

# NOTES ON ACARI.

## Fifth Series. <sup>1)</sup>

BY

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(With Plates 10—12.)

### 1. Acari of Russia.

The *Argus reflexus* (Fab.), mentioned in the *Tijdschrift voor Entomologie*, vol. 43, p. 112, as found in 1879 by Dr. A. R. SPOOF in a farmer's dwelling in the Russian village Ssamjáni, near Astrachan, is determined by Prof. G. NEUMANN, of Toulouse, as *Argas persicus* Fischer, with a ?

The following *Acari* were collected by Dr. A. R. SPOOF near Åbo, Finland, 1897—1900.

*Parasitus crassipes* (L.), ♀.

*Uropoda ovalis* (C. L. Koch), 2 nymphae, 1 ♂. Under chips on the sea-shore, July, 1897.

*Tydeus croceus* (L.), 1 ex. On *Prunus padus* L., Sept., 1900.

*Linopodes motatorius* (L.), 1 ex.

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1) The First Series appeared 15, I, 1897 in the *Tijdschr. v. Entom.* vol. 39, p. 175—187.

The Second Series 5, IX, 1900 in the *Tijdschr. v. Entom.*, vol. 43, p. 109—128.

The Third Series 30, XI, 1901 in the *Tijdschr. d. Ned. Dierk. Vereen.* ser. 2, vol. 7, p. 50—87.

The Fourth Series 18, VII, 1902 in the *Tijdschr. d. Ned. Dierk. Vereen.*, ser. 2, v. 7, p. 276—311.

The Seventh Series 31, X, 1902 in the *Tijdschr. d. Ned. Dierk. Vereen.*, ser. 2, vol. 8, p. 17—34.

The Series are independent from one another.

*Tijdschr. v. Entom.* XLV.

*Anystis baccarum* (L.), 3 ex. On *Alnus glutinosa* (L.), Sept., 1900.

*Tarsonemus floricolus* Can. et Fanz. In *Ceratoneon attenuatum* Brems on *Prunus Padus* L., Sept., 1900.

*Rhombognathus setosus* (Lohm.), 3 ex. In subsaline algae., Sept., 1900.

*Camisia glabra* (Michael), 1 ex. In subsaline algae. Sept., 1900.

*Li acarus coracinus* (C. L. Koch), 3 ex. Under chips on the sea-shore, July, 1897.

*Eremaeus confervae* (Schränk), 5 ex. In subsaline algae, Sept., 1900.

*Scutovertex bilineatus* Michael, 2 larvae, 27 nymphae, 16 adulti. In subsaline algae, Sept., 1900.

*Notaspis seminulum* (Panz.), 1 ex. Under chips on the sea-shore, July, 1897.

*Notaspis alatus* Herm., 1 ex.

*Lentungula algivorans* Michael, 6 nymphae, 4 ♀. In subsaline algae, Sept., 1900.

*Eriophyes laevis* (Nal.). In *Cephaloneon pustulatum* Brems on *Alnus glutinosa* L., Sept., 1900.

*Eriophyes tiliae* (Pagenst.). In *Ceratoneon extensum* Brems on *Tilia ulmifolia* Scop., Sept., 1900.

*Eriophyes padi* Nal. In *Ceratoneon attenuatum* Brems on *Prunus Padus* L., Sept., 1900.

Prof. JULIUS WAGNER, of Kiew, caught some *Acari* on *Vespertilio pipistrellus* and sent them to Mr S. A. POPPE, who presented them to me for determination. They were larvae of *Argas vespertilionis* (Latr.).

The same Russian Professor collected *Acari* on four bats, which were forwarded to Mr. S. A. POPPE, who sent them to me. The four tubes did not bear any mentioning of locality, nor of the hosts; they contained each several individuals of:

*Liponyssus lepidopeltis* (Klti.) (see below),

*Spinturnix mystacina* (Klti.),

and one of the tubes:



*Uropoda wagneri* Oudms., 1 ex., nov. sp.

*Thrombidium russicum* Oudms., 1 ex., nov. sp.

*Acotyledon paradoxa* Oudms., 1 ex., nov. gen., nov. sp.

## 2. Acari of Congo.

Mr. S. A. POPPE, of Vegesack, asked me to determine some *Acari*, found by Mr. PAUL HESSE, on a *Vesperugo pagenstecheri* Nck., 18, IX, 1886, in Banana. I found in the little tube:

*Eremaeus hessei* Oudms., nov. sp.,

*Liponyssus musculi* (C. L. Koch).

Mr. ANTON GRESHOFF, of Brazzaville, Congo, handed me four specimens of that locality, allied to *Amblyomma venustum* C. L. Koch and *A. annulipes* C. L. Koch (See *Tijdschrift voor Entomologie*, v. 39, p. 192). The animals were caught in 1893. Prof. G. NEUMANN, of Toulouse, determined them as *Amblyomma splendidum* Gieb.

In 1896 I received from Mr. ANTON GRESHOFF a few *Thrombidium*, which prove to be *Trombidium tinctorium* (L.), and a lot of *Ixodidae*, which Prof. NEUMANN determined as:

*Amblyomma splendidum* Gieb. ♂, ♀,

*Ambl. dubitatum* Nn., ♀,

*Hyalomma affine* Nn., ♂, and

*Rhipicephalus bursa* Can. et Fanz.

## 3. Acari of Chili.

In 1900 I received from Dr. J. C. C. LOMAN 10 specimes of an *Acarus*, found parasitic on *Discocyrtus funestus* Butler, an Opilionid of Chili. They are larvae, but characteristic enough to describe them. I will call them *Erythraeus lomani* Oudms., nov. sp.

## 4. Acari of Brazil.

From Mr. S. A. POPPE, of Vegesack, I received a tube with *Acari*, found by Dr. H. VON JHERING, 25, IV, 1899, on a *Vampyrops lineatus* Geoff., in Sao Paulo. The species is new and will be described below under the name of *Periglischrus jheringi* Oudms., nov. sp.



### 5. Acari of Luxemburg.

In April 1900 the following *Acari* were caught by the Rev. ERIC WASMANN, S. J., in a nest of *Formica rufibarbis* F., in Luxemburg.

*Hypoaspis cuneifer* (Michael),  
*Hypoaspis myrmecophilus* (Berl.),  
*Glyphopsis coccinea* Michael.

### 6. Acari of Malakka.

In the acarid-chamber in the first abdominal segment of *Koptorthosoma aestuans* (L.) of Singapore, Mr. J. D. ALFKEN, of Bremen, found in October, 1900, one single specimen of an *Acarus*, which I will call *Greenia alfkeni* Oudms., nov. sp.

### 7. Acari of India.

In the acarid chamber of bees of India, sent to me by Mr. J. D. ALFKEN, I found the following Acari, Oct., 1900:

*Greenia alfkeni* Oudms., nov. sp., 6 ex., in *Koptorthosoma aestuans* L.

*Greenia perkinsi* Oudms., 7 ex., in *Koptorthosoma tenuiscapa* Westw.

*Hypoaspis greeni* Oudms., nov. sp., 16 ex., in *Koptorthosoma tenuiscapa* Westw.

*Trichotarsus helenae* Oudms., nov. sp., 6 ex., in *Koptorthosoma tenuiscapa* Westw.

*Trichotarsus hipposiderus* Oudms., nov. sp., 1 ex., in *Koptorthosoma tenuiscapa* Westw.

*Trichotarsus koptorthosomae* Oudms., 135 ex., in *Koptorthosoma tenuiscapa* Westw.

### 8. *Greenia alfkeni* Oudms., nov. sp.

(With Plate 10 fig. 1—5).

Briefly described in Entomologische Berichten, p. 37; 1, VII, 1902.

*Nympha*. Length from 1225—1295  $\mu$ . — Colour: the usual yellowish-brown of Gamasids. Shape oval, robust, like a *Hypoaspis*. The dorsal side (Fig. 1) is protected by one strongly chitinized



shield, oval in shape, with top turned backward. Between the shoulders and the vertex the outline shows a second smaller shoulder. Between the shoulder and the posterior end the margin of the shield has two denticulations or two incisions, which, however, are not comparable with the erosions of the shield of *Greenia perkinsi* Oudms. The dorsal shield is provided with about 80 relatively small hairs, which are somewhat curled and directed outward and forward, and symmetrically arranged. The dorsal shield is on the sides and posteriorly surrounded by the unprotected margin of the body, which bears hairs of the same shape as those on the dorsal shield. The hairs which surround the dorsum are the longest, as long as about the breadth of the legs.

On the *ventral side* (Fig. 2) the sternal shield is somewhat trapezoidal, eroded as it were on its margins, bearing four hairs; it is small, compared with its breadth. The genital shield is triangular, long, distinctly chitinized posteriorly, indistinctly anteriorly. The anal shield is broad oval, large. The *stigmata* are cup-like; their margins are bent inward, leaving an opening like a key-hole, and striated radially. This cup is of course a rudiment of a *peritreme*. The venter is hairy.

The *epistoma* (Fig. 3) is a triangular hyalin appendage with an indication of a lateral tooth.

The *mandibles* (Fig. 4) are short, stout; their immovable finger has a short canine tooth; the movable finger is longer and provided with an indication of a molar.

The *hypostoma* (Fig. 5) does not show inner or outer malae, but only a blunt chitinized appendage with a hyalin short piece.

The *first leg* is singularly provided with short, strongly chitinized, partly blunt and partly sharply pointed thorns, all *directed backward*. The *second leg*. Its tibia has a blunt thorn directed backward; its tarsus one blunt thorn, directed outward, and one forward (distalward). Femur, genu and tibia have moreover long stiff hairs, directed outward and backward. The *third* and *fourth legs* bear long stiff hairs. On the *coxae* 1, 2 and 3 (Fig. 2) there are two, and on coxa 4 only one sharp, somewhat curved spines.



*Habitat*: the acarid-chamber in the first abdominal segment of *Xylocopa* (*Koptorthosoma*) *aestuans* L.

*Patria*: Malakka, India.

### 9. Key to the species of *Greenia* Oudms.

- |    |   |                                      |                           |
|----|---|--------------------------------------|---------------------------|
| 1. | { | Dorsal shield with lateral incision. | <i>G. perkinsi</i> Oudms. |
|    |   | Dorsal shield without incisions.     | <i>G. alfkeni</i> Oudms.  |

### 10. *Hypoaspis greeni* Oudms., nov. sp.

(With Plate 10 fig. 6—8).

Briefly described in Entomologische Berichten, p. 37; 1, VII, 1902.

*Female*. Length 525—560  $\mu$ . — *Colour*: the usual Gamasid-yellow. — Shape oval, typical that of *Hypoaspis*. — *Dorsal side* (Fig. 6) provided with one dorsal shield, smooth, with some symmetrically arranged hairs, which are long in front and near the shoulders, minute on the remaining part. Two strong bristles on the posterior margin.

*Ventral side* (Fig. 7). The sternal shield is perfectly trapezoidal, with straight anterior and posterior edges. The geniti-ventral shield shows a marking like a network with large meshes, a rounded posterior margin and an indistinct anterior one, which probably lies over the sternal shield. There are two little oval metapodial shields and a small triangular anal one. The *peritrema* runs to the sides of legs 1. Its beginning is a cup, strongly remembering us of that of *Greenia*.

The *epistoma* (Fig. 6) is a long, triangular hyalin appendage.

The *hypostoma* (Fig. 8) is very abnormal, such as is unknown to me in other *Parasitidae*. It is narrow, long, tapering to the distal end. Besides the common 6 hairs it shows us two beautiful curved horns and two inner malae; further a long lingula.

*Habitat*: the acarid-chamber in the first abdominal segment of *Xylocopa* (*Koptorthosoma*) *tenuiscapa* Westw.

*Patria*: India.



11. Key to the species of *Hypoaspis* G. Can.

1. { Leg 2 in both sexes with spines. *H. hermaphrodita* (Berl.)  
       { Leg 2 without spines . . . . 2
2. { ♀ ventral and anal shields fused. 3  
       { ♀ ventral and anal shields  
           separate . . . . . 5
3. { Body elongate. . . . . *H. holaspidoideis* (G. Can.)  
       { Body subcircular. . . . . 4
4. { Body without hairs. . . . . *H. tumidulus* (C. L. Koch.)  
       { Body with long hairs on margin *H. placentula* (Berl.)  
           { ♀ anal and ventral shields  
               touching with parallel edges 6  
               { ♀ anal and ventral shields remote 8
5. { Body round-oval, scarcely shouldered . . . . . 7  
       { Body long-oval, well shouldered *H. arcualis* (C. L. Koch.)
7. { Body without hairs . . . . . *H. myrmecophilus* (Berl.)  
       { Body with marginal hairs . . . . *H. canestrinii* (Berl.)  
           { Dorsal shield with lateral  
               incision . . . . . 9  
               { Dorsal shield without incision 10
8. { Body with minute hairs . . . . *H. semiscissus* (Berl.)  
       { Body with long hairs . . . . *H. campestris* (Berl.)
9. { Body red, nearly hairless . . . . *H. lignicola* (G. et R. Can.)  
       { Body pale, yellow or brown, hairy, 11
10. { Hairs club-shaped . . . . . *H. cuneifer* (Michael).  
       { Hairs otherwise . . . . . 12
11. { Hairs cultrate. . . . . 13  
       { Hairs usual . . . . . 14
12. { Leg 2 in both sexes thicker  
       { than 1, 3, 4 . . . . . *H. miles* (Berl.)  
       { Leg 2 not thicker . . . . . *H. pavidus* (C. L. Koch).
13. { Hairs short . . . . . 15  
       { Hairs long. . . . . 19
14. { Tarsus 4 with strong spines. *H. aculeifer* (G. Can.)  
       { Tarsus 4 with hairs , . . . 16



- |     |   |                                  |                                     |
|-----|---|----------------------------------|-------------------------------------|
| 16. | { | Epistoma rounded . . . . .       | 17                                  |
|     | { | Epistoma otherwise . . . . .     | 20                                  |
| 17. | { | Body long-oval . . . . .         | <i>H. hypudaei</i> (Oudms.)         |
|     | { | Body short-oval . . . . .        | 18                                  |
| 18. | { | Body well-shouldered . . . . .   | <i>H. bombicolens</i> (G. Can.)     |
|     | { | Body not shouldered . . . . .    | <i>H. oophilus</i> (Wasm.)          |
| 19. | { | Legs 2 thicker than 1, 3, 4.     | <i>H. krameri</i> (G. et R. Can.)   |
|     | { | All the legs thick . . . . .     | <i>H. celeripediformis</i> (Oudms.) |
| 20. | { | Epistoma with 3 spines . . . . . | <i>H. cossi</i> (A. Dug.)           |
|     | { | Epistoma pointed . . . . .       | <i>H. greeni</i> (Oudms.)           |

## 12. *Liponyssus lepidopeltis* (Klti.)

(With Plate 10 fig. 9—19).

*Nympha.* Length 360—528  $\mu$ . — Colour white, or pale. — *Shape* like that of the nymph of *Liponyssus musculi* (L. C. Koch). — *Dorsal side* (Fig. 9). Shoulders and sinuations above coxae 1 distinct; sides nearly parallel lines; posterior abdomen rounded. Surface finely wrinkled, except on the shields. There are two large, scaly, and 8 intermediate shields; the anterior is subpentagonal, with 6 pairs of larger marginal stiff hairs, and 4 pairs of smaller inner dito; the posterior is subpentagonal with top turned forward, and with four pairs of larger marginal and three pairs of smaller inner hairs. On the striated soft skin, surrounding the shields there are 8 pairs of marginal and two pairs of intermediate stiff hairs, which are nearly of the same size as the marginal hairs of the shield.

*Ventral side* (Fig. 10). The sternal shield is pentagonal, distinctly scaly, with 6 hairs; the anal shield oval, with the usual three hairs and top turned backward. Cribrum present. Between the sternal and anal shields four pairs of hairs.

*Legs* shorter than body (Fig. 9), not much longer than its breadth. Femur 1 and 2 provided with the usual spines. Coxa 2 with spur turned forward (Fig. 10).

*Male.* Length about 480  $\mu$ . — Colour pale; dorsal shield darker, straw-coloured. — *Shape* elongate, *Dermanyssus*-like. *Body* (Fig. 11) well shouldered, with sinuation above coxae 1. Largest breadth



about the level of leg 3, tapering slowly backward; posterior margin of abdomen rounded. *Dorsal side* for the greater part protected by a scaly shield, which follows anteriorly to the 2d pair of legs the margin of the body; further it is surrounded by the unprotected skin. The greatest breadth is at the level between legs 2 and 3, tapering slowly backward; posterior margin rounded; before this last portion the lateral margin of the shields bends a little inward. There are four longitudinal broken rows of little hairs on the shield. Remarkable are a stronger hair on the shoulder, a ditto on the level of leg 4, and two ditto quite posteriorly. To the sides of the shield the skin has 9 hairs, and behind the shield 9 pairs, of which 4 pairs quite marginal are strong.

*Ventral side* (Fig. 12). There is a distinct furrow between the scaly sterni-genital and the ventri-anal shields, and an indistinct one between the ventral and anal portion of the latter. This ventral portion therefore is hexagonal, with lateral angles. The sterni-genital shield with 5 pairs, the ventral with 6 pairs of hairs. To the sides of the ventri-anal shield about 9 pairs of hairs. — *Peritrema* of middling size, reaching not beyond the coxae 2.

*Epistoma* pointed anteriorly (Fig. 11).

*Mandibles* chelate, without teeth, but with spoon-shaped appendage. Fig. 13 shows us the left mandible seen from above; fig. 14 the right one from the ventral side.

*Hypostoma* (Fig. 15) deeply split, with inner and outer apparently movable malae, forming pincers, without teeth; the inner malae blade-like, the outer like a spine. *Palps*. First article with a ventral appendage, imitating a swallow's nest (Fig. 16).

*Legs* (Fig. 11) shorter than the body; legs 2 and 3 not much longer than its greatest breadth. On femur 1 and 2 the common spines; coxa 2 (Fig. 12) with sharp spur forward.

*Female*. *Length* about 540  $\mu$ . — *Colour* pale, with darker straw-coloured shield. — *Shape* elongate, tapering to both ends, except when the animal is swollen, in which instance it is broadest posteriorly, with median incision. *Dorsal side* (Fig. 17) for the greater part protected by one shield, with scaly surface, tapering



to both ends, largest in the middle, and with slight sinuation laterally before the hindmost rounded portion. It is provided with four longitudinal rows of small hairs, two marginal and two broken median ones. Quite posteriorly two longer hairs. The sides of the body are very sinuous.

*Ventral side* (Fig. 18). Here we have a nearly triangular sternal shield, laterally with sharp angles between the coxae 1 and 2, with deep posterior rounded excavations to receive the lower genital lip, and with 6 hairs. The genital shield is long and narrow, longitudinally scaly and gradually passing anteriorly into the striated portion. Anal shield oval, large. Many small hairs around the ventral portion of the genital shield and around the anal one. *Peritrema* long, reaching before the coxae 1. Remarkable is, that the peritrema reaches the dorsal side above coxae 1, 2 and 3 (see fig. 17).

*Epistoma*, *hypostoma* and *palps* like in the ♂.

*Mandibles* (Fig. 19) chelate, the movable finger with a hook distally, which is outside provided with two smaller hooks and a little knot.

*Legs*. Compared with the male, the legs are longer, esp. 1 and 4.

*Habitat*: *Mus rattus*, *Vespertilio murinus*.

*Patria*: Netherlands, Russia.

### 13. Key the species of *Liponyssus*.

#### *Nymphs*.

- |    |   |  |
|----|---|--|
| 1. | { | With 8 intermediate shields <b>L. lepidopeltis</b> (Klti.) |
|    | { | With 6 ditto . . . . . 2                                   |
|    | { | With 4 ditto . . . . . 3                                   |
| 2. | { | Legs slender, esp. 1 and 4. <b>L. rhinolophi</b> Oudms.    |
|    | { | Legs thick, esp. 1 and 2 . <b>L. chelophorus</b> Oudms.    |
| 3. | { | Post. dors. shield with 6                                  |
|    | { | bristles . . . . . <b>L. musculi</b> (C. L. Koch).         |
|    | { | Post. dors. shield with 2                                  |
|    | { | bristles . . . . . 4                                       |



4. { Post. dors. shield half as wide  
       as ant. . . . . **L. lacertarum** (Cont.)  
       Post. dors. shield much nar-  
       rower . . . . . **L. saurarum** Oudms.

*Males.*

1. { With broom of bristles  
       around anus. . . . . **L. corethroproctus** Oudms.  
       Without broom . . . . . 2  
       With 2 enormous curved  
       spines on each side . . . **L. uncinatus** (Can.)  
       Without such unci . . . . 3  
       Dors. shield narrow, sur-  
       rounded by unprotected  
       skin . . . . . **L. musculi** (C. L. Koch).  
       Dors. shield wide, occasionally  
       and esp. posteriorly sur-  
       rounded by narrow unpro-  
       tected margin . . . . . 4  
       Distinct demarcation between  
       sterni-genital and ventri-  
       anal shields . . . . . **L. lepidopeltis** (Klti.)  
       No such demarcation. . . . 5  
       Femur 3 with spur . . . . **L. lacertarum** (Cont.)  
       Femur 3 without spur . . . 6  
       Peritrema reaching level be-  
       tween coxae 2 and 3. . . **L. saurarum** Oudms.  
       Peritrema passing coxae 1 . **L. albatu**s (C. L. Koch).

*Females.*

1. { Two dorsal shields . . . . **L. musculi** (C. L. Koch).  
       One dorsal shield . . . . 2  
       Sternal shield present . . . 2  
       No sternal shield more . . . **L. uncinatus** (Can.)  
       Sternal shield trapezoidal . . 4  
       Sternal shield linear . . . . **L. sylviarum** (Can. et Panz.)



- |    |   |   |                                  |
|----|---|---|----------------------------------|
| 4. | { | Legs 1 and 2 thick and short ;  |                                  |
|    |   | femur 1 and 2 dorsally<br>with 2 spines . . . . .                                       | <b>L. spinosus</b> Oudms.        |
|    |   | Legs 1 and 2 not so thick. 5  |                                  |
| 5. | { | Dorsal shield wide, occasion-<br>ally and esp. posteriorly<br>surrounded by unprotected |                                  |
|    |   | margin . . . . .  | 6                                |
|    |   | Dorsal shield narrow; sur-<br>rounded by unprotected<br>hairy skin . . . . .            | 8                                |
| 6. | { | Coxa 2 with 2 spines, one<br>forward and one backward;                                  |                                  |
|    |   | coxa 3 with 2 spines<br>backward . . . . .  | <b>L. albatu</b> s (C. L. Koch). |
|    |   | Coxa 3 with 1 spine forward. 7  |                                  |
| 7. | { | Body and dors. shield broad;<br>palp without appendage .                                | <b>L. corethroproctus</b> Oudms. |
|    |   | Body and dors. shield elon-<br>gate; joint 1 of palp ven-<br>trally with appendage. .   | <b>L. lepidopeltis</b> (Klti.)   |
| 8. | { | Peritrema reaching coxa 2;<br>dors. shield without con-<br>striction in the middle .    | <b>L. lacertarum</b> (Cont.)     |
|    |   | Peritrema passing coxa 1;<br>dors. shield with constrict-<br>ion in the middle. . .     | <b>L. saurarum</b> Oudms.        |

#### 14. *Periglischrus* Klti.

The genus *Periglischrus* of KOLENATI has long times been lost. I have found it again in a tube with parasites of a Brazilian bat, found by Dr. H. VON IHERING in Sao Paulo (Brazil).

KOLENATI'S description of the female is very good. His « Augen an der Unterseite » are light-refracting chitinizations on the baze of the palps.

KOLENATI'S genus *Periglischrus* is only based on the female.



I should like to define the genus as follows :

« Legs 1 have between their coxae the « rostrum. » All the legs short and thick, subequal in thickness. Two dorsal shields. ♀ with genital shield. Type *Periglischrus caligus* Klti. »

### 15. *Periglischrus jheringi* Oudms.

(With Plate 11 fig. 20—27).

Briefly described in Entomologische Berichten, p. 38 ; 1, VII, 1902.

*Protonympha*. Length 480  $\mu$ . — Colour between pale and sulphureous. — Shape *Spinturnix*-like ; body flat, oval, top backward. — Dorsal side (Fig. 20) protected by two dorsal shields. The anterior dorsal shield subheptagonal, truncated and excavated trapezoidally posteriorly ; the foremost half of the lateral margins and the anterior margins with sinuities between the 4 pairs of hairs which surround it. The posterior dorsal shield nearly triangular. There is a narrow space between the two dorsal shields. At the level of this space there is a hair on each side, and outward of this hair the stigma (see below.). — Ventral side (Fig. 21) with subheptagonal sternal shield, truncated anteriorly, pointed posteriorly, with 3 pairs of hairs. No anal shield. Behind the sternal shield and between the coxae 4 four pairs of hairs. Stigma perfectly lateral, invisible when the animal is viewed from the dorsal or from the ventral side (Fig. 20 and 21). — Peritreme dorsal, short, running forward and outward exactly to the level between legs 2 and 3. Legs resembling those of the deutonympha (Fig. 22).

*Deutonympha*. Length 560  $\mu$ . — Colour between pale and sulphureous. — Shape *Spinturnix*-like ; body flat, oval, broader than in the protonympha, top backward. — Dorsal side (Fig. 22) protected by two dorsal shields. The anterior dorsal shield subheptagonal, truncated and excavated posteriorly, pointed anteriorly ; margin without the above mentioned sinuities of the protonympha. The posterior dorsal shield subpentagonal, with 3 sides contiguous to the anterior shield. The two shields are surrounded by 6 pairs



of hairs (one pair more than in the protonympha). — *Stigma dorsal*, outside of the most posterior dorsal hair, on the level between legs 3 and 4. — *Peritrema* wholly *dorsal*, diverging till the level between legs 2 and 3, and then converging to the level of legs 1 and 2 — *Ventral face* (Fig. 23) like that of the protonympha, but with a pair of hairs between the sternal shield and coxae 3, and with 11 pairs of hairs between coxae 4; anal shield small, with one pair of minute hairs. — *Legs* like those of the adults.

*Male*. Length 560  $\mu$ . — *Colour* between stoney-coloured and tawny. — *Shape* *Spinturnix*-like. — *Body* flat, oval or subhexagonal, like the combination of the two dorsal shields (Fig. 24). — *Dorsal side* protected by two dorsal shields, which are coalesced as to form one. Together they form an elongate hexagonal shield, blunt, with two sides forward, pointed backward. Six pairs of hairs, of which the two foremost pairs are planted *in the margin of the shield*. *Stigma* and *peritrema* like in the deutonympha. — *Ventral side* (fig. 25). Sternal shield shield-shaped with a prominent anterior top and two anterior rounded corners, and with 5 pairs of hairs. Under the anterior top the genital opening. Between the sternal and anal shields 2 pairs of hairs. Anal shield with 4 pairs of hairs and flanked by two pairs — *Legs* (Fig. 24) short, thick, almost regularly with 6 rows of hairs, two rows of minute hairs ventrally, 2 rows on the sides, and 2 rows dorsally. The dorsal hairs of femur and genu longer than the others. — Coxae 2 with quite lateral stiff hair. — Between the *palpi* the two dorsally and backward crooked appendages of the *mandibles* (most probably copulation-organs) are visible.

*Female*. — Length 1040—1120  $\mu$ . — *Colour* like in the ♂. — *Shape* very singular: the fore-half *Spinturnix*-like, the hinder-half (Fig. 26) is a flat, reversed chinese fan, with sharp edges and with wrinkles parallel to the posterior margin of the dorsal shield and to the margin of the fan itself. With this fan the animal sticks firmly on the patagium of the bats, as KOLENATI tells us. Anus terminal, in a little incision. — *Body* flat and nearly circular. —



*Dorsal side* (Fig. 26) protected by two dorsal shields coalesced together, like in the male, but posteriorly less pointed. The 6 pairs of hairs are present, but only the most anterior pair is planted in the margin of the shield, and minute. Moreover the fan bears a minute pair. *Stigma* and *peritrema* like in the deutonympha and ♂, except the anterior half of it, which is sunuated and longer. — *Ventral side* (fig. 27). The sternal shield is broad pyriform, without any hair, but surrounded by 3 pairs of minute hairs. Another pair of minute hairs on the level between coxae 3 and 4. There is an indistinct, small oval genital shield between the coxae 4 and provided with a pair of minute hairs. In the centre of the fan a pair of minute hairs; between this pair and the anal shield two pairs of ditto; the anal shield long and narrow, with one pair of distal minute hairs.

*Habitat*: *Vampyrops lineatus* Geoffr.

*Patria*: Brazil.

#### 16. Key to the species of *Periglischrus* Kol.

- |    |   |                               |                               |
|----|---|-------------------------------|-------------------------------|
| 1. | { | The two dorsal shields free 2 |                               |
|    | { | The two dorsal shields con-   |                               |
|    |   | tiguous . . . . .             | 5                             |
| 2. | { | Ant. dors. shield pyriform,   |                               |
|    |   | or oval, top forward. . .     | 3                             |
|    | { | Ant. dors. shield nearly cir- |                               |
|    |   | cular . . . . .               | <b>P. interruptus</b> Kolen.  |
| 3. | { | Post. dors. sh. pyriform or   |                               |
|    |   | oval, top forward . . .       | 4                             |
|    | { | Post. dors. sh. pyriform or   |                               |
|    |   | oval, top backw. . . .        | <b>P. hipposiderus</b> Kolen. |
| 4. | { | ♀ Flat portion of abdomen     |                               |
|    |   | not wider than body. . .      | <b>P. asema</b> Kol.          |
|    | { | ♀ Flat portion of abdomen     |                               |
|    |   | suddenly wider. . . .         | <b>P. glutinimargo</b> Kol.   |



5. { ♀ genital shield wider than  
       sternal . . . . . **P. caligus** Kolen.  
       ♀ genital shield narrower than  
       sternal . . . . . **P. jheringi** Oudms.

**17. *Uropoda wagneri* Oudms. nov. sp.**

(With. Plate 11 fig. 28—30).

Briefly described in Entomologische Berichten, p. 38; 1, VII, 1902.

I have only one deutonympha, found by Prof. J. Wagner on a Russian bat.

*Deutonympha*. — *Length* 568  $\mu$ . — *Colour* very pale straw-coloured. — *Shape* like that of *Uropoda krameri*. — The dorsum (Fig. 28) is quite polished, with numerous little hairs, which stand in irregular rows, almost parallel to the margin. It is protected by a median dorsal shield which only quite anteriorly is fused with the circumjacent ring formed by the coalescence of the lateral and posterior shields. This ring is almost hairless. — On the *ventral* side (Fig. 29) you observe the sterni-genital shield, with slight excavations at the level of coxae 2 and 4, and with 5 pairs of large pores; it is polished. The ventri-anal shield is broad, semilunar, with anterior margin somewhat bowed inward, and with 6 pairs of large pores. The metapodial shields are truncated posteriorly and fused with the pedal ones; there is a deep gut between coxae 3 and 4. The pits for the legs are small, just large enough to receive them. The stigma, as is usual, lies in the pit 3. The peritreme runs first outward to reach the edge of the body, then bends inward between the pits 2 and 3, then again outward, not quite till the edge, then slowly inward and forward passing the pit 2 and proceeding till the foremost margin of the pedal shields.

The *hypostoma* (Fig. 30) is very characteristic. It shows a wide cleft, separating the inner malae. These are pointed and bear a (movable?) inner and lower appendage, forming pincers. The outer malae are thick, well chitinized. The 6 hairs of the hypostome are beautiful feathers; moreover the edge of the rostral tube bears



quite under the first joint of the palpi two feathered hairs on each side.

On *legs*, *palpi*, *mandibles* etc., no particularities. The femurs have no blade at all.

*Habitat* ? Occasionally on a bat.

*Patria* : Russia.

### 18. Key to the species of Uropoda Latr.

- |    |   |                                   |                               |
|----|---|-----------------------------------|-------------------------------|
| 1. | { | Median dorsal shield ornated      |                               |
|    |   | with chitinous ridges . . .       | 2                             |
|    | { | Median dorsal shield without      |                               |
|    |   | such ridges . . . . .             | 4                             |
| 2. | { | Anterior part of abdomen simu-    |                               |
|    |   | lates a cephalothorax . . .       | <b>berlesiana</b> Berl.       |
|    | { | No simulation of cephalotorax.    | 3                             |
|    |   |                                   |                               |
| 3. | { | Two suboval spaces on dorsum      |                               |
|    |   | joined by a median line. .        | <b>festiva</b> Berl.          |
|    | { | No such arrangement . . .         | <b>laminosa</b> Can. et Berl. |
|    |   |                                   |                               |
| 4. | { | Anterior margin with chitinous    |                               |
|    |   | membrane . . . . .                | 5                             |
|    | { | No such membranes . . . .         | 6                             |
|    |   |                                   |                               |
| 5. | { | Body subpyriform; membranes       |                               |
|    |   | extending to legs 4 . . .         | <b>canestriniana</b> Berl.    |
|    | { | Body broad-oval; membranes        |                               |
|    |   | extending to legs 2 . . .         | <b>cristiceps</b> Can.        |
| 6. | { | Dors. concave; margins upward     | <b>carinata</b> Berl.         |
|    |   | Dors. convex; margins downward    | 7                             |
| 7. | { | Anal shield distinct, separate    |                               |
|    |   | from ventral shield . . .         | 8                             |
|    | { | Anal shield fused with ventral    |                               |
|    |   | shield . . . . .                  | 11                            |
| 8. | { | Sternal shield post. denticulate; |                               |
|    |   | anal shield crescentshaped .      | 9                             |
|    | { | Sternal shield indistinct or pos- |                               |
|    |   | teriorly not denticulate .        | 10                            |



9. { Dorsal shield with hairs . . . **paradoxa** C. et B.  
       Dorsal shield without hairs . . . **pusilla** Berl.
10. { Anal shield small, sub-semi-  
       circular . . . . . **obovata** C. et B.  
       Anal shield large, luniform . . . **elimata** Berl.
11. { Post. dors. shield present . . . 12  
       No post. dors. shield . . . 13
12. { Posterior dorsal shield very  
       small, body hairy . . . . . **obscura** C. L. Koch.  
       Posterior dors. shield luniform;  
       body without hairs . . . . **tecta** Kram.
13. { Dors. shield rough, punctulate. 14  
       Dors. shield polished . . . 16
14. { Dors. shield surrounded by  
       broad margin . . . . . **elegans** Kram  
       Dors. shield without margin . 15
15. { Marginal and dorsal hairs mi-  
       nute, smooth . . . . . **ovalis** (Koch)  
       Marginal and dorsal hairs clav-  
       ate and plumose . . . . . **patavina** Can.
16. { Metapodial shields fused with  
       ventri-anal shield . . . . . 17  
       Metapodial shields distinct. . 20
17. { Anus terminal . . . . . **lagna** Berl.  
       Anus ventral . . . . . 18
18. { Anteriorly two little hairs di-  
       rected forward . . . . . **tridentina** Can.  
       No such hairs . . . . . 19
19. { The level of legs 4 just divides  
       the body in two halves . . . **hypopoides** B.  
       The level of legs 4 is far more  
       backward. . . . . **ricasoliana** B.
20. { Four hairs longer than body post.  
       on ventral shield . . . . . **longiseta** Berl.  
       No such hairs . . . . . 21



- |     |   |  |
|-----|---|--|
| 21. | { | Median dors. shield surrounded<br>by marginal shield except an-<br>teriorly . . . . . 22 |
|     |   | Only one dorsal shield. . . . <b>campomolendina</b> B                                    |
| 22. | { | Metapodial shields with acute<br>posterior angle . . . . . <b>krameri</b> Berl.          |
|     |   | Metapodial shield with rounded<br>posterior angle . . . . . <b>javensis</b> Oudms.       |
|     |   | Metapodial shield truncated<br>posteriorly . . . . . <b>wagneri</b> Oudms.               |

### 19. *Erythraeus lomani* Oudms., nov. sp.

(With. Plate 12, fig. 31—38).

*Larvae.* Colour vermillion. — *Length* of body 525; of body pseudocapitulum and rostrum 700  $\mu$  — *Dorsal side* (Fig. 31). It seems to me that the whole skin is soft. No dorsal shield is visible and no crista. The space, which should be occupied by a dorsal shield, bears 2 pairs of very fine sensorial hairs and 2 pairs of stronger feathered hairs. — The two eyes are prominent, far remote, situated in the foremost fourth part of the body, a space almost destitute of hairs, comparable with the thorax of the adult. They are on a level behind the two hindmost sensorial hairs and before the coxae 2. — Next to each eye there is a hair inward. The real abdomen is hairy, without any indication of segmentation. The hairs stand in transversal and longitudinal rows, but irregularly. Only the foremost transversal row and the two most central longitudinal rows are distinct.

*Ventral face* (Fig. 32). — The coxae are not contiguous. The coxae 2 and 3 bear distally and forward a spine, and on their ventral side a hair. On the inner side of coxae 1 and 2 you observe a hair. In the hind half of the space between the coxae 2 and 3 there are 14 hairs ranged in 7 pairs; between the coxae 3 one pair, and behind the coxae 3 on the belly 3 pairs. The hinder part of the belly is also somewhat hairy, like the dorsum. —



*Legs.* (Fig. 34). The femur of all the legs is distinctly divided in two joints (is provided with a profemur). Seen from aside all the tarsi (Fig. 33) are somewhat swollen and falling off distally. There is a little praetarsus with two strong claws and a pulvillum. The legs are provided with feathered hairs; on the proximal joints the hairs resemble those of the body (Fig. 34), distally they are much more feathered (Fig. 35). The tibia and tarsus bear one or two olfactorial hairs (Fig. 36) and one or two tactile ones (Fig. 37).

The proximal third part of the *mandibles* (Fig. 31) is swollen and dorsally flat; the remaining two thirds suddenly become narrow. Close to the end they are embraced by the maxillae (Fig. 31, 32 and 38), which show there a hyalin somewhat serrated edge. The mandibles have no chelae, nor stylet, hooks, or other appendages.

The *maxillae* bear on their ventral face two pairs of tactile hairs. (Fig. 32).

The palps have only 4 free joints (Fig. 38), decreasing in length and in bulk. The third joint ends in an enormous hook and bears ventrally and outward the fourth joint or « appendage ». This too ends in a hyalin chitinous claw.

*Habitat*: *Discocyrtus funestus* Butler (an Opilionid).

*Patria*: Chili.

## 20. Key to the species of *Erythraeus* Latr.

### *Larvae.*

- |    |   |   |                                    |
|----|---|---|------------------------------------|
| 1. | { | With dorsal shield . . . . .                    | <b>E. phalangioides</b> (de Geer). |
|    | { | Without dorsal shield . . . . .                 | 2                                  |
| 2. | { | Without crista . . . . .                        | <b>E. lomani</b> Oudms.            |
|    | { | With crista like that of the<br>adult . . . . . | <b>E. quisquiliarum</b> (Herm.)    |

## 21. *Thrombidium rassicum* Oudms. nov. sp.

(With Plate 12 fig. 39—42).

Only one *larva* is known to me, found by Prof. J. WAGNER on a Russian bat.

*Length* 424  $\mu$  without capitulum. *Colour* pale. —



In many particularities this larva (Fig. 39) resembles that of *Tr. gymnopterorum* (L.). I can nothing say about the pseudostigmatic organs, as they were wanting.

There is but one dorsal shield, with 5 hairs and 2 pseudostigmata, the situation of which is perfectly as in the named larva. On the back there are only four transversal rows of four hairs each. All the hairs of the body are thick and feathered (Fig. 40). The body does not show any deep fold or segmentation. There are so far as I could observe only *two* eyes. The maxillar palp (Fig. 41) ends in a bifid claw. I did not observe a fifth joint appending to the fourth claw-bearing one. The second joint projects with an angle sideways (Fig. 41 represents the ventral face of left palp). The ventral face of the body (Fig. 42) shows also less hairs than in the above named larva. — The middle claw is twice thinner than the lateral ones.

## 22. Key to the species of *Thrombidium* F.

### *Larvae.*

- |    |   |                              |  |
|----|---|------------------------------|--|
| 1. | { | Two dorsal shields . . . .   | <b>Thr. holosericeum</b> (L.)                |
|    | { | One dorsal shield . . . .    | 2  |
| 2. | { | On each side one eye . . . . | <b>Thr. russicum</b> Oudms.                  |
|    | { | On each side two eyes. . . . | 4  |
| 3. | { | Psdst. org. filiform . . . . | <b>Thr. gymnopterorum</b> (L.)               |
|    | { | Psdst. org. clavate . . . .  | <b>Thr. Berlesei</b> Oudms. <b>nov. nom.</b> |
|    |   |                              | (Berl., Trom. Tab. XVI).                     |

## 23. *Eremaeus hessei* Oudms., nov. sp.

(With Plate 12 fig. 43).

*Length* 520  $\mu$ . — *Colour* tawny. — *Shape* resembling *Eremaeus tibialis* (Nic.) — *Dorsal side* (Fig. 43). Rostrum blunt; cephalothorax usual shaped, with parabolic outlines; tectopodia 1 large; tectopodia 2 short; lamellae blades; translamella a distinct blade, as wide as the lamellae; lamellar cusps distinct, ending in a stiff lamellar hair. Interlamellar hairs a good distance before the demarcation between



abdomen and cephalotorax, and a good distance from the lamellae; they are long and stiff. — Abdomen oval with narrow free blades at anterior corners of dorsum. This free blade bears *two* stiff hairs. There are four longitudinal rows of stiff hairs; the two outer ones of six hairs each, the two inner ones of four hairs each; you may also say: there are two dorsal rows of three hairs each, and a submarginal row of 14 hairs. — The pseudostigmata are small cups at the base of the lamellae. — The pseudostigmatic organs are small and have a slender peduncle and a thick clavate head. — *Ventral face*. No striking particularities. — *Legs*, slender; femur 1 and 2 with thin peduncle. — Claws tridactyle, very heterodactyle. — All the *hairs*, except those of the tarsi, are feathered, or serrated, which is best visible in those of the dorsum of the creature.

*Habitat*: *Vesperugo pagenstecheri* Nck; most probably strayed here

*Patria*: Banana (Congo).

Found by Mr. Paul Hesse, at present in Venise.

## 24. Emendation of the key to the species of *Eremaeus*.

(Das Tierreich, Oribatidae, p. 43.)

- |     |   |                                 |                           |
|-----|---|---------------------------------|---------------------------|
| 4.  | { | With tr. lam. . . . .           | <b>E. hessei</b> Oudms.   |
|     | { | Without tr. lam. . . . .        | 4a                        |
|     |   | Lam. wider anteriorly than pos- |                           |
|     |   | teriorly . . . . .              | <b>E. exilis</b> (Nic.)   |
| 4a. | { | Lam. narrower anteriorly than   |                           |
|     | { | posteriorly . . . . .           | <b>E. tibialis</b> (Nic.) |

## 25. *Trichotarsus helenae* Oudms. nov. sp.

(With Plate 12, fig. 44—45.)

*Hypopus*. Length 165  $\mu$ .

The creature is related to *T. trifilis* Can., *T. ornatus* Oudms. and *T. manicati* Giard., and has like these species *two dorsal shields*. The anterior dorsal shield (Fig. 44) has only two minute bristles on the tip of the rostrum and two, situated on the edges, nearly



midway between the tip of the rostrum and the shoulders. The posterior shield is almost hairless too, except that there is a minute hair some distance behind the shoulder and four pairs of minute hairs near the posterior edge. The sucker-plate projects behind the posterior edge.

*Ventral side.* (Fig. 45). The epimera 1 join in the middle, forming an Y. The two sense-organs on the ventral side of the head are very small, but they have long sense-hairs. The sucker-plate is very large, with hyaline margin and six large suckers of nearly equal size and two minute suckers to the sides of the anus.

*Legs.* All the legs have a minute claw; the tarsi 1—3 have four lancet-shaped hairs and a long tactil hair; moreover the tarsi 1—2 have an olfactory hair. The tibiae 1—3 bear a long tactil hair too. The tarsus 4 bears 4 hairs, the dimensions of which are 22, 33, 120 and 160  $\mu$ .

*Habitat:* in the acarid chamber in the first abdominal ring of *Koptorthosoma tenuiscapa* Westw.

*Patria:* India.

Named in honor to my dear wife, who in sundry manners is assisting me in my study.

## 26. *Trichotarsus hipposiderus* Oudms. nov. sp.

(With Plate 12, fig. 46—47).

*Hypopus.* *Length:* 240  $\mu$ . The animal is closely related to the species *T. xylocopae*, etc.

*Dorsal side* (Fig. 46). The anterior lunular portion is soft, has about 10 wrinkles and 5 pairs of strong bristles, arranged like in *T. xylocopae* and allies. The posterior round or oval portion, however, is protected by a shield which shows some longitudinal markings and a chitination resembling a horse-shoe, behind which the back is concave.

*Ventral side* (Fig. 47). The epimera 1 join in the median line to form an Y; moreover they are joined sideward with the epimera 2, which on their turn have a lateral prolongation behind



the coxae 2. Between the epimera 3 there are two triangular chitinizations. — The sucker plate is small and shows two large suckers, before these two minute ones, and behind them four others of middling size. The dorsal shield is considerably sufflexed on the ventral surface, but does not reach forward beyond the posterior margin of the sucker-plate. This sufflexed piece bears two hairs.

*Legs.* The tibiae 1—3 bear a long tactil hair and two elongate lanceolate hairs. The tactil hair on tarsus 3 is about  $175\ \mu$  long. The tarsus 4 ends in one long hair of about  $350\ \mu$ . and a very small one of about  $15\ \mu$ .

*Habitat:* in the acarid chamber in the first abdominal ring of *Koptorthosoma tenuiscapa* Westw.

*Patria:* India.

## 27. Key to the hypopi of Trichotarsus.

- |    |   |                                      |                              |
|----|---|--------------------------------------|------------------------------|
| 1. | { | Two dorsal shields; tarsi 1—4        |                              |
|    |   | with minute claw; circumfe-          |                              |
|    |   | rence of animal sub-oval; dor-       |                              |
|    |   | sum almost hairless. <b>Group A.</b> | 2                            |
|    |   | Tarsus 4 without claw . . .          | 5                            |
| 2. | { | Tarsi 1-3 with 4 leaf-like hairs.    | 3                            |
|    |   | Tarsi 1-3 without such hairs .       | 4                            |
| 3. | { | Two large, 4 middle-sized and        |                              |
|    |   | 2 minute suckers . . . . .           | <b>T. ornatus</b> Oudms.     |
|    |   | Six suckers of equal size, 2 mi-     |                              |
|    |   | minute ones . . . . .                | <b>T. helenae</b> Oudms.     |
| 4. | { | Six suckers . . . . .                | <b>T. manicati</b> Giard.    |
|    |   | Eight suckers. . . . .               | <b>T. trifilis</b> Canestr.  |
| 5. | { | Two dorsal shields; tarsi 1-3        |                              |
|    |   | with minute claw; circumfe-          |                              |
|    |   | rence of body sub-oval; dorsum       |                              |
|    |   | with hairs; <b>Group B</b> . . .     | <b>T. intermedius</b> Oudms. |
|    |   | Tarsi 1-3 with strong claw;          |                              |
|    |   | circumference of body sub-           |                              |
|    |   | circular; dorsum with strong         |                              |
|    |   | bristles . . . . .                   | 6                            |



- |     |   |                                      |                                 |
|-----|---|--------------------------------------|---------------------------------|
|     |   | Two dorsal shields; the anterior     |                                 |
|     |   | one triangular; <b>Group C</b> . . . | <b>T. osmiae</b> (Duf.)         |
| 6.  | { | One dorsal shield posteriorly;       |                                 |
|     |   | <b>Group D</b> . . . . .             | 7                               |
|     |   | Tarsi 1-3 with 2 claws . . .         | <b>T. alfkeni</b> Oudms.        |
| 7.  | { | Tarsi 1-3 with 1 claw . . .          | 8                               |
|     |   |                                      |                                 |
|     |   | Tarsus 4 with one hair . . .         | 9                               |
| 8.  | { | Tarsus 4 with two hairs . . .        | 10                              |
|     |   |                                      |                                 |
|     |   | Tarsus 1 with 2 lancet-shaped        |                                 |
|     | { | hairs . . . . .                      | <b>T. koptorthosomae</b> Oudms. |
| 9.  |   | Tarsus 1 without such hairs.         | <b>T. xylocopae</b> Donn.       |
|     |   | Tarsi 1-3 with 4 lancet-shaped       |                                 |
|     | { | hairs . . . . .                      | 11                              |
| 10. |   | Tarsi 1-3 without such hairs.        | <b>T. bifilis</b> Can.          |
|     |   | On posterior abdomen a longit-       |                                 |
|     | { | udinal chitinization . . .           | <b>T. japonicus</b> Oudms.      |
| 11. |   | On post. abdomen a horse-shoe-       |                                 |
|     |   | shaped ditto. . . . .                | <b>T. hipposiderus</b> Oudms.   |

## 28. *Acotyledon paradoxa* Oudms. nov. gen. nov. sp.

(With Plate 12, fig. 48—49).

KRAMER'S genus *Labidophorus* is based on a hypopus, and the name refers to the two claspers at the ventral side of the posterior abdomen in the hypopus.

Indeed, these claspers are exceedingly well fit for holding between them a Mammal's hair.

*Dermacarus* of Haller too has claspers, assisted by two pedunculated muscular suckers, for the same purpose.

No wonder that travelling nymphs, which must cling to the smooth, and even often polished body of Insects, are better fit for this manner of living when they are prepared with suckers. To climb their pegasus their legs, especially the fore-legs are provided either by enormous crooked claws to seize a hair, or with pedunculated suckers, which resemble a table-spoon, or even with blade-like hairs, the adhesion to the insect's body suffice to fix the little creature to it.



What, however, to say of the hypopial nymph described here below, which is in its most primitive stage of becoming an aeronaut! It seems to me that the name of *Acotyledon paradoxa* is well chosen.

The animal resembles the hypopial nymphs of the genus *Tyroglyphus*, without any trace of suckers. Its *length* is  $215\ \mu$ ; its *colour* pale.

Fig. 48. *Dorsal side*. This is not wholly visible, as the lateral margins are sufflexed ventrally. Probably this is an instrument to fix on a smooth surface firmly.

All the hypopi with a body with sharp edges have this behaviour. The dorsum is quite polished without any structure. There are two pairs of almost inperceptible hairs on the cephalothorax, four pairs on the abdomen and three pairs on the sufflexed margin (fig. 49). The abdomen lies over the cephalothorax with a sharp edged margin. The line of demarcation is slightly bowed forward.

Fig. 49. *Ventral face*. The epimera 1 are coalesced to form an Y. The epimera 2 bow inward and hindward. Between legs 2 and 3 there is a distinct demarcation between cephalothorax and abdomen, convex hindward. The epimera 3 are bowed forward and inward, and, united with epimera 4, limit a space of the abdomen which resembles a joint of a leg, so that at first view one is deceived, believing that the legs 3 are close together.

*Legs* 3 and 4 are planted at the venter, much inward, and as they are short, the claws scarcely pass the circumference of the abdomen. Legs 1 and 2 are not longer than 3 and 4, but as they are planted nearly at the anterior edge of the cephalothorax they are wholly visible from the dorsal-side. — All the legs are similar in structure. Tarsus 1 bears three curved and distally spatulate hairs, one tactile hair, as long as tarsus and tibia, two minute hairs and a rather long, distally slightly clavate olfactoric hair. Tarsus 2 has only one curved, distally spatulate hair; moreover it is like tarsus 1. Tarsus 3 is only provided with one distally spatulate hair and one little tactile hair. Tarsus 4 has a small and a long tactile hair, longer than the 4 distal joints of



the leg. All the tarsi end in the tolerably strong claw. Tibia 1 is also provided with a tactile hair.

*Habitat*: A bat.

*Patria*: Russia.

## 29. Key to the genera of Tyroglyphinae.

### HYPOPI.

- |    |   |  |  |
|----|---|--|--|
| 1. | { | Abdomen without sharp edges.   | 2                                      |
|    |   | Abdomen with sharp-edged margins, which can be sufflexed ventrally (fixation-apparatus) .                                    | 6                                      |
| 2. | { | Ventral side without any trace of suckers or claspers : Degenerated hypopi of <i>Glycyphagus</i> ; never free. <sup>1)</sup> |  |
|    |   | Ventral side with suckers or claspers; animals free living.  | 3                                      |
| 3. | { | Behind the anus a suckerplate.   | 4                                      |
|    |   | Behind the anus two claspers.  | 5                                      |
| 4. | { | All the legs equal in armature and in hairs of tarsi . . .   | <b>Cerophagus</b> Oudms. <sup>2)</sup> |
|    |   | Legs 4 quite otherwise. . .  | <b>Trichotarsus</b> Can.               |
| 5. | { | Under the claspers no sucker.  | <b>Labidophorus</b> Kramer.            |
|    |   | Under each clasper a pedunculated sucker . . . . .   | <b>Dermacarus</b> Haller.              |
| 6. | { | Ventral side without any suckers at all . . . . .  | <b>Acotyledon</b> Oudms.               |
|    |   | Behind the anus a sucker-plate.  | 7                                      |
| 7. | { | No eyes . . . . .  | 8                                      |
|    |   | Two eyes . . . . .   | 13                                     |

1) According to Michael, British Tyroglyphidae, v. I. p. 168 sqq., 1 Nov 1901.  
Arnhem, Januari 1902. A. C. O.

2) Tijdschr. d. Ned. Dierk. Vereen., ser. 2, v. VIII, p. XV. — 17, IX, 1802.  
Arnhem, Dec. 1902. A. C. O.



8. { All the legs equal in length,  
short and thick; legs 3 and 4  
usually turned backward. . 9
8. { All the legs slender; legs 3 and 4  
shorter and slenderer than 1 and  
2 and usually turned forward .12
9. { Four pairs of suckers after one  
another . . . . . **Aleurobius** Can.
9. { Sucker-plate with 8 suckers,  
arranged 2, 4, 2 . . . . .10
10. { Anterior top of Cepth. hairless. **Tyroglyphus** Latr.
10. { Top of Cepth. with 2 minute  
hairs . . . . .11
11. { Epimera 1 very short, joined to  
the sternum; epimera 3 and 4  
joined to each other with a  
large bow . . . . . **Hypopus** Dugès.
11. { Epimera 1 absent; sternum  
free; epimera 3 and 4 free. **Glycyphagus** Hering.
12. Only one genus. . . . . **Anoetus** Dujard.
13. Only one genus. . . . . **Histiogaster** Berl.

Arnhem,

A. C. OUDEMANS.

1 October 1901.





Oudemans, A. C. 1903. "Notes on Acari. 5." *Tijdschrift voor entomologie* 45, 123–150.

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