

ACARI FROM OPERATION DRAKE IN NEW GUINEA 2. UROPODIDAE¹

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UROPODINA
SYSTEMATICS
ZOOGEOGRAPHY

ABSTRACT : The subgenus *Vinicoloraobovella* Hirschmann of the genus *Uroobovella* Berlese is defined and briefly described. One of the main features of the subgenus is a characteristic red coloration of the inner parts of the body, the cuticle being pale. *U. (V.) rubra* sp. nov., collected in Papua New Guinea under dead bark, is figured and described, thereby extending the geographical range of a subgenus previously known only from Europe.

UROPODINA
SYSTÉMATIQUE
ZOOGÉOGRAPHIE

RÉSUMÉ : Le sous-genre *Vinicoloraobovella* Hirschmann, appartenant au genre *Uroobovella* Berlese, est défini et brièvement décrit. Un des caractères du groupe est la coloration rouge caractéristique qui affecte les organes internes, la cuticule étant peu pigmentée. Une espèce nouvelle appartenant au sous-genre, *U. (V.) rubra*, de bois morts en Papauasie-Nouvelle Guinée, est décrite. La découverte de cette espèce étend considérablement l'aire de répartition du sous-genre qui n'était jusque là connu que de l'Europe.

The uropodid mites from this collection, from under the dead bark fallen trees, comprised one male and several deutonymphs of the same new species. It is included in the genus *Uroobovella* Berlese and is closely related to a homogeneous group of species characterised by a red coloration of the inner parts of the body. Because of the lack of the female the new species is only briefly described, but I have a large collection (including females) of a member of the same group collected in dead wood in the Massane forest (Pyrénées-Orientales, France). This taxon, *U. (Vinicoloraobovella) rubella* (Athias-Binche, 1981), was briefly described in a thesis but will be studied in detail later.

The present material was studied using the open-slide technique of GRANDJEAN (1949). The nomenclature used is mainly derived from EVANS & TILL (1979).

Genus *Uroobovella* Berlese, 1903

Type-Species *Uropoda obovata* Canestrini & Berlese, 1884.

Uroobovella is included in the higher Uropodina (Uropodoidea), which are characterised by ventral depressions to accept the legs (= pedofossae), and have the sternapophysis (= tritoster-

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1. For the first part of this series see DOMROW, page 333.

num) and gnathosoma concealed by the enlarged coxae I. The following brief definition is based on MARAIS (1972) and EVANS & TILL (1979).

■ Pedofossae present ; cuticle smooth ; pygidial shield absent (fused with dorsal shield) ; marginal shield fused anteriorly with dorsal shield ; inner border of marginal shield smooth, not crenulate ; with more than five pairs of sternal setae ; leg I with ambulacrum ; femur I with nine setae ; palpifemur with five setae ; levator tendon of movable digit of chelicera with a sclerotised node ; without a forked pilus dentilis on fixed digit.

Key to subgenera of *Uroobovella*

- 1: — Pedofossae with a posterior groove for distal part of leg IV ; body rounded ; scabellum present....
*Urocicella*² Berlese, 1913
Type-species *Uroobovella (Urocicella) parvula* Berlese, 1913
- Pedofossae without posterior groove..... 2
2. — Without metapodal line ; a line present between ventral and anal shields.....
Uroobovella Berlese, 1903
Type-species *Uropoda obovata* Canestrini & Berlese, 1884
- With metapodal line ; without transverse ventral line..... 3
3. — Body attenuate posteriorly, light to dark brown.
Fuscuropoda Vitzthum, 1924
Type-species *Notaspis marginatus* Koch, 1839
- Body ovoid, red internally.....
Vinicoloraobovella Hirschmann, 1979
Type-species *Uropoda vinicolora* Vitzthum, 1926

The subgenera *Uroobovella*, *Fuscuropoda* and *Vinicoloraobovella* appear to be a homogeneous group, *Fuscuropoda* and *Vinicoloraobovella* being very closely related ; *Urocicella*, however, may require the status of a distinct genus.

Subgenus *Vinicoloraobovella* Hirschmann, 1979

Type-species *Uropoda vinicolora* Vitzthum, 1926.

■ Idiosoma ovoid, vertex slightly prominent. Cuticle pale, yellowish, but inner organs charac-

2. Often written *Urocicella*, but I follow BERLESE's original spelling.

ristically red, especially in adults and deutonymphs.

Dorsal shield smooth, cuticle weakly ornamented. Marginal shield fused with vertex anteriorly and with ventrianal shield posterior to pedofossae IV (Fig. 3, mg sh). Posterior part of marginal shield not visible in dorsal view (Fig. 2). More than 26 pairs of short, setiform dorsal setae.

Scabellum absent (Figs 1, 3) ; pedofossae not very deep, but exopodal tecta II-III and III-IV well marked (Fig. 1A, exp. II-III, III-IV). Typically a non-sclerotised lateral area to exopodal scutum III-IV (Fig. 1A, ns). Stigma with a paraxial branch ; peritreme simple, with a distal angle (Fig. 1A). Female genital shield without anterior projection ; female accessory genital glands typically spherical (cf. e.g. HUTU, 1976, Fig. 43 VW). Male genital shield rather large, intercoxal ; male sternal glands well developed, often with several openings (Fig. 1A, st g_s). Anus closed by an unpaired scutellum in phoretic deutonymph (Fig. 4C).

Chelicera long and narrow, flexible ; proximal articulation complex. Anterior part of middle article with striated cuticle (Fig. 6B). Chela small, weakly sclerotised, with few denticles. Fixed digit bearing an elongated sensilla-like structure (Fig. 4B). Palp with a tibiotarsus. Leg II of male without sexual dimorphism.

List of related nominal species

1. *Uropoda vinicolora* Vitzthum, 1926 (= *Urosternella vinicolora* : VITZTHUM, 1929 ; = *Pseudouropoda vinicolora* : WILLMANN, 1956). In dead wood, in drift of xylophagous Coleoptera, Austria, Germany, Poland (522 × 396 µm).
2. *Uroobovella bucovinensis* Hutu, 1976. Forest soil, Rumania (730 × 472 µm).
3. *Uroobovella seideri* Hutu, 1976. Oak forest soil, Rumania (600 × 448 µm).
4. *Pseudouropoda rubella* Athias-Binche, 1981. Dead wood, Pyrénées mountains, France (500 × 378 µm).
5. *Uroobovella (Vinicoloraobovella) rubra* sp. nov. Dead wood, Papua New Guinea (560 × 413 µm).

A sixth species, *Notaspis rutilans* Koch, 1841 [= *Pseudouropoda* (?) *rutilans* : OUDEMANS, 1936] may belong to this list, but the original description is inadequate to identify it with certainty.

The subgenus *Vinicoloraobovella* constitutes the *vinicolora* "Artengruppe" in HIRSCHMANN's "Gangsystematik". This "Artengruppe" is included in the "Ganggattung" *Urobovella* Berlese, 1903 comb. nov. Hirschmann & Zirngiebl-Nicol, 1962. This "Ganggattung" includes, in fact, about 22 different genera (cf. HIRSCHMANN & ZIRNGIEBL-NICOL, 1962, p. 62). More recently, HIRSCHMANN (1979) created a new system, the "Stadiensystematik". According to this new classification, the *vinicolora*-“Gruppe” becomes the “Stadiengattung” *Vinicoloraobovella* Hirschmann, 1979, type-species *Uropoda vinicolora* Vitzthum, 1926.

In addition, one can point out that the "Artengruppe" *vinicolora* was included in the "Gangtribu" Dinychini Vitzthum, 1931 *sensu* Hirschmann, 1979, "Gangunterfamilie" Uropodinae Hirschmann & Zirngiebl-Nicol, 1962, but that the "Stadiengattung" *Vinicoloraobovella* was more recently placed by HIRSCHMANN (1979) in the "Stadienfamilie" Urodinychidae Berlese, 1917 comb. nov. Hirschmann, 1979.

In the same issue of his journal *Acarologie* (p. 35), HIRSCHMANN presented a list of the 12 "Gangarten" in his *vinicolora*-“Gruppe” :

1. *Uropoda vinicolora* Vitzthum, 1926.
2. *Urobovella neoamericana* Hirschmann, 1972, after *Fuscuropoda americana* Moser & Roton, 1971, *nomen nudum* according to HIRSCHMANN (1972), *nom. nov.* for *Urobovella americana* Hirschmann, 1972.
3. *Urobovella baloghi* Hirschmann & Zirngiebl-Nicol, 1962.
4. *Urobovella stricta* Hirschmann & Zirngiebl-Nicol, 1972.
5. *Urobovella erlangensis* Hirschmann & Zirngiebl-Nicol, 1962.
6. *Urobovella bucovinensis* Hutu, 1976.
7. *Urobovella feideri* Hutu, 1976.
8. *Urobovella franzi* Hirschmann & Zirngiebl-Nicol, 1962.
9. *Fuscuropoda tricuspidata* Sellnick, 1973.
10. *Urobovella hamata* Hirschmann, 1979.
11. *Uropoda bisterialis* Vitzthum, 1938.
12. *Uropoda pearsi* Wharton, 1938.

Some of the species listed by HIRSCHMANN appear to belong to other genera ; thus No. 2 and 9 seem to be more related to the subgenus *Fuscuropoda*, while the

systematic status of No. 8, 11 and 12 requires reappraisal.

The preceding remarks show that the systematic placement of the "Stadiengattung" *Vinicoloraobovella* appears to be inadequate. Consequently, in the present paper, *Vinicoloraobovella* Hirschmann, 1979 is considered as a Linnean subgenus included in the genus *Urobovella* Berlese, 1903, which is provisionally placed in the family Uropodidae Berlese, 1917 according to the classification proposed by BAKER & WHARTON (1952).

***Urobovella (Vinicoloraobovella) rubra* sp. nov.**

(Figs 1-6, Tabs 1-2)

■ Male : *Idiosoma* ovoid, vertex slightly marked (Fig. 2, dimensions Tab. 1). Cuticle weakly pigmented, yellowish, but inner organs wine-red. Cuticular ornamentation reduced to discrete punctations.

TABLE 1. — *U. (V.) rubra* sp. nov., dimensions (μm).

| | L | W | L/W | N |
|------------------|-----|-----|------|----|
| Idiosoma, ♂ | 560 | 413 | 1.35 | 1 |
| Idiosoma, DN | 495 | 389 | 1.27 | 30 |
| DN, maxima | 541 | 414 | | |
| DN, minima | 473 | 365 | | |
| Chelicera, ♂ | 356 | 25 | 14.2 | 1 |
| Fixed digit | 48 | | | |
| Middle article | 241 | | | |
| Proximal article | 67 | | | |
| Anal pedicel, DN | 196 | 14 | 14 | 3 |

Dorsal surface smooth, muscular prints weakly marked (Fig. 2). Dorsal shield hemispherical (Figs 2-3). Marginal shield fused with vertex anteriorly and to ventrianal shield posterior to margin of pedofossa IV (Fig. 3, mg sh). Marginal shield remaining linked to peritrematic-metapodal and ventral areas when dorsal shield removed. Dorsolateral muscular prints flower-shaped (Fig. 2, tm₇), close to a large dermal gland (Fig. 2, dg). Three other pairs of large glands, with several openings, borne on edge of marginal shield (Fig. 3). Dorsum bearing about 25 other pairs of small dermal glands (Figs 2-3). Eight pairs of lyrifissures visible on dorsal shield and another pair on marginal shield. Dorsal setae short, setiform and equal in length (Fig. 2) [with

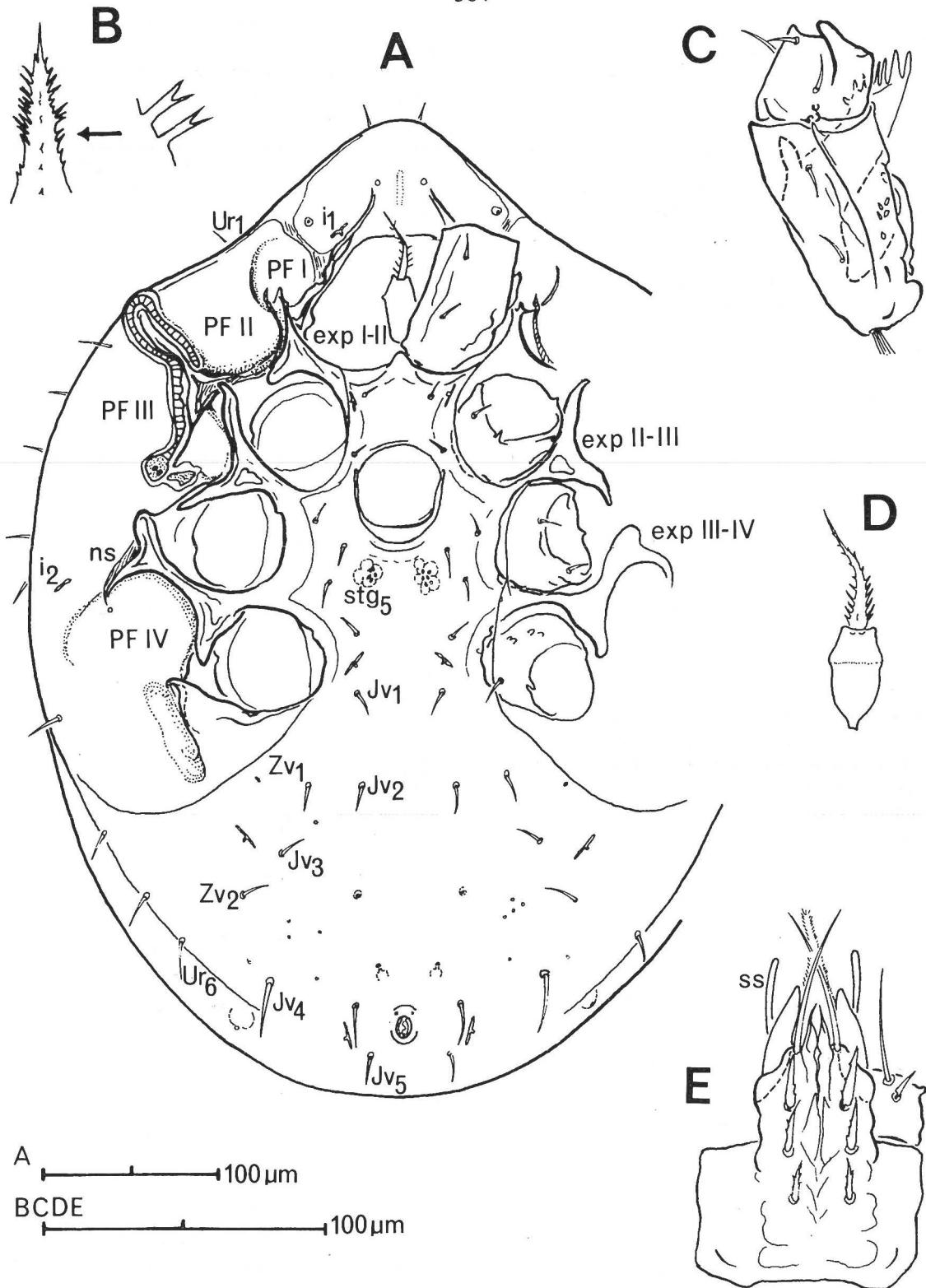


FIG. 1. — *Uroobovella (Vinicoloraobovella) rubra* sp. nov., Male. A) Dorsal view; B) Tegular limb; C) Coxa-trochanter, right leg I, ventroparaxial; D) Sternapophysis; E) Gnathosoma, ventral (exp I-II, II-III, III-IV, exopodal tecta; PF I-IV, pedofossae I-IV; i₁₋₂, lyrifissures; ss, salivary stylus).

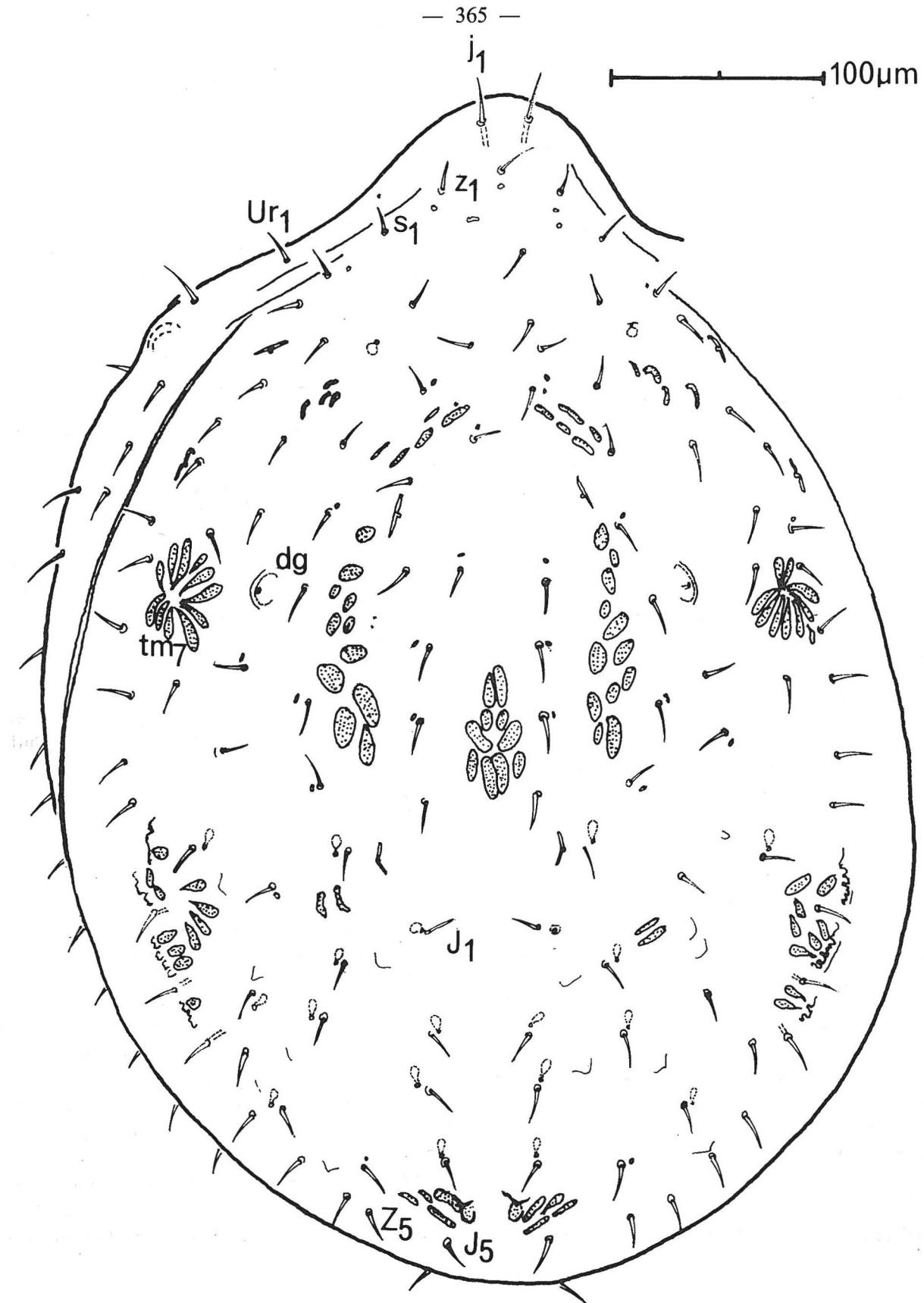


FIG. 2. — *U. (V.) rubra*, male dorsal (dg. large dorsal gland ; tm₇, dorsolateral muscle prints).

more than 45 pairs of dorsal setae (Tab. 2), species may be considered polytrichous].

TABLE 2. — *U. (V.) rubra*. A) Idiosomal chaetotaxy (after LINDBERG & EVANS, 1965); B) Leg chaetotaxy, total number of setae (after EVANS, 1972; F. A.-B., personal observations).

| A) | Ventral face | | | | | | | Total |
|-------------|--------------|--------------|---------------|---------------|-------------|-------------|-------|-------|
| | Sternal | Ventral | Paranal | | | | | |
| Male | 6 | 7 | 1 | | | | | 14 |
| Deutero- | | | | | | | | |
| nymph | 7 | 7 | 2 | | | | | 16 |
| Dorsal face | | | | | | | | |
| Male | jJ 11 + 2 | zZ 11 + 2 | sS 11 + 10 | rR 13 + 13 | Ur 6 + 3 | Other 12 | Total | 94 |
| Deutero- | | | | | | | | |
| nymph | 11 + 2 | 11 + 2 | 11 + 9 | 13 + 7 | 6 + 5 | 12 | | 89 |
| B) | I | II | III | | | | IV | |
| Femora | 9 | 9 | 7 | | | | 7 | |
| Genua | 7 | 6 | 6 | | | | 6 | |
| Tibiae | 7 | 7 | 7 | | | | 7 | |

Ventrally, scabellum absent, but thin paired ridges present lateroanterior to gnathopodal cavity (Fig. 1A). Short ridge constituting posterior margin of pedofossa I (Fig. 1A, PF I). Distal part of peritreme marking posterior margin of pedofossa II (PF II). Posterior limit of pedofossa IV rounded (Fig. 1A, PF IV), with discrete paraxial depression. Exopodal tecta well developed and triangular (Fig. 1A, exp II-III, III-IV). Stigma with paraxial diverticulum; peritreme folded anteriorly, angle reaching margin of body (Figs 1A-3). Sternapophysis simple (Figs 1A, 1D). Genital shield rounded, genital opening between endopodal shields II-III. Sternal glands enlarged (Fig. 1A, st g), with six to eight openings. Anus simple, small; no postanal setae. Ventral setae simple, short; setae JV₄ about twice as long as other setae (Fig. 1a). Sternum bearing six setae (Tab. 2), i.e. one more than usual [this feature considered characteristic of genus *Uroobovella* (see EVANS & TILL, 1979)]. Six pairs of lyrifissures visible in ventral view: two belonging to dorsal territory (Fig. 1A, i₁-i₂), two on sternum and two on ventrianal shield.

■ **Gnathosoma** : Tegular limb (= gnathotectum) simple, with bifid denticles on its base (Fig.

1B). Ventral surface of gnathosoma weakly ornamented, salivary styli long (Fig. 1E, ss), laciniae (= internal malae) not plumose (Fig. 1E). Shape and situation of gnathosomal setae shown in Fig. 1E.

Appendages : Chelicera long, curved and narrow, especially in distal part (Fig. 6B, Tab. 1). Cuticle of middle article striated along about three-quarters of its length. Proximal articulation complicated (Fig. 6B). Fixed digit bearing a sensilla-like structure that is elongate and smooth (Fig. 4B), movable digit with one small tooth. Pedipalp with tibiotarsus. Morphology of legs corresponding to that of other higher Uropodina with pedofossae. Tarsus I with long pretarsus as in other species of genus *Uroobovella*. Coxa I bearing thin ridge ventrally and large denticulate tectum dorsally (Figs 1C, 3, Cx I). Femur I bearing nine setae (Tab. 2) as in other species of genus (cf. EVANS & TILL, 1979). Leg chaetotaxy slightly different from that given by MARAIS (1972) for genus *Uroobovella* viz. femur III bears six setae, genu I eight and genu II seven (resp. 7, 7 and 6 in new species).

■ **Deuteronymph** : *Idiosoma* ovoid, more rounded than in male (Fig. 5, Tab. 1). Cuticle pale, yellowish; internal red coloration light to dark depending on the individual.

Holodorsal scutum (= marginal and dorsal shields fused) globular, smooth. In lateral view, margin of dorsum covering pedofossae [in fact, observation of lateral part of animal only possible after removal of holodorsal scutum (Fig. 6A)]. Submarginal shield (= ventrolateral *sensu* ATHIAS-BINCHE, 1977), which is separate in deuteronymph, thin and hyaline, with irregular ventral margin (Fig. 6A, sm sh) [this shield remains with dorsal shield when it is removed (fig 6A)]. Three pairs of large dorsal glands (Fig. 5, dg₁₋₃) instead of one as in male, and four pairs of dorsal lyrifissures. Dorsal setae short, equal in length (Fig. 5, Tab. 2).

Shape and situation of different ventral shields shown in Figs 4A, 6A; comparable with condition in deuteronymphs of other species of subgen-

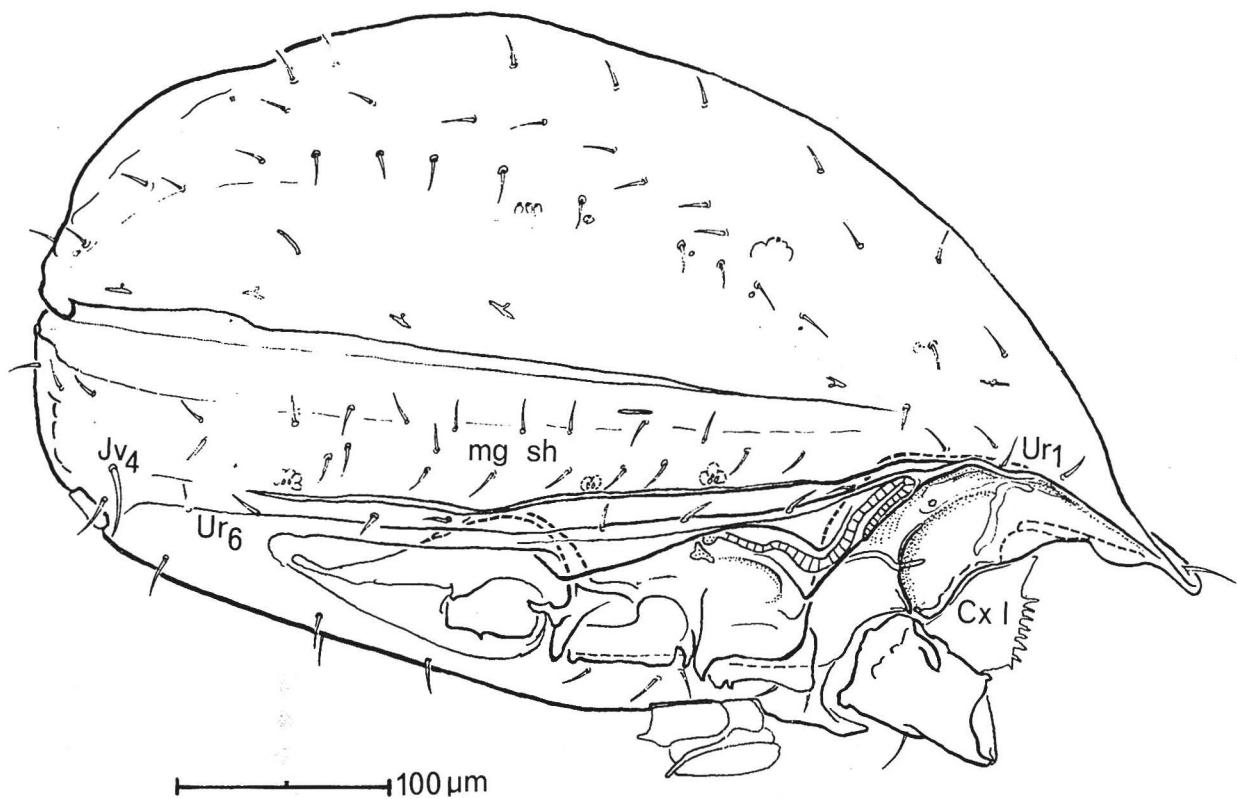


FIG. 3. — *U (V.) rubra*, male, lateral (*Cx I*, *coxa I*) ; *mg sh*, marginal shield).

nus *Vinicoloraobovella* (see e.g. Hutu, 1976). Anal opening covered with unpaired scutellum bearing two pairs of setae and a pair of narrow, lyrifissure-like organs (Fig. 4C). Sternal shield with a pair of large gland between sternal setae 2-3, and another anterior to ventral setae *Jv₃* (Fig. 4A). Ventral setae short, setae *JV₄* about twice as long as others, setae *Zv₂* (?) inserted on striate ventral cuticle. Anal pedical long and narrow (Tab. 1), hyaline.

■ *Material examined* : Holotype male, under dead bark of fallen tree, Buso, Morobe Province, Papua New Guinea, IX.1979, R. Domrow ; 30 paratypes deuteronymphs, phoretic on fungus-feeding insect, *Mezira subtriangula* Kormilev (Hemiptera : Aradidae), det. Dr G. B. Monteith, Queensland Museum, Brisbane, other data as above. Holotype male, and one entire and two dissected paratype deuteronymphs in British

Museum (Natural History), London ; 24 deuteronymphs in Queensland Institute of Medical Research, Brisbane ; and three deuteronymphs in author's collection.

■ *Discussion* : *U. (V.) rubra* is easily distinguished from the other species of the subgenus, especially by the simple sternapophysis (three-branched in other species). Besides its dimensions, the new species is also characterised by the lack of reticulated ornamentation on the ventral shield and by the relatively long ventral setae *JV₄*.

One interesting feature of *U. (V.) rubra* is its occurrence in Papua New Guinea ; the subgenus was previously known only from Europe. The subgenus *Vinicoloraobovella* appears to be very homogeneous, both morphologically and biologically. Three of the five known species occur in dead wood, and the deuteronymphs are all phoretic, with specialised analia. The characteristic red

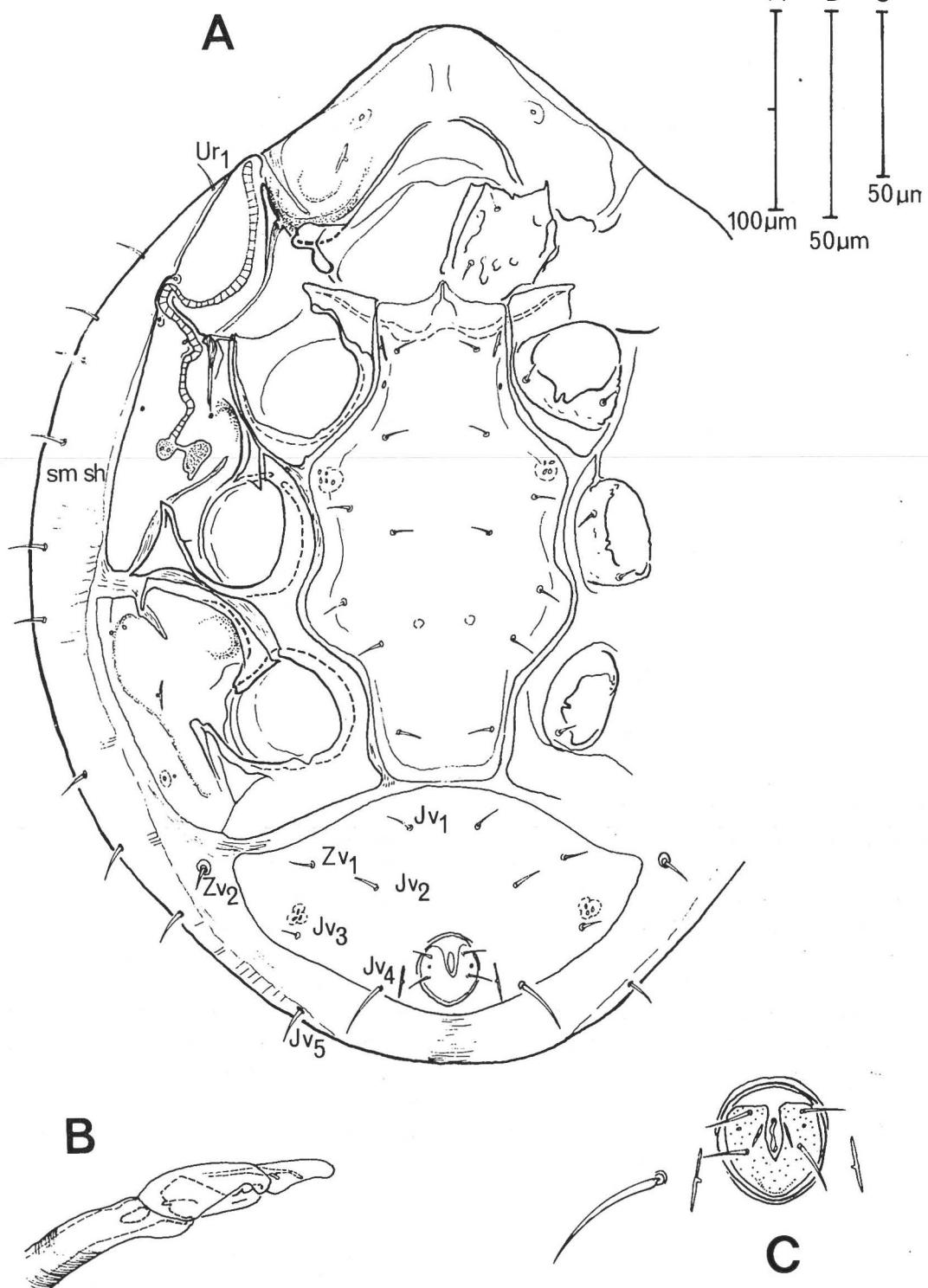


FIG. 4. — *U. (V.) rubra*. A) Phoretic deuteronymph, ventral view ; B) Male, chelicera ; C) Phoretic deuteronymph, anal region (sm sh, submarginal shield).

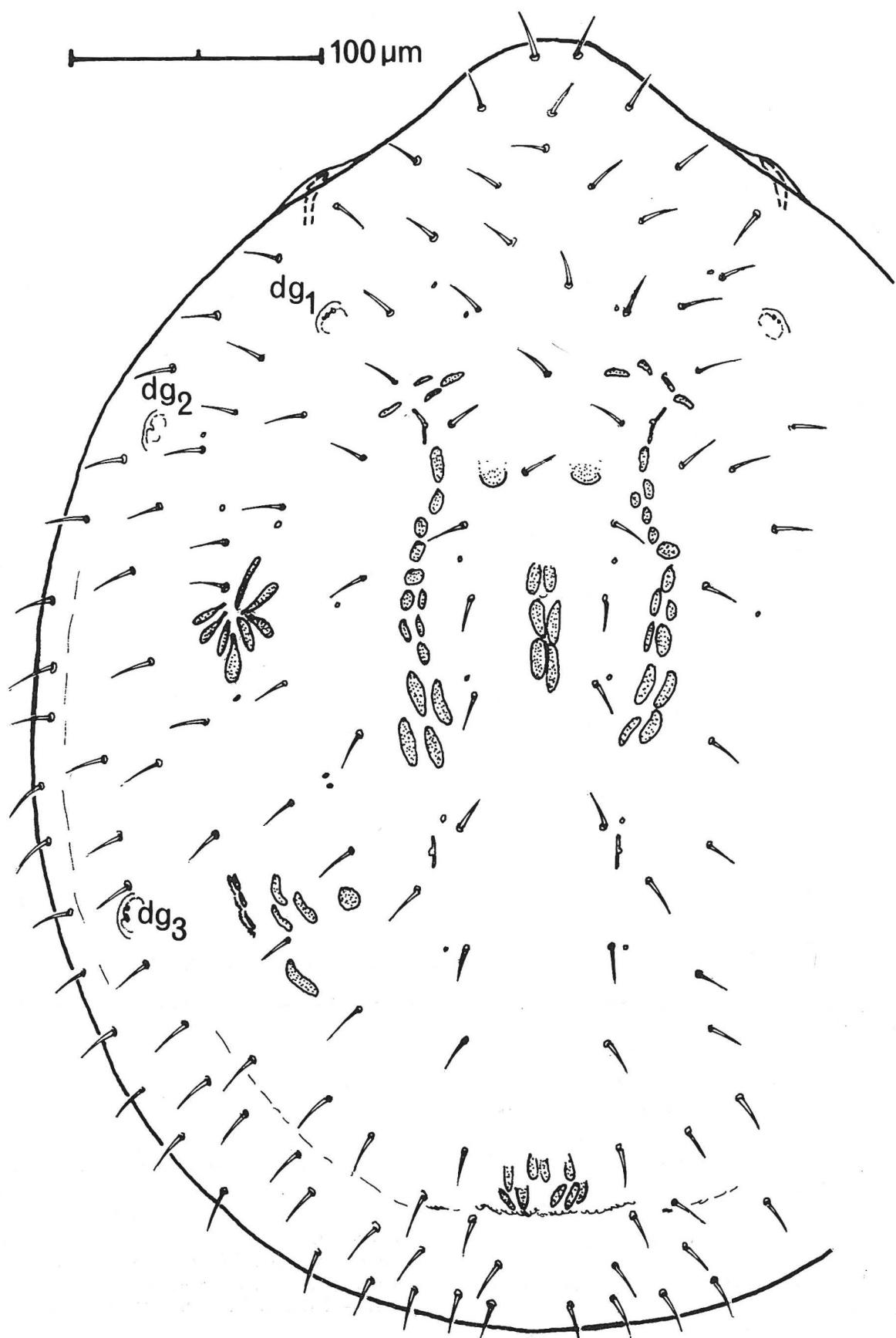


FIG. 5. — *U. (V.) rubra*, phoretic deutonymph, dorsal (dg₁₋₃, large dorsal glands).

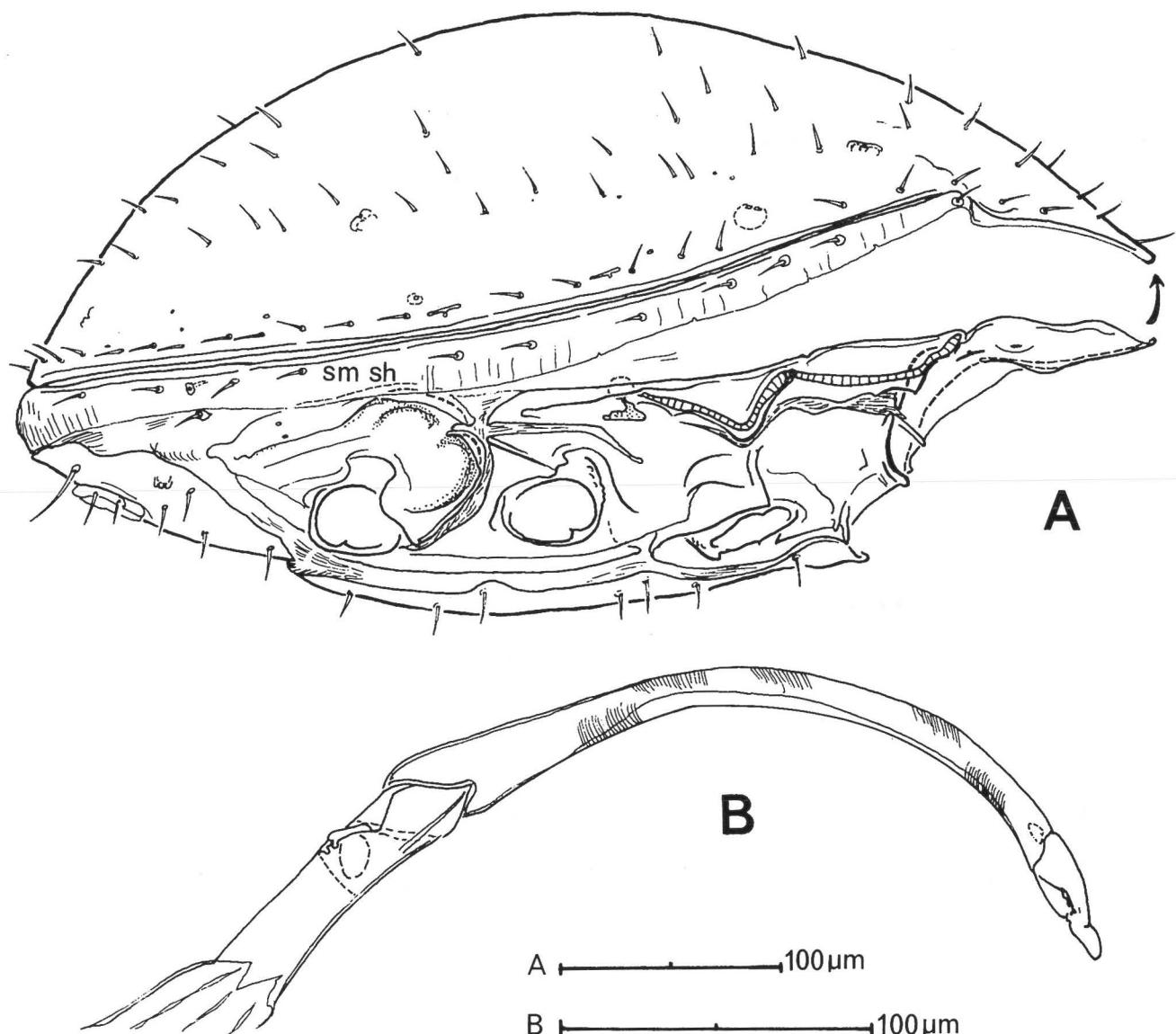


FIG. 6. — *U. (V.) rubra*. A) Phoretic deuteronymph, lateral, holodorsal shield slightly lifted ; B) Male, chelicera (sm sh, submarginale shield).

colour of the internal organs may indicate a common biological origin, perhaps due to similar trophic habits.

The new specific name is the Latin adjective *rub-er, -ra, -rum*, red.

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