



MORPHOLOGICAL CHARACTERISTICS OF IMMATURE STAGES
OF *PRODINYCHUS TUBEROSUS* LEITNER
(PRODINYCHIDAE, UROPODINA, ACARINA)

BY

Stanislaw DZIUBA

(*Department of Nature Conservation and Ecology,
Copernicus University, Torun, Poland*).

The adult forms of *Prodinychus tuberosus* were described by LEITNER in 1946. This species was found in fresh manure (LEITNER 1946, FRANZ 1954, HYATT 1956).

The author found a considerable number of these individuals in the soil of cultivated fields, in 1960.

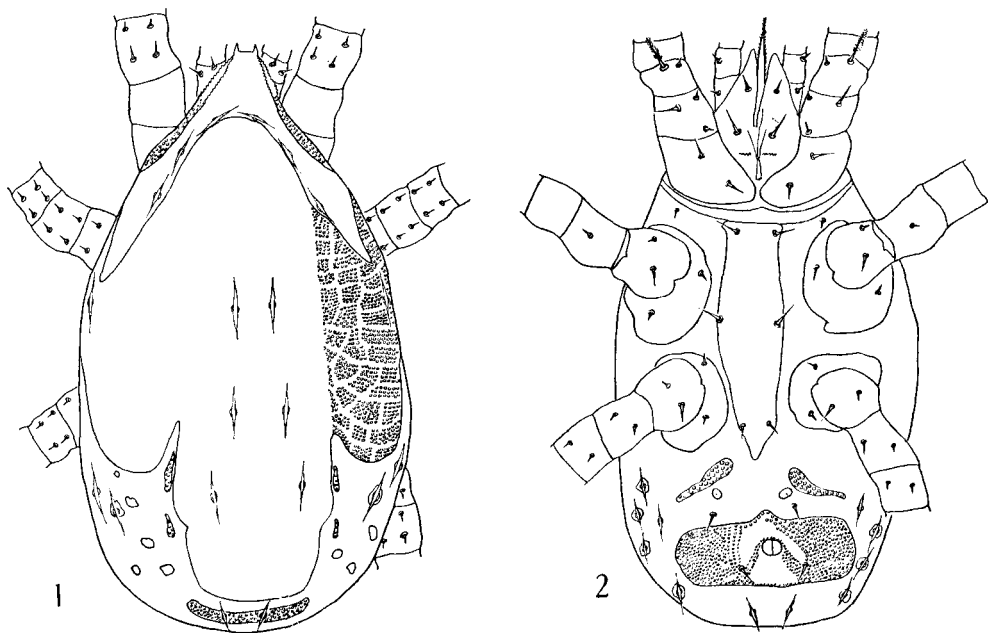
The collected material was identified in the Acarological Laboratory of the Zoological Institute of the Academy of Sciences, Leningrad, U.S.S.R.

The author wishes to express his thanks for the valuable help offered to him by N. G. BREGETOVA in the identification of the material, he is also indebted to E. W. KOROLOVA for her advice and suggestions concerning the drawings of microscope samples.

81 individuals, among which 27 adult forms (i.e. 18 females and 9 males), 39 deutonymphs, 14 protonymphs and 1 larva were collected altogether.

Larva. Body oval, elongated, milk-white in color. Length of the body 400 μ , breadth at widest point-220 μ . The dorsal part of the idiosoma (fig. 1) carries two well-developed plates: the dorsal plate which covers nearly the whole dorsal part of the idiosoma, and a comparatively small pygidial plate. The dorsal plate (length 320 μ , breadth 208 μ) is considerably narrowed about the borderline between metapodosoma and opisthosoma (nearly twice), as the result of which its metapodosomal part forms a kind of wings symmetrically distributed on each side of the body. A much fainter narrowing of the opisthosomal part of the dorsal plate occurs in the middle of its length. The whole dorsal plate has a well developed finely granulated structure, which is not uniform but consists of small platelets different in size and shape and separated from each other. The pygidial plate which is 26 μ long and 104 μ wide has the shape of a slightly curved ribbon and its margins are directed

towards the anterior part of the body. Each side of the opisthosomal part of the dorsal plate bears symmetrically situated 2 small intercalar sclerites. Both the pygidial plate and the sclerites are finely granulated. The dorsal part of the body is provided with 10 pairs of setae which are similar to a compass needle in shape. 3 pairs of the above mentioned setae are placed in the anterior part of the idiosoma next to the edge of the anterior dorsal plate, 4 pairs symmetrically on the dorsal plate, 1 pair on the pygidial plate and the remaining 2 pairs on the opisthosoma, on the sides of the dorsal plate. 1 pair of setae out of the latter 2 pairs is placed on small sclerites as if on cushions.

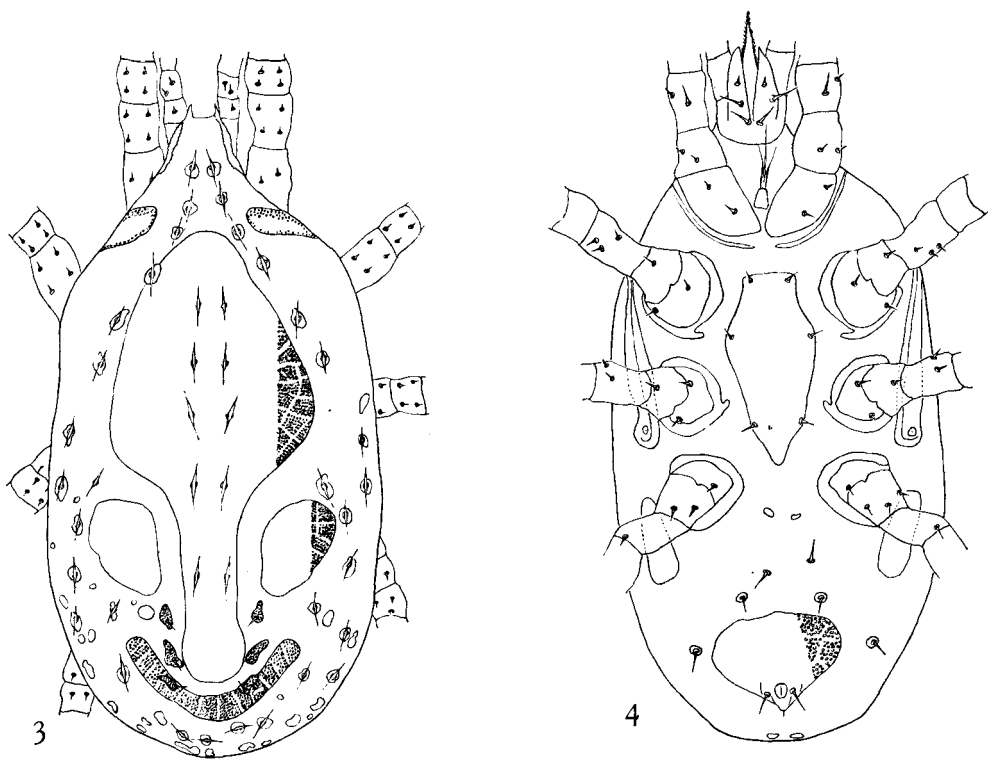


Prodinychus tuberosus Leitner, 1946.
1, dorsum of larva ; 2, venter of larva.

On the ventral part of the idiosoma (fig. 2) there is an elongated sternal plate $156\ \mu$ long, and $52\ \mu$ wide, with a sharp pointed terminal part. Beside the sternal plate there are clearly visible subcoxal plates, while below the sternal plate small elongated intercalar plates are apparent. Those are situated diagonally to the length axis of the body. The anal plate, well developed, is considerably broader than it is long. Its breadth is $130\ \mu$ while its length is only $52\ \mu$. Both the intercalar and anal plates have a well-developed granulated structure which covers nearly all their surface. On the anal plate only there can be distinguished a comparatively small space which is not granulated. The ventral part of the idiosoma bears 16 pairs of setae, of which 10 pairs are simple while the shape of the remaining 6 pairs reminds of the compass needle. 3 pairs of simple setae are situated on the sternal plate,

1 pair above the anal plate, 1 pair on the anal plate and 2 pairs on each subcoxal plate of the second and third pair of legs. The setae of compass needle shape are distributed on the sides of the opisthosoma-5 pairs on each side and 1 pair below the anal plate.

Tritosternum tripartite, $80\ \mu$ in length, its median lacina is longer than the lateral ones. Length of legs: I — $312\ \mu$, II — $286\ \mu$, III — $260\ \mu$. Tarsus of legs I is $120\ \mu$ long and it is about three times as long as any remaining member. Tarsi of legs II and III are much shorter, and are $85\ \mu$ long each. Fig. 7 a.

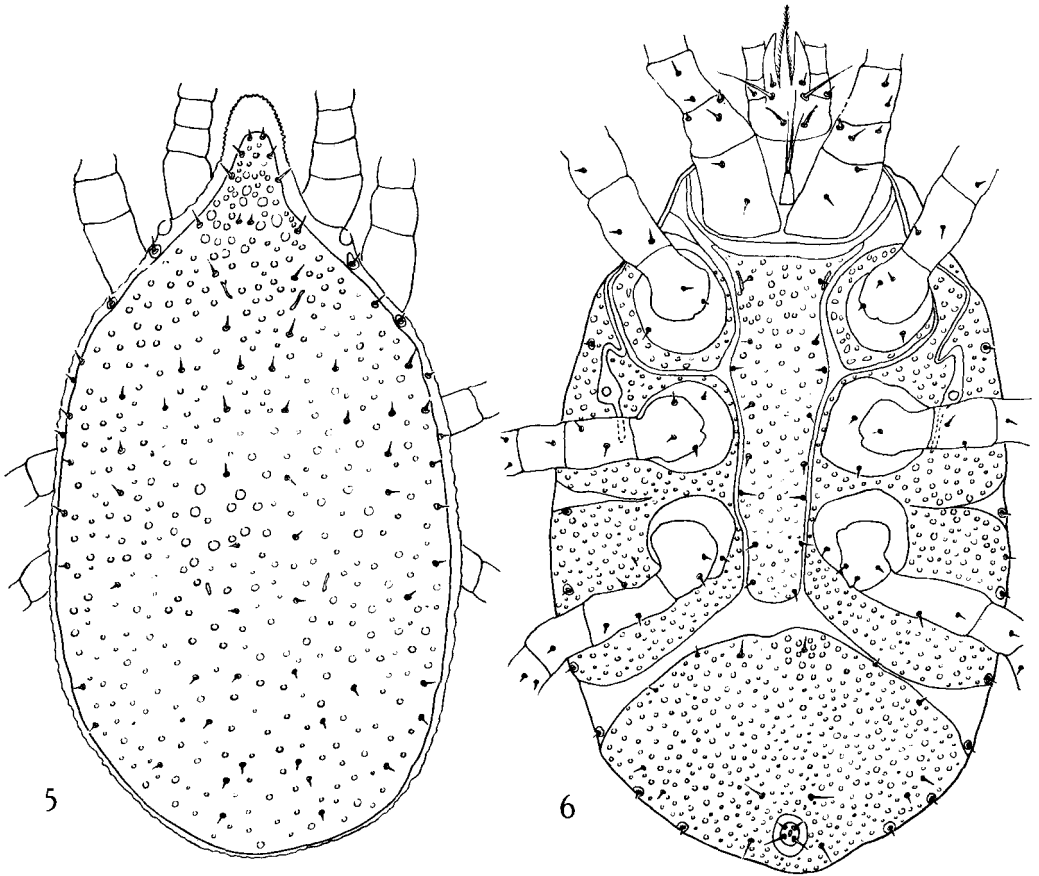


Prodinychus tuberosus Leitner, 1946.

3, dorsum of protonymph; 4, venter of protonymph.

Protonymph. Elongated body the shape of which reminds that of the larva. As the result of greater sclerotization and pigmentation both of particular plates and of legs the color of the body is yellow. Dimensions: length — $442\ \mu$, breadth — $221\ \mu$. The protonymphal transformation of the dorsal part of the idiosoma (fig. 3) is connected with the increase of the number of plates, a change in their proportion and a greater sclerotization of the existing ones. The lateral dorsal plates more or less ovoid, are distributed diagonally to the length axis of the body. The dorsal plate is slightly shorter than that of the larva. It is $300\ \mu$ in length

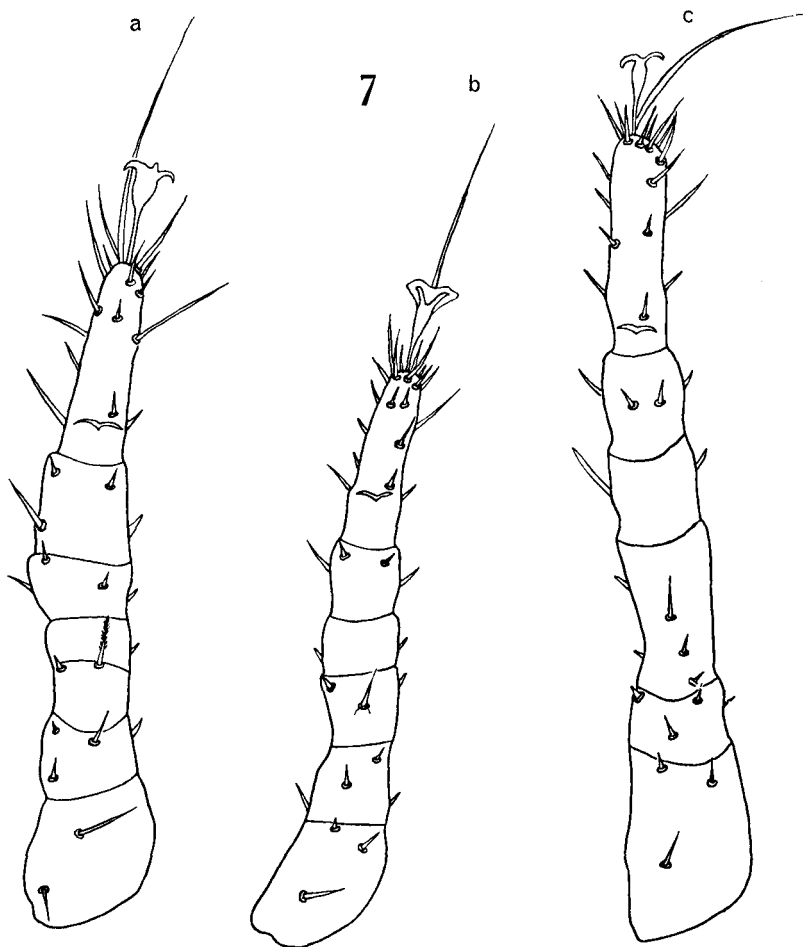
and $150\ \mu$ in breadth. The pygidial plate has not actually changed its shape but it is more bent and much bigger than that of the larva. The total number of setae on the dorsal side has increased up to 26 pairs, of which only 5 pairs are on the dorsal plate. The remaining setae are situated on sclerites of changing shape in different parts of the idiosoma. Of the 26 pairs of setae 23 are compass-needle-shaped while 3 pairs are simple setae. 2 pairs of simple setae are placed on the sides of the narrowed part of the dorsal plate and 1 pair on the pygidial plate.



Prodinychus tuberosus Leitner, 1946.
5, dorsum of deutonymph ; 6, venter of deutonymph.

On the ventral part of the idiosoma (fig. 4) the following plates are visible : sternal, anal, and the newly formed peritremal plate with faintly developed peritremes. The sternal plate is elongated in shape with a considerably narrowed anterior part and a sharp pointed posterior part as it could be seen in the larva, but on the whole it is shorter and wider. Its length is $140\ \mu$ and breadth $70\ \mu$. The sternal plate bears 3 pairs of setae. The anal plate of the protonymph bears

1 pair of setae and its shape considerably differs from the anal plate of the larva. While in the larva the breadth of the anal plate is three times as big as its length, in the protonymph it is only 1,5 times as big. The anal plate of the protonymph is heart-shaped, it is only 105 μ in breadth and 75 μ in length. All the setae situated on the ventral side of the protonymph are simple and normally set, except the 2 pairs which are placed on the sclerites. 1 pair is above the anal plate and 1 is distributed on the sides of this plate.



Prodinychus tuberosus Leitner, 1946.

7 a, leg I of larva ; 7 b, leg I of protonymph ; 7 c, leg I of deutonymph.

Tritosternum tripartite, as in the larval form, 70 μ in length. Length of legs : I — 275 μ , II — 240 μ , III — 225 μ , IV — 250 μ . Tarsus length of particular pairs of legs : I — 95 μ , II — 80 μ , III — 70 μ , IV — 85 μ . Fig. 7 b.

Deutonymph. Body oval, (fig. 5) dark golden to brown in colour. Length of body 559 μ , breadth-364 μ . All plates on the dorsal side have fused into one another forming one big plate, 480 μ in length, 330 μ in breadth. This plate covers almost all the dorsal surface of the body and it bears 33 pairs of simple setae. Moreover the whole dorsal plate is irregularly covered with small round hollows which are more numerous in the anterior part and less numerous in the posterior part.

The ventral part of the idiosoma (fig. 6) looks like uniform armour, although individual plates have not fused into one and their margins are rather distinctly seen. The sternal plate, elongated, reaching below IV coxae, fills out almost the whole space between the coxae. Its anterior part is a little wider than its posterior part. The length of the sternal plate is 265 μ , while its breadth is 110 μ (at its widest point). The setae occurring here are simple and their number in comparison with that of the protonymph has increased up to 8 pairs. The setae are distributed on the sides of the sternal plate along the whole of its length more or less at equal distances from one another. The ventro-anal plate occupies almost the whole space of the posterior part of the body and is more than twice as wide as it is long. Its length is 117 μ , breadth-270 μ . The ventro-anal plate contains 11 pairs of simple setae out of which 9 pairs are placed on the ventral part, 2 of them next to the anus. Subcoxal plates well-developed and distinctly visible. Both the sternal, ventro-anal and subcoxal plates have a clear structure, very like that of the dorsal plate. Peritremes rather long, well developed, slightly bent almost all along their length. Only the peritreme part right below coxae pair II is strongly bent forming a sort of pockets.

Tritosternum 65 μ in length, tripartite as in the previously described stages with its median lacina a little longer than the lateral ones. Length of particular pairs of legs: I — 330 μ , II — 300 μ , III — 270 μ , IV — 325 μ , length of tarsus: I — 120 μ , II — 90 μ , III — 80 μ , IV — 94 μ . Fig. 7 c.

Type locality: Cultivated soil, the Centre of Applied Biology, Copernicus University at Koniczynka near Toruń.

Type specimens: Holotype in authors collection.

Paratypes in collection of Zoological Institute of the Academy of Sciences U.S.S.R., Leningrad.

REFERENCES

- LEITNER (E.), 1946. — Zur Kenntnis der Milbenfauna auf Düngerstätten. *Zbl. Gesamt. Geb. Ent.* 1, 75-95; 4-5, 1-48.
- FRANZ (H.), 1954. — Die Nordost-Alpen. 15. Ordnung Acarina in Spiegel. Land-Tierwelt Innsbruck, 1, 329-452.
- HYATT (K. H.), 1956. — A collection of mites from stable manure. *Ent. mon. Mag.*, IV Ser., 194, 36-38.