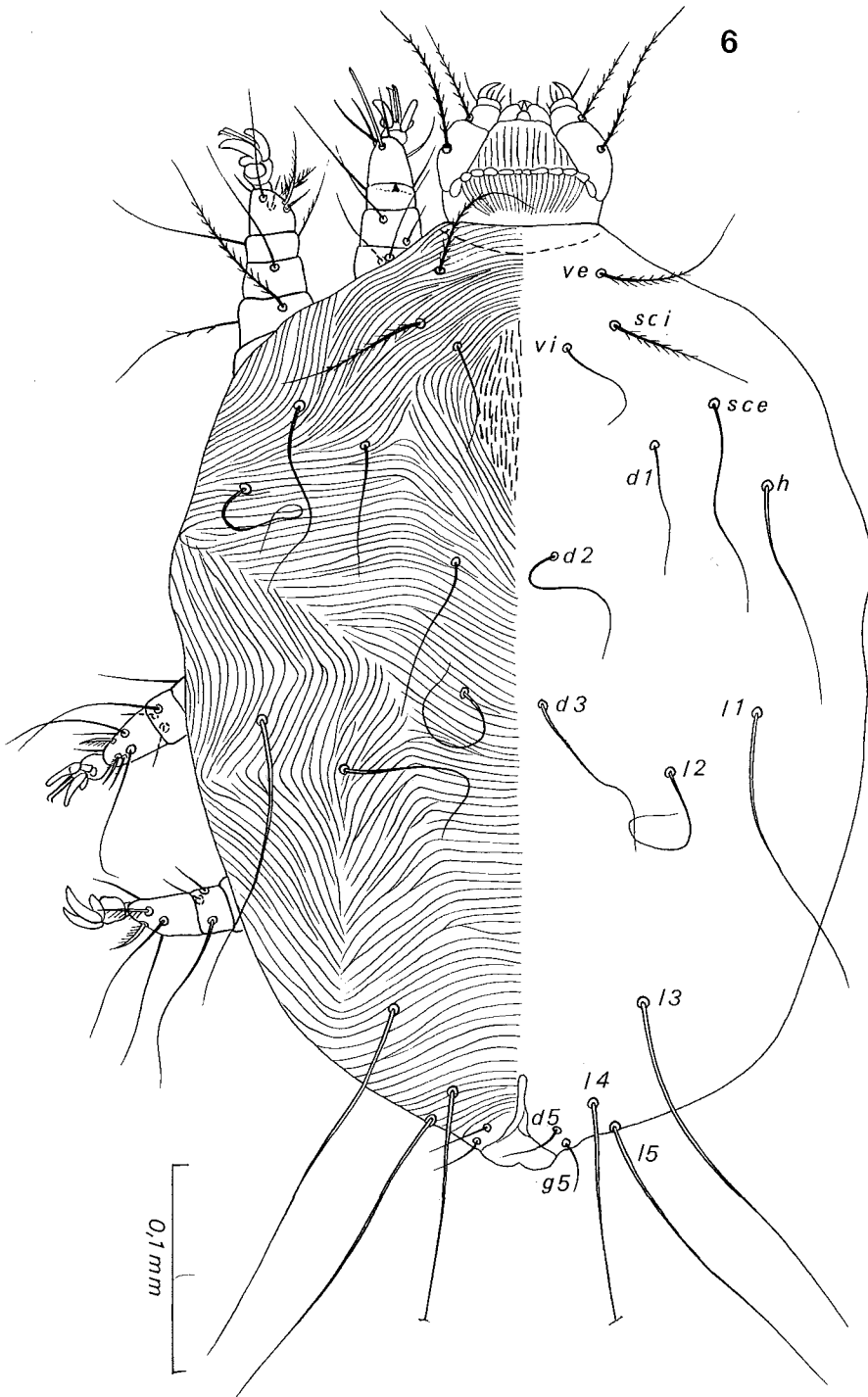


Fig. 6. *Neocheyletiella media* Fain, holotype female in dorsal view.

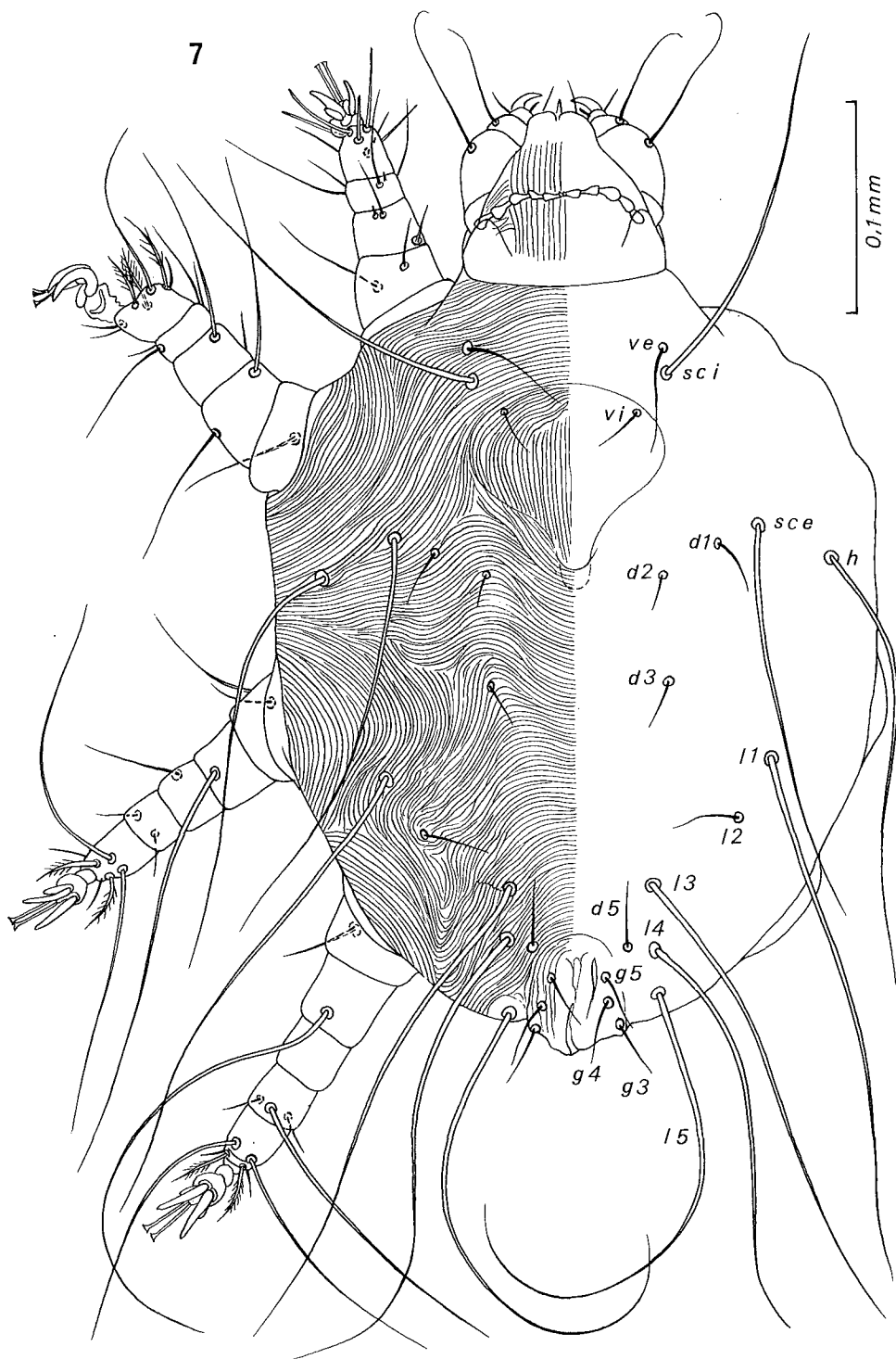


Fig. 7. *Neocheyletiella avicola* Fain, holotype female in dorsal view.

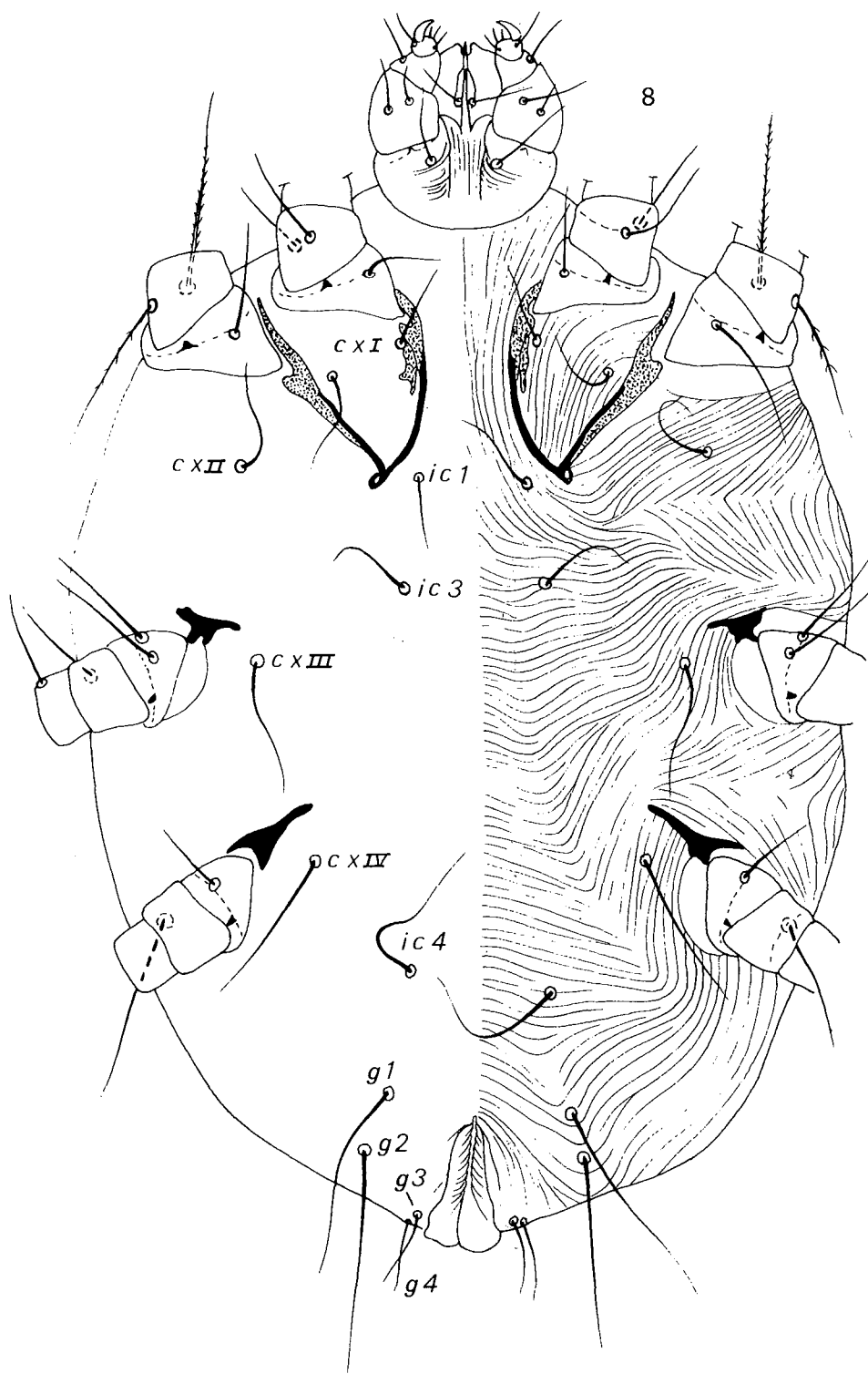


Fig. 8. *Neocheyletella media* Fain, holotype female in ventral view.

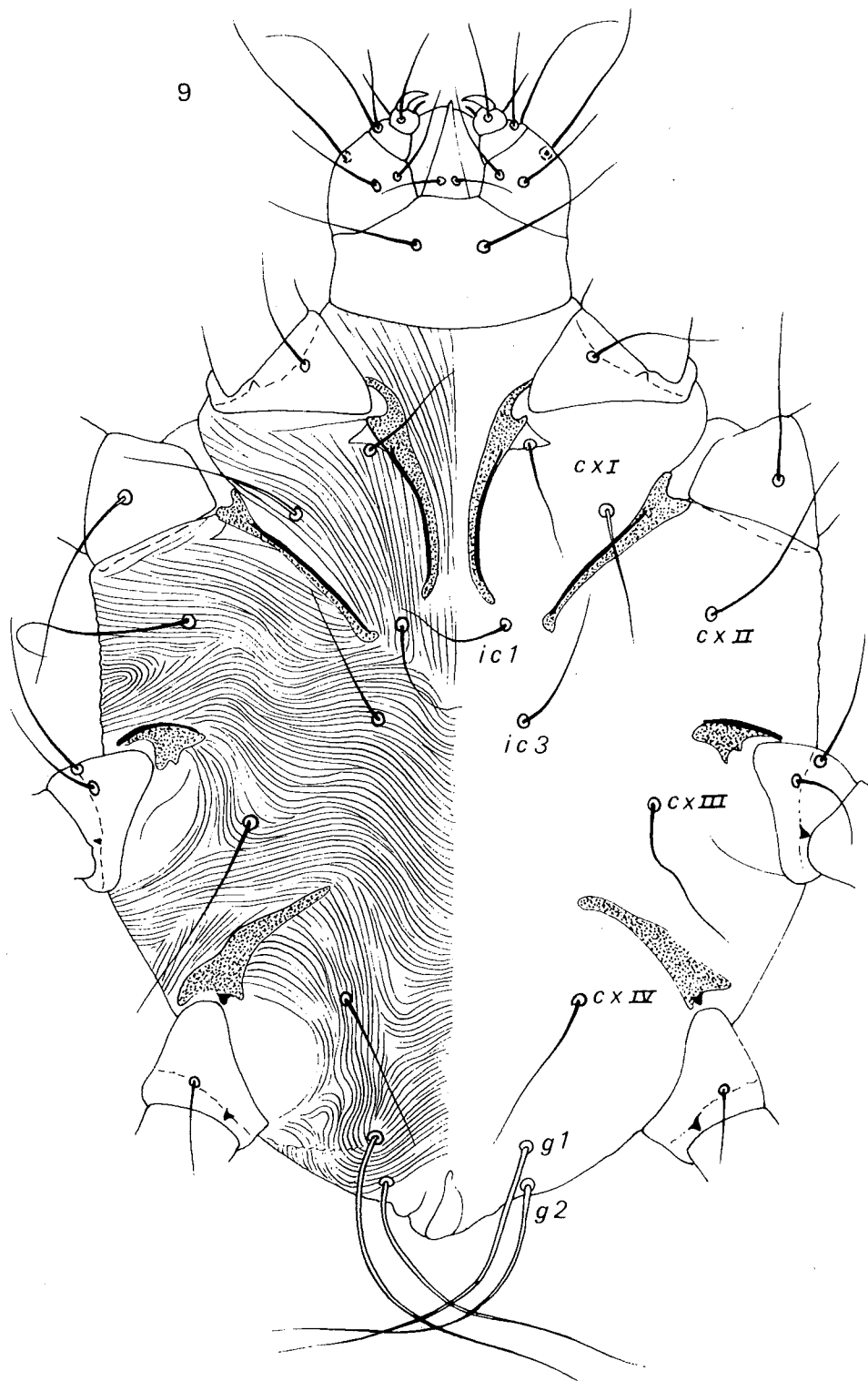


Fig. 9. *Neocheyletiella avicola*, holotype female in ventral view.

which died in Antwerp, 14.II.1964 (Holotype and four female paratypes, three nymphal paratypes; coll. A. Fain).

From the same host, Fries Museum, The Netherlands (two females and one male; coll. F. Lukoschus).

2. *Neochelyletiella avicola* Fain, 1972

(? = *Neochelyletiella vestergaardi* Smiley, 1977)

Female (Figs. 7, 9): Holotype with idiosoma 360 μ long and 270 μ wide. *Dorsum*: Propodonal shield as in *N. media*. All dorsal setae are smooth. Setae *ve* and *vi* very thin, 50 μ and 18 μ long respectively. Setae *sci*, *sce* and *h* thicker and 180–220 μ long. Setae *d1*, *d2*, *d3* very thin and short (15–20 μ). Setae *l1*, *l3*, *l4*, *l5* 250 μ long; *l2* thin and short. *Venter*: Epimera I and II free, the coxae I not closed. Setae *ic4* absent. Maximum width of gnathosoma 96 μ (at level of palpi). All the setae of the palpi are smooth. Peritremes with 2 \times 5 or 6 segments, the three laterals being much larger than the internals. Legs long; tibia III with only the two ventral setae, tibia IV with two ventral setae and one longer and stronger dorsal seta (150 μ long).

Male: unknown.

Host and locality: On several birds which died in the Antwerp Zoo (Coll. A. Fain):

- (i) the holotype, four female paratypes and three nymphal paratypes were collected on the wings of *Ara* sp. (Psittacidae), April, 1967;
- (ii) from the wings of *Agapornis fisheri*, 13th March, 1967 (one female paratype);
- (iii) from a parrakeet, April, 1967 (two female paratypes);
- (iv) from *Erythrura prasina* (on the base of the wings), 10th March, 1967 (one female and four nymphal paratypes) and 15th May, 1970 (two female paratypes).

In my opinion, *N. vestergaardi* Smiley, 1977 described from a cage-bird, *Erythrura prasina*, is a synonym of *N. avicola*. The presence of this species on several other birds which died in the Antwerp Zoo was probably accidental and *E. prasina* could be the true host.

Smiley (1977) has given a description and a drawing of the male of this species.

3. *Neochelyletiella amandavae* Fain, 1972

Female (Figs. 10–11): Idiosoma of the holotype 430 μ long and 310 μ wide. *Dorsum*: Scutum as in *N. media*. All the dorsal setae are smooth. Seta *vi* very short and thin (15–20 μ); the *ve* longer (50–60 μ); the *sci*, *sce* and *h* are strong and 150 μ long. Setae *d1*–*d3* short and thin. Setae *l1*, *l3*, *l4*, *l5* 150–200 μ long. Setae *l2* and *d5* thin 30–35 μ long. *Venter*: Epimera I–II fused; The setae *ic4* are present. Gnathosoma: maximum width 90 μ (at level of palpfemora). Dorsal setae of palps with a few barbs. Legs strong. Tibiae III and IV with only two thin ventral setae, without dorsal setae.

Male: unknown

Host and locality: On *Amandava amandava*, from Java. This bird died in the Antwerp Zoo, 14th May, 1967 (holotype and one female paratype; two larval paratypes).

4. *Neochelyletiella pittae* Fain, 1972

Female (Fig. 12): Idiosoma in the holotype 450 μ long and 315 μ wide. *Dorsum*: Scutum as in *N. media* but the striation are more oblique. All the dorsal setae are smooth except *ve* which is barbed. Setae *ve*, *vi*, *sci*, *sce* and *h* are 100 μ , 60 μ , 180 μ , 170 μ and 180 μ long. The setae *d1*, *d2*, *d3* are 90 μ , 50 μ and 120 μ long. The setae *l1* to *l5* are 120 to 250 μ long. *Venter*: Epimera I–II fused. Setae *ic4* present. Gnathosoma 96 μ wide (at level of palpfemora). Legs strong. Tibia III with only two thin ventral setae; tibiae IV with an additional long dorsal seta.

Male: unknown

Host and locality: On *Pitta megarhyncha*, Antwerp Zoo, 1st October, 1964 (holotype and three female paratypes, one nymphal paratype).

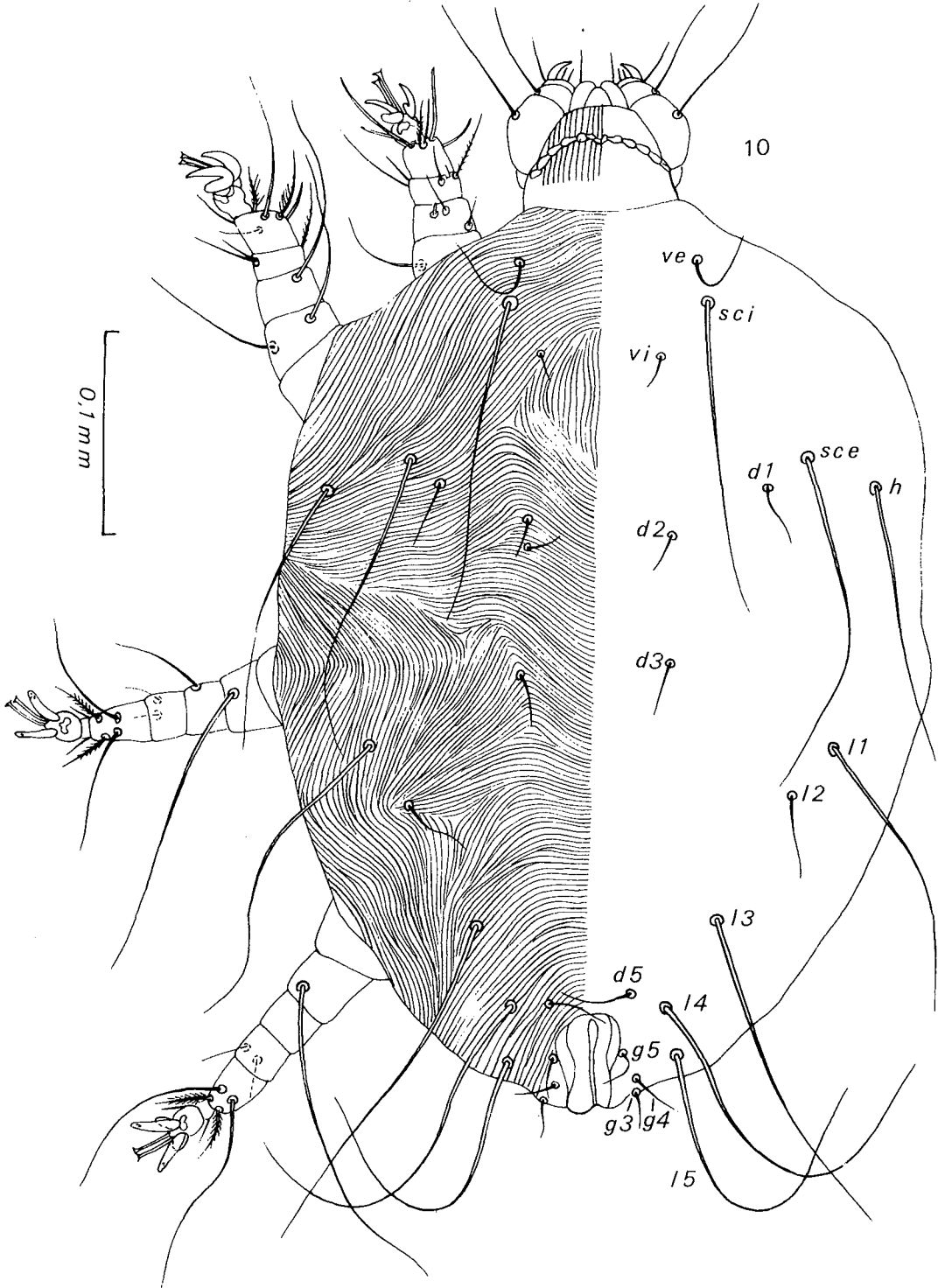


Fig. 10. *Neocheyletiella amandavae* Fain, holotype female in dorsal view.

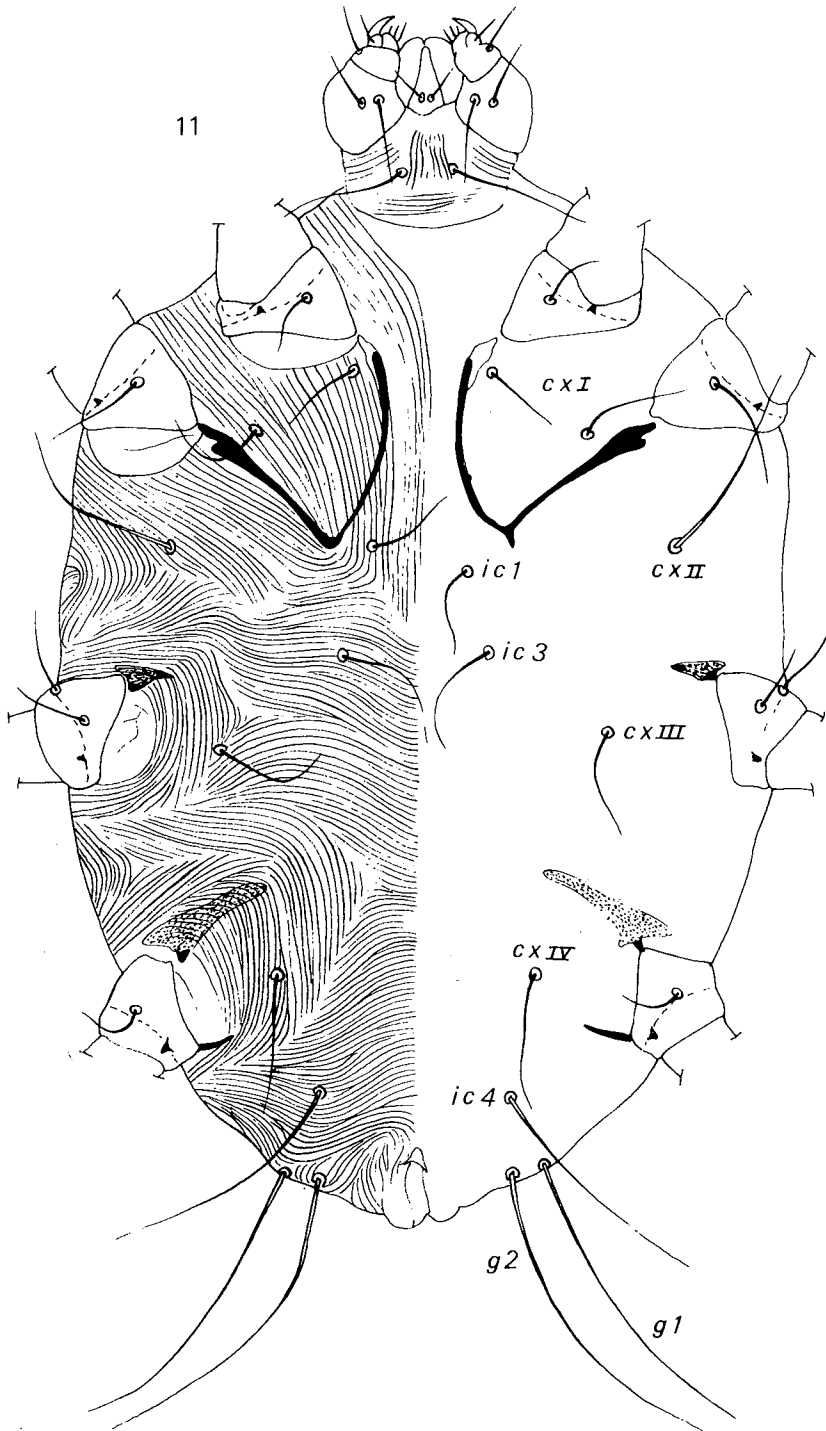


Fig. 11. *Neocheyletiella amandavae* Fain, holotype female in ventral view.

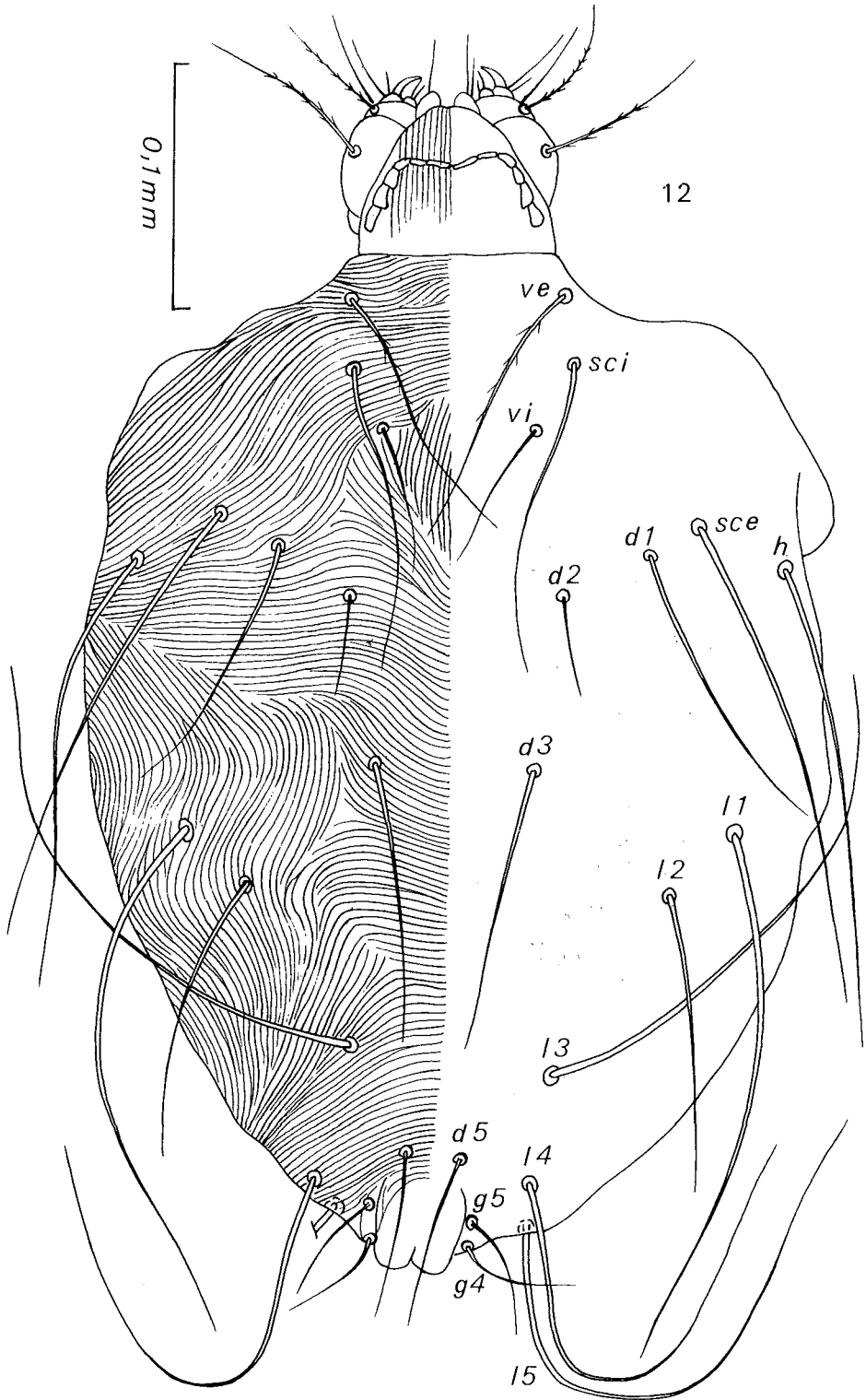


Fig. 12. *Neochelyletia pittae* Fain, female in dorsal view.

5. *Neochelyletiella siva* Fain, 1972

This species is known only from the male. It is clearly distinguished from the other species in the genus by the fusion of epimera I combined with the presence of 3 setae on tibiae IV and 2 setae on tibiae III and by the great length of *g1* and *d3*.

Male (Fig. 13): Idiosoma 225 μ long and 175 μ wide. *Dorsum*: Genital orifice dorsal, situated between legs II and III. Penis straight, 75 μ long. All dorsal setae smooth. Setae *ve*, *vi*, *sci*, *sce* and *h* are 40 μ , 12 μ , 80 μ , 120 μ and 100 μ long respectively. Setae *g5* and *g6* very short, other genital setae are lacking; setae *d1*, *d2* and *d3* 25 μ , 33 μ and 90 μ long respectively. Setae *l1*, *l2*, *l4* and *l5* 80 μ , 180 μ , 150 μ and 150 μ long respectively. *Venter*: Epimera I fused in Y; the sternum is not fused with epimera II. Legs strong and long, with strong claws. Tibiae III with two short and thin ventral setae, tibiae IV with two thin ventral and one long dorsal setae.

Host and locality: On *Siva cyanoptera*, imported from India and which died in Antwerp Zoo, 9th March, 1965 (holotype and only known specimen).

6. *Neochelyletiella microrhyncha* (Berlese & Trouessart, 1889)

(= *Cheyletiella microrhyncha* Berlese & Trouessart, 1889, pp. 136–137; *Neochelyletiella microrhyncha*, Baker, 1949, p. 272; *Neochelyletiella oudemansi* Volgin, 1969, p. 417 (Fig. 528) new synonym; *Neochelyletiella callawaye* Smiley, 1970, p. 1063 (Figs. 14–17).

The original description of this species mentions clearly the name of the host: "Cette forme se trouve sur l'hirondelle (*Hirundo rustica*) d'Europe" (Berlese & Trouessart, 1889, p. 137). Baker erroneously surmized that the host of this species was unknown, but he recognized that "the original description could not be found" (Baker, 1949, p. 272).

Volgin (1969) described his *N. oudemansi* from specimens found on Hirundinidae (*De-*

ichon urbica and *Riparia riparia*). He apparently did not see the paper by Berlese & Trouessart.

I have examined the two slides containing the types of *N. microrhyncha*. One contains a larva, the other a female and a nymph, together with several analgid mites. This female hereby designated as the **Lectotype**, corresponds perfectly to the description of *N. oudemansi*.

Smiley (1970) described *N. callawaye* from *Hirundo rustica* in the USA but, in 1977, he synonymized his species with *N. oudemansi*.

Oudemans (1907), in his key to the genus *Cheyletiella*, mentioned erroneously that the epimera I of *C. microrhyncha* are fused. This mistake was repeated by Baker (1949) and Smiley (1970 and 1977). In fact, the latin diagnosis given by Berlese & Trouessart is rather confusing: "*Ch. ovalis*, *rostro parvo*, *pedibus curtis*, *Ch. macronychae* (Megnin) *simillima*, *sed epimeris auticis (duobus) conjunctis*". However in the French text following the Latin, it appears that the epimera I and II are confluent posteriorly ("Les épimères de la 1^e et de la 2^e paire sont confluent en arrière comme chez *Ch. parasitivorax*").

Host and locality: I have found this species on two new hosts and give here a complete host list (all Hirundinidae):

- (i) *Hirundo rustica*: this is the type host. The original publication mentions "Europe" as the locality but on the two type slides the locality is "France" (Lectotype female, one nymph and one larva). The species is also known on this host from Wooster, Ohio, U.S.A. (= types of *N. callawaye*). The Lectotype is in the Trouessart Collection, Museum National d'Histoire Naturelle, Paris.
- (ii) *Delichon urbica*, from USSR (types of *N. oudemansi* Volgin).
- (iii) *Riparia riparia*, from USSR (types of *N. oudemansi* Volgin).
- (iv) *Petrochelidon pyrrhonota*, from USA (Smiley, 1970).
- (v) *Cecropis abyssinicus unitatis*, from Rwanda, July, 1955 (recorded by A. Fain).
- (vi) *Psolidoprocene albiceps*, from Rwanda, January and 24th February, 1956, female and male specimens (recorded by A. Fain).

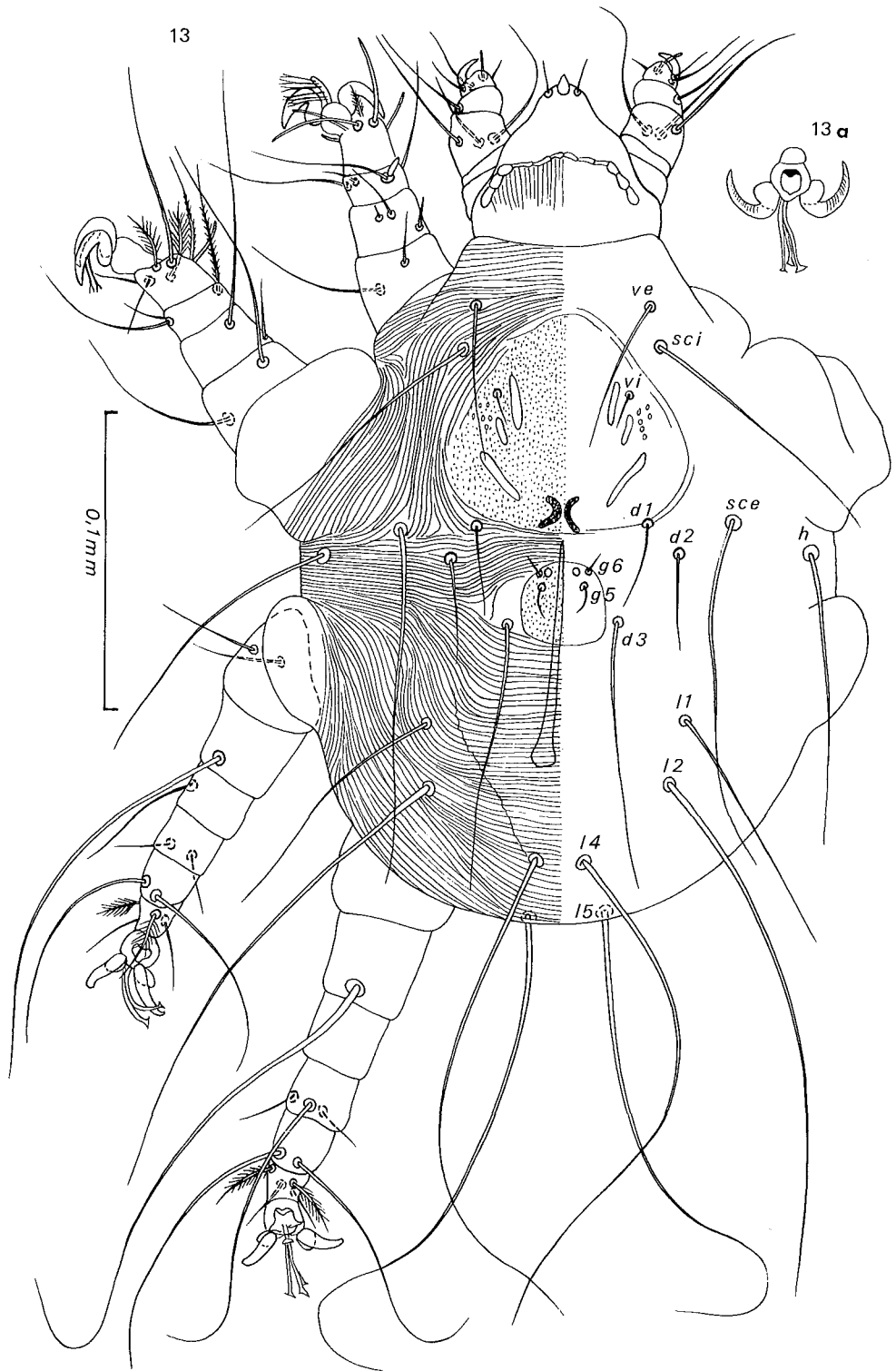


Fig. 13. *Neocheyletia siva* Fain, holotype male in dorsal view; claws (13a).

7. *Neocheyletiella macronycha* (Megnin, 1878) (*Cheyletus macronycus* Megnin, 1878, p. 427, Pl. 29, Figs. 7 & 8; *Cheyletiella macronycha*, Berlese & Trouessart, 1889, p. 136; Oudemans, 1907, p. 212; *Neocheyletiella macronycha*, Baker, 1949, p. 272.)

We have not seen this species, which is not represented in the Trouessart Collection of Museum National, Paris (Mr. M. Naudo, *in litt.*).

According to the original description this species was found: "Au fond des poils de plusieurs petits passereaux exotiques du groupe des Bengalis".

8. (?) *Neocheyletiella heteropalpus* (Megnin, 1978)

(*Cheyletus heteropalpus* Megnin, 1878, p. 426, Pl. 29; *Cheyletiella heteropalpa*, Berlese, 1886, Fasc. 28, Tav. 127, Figs. 1-5; *Neocheyletiella heteropalpus*, Baker, 1949, p. 272.)

We have not seen this species which is not represented in the Collection of Trouessart (Mr. M. Naudo, *in litt.*).

According to Megnin's drawings, this species probably does not belong to the genus *Neocheyletiella* but it seems close to the new genus *Apodicheles* Fain (1979). This genus so far contains two species, both from Afrotropical swifts: *A. cypsiurus* Fain from *Cypsiurus parvus* and *A. apus* Fain from *Apus caffer*. These two species, however, may be clearly distinguished from Megnin's by the following characters: Female with shorter and wider palps and with larger tibial spines, absence of long setae in the middle of the dorsum, absence of sejugal furrow The male of *A. cypsiurus* differs from that of (?) *A. heteropalpus* by the presence of a pair of very long *ll* setae, and the much shorter palps. Megnin's species was collected from: "Au fond des plumes de plusieurs oiseaux de la famille Colombidés et de petits passereaux".

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Mr. R. Smiley, U.S. National Museum, Washington, has kindly checked some characters on type material deposited in this Museum. We thank him for this courtesy.

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