FOLIA ENTOMOLOGICA HUNGARICA
ROVARTANI KÖZLEMÉNYEK
XLIII. 1. 1982 p. 111-123

The false darkling beetle genus Lederia Rtt. (Coleoptera, Melandryidae)

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(Received December 1, 1981)

Abstract: The melandryid genus Lederia Rtt. is revised, with a diagnosis of the genus split into 5 subgenera, 4 of which are new: Fuscatelia subgen.n., only with the type species, L. oviformis (Fairm. et Germ.) from Chile; Lederina subgen.n., besides the type species L. kaszabi sp.n. including L. topali sp.n., L. minima sp.n. (all from Vietnam), L. indica sp.n. from India, L. similis sp.n. from Nepal, L. japonica Rtt., L. foenilis (Lewis) and L. lata (Lewis) (all from Japan); Macrolederia subgen.n. only with the type species L. oblonga sp.n. from Chile; Paralederia subgen.n., along with the type species L. anatolica J. Friv. from Turkey and Lenkoran, USSR, containing L. seidlitzi Rtt. from Turkey; and Lederia s.str. with the type species L. suramensis Rtt. from the Caucasus, USSR, and L. arctica (Horn) from North America. A key is provided to all the 14 species of the genus (except ?L. californica Barrett).

The genus Lederia Rtt. belongs to the tribe Orchesiini. Eight species have hitherto been placed in the genus. Besides, Microscapha californica Barrett, 1928, known to us only from its original description, seems in fact to be a Lederia, although this should be justified by a restudy of the types. In addition, two species originally described under Lederia, i.e. L. asturiensis Rtt. and L. ehlersi Heyden, both from southern Spain, have been transferred to the genus Eucinetomorphus Perris.

Species of Lederia are mainly met with in the southern parts of the temperate zone, in subtropical and sometimes tropical areas. Only L. arctica LeC. ranges as far northward as Alaska. The life history of these beetles is very poorly known, the larvae being absolutely unknown.

The present paper deals with a detailed morphological and taxonomic study of Lederia resulting in distinguishing 4 new subgenera: Fuscatelia, Lederina, Macrolederia, and Paralederia. A key is elaborated for all the known species except L. californica (Barrett), comb.n., six species being described as new: L. kaszabi, L. topali, L. minima, all from Vietnam, L. indica from India, L. similis from Nepal and L. oblonga from Chile.

Material: We have been able to study types of nearly all hitherto known species of Lederia, with the exception of those of L. arctica (Horn) and may be L. oviformis (Fairmaire et Germain), L. anatolica J. Frivaldszky, 1880 (5 specimens, including 3 types), L. arctica (Horn, 1893) (1 female), L. foenilis (Lewis, 1895) (2 males, including 1 type), L. indica sp.n. (male holotype), L. japonica Reitter, 1891 (male holotype), L. kaszabi sp.n. (3 males, including holotype, and 1 female), L. lata (Lewis 1895) (1 female syntype), L. minima sp.n. (male holotype), L. oblonga sp.n. (3 males, including holotype), L. oviformis (Fairmaire et Germain, 1863) (1 specimen identified by the authors of the species, may be the type), L. seidlitzi Reitter, 1916 (male holotype), L. similis sp.n. (2 males, including holotype, and 2 females), L. suramensis Reitter, 1879 (20 specimens, including 3 types), L. topali sp.n. (2 males, including holotype). Nearly all the new species are based on material deposited at the Hungarian Natural History Museum, Budapest. The authors express their since appreciation to Dr. Z. KASZAB (Természettudo-

mányi Muzeum, Budapest), Dr. P. SPANGLER (Smithsonian Institution, Washington, D.C.), Drs. C.M.F. von HAYEK, J. MARSHALL and M. T. D. BRENDELL (British Museum, London), and Dr. J. MARTENS (Institut für Allgemeine Zoologie, Johannes-Gutenberg-Universität, Mainz) for the opportunity to study all the abovementioned materials.

Genus Lederia Reitter, 1879

Lederia Reitter, 1879. Verh.Zool.-Bot.Ges., Wien, 29: 479.
Stauropus Fairmaire et Germain, 1863. Annls Soc.ent.Fr., Paris, (4) 3: 227 (praeocc.)
Crioscapha Horn, 1893. Trans.Amer.ent.Soc., 20: 144.

Type species: Lederia suramensis Reitter, 1879 (by monotypy).

Description: Body small (1.2 to 2.7 mm long), convex, oval (fig. 3), oblong-oval (figs. 1, 2) or more or less ovoid. Colour varying from light reddish-brown to black, elytra more or less unicolour (without expressed spots or bands). Body clothed with thin, decumbent, usually yellowish-grey pubescence.

Head rather small, directed down, deeply drawn in pronotum (figs. 1-4). Eyes always present and more or less distinctly separated (figs. 1-4). Maxillary palpi 4-jointed, their last joint being irregularly oval, somewhat blunt, or obliquely truncate at apex, or roundly securiform (figs. 5, 6). Antennae rather short, 11-jointed (figs. 7-9), with a 3 to 4-jointed, sometimes loose and more or less poorly distinguishable club (figs. 8-11). Antennal joint 3 often clearly shorter than 2nd (figs. 7-9). Pronotum well transverse, broadest at the base whereupon abruptly roundly narrowing forward (figs. 1-4). Pronotum without despressions, its base usually slightly regularly concave (figs. 1-4) or very poorly bisinuate, nearly straight. Only in (?) L. californica (Barrett, 1928) remaining unknown to the authors, base of pronotum clearly bisinuate (making the species comparable with Microscapha spp.), but scutellum invisible. Edging of lateral margins of pronotum complete or shortened anteriorly (in L. arctica, L. anatolica, L. seidlitzi and some specimens of L. suramensis), margins anteriorly being absolutely round. Scutellum absent (figs. 1-4) or hardly visible, point-like. Base of elytra not or just a little broader than that of pronotum (figs. 1-4). Elytra oval, oblong-oval or more or less ovoid, surface usually irregularly punctured, without striae or punctured rows. Sutural stria invisible. At least in the majority of species wings are absent. Legs rather short, apices of mesofemora in dorsal view almost not exceeding beyond lateral margin's contour of elytra, whereas those of metafemora exceeding beyond it a little (fig. 1). Procoxae divided by a more or less triangular prothoracic process (figs. 13-16). Anterior coxal cavities posteriorly open. Mesocoxae divided by both a rather narrow directed backward mesothoracic and a broader directed forward metathoracic process (figs. 13-16). Metacoxae very large, subdivided by a suture into a narrow and oblique anterior and a broad blade-shaped hind part (figs. 17-19). Anterior metacoxal part narrowed outward (except in L. oviformis) from coxal socket to metelisternum, often provided with a microsculpture finer than on hind part. Penultimate joint of both pro- and mesotarsi distinctly bilobated, that of metatarsi simple (fig. 1). Hind legs saltatory, their femora thickened and flattened; tibiae clearly shorter than femora, flattened, distad triangularly enlarged, simple, at outer edges without distinct ridges, apically each with 2 long well pectinate serrate spurs, larger of which reaching at least apical third of tarsus (figs. 21, 22). Metatarsal joint 1 very long, usually not shorter (but often clearly longer) than joints 2 to 4 taken together (fig. 1). Metathorax well developed, usually longer than abdominal sterna 1 and 2 taken together. Metepisterna usually completely divided from metathorax by a suture each (figs. 17, 18, 20), only in L. suramensis and L. arctica suture at posterior part of metathorax not expressed (fig. 19). In Lederina subgen.n. metepisterna lie very much outward, being very narrow (fig. 20) and often partly or completely fused with the epimeres. The outward position of metepisterna makes the species of this subgenus distinguishable from all the others, in which the internal suture of the metepisternum is situated considerably more medially (figs. 17, 18). It is also important that the place occupied by the metepisterna in Lederina is situated nearby that of the epimeres in species of the other subgenera, with the difference that the episternum is of ventral position, clearly visible in ventral view and somewhat broadened anteriad (fig. 20). The above characters have permitted us to name this part of the thorax in Lederina as metepisterna and not metepimeres, although for new comparative material of certain related genera ought to be studied before final conclusion can be reached. The metathorax, along its middle with a longitudinal depression is often of diagnostic value, at least in males (figs. 18, 19, 28-30, 37-39). Abdomen with 5 visible sterna. Aedeagus usually trilobated (figs. 31-36).

Distribution: The beetles, which are usually found in litter, are known from the eastern Mediterranean, East, South-East and South Asia, western North and South America. Larvae unknown.

Diagnosis: Lederia is distinguishable from the genera Microscapha LeC., Orchesia Latr. and Hylobia Broun, also members of the tribe Orchesiini, by the total lack of the scutellum (or it is point-like and hardly visible). From the New Zealand genus Lyperocharis Broun the genus Lederia is distinguishable by at least partly developed sutures dividing the metepisterna and metasterna, as well as by the spurs of the metatibiae being shorter than joint 1 of metatarsi (in Lyperocharis the longer of the spurs is slightly longer than the tarsal joint 1).

Lederia is apparently most closely related to the genus Eucinetomorphus Perris, but differs from it by the absence of the suture dividing the anterior parts of metacoxae and metathorax, as well as by the very short suture dividing the metepisterna from their sterna, which is at best developed only at the anterior quarter of the metathoracic sides.

We had the opportunity to study only one species of Eucinetomorphus, namely E. asturiensis (Rtt.), but according to SEIDLITZ (1898), the above characters seem to be shared by other species of the genus as well. They are members of Lederia s.str. (with L. suramensis and L. arctica) that are apparently especially closely related to Eucinetomorphus, for they have the suture dividing the metepisterna and sterna posterior 1/4 to 2/3 as long as the lateral margin of the metathorax, although the suture dividing the anterior margin of metacoxae and metathorax is always clear.

Fuscatelia subgen.n.

Type species: Stauropus oviformis Fairmaire et Germain, 1863.

Diagnosis: Distinguishable from the other subgenera by a very slightly narrowing outward (not coming to naught) posterior part of the metacoxae (fig. 17), as well as by a dark coloration of the dorsum.

The type species, L. oviformis from Chile, is by now the only member of the subgenus.

Lederina subgen.n.

Type species: Lederia kaszabi sp.n.

Diagnosis: Characterized by very narrow lateral metepisterna (not less than 5 to 6 times longer than wide), often partly or completely fused with the epimeres, but, unlike the latters, situated ventrally, well visible in ventral view and a little broadened anteriad (fig. 20). Antennal joint 3 very short and thin, not less than 2.0 to 2.5 times narrower and 2.5 to 3.0 times shorter than 2nd, club 3-jointed, rather well demarcated (fig. 7). Lateral margins of pronotum completely edged. Anterior part of metacoxa rather well narrowing outward to come to naught (fig. 20). Eyes reniform, distinctly emarginated anteriorly.

The subgenus contains 8 species: L. foenilis, L. lata, L. japonica (all from Japan), L. kaszabi sp.n., L. topali sp.n., L. minima sp.n. (all from Vietnam), L. indica sp.n. from India and L. similis sp.n. from Nepal.

Macrolederia subgen.n.

Type species: Lederia oblonga sp.n.

Diagnosis: Metepisterna posteriad roundly narrowed (fig. 18), ca 2.7 to 3.0 times longer than anteriorly wide. Antennal joint 2 distinctly less than twice as wide as 3rd (fig. 8). Lateral margins of pronotum completely edged. Anterior part of metacoxae rather well narrowing outward to come to naught (fig. 18). Characterized by largest (2.3 to 2.7 mm long) body size. Head behind eyes with a transverse carina (fig. 1). Antennae with a poor 4-jointed club (fig. 8). Along middle of male metathorax a rather deep, more or less lanceolate depression with good cariniform edges (Fig. 18).

Only L. oblonga sp.n. from Chile, the type species, belongs to this subgenus.

Paralederia subgen.n.

Type species: Lederia anatolica J. Frivaldszky, 1880.

Diagnosis: Characterized by a backwardly narrowing metepisterna usually not less than 3.5 as long as wide, broader than in Lederina subgen.n. Antennal joint 3 usually much broader and elongate than in Lederina subgen.n., less than twice thinner than the 2nd (fig. 40). Lateral margins of pronotum anteriorly not edged. Anterior part of metacoxa rather well narrowing outward

to come to naught. Antennal club loose, 3 to 4-jointed (figs. 10, 11). Body colour usually red-brown.

Besides the type species L. anatolica, the subgenus contains also L. seidlitzi, also from Asia Minor.

Lederia s.str.

Type species: Lederia suramensis Reitter, 1879.

Diagnosis: Distinguishable from the species of the other subgenera by the suture dividing metepisterna and metasterna shortened and expressed only anteriorly (fig. 19). Antennal joint 3 less than twice thinner than the 2nd (fig. 9).

This subgenus contains, along with the type species L. suramensis from the Caucasus, only L. arctica from northwestern North America.

Key to the subgenera and species of Lederia Rtt.

1(24) Suture dividing metepisterna and metasterna complete (figs. 17, 18, 20).

2(21) Lateral margins of pronotum completely edged. Prothoracic process dividing procoxae chiefly rather narrow, sharpened at apex. Antennal joint 3 in Lederina spp. not less than 2.0 to 2.5 times narrower and 2.5 to 3.0 times shorter than 2nd (fig. 7).

3(4) Anterior part of metacoxa broader, nearly not narrowing outward and certainly not coming to naught (fig. 17). Antennal club rather well expressed, 3-jointed. Body more or less ovoid, 1.82 times as long as wide. Elytra broadest between anterior 1/3 and 1/4 of their length. Head and elytra distinctly punctured by medium-sized points; isthmus between punctures at anterior part of elytra not less than 1.3 to 1.4 times as large as diameter of a puncture. Pronotum very finely shagreen and sparsely and finely punctured. Body black-brown or brown, elytra slightly shining, ventrum partly lighter, antennae and legs rad-brown. Length 1.5 to 1.6 mm. Chile (Chiloe island)
L. (Fuscatelia) oviformis (Fairm. et Germ.).

4(3) Anterior part of metacoxa narrower, clearly narrowing outward to come to naught (fig. 18, 20). Body light, red-brown, or partly darkened.

5(20) Antennal joint 3 very narrow, not less than 2.0 to 2.5 times thinner and 2.5 to 3.0 times shorter than 2nd; club rather distinctly demarcated, 3-jointed (fig. 7). Metepisterna narrow, not less than 5 to 6 times longer than wide anterriorly (fig. 20)
Subgenus Lederina

6(15) Smaller: 1.2 to 1.7 mm. Spurs of metatibiae longer, the longer of them almost reaching apex of tarsal joint 2 (fig. 25). In both sexes abdomen without axial depression. Metasternum very finely punctured, usually better along axis and lateral. Colour light red-brown or brown, rarely meso-, metathorax and partly elytra darker, dark red-brown or brown (L. similis sp.n.). Maxillary palpi and antennae always lighter, red-yellow. Dorsul dull or slightly shining, clothed with short, silky, decumbent, grey-yellowish pubescence. Pronotum finely transversely shagreen and exceedingly finely and sparsely punctured. Elytra well and finely punctured (still coarser and denser than pronotum), as well as very finely shagreen; usually isthmus between punctures at anterior part of elytra clearly larger than diameter of a puncture. Five closely related species from Vietnam, Nepal and India.

7(12) Metathorax with an axial depression (figs. 28-30).

8(9) Axial depression of metathorax wider, ablong-oval, posteriad sharpened, anteriad reaching approximately to first quarter of metathorax (fig. 28). Body oblong-oval, dorsally slightly shining, ca. 1.93 times longer than wide (fig. 4). Aedeagus as depicted (fig. 36). Length 1.2 mm. Vietnam L. (Lederina) minima sp.n.

9(8) Axial depression of metathorax considerably narrower, more or less narrowly lanceolate, anteriad reaching to half, first third or quarter of metathorax (figs. 29, 30).

10(11) Axial depression of metathorax narrower, narrowly lanceolate, reaching approximately to first third of metathorax (fig. 29). Colour red-brown, surface slightly shining, maxillary palpi, antennae, prothorax, partly legs and abdomen lighter, reddish-yellow. Body 1.87 times longer than wide. Parameres considerably longer than central lobe of aedeagus (fig. 33). Length 1.6 mm. India (West Bengal) L. (Lederina) indica sp.n.

11(10) Axial depression of metathorax broader, more or less lanceolate, varying in lenght, in females reaching to half of metathorax, in males ending between first quarter and a half

of metathorax (fig. 30). Colour red-brown or dark brown, elytra, meso-, metathorax darker, dark red-brown or brown, elytra at apical part and often sutural area lighter. Body 1.79 to 1.89 times longer than wide. Parameres very poorly longer than the central lobe of aedeagus (fig. 34). Length 1.5 to 1.8 mm. Nepal L. (Lederina) similis sp.n.

12(7) Axial depression of metathorax absent, its place being occupied by a more or less narrowly triangular flattened keel (figs. 26, 27). Body shorter, ca 1.67 to 1.84 times longer than wide (figs. 2, 3).

13(14) Smooth edging of axial very narrowly triangular flattened keel of metathorax reaching to first 1/4 to 1/5 of the length of metathorax, length being measured from hind margin of mesocoxae (fig. 26). Body broader, oval, 1.67 to 1.78 times longer than wide (fig. 3). Dorsum more or less dull. Aedeagus as depicted (fig. 31). Length 1.4 to 1.7 mm. Vietnam L. (Lederina) kaszabi sp.n.

14(13) Smooth edging of axial narrowly triangular flattened keel ending not farer than between first 1/3 and 1/4 of length of metathorax (fig. 27). Body more or less oblong-oval, 1.8 to 1.84 longer than wide (fig. 2). Dorsum more or less dull or slightly shining. Aedeagus as depicted (fig. 32). Length 1.3 to 1.6 mm. Vietnam L. (Lederina) topali sp.n.

15(6) Larger: 1.7 to 2.3 mm. Spurs of metatibiae shorter, unequal in length, longer of which usually reaching only apical third or quarter of tarsal joint 1 (figs. 23, 24). Abdominal sterna in males with rather broad axial depressions. Metasternum clearer punctured. Colour from red-brown to reddish-brown. Japanese species. (Unfortunately, L. lata is known only by females which have no axial depressions on abdominal sterna.)

16(17) Larger: 2.3 mm long. Body broad, 1.63 to 1.67 times longer than wide. Depression along middle of posterior part of metathorax wider and flatter (fig. 37). Abdominal sterna without depressions. Metatarsal joint 1 nearly straight (fig. 24). Elytra very finely and sparsely punctured (isthmus between punctures at anterior parts of elytra usually not less than 2.0 to 2.5 times larger than diameter of a puncture). Apices of elytra somewhat protruding, slightly apart, rounded separately. Body very convex, red-brown, dorsally very poorly shining, covered with very shin, decumbent, yellowish-grey pubescence. Japan (Kasiwagi) L. (Lederina) lata (Lewis)*

17(16) Smaller: 1.7 to 1.8 mm long. Body more slender, 1.75 to 1.85 times longer than wide. Depression along middle of posterior part of metathorax narrower, oblong-oval (fig. 39) or in form of a groove sharpened posteriad (fig. 38). Abdominal sterna with distinct axial depressions. Metatarsal joint 1 in L. foenilis (Lewis)** distinctly curved (fig. 23).

18(19) Depression along middle of hinder part of metathorax oblong-oval, distinctly narrowing both anteriad and posteriad (fig. 39). Elytra very finely and rather sparsely punctured, isthmus between punctures at anterior part of elytra not less than twice as large as diameter of a puncture. Lateral parts of metathorax well and rather densely punctured (isthmus between punctures usually subequal to diameter of a puncture). Body ca. 1.84 times longer than wide, well transversely shagreen. Colour rusty-red, surface very poorly shining. Length 1.8 mm. Japan L. (Lederina) japonica Rtt.

19(18) Depression along middle of hinder part of metathorax more parallel-sided, groove-like, sharpened backward (fig. 38). Elytra rather finely, but still coarser punctured than in two previous species. Body ca. 1.75 to 1.85 times longer than wide. Metatarsal joint 1 distinctly curved (fig. 23). Colour red-brown, surface slightly shining. Length 1.7 to 1.85 mm. Japan L. (Lederina) foenilis (Lewis)

20(5) Antennal joint 3 much less than twice thinner and less than 2.5 times shorter than 2nd (fig. 8). Antennal club very poorly demarcated, 4-jointed (fig. 8). Metepisterna considerably broader, roundly narrowing backward (fig. 18), ca. 2.7 to 3.0 times longer than wide. Metathorax dull, with a clear isodiametric microsculpture consisting of rounded cells (fig. 18) and very sparsely and finely superficially punctured. Depression along middle of hinder

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* Females of L. foenilis (Lewis) and L. japonica Rtt. rest unknown. Possibly L. lata described by two females belongs in fact to either of them To solve the matter, new materials from Japan should be studied.

** Unfortunately on the holotype of L. japonica, wanting both metatarsi, the form of their joint 1 could not be detected.

part of metathorax more or less lanceolate, deep, with distinct keel-like edges (fig. 18). Elytra very finely, densely and roughly punctured (fig. 1). Spurts of metatibiae a little shorter than tarsal joint 1 (fig. 21). Head, pronotum and elytra finely shagreen. Colour brown or dark reddish-brown, dorsum dull or very poorly shining, pronotal disc, head, legs and partly abdomen, as well as sometimes basal parts of elytra lighter, red-brown; antennae and maxillary palpi reddish-brown. Dorsum clothed with dense, decumbent, yellowish-grey pubescence. Aedeagus as depicted (fig. 35). Length 2.3 to 2.7 mm. Chile
L. (Macrolederia) oblonga sp.n.

21(2) Lateral margins of pronotum at anterior 1/4 to 1/5 of their length free from edging. Prothoracic process dividing procoxae rather broad, distad not or slightly narrowing, usually more or less rounded (figs. 13, 14). Antennal joint 3 less than twice thinner than 2nd (fig. 40). Club 3 to 4-jointed, rather poorly demarcated (figs. 10, 11). Depression along middle of metathorax narrow, usually in the form of a thin depressed line. Elytra well and more or less coarsely punctured (figs. 42, 43). Metepisterna posteriad rather well narrowed, not less than 3.2 to 3.5 times longer than wide at anterior part.
Subgenus Paralederia

22(23) Antennae with 4-jointed, rather loose clubs (fig. 10). Elytra coarsely and densely punctured (isthmus between points at anterior part usually not more than 0.8 to 1 times as large as dimaeter of a point (fig. 42). Elytra more or less shining, anteriroly slightly transversely shagreen (fig. 42). Hairs on elytra longer, usually a foregoing hair exceeding beyond base of next one. Pronotum more or less finely and densely punctured, finer than on elytra. Body oblong-oval, 1.84 to 1.96 times longer than wide. Spurs of metatibiae 1.3 to 1.4 times shorter than 1st tarsal joint. Colour red-brown, surface more or less shining, hind margin of pronotum often darker. Length 2.1 to 2.7 mm. Asia Minor, Talysh
L. (Paralederia) anatolica J. Friv.

23(20) Antennae with a rather loose 3-jointed club (fig. 11). Elytra sparser punctured, isthmus between punctures at anterior part usually a little larger than diameter of a puncture (fig. 43). Elytra almost dull, densely and well transversely shagreen (fig. 43). Hairs on elytra thin, decumbent, rather short, usually a foregoing hair not exceeding beyond base of next one. Body oblong-oval, 1.94 times longer than wide. Antennal joint 2 only a little longer and broader than 3rd (fig. 40). Spurs of metatibiae ca. 1.3 to 1.4 times shorter than 1st joint of metatarsi. Colour red-brown. Length 1.7 mm. Asia Minor
L. (Paralederia) seidlitzi Rtt.

24(1) Suture dividing metepisterna and metasterna not developed at posterior part (fig. 19). Antennae with a more or less loose 3-jointed club (figs. 9, 12). Metathorax rather coarsely punctured (fig. 19). Depression along middle of metathorax narrow, in form of a depressed line (fig. 19)
Subgenus Lederia s.str.

25(26) Spurs of metatibiae shorter, ca. 1.5 times shorter than 1st joint of metatarsi (fig. 22). Lateral parts of pronotum mainly completely edged. Prothoracic process dividing procoxae laterally not edged, it is broader and longer (at least a little extending beyond anterior margin of mesocoxae) (fig. 16). Antennal club rather poorly demarcated, 3-jointed (fig. 9). Base of pronotum very slightly evenly concave. Dorsum clearly transversely shagreen. Elytra moderately largely and sparsely punctured, isthmus between punctures at anterior part usually not less than 1.1 to 1.3 times larger than diameter of a puncture. Body more or less oblong-oval. 1.7 to 1.92 times longer than wide. Colour red-brown, surface dull or slightly shining, often elytra except their base, pronotal hind margin and partly metathorax darker, dark red-brown. Length 1.5 to 2.4 mm. Caucasus
L. (Lederia) suramensis Rtt.

26(25) Spurs of metatibiae better developed, usually not more than 1.3 times shorter than 1st tibial joint. Lateral parts of pronotum anteriorly not edged. Prothoracic process dividing procoxae laterally edged, narrower, triangular, apically sharp and almost not exceeding beyond anterior margin of mesocoxae (fig. 15). Antennal club more distinctly enlarged, 3-jointed (fig. 12). Base of pronotum very slightly bisinuate. Pronotum and at least anterior part of elytra shining, without clear shagreen. Isthmus between punctures at anterior part of elytra a little larger than diameter of a puncture. Body more or less oblong-oval, ca. 1.75 times longer than wide. Colour red-brown, elytra a little darker. Length 1.7 to 2.5 mm. Northwestern North America
L. (Lederia) arctica (Horn)

? Lederia californica (Barrett) comb.n.

We are unfamiliar with this species and therefore present herein its original description (BARRETT, 1928: 173).

"Body oval, strongly convex, castaneous. Head deflexed, with slightly constricted eyes; eyes very coarsely granulate, widely separated on the front, slightly emarginate in front and not prolonged over the insertion of the antennae; maxillary palpi large, four-segmented, last segment strongly dilated and obliquely truncate at type, longer than wide; antennae eleven-segmented, first two segments equal in length to segments three to seven inclusive, last four segments dilated, forming a well-developed club, first two segments thicker than third. Prothorax twice as wide as long, as wide behind as base of elytra, a slight though distinct margin at sides, base sinuate at each side; finely, moderately, closely and irregularly punctate. Scutellum invisible. Elytra convex, sides narrowly inflexed, non-striated, finely, moderately, closely and irregularly punctate, with a single seta arising in each puncture. Abdomen with five ventral segments, basal segment subequal to second at middle. Legs moderately robust; anterior coxae narrowly separated, large and almost oval; middle coxae small, moderately separated with the mesosternum between coxae cordiform; hind coxae small and narrowly separated; hind tibia with two spines on distal end, one half to two thirds as long as first tarsal segment, serrate on under margin, outer spine slightly longer than inner; tarsi 5-5-4, pubescent, first segment of middle tarsi at least as long as the next two combined, first segment of hind tarsi as long as tibia; tarsal claws simple. Length 2.5 to 3.5 mm, breadth 1.25 to 2 mm; holotype (No 2558, Mus.Calif.Acad.Sci.) and ten paratypes taken by myself from nests of the wood rat, Neotoma fuscipes Baird, near Pasadena, California, January 1, 1928."

Judging from the description, this form is distinguishable from all species of Lederia by the pronotal hind margin very well bisinuate.

DESCRIPTION OF THE NEW SPECIES

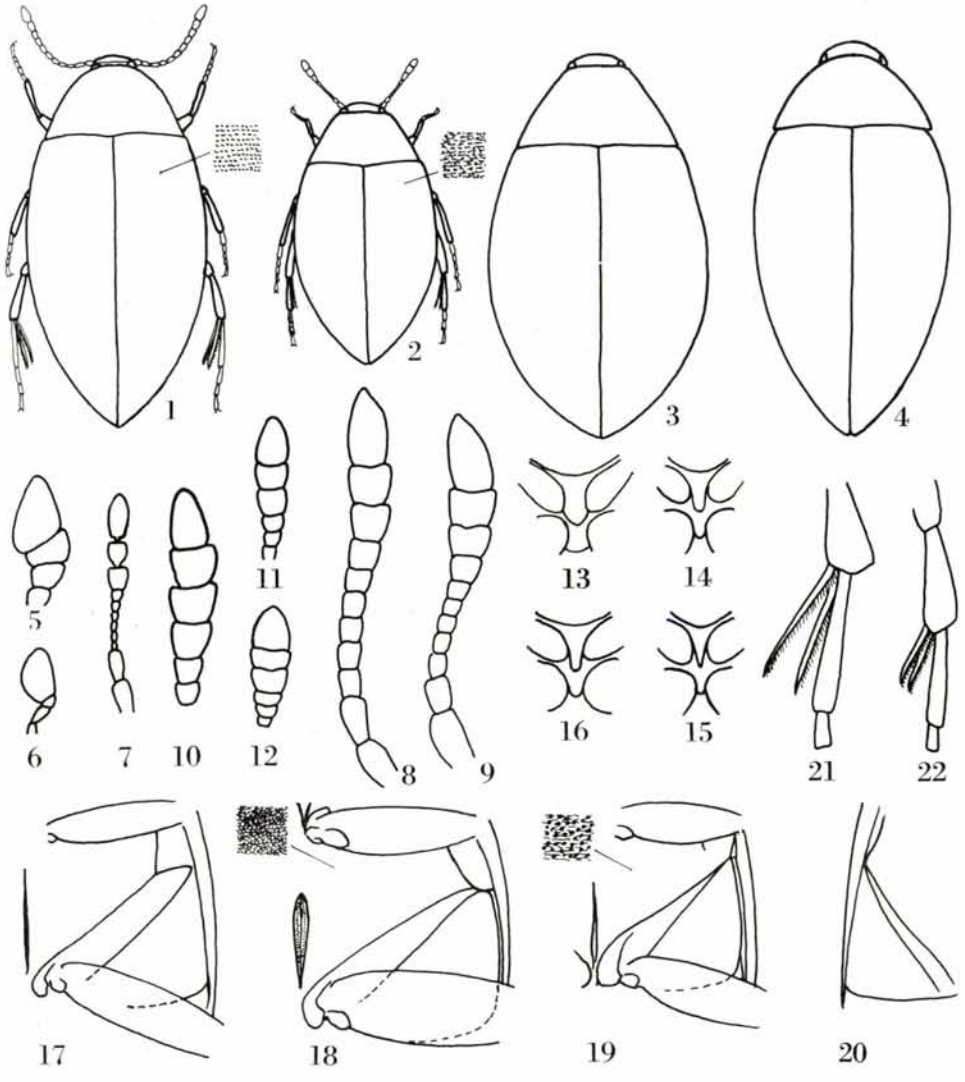
Lederia (Lederina) minima sp.n. (fig. 4)

Locality: Vietnam, Cuc-phuong Bong, jungle, extracted from litter, 1 ♂ (holotype) - 12-15. XII.1965, leg. T. PÓCS.

The abovementioned spcimen is deposited in the Hungarian Natural History Museum, Budapest.

Description: Body oblong-oval, rather convex, ca. 1.93 times longer than wide. Colour light red-brown, maxillary palpi, antennae and partly legs red-yellow. Dorsum slightly shining, clothed with fine, short, decumbent, silky, grey-yellowish pubescence.

Head rather densely, moderately finely (coarser than pronotum) punctured. Eyes coarsely faceted, reniform, anteriorly clearly emarginate. Interocular isthmus subequal to height of eye. Joint 2 of maxillary palpi longitudinal; joint 3 shorter than 2nd, transverse; joint 4 large, roundly securiform, not less than 1.6 to 1.7 times broader and ca. 3.3 times longer than 3rd. Antennae (as fig. 7) rather short, only a little exceeding beyond pronotal hind margin; joints 1 and 2 well developed, longitudinal, subequal in length, taken together a little longer than joints 2 to 8 combined; joint 3 short and thin, not less than twice thinner and ca. 3.3 times shorter than 2nd; joints 4 and 5 also short, subequal in length; joints 6 to 8 short as well, but more or less gradually broadening; at least joint 8 more or less transverse; joints 9 to 11 well developed, forming a club; joint 9 very poorly longitudinal, ca. 1.5 times as wide and ca. 2.2 times as long as the 8th; joints 9 and 10 subequal in length; joint 11 more or less oblong-oval, ca. twice as long as wide, ca. 1.7 times longer than 10th, joints 9 to 11 combined ca. 1.5 to 1.6 times longer than joints 3 to 8 taken together. Pronotum much transverse, ca. twice broader than long, broadest at base, whereupon anteriad roundly narrowed; base very slightly concave, exceedingly poorly bisinuate, nearly straight (fig. 4). Surface finely shagreen and highly finely and obscurely punctured. Prothoracic process narrowly dividing procixae triangular, apically sharpened, ending approximately between hind third or quarter of their length. Mesothoracic process dividing mesocoxae narrow, just a bit exceeding beyond a half of their length. Metathorax with a very fine isodiametric microsculpture, more or less finely punctured along middle, sparser superficially punctured laterally. Axial depression of metathorax oblong-oval, sharpened posteriad, reaching anteriad ca. at anterior quarter of metathoracic length (fig. 28). Metepisterna very narrow, not less than 6.0 times longer than wide (anteriorly). Posterior (broader) part of metacoxae more or less finely, but considerably denser punctured (especially laterally) than metathorax. Spurs of metatibiae long, unequal in length; longer spur almost reaching apex of metatarsal joint 1 (as fig. 25). The latter



Figs 1-22. Habitus and structural details of the species of Lederia. 1-2: habitus: 1 = L. oblonga sp.n. - 2 = L. topali sp.n.; 3-4: dorsal view (scheme): 3 = L. kaszabi sp.n. - 4 = L. minima sp.n.; 5-6: maxillary palpi: 5 = L. oblonga sp.n. - 6 = L. indica sp.n.; 7-9: antennae: 7 = L. topali sp.n. - 8 = L. oblonga sp.n. - 9 = L. suramensis Rtt.; 10-12: antennal joints 6 to 11: 10 = L. anatolica J.Friv. - 11 = L. seidlitzi Rtt. - 12 = L. arctica (Horn; 13-16: pro- and mesothoracic processes dividing pro- and mesocoxae, respectively: 13 = L. anatolica J.Friv. - 14 = L. seidlitzi Rtt. - 15 = L. arctica (Horn) - 16 = L. suramensis Rtt.; 17-20: metathorax: 17 = L. oviformis (Fairm.et Germ.) - 18 = L. oblonga sp.n. - 19 = L. suramensis Rtt. - 20 = L. kaszabi sp.n. (scheme); 21-22: metatibia and tarsal joint 1: 21 = L. oblonga sp.n. - 22 = L. suramensis Rtt. (a - metathorax, b - metepisternum, c - anterior part of metacoxae, d - posterior part of metacoxae)

very long, distinctly longer than all next combined; joints 2 and 4 subequal in length, each a little longer than 3rd. Middle of abdominal sterna without depressions. Posterior margin of last visible abdominal sternite without notches. Aedeagus as depicted (fig. 36). Length 1.2 mm.

Lederia (Lederina) indica sp.n.

Locality: India, W. Bengal, Darjeeling, distr. Ghum, 2200 m, sifted litter, 1 ♂ (holotype) - 6-17.X.1967. leg. Gy. TOPÁL.

The above specimen is deposited in the Hungarian Natural History Museum, Budapest.

Description: Body oblong-oval, convex, ca. 1.87 times longer than wide. Colour red-brown, maxillary palpi, antennae, prothorax, partly legs and abdomen lighter, red-yellow. Dorsum slightly shining, clother with fine, short, decumbent, silky, grey-yellowish pubescence.

Head finely and sparsely punctured, but coarser and denser than pronotum. Eyes reniform, coarsely faceted, well emarginate anteriorly. Isthmus between eyes ca. 1.2 times larger than eye height. Joint 2 of maxillary palpi longitudinal; joint 3 distinctly shorter than 2nd, transverse; joint 4 well developed, roundly securiform, not less than 1.6 to 1.7 times broader and ca. 3.3 times longer than 3rd, ca. 1.3 to 1.4 times longer than wide (fig. 6). Antennae rather short, a bit exceeding beyond pronotal hind margin; joints 1 and 2 well developed, longitudinal, latter a bit longer than former, taken together they are a bit longer than joints 3 to 8 combined; joint 3 short and slender, ca. 2.3 times as thin and not less than ca. 3.5 times as short 2nd; joints 3 to 5 thin, subequal in length; joints 6 to 8 a little broadened, 8th more or less transverse; joints 9 to 11 broadened in a distinct club; joint 9 slightly longitudinal, ca. 1.6 times as broad and ca. 2.2 times as long as 8th; joints 9 and 10 subequal in length; joint 11 ca. 1.7 times longer than 10th; joints 9 to 11 combined ca. 1.4 to 1.5 times as long as joints 3 to 8 taken together and ca. 1.3 to 1.4 times as long as both joints 1 and 2. Pronotum much transverse, ca. 2.1 times broader than long, broadest at base, whereupon anteriad slightly roundly narrowed. Surface finely transverse shagreen and exceedingly finely and sparsely punctured. Elytra more or less oblong-ovoid, ca. 1.52 times longer than wide, broadest at anterior third, whereupon backward roundly narrowed. Surface finely transversely shagreen and very finely (but still clearly denser and coarser than pronotum) punctured. Isthmus between punctures at the anterior part of elytra considerably larger than diameter of a puncture. Procoxae narrowly divided by a triangular prothoracic process nearly reaching hind third of their length. Mesothoracic process dividing mesocoxae short and narrow, ending somewhere between anterior third and half of their length. Metathorax provided with a fine isodiametric microsculpture, rather finely punctured along medial depression and very finely superficially punctured around, although clearer laterally. Axial depression of metathorax narrow, lanceolate, reaching anteriad some one third of metathoracic length (fig. 29). Metepisterna very narrow, not less than 6.0 times longer than wide (as fig 20). Surface on anterior part of metacoxae at internal margin rather smooth; broadened posterior part with a fine microsculpture, very finely punctured. Spurs of metatibiae large, unequal in length, longer one nearly reaching apex of metatarsal joint 1 (fig. 25). The latter very large, considerably longer than all next combined. Posterior margin of the last visible sternite of abdomen without nitches. Aedeagus as depicted (fig. 33). Length 1.6 mm.

Lederia (Lederina) similis sp.n.

Locality: Nepal, Phulchoki, 2600-2650 m, Quercus litter, 1 ♂ (holotype) - 21-22.III.1980. leg. MARTENS AUSOBSKY. - Paratypes 2 ♀ with the same label; 1 ♂ from the same locality, but taken on 14.V.1980.

Holotype and two female paratypes deposited in the Senckenberg Museum, Frankfurt a.M., FRG. The male paratype has been retained for a subsequent deposition in the Zoological Museum of the Moscow University, USSR.

Description: Body oval or oblong-oval, much convex, 1.79 to 1.89 times longer than wide. Colour red-brown or dark red-brown, meso-, metathorax and elytra often darker, dark red-brown or brown, elytra often with lighter apical parts and sutural area, antennae and maxillary palpi lighter, red-yellow. Surface more or less dull or slightly shining, clother with thin, decumbent, grey-yellowish pubescence.

Head rather finely and densely punctured. Eyes reniform, distinctly emarginate anteriorly, interocular isthmus 1.25 to 1.40 times as large as height of eye. Maxillary palpi 4-jointed; joint 2 elongate, clearly longitudinal; joint 3 very slightly transversal or subequally long and wide,

distinctly shorter than 2nd; joint 4 large, roundly securiform, not less than thrice longer and 1.7 to 2.0 times broader than 3rd. Antennae short, a bit exceeding beyond hind margin of pronotum; joints 1 and 2 large, elongate; joint 2 a bit longer than the 1st; joint 3 short and thin, not less than 3.0 to 3.2 times shorter and 2.0 times thinner than 2nd; joints 4 and 5 also short and thin, subequal in length; joints 6 to 8 short as well, but more or less gradually broadened, and 8th subequally wide and long or slightly transverse; joints 9 to 11 well developed, form a club; joint slightly longitudinal, ca. twice as long and 1.5 to 1.7 times as broad as 8th; joints 9 and 10 subequal in length; joint 11 oblong-oval, ca. 1.6 to 1.7 times longer than 10th; joints 9 to 11 taken together ca. 1.3 to 1.35 times longer than joints 3 to 8 combined, or a little longer than joints 1 and 2 combined. Pronotum much transverse, ca. twice wider than long, broadest at base, whereupon forward much roundly narrowed. Surface very finely and sparsely punctured and clearly transversely shagreen. Base regularly and very slightly concave, exceedingly poorly bisinuate, nearly straight. Elytra more or less ovoid or oblong-ovoid, 1.48 to 1.54 times longer than wide, broadest between first third and half, surface very finely and denser than on pronotum punctured (isthmus between punctures a little larger than diameter of a puncture) and clearly transversely shagreen. Procoxae narrowly divided by a prothoracic process reaching hind third or quarter of their length. Mesothoracic process dividing mesocoxae narrow, ending at nearly half length of coxae. Metathorax clearly transversely shagreen and well finely and densely punctured along axial depression, but finely superficially punctured elsewhere, especially clearly laterad. Axial depression of metathorax more or less narrowly lanceolate, varying in length, reaching in females approximately half of metathorax and ending in males between a half and first quarter length of metathorax (fig. 30). Metepisterna very narrow, not less than 6.0 times longer than wide. Spurs of metatibiae well developed, unequal in length, longer of which almost reaching apex of tarsal joint 1. The latter very large, considerably longer than next joints combined. Aedeagus as depicted (fig. 34). Length 1.5 to 1.8 mm.

Lederia (Lederina) kaszabi sp.n. (fig. 3)

Locality: Vietnam, Cuc-phuong Ninh-Binh, 1 ♂ (holotype) - 5-18.V.1966. leg. Gy.TOPÁL. Paratypes 2 ♂ and 1 ♀ with the same label.

The above specimens have been deposited in the Hungarian Natural History Museum, Budapest.

Description: Body more or less oval, convex, 1.67 to 1.78 times longer than wide (fig. 3). Colour light red-brown, ventrum and legs partly lighter, antennae and maxillary palpi red-yellow. Dorsum more or less dull, clothed with fine, decumbent, rather short, silky, grey-yellowish pubescence.

Head rather densely, moderately finely punctured (still considerably coarser than both pronotum and elytra). Eyes reniform, rather coarsely faceted, anteriorly well emarginate. Isthmus between eyes approximately same as height of eye. Joint 4 of maxillary palpi large, not less than 1.6 to 1.7 times broader and 3.0 to 3.5 times longer than 3rd, ca. 1.4 times longer than wide. Antennae 11-jointed, joints 1 and 2 well developed, longitudinal, subequal in length, when combined somewhat longer than joints 3 to 8 taken together; joint 3 small, ca. 2.0 times as thin and usually not less than 3.0 times as short as 2nd; joints 4 and 5 also very small, subequal in length; joints 6 to 8 gradually broadening, at least 8th slightly transverse; joints 9 to 11 form a well expressed club; joint 9 usually very slightly longitudinal, 1.4 to 1.5 times broader and 2.0 to 2.3 times longer than 8th; joints 9 to 10 subequal in length; joint 11 more or less oblong-oval, 1.7 to 1.8 times as long as 10th; joints 9 to 11 combined 1.5 to 1.6 times longer than joints 3 to 8 taken together. Pronotum 2.0 to 2.2 times broader than long, broadest at base whereupon anteriad roundly narrowed; base nearly straight, only a bit regularly concave (fig. 3). Surface very finely and sparsely punctured, well transversely shagreen. Elytra more or less oval, ca. 1.35 to 1.43 times longer than wide, broadest between anterior third and half of their length (fig. 3). Surface distinctly transversely shagreen, exceedingly finely (still denser than pronotum) punctured. Isthmus between punctures at anterior part of elytra considerably less than diameter of a puncture. Procoxae narrowly divided by a triangular prothoracic process reaching only apical 2/3rds of length of coxae. Mesocoxae divided by a narrow mesothoracic process just reaching half length of coxae. Metathorax with a fine isodiametric microsculpture, rather finely punctured along middle and very finely superficially punctured laterad. Metathorax with a narrowly triangular, flattened axial keel, smooth edging of which not reaching mesocoxae only by 1/4 to 1/5th of length of metathorax (fig. 26) (length being measured from hind margin of mesocoxae). Metepisterna 6.0 to 6.5 times longer than wide (fig. 20). Spurs of metatibiae unequal, longer of which almost

reaching apex of metatarsal joint 1 (as fig. 25). The latter very long, considerably longer than all next combined; joints 2 and 4 considerably longer than 3rd. Abdominal sterna medially without depressions. Apex of abdominal visible sternite 5 simple, without notches. Aedeagus as depicted (fig. 31). Length 1.4 to 1.7 mm.

The species is named in honour of the famous Hungarian entomologist Dr. ZOLTÁN KASZAB.

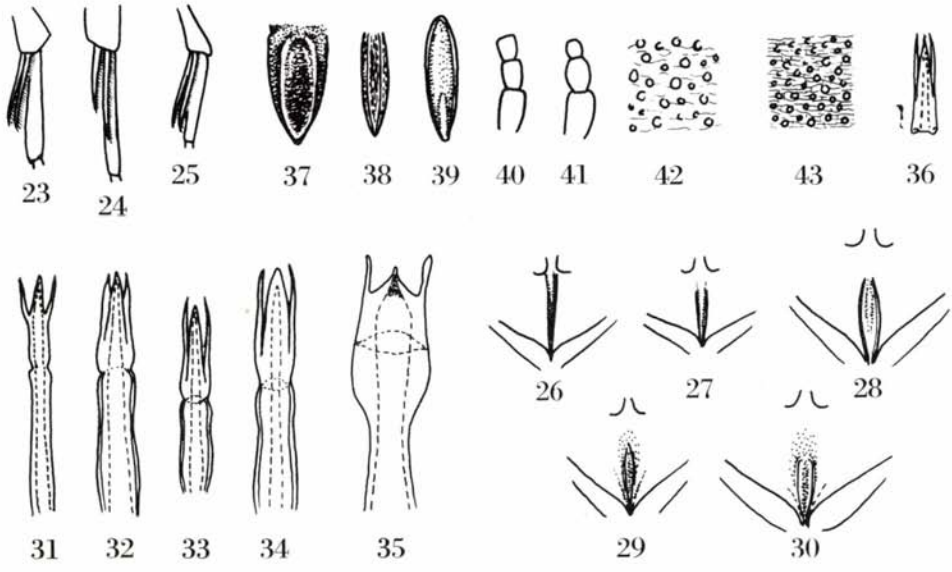
Lederia (Lederina) topali sp.n. (fig. 2)

Locality: Vietnam, Ko-xan, 1 ♂ (holotype) - 27.XI.1971. leg. Gy. TOPÁL. - Paratype ♂ with the same label.

The above specimens deposited in the Hungarian Natural History Museum, Budapest.

Description: Body oblong-oval, convex, 1.8 to 1.84 times longer than wide. Colour red-brown, ventrum and legs partly lighter, maxillary palpi and antennae red-yellow. Dorsum slightly shining or dull, clothed with short, silky, decumbent, grey-yellowish pubescence.

Head moderately finely punctured, punctures of medium density, with isthmus between them usually not larger than diameter of a puncture. Eyes reniform, distinctly emarginate anteriorly, coarsely faceted. Interocular isthmus ca. 1.1 times larger than height of eye. Joint 2 of maxillary palpi longitudinal; joint 3 distinctly shorter than 2nd, transverse; joint 4 large, more or less roundly securiform, not less than 1.6 to 1.7 times wider and 3.0 to 3.2 times longer than 2nd, ca. 1.4 to 1.5 times longer than wide. Antennae short, a bit exceeding beyond hind



Figs 23-43. Structural details of the species of Lederia. 23-25: spurs of metatibiae and metatarsal joint 1: 23 = L. foenilis (Lewis) - 24 = L. lata (Lewis) - 25 = L. indica sp.n.; 26-30: middle part of metathorax (scheme): 26 = L. kaszabi sp.n. - 27 = L. topali sp.n. - 28 = L. minima sp.n. - 29 = L. indica sp.n. - 30 = L. similis sp.n.; 31-35: aedeagus: 31 = L. kaszabi sp.n. - 32 = L. topali sp.n. - 33 = L. indica sp.n. - 34 = L. similis sp.n. - 35 = L. oblonga sp.n.; 36 = apex of tegmen in L. minima sp.n.; 37-39: axial depression of metathorax: 37 = L. lata (Lewis) - 38 = L. foenilis (Lewis) - 39 = L. japonica Rtt.; 40-41: antennal joints 1 to 3: 40 = L. seidlitzi Rtt. - 41 = L. arctica (Horn); 42-45: anterior parts of elytra shagreen and punctured (x 56): 42 = L. anatolica J.Friv. - 43 = L. seidlitzi Rtt.

margin of pronotum; joints 1 and 2 well developed, longitudinal, latter a bit longer than former; joint 3 short and narrow, 2.0 to 2.3 times thinner and 3.0 to 3.3 times shorter than 2nd; joints 3 to 5 subequal in length, slightly longitudinal; joint 6 to 8 somewhat broadened, 8th transverse; joints 9 to 11 form a well expressed club; joint 9 slightly longitudinal, nearly as long as 10th, 2.2 to 2.5 times longer and 1.4 to 1.5 times wider than 8th; joint 11 more or less oblong-oval, 1.7 to 1.8 times longer than 10th; joints 9 to 11 ca. 1.5 to 1.6 times as long as either joints 3 to 8 combined or joints 1 and 2 taken together. Pronotum much transverse, ca. 2.0 times wider than long, broadest at base, whereupon forward much roundly narrowed. Pronotal hind margin nearly straight, very poorly regularly concave (fig. 2). Surface finely transversely shagreen and very finely and sparsely punctured. Elytra more or less oblong-oval, ca. 1.42 to 1.44 times longer than wide, broadest between anterior third and half of length (fig. 2). Surface finely tranversely shagreen and very finely (still considerably clearer than pronotum) punctured. Isthmus larger than diameter of a puncture. Procoxae narrowly divided by a triangular prothoracic process reaching approximately hind third of length of coxae. Mesothoracic process dividing mesocoxae rather short, must reaching a half length of coxae. Metathorax finely transversely shagreen, laterad to become covered with an isodiametric microsculpture, rather finely punctured along middle and very finely superficially punctured laterad. Metathorax with a narrowly triangular, flattened axial keel, smooth edging of which usually ends not farer than between anterior third and quarter of length of metathorax (fig. 27). Metepisterna narrow, 6.0 to 6.5 times longer than wide (broadest anteriorly) (as fig. 20). Broadened posterior part of metacoxae with a fine isodiametric sculpture, rather finely (still denser than sides of metathorax) punctured. Spurs of metatibiae long, unequal in length, longer one nearly reaching apex of metatarsal joint 1 (as fig. 25). The latter very long, subequally as long as tibia and considerably longer than all next tarsal joints combined; joints 2 and 4 subequal in length, a little longer than 3rd. Hind margin of last visible abdominal sternite without notches. Aedeagus as depicted (fig. 32). Length 1.3 to 1.6 mm.

The species is dedicated to its collector, Dr. György TOPÁL.

Lederia (Microlederia) oblonga sp.n. (fig. 1)

Locality: Chile, Prov. Valdivia, 20 km from Valdivia, on a road to La Union, 1 ♂ (holotype) - 24.X.1965. leg. S. MAHUNKA. - Paratypes: 2 ♂ with the same label.

The above specimen is deposited in the Hungarian Natural History Museum, Budapest.

Description: Body oblong-oval, more or less convex, 2.0 to 2.1 times longer than wide (fig. 1). Colour brown or dark red-brown, pronotal disc, head, legs, partly ventrum, sometimes also basal parts of elytra lighter, red-brown, as well as antennae and maxillary palpi which are lighter, reddish-brown. Dorsum dull or very slightly shining, clothed with rather dense, silky, decumbent, grey-yellowish pubescence.

Head rather densely punctured, punctures coarser and denser than on both pronotum and elytra, with a sharp transverse carina behind eyes limiting backward movements of head. Eyes rather large, coarsely faceted, reniform, anteriorly clearly emarginate. Interocular isthmus as large as height of eye. Maxillary palpi 4-jointed; joint 3 irregularly quadrangular, transverse; joint 4 somewhat broader, ca. 2.2 times longer than 3rd, roundly securiform (fig. 5). Antennal joints 1 and 2 distinctly broadened and elongate, 2nd just a bit shorter and a little narrower than 1st; joints 3 and 4 slightly longitudinal, 1.4 to 1.5 times shorter and 1.3 to 1.4 times narrower than 2nd; joint 5 a bit shorter than 4th; joint 6 a little shorter than 5th, subequally long and wide: joint 7 a little wider than 6th; joints 8 to 10 each approximately as long as wide; joints 8 to 11 form a loose club; joint 8 some 1.3 to 1.4 times as wide and 1.4 to 1.5 times as long as 7th; joint 11 oblong-oval, ca. 2.0 to 2.2 times longer than 10th (fig. 8). Pronotum transverse, 1.8 to 1.85 times wider than long, broadest at base, whereupon forward much roundly narrowing. Lateral margins completely edged, base regularly and very slightly concave (fig. 1). Surface moderately densely punctured and finely densely shagreen, isthmus between punctures at anterior part of pronotum usually not less than 1.1 to 1.3 times larger than the diameter of a puncture. Elytra oblong-ovoid, 1.6 to 1.65 times as long as wide, broadest at anterior third, whereupon posteriad roundly narrowed. Surface finely shagreen and rather finely, densely, roughly punctured, finer and denser than pronotum, clothed with fine, decumbent, rather dense pubescence, foregoing hairs exceeding beyond base of following ones. Pro- and mesocoxae distinctly divided. Prothoracic process triangular, a little exceeding beyond posterior margin of procoxae. Mesothoracic process narrow, elongate, reaching approximately hind third or quarter of length of

mesocoxae. In lateral view mesothoracic process distinctly projects above level of coxae. Metepisterna rather broad, 2.7 to 3.0 times longer than wide, posteriad roundly narrowing, each completely set off from metasterna by a suture (fig. 18). Metathorax with a more or less lanceolate axial depression delimited by carinimorph lateral sides and reaching anteriorly approximately to first third of length of metathorax (fig. 18). Metathorax very finely, sparsely, superficially punctured and distinctly isodiametrically shagreen (fig. 18). Anterior part of metacoxae gradually narrowing outward, its anterior side rounded outward (fig. 18). Metatibia short, thickened, ca. twice shorter than femora. Metatibial spurs well developed, subequal in length, almost reaching apex of tarsal joint 1 (fig. 21). The latter very long, 1.3 to 1.4 times longer than tibia and 1.25 to 1.35 times as long as all following joints combined: joints 2 and 4 elongate, each a little longer than 3rd. Last visible abdominal sternite posteriorly emarginate. Aedeagus as depicted (fig. 35). Length 2.3 to 2.7 mm.

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