

TWO NEW SPECIES OF *AMEROSEIUS* BERLESE 1903  
(MESOSTIGMATA : AMEROSEIIDAE) FROM VIÊT-NAM

BY

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To date, five genera are recognized in the family Ameroseiidae Evans 1961 (in HUGHES, 1961) : *Ameroseius* Berlese 1903, *Brontispalaelaps* Womersley 1956, *Epicriopsis* Berlese 1916, *Kleemannia* Oudemans 1930 and *Neocypholaelaps* Vitzthum 1941. EVANS (1963) supplied much of the basic informations for subsequent work on the group. He is discussing the external morphology of the Ameroseiidae and giving a key to the genera. The genus *Ameroseius* is defined as follows : fixed digit of the chelicera with at least two strong teeth ; corniculi stout, divided distally ; five or six pairs of ventral setae (excluding the three setae associated with the anus) ; a three-tined modified palpal claw and a anal shield bearing only the anal setae.

***Ameroseius vietnamensis* n. sp.**

MALE. Idiosoma : length 333-430  $\mu$  (the average from 4 specimens 362  $\mu$ ), width 210-235  $\mu$  (the average from 4 specimens 224  $\mu$ ).

*Dorsum* (Fig. 1). The strongly sclerotized dorsal shield, covering the whole body is characteristically ornamented by a regular reticulate design, as shown in Fig. 1. The 29 pairs of dorsal setae are strongly differentiated. Apart from the foliated, serrated i1 setae, there are short, smooth setae (i2, i3, J4, z2, z3, Z4, s1-s3, S2-S5, r2, r5-r7, in all 17 pairs), longer and more narrow smooth setae (z1, Z1, s4, s5, S1, in all 5 pairs), longer, broader smooth setae (i4, Z2, s6, in all 3 pairs and finally 3 pairs of claviform, slightly plumose setae i5, J2 and somewhat shorter Z5 which are the most characteristic for this species.

*Venter* (Fig. 2). Tritosternum well developed, with a pair of long, pilose lacinae. Jugular plates or stripes are lacking. The sterni-genital shield of elongated rectangular shape is covered with a finely reticulate pattern and beares setae S1-S5 and

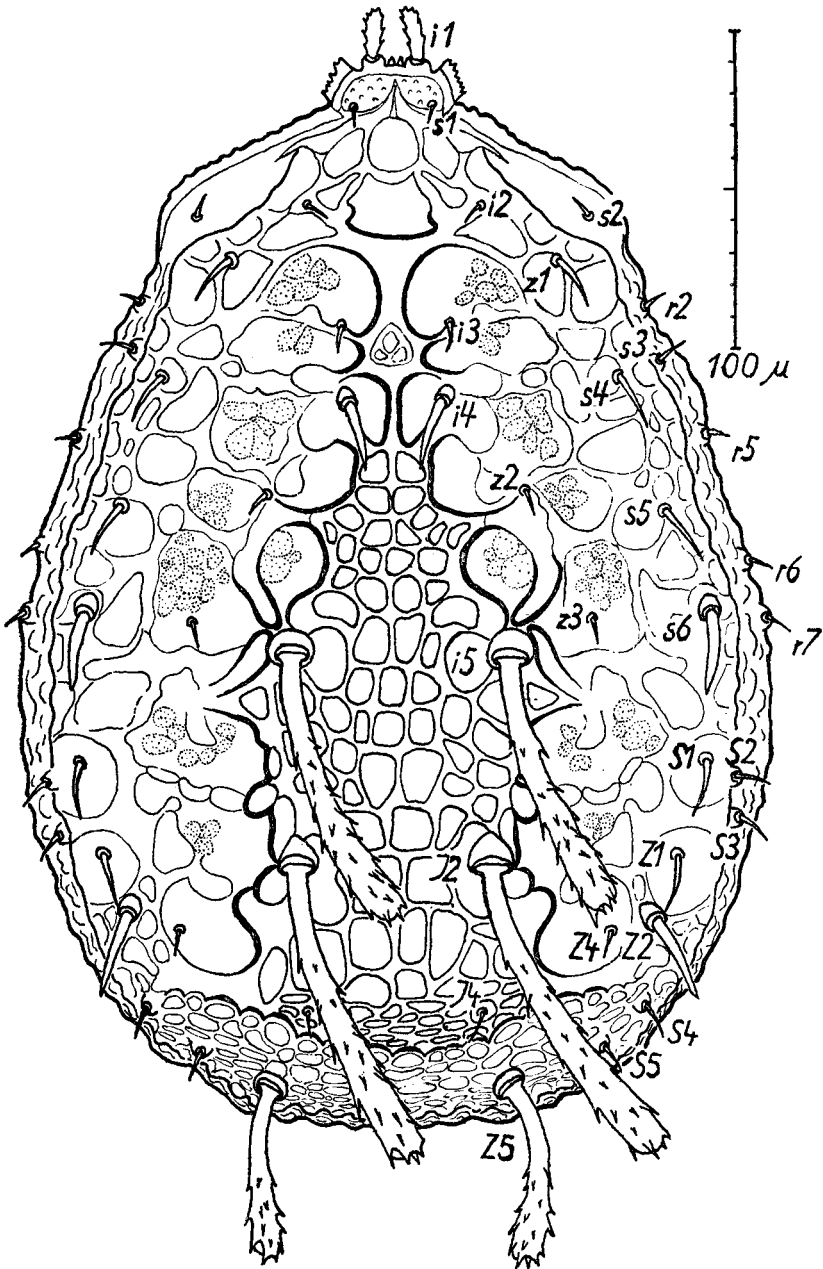


FIG. 1. — *Ameroseius vietnamensis* n. sp. Dorsum of male.

three pair of pores. The endopodalia between coxae II and III are fused with the sterni-genitale, the endopodalia between coxae III and IV are separated, narrow and elongated embracing coxae IV from below. The peritrematal plates enlarged distally, embrace coxa IV to one half of his breadth. Between the sterni-genitale and ventri-anale are the setae V1 and a small band of intermediate platelets. The

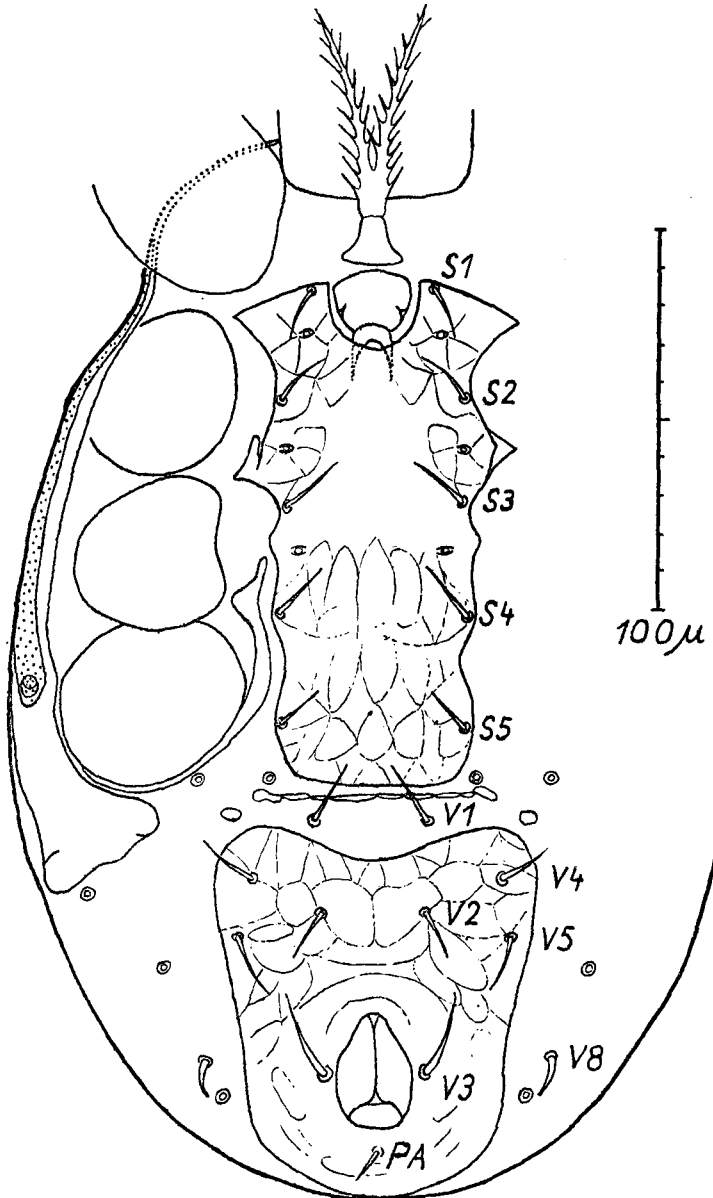


FIG. 2. — *Ameroseius vietnamensis* n. sp. Venter of male.

large ventri-anale is roughly rectangular, shallowly excavated anteriorly, with a fine but distinct reticulate pattern, with four pairs of setae V2-V5 and one unpair postanal one (PA). Seta V8 is smooth, short and somewhat thicker than the other ventral setae.

The gnathosoma is the same as that of the female, but the toothed stripes on the plane of the tectum are developed stronger than in the females (Fig. 4 G). The chelicerae are typical for this genus (Fig. 4 C), the fixed digit with three strong teeth, the movable digit with two teeth and a short, flask-like spermatophoral process. Pedipalpus like this of the female.

Each leg (Fig. 5 A, B, C, D) terminates in a pretarsus with claws but without a well developed pulvillus. All legs are equipped with smooth setae and dorsally with foliated, serrated setae, as shown in Fig. 5.

FEMALE. Idiosoma : length 308-447  $\mu$  (the average from 6 specimens 393  $\mu$ ), width 205-378  $\mu$  (the average from 6 specimens 265  $\mu$ ).

*Dorsum.* The shape, ornamentation and chaetotaxy closely resemble those of the males. The average length of setae is somewhat larger according to the larger size of the females.

Length of dorsal setae (in brackets the average from 6 measurements) in  $\mu$  :

i1 — 16-23 ( $\sigma$ 18, $\phi$ 22)	i5 — 76-112 ( $\sigma$ 83, $\phi$ 105)
i2 — 9-19 ( $\sigma$ 10, $\phi$ 17)	J2 — 83-123 ( $\sigma$ 90, $\phi$ 110)
i4 — 23-25 ( $\sigma$ , $\phi$ 24)	Z2 — 23-30 ( $\sigma$ , $\phi$ 27)
s6 — 23-25 ( $\sigma$ , $\phi$ 24)	Z5 — 45-80 ( $\sigma$ 50, $\phi$ 77)

The width of setae i5 and J2 is approximately 6-10  $\mu$  in the males and 8-12  $\mu$  in the females.

*Venter* (Fig. 3). The tritosternum is the same as this of the male. Sternal shield roughly square with anterior border shallowly excavated and only slightly expanded between coxae I and II, with surface covered by a gentle reticulation. Jugularia are lacking and are replaced by a transverse band of coarsely fibrous cuticle. Sternal shield with two pores and two setae (S1, S2), the third pair of sternal setae (S3) arising from independent, rounded platelets. The endopodalia between coxae II and III are small and triangular, while between coxae III and IV they are narrow, elongated, lying in juxtaposition with the anterior edges of the genital shield. The peritrematalia are similar to these of the male. Genital shield as broad as sternale, broadly rounded posteriorly, also gently reticulate. Setae S4 and S5 are arising from the genital shield. The anal plate is broadly oval, without any visible ornamentation with cribrum and three smooth setae (a pair V3 and a postanal seta (PA)). In front of setae V1 there is a small band of intermediate platelets. Inguinalia are lacking. Seta V8 is smooth, short and somewhat thicker than other ventral setae.

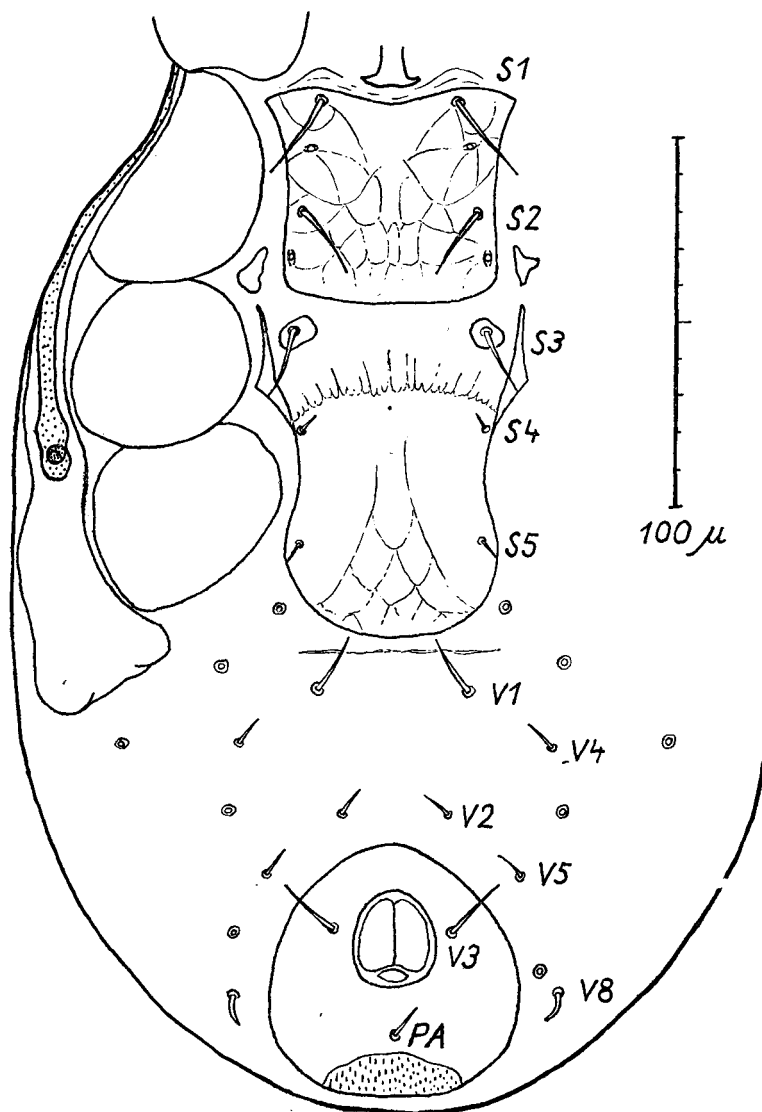


FIG. 3. — *Amersoseius vietnamensis* n. sp. Venter of female.

*Gnathosoma*. The hypostome (Fig. 4 B) is typical for this genus. The fused lacinae form a triangular lobe with smooth edges. The distal fork of the corniculi is only poorly developed as a small subapical tooth. The rostral setae C1 and C2 are only slightly thicker compared to setae C3 and C4. The deutosternal groove has distinct, parallel edges and five transverse rows of teeth with 5-6 teeth per row. At the base of the deutosternal groove two arched stripes with narrow, elongated teeth are arising. The tectum (Fig. 4 E, F) is unipartite with a broad, triangular

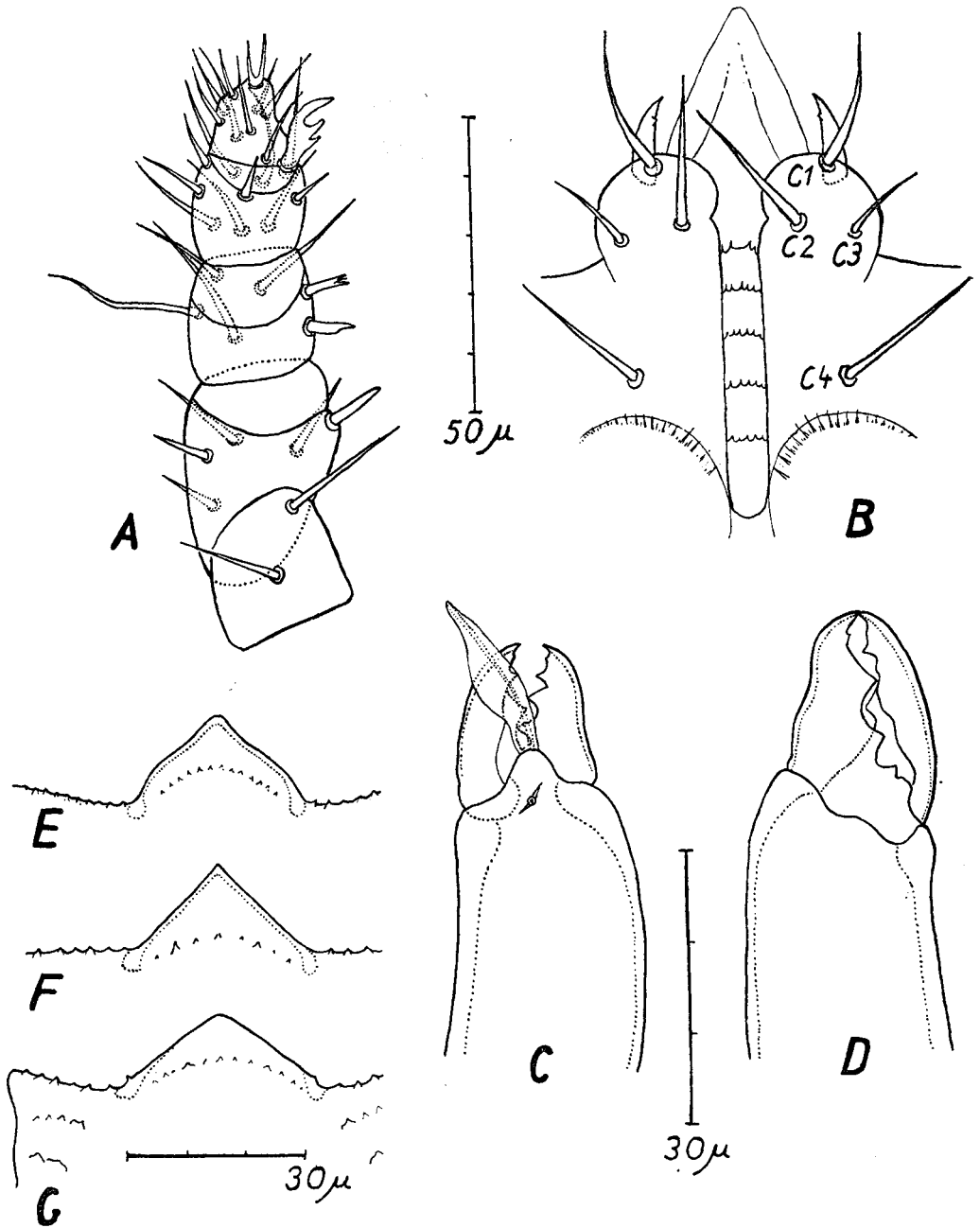


FIG. 4. — *Ameroseius vietnamensis* n. sp. A — pedipalpus of female, ventral. B — hypostome of female. C — chelicera of male. D — chelicera of female. E, F — tectum of female. G — tectum of male.

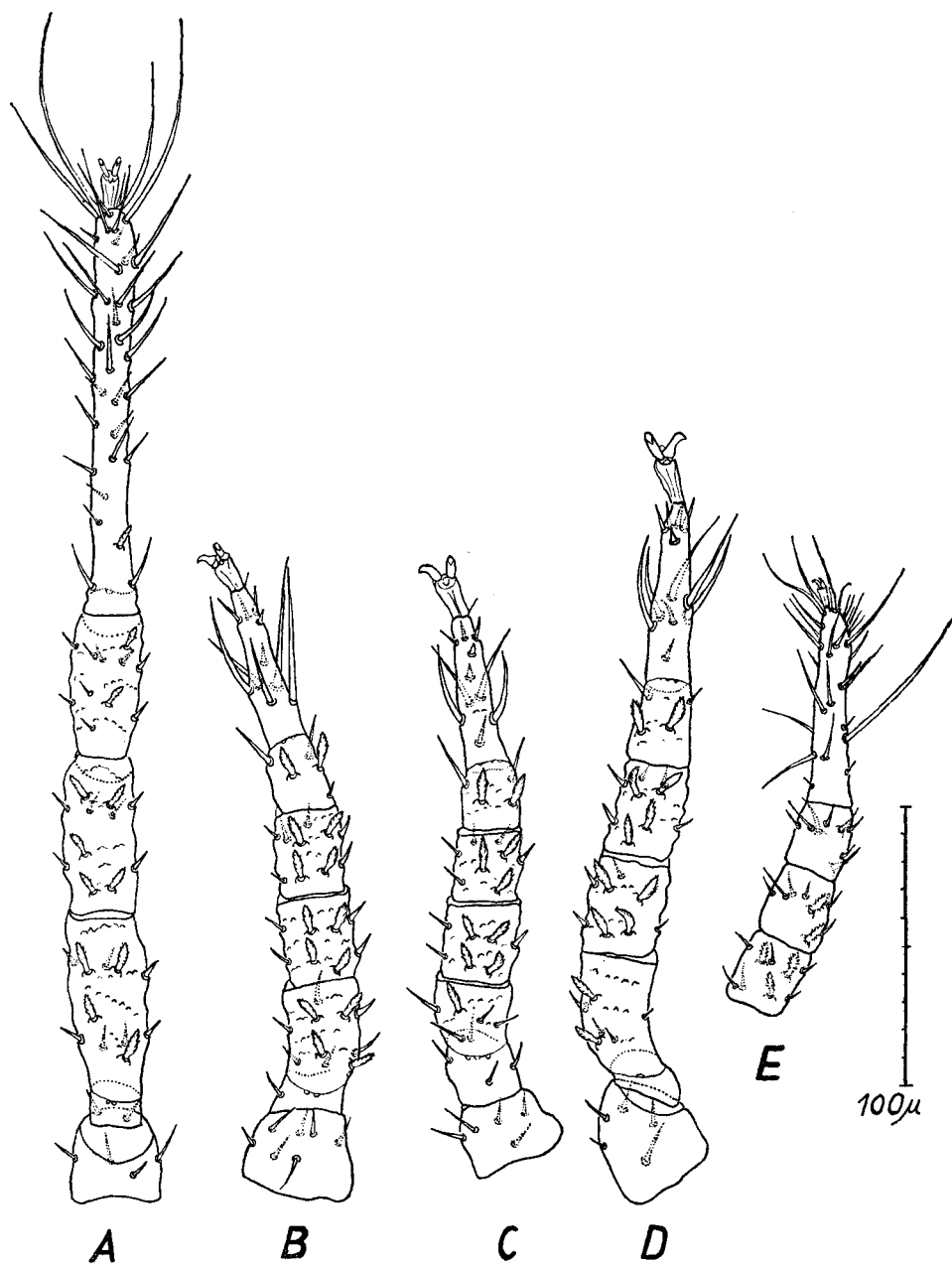


FIG. 5. — *Ameroseius vietnamensis* n. sp. A — leg I of male, dorsal. B — leg II of male, dorsal. C — leg III of male, dorsal. D — leg IV of male, dorsal. E — leg I of deutonymph, ventral.

median process more or less sharply pointed, laterally straight ore slightly convex. On the surface of the tectum there are toothed, arched stripes. Chelicerae (Fig. 4 D) are strong and massive, the fixed digit with a tooth forked apically and three lateral teeth, the movable digit with a tooth apically forked not distinctly, with two lateral teeth and a longitudinal row. The pedipalpal setae are smooth (Fig. 4 A), the modified palpal claw is three-tined.

The shape and chaetotaxy of the legs closely resemble those of the males.

DEUTONYMPH. Idiosoma : length 260-297  $\mu$  (the average from 3 specimens 282  $\mu$ ), width 178-207  $\mu$  (the average from 3 specimens 190  $\mu$ ).

*Dorsum* (Fig. 6). The dorsal chaetotaxy is so different from the adulti that it would not be possible the deutonymph to identify by this feature. But of the three available specimens there were two approaching the ecdysis, so that under the transparent cuticle the setae characteristic for the adulti were visible. This made it possible to find homologies of setae z1, i4, s6, i5, J2, Z2 and Z4 which are typical for *Ameroseius vietnamensis* n. sp. The dorsal plate is weakly sclerotized, with traces only of the dorsal pattern visible. The chaetotaxy is shown in Fig. 6.

Length of dorsal setae (in brackets the average from 6 measurements) in  $\mu$  :

i2 — 38-50 (43)	s6 — 81-94 (87)
z1 — 49-57 (53)	i5 — 104-124 (113)
s4 — 58-80 (70)	z4 — 80-87 (84)
i4 — 99-113 (108)	Z5 — 57-79 (68)
s5 — 49-64 (54)	J2 — 80-102 (96)

The *venter* is typical for this genus. Setae S1-S5 arise from the weakly sclerotized sternal shield. The anal plate and its chaetotaxy is the same as in the female.

Legs with pretarsus and claws with no pulvillus and with the smooth or foliated setae as in the adulti. Tarsus I (Fig. 5 E) with a long mastitarsale in the middle length of the tarsus, characteristic for the deutonymphs.

Type specimens. The type series on which this description is based consists of four males, eight females and three deutonymphs cleared in 2 % KOH and mounted as microscopical slides in Berlese's medium.

Holotype. A male of 344  $\mu$  length and 210  $\mu$  width, cleared in 2 % KOH. Other specimens are paratypes. The holotype and a few paratypes are deposited in the Zoological Museum of the Jagiellonian University in Krakow, Poland, the rest of paratypes will be sent to the Zoological Department of the University of Hanoi, Nord Viêt-Nam.

Type locality : Cha-Pa, Nord Viêt-Nam, 40 km SW from Lao-Kay, about 1500 m a.s.l., near the Geophysical Station in four samples from mould in a rocky cavity, leaf litter under ferns, dry and moist moss. Legit A. BARTKE 10.XII.1960,

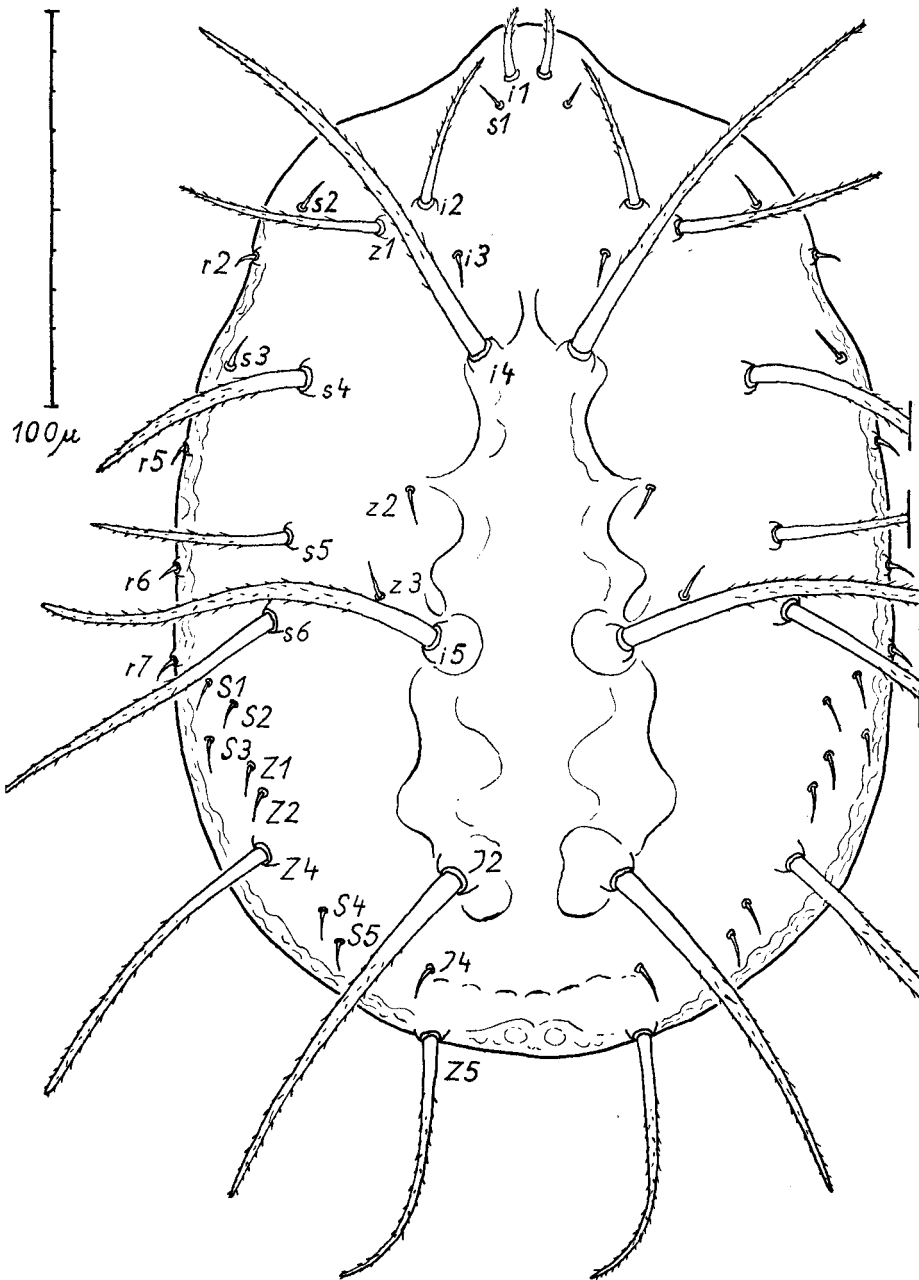


FIG. 6. — *Ameroseius vietnamensis* n. sp. Dorsum of deutonymph.

17.I., 2. and 20.III. 1961 to whom I express my thanks for his efforts in collecting specimens and for the kindness in making them available for investigation.

In the terminal gut of two deutonymphs were clusters of diatoms, which probably constitute the food of these mites.

**Ameroseius decemsetosus n. sp.**

In the samples mentioned above one female distinctly different from *A. vietnamensis* n. sp. was found. Its description is given below.

FEMALE. Length of the idiosoma 376  $\mu$ , width 251  $\mu$ .

The dorsal shield closely resembles this of the previous species, but the details of the pattern are somewhat different, as shown in Fig. 7. The 29 pairs of dorsal setae are similarly differentiated in four groups but the particular setae are somewhat different. The foliated setae i1 has only 2-4 lateral notches. 11 pairs belong to the short, smooth setae (s1-s3, S1, S3-S5, r2, r5-r7), 6 pairs to the longer, narrower smooth setae (i2, i3, z1-z3, Z4), 6 pairs are still longer, smooth setae (i4, J4, s4, s5, S2, Z1) and finally 5 pairs of claviform, slightly plumose setae i5, J2, Z5, s6 and Z2, which are the most characteristic for this species. The latter show an analogy to the 3 pairs of setae i5, J2 and Z5 of *A. vietnamensis* n. sp., but there are five pairs of these setae and to this feature refers the name of the new species.

Length of dorsal setae in  $\mu$  : i1-23, i2-21, i3-19, i4-41, i5-54, J2-60, s4-30, s6-63, Z2-74, Z5-66, J4-32.

Venter (Fig. 8 A). Sternal shield narrower than that of *A. vietnamensis* n. sp. and its anterior edge is more expanded between coxae I and II. The narrow, elongated endopodalia between coxae III and IV are not in contact with the genital plate. Setae S4 arise from the soft cuticle outside the genital shield. Setae S5 are longer as in *A. vietnamensis* n. sp. The anal plate is subcircular, slightly concave anteriorly, setae V8 do not differ from other ventral setae, additionally there are setae V7. Other characters do not differ from those in *A. vietnamensis* n. sp. Similarly the modified palpal claw is three-tined.

The legs are similar to these of *A. vietnamensis* n. sp., but with smooth spines (Fig. 8 B) instead of the foliated dorsal setae.

Holotype. A female of a size given above, cleared in 2 % KOH, mounted as microscopical slide in Berlese's medium, deposited in the Zoological Museum of the Jagiellonian University, Kraków, Poland.

Type locality : Cha-Pa, Nord Viêt-Nam, the same as in the previous description, in mould under a wooden trunk nearly the Geophysical Station. Legit A. BARTKE 7.XII, 1960.

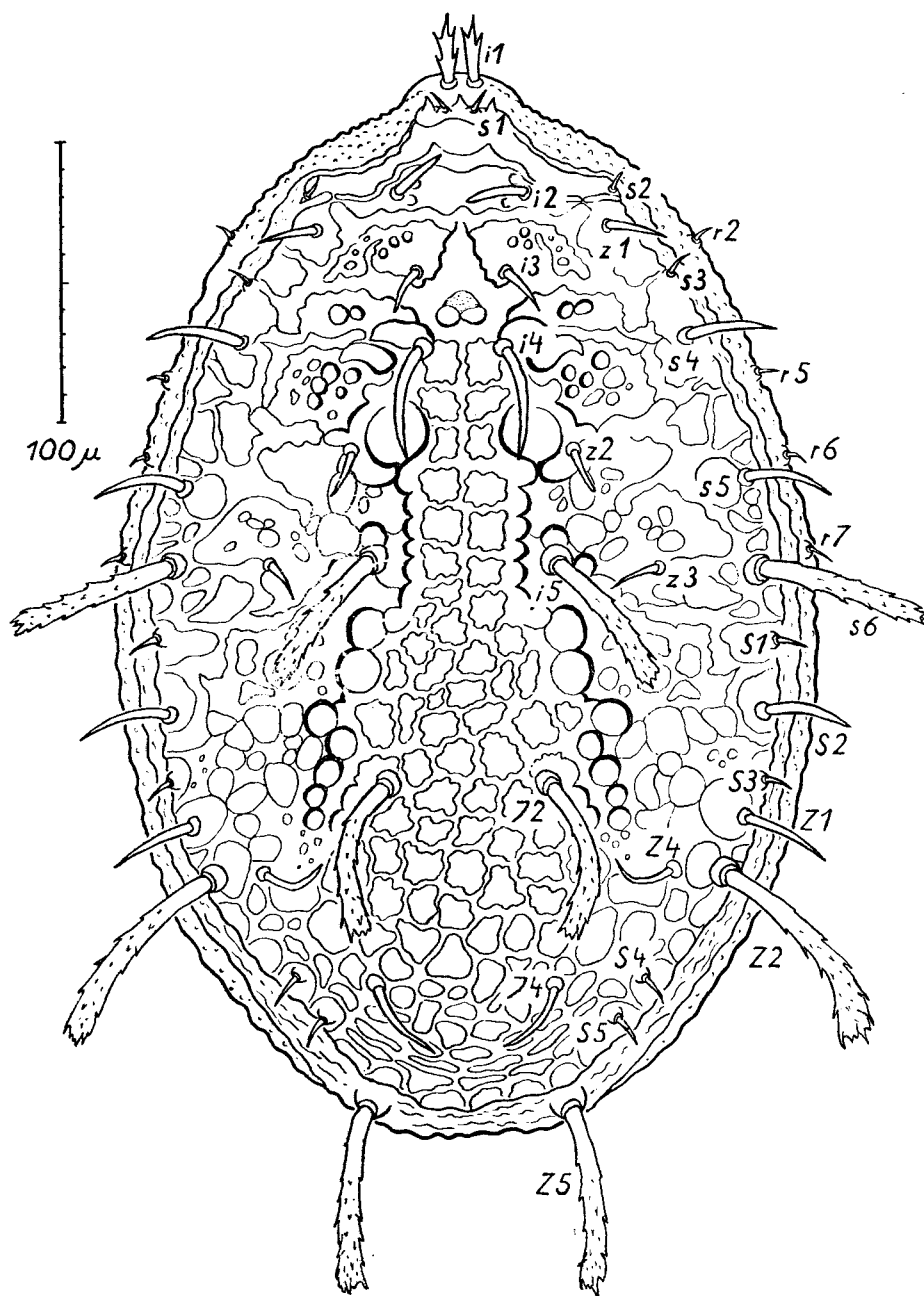


FIG. 7. — *Ameroseius decemsetosus* n. sp. Dorsum of female.

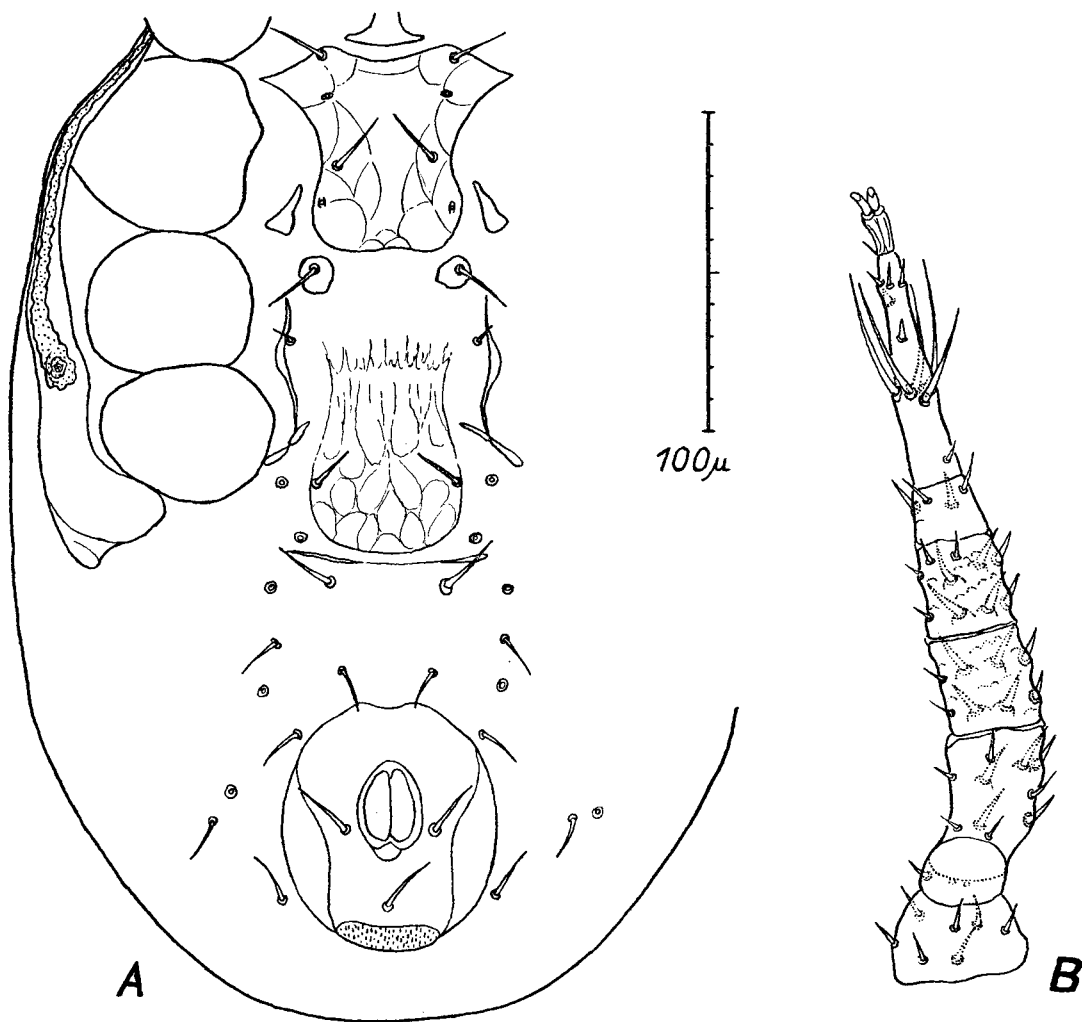


FIG. 8. — *Ameroseius decemsetosus* n. sp. A — venter of female. B — leg II of female, ventral.

#### DISCUSSION.

Both the described species differ distinctly from other known species before all by their characteristic, claviform dorsal setae, six in *A. vietnamensis* n. sp. (i5, J2, Z5) and ten in *A. decemsetosus* n. sp. (s6, i5, Z2, J2, Z5). As far as one can guess from the very short and rather ambiguous description by BERLESE (1910), *Ameroseius flagellatus* Berlese 1910 from East Indies possess also some long, presumably much longer, dorsal setae ("Pili dorsi duo verticis, duo humerales, duo scapulares, quatuor ad IV pedes laterales, duoque postici, corporis latitudinem multo superantes").

BERLESE (1910), p. 254). BERLESE in a more recent paper (1916) identified *A. flagellatus* with *Lasioseius flagellatus* Berlese 1916, but WESTERBOER (1963) after an examination of BERLESE's specimens considers it to belong to the genus *Ameroseius*.

The genus *Ameroseius* Berlese 1903 has been reviewed by WESTERBOER and BERNHARD (1963) under the collaboration with HIRSCHMANN. According to these authors, the genus *Ameroseius* belongs to the family Phytoseiidae Berlese 1916. The authors suggested that *Kleemannia* Oudemans 1930 is a synonym for *Ameroseius*, while *Zercoseius* Berlese 1916, which was synonymized with *Kleemannia* by OUDEMANS (1939), is identified with *Lasioseius* s. str. Berlese 1916. The type species for *Ameroseius* is *Acarus corbicula* Sowerby 1806 = *Seius echinatus* Koch 1839 = *Seius hirsutus* Berlese 1887 ex Koch, nec *Seius muricatus* Koch 1839, nec *Seius muricatus* Berlese 1887.

However, these familial and generic concepts are questionable from the point of view which is present by EVANS (1963, 1963 a). The family Phytoseiidae, as presently conceived, appears to be a natural group. It can be easily separated from the Ameroseiidae by several different characteristics, even e.g. the dorsal sclerotization and the fewer reduced chaetotaxy of the podosoma. Further, the genus *Kleemannia* is considered by EVANS (1963) to be a valid genus, differing from *Ameroseius* in the numbers of ventral setae on the ventri-anal shield and a two-tined modified palpal claw.

Noteworthy is the very different dorsal chaetotaxy on deutonymphs and adults by *A. vietnamensis* n. sp. However, taking into consideration the descriptions by WESTERBOER and BERNHARD (1963), this seems not to be exceptional for this genus, as such disparities were noted also in *A. pulcher* Westerboer 1963 and *A. corbicula* (Sowerby 1806). Moreover, the deutonymphal dorsal chaetotaxy of *A. vietnamensis* n. sp. is very similar to that of *A. corbicula*, from which it differs only in some details.

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