

A REVIEW OF THE GENUS *ENDOMYCHUS* PANZER (COLEOPTERA: ENDOMYCHIDAE), WITH DESCRIPTIONS OF SEVEN NEW SPECIES

K. WIOLETTA TOMASZEWSKA

Muzeum i Instytut Zoologii PAN, ul. Wileza 64, 00-679 Warszawa, Poland

Abstract.— World species of the genus *Endomychus* are reviewed, keyed and illustrated. The following new synonyms are proposed: *Endomychus coccineus* (Linnaeus, 1758) (= *Endomychus quadripunctatus* Gorham, 1873); *E. atripes* Pic, 1921 (= *E. curtus* Pic, 1927); *E. quadra* (Gorham, 1887) (= *E. ohbayashii* Nakane, 1951; = *E. ohbayashii shirahatai* Nakane, 1951; = *E. ohbayashii kojimai* Nakane, 1994); *E. plagiatus* (Gorham, 1887) (= *E. plagiatus interruptus* Nakane, 1994); *E. gorhami* (Lewis, 1874) (= *E. gorhami kyushuensis* Sasaji, 1978). The following new status is proposed: *E. punctatus* Arrow, 1928 (= *E. divisus punctatus* Arrow, 1928). Lectotypes are designated for *Endomychus armeniacus* Motschulsky, *E. atripes* Pic, *E. curtus* Pic, *E. divisus* Arrow, *E. divisus punctatus* Arrow, *E. tonkineus* Pic, *Caenomychus humeralis* Pic, *C. muelleri* Mader, and *Cyanauges nigropiceus* Gorham. Seven new species are described: *Endomychus pakistaniensis* (Pakistan), *E. micrus* (Pakistan), *E. mroczkowskii* (E. Nepal), *E. yunnani* (China: Yunnan), *E. slipinskii* (N. Burma), *E. rogeri* (Vietnam) and *E. agatae* (India: Assam). Distribution, nomenclatural history and diagnoses are provided for each species. *Endomychus rufipes* Pic and *E. nigripes* Mader, are treated here as species *incertae sedis* because of insufficient descriptions and unavailable material.



Key words.— Entomology, taxonomy, revision, Coleoptera, Cucujoidea, Endomychidae, *Endomychus*.

INTRODUCTION

The long nomenclatural history of *Endomychus* Panzer has been mostly that of isolated species description. By far the largest work on the *Endomychidae* this century was Strohecker's world generic review and catalogue. Other important works concerning the genus *Endomychus* include Arrow (1925) on the Indian fauna, Mader's (1936) key to the world species of *Endomychus*, keys to the Japanese species of *Endomychus* (Nakane 1951, Sasaji 1980), some taxonomic papers on Japanese *Endomychidae* (Sasaji 1980) and a local check-list (in Japan, Sasaji 1983). The present paper is the first review of world species classified in the genus *Endomychus*.

The history of this genus began in 1795, when Panzer established *Endomychus* for the Linnaean species *Chrysomela coccinea*, described in 1758 as the first species of *Endomychidae*. In 1874, Gorham proposed a new genus *Cyanauges* for a Japanese species *C. gorhami* Lewis; and in 1887 he described another three species from Japan in this genus: *C. plagiatus*, *C. quadra* and *C. nigropiceus*. Describing the genus *Cyanauges*, Gorham based its diagnosis on the shape of the terminal maxillary palpomere, which was "conically acuminate" in this genus, although he had himself admitted, the difference in the maxillary palp was not a substantial one and that *Cyanauges* was

insufficiently distinguished from *Endomychus*. In 1893 Lewis changed this generic name for *Caenomychus*, because the name *Cyanauges* had been used before in *Diptera*. Mader (1936a), while publishing his "Neue Coleopteren und Notizen" also separated *Caenomychus* from *Endomychus* in a key, based (as Gorham) on the shape of the terminal maxillary palpomere. He stated that the species of *Endomychus* have "endglied der Kiefertaster gegen die Spitze verbreitert, mehr oder weniger beilförmig" while those of *Caenomychus* had "letztes Glied der Kiefertaster gegen die schräg abgestutzte Spitze verschmälert". Strohecker (1953) in his world's catalogue, citing Arrow "the distinctions are difficult due to many cases of an intermediate nature", considered that *Caenomychus* was not separable from *Endomychus*. During my detailed study of all known *Endomychus* species, I could not find any correlation between the shape of the terminal maxillary palpomere and other characters of this genus. It seems at present, that this feature cannot be used as a generic character.

MATERIAL AND METHODS

This revision is based on the examination of types and material from the following institutions:

- BMNH – The Natural History Museum, London (M. Kerley, R. Booth)
- BLFU – Biological Laboratory, Fukui University, Fukui (H. Sasaji)
- BPBM – Bernice P. Bishop, Museum, Honolulu (A. Samuelson)
- CASC – California Academy of Sciences, San Francisco (N. Penny)
- DEI – Deutsches Entomologisches Institut, Eberswalde (L. Zerche)
- EMLU – Entomological Museum, Lund University, Lund (R. Danielsson)
- FSCA – Florida State Collection of Arthropods, Gainesville (P. Skelley)
- MHNG – Muséum d'Histoire Naturelle, Genève (I. Löbl)
- MLSU – Moscow Lomonosow State University (N. Nikitsky)
- MNHN – Muséum National d'Histoire Naturelle, Paris (N. Berti)
- MZPW – Museum Zoologicum Polonicum, Warszawa
- NHMB – Naturhistorisches Museum, Basel (M. Brancucci)
- NHMV – Naturhistorisches Museum, Vienna (H. Schönmann)
- NMP – Národní Muzeum v Praze, Prague (J. Jelinek)
- SMD – Staatliches Museum, Dresden (R. Krause)
- SMNS – Staatliches Museum für Naturkunde, Stuttgart (W. Schawaller)
- TMB – Természettudományi Múzeum, Budapest (O. Merkl)
- TNC – Takehiko Nakane, private collection
- USNM – United States National Museum of Natural History, Smithsonian Institution, Washington, D.C. (J. Pakaluk)

I thank the curators and their institutions mentioned above for the loan of material.

Measurements were made using a filar micrometer as follows: length, from apical margin of clypeus to apex of elytra; width, across both elytra (maximum); pronotal length, from the middle of anterior margin to margin of basal foramen; pronotal width, across widest part; elytral length, along suture including scutellum; elytral width, across broadest point of both elytra. Where many specimens were available, measurements were taken from a selection of specimens, representing both sexes, and exhibiting maximum range of size and form. Outline drawings were made from dry preserved specimens using a camera lucida attached to a Citoval Zeiss dissecting microscope. The internal structures (preserved in glycerine) were drawn using a camera lucida attached to a Zeiss Amplival microscope. Wing venation terminology follows Kukulová-Peck and Lawrence (1993).

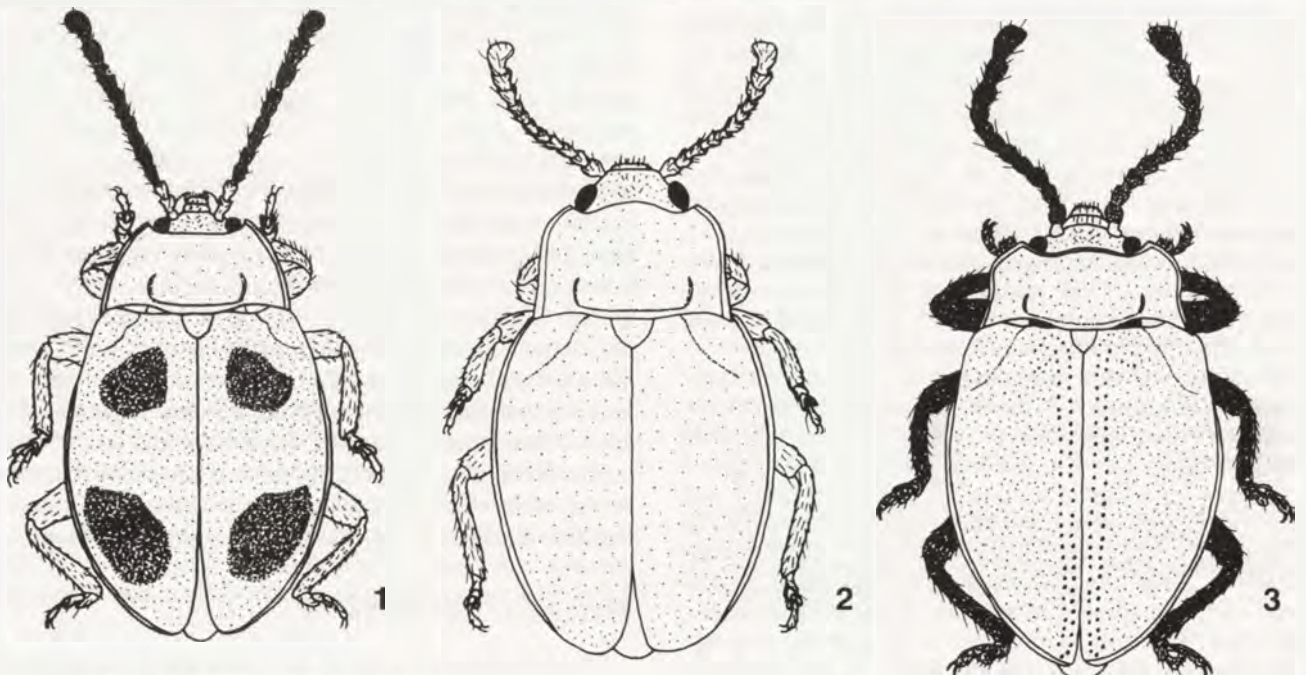
Endomychus Panzer

Endomychus Panzer, 1795: 175. Type species, by subsequent designation of Latreille, 1810: 432, *Chrysomela coccinea* Linnaeus, 1758. – Fabricius 1801: 505; Gerstaecker 1858: 368; Ganglbauer 1899: 938; Arrow 1925: 357; Strohecker 1953: 112.

Cyanauges Gorham: in Gorham and Lewis, 1874: 54. Type species, by original designation, *Cyanauges gorhami* Lewis, 1874. – Arrow 1920: 66.

Caenomychus Lewis, 1893: 153. Replacement name for *Cyanauges* Gorham, 1874. – Arrow 1920: 66; Mader 1936: 98.

Diagnosis and comments. *Endomychus* Panzer, *Cycloptoma* Mulsant, *Meilichius* Gerstaecker, *Bolbomorphus* Gorham and *Eucteanus* Gerstaecker belong to the subfamily Endomychinae sensu Strohecker (1953). *Endomychus* shares with these genera subquadrate to elongate ligula, not lobed at sides, dorsal surface glabrous, rarely



Figures 1–3. Habitus of *Endomychus* species. 1. *E. armeniacus* Motschulsky; 2. *E. micrus* sp. nov.; 3. *E. mroczkowskii* sp. nov.

with very fine pubescence, colour of body from yellow, orange, red, brown to black, often with bright markings on elytra; prothorax with broad prosternum and pronotum without stridulatory membrane.

The following characters distinguish *Endomychus* from the remaining genera of Endomychinae:

- mesosternum quadrate or slightly transverse, flat;
- prosternal process moderately broad ($0.5\text{--}1.0 \times$ as broad as coxal diameter), extends behind the front coxae, broadly produced behind them, distinctly widened or nearly parallel-sided, rounded or almost truncate apically;
- antenna about half as long as body, 11-segmented with a loosely-articulated, scarcely flattened, narrow club.

With regard to the prosternal process, *Endomychus* is similar to *Cyclotoma* Mulsant, but the mesosternum of *Cyclotoma* is always transverse. In addition, *Cyclotoma* has short, 10- or 11-segmented antennae with a narrow, but not flattened club which is nearly as long as the combined length of the remaining antennomeres; its body is almost circular in outline, highly convex and almost hemispherical, while *Endomychus* is regularly oval in outline, moderately and evenly convex.

The shape of the antenna of *Endomychus* is similar to that of *Meilichius* Gerstaecker, but the antennal club of *Meilichius* is less flattened and more compact than in *Endomychus*. *Meilichius* also has the prosternal process very broad (about $1.5 \times$ as broad as coxal diameter), reaching to the hind margin of the front coxae, truncate, and the mesosternum is very short and strongly transverse.

Description. Length 3.40–6.56 mm; body ovate (Figs 1–3), moderately convex; surface shiny, smooth; colour yellow, orange-brown, brown, brownish-black or black; elytra often with black or yellow spots, or stripes (Fig. 12).

Head (Fig. 4) weakly elongate, slightly narrower at apex than at base. Eyes large. Fronto-clypeal ridge straight. Antenna (Fig. 8) about a half or more than a half as long as body, 11-segmented; scape slightly longer than pedicel, antennomere 3, longer than 2 or 4, 4–7 subequal; antennomere 8 slightly shorter than 7 and distinctly smaller than 9; antennomeres 9–11 form narrow, loose and scarcely flattened club. Clypeus transverse, flat, slightly narrower at apex than at base. Labrum (Fig. 9) subquadrate, sclerotized, labral rods narrow, almost parallel and heavily sclerotized, tormae with mesal arms straight. Mandible (Fig. 7) short with two prominent apical teeth and one small internal tooth; protheca very large, membranous with brush of short setae; molar lobe and submola large, well-developed. Maxilla (Fig. 10) with 4-segmented palp. Palpomere 1 is the smallest; palpomere 2 almost $3 \times$ the length of palpomere 1; palpomere 3 about a half the length of 2; palpomeres 2 and 3 distinctly expanded towards apices; shape of palpomere 4 variable – from elongate, cylindrical, narrowing towards apex to axe-shaped, strongly enlarged apically. Galea and lacinia well-developed, densely setose apically. Digitus very small, hardly visible. Labium (Fig. 6) with 3-segmented palp; palpomere 2 more than twice the length of 1; palpomere 3 longest and widest. Mentum transverse, almost rectangular, sparsely punctured with a few setae at anterior angles. Prementum weakly trapezoidal, narrower at base, sclerotized, punctured; ligula elongate

with brush of short setae and several long setae. Tentorium (Fig. 5) with anterior arms fused medially, and widely divergent anteriorly; posterior tentorial bridge straight, without median process.

Prothorax transverse, weakly to distinctly bordered laterally; basal sulcus distinct or hardly visible, lateral sulci short but distinct; basal margin most often wider than anterior one. Pronotal disc almost flat or weakly convex. Prosternal process moderately broad, extending posteriorly beyond the front coxae. Procoxal cavities externally open; postcoxal bridges (Fig. 11) very narrow, membranous; procoxa circular in outline.

Meso- and metathorax. Mesosternum flat, almost square; mesocoxal cavities widely separated (mesosternum $0.9\text{--}1.2 \times$ as broad as coxal diameter), open outwardly; mesocoxa circular in outline; trochantin exposed. Elytron oval, convex, confusedly punctured, shiny. Scutellum moderately large, cordiform, punctured. Metasternum large, transverse, nearly twice as broad as long, weakly convex, slightly narrower anteriorly. Metendosternite (Fig. 13) with anterior arms and anterior tendons widely separated. Hind wing (Fig. 14) with venation nearly complete. Anal anterior (AA) fused with cubital anterior (CuA), extends towards the back of medial field as one vein (AA+CuA); media posterior (MP 1+2) moderately long, sclerotized, fused with partially reduced radius posterior (RP); in radial part of wing well-developed are subcosta anterior (ScA), subcosta posterior (ScP) and long, strong sclerotized radius anterior (RA); radial bar is formed by fused radius anterior and subcosta posterior. Medial bridge distinct; medial fleck undivided; anal vein single; closed radial cell absent.

Legs. Tarsal formula 4-4-4 in both sexes; (Fig. 19), tarsomeres 1 and 2 flattened and ventrally lobed, tarsomere 3 very small, $3 \times$ shorter than 2 and four or more times shorter than tarsomere 4; claws simple. Femur width twice that of tibia (Fig. 16), elongate, covered with moderately dense pubescence; tibia and tarsus more densely pubescent than femur; tibial spurs absent.

Abdomen (Fig. 15), with six freely articulated ventrites and 5 pairs of functional spiracles on abdominal segments 1–5; ventrite 1 (sternite 3) almost as long as metasternum, and longer than the two following together, ventrites 2–4 subequal, ventrite 5 slightly longer than 2, 3 or 4. Ventrite 2–5 with internal, anterolateral apodemes; dorsally all 9 tergites are present.

Aedeagus: median lobe moderately long, with membranous gonopore at apex; from inside gonopore there extends slender but distinct sclerite of variable length. Tegmen reduced; tegminal plate small, more than three times shorter than median lobe; with short, fused parameres.

Female genitalia (Figs 17, 18). Ovipositor moderately sclerotized, very simple, reduced to two coxities, which are triangular or elongate; styli very small, placed apically. Spermatheca large. Sperm duct comparatively short. Sclerotized infundibulum absent.

Key to the world species of *Endomychus*

1. Dorsum covered with fine pubescence; [uniformly dark brown, or only humeral angles and area around scutellum lighter, or elytra lighter with two large, black, oval spots on each elytron]; USA (California) *E. limbatus* (Horn), p. 236
 - Dorsum without pubescence 2
2. Background of pronotum and elytra of the same colour 3
 - Background of pronotum of different colour than background of elytra 4
3. Dorsal background yellow, yellowish-brown or brown 5
 - Dorsal background black or blackish-brown 6
4. Elytra with contrasting markings 7
 - Elytra without contrasting markings 8
5. Ventral surface uniformly coloured; [pro-, meso-, metasternum and abdomen yellow or brown as dorsal background] 9
 - Ventral surface variably coloured 10
6. Terminal maxillary palpomere distinctly enlarged towards its apex (Fig. 32) 11
 - Terminal maxillary palpomere not enlarged towards its apex (Fig. 69) 12
7. Each elytron with four small, oval, black spots *E. rogeri* sp. nov., p. 238
 - Each elytron with two oval, black spots 13
8. Terminal maxillary palpomere axe-shaped (Fig. 48) 14
 - Terminal maxillary palpomere not axe-shaped (Fig. 118) 15
9. Terminal maxillary palpomere elongate, cylindrical, rounded apically (Fig. 143) 16
 - Terminal maxillary palpomere widened apically (Fig. 21) 17
10. Each elytron with two large, black, oval spots; middle part of pronotum most often with black longitudinal stripe (Fig. 20) *E. coccineus* (Linnaeus), p. 219
 - Elytra and pronotum without spots or stripes 18
11. Prosternal process comparatively broad (about 0.85 × as broad as coxal diameter), distinctly widened apically (Fig. 40); elytra without spots; Russian Far-East *E. jureceki* Mader, p. 224
 - Prosternal process narrow (about 0.65 × as broad as coxal diameter), weakly widened apically (Fig. 63); elytra most often with yellow spots or stripes (Figs 56, 57, 58); Japan *E. quadra* (Gorham), p. 228
12. Each elytron with elongate, yellow stripe, sometimes interrupted at middle (Figs 71, 72) *E. plagiatus* (Gorham), p. 229
 - Elytra without markings 19
13. Posterior spot about four times as large as anterior one (Fig. 115) *E. biguttatus* Say, p. 235
 - Posterior and anterior spots on elytra subequal (Fig. 129) 20
14. Elytra strongly convex; body black with elytra and abdomen orange, more oval (1.59–1.63 × as long as wide) *E. bicolor* Gorham, p. 226
 - Elytra moderately convex; body black with elytra, abdomen, metasternum and middle part of mesosternum orange, more elongate (1.64–1.82 × as long as wide) 21
15. Elytra and all visible ventrites orange 22
 - Elytra orange with humeral angles black; ventrites 1 and 2 black, ventrites 3–6 orange *E. tomishimai* Nakane, p. 235
16. Antennae and legs black; elytra uniformly yellowish-brown or brown 23
 - Antennae and legs dark brown; each elytron with six elongate, slender, blackish rows of pigmented spots (Fig. 140) *E. agatae* sp. nov., p. 240
17. Antennae and legs black 24
 - Antennomeres 1 and 2 (scape and pedicel) and legs yellowish-brown or red-brown, as rest of body; [each elytron with two large, black, oval spots] *E. armeniacus* Motschulsky, p. 223
18. First abdominal ventrite darker than rest of body or black; aedeagus and terminal maxillary palpomere as in Figs 92, 99; China (Fukien) *E. muelleri* (Mader), p. 233
 - Basal portion of first abdominal ventrite sometimes black; aedeagus and terminal maxillary palpomere as in Figs 101, 108; Taiwan ... *E. nigriceps* Chûjô, p. 234
19. Body less than 4 mm long; terminal maxillary palpomere cylindrical, rounded apically (Figs 86, 87); Pakistan 25
 - Body more than 4 mm long; terminal maxillary palpomere subcylindrical, obliquely truncate at apex (Fig. 34); Japan, India (Kashmir) 26
20. Body more oval, 1.48–1.60 × as long as wide; each elytron with two large, oval, black spots; metasternum or at least its edges black *E. thoracicus* Charpentier, p. 224
 - Body more elongate, 1.73–1.78 × as long as wide; each elytron with two small, oval, black spots; metasternum yellow or orange 27
21. Body more oval, 1.64–1.73 × as long as wide; pronotum more transverse, 0.50–0.52 × as long as wide; scutellum dark brown; antenna comparatively short and stout; Vietnam *E. tonkineus* Pic, p. 239
 - Body more elongate, 1.74–1.82 × as long as wide; pronotum more elongate, 0.53–0.56 × as long as wide; scutellum black; antenna long, slender; Taiwan *E. sauteri* Chûjô, p. 235
22. Mesosternum orange; smaller specimens (3.70 mm long) *E. yunnani* sp. nov., p. 227
 - Mesosternum or at least its edges black; larger specimens (4.40–5.00 mm long) 28
23. Prosternal process almost as broad as coxal diameter, strongly widened behind coxae (Fig. 133); Burma *E. slipinskii* sp. nov., p. 237

- Prosternal process narrower than coxal diameter, almost parallel-sided (Fig. 85); Cambodia
..... *E. atriceps* Pic, p. 231
- 24. Each elytron with two small, oval, black spots
..... *E. flavus* Strohecker, p. 226
- Elytra without spots 29
- 25. Body broadly oval, 1.60–1.65 × as long as wide; dark brown with antennae, legs, mouthparts, prosternum and edges of pronotum lighter (yellowish); Pakistan
..... *E. micrus* sp. nov., p. 231
- Body more elongate, 1.74–1.80 × as long as wide; whole body blackish-brown with dark greenish shade; Pakistan *E. pakistanicus* sp. nov., p. 231
- 26. Body brownish-black with antennae, legs in part, mouthparts and elytra at shoulders and behind scutellum yellowish (elytra sometimes uniformly black); India (Kashmir) *E. humeralis* Pic, p. 226
- Whole body uniformly black or dark brown; only abdominal ventrites from 2 to 6 orange; Japan 30
- 27. Intercoxal process of mesosternum yellow or orange; prosternal process moderately long and rather broad (Fig. 128); pronotum more transverse (0.50–0.53 × as long as wide); Vietnam . . . *E. punctatus* Arrow, p. 238
- Intercoxal process of mesosternum black; prosternal process long and narrow (Fig. 125); pronotum more elongate (0.54–0.56 × as long as wide); China (Fukien)
..... *E. chinensis* Csiki, p. 238
- 28. Pronotum strongly transverse (0.48–0.49 × as long as wide); prosternal process broad and rather short (Fig. 97); intercoxal process of mesosternum yellow or orange; Vietnam *E. divisus* Arrow, p. 232
- Pronotum more elongate (0.54–0.56 × as long as wide); prosternal process long and narrow (Fig. 125); intercoxal process of mesosternum black; China (Fukien)
..... *E. chinensis* Csiki, p. 238
- 29. Each elytron with two rows of black macropunctures extending along its inner edge from near scutellum to sutural angle (Fig. 59); mouthparts brown like whole body; prosternal process rather short (Fig. 62), truncate apically; [Nepal] *E. mroczkowskii* sp. nov., p. 227
- Elytra without rows of black macropunctures; mouthparts blackish; prosternal process rather long, weakly rounded apically (Figs 47, 106) 31
- 30. Prosternal process (Fig. 73) narrower, rounded apically; body more elongate (1.80–1.90 × as long as wide), often with violet luster; Japan
..... *E. gorhami* (Lewis), p. 230
- Prosternal process (Fig. 67) broader, truncate apically; body less elongate (1.75 × as long as wide), without violet luster; Japan *E. nigropiceus* (Gorham), p. 229
- 31. Body 5.00–5.55 mm long, more oval (1.50–1.61 × as long as wide); [aedeagus as in Fig. 37]; China (Tibet), Vietnam *E. atripes* Pic, p. 225
- Body 4.06–4.50 mm long, more elongate (1.73–1.76 × as long as wide); China, Taiwan 32

- 32. Smaller specimens (4.06–4.38 mm long); pronotum more transverse (0.52–0.54 × as long as wide); Taiwan
..... *E. nigricornis* Chûjô, p. 235
- Larger specimens (4.5 mm long); pronotum more elongate (0.55 × as long as wide); [aedeagus as in Fig. 46]; China (Sichuan) *E. flavus* Strohecker, p. 226

SPECIES DESCRIPTIONS

Endomychus coccineus (Linnaeus)

(Figs 4–16, 19–20, 24, 27)

Chrysomela coccinea Linnaeus, 1758: 371. Type locality: Europe. (Type material lost ?).

Galleruca coccinea: Fabricius 1792: 20.

Endomychus coccineus: Panzer 1795: 175; Gerstaecker 1858: 369; Ganglbauer 1899: 940; Mader 1936: 98; Strohecker 1953: 113.

Endomychus quadripunctatus Gorham, 1873: 64. Holotype: locality unknown; BMNH, examined. **Syn. nov.**

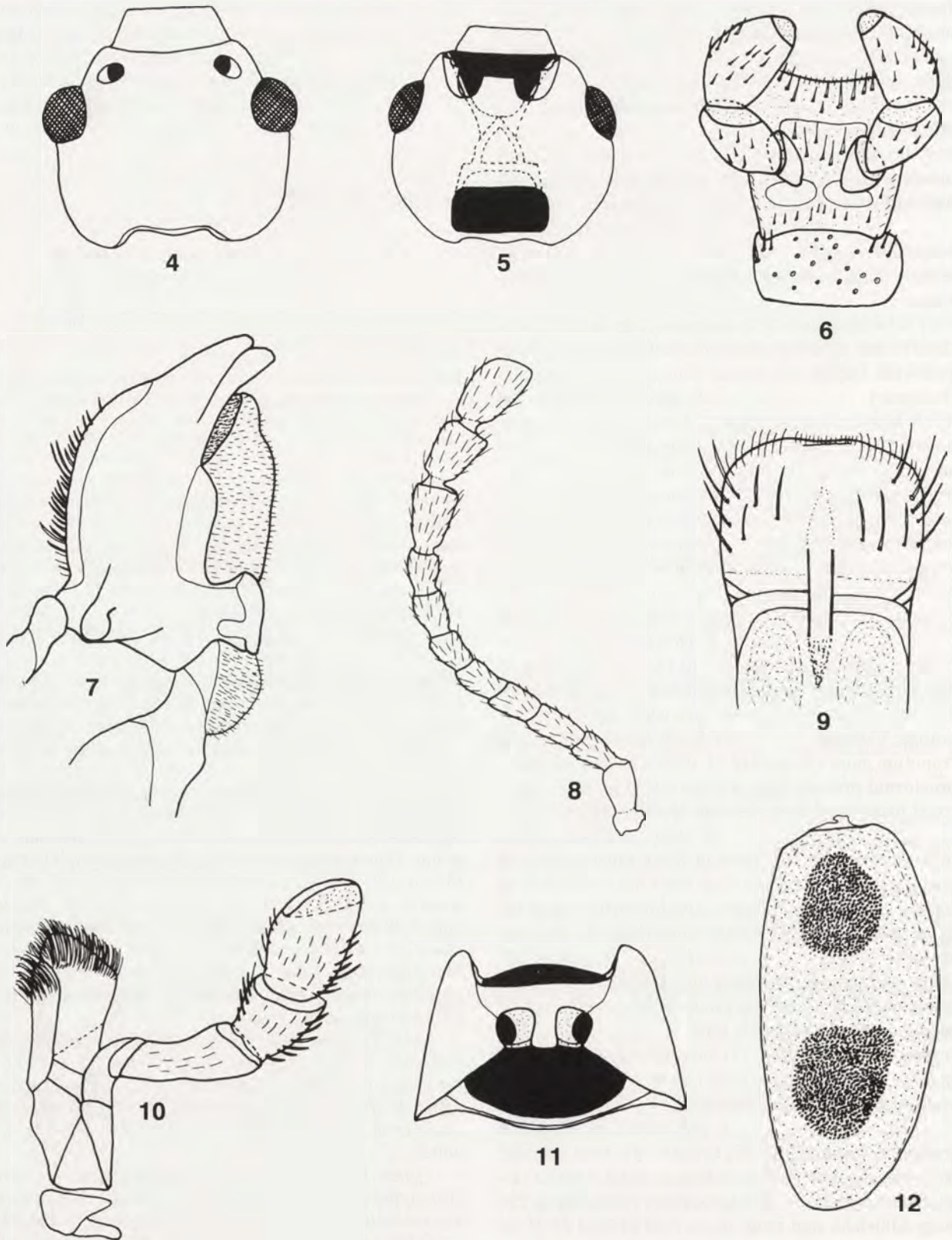
Diagnosis. This species is easily recognized especially by the black, longitudinal stripe in the middle part of pronotum, which usually extends from the anterior almost to the posterior margin (Fig. 20). Sometimes this stripe can be obsolete. This species is somewhat similar to *E. biguttatus*, but differs in having orange-brown (not black) prosternum and sides of pronotum.

Description. Length 4.00–6.50 mm; body elongate 1.74–1.87 × as long as wide, moderately convex, shiny and glabrous, uniformly, confusedly and densely punctured. Colour yellowish-brown to red-brown; head, antennae and legs black or blackish-brown; middle part of pronotum, scutellum, mesosternum and metasternum or at least its sides black. Pronotum (Fig. 20) 0.94–1.22 mm long, 1.60–2.30 mm wide; 0.50–0.55 × as long as wide; anterior angles produced and acutely rounded; hind angles distinctly acute; side margins weakly bordered. Basal sulcus distinct. Prosternal process (Fig. 27) comparatively narrow (about 0.75 × as broad as coxal diameter), enlarged and weakly rounded at apex. Elytra 3.15–4.40 mm long, 2.60–3.30 mm wide; about 3.30–3.80 × as long as pronotum and 1.40–1.47 × as wide as pronotum; each elytron with two large, black spots; anterior spots slightly smaller than posterior ones. Terminal maxillary palpomere as in Fig. 10. Aedeagus as in Fig. 24.

Note. Type locality of *E. quadripunctatus* Gorham is unknown. In Gorham's description no locality is given. On the type label there is: "Amer. Bor.", but *E. coccineus* with which *E. quadripunctatus* is here synonymized, is unknown from North America, so it had been probably mislabelled.

Types. Holotype of *Endomychus quadripunctatus* ♀: "Holotype/ Amer. bor./ Gorham coll. 91-50/ 4-notatus Dej., 4-punctatus, Ill./ *E. quadripunctatus* Gorh./" (BMNH).

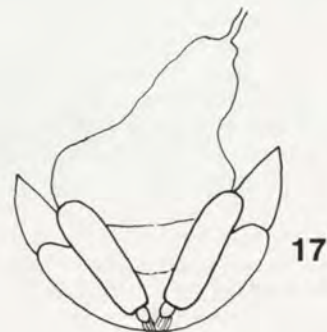
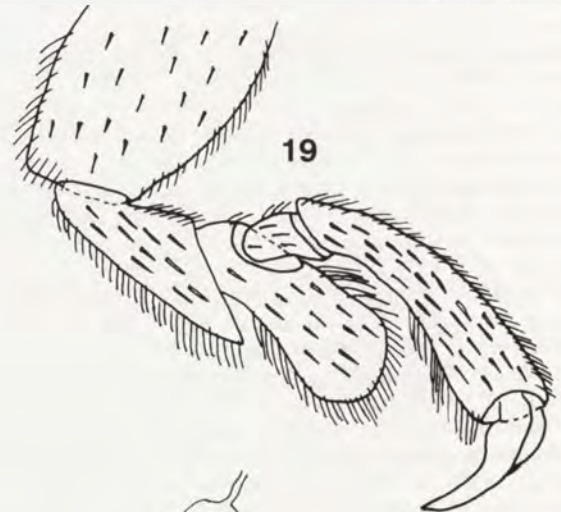
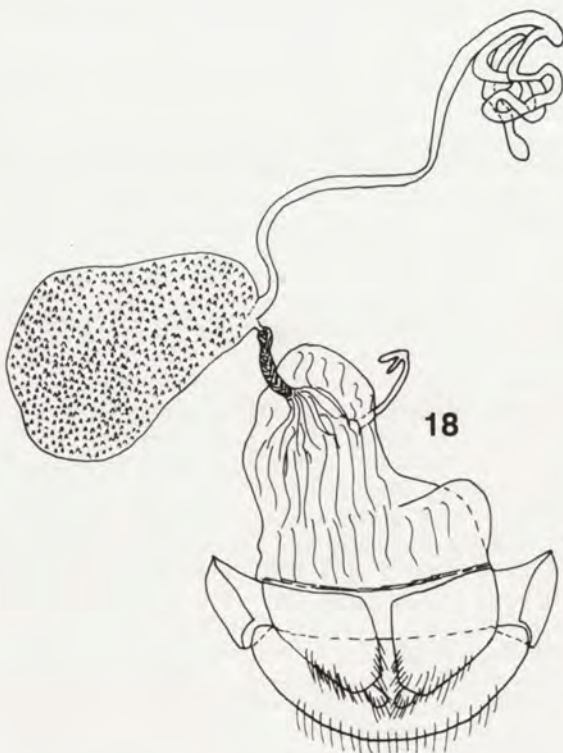
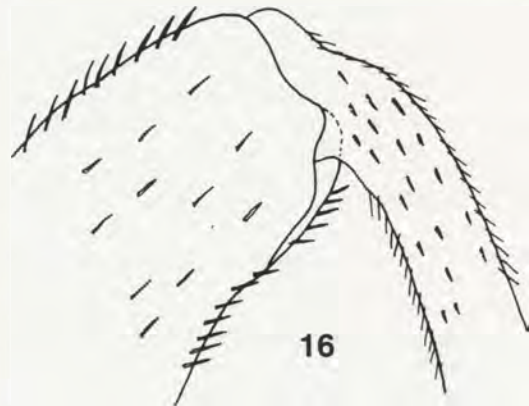
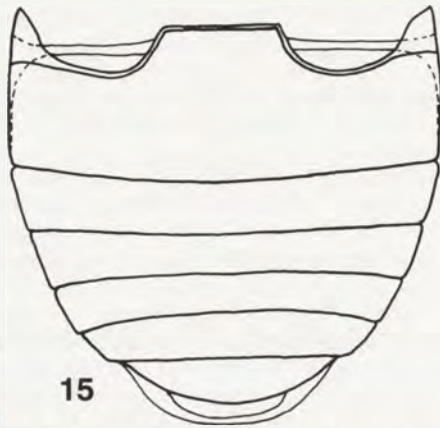
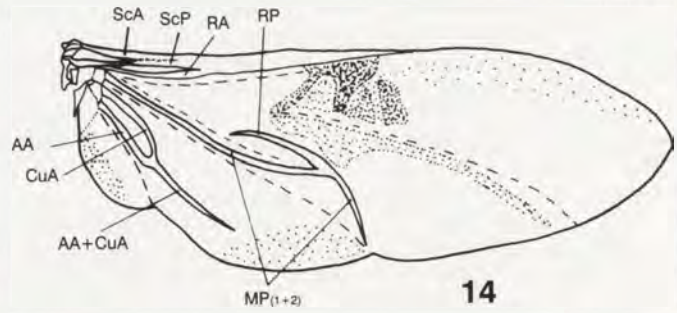
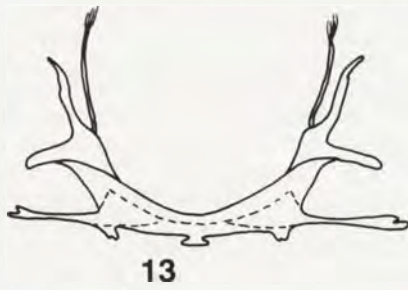
Other material examined. **Albania:** Kula Lump, Akad. Balk. Exp., Csiki, 1918 (24: TMB); Mustajbeg, Velipoja (2: TMB); Austria: Reitter, coll. Reitter (2: TMB); coll. K. Fuss, 5495 (4: TMB); coll. G. Dahl (1: TMB); same, but Dahl, 3004 (1: TMB); Wien, Umgeb. F. Schade (1: TMB); same but Eichkogel, coll. Dr. J. Fodor



Figures 4–12. *Endomychus coccineus*, structures. (4) head, dorsal; (5) head, ventral; (6) labium, ventral; (7) mandible, ventral; (8) antenna; (9) labrum, dorsal; (10) maxilla, ventral; (11) prothorax, ventral; (12) elytron, dorsal.

(1: TMB); Kärnten Waidisch, 30.VI.1956, leg. Th. Palm (3: EMLU); same but 1.-4.VII.1956 (1: EMLU); Südkärnten, Waidisch, 23.-30.VI.1955, Palm (1: EMLU); Lofer, Prof. Schneider, Vermäch 1903 (1: SMD); **Belgium**: 29.VIII.1944, coll. P. de Peyerimhoff (1: MNHN); **Bulgaria**: Karlovo-Kalof, 9.-11.VI.1956, leg. Dr. Balogh (1: TMB); Stara Planina, Karlovo, Botev vrh, 11.VII.1928, leg. Dr. J. Fodor (1: TMB); Crna Gora, Durmitor, Skrcko Jezero, 13.VII.1933, leg. Dr. J. Fodor (1: TMB); Trevna, V.-VI.1912, leg. M. Hilf, coll. Leonhard (3: DEI); same but Magline, VII.-VIII.1912 (1: DEI); Albena, Palm (2: EMLU); same and 19.VIII.-1.IX.1983 (2: EMLU); **Denmark**: Jylland (NEJ), Rold Skov, Trolde, NH 59, 8.V.1986, H. Enghoff, Z. Korsos (2: TMB); **Finland**: same collection (5: MNHN); Lapponia, 1888, Leonhard (1: DEI); **France**: Mont Dore (2: NMP); same but VII.1927, B. Kouril, 8713, coll. Kouril, P5/46/62 (1: NMP); Fontainebleau (3: TMB); same and coll. Ste Claire Deville (17: MNHN); same but coll. M. Sédillot (6: MNHN); Alpes fr., La Bralère, coll. M. Sédillot (3: MNHN); Forêt de la Mairis, Alp. m., coll. Ste Claire Deville (3: MNHN); Compiègne, coll. M. Sédillot (14: MNHN); Paris, same coll. (2: MNHN); Brout-Vernet, Allier, coll. Ste Claire Deville (4: MNHN); St. Germain-Lembron, Puy de Dôme, D'auzat, same coll. (3: MNHN); Puy de Dôme, F. Mascaraux, same coll. (4: MNHN); same and St. Eloy (1: MNHN); Bassin Agoât, Tarn, Galibert, same coll. (2: MNHN); Rég. de Castres, Galibert, same coll. (2: MNHN); Env. de Moulhouse, Seyrig, same coll. (2: MNHN); Gde. Chartreuse, 28.VIII.1891, coll. Ch. Demaison (1: MNHN); Hohneck, Vosges, S.C. Deville, same coll. (1: MNHN); Grenoble, same coll. (3: MNHN); Compiègne, coll. Reitter (2: TMB); Les Echelles, 9.IX.1903, (Savoie), Planet (2: TMB); same and gerbaix (2: TMB); same and Gde Chartreuse, 4.6. V. Planet (3: TMB); Gde Chartreuse, Ruchere coll., 27.VI.1908, V. Planet (3: TMB); Chartreuse, Senges, 7.V.1917, V. Planet (1: TMB); same but 4.VIII.1913 (3: TMB); Tremenis, 12.VII.1918, (Isere), Planet (2: TMB); La Marte Isere a Terre, 31.VII.1895 (1: TMB); same and Rhone (1: TMB); Route J'Entremont, Isere, 17.VI.1896, Rhone (1: TMB); Gallia mer., coll. Kirsch (2: SMD); same coll. but Holzminden (2: SMD); Gallia, Mus. antiqu. (3: SMD); **Germany**: Gartenkirschen, 8.VI.1928, W. Liebmann, coll. Liebmann, Arnstadt (1: DEI); Mark: Umg. Briesland, Fauna marchica, coll. Neresheimer (6: DEI); same but Umgeb. Berlin, Briesland (7: DEI); Umgeb. Berlin, Bredow (1: DEI); Berlin, coll. Kraatz (3: DEI); Mark: Forst Bredow, Fauna marchica, coll. Neresheimer (1: DEI); Brockstedt, 31.V.1868, coll. Koltze (2: DEI); same but 14.VI.1868 (2: DEI); Harz, Plagge, coll. L.v. Heyden (1: DEI); Frankft. Wald, same coll. (1: DEI); Frankft. Buchrainweiher, Boettger, same coll. (1: DEI); Germ. bor. Sanitz: Teufelsmoor, 10.V.1986, leg. Behne (1: DEI); Thüringen: NSG, Vassertal b. Sühl, 26.V.1986, leg. Behne (1: DEI); Mecklenburg, Grambow Moor bei Schwerin, 20.V.1984, leg. Behne (1: DEI); Hamburg, Schenkling, coll. Schenkling (2: DEI); Saxonia, Umgebung Dresdens, W.H. Mueche, Radeberg, Ankauf (1: SMD); Saxonia, coll. Märkel (3: SMD); E-zgeb., Saxon (1: EMLU); Friedrichroda, W.H. Mueche, Radeberg, Ankauf (2: SMD); Rahren Süntel, Wesergeb., W.H. Mueche, Radeberg, Ankauf (2: SMD); Hint. Sächs. Schweiz, Gr. Winterberg (1: SMD); same and S- Kuppe, 420-490 m, 24.VI.1974 (9: SMD); Hint. Sächs. Schweiz, Webergrotte, 390 m (1: SMD); same and 3.XI.1971 (5: SMD); same but 4.IV.1972 (1: SMD); Hint. Sächs. Schweiz, Kleiner Winterberg, 29.VI.1967 (1: SMD); same but Gr. Winterberg, 3.IV.1974, O-Seite, 500-520 m (1: SMD); Hint. Sächs. Schweiz, Neunstelliger Hübel, aus Stümpfen, 1.X.1981 (2: SMD); Sächs. Schweiz, Kuhstall, 6.V.1951, Linke, coll. Linke, Leipzig, Ankauf 1979 (1: SMD); Böhmisches Schweiz, Rosenberg, 8.IX.1973 (4: SMD); Görz, coll. K.F. Hartmann, Ankauf 1941 (6: SMD); Moritzburg, v. Minekwitz, Sammlung K. Hänel, Ankauf 1947 (2: SMD); Riedel, Collection Herb. Schmidt, Gersdorf b. Kz. (3: SMD); same collection but Kl. Welka, Oberlausitz, 30.VI.1939, Dr. Jordan (1: SMD); same collection but Rohtein, Oberlausitz, 31.VIII.1935, Dr.

Jordan (1: SMD); F. Sachsen, Rochlitzer B., Linke 11.X.1925, coll. Linke, Leipzig, Ankauf 1979 (5: SMD); Tagernsee, 21.VI.1914, Dr. Feige, Sammlung K. Hänel, Ankauf 1947 (2: SMD); Liptauer Alp. Com. Liptau, Linke 1905, coll. Linke, Leipzig, Ankauf 1979 (2: SMD); Ob.- Bayern, Fischbachau, 1929, 41 (3: SMD); O. Bayern, coll. Prof. Dr. Fuchs, Ankauf 1946 (2: SMD); same coll. but Dess., 5.VI.1897 (1: SMD); Alpes bavar., 16.VII.1910, Valepp, collection W. Foth, G. Kretschmar Geschenk, 1932, 17 (2: SMD); Alpes bav. W. Foth, Sammlung K. Hänel, Ankauf 1947 (1: SMD); Walbheim Sa. coll. Detzner, 8.VI.1919, ex. coll. Detzner, Geschenk Pflanzenschutzamt 1969 (2: SMD); same but 10.VI.1919 (1: SMD); Meissen, Sammlung K. Hänel, Ankauf 1947 (1: SMD); same but Altvater (1: SMD); same but Gr. W. (1: SMD); same but Waldheim, Ankauf 1946 (3: SMD); same but Nossen (1: SMD); Dresden, Plauenschler Gr., J. Richter, VIII.1931 (2: SMD); Dresden, A. Dehne, Sammlung K. Hänel, Ankauf 1947 (1: SMD); Nordtirol, Kaprunertal, 18.VI.1943, Linke, coll. Linke, Leipzig, Ankauf 1979 (2: SMD); Savica-Fall, K. Hänel, VI.1930, Sammlung K. Hänel, Ankauf 1947 (1: SMD); same Sammlung but Bolechów, Raut, 39 (2: SMD); Nordrhein-Westfalen, Lünen, Cappenberg, VIII.1977, leg. Eisenhauer (1: SMD); Nordrhein-Westfalen, Altflünen, unt. Buchenrinde, 22.XI.1977, leg. Eisenhauer (1: SMD); Alpes bavar. 13.VII.1910, V. Valepp, 350 (1: EMLU); Küstenland, Kirchheim, coll. Reitter (2: TMB); Eisleben, Dr. Feige, Sammlung K. Hänel, ankauf 1947 (2: SMD); Rosenberg, Boruss occ., v. Mülverstedt, coll. L.v. Heyden (1: DEI); Helfta bei Eisleben, 6.IX.1936, gef. H. Köller (1: DEI); Gr. Winterberg, Sächs. Schweiz, Büchenrinde, 30.VIII.1953, leg. Dieckmann (1: DEI); same but Büchenstümpf, 21.VII.1952 (1: DEI); **Greece**: Pangäon-Gebirge bei Kavalla, 10.VIII.1975, 1200-1600 m, Blumenthal 1975 (4: NHMB); **Hungary**: Transcen. Reitter, W.H. Mueche, Radeberg, Ankauf (8: SMD); Transcen., Also-Rakos, coll. Prof. Dr. Fuchs, Ankauf 1946 (1: SMD); Helvetia, coll. Leonhard (1: DEI); **Italy**: Calabria, Aspromonte, 1905, Paganetti (12: TMB); same but, Aspromonte, lg. Paganetti (1: TMB); **Poland**: Stettin, det. P. Heymes, Mus. Zool. Polonicum, Warszawa 12/45 (7: MZPW); same but Sammlung Schroeder (10: MZPW); Pongracz, Zagdańsk, Lysa Góra (2: TMB); Breslau, Letzner, coll. Letzner (3: DEI); Beskiden, VI.1892, coll. Koltze (2: DEI); Silesia, coll. Koltze (1: DEI); **Romania**: Transsylvania, Buczecz, 1891, Leonhard (8: DEI); Comana Vlasca, A.L. Montandon, O. Leonhard, (1: DEI); Fort Sanik, coll. Srnka (2: DEI); A. Knt.: Karawanken, Hudajama bei Zell Pfarre, 1800 m, 17.VII.1992, leg. L. Behne (1: DEI); same but Ferlacher Horn bei Ferlach, 600 m, 8.VII.1992, leg. L. Behne (1: DEI); Karawanken, Ledenitzen, 18.VI.1942, W. Liebman, coll. W. Liebman, Arnstadt (1: DEI); A. Bonnefois, Elsass, coll. Srnka (2: DEI); **Slovakia**: c. Banska Bystrica: Tajov, 29.VII.1988, Behne leg. (1: DEI); Cemerno, Grabowski (2: TMB); Tremosna u Rozmitalu, 19, 21.IV.1923 (2: NMP); **Switzerland**: Lausanne, coll. Ch. Demaison (1: MNHN); coll. M. Sédillot (2: MNHN); **Ukraine**: Uzhorod, V. Zoufal, 8713, coll. Kouril, P5/46/62 (1: NMP); Žernina, 30.VIII.1931 (1: NMP); Sinak, 25.VIII.1931 (4: NMP); **(Former) Yugoslavia**: Kosovo Pec, Radavae, 700 m, leg. Papp, Horvatovich, nr. 13, 17.V.1971 (1: TMB); Gusinje Prokletija, VI.1937, Dr. Purkyne leg. (1: NMP); Istria, Reitter, W.H. Mueche, Radeberg, Ankauf (1: SMD); Plitvica, Heyden, coll. L.v. Heyden (2: DEI); Orjen-Geb., Dr. Grabowski (3: TMB); **Bosnia**: Bisina, ex. coll. Dr. M. G. (1: TMB); Reitter, coll. Reitter (1: TMB); same and Ivan (1: TMB); coll. Reitter (2: TMB); Velež-Planina, coll. Leonhard (1: DEI); Stambulic, 10.VI.1929, leg. Dr. Fodor (1: TMB); Karolinen Thal, 10.VI.1929, leg. Dr. Fodor (1: TMB); Vares Zwizda, coll. Dr. J. Fodor (1: TMB); Majavica, VI. Zoufal, 8713, coll. Kouril, P5/46/62 (3: NMP); Bosnia mer. Metalka, Dr. Noeske, VI.1910, coll. Herb. Schmidt, Gersdorf b. Kz. (1: SMD); Bjelasnica plan, O. Leonhard (12: DEI); **Croatia**: coll. Koltze (1: DEI); Agram, Leonhard (1: DEI); **Macedonia**: Han Mavrovo, 16.VII.1937, leg. Dr. J. Fodor (2: TMB); Sar. Pl. 7.VII.1935, leg. Dr.



Figures 13–19. *Endomychus* spp., structures. 13–16, 19. *E. coccineus*; 17. *E. jureceki*; 18. *E. thoracicus*. (13) metendosternite, ventral; (14) hind wing; (15) abdomen, ventral; (16) femur and tibia; (17), (18) female genitalia, dorsal; (19) tarsus.

J. Fodor (2: TMB); Serbia: coll. Reitter (2: TMB); Ruplje, Horvath, IX.1902 (3: TMB); Jakupica, pl. alpin. 7.-14. Dr. Rembousek, O. Leonhard (2: DEI); Slovenia: Pakrac, Apfelbeck (1: TMB);

Distribution. Europe.

Endomychus armeniacus Motschulsky

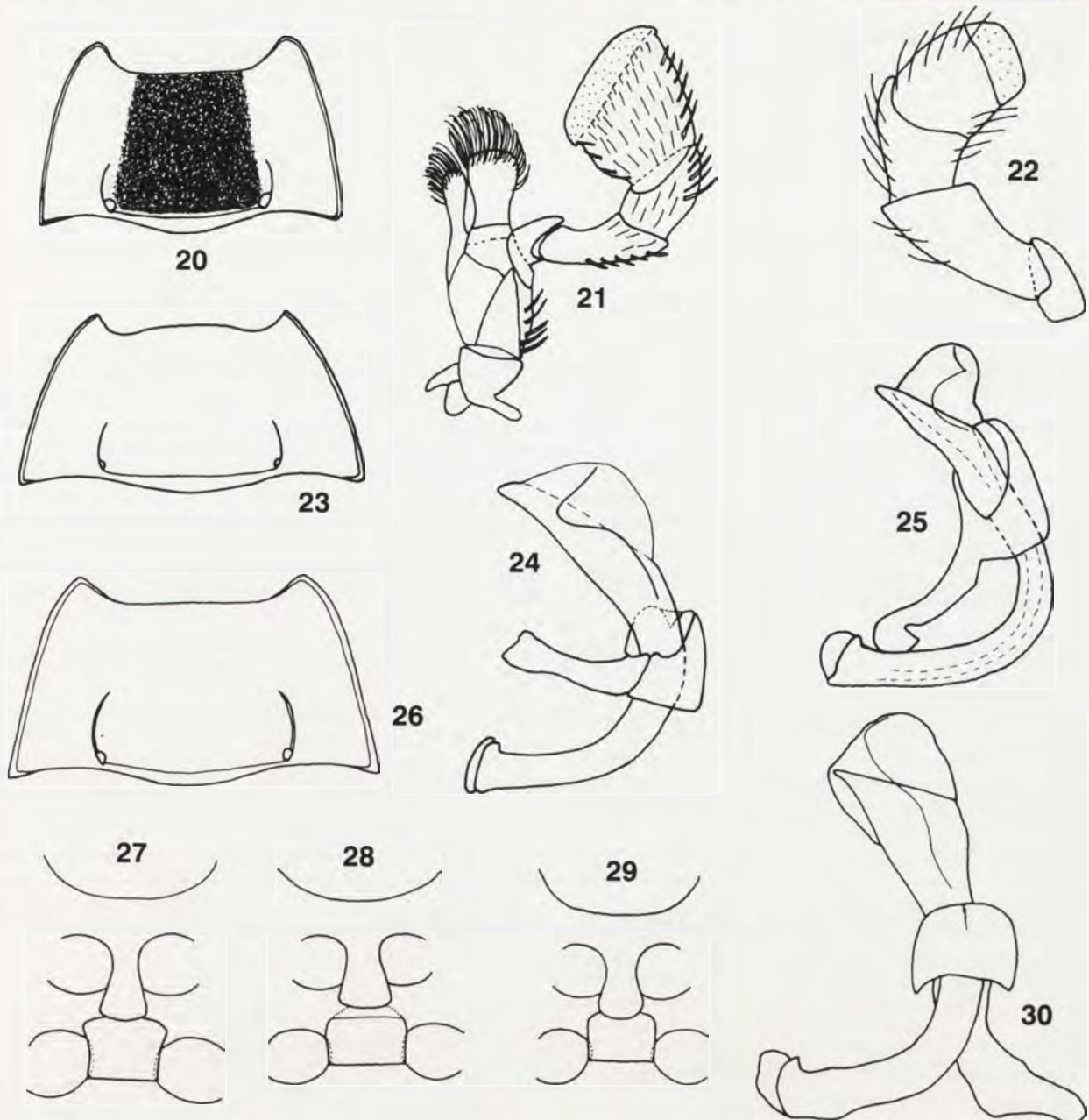
(Figs 1, 21, 23, 25, 28)

Endomychus armeniacus Motschulsky, 1835: 321. Lectotype, here designated: Armenia; MLSU, examined. – Gerstaecker 1858: 375; Marseul 1868: 79; Ganglbauer 1899: 940; Mader 1936: 98; Strohecker 1953: 113.

Endomychus scovitzii Falderman, 1837: 411. Type locality: Caucasus; Number of type specimens unknown, not examined. Synonymy by Gerstaecker 1857: 243.

Diagnosis. This species can easily be distinguished from all its congeners by colouration; this is the only species of *Endomychus* which is almost uniformly yellow or yellowish-brown to red-brown except for the antennae, segments 3–11 are black (scape and pedicel almost the same colour as body), pronotal disc most often slightly darker than edges, and two black, large spots on each elytron.

Description. Length 4.20–6.50 mm; body oval, convex, about 1.52–1.75 × as long as wide; glabrous, shiny; almost



Figures 20–30. *Endomychus* spp. 20, 24, 27. *E. coccineus*; 21, 23, 25, 28. *E. armeniacus*; 22, 26, 29–30. *E. thoracicus*. 20, 23, 26. Outline of pronotum. 21. Maxilla. 22. Maxillary palp. 24–25, 30. Aedeagus, lateral. 27–29. Pro- and mesosternum.

the same colour as body. Pronotum (Fig. 23) flat, about 1.00–1.22 mm long, 2.00–2.70 mm wide, about 0.45–0.52 × as long as wide, distinctly narrowing towards anterior margin; anterior and hind angles acute, distinct; side margins narrowly bordered. Prosternal process (Fig. 28) comparatively broad (about 0.88 × as broad as coxal diameter), distinctly enlarged and weakly rounded at apex. Elytra 3.10–4.50 mm long, 2.40–3.75 mm wide, 3.20–3.80 × as long as pronotum, 1.36–1.50 × as wide as pronotum; each elytron with two black spots, anterior spots distinctly smaller than posterior ones. Apical maxillary palpomere as in Fig. 21. Aedeagus as in Fig. 25.

Types. Lectotype: **Armenia** – “*Endomychus armeniacus*, michi, Armenia” (MLSU); syntypes almost totally destroyed, without labels (2: MLSU).

Other material examined. **Caucasus:** (1: TMB); coll. Dr. J. Fodor (1: TMB); coll. A. Puton, 1911 (1: MNHN); Swaenetien, Leder, Reitter, coll. Reitter (4: TMB); same but coll. Hlisnikovsky (2: MNP); same but coll. Kanabé (5: TMB); Swaenetien, Leder, Reitter (1: MNP); same and 8711 (1: MNP); Swaenetien, Dr. Vesely (1: MNP); Kodori 1000 m, 28.V.1975, leg. Podlussany (1: TMB); Leder (2: TMB); Leder (2: SMD); Leder, coll. Hlisnikovsky (1: MNP); Leder, coll. Kraatz (5: DEI); same, but, coll. Stierlin (2: DEI); same but coll. L.v. Heyden (3: DEI); Leder, Prof. Schneider, Vermächt. 1903 (1: SMD); coll. Stierlin (1: DEI); coll. Koltze (5: DEI); O. Koechlin, coll. Srnka (1: DEI); Adji-Kent (2: TMB); same and coll. Dr. J. Fodor (2: TMB); Adji-Kent, 38 61, coll. Ste Claire Deville (2: MNHN); Adji Kent, O. Leonhard (2: DEI); same and Babadjanides (4: DEI); same, coll. F. Speiser (1: TMB); Adji Kent, Babadjanides, W.H. Mucho, Radeberg, Ankauf (2: SMD); Borshom, W.H. Mucho, Radeberg, Ankauf (5: SMD); Armen. Geb., Leder, Reitter, coll. Linke, Leipzig, Ankauf 1979 (1: SMD); same but coll. Schenkling (2: DEI); Abastuman, Leder, Reitter, coll. M. Sédillot (1: MNHN); Circassia, coll. Koltze (1: DEI); Circassia, W.H. Mucho, Radeberg, Ankauf (1: SMD); same and Sotschi (1: SMD); Abastuman, Leder, (Reitter), det. P. Heymes, Mus. Zool. Polonicum, Warszawa 12/45 (2: MZPW); **Abchasia:** Juznūj Prijut, Vallis Klich, Caucasus occid. 11.–14.VII.1979, leg. Kalman, Székely (1: TMB); Gvandra, Vallis Gvandra, Caucasus occid. 900 m, 14.VII.1979, leg. Kalman, Székely (1: TMB); same but Vallis Klüch, 1200 m, 5.–16.VII.1977, leg. Kalman, Gaskó (1: TMB); Tkvarcheli Vallis Galidzga, Caucasus occid. 800 m, 9.–10.VII.1983, leg. Imre Retezar (1: TMB); W.H. Mucho, Radeberg, Ankauf (3: SMD); Caucas occid., Utsch Dere, 20.IX.85, coll. Stierlin (2: DEI); Caucas occid. Starck (1: MNP); same and coll. E. Csiki (3: TMB); Caucasus occid., Krasnaja Poljana, 2.VII.1990, 1000–1600 m, leg. Dr. R. Fencl, Z. Honsecl (1: MNP); **Georgia:** Lagodechi, 10.VIII.1987, P. Pacholatkolgt (6: NHMB); **Iran:** coll. Licht. (1: TMB); det. P. Heymes, Mus. Zool. Polonicum, Warszawa 12/45 (1: MZPW); **Ukraine:** Kuban, Maikop, Reitter (2: MNP);

Endomychus thoracicus Charpentier
(Figs 18, 22, 26, 29–30)

Endomychus thoracicus Charpentier, 1825: 245. Syntypes: Southern Hungary; location of syntypes unknown. – Gerstaecker 1858: 374; Ganglbauer 1899: 941; Strohecker 1953: 115.

Caenomychus thoracicus: Mader 1936: 99.

Diagnosis. This species resembles *E. biguttatus* in body colouration, but is larger, less elongate and has subequal anterior and posterior spots on the elytra.

Description. Length 5.00–6.00 mm, body oval; dorsum more convex than in two previous species, 1.48–1.60 × as long as wide, orange or yellowish-brown to reddish-brown; head, antennae, pronotum, scutellum, legs, prosternum and at least sides of meso- and metasternum black or brownish-black. Pronotum (Fig. 26) weakly convex, 1.10–1.25 mm long, 2.15–2.55 mm wide, 0.49–0.53 × as long as wide; anterior and hind angles distinct, acute, side margins narrowly bordered. Prosternal process (Fig. 29), about 0.86 × as broad as coxal diameter, expands behind the front coxae, weakly rounded apically. Elytra 3.60–4.50 mm long, 3.00–3.70 mm wide, 3.36–3.45 × as long as pronotum, 1.38–1.46 × as wide as pronotum; each elytron with two subequal black spots. Apical maxillary palpomere as in Fig. 22. Aedeagus as in Fig. 30.

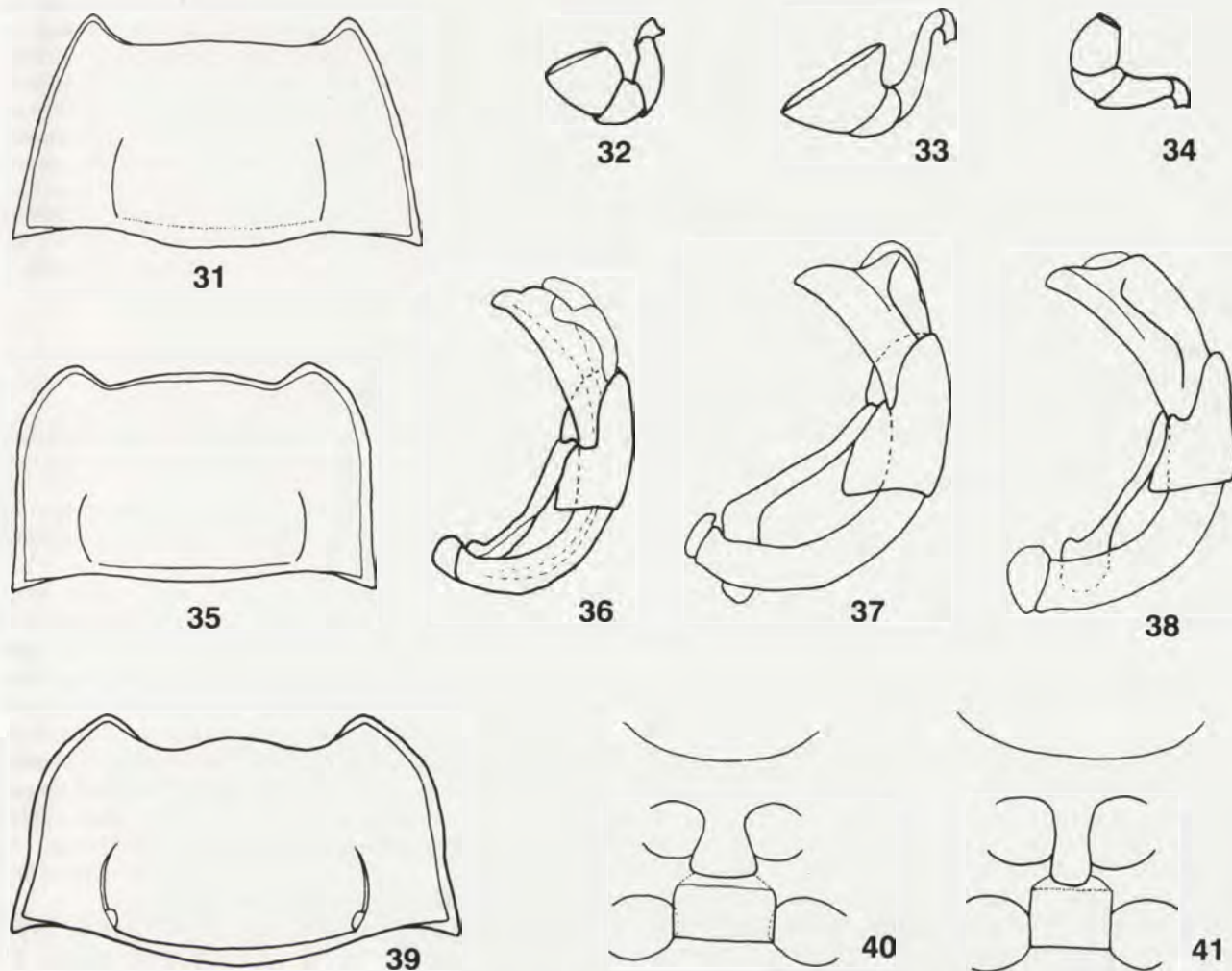
Material examined. **Austria:** Reitter, coll. Kanabé (4: TMB); coll. Felsche, Geschenk 1907 (4: SMD); coll. M. Sédillot (1: MNHN); Tirol, coll. Kirsch (2: SMD); coll. Koltze (4: DEI); **Hungary:** (1: NMP); coll. Fleischer (1: NMP); Bihar, coll. Fleischer (7: NMP); coll. Märkel (5: SMD); same but coll. Prof. Dr Fuchs, Ankauf 1946 (1: SMD); Sammlung K. Hänel, Ankauf 1947 (2: SMD); coll. M. Sédillot (1: MNHN); coll. A. Puton, 1911 (1: MNHN); coll. De Marseul, 2842–90 (1: MNHN); O. Koechlin, coll. Srnka (2: DEI); coll. Künnemann (1: DEI); Herculesbad (1: NMP); Herculesbad, Spaeth, 1896, coll. P. de Peyerimhoff (2: MNHN); Herculesbad, coll. Künnemann (3: DEI); **Italy:** coll. Kirsch (2: SMD); **Romania:** W.H. Mucho, Radeberg, Ankauf (3: SMD); same and Schäsburg (1: SMD); Sammlung K. Hänel, Ankauf 1947 (1: SMD); Gehr. W. Müller, Vermächt. 1909 (1: SMD); coll. K.F. Hartmann, Ankauf 1941 (1: SMD); Gb. 30.VII.1906, coll. Prof. Dr Fuchs, Ankauf 1946 (1: SMD); Klam. coll. Prof. Dr Fuchs, Ankauf 1946 (1: SMD); coll. Schenkling (1: DEI); coll. Stierlin (1: DEI); coll. Kratz (1: DEI); coll. M. Sédillot (4: MNHN); Pptz, coll. Ch. Demaison (4: MNHN); Stentz, coll. L.v. Heyden (1: DEI); Götzenburg, Boettger, coll. L.v. Heyden (3: DEI); Hohe Rinne, 31.VII.1904 (1: NMP); Kronstadt (1: NMP); Dr. Fleischer (1: NMP); Merkl, coll. Ch. Demaison (1: MNHN); Pestera, 1700–2000 m, x.1958, leg. Maran (1: NMP); Ruman. Karpaten, Lysa Tal, VII.1917, coll. Künnemann (1: DEI); Banat, coll. Srnka (1: DEI); Banat, coll. L.v. Heyden (2: DEI); Banat, Orsova, 1909, leg. M. Hilf, coll. O. Leonhard (2: DEI); Siebenbuergen, Mus. antiqu. (1: SMD); Siebenbuergen, H. Viehm. Sammlung K. Hänel, Ankauf 1947 (1: SMD); same and 1905 (1: DEI); Siebenbuergen, coll. Hlisnikovsky (2: NMP); Siebenbuergen, coll. Kraatz (6: DEI); Karpates, coll. A. Puton 1911 (3: MNHN); Carpaten, Sinaia Valachie, A.L. Montandon, coll. Ste Claire Deville (2: MNHN); coll. L.v. Heyden (5: DEI); SMD); Transsylvanien, det. P. Heymes, Mus. Zool. Polonicum, Warszawa 12/45 (5: MZPW).

Distribution. Central and south Europe.

Endomychus jureceki Mader
(Figs 17, 31–32, 36, 40)

Endomychus jureceki Mader, 1936: 69. Syntypes: East Siberia, Vladivostok; Mader's collection, not examined. – Strohecker 1953: 114.

Diagnosis. This species is recognized by uniformly black or blackish-brown body, with pronotum or at least its



Figures 31–41. *Endomychus* spp. 31–32, 36, 40. *E. jureceki*; 33, 37, 39. *E. atripes*; 34–35, 38, 41. *E. humeralis*. 31, 35, 39. Outline of pronotum. 32–34. Maxillary palp. 36–38. Aedeagus, lateral. 40–41. Pro- and mesosternum.

middle part often darker than the rest of the body. It is similar to *E. quadra* (see diagnosis of *E. quadra*).

Description. Length 3.80–4.70 mm; body comparatively convex, elongate, 1.70–1.90 × as long as wide, glabrous, shiny. Pronotum (Fig. 31) 0.75–0.90 mm long, 1.50–1.80 mm wide, 0.48–0.53 × as long as wide; anterior and hind angles distinct, acute; side margins narrowly bordered, basal sulcus hardly visible; anterior margin distinctly narrower than basal one; prosternal process (Fig. 40) comparatively wide (about 0.85 × as wide as coxal diameter), distinctly widened behind the front coxae, almost truncate apically. Elytra without spots, 2.80–3.40 mm long, 2.10–2.50 mm wide, 3.75–3.95 × as long as pronotum, 1.35–1.50 × as wide as pronotum. Terminal maxillary palpomere as in Fig. 32. Aedeagus as in Fig. 36.

Material examined. Russian Far East: Ussuri, Kamenushka, 9.VI.1991, S. Kurbatov (1: NHMB); Sibir. or. Ussuri, Vladivostok, Dr. Jurecek 1919 (10: NMP, 1: MZPW); same but Ussuri mer. (2: NMP); Sibir. or., Vladivostok, coll. Dr. Jurecek et Hedviga Ju-

reckova (2: NMP); Manchuria, Ersentientze, 23.VI.1940, collector M.A. Weymann (1: CASC);

Endomychus atripes Pic
(Figs 33, 37, 39)

Endomychus atripes Pic, 1921: 2. Lectotype, here designated: China, Tibet; MNHN, examined. – Mader 1936: 98; Strohecker 1953: 113.

Endomychus curtus Pic, 1927: 10. Lectotype, here designated: Vietnam; MNHN, examined. – Arrow 1928: 356; Mader 1936: 98; Strohecker 1953: 114. **Syn. nov.**

Diagnosis. Uniformly yellowish-brown or reddish-brown body with only antennae, legs, clypeus and mouthparts black, relatively large size and oval body, separate this species from most other species of *Endomychus*. It is similar in colouration to *E. flavus* and *E. atriceps*. It differs from *E. flavus* in larger size, less elongate body and in the absence of spots on the elytra. From *E. atriceps* it differs in having smaller size, more oval body, distinct basal

sulcus on pronotum and axe-shaped terminal maxillary palpomere.

Description. Length 5.00–5.55 mm; body oval, convex, 1.50–1.61 × as long as wide. Pronotum (Fig. 39), weakly convex, 1.10–1.28 mm long, 2.10–2.47 mm wide; 0.51–0.53 × as long as wide; anterior and hind angles distinct; hind angles acute, anterior angles weakly rounded; side margins bordered; pronotum widest at base; basal sulcus distinct. Prosternal process weakly widened behind the front coxae, rounded apically. Elytra convex, without spots, 4.10–4.55 mm long, 3.00–3.70 mm wide; 3.55–3.68 × as long as pronotum and 1.42–1.49 × as wide as pronotum. Apical maxillary palpomere as in Fig. 33. Aedeagus as in Fig. 37.

Types. Lectotype of *E. atripes*, ♂: China – “Tybet/ *Endomychus atripes* n. sp./ type/ Museum Paris, coll. M. Pic” (MNHN); paralectotypes of *E. atripes*: same data as lectotype (5: MNHN) – three of them have labels transcribed from the original one by hand, by the present author; paralectotypes of *E. atripes*: same but without label “*Endomychus atripes*” (4: MNHN); lectotype of *E. curtus*, ♂: Vietnam – “Tonkin, Chapa 16.V.1918, Jeanvoine/ Museum Paris, coll. M. Pic” (MNHN); paralectotype of *E. curtus*: same and “*curtus* Pic”/ type (1: MNHN).

Endomychus humeralis (Pic)

(Figs 34–35, 38, 41)

Caenomychus humeralis Pic, 1922: 10. Lectotype, here designated: India, Kashmir; MNHN, examined. – Arrow 1925: 359; Mader 1936: 99. *Endomychus humeralis*: Strohecker, 1953: 114.

Diagnosis. Brownish-black body with legs in part, mouthparts and elytra at shoulders and behind scutellum reddish-yellow, and antennae slightly darker than reddish-yellow. Sometimes elytra uniformly black or brownish-black, then it is similar to *E. pakistanicus*, but differs by larger size, more oval body and shape of the terminal maxillary palpomere.

Description. Length 4.50–5.40 mm; body oblong-oval, 1.65–1.75 × as long as wide. Pronotum (Fig. 35) 0.95–1.19 mm long, 1.60–2.00 mm wide; 0.58–0.63 × as long as wide; punctures on pronotum fine as those on elytra or head. Anterior angles of pronotum produced, rounded; lateral margins distinctly bordered. Scutellum weakly acute at its apex. Prosternal process (Fig. 41) comparatively narrow (about 0.60 × as wide as coxal diameter), weakly enlarged apically and indistinctly rounded at its apex. Elytra 3.10–3.85 mm long, 2.50–3.10 mm wide; 3.20–3.40 × as long as pronotum, 1.50–1.65 × as wide as pronotum. Terminal maxillary palpomere (Fig. 34) subcylindrical, stout. Aedeagus as in Fig. 38.

Types. Lectotype: India – “Kashmir (Rost)/ Endomychidae/ type/ Museum Paris, coll. M. Pic/ *Caenomychus humeralis* n. sp.” (MNHN); paralectotype: “Kashmir (Rost)/ *Endomychus* n. sp./ type/ Museum Paris, coll. M. Pic” (1: MNHN);

Other material examined. India: Kashmir (Rost), coll. M. Pic. (1: MNHN); Rost (1: DEI); Indien, (Jammu and Kashmir), 1989, leg. Heinz, Naranag, 2200–2400 m b. Kangan, 16.–20.VIII (1: SMNS); Kashmir, Gulmarg, 3000 m, leg. Gy. Topal, no. 516, from

under stones, 13.VI.1967 (1: TMB); Pakistan – 17.–22.IV.1984, leg. S. Vit, pied creux/Quercus, envs. Changla-Gali, Hazara, sept. (4: MHNG); same but ecorce Pinus/m. 2300, Nathia-Gali (1: MHNG); Hazara, Shogran 2400 m, 3.VI.1983, Besuchet, Löbl (1: MHNG); Hazara s/Naran 2600 m, 1.VI.1983, Besuchet, Löbl (1: MHNG); same but Naran-Kaghan, 2300 m, 2.VI.1983 (1: MHNG); Hazara Malkandi, 1500 m, 3.VI.1983, Besuchet, Löbl (8: MHNG); Dir Lawarai Pass, 2700 m, 21.V.1983, Besuchet, Löbl (1: MHNG); Shogran Khagan V., 2300–2750 m, 17.VI.1977, Wittmer, Brancucci (4: NHMB); Sharan, 2400–2700 m, 1.–2.VII.1979, W. Wittmer (1: MZPW); Kalam, 5.VI.1978, 2000/2400 m, Swat Pak., W. Wittmer (3: NHMB, 1: MZPW); same but Miandam, 3.VI., 1800–2300 m (1: NHMB).

Endomychus bicolor Gorham

(Figs 42, 44, 48)

Endomychus bicolor Gorham, 1875: 22. Holotype: India; BMNH, examined. – Arrow 1925: 357; Mader 1936: 99; Strohecker 1953: 113.

Diagnosis. This species is fairly easily recognized by its strongly convex elytra and black body, with the only elytra and abdomen brown.

Description. Length 5.00–5.55 mm; body oval, 1.59–1.63 × as long as wide. Pronotum (Fig. 42) 1.00–1.09 mm long, 1.97–2.19 mm wide. 0.50–0.51 × as long as wide; the widest at its base. Lateral margins of pronotum narrowly bordered; anterior and hind angles acute. Basal sulcus distinct. Scutellum weakly rounded at apex. Prosternal process (Fig. 44), about 0.70 × as wide as coxal diameter, distinctly widened behind the front coxae, rounded apically. Punctures on elytra and pronotum very fine. Elytra 3.90–4.25 mm long, 3.06–3.50 mm wide; 3.87–3.90 × as long as pronotum, 1.55–1.60 × as wide as pronotum. Apical maxillary palpomere (Fig. 48) enlarged apically.

Types. Holotype ♀: India – “Holotype/ Gorham Type/ Fry. coll. 1905. 100 / India, Orient/ 25840/ *Endomychus bicolor* Gorham/” (BMNH);

Other material examined. Sikkim (1: TMB) – specimen (female) compared with type by G.J. Arrow.; O. Nepal, Num-Chichila, 15/1900 m, 17.VI.1980, W. Wittmer (1: NHMB).

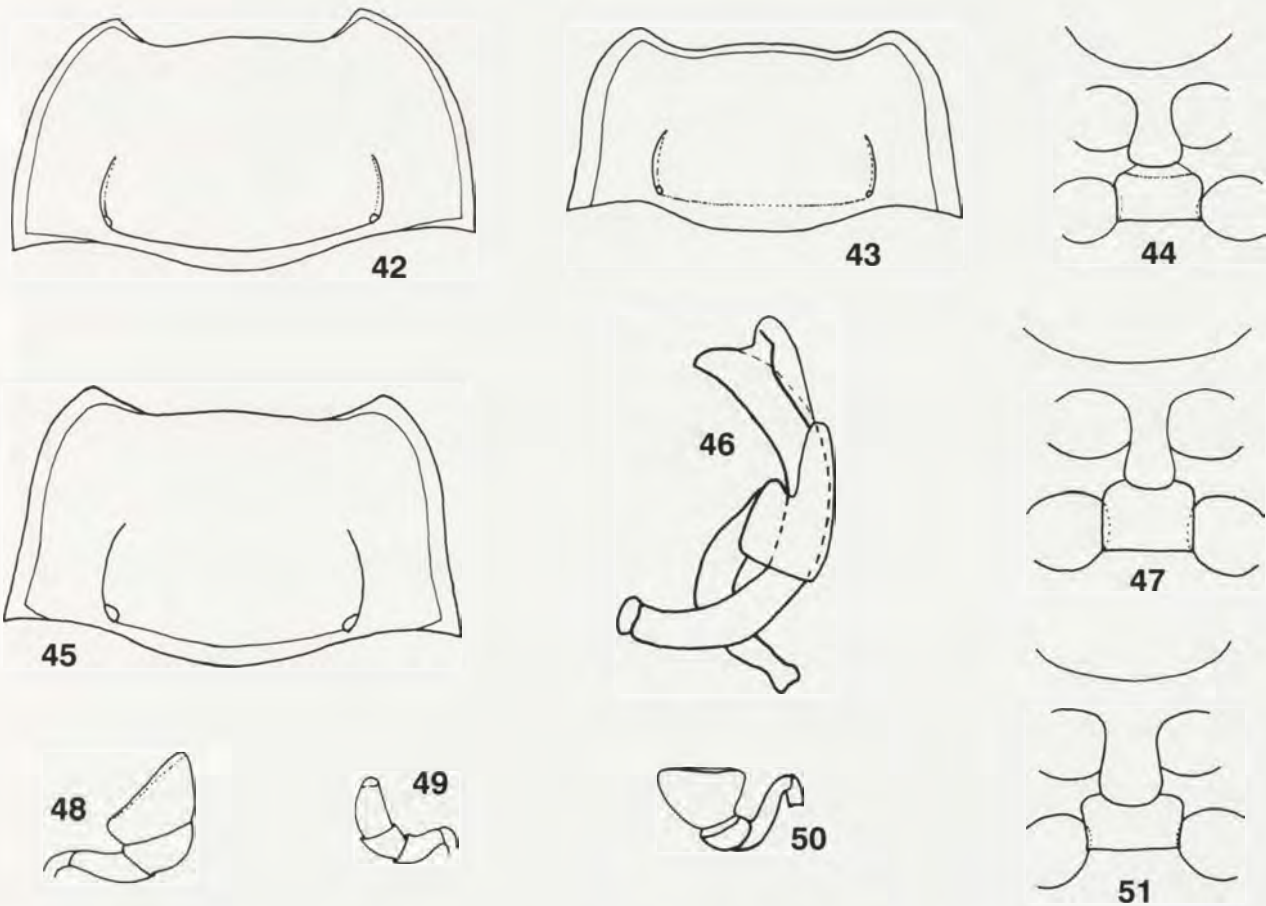
Endomychus flavus Strohecker

(Figs 45–47, 50)

Endomychus flavus Strohecker, 1943: 390. Holotype: China, Sichuan; U.S.N.M., examined. – Strohecker 1953: 114.

Diagnosis. This species is most similar to *E. atripes*, but differs in having more elongate body, smaller size, ventral surface finely pubescent, and sometimes two small, black spots on each elytron.

Description. Length 4.50 mm; body weakly elongate, convex, about 1.74 × as long as wide; reddish-yellow or yellow; antennae, legs, clypeus and mouthparts black. Pronotum (Fig. 45) 0.97 mm long, 1.72 mm wide, 0.55 × as long as wide; anterior and hind angles distinct, side margins bordered; pronotum slightly narrower at its apex, at base hardly narrower than elytra. Prosternal process (Fig. 47), about 0.72 × as wide as coxal diameter, distinctly enlarged behind the front coxae, rounded apically. Scutellum acute at its apex. Elytra 3.56 mm long, 2.60 mm wide, 3.67 × as



Figures 42–51. *Endomychus* spp. 42, 44, 48. *E. bicolor*; 43, 49, 51. *E. yunnani*; 45–47, 50. *E. flavus*. 42–43, 45. Outline of pronotum. 44, 47, 51. Pro- and mesosternum. 46. Aedeagus, lateral. 48–50. Maxillary palp.

long as pronotum, $1.51 \times$ as wide as pronotum. Apical maxillary palpomere as in Fig. 50.

Note. As well as the female holotype, I examined one male specimen from Sichuan (Aedeagus as in Fig. 46), which seems to be conspecific with *E. flavus*; the only apparent difference from the holotype, was an absence of any spots on the elytra.

Types. Holotype ♀. **China** – “Near Mupin, China, Szechwan, D.C. Graham, 1.–3. VII. 1929, 3000–7600 ft.” (U.S.N.M. type no. 55890).

Other material examined. **China**, pr. Sichuan, Emei Mt., 1000 m, 4.–20.V.1989, Vit Kuban leg. (1: NMHB).

Endomychus yunnani sp. nov.
(Figs 43, 49, 51)

Diagnosis. This species is easily recognized by its small size and colouration which is dark brown, with head, pronotum, scutellum, prosternum, antennae and legs black (tarsi slightly lighter, meso- and metacoxae brown).

Description. Length 3.70 mm, body oval, comparatively strongly convex, $1.51 \times$ as long as wide. Pronotum (Fig. 43) 0.75 mm long, 1.56 mm wide; $0.48 \times$ as long as wide; anterior angles slightly rounded, side margins comparatively

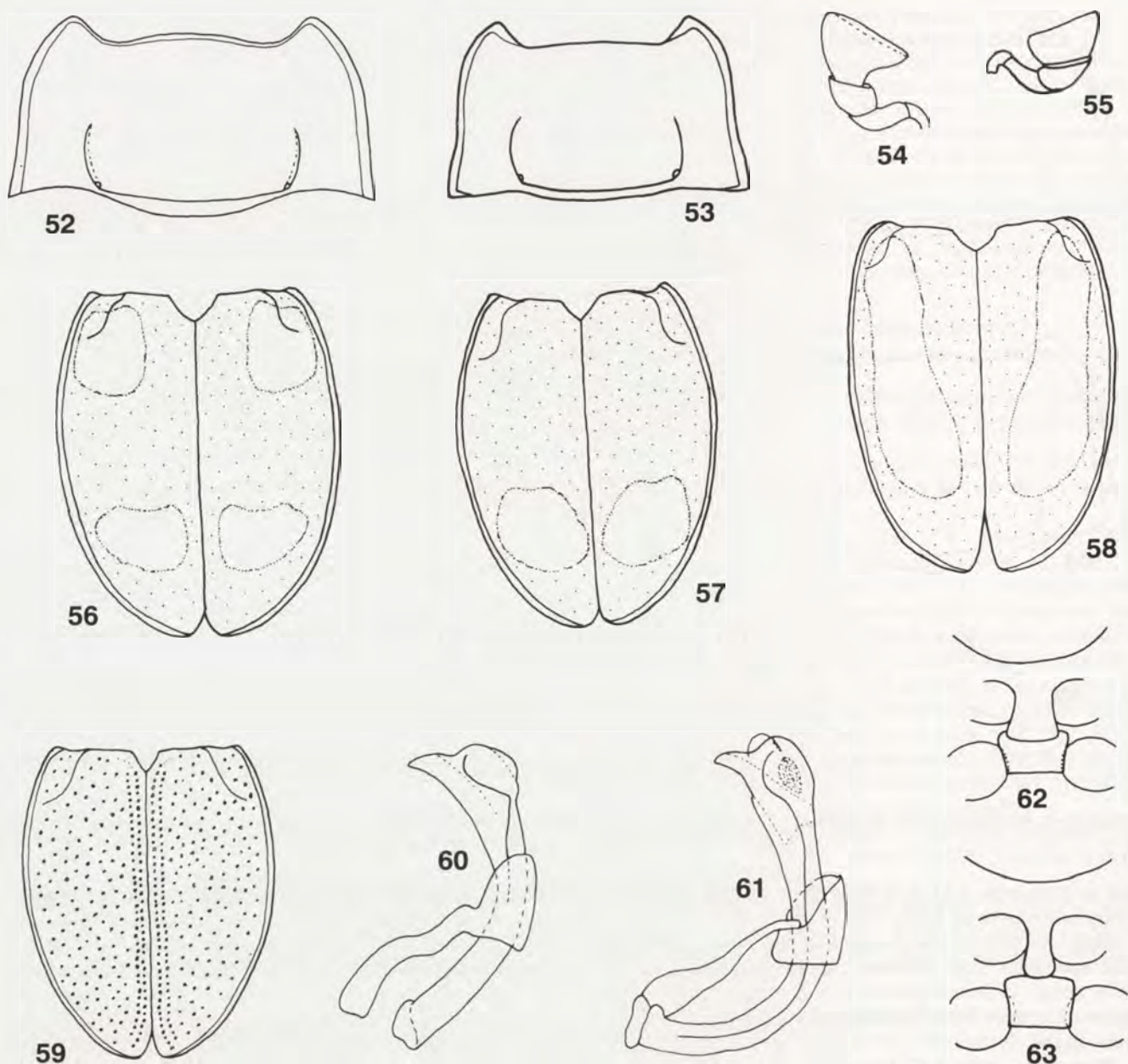
broadly bordered; basal sulcus distinct. Scutellum weakly rounded at its apex. Prosternal process (Fig. 51) moderately long and broad, weakly widened behind the front coxae, rounded apically. Elytra 2.88 mm long, 2.44 mm wide; $3.84 \times$ as long as pronotum, $1.56 \times$ as wide as pronotum. Punctuation on elytra and pronotum not very dense but coarse. Terminal maxillary palpomere (Fig. 49) cylindrical, narrower towards its apex.

Types. Holotype ♀. **China**: “Yunnan, 2800–3000 m, 25.12N 100.24E, Weibaoshan mts., 29.–30.VI.1992, Vit Kuban leg.” (NHMB).

Endomychus mroczkowskii sp. nov.
(Figs 3, 52, 54, 59–60, 62)

Diagnosis. This species is similar to *E. nigricornis* in size and body colouration, but has two rows of black macropunctures on each elytron (Fig. 59), extending along its inner edge from near the scutellum to the sutural angle.

Description. Length 4.25–4.80 mm, body elongate-oval, convex, 1.66 – $1.88 \times$ as long as wide; dark brown with antennae and legs black (tarsi and coxae – lighter); strongly shiny. Ventral surface finely pubescent. Pronotum (Fig. 52) 0.88–0.94 mm long, 1.75–1.88 mm wide; 0.49 – $0.52 \times$ as long



Figures 52–63. *Endomychus* spp. 52, 54, 59–60, 62. *E. mroczkowskii*; 53, 55–58, 61, 63. *E. quadra*. 52–53. Outline of pronotum. 54–55. Maxillary palp. 56–59. Outline of elytra. 60–61. Aedeagus, lateral. 62–63. Pro- and mesosternum.

as wide; anterior angles strongly produced, weakly rounded; side margins narrowly bordered; basal sulcus rather distinct. Scutellum heart-shape, acute apically. Prosternal process (Fig. 62) not very long, comparatively broad (about $0.90 \times$ as broad as coxal diameter), weakly widened behind the front coxae, almost truncate. Punctuation on pronotum finer than on elytra, where it is dense and coarse. Elytra 3.19–3.28 mm long, 2.53–2.69 mm wide; $3.50\text{--}3.69 \times$ as long as pronotum, $1.40\text{--}1.44 \times$ as wide as pronotum. Terminal maxillary palpomere (Fig. 54) strongly enlarged apically. Aedeagus as in Fig. 60.

This species is dedicated to Prof. Maciej Mroczkowski.

Types. Holotype ♂: “E-Nepal, Arun V., M. Brancucci, Mure 2000 – Num 1550 m, 4.–7.VI.1983” (NHMB); paratypes: same data as holotype (5: NHMB, 2: MZPW).

Endomychus quadra (Gorham)
(Figs 53, 55–58, 61, 63)

Cyanauges quadra Gorham, 1887: 651. Holotype: Japan, Kashiwagi; BMNH, examined.

Caenomychus quadra: Mader 1936: 99.

Endomychus quadra: Strohecker 1953: 114.

Endomychus ohbayashii Nakane, 1951: 116. Holotype: Japan, Honshu; TNC, not examined. **Syn. nov.**

Endomychus ohbayashii shirahatai Nakane, 1951: 117. Holotype: Japan, Honshu; TNC, examined. **Syn. nov.**

Endomychus ohbayashii kojimai Nakane, 1994: 83. Holotype: Japan, Shikoku; TNC, examined. **Syn. nov.**

Diagnosis. This species is similar to *E. jureceki* in colouration and shape of the terminal maxillary palpomere, but differs in having narrower prosternal process, elytra most often with yellow spots or stripes, and tarsi, maxillary palpi and ventrites slightly lighter than the rest of the body. Some members of *E. quadra* are similar in colouration to *E. plagiatus* (see diagnosis of *E. plagiatus*).

Description. Length 4.20–4.69 mm, body weakly elongate, rather convex, 1.62–1.74 × as long as wide; brownish-black or black; tarsi, maxillary palpi and abdomen slightly lighter. Each elytron with two yellow or orange-yellow spots (Fig. 56); sometimes each elytron with one orange-yellow spot behind the middle of elytron (Fig. 57), or a broad longitudinal stripe which extends from just behind the humeral prominence to near the apex (Fig. 58); these stripes may be rounded or obliquely truncate anteriorly. Rarely elytra without any spots or stripes. Dorsal side strongly shiny. Scutellum large, weakly rounded apically. Pronotum (Fig. 53) 0.91–0.97 mm long, 1.66–1.80 mm wide, 0.54–0.56 × as long as wide; widest at base. Side margins of pronotum bordered; hind angles distinct, anterior angles acutely rounded. Punctures on pronotum finer than those on head or elytra; pronotal surface with fine irregular microsculpture. Prosternal process (Fig. 63) comparatively narrow (about 0.65 × as wide as coxal diameter), weakly widened behind the front coxae, rounded apically. Elytra oval, widest near middle; 3.30–3.69 mm long, 2.55–2.90 mm wide, 3.51–3.64 × as long as pronotum, 1.51–1.61 × as wide as pronotum. Terminal maxillary palpomere (Fig. 55) distinctly enlarged apically. Aedeagus as in Fig. 61.

Note. Nakane (1958) classified *E. ohbayashii* and *E. ohbayashii shirahatai* as forms of *E. nigropiceus*, but according to my study, they are synonymous with *E. quadra*.

Types. Holotype of *E. quadra*, ♀: "Japan, G. Lewis, 1910–320/ Kashiwagi. 15.VI.–24.VI.81/ *Cyanauges quadra*/ holotype/ type H.T." (BMNH);

Cotype of *E. ohbayashii*: "Hirugano, Gifu, (3.VIII.1947), K. Ohbayashii/ Cotype/ *Endomychus ohbayashii* Nakane, det. T. Nakane/" (1: TNC);

Holotype of *E. ohbayashii shirahatai*: "Mt. Chokai, Yamagata Pref., 23.IX.1937, K. Shirahata/ Holotype/ *Endomychus ohbayashii shirahatai* Nakane, det. T. Nakane/" (TNC);

Holotype of *E. ohbayashii kojimai*: "Matsubagawa Kochi, 24.V.1952, K. Kojima/ Holotype/ *Endomychus ohbayashii kojimai*, det. T. Nakane" (TNC); paratypes: "Mt. Kurodake, Oita, 6.VI.1987, K. Kido/ Paratype/ *Endomychus ohbayashii kojimai*, det. T. Nakane" (2: MZPW);

Other material examined. Japan: Hirayu Pass, Hids, Honshu, 4.VIII.1951, coll. H. Torigai (1: TNC); Yakeyama Towada, 14.VIII.1967, T. Nakane, IBPCT (1: TNC). Mt. Gomadan, Kii, 4.VI.–II.1953, N. Yato (2: MZPW); Mt. Daisen, Tottori, 11.VII.1951, N. Yato, labeled as *E. ohbayashii insignatus* (2: MZPW); Hirayu-Sup. Hida (Honshu), 14.VII.1956, coll. H. Torigai; labeled as *E. ohbayashii insignatus* (1: MZPW); Honshu, Arashi, Fukui Pref., 22.VII.1970, H. Sasaji (1: BLFU, 1: MZPW); Tanimayakana, 10.VI.1979, M. Saito (1: BLFU); Kyushu, Mt. Hikosan, Fukuoka Pref., 14.–16.VII.1958, col. K. Morimoto (1: BLFU);

Endomychus nigropiceus (Gorham)
(Figs 64, 67–68, 75)

Cyanauges nigropiceus Gorham, 1887: 651. Lectotype, here designated: Japan, Kashiwagi; BMNH, examined.

Caenomychus nigropiceus: Ohta 1931: 234; Mader 1936: 100.

Endomychus nigropiceus: Strohecker, 1953: 114

Endomychus hiranoi Sasaji, 1978: 27. Holotype: Japan, Honshu; Entomological Laboratory, Kyushu University, not examined. Synonymy by Nakane 1989: 6.

Diagnosis. This species is most similar in colouration and body shape to *E. gorhami*, but differs from it by its distinctly broader, apically truncate prosternal process, less elongate body and finer punctation on the elytra.

Description. Length 4.20–4.63 mm, body elongate, convex, 1.70–1.81 × as long as wide; dark brown or black, strongly shiny; the only abdominal ventrites from 2 onwards lighter. Pronotum (Fig. 64) 0.94–1.03 mm long, 1.66–1.90 mm wide, 0.53–0.57 × as long as wide; anterior and hind angles distinct, acute; side margins weakly bordered; widest at base. Punctures on pronotum fine but dense and distinct like those on head and elytra. Scutellum slightly acute at apex. Prosternal process (Fig. 67) broad (almost as broad as coxal diameter), slightly longer than wide, nearly parallel-sided with truncate apex. Elytra 3.10–3.45 mm long, 2.40–2.60 mm wide; 3.22–3.44 × as long as pronotum, 1.34–1.48 × as wide as pronotum; elytra widest near middle. Apical maxillary palpomere (Fig. 68) subcylindrical, obliquely truncate on its apex. Aedeagus as in Fig. 75.

Types. Lectotype of *E. nigropiceus*, ♀: "Japan, G. Lewis, 1910–320/ Kashiwagi, 15.VI.–24.VI.81/ *Cyanauges nigropiceus*/ syntype/ type H.T." (BMNH); paratypes of *E. hiranoi*, "Sasaji, 1978, Miyanoshita Hakone, 3.XI.1975, Y. Hirano" (2: BLFU); "Honshu, Karuizawa, Shinano, 7.–14.VII.1959, K. Morimoto" (1: BLFU);

Other material examined. Japan: Honshu, Senjughama, Chugushi, 29.VI.1985, N. Morishima (1: MZPW); same and Nikko-Shi (1: BLFU); Honshu, Eta, Iwaki-shi, Fukushima, 4.VIII.1976, S. Oomono (1: BLFU, 1: MZPW); Taguchi, Komono, Mia Pref., 1.IX.85, H. Narukawa (1: TNC);

Endomychus plagiatus (Gorham)
(Figs 65, 69, 71–72, 74, 77)

Cyanauges plagiatus Gorham, 1887: 650. Syntypes: Japan, Kyushu; BMNH, not examined.

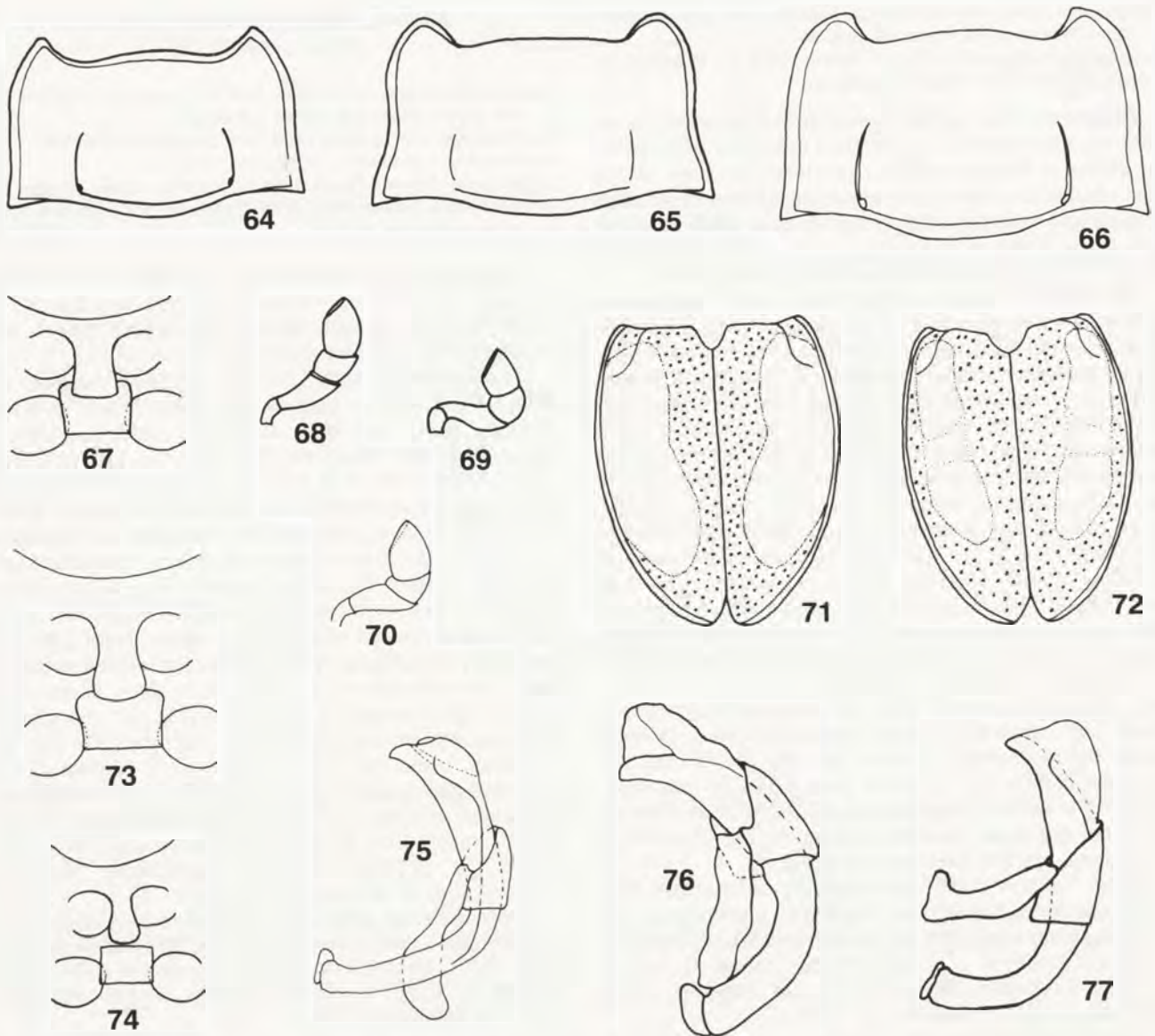
Caenomychus plagiatus: Ohta 1931: 235; Mader 1936: 99.

Endomychus plagiatus: Strohecker 1953: 114.

Endomychus plagiatus interruptus Nakane, 1994: 82. Holotype: Japan, Kyushu; TNC, examined. **Syn. nov.**

Diagnosis. Blackish-brown body with oblong yellow stripe on each elytron (Figs 71, 72) which extends from base to 3/4 of elytral length (sometimes these stripes are interrupted in their middle) are characteristic for this species. It is similar in colouration to some members of *E. quadra*, but differs from it by strongly elongate body and short, subcylindrical shape of the terminal maxillary palpomere.

Description. Length 3.65–4.35 mm; body strongly shiny, blackish-brown with 2–6 abdominal ventrites orange; elongate, convex; 1.80–1.89 × as long as wide. Pronotum



Figures 64–77. *Endomychus* spp. 64, 67–68, 75. *E. nigropiceus*; 65, 69, 71–72, 74, 77. *E. plagiatus*; 66, 70, 73, 76. *E. gorhami*. 64–66. Outline of pronotum. 67, 73–74. Pro- and mesosternum. 68–70. Maxillary palp. 71–72. Outline of elytra. 75–77. Aedeagus, lateral.

(Fig. 65) 0.80–1.00 mm long, 1.35–1.80 mm wide; 0.55–0.58 × as long as wide; anterior angles weakly acute, hind angles acute; side margins distinctly bordered. Punctures on pronotum and head finer than on elytra, where punctation is dense and coarse. Prosternal process (Fig. 74), about 0.75 × as broad as coxal diameter, weakly widened behind the front coxae; rounded apically. Elytra 2.65–3.47 mm long, 2.00–2.44 mm wide; 3.37–3.57 × as long as pronotum, 1.35–1.47 × as wide as pronotum. Apical maxillary palpomere (Fig. 69) comparatively short, subcylindrical, obliquely truncate. Aedeagus as in Fig. 77.

Types. Holotype of *E. plagiatus interruptus*, ♀, Japan – “Aso, Kyushu, 10.X.1992” (TNC).

Other material examined. Japan: Kyushu, Cape Sata Osumi Pen., 26.VI.1957, Y. Shono (2: NMP); same (2: BLFU); same but 2.–5.V.1958, K. Morimoto (1: MZPW); Kyushu, Kamishiiba, Miya-

zaki Pref., 8.VI.1955, coll.M. Takahashi (1: BLFU); coll. Kraatz, det. Schenkling (2: DEI); Chiran, Satsuma, 4.V.1980, T. Nakane (2: MZPW); Aso, Kyushu, 4.X.1994, Y. Tomishima (3: MZPW);

Endomychus gorhami (Lewis)

(Figs 66, 70, 73, 76)

Cyanauges gorhami Lewis: in Gorham and Lewis, 1874: 55. Holotype: Japan, Kawatchi; BMNH, not examined. – Gorham 1887: 650.

Caenomychus gorhami: Mader 1936: 100.

Caenomychus violaceipennis Mader, 1941: 170. Holotype: Japan, Hondo; Mader's collection, not examined. Synonymy by Sasaji, 1978: 25.

Endomychus gorhami: Strohecker 1953: 114.

Endomychus gorhami kyushuensis Sasaji, 1978: 25. Holotype: Japan, Kyushu; Entomological Laboratory, Kyushu University, not examined. **Syn. nov.**

Diagnosis. This species is most similar to *E. nigropiceus*. The comparatively narrow prosternal process with a weakly rounded apex, more elongate body, densely and strongly punctured elytra often with violet luster, and remaining key characters, separate this species from *E. nigropiceus* and from other species of *Endomychus*.

Description. Length 4.25–5.00 mm; body elongate, convex; 1.80–1.90 × as long as wide; black or brownish-black with violet luster on elytra, usually strongly shiny; the only 2–6 abdominal ventrites orange. Pronotum (Fig. 66) 0.88–1.00 mm long, 1.53–1.80 mm wide; 0.55–0.57 × as long as wide; side margins comparatively broadly bordered, anterior angles acutely rounded; punctures on pronotum finer than those on elytra, where punctation is rather dense and coarse. Prosternal process (Fig. 73) comparatively narrow (about 0.60 × as broad as coxal diameter), distinctly broadens apically with a weakly rounded apex. Elytra 3.10–3.50 mm long, 2.30–2.75 mm wide; 3.50–3.57 × as long as pronotum, 1.45–1.52 × as wide as pronotum. Apical maxillary palpomere as in Fig. 70. Aedeagus as in Fig. 76.

Note. I did not examine the holotype of *E. gorhami kyushuensis*, but I examined a few paratypes of this subspecies. The only difference from *E. gorhami* is the absence of violet luster on the elytra. Therefore I decided to make a new synonymy of *E. gorhami*.

Types. Paratypes: **Japan** – “Kyushu, Mt. Homan, near Fukuoka, 24.XI.1954, coll. H. Kamiya” (1: MZPW); “Kyushu, Mt. Hikosan, Fukuoka pref. 14.VI.1958, coll. H. Kamiya” (2: BLFU); same but 12.–14.VI.1959 (1: BLFU); same but 16.VI.1958 (1: BLFU); same but 4.VI.1958, K. Morimoto (1: BLFU);

Other material examined. **Japan:** (2: TMB); Ikai, Lewis, coll. E. Csiki (1: TMB); Unzen, Shomabara, Reitter (1: TMB); Aizu-Wakamatsu, Fukushima Pref., 25.VI.1949, Y. Kurosawa lgt. (1: MNP, 1: MZPW); Mt. Ohtaki, Kagawa Pref., 8.VIII.58, H. Toshima, P.H. Arnaud, Jr., collection C.A.S.Acc. (4: CASC); Shizunai, Hokkaido, 2.VII.1958, T. Nakane (2: MZPW); Matsubagawa, Kochi, 25.V.1952, K. Kojima (2: TNC); Kumogahata, Kyoto, 8.VI.1954, T. Nakane (2: TNC); Mt. Ariake, Tsushima, 5.IX.1964, T. Nakane (1: MZPW); Haha, Yahala City, 30.V.1965, M. Ueda (1: TNC); Fukui, Taniyama, Oono, 8.VI.1975, H. Sasaji (1: MZPW); same but 24.VI.1982 (1: BLFU); Fukui Pref., 8.VIII.1979, H. Sasaji leg. (1: BLFU); Fukui, Okochi, Imajo, 17.VI.1973, H. Sasaji (1: BLFU); Mt. Oshiba, Fukui Pref. 3.VI.1979, H. Sasaji leg. (2: BLFU); Koike, Oono, Fukui Pref., 31.VII.1982, H. Sasaji leg. (1: BLFU); **China:** Shanghai – coll. Reitter (1: TMB).

Endomychus pakistanicus sp. nov.
(Figs 78, 80, 82, 86)

Diagnosis. This species can be easily recognized by its uniformly blackish-brown body with dark greenish shade, and the pronotal shape which is widest at its apical third.

Description. Length 3.75–3.95 mm. Body elongate, 1.74–1.80 × as long as wide. Pronotum (Fig. 78) 0.88–0.94 mm long, 1.50–1.59 mm wide; 0.58–0.59 × as long as wide; anterior angles of pronotum rounded, hind angles acute; side margins narrowly bordered. Scutellum comparatively wide, rounded at apex. Prosternal process (Fig. 82) not very long, almost parallel-sided, rounded at apex. Elytra

2.55–2.75 mm long, 2.10–2.28 mm wide; 2.93 × as long as pronotum, 1.39–1.43 × as wide as pronotum. Terminal maxillary palpomere cylindrical, narrower towards its apex (Fig. 86). Aedeagus as in Fig. 80.

Types. Holotype: “Pakistan, Pass zw. Reshian u. Leepa, 2700–3000 m, 20.VIII.–5.IX.1988, (Distr. Muzaffarabad), Azad Jammu and Kashmir, Heinz leg.” (SMNS). Paratype: same data as holotype (SMNS).

Endomychus micrus sp. nov.
(Figs 2, 81, 83–84, 87, 89)

Diagnosis. This is the smallest species of *Endomychus* and is recognized by its size, broadly oval body and peculiar colouration: dark brown body with antennae, legs, mouthparts, prosternum and sides of pronotum yellowish.

Description. Length 3.50–3.70 mm. Body oval, strongly shiny; 1.60–1.65 × as long as wide. Pronotum (Fig. 81) widest at base, weakly narrower towards anterior margin; 0.91–0.97 mm long, 1.53–1.62 mm wide; 0.58–0.61 × as long as wide. Anterior angles produced, acutely rounded, side margins narrowly bordered. Prosternal process (Fig. 84) comparatively short, distinctly widened behind the front coxae, weakly rounded apically. Scutellum rounded at apex. Elytra (Fig. 89) 2.40–2.53 mm long, 2.20–2.25 mm wide; 2.55–2.70 × as long as pronotum, 1.40–1.45 × as wide as pronotum. Punctures on body very fine. Terminal maxillary palpomere (Fig. 87) elongate, subcylindrical, rounded apically. Aedeagus as in Fig. 83.

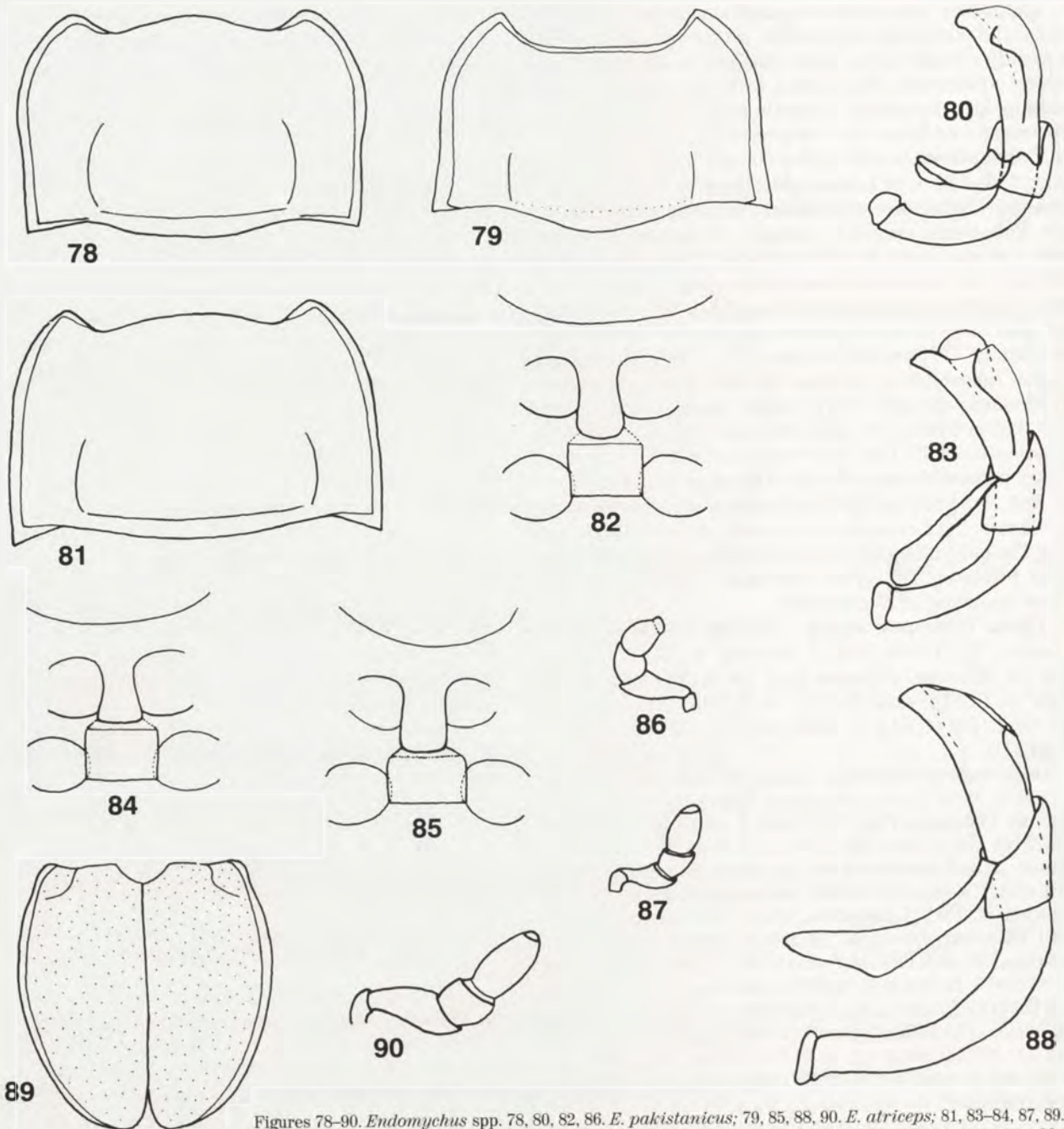
Types. Holotype ♂: “Pakistan, Swat Malam Jabba, 9.V.1983, 2300–2400 m, Besuchet, Löbl” (MHNG); paratypes: same data as holotype (4: MNHG, 1: MZPW); “Dir Lawarai Pass, 2700 m, 21.V.1983, Besuchet, Löbl” (1: MNHG, 1: MZPW).

Endomychus atriceps Pic
(Figs 79, 85, 88, 90)

Endomychus atriceps, Pic: 1932: 25. Holotype: Cambodia; MNHN, examined. – Mader 1936: 99; Strohecker 1953: 113.

Diagnosis. The relatively large size of this species and its uniformly light brown body with ventral surface slightly darker, separate it from most other species of *Endomychus*. Its colouration is similar to *E. flavus* and *E. atripes*. It differs from *E. flavus* by its size, more oval and less convex body and by absence of any spots on the elytra. It differs from *E. atripes* in having pronotal basal sulcus hardly visible and elongate terminal maxillary palpomere.

Description. Length 6.00 mm. Body oblong-oval, moderately convex; 1.57 × as long as wide; light brown, head, antennae and legs, except tarsi, black; tarsi brown. Pronotum (Fig. 79) 1.17 mm long, 2.75 mm wide; 0.43 × as long as wide; side margins comparatively broadly bordered, anterior angles acute; scutellum small, finely acute apically. Prosternal process (Fig. 85) widely separates front coxae, almost parallel-sided; truncate at apex. Punctures on pronotum finer than those on head or elytra. Elytra 4.38 mm long, 3.78 mm wide; 3.74 × as long as pronotum, 1.37 × as wide as pronotum. Terminal maxillary palpomere (Fig. 90) elongate, cylindrical, rounded apically. Aedeagus as in Fig. 88.



Figures 78–90. *Endomychus* spp. 78, 80, 82, 86. *E. pakistanicus*; 79, 85, 88, 90. *E. atriceps*; 81, 83–84, 87, 89. *E. micrus*. 78–79, 81. Outline of pronotum. 80, 83, 88. Aedeagus, lateral. 82, 84–85. Pro- and mesosternum. 86–87, 90. Maxillary palp. 89. Outline of elytra.

Types. Holotype ♂: Cambodia – “Museum Paris, Cambodge (Vitalis Sc. Salvaza), coll. J. Chatanay 1914/ *Endomychus* sp. (immature)/ *Endomychus atriceps* n. sp. M. Pic det.” (MNHN).

Endomychus divisus Arrow
(Figs 91, 96–98)

Endomychus divisus Arrow, 1920a: 334. Lectotype, here designated: Vietnam; BMNH, examined. – Arrow 1925: 358, 1928: 355; Mader 1936: 99; Strohecker 1953: 114.

Diagnosis. This species is similar to *E. sauteri* and *E. tonkineus* because of the body colouration. It differs from them in having subcylindrical shape of the terminal maxillary palpomere, larger size and more elongate body.

Description. Length 4.44–4.63 mm; body elongate, moderately convex; 1.76–1.87 × as long as wide; orange-brown with head, pronotum, scutellum, antennae, legs, prosternum and edges of mesosternum black. Pronotum (Fig. 91) 0.86–0.92 mm long, 1.75–1.90 mm wide; 0.48–0.49 × as long as wide; side margins rather strongly bordered, anterior angles acutely rounded, basal and lateral sulci distinct;

punctures on pronotum finer than those on elytra, where punctation is not very dense but coarse; scutellum rounded at its apex. Prosternal process (Fig. 97) widely separates front coxae (about $0.85 \times$ as broad as coxal diameter), rounded at apex. Elytra $3.35\text{--}3.50$ mm long, $2.38\text{--}2.63$ mm wide; $3.80\text{--}3.88 \times$ as long as pronotum, $1.36\text{--}1.40 \times$ as wide as pronotum. Terminal maxillary palpomere (Fig. 98) stout, subcylindrical, obliquely truncate. Aedeagus as in Fig. 96.

Types. Lectotype ♂: "Indo-China, R.V. de Salvaza, 1918-1/ Haut Mekong, Pou Hai Katoui, 6.IV.1918, R.V. de Salvaza/ syntype/" (BMNH); paralectotypes: "Indo China, R.V. de Salvaza, 1918-1/ Luang Prabang, Ban Thiou, 18.III.1918, R.V. de Salvaza/ syntype/" (2: BMNH);

Other material examined. Vietnam: That Khe/ Museum Paris, coll. M. Pic/ *Endomychus bicolor*/ (3: MNHN); Dang Khao, 29.XI.1971, No. 163, leg. Gy. Topal (1: FSCA); same (2: TMB); Tonkin, Montes Mauson, IV, V, 2-3000', H Fruhstorfer (1: FSCA); Tonkin, Hoa-Binh, lg. de Cooman, 1953 coll. Heikertinger, Museum Frey, München (1: FSCA).

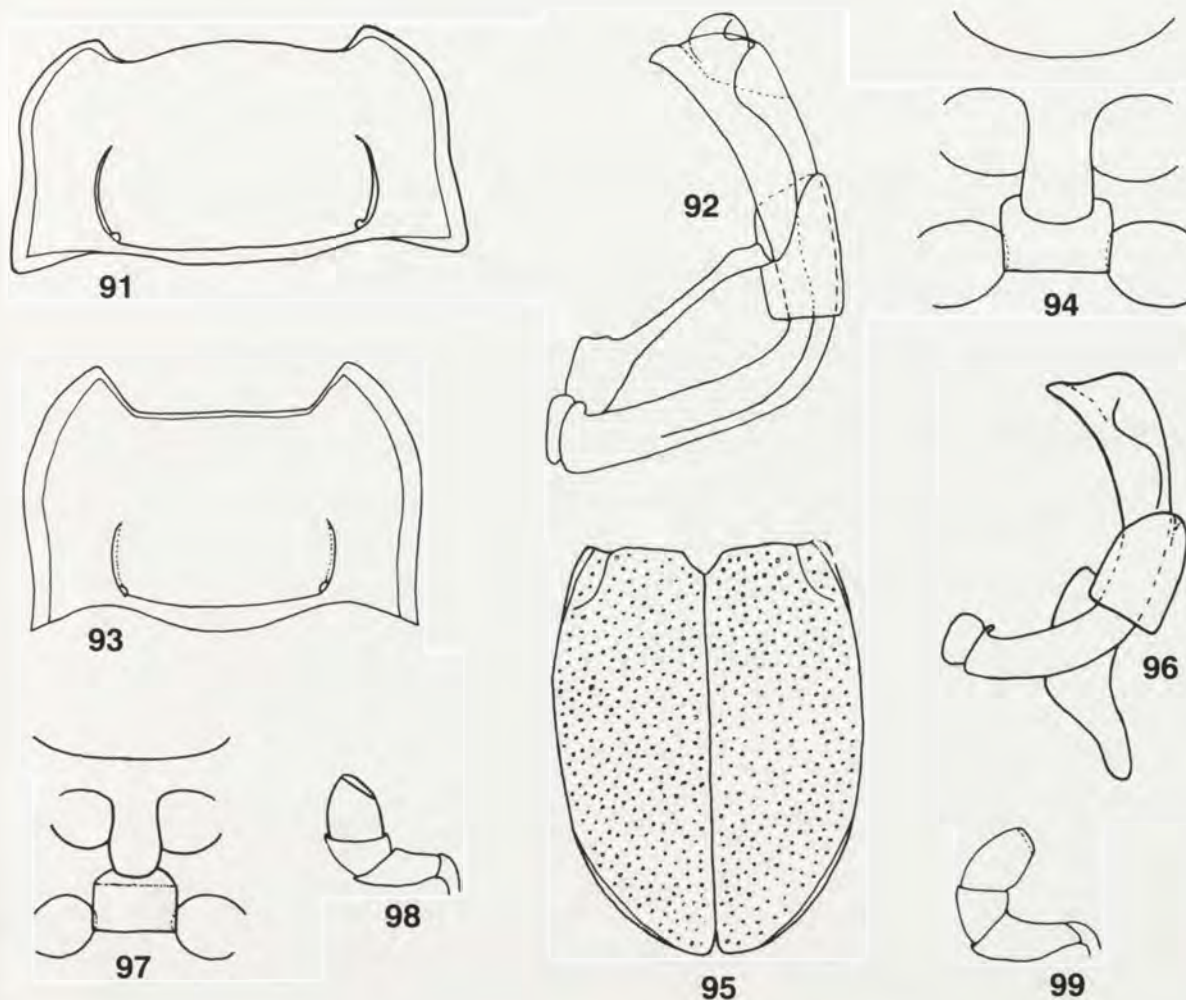
Endomychus muelleri (Mader)
(Figs 92-95, 99)

Caenomychus mülleri Mader, 1955: 71. Lectotype, here designated: China, Fukien; TMB, examined.

Endomychus mülleri: Strohecker 1953: 114.

Diagnosis. This is the largest species of *Endomychus*. It is most similar to *E. nigriceps* which it resembles in colouration of dorsum, size and shape of body, but differs in having punctation on pronotum almost as dense as on elytra, although weakly finer; and ventral surface with prosternum, mesosternum, metasternum and first abdominal ventrite darker than the rest of the body or black.

Description. Length $6.10\text{--}6.56$ mm. Body moderately convex, elongate; $1.74\text{--}1.85 \times$ as long as wide; dark brown, with head, antennae, legs, prosternum, mesosternum, metasternum and first abdominal ventrite darker than rest of body or black. Pronotum (Fig. 93) $1.37\text{--}1.50$ mm long,



Figures 91-99. *Endomychus* spp. 91, 96-98. *E. divisus*; 92, 93-95, 99. *E. muelleri*. 91, 93. Outline of pronotum. 92, 96. Aedeagus, lateral. 95. Outline of elytra. 94, 97. Pro- and mesosternum. 98-99. Maxillary palp.

2.44–2.62 mm wide; 0.54–0.60 × as long as wide; widest in about a half of its length. Lateral margins distinctly bordered; anterior angles strongly produced, acute; basal sulcus distinct; punctures on pronotum slightly finer than those on elytra, where punctation is dense and comparatively coarse. Scutellum rather small, acute apically. Prosternal process (Fig. 94), about 0.87 × as wide as coxal diameter, almost parallel-sided, comparatively long and broad, rounded apically. Elytra (Fig. 95) 4.56–5.00 mm long, 3.44–3.56 mm wide; 3.30–3.47 × as long as pronotum, 1.36–1.44 × as wide as pronotum. Punctation on elytra very dense and comparatively coarse. Terminal maxillary palpomere elongate, rounded at apex (Fig. 99). Aedeagus as in Fig. 92.

Types. Lectotype ♂: **China** – “Paratypus, *Caenomychus mülleri*, Mader, 1955/ Kuantun, Fukien, China, 2.XI.46, Tschung Sen/ Paratype, *Caenomychus mülleri*, det. Mader 1955” (TMB); paralectotypes: ♀ – same inf. on three labels and one more label – /*Caenomychus mülleri* Mader/ (1: TMB); “Kuantun, Fukien, China, 2.XI.46 (Tschung Sen.)/

Paratypus” (3: MNHG); same end one more label – /*Caenomychus mülleri*, Mader, paratypus/ (1: MNHG).

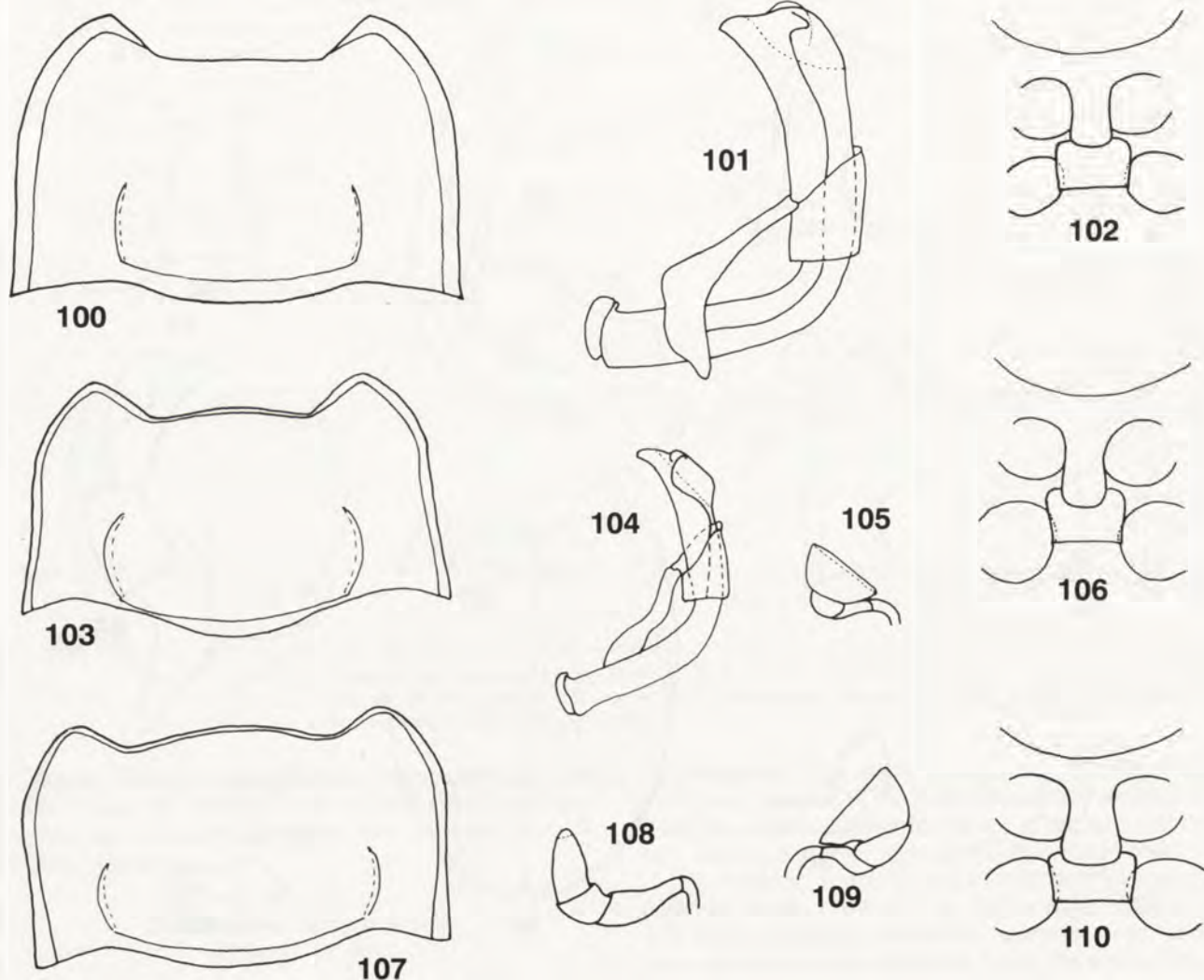
Comment. Although the type specimens were labelled as paratypes, a holotype was not selected in the original description, which referred only to “10 Cotypen”.

Other material examined. **China:** Fukien, S. China. Shaowu, Tachuland, 7.X.1943, T.C. Maa Collector (3: BPBM); same but 11.XI.1942 (2: BPBM); same but Tachufung, 27.X.1942, T.C. Maa, L. Gressitt collection (1: CASC).

Endomychus nigriceps Chûjô
(Figs 100–102, 108)

Endomychus nigriceps Chûjô, 1938: 404. Holotype: Taiwan; Entomological Laboratory, Dept. Agriculture in Taichun City, Taiwan, not examined. – Strohecker 1953: 114.

Diagnosis. This species differs from *E. muelleri* (which is most similar) by the punctation on the pronotum and on elytra being very fine, and ventral surface with pro-



Figures 100–110. *Endomychus* spp. 100–102, 108. *E. nigriceps*; 103, 106, 109. *E. nigricornis*; 104–105, 107, 110. *E. sauteri*. 100, 103, 107. Outline of pronotum. 101, 104. Aedeagus, lateral. 102, 106, 110. Pro- and mesosternum. 105, 108–109. Maxillary palp.

and mesosternum, sometimes metasternum and basal portion of first abdominal ventrite black.

Description. Length 5.50–6.10 mm. Body elongate; 1.78–1.88 × as long as wide; reddish-brown with head, antennae, legs, pro- and mesosternum, sometimes metasternum and basal portion of first abdominal ventrite black. Pronotum (Fig. 100) 1.16–1.34 mm long, 2.06–2.44 mm wide; 0.55–0.56 × as long as wide; anterior angles acute, lateral margins bordered; basal sulcus distinct. Scutellum weakly acute apically, nearly heart-shaped. Punctuation on pronotum very fine almost as those on elytra. Prosternal process (Fig. 102) moderately broad (about 0.87 × as broad as coxal diameter) and long, almost parallel-sided, weakly rounded at apex. Elytra 4.20–4.60 mm long, 2.91–3.44 mm wide; 3.45–3.60 × as long as pronotum, 1.41 × as wide as pronotum. Terminal maxillary palpomere (Fig. 108) elongate, cylindrical, rounded apically. Aedeagus as in Fig. 101.

Note. Locality of types preservation of *E. nigriceps*, *E. nigricornis* and *E. sauteri* – according to the letter from Dr. Michitaka Chūjō (Kyushu University).

Material examined. Taiwan: Meifeng, 15.V.1974, K. Akiyama (1: BLFU); Mt. Lalashan, Taoyuan Hsien, 21.–24.V.1980, H. Makihara (1: MZPW).

Endomychus nigricornis Chūjō
(Figs 103, 106, 109)

Endomychus nigricornis Chūjō, 1938: 405. Syntypes: Taiwan; Entomological Laboratory, Dept. Agriculture in Taichun City, Taiwan, not examined. – Strohecker 1953: 114.

Diagnosis. This species is most similar to *E. atripes*, *E. flavus* and *E. mroczkowskii*. Smaller size and more elongate body separate it from *E. atripes*; elytra without rows of black macropunctures distinguish it from *E. mroczkowskii*; smaller size, more transverse pronotum and absence of any spots on the elytra, separate it from *E. flavus*.

Description. Length 4.06–4.38 mm. Body comparatively convex, elongate; 1.73–1.76 × as long as wide; shiny, yellowish-brown with mouthparts darker; legs and antennae dark brown or blackish-brown, tarsi brown. Pronotum (Fig. 103) 0.91–0.94 mm long, 1.70–1.81 mm wide; 0.52–0.54 × as long as wide; anterior and hind angles produced, anterior angles finely rounded; lateral margins weakly bordered, basal sulcus rather distinct. Punctuation on pronotum finer than on head or elytra. Scutellum heart-shaped. Prosternal process (Fig. 106) moderately broad (about 0.83 × as wide as coxal diameter), almost parallel-sided, rounded at apex. Elytra 3.13–3.30 mm long, 2.31–2.53 mm wide; 3.44–3.52 × as long as pronotum, 1.37–1.40 × as wide as pronotum. Terminal maxillary palpomere (Fig. 109) enlarged at apex.

Material examined. Taiwan: Nanshanchi, Nantou Hsien, 2.X.1984, S. Osawa leg. (1: BLFU, 1: MZPW); Alishan, 2400 m, 11.VI.77, leg. J.U.S. Klapperich (1: MNHG).

Endomychus sauteri Chūjō
(Figs 104–105, 107, 110)

Endomychus sauteri Chūjō, 1938: 405. Syntypes: Taiwan; Entomological Laboratory, Dept. Agriculture in Taichun City, Taiwan, not examined. – Strohecker 1953: 114.

Diagnosis. This species is most similar to *E. tonkineus* and *E. divisus*. Shape of the terminal maxillary palpomere (Fig. 105), smaller size and strongly shiny body, separate it from *E. divisus*. More elongate body, less transverse pronotum, longer and slender antenna, and black scutellum distinguish it from *E. tonkineus*.

Description. Length 3.70–4.50 mm. Body elongate-oval; 1.74–1.82 × as long as wide; head, pronotum, scutellum, legs (tarsi brownish-black), prosternum and at least sides of mesosternum black; elytra, abdomen, metasternum yellowish-brown. Pronotum (Fig. 107) 0.81–0.97 mm long, 1.44–1.84 mm wide; 0.53–0.56 × as long as wide. Anterior angles of pronotum weakly rounded, lateral margins rather distinctly bordered, basal sulcus distinct. Punctuation on pronotum much finer than those on elytra or head. Scutellum elongate, acute apically. Prosternal process (Fig. 110) rather broad, about 0.87 × as broad as coxal diameter, moderately long, weakly widened behind front coxae, finely rounded apically. Elytra 2.70–3.40 mm long, 2.00–2.59 mm wide; 3.32–3.52 × as long as pronotum, 1.39–1.41 × as wide as pronotum. Terminal maxillary palpomere enlarged apically. Aedeagus as in Fig. 104.

Material examined. Taiwan: Nanshanchi, Nantou Hsien, 2.X.1984, S. Osawa leg. (1: BLFU, 1: MZPW).

Endomychus tomishimai Nakane
(Figs 111, 118, 121)

Endomychus tomishimai Nakane, 1994: 82. Holotype: Japan, Kyushu; TNC, examined.

Diagnosis. This species is distinctive by its colouration; the whole body is black with only the elytra, except humeral angles, and abdominal ventrites 3–6, brown.

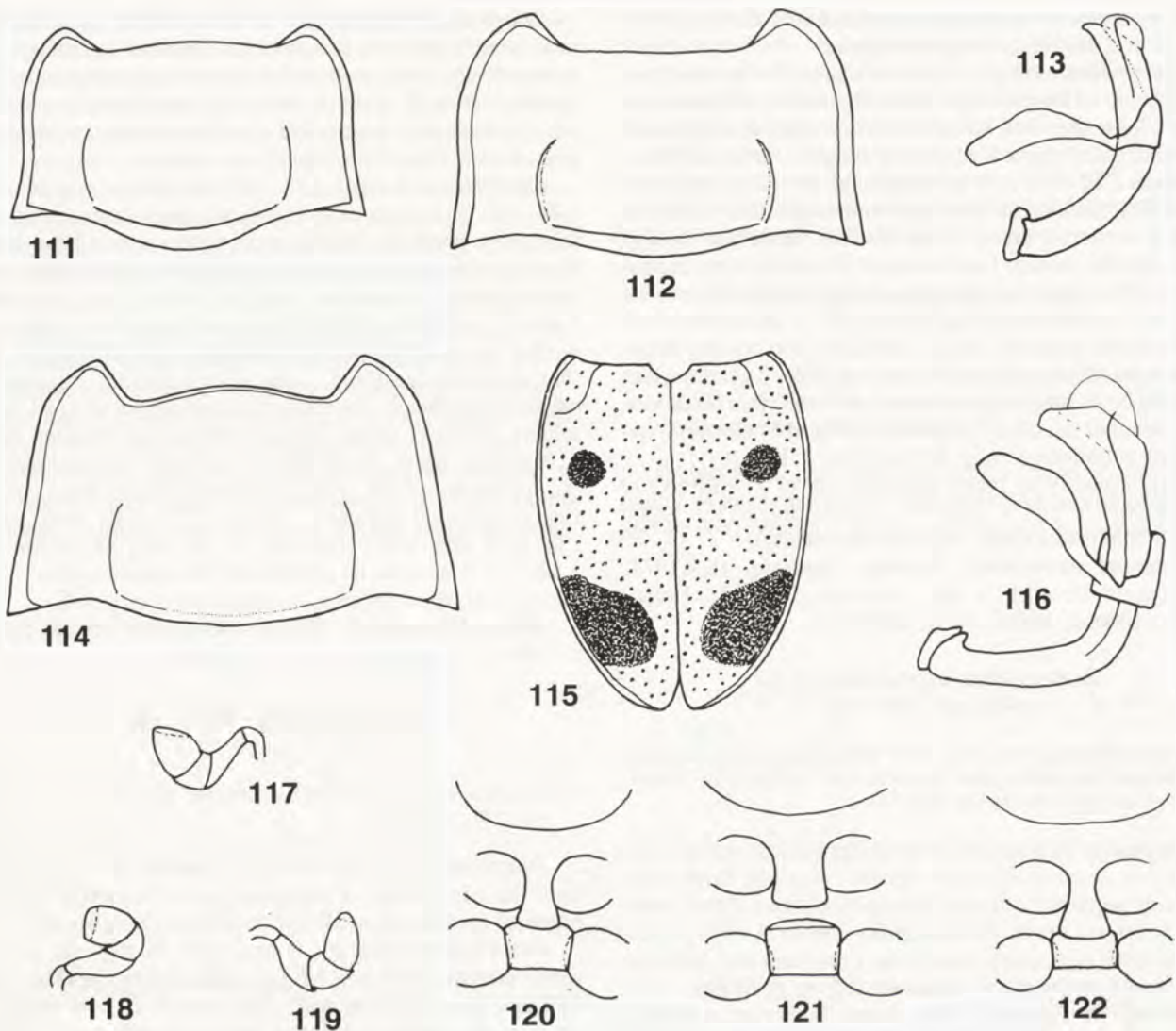
Description. Length 4.3 mm, body oblong-oval, moderately convex; 1.76 × as long as wide. Pronotum (Fig. 111) 0.97 mm long, 1.75 mm wide; 0.55 × as long as wide; lateral margins weakly bordered, anterior angles acutely rounded, basal sulcus distinct. Scutellum weakly transverse, acute apically. Prosternal process (Fig. 121) wide, moderately long, almost parallel-sided, truncate at its apex. Punctures on pronotum finer than on elytra, where they are distinct but not very dense. Elytra 3.25 mm long, 2.44 mm wide; 3.35 × as long as pronotum, 1.39 × as wide as pronotum. Terminal maxillary palpomere (Fig. 118) rather short and stout.

Types. Holotype ♀: "Japan, Shimizudani, Aso, Kumamoto Pref., Kyushu, 6.X.1993, Y. Tomishima leg." (TNC).

Endomychus biguttatus Say
(Figs 114–117, 122)

Endomychus biguttatus Say, 1824: 96. Type locality: E. North America. (Type material lost). – Gerstaecker 1857: 243; Mader 1936: 98; Strohecker 1953: 113.

Diagnosis. Size of spots on the elytra (Fig. 115) – posterior spots are about four times as big as anterior ones – easily separate this species from all other species of *Endomychus*.



Figures 111–122. *Endomychus* spp. 111, 118, 121. *E. tomishimai*; 112–113, 119–120. *E. limbatus*; 114–117, 122. *E. biguttatus*. 111–112, 114. Outline of pronotum. 113, 116. Aedeagus, lateral; 115. Outline of elytra. 117–119. Maxillary palp. 120–122. Pro- and mesosternum.

Description. Length 4.15–5.10 mm, body elongate, weakly convex; orange-brown with head, antennae, pronotum, scutellum, legs, prosternum and at least sides of mesosternum black; each elytron with two oval spots. Prosternal process (Fig. 122) about $0.80 \times$ as wide as coxal diameter, distinctly widened behind the front coxae, weakly rounded apically. Pronotum (Fig. 114) 0.94–1.05 mm long, 1.75–1.95 mm wide; $0.54\text{--}0.56 \times$ as long as wide; its anterior angles strongly produced, acutely rounded, side margins weakly bordered, basal sulcus hardly visible. Punctuation on pronotum finer than on elytra where it is rather dense and coarse. Elytra 3.13–3.85 mm long, 2.40–2.80 mm wide; $3.40\text{--}3.80 \times$ as long as pronotum, $1.35\text{--}1.43 \times$ as wide as pronotum. Terminal maxillary palpomere (Fig. 117) subcylindrical, obliquely truncate. Aedeagus as in Fig. 116.

Material examined. North America: Am. sept. (3: MZPW); N. Amer., 1892, 533 (2: MZPW).

Endomychus limbatus (Horn)

(Figs 112–113, 119–120)

Mycetina limbata Horn, 1870: 96. Holotype: USA, California; MCZC, not examined.

Mycetina endomychoides Fall, 1901: 304. Syntypes: USA, California; MCZC, not examined. Synonymy by Strohecker 1953: 114.

Aphorista limbata: Csiki 1910: 39.

Endomychus limbatus: Arrow 1920: 66; Strohecker 1953: 114.

Diagnosis. Uniformly dark brown body with fine pubescence (sometimes elytra lighter, with two large, black, oval spots on each elytron), separate this species from all its congeners.

Description. Length 3.40–4.20 mm. Body oval; $1.65\text{--}1.79 \times$ as long as wide; dark brown, or elytra may be lighter, then with two big black spots on each elytron; posterior spot bigger than anterior or the same size. Someti-

mes elytra dark brown as rest of body, only humeral angles and area around scutellum lighter. Dorsum with very fine pubescence. Pronotum (Fig. 112) 0.78–0.94 mm long, 1.50–1.75 mm wide; 0.50–0.55 × as long as wide. Anterior angles produced, weakly rounded, lateral margins moderately bordered. Basal sulcus distinct. Prosternal process (Fig. 120) distinctly widened behind the front coxae, weakly rounded at apex. Elytra 2.62–3.20 mm long, 2.00–2.50 mm wide; 3.36–3.97 × as long as pronotum, 1.29–1.47 × as wide as pronotum. Terminal maxillary palpomere as in Fig. 119. Aedeagus as in Fig. 113.

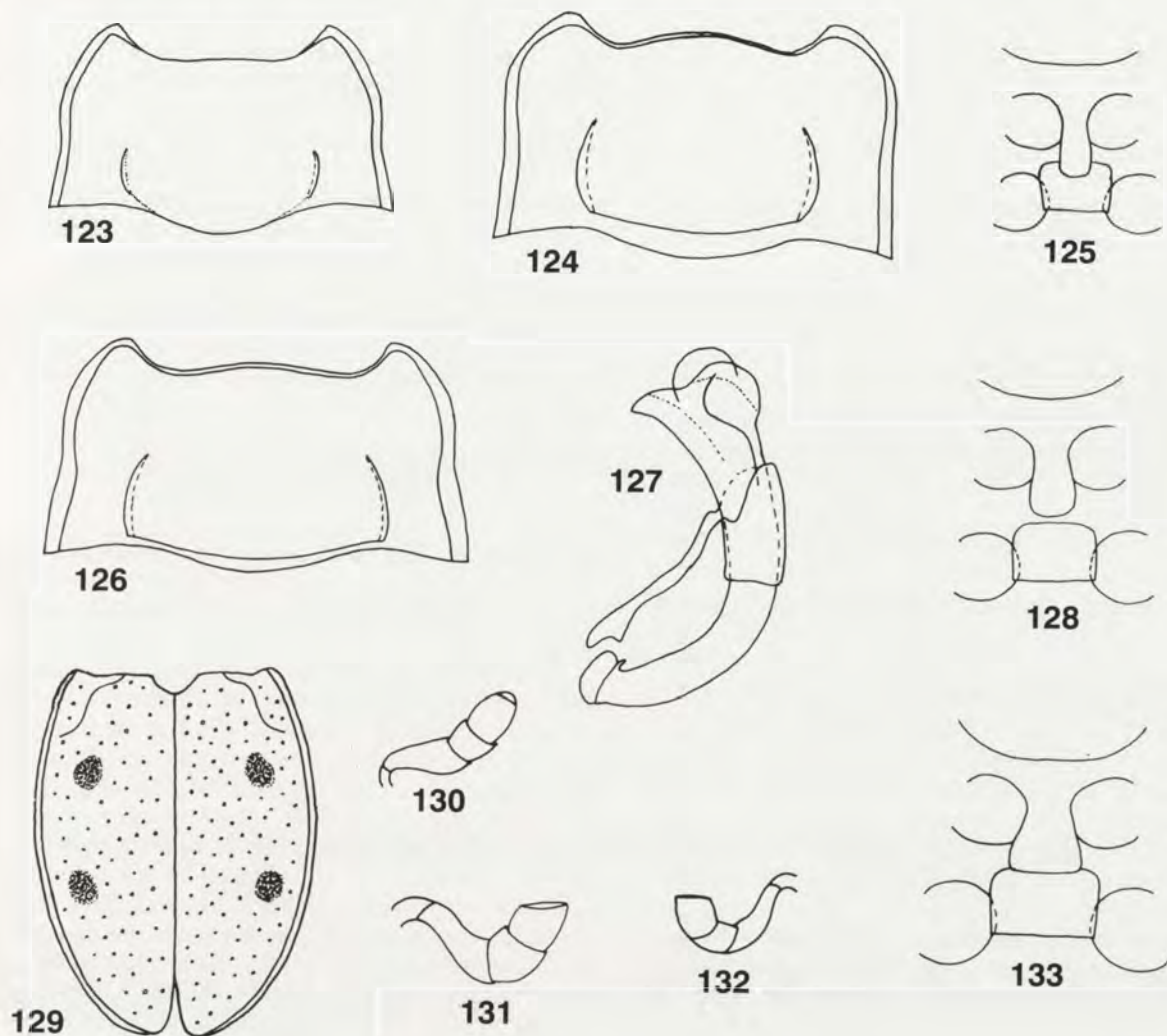
Material examined. USA, California: Pohono Trail, Alt. 7000–7750 ft. 13.VI.1931 (2: USNM); same but 18.VI.1931 (1: USNM); 6 mi. N.W. Chester on Benner Ck., Plumas Co., 11.VI.1965, Terry L. Erwin collector, acc. no. 276 (4: USNM); Mt. Lassen Nat. Park Cal., 8000 ft, 15.VII.1945, A.T. McClay collector (1: USNM); Hantington Lake, 26.VII.1940, same coll. (1: USNM); Oregon: Mt. Hood, Gov't Camp 4000', 8.V.1939, H.P. Lanchester (1: USNM); ALTA. Waterton Lks. N.P., Rowe Lks Tr. 20.–27.1980, 6500', J.M.

Campbell. Coll. J. Pakaluk (1: USNM); same but Upper Rowe Lk., 20.VI.1980, J.M. Campbell, same coll. (1: USNM); B.C., Blackwall Pk. Manning Prov. Pk. 6000–6750', 20.VI.1968, Campbell and Smetana, same coll. (1: USNM).

Endomychus slipinski sp. nov.
(Figs 123, 130, 133)

Diagnosis. This species is most similar to *E. mroczkowskii* and *E. nigricornis*. Shape of the terminal maxillary palpomere, absent of two rows of black macropunctures on the elytra, and dorsal surface of the head black, separate it from *E. mroczkowskii*. More oval body, more transverse pronotum, shape of the terminal maxillary palpomere, shape of the prosternum and colouration of the head, distinguish it from *E. nigricornis*.

Description. Length 4.38 mm. Body rather oval, moderately convex; 1.65 × as long as wide; orange-brown with



Figures 123–133. *Endomychus* spp. 123, 130, 133. *E. slipinski*; 126–129, 131. *E. punctatus*; 124–125, 132. *E. chinensis*. 123–124, 126. Outline of pronotum. 125, 128, 133. Pro- and mesosternum. 130–132. Maxillary palp. 127. Aedeagus. 129. Outline of elytra.

head except gular area, antennae and legs black. Pronotum (Fig. 123) 0.88 mm long, 1.81 mm wide; $0.49 \times$ as long as wide; side margins rather narrowly bordered, anterior angles acutely rounded; basal sulcus hardly visible, lateral sulci distinct; punctation on pronotum fine. Scutellum acute apically. Prosternal process (Fig. 133) comparatively short, broadly separates front coxae (almost as broad as coxal diameter), distinctly widened behind them, truncate apically. Elytra 3.31 mm long, 2.66 mm wide; $3.76 \times$ as long as pronotum, $1.47 \times$ as wide as pronotum; punctures on elytra weakly coarser than those on pronotum. Terminal maxillary palpomere (Fig. 130) weakly elongate, cylindrical, rounded at apex.

This species is dedicated to my teacher and friend Professor Adam Ślipiński whose help in preparation of this paper was invaluable.

Types. Holotype ♀: "N. Burma: Adung Valley, 6000ft. II-V - 1931. Lord Cranbrook. B.M. 1932-196." (BMNH).

Endomychus punctatus Arrow stat. nov.
(Figs 126-129, 131)

Endomychus divisus punctatus Arrow, 1928: 355. Lectotype, here designated: Vietnam; BMNH, examined.

Endomychus divisus: Strohecker 1953: 114.

Diagnosis. This species resembles *E. divisus* and *E. chinensis*. More convex, less elongate body, narrower pronotum and two small, oval, black spots on each elytron, separate this species from *E. divisus*. More transverse pronotum, longer and narrower prosternal process, intercoxal process of mesosternum yellow or orange, distinguish it from *E. chinensis*.

Description. Length 4.00-4.80 mm; body elongate, convex; $1.73-1.78 \times$ as long as wide; yellow or orange with head, pronotum, scutellum, antennae, legs, prosternum and edges of mesosternum black or brownish-black; each elytron with two small, oval, black spots (Fig. 129). Pronotum (Fig. 126) 0.81-1.00 mm long, 1.56-1.94 mm wide; $0.50-0.53 \times$ as long as wide; side margins distinctly bordered, anterior angles acutely rounded; basal and lateral sulci distinct; punctures on pronotum much finer than those on elytra. Scutellum rounded apically. Prosternal process (Fig. 128) about $0.90 \times$ as broad as coxal diameter, weakly rounded at its apex. Elytra 3.00-3.70 mm long, 2.25-2.70 mm wide; $3.62-3.72 \times$ as long as pronotum, $1.41-1.44 \times$ as wide as pronotum. Punctation on elytra comparatively coarse but not very dense. Terminal maxillary palpomere (Fig. 131) short, subcylindrical, obliquely truncate apically. Aedeagus as in Fig. 127.

Types. Lectotype ♂: Vietnam - "*Endomychus divisus* Arr. v. *punctatus* Arr./ Museum Paris, Tonkin, Chapa (Vitalis de Salvaza), coll. J. Chatanay 1914/ syntype/ cotype" (BMNH).

Other material examined. China: Tatsienlu - Kiulung, Em. Reitter (3: DEI); same (2: NMP); same and ex. 2nd coll. Edmund Reitter, gift of O. Bryant (1: CASC); Kiautschau (5: NMP); same (4: TMB); same (5: FSCA);

Endomychus chinensis Csiki
(Figs 124-125, 132)

Endomychus chinensis Csiki, 1937: 174. Holotype: China, Fukien: TMB, examined. - Strohecker 1953: 113.

Diagnosis. This species is most similar to *E. punctatus* and *E. divisus*. Decidedly longer and narrower prosternal process, black mesosternum and more elongate pronotum, separate it from these two species and from other species of *Endomychus*.

Description. Length 4.80-5.00 mm; body elongate, moderately convex; $1.73-1.74 \times$ as long as wide; reddish-brown with head, pronotum, scutellum, pro-, mesosternum, antennae and legs black. Each elytron with two small, oval, black spots. Pronotum (Fig. 124) 1.00-1.03 mm long, 1.83-1.86 mm wide; $0.54-0.56 \times$ as long as wide; side margins decidedly bordered; basal and lateral sulci distinct; punctation on elytra moderately dense and rather coarse; punctation on pronotum finer. Scutellum rounded at its apex. Prosternal process (Fig. 125) about $0.54 \times$ as broad as coxal diameter, comparatively long, almost parallel-sided, weakly rounded apically. Elytra 3.75 mm long, 2.75-2.76 mm wide; $3.64-3.75 \times$ as long as pronotum, $1.47-1.51 \times$ as wide as pronotum. Terminal maxillary palpomere (Fig. 132) short, subcylindrical, obliquely truncate.

Note. As well as the holotype, I examined one female specimen from Taiwan, which seems to be conspecific with *E. chinensis*; the only apparent difference from the holotype, is an absence of any spots on the elytra.

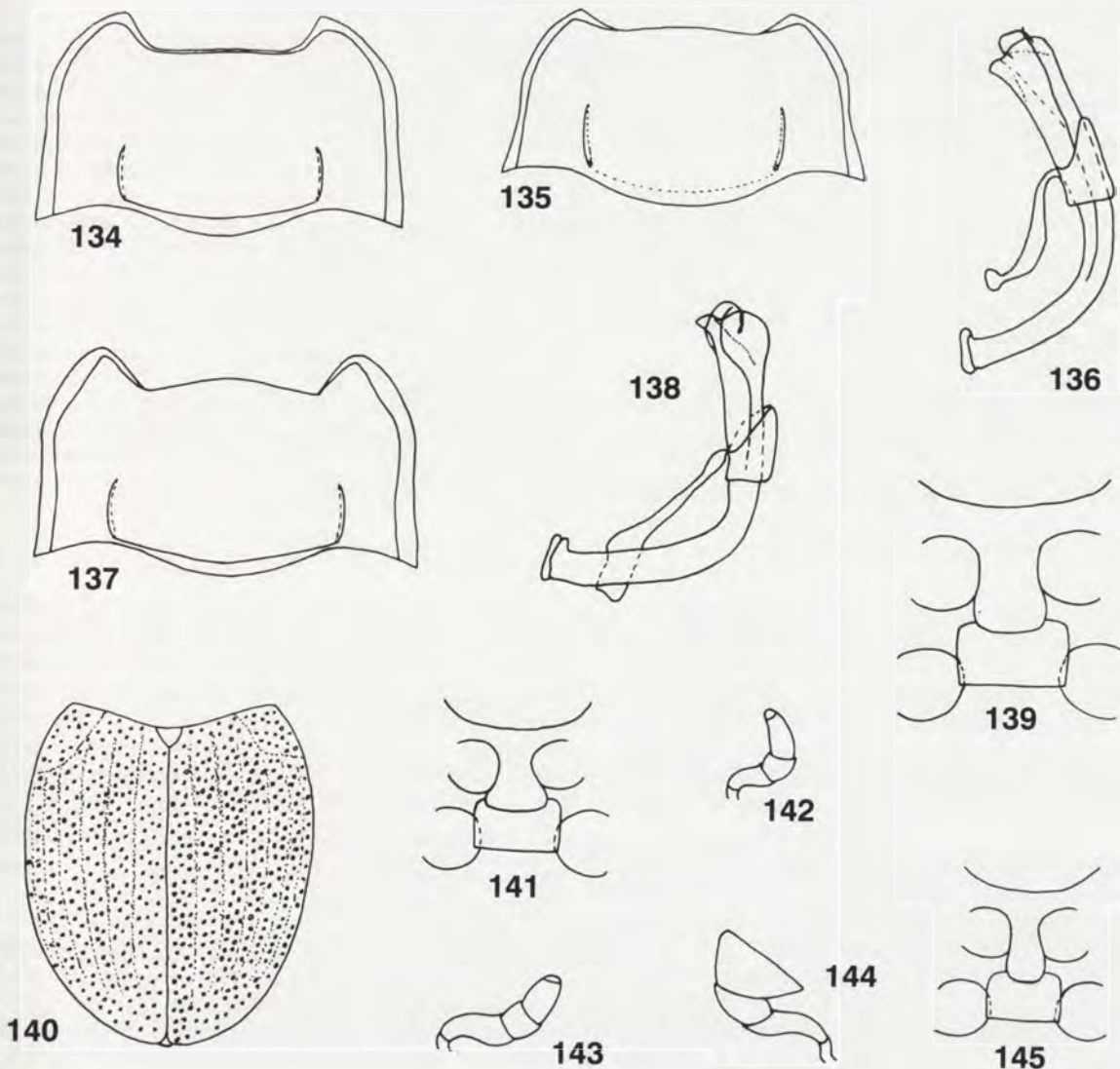
Types. Holotype: China - "Monotypus, *Endomychus chinensis* Csiki, 1937/ China/ Fukien/ coll. E. Csiki" (TMB);

Other material examined. Taiwan: Hui-sun Experimental Forest, Kuan Tao River (E of Pu-li), 23.X.1970, J.E. Tobler I. cllr (CASC).

Endomychus rogeri sp. nov.
(Figs 134, 136, 142, 145)

Diagnosis. This is the only known species of *Endomychus* with 4 small, oval, black spots on each elytron. These peculiar markings easily separate it from other species of this genus.

Description. Length 3.94 mm; body oblong-oval, convex; $1.65 \times$ as long as wide; reddish-brown with head, pronotum, scutellum, antennae, legs, prosternum and mesopleura brownish-black (tarsi slightly lighter); each elytron with four small, oval, black spots. Pronotum (Fig. 134) 0.81 mm long, 1.72 mm wide; $0.47 \times$ as long as wide; side margins rather strongly bordered, anterior angles weakly rounded, almost acute; basal and lateral sulci distinct; punctation on pronotum slightly finer than those on elytra, where punctures are comparatively coarse, but not very dense. Prosternal process (Fig. 145) moderately broad (about $0.75 \times$ as broad as coxal diameter) and rather long, rounded apically. Scutellum acute at its apex. Elytra 3.19 mm long, 2.38 mm wide; $3.94 \times$ as long as pronotum, $1.39 \times$ as wide as pronotum. Terminal maxillary palpomere (Fig. 142) elongate, cylindrical, narrowing towards its apex, rounded. Aedeagus as in Fig. 136.



Figures 134–145. *Endomychus* spp. 134, 136, 142, 145. *E. rogeri*; 137–139, 144. *E. tonkineus*; 135, 140–141, 143. *E. agatae*. 134–135, 137. Outline of pronotum. 136, 138. Aedeagus. 139, 141, 145. Pro- and mesosternum. 140. Outline of elytra. 142–144. Maxillary palp.

This species is dedicated to Dr. Roger Booth, who recognized this new species and helped in many ways in this study.

Types. Holotype ♂: Vietnam – “Tonkin: Hoa-Binh. A. de Cooman. B.M. 1932–33/ *Endomychus* n. sp., det. R.G. Booth, 1997.” (BMNH)

Endomychus tonkineus Pic
(Figs 137–139, 144)

Endomychus tonkineus Pic, 1922: 9. Lectotype, here designated: Vietnam; MNHN, examined.

Endomychus divisus: Strohecker 1953: 114.

Diagnosis. This species is most similar to *E. sauteri* and *E. divisus*. From *E. sauteri* it differs in having less elongate body, more transverse pronotum, shorter and more stout antenna, and dark brown (not black) scutellum.

Shape of the terminal maxillary palpomere and more oval body separate this species from *E. divisus*.

Description. Length 3.45–4.25 mm; body rather oval, moderately convex; 1.64–1.73 × as long as wide; reddish-brown with head, antennae, legs (except tarsi), pronotum, prosternum and edges of mesosternum black or brownish-black, tarsi brown; scutellum slightly darker than elytra; metasternum dark brown. Pronotum (Fig. 137) 0.75–0.97 mm long, 1.5–1.87 mm wide; 0.50–0.52 × as long as wide; side margins broadly bordered, anterior angles strongly produced, almost acute or finely rounded; basal and lateral sulci distinct; punctures on pronotum finer than those on elytra, where punctation is comparatively dense but not very coarse. Scutellum weakly acute apically. Prosternal process (Fig. 139) broad (about 0.92 × as broad as coxal diameter), weakly rounded apically. Elytra 2.75–3.30 mm long, 2.00–2.55 mm wide; 3.40–3.70 × as long as pronotum,

1.33–1.36 × as wide as pronotum. Terminal maxillary palpomere (Fig. 144) enlarged apically. Aedeagus as in Fig. 138.

Types. Lectotype: Vietnam – “Hoa-Binh, Tonkin/ type/ Coomani Pic/ Type/ Muséum Paris, coll. M. Pic/ *Endomychus tonkineus* n. sp./”, and one more label, which is impossible to spell out (MNHN).

Other material examined. Vietnam: Tonkin, Hoa-Binh, A. de Cooman, B.M. 1935–79. (11: BMNH, 2: MZPW); same and *Endomychus divisus* Arrow, R.J.W. Aldridge, det. 1979 (1: BMNH); same but 1940–13 (3: BMNH, 1: MZPW); same but 1930–369 (1: BMNH); same but 1929–300 (1: BMNH); same but 1932–33, and *Endomychus tonkineus*, Pic, determined from description. G.J.A. (1: BMNH).

Endomychus agatae sp. nov.

(Figs 135, 140–141, 143)

Diagnosis. This species is distinctive by its colouration, dark reddish-brown body with antennae, dorsal surface of head and mouthparts darker, and each elytron with six slender, elongate, blackish rows of pigmented spots (Fig. 140).

Description. Length 4.00 mm; body oblong-oval, convex; 1.73 × as long as wide. Pronotum (Fig. 135) 0.78 mm long, 1.66 mm wide; 0.50 × as long as wide; side margins rather narrowly bordered, anterior angles weakly produced, acutely rounded; basal sulcus invisible, lateral sulci distinct; punctation on pronotum comparatively dense, almost as on elytra, but slightly finer. Scutellum acute apically. Prosternal process (Fig. 141) rather short and broad (about 0.94 × as broad as coxal diameter), distinctly widened behind front coxae, truncate apically. Elytra 2.88 mm long, 2.31 mm wide; 3.69 × as long as pronotum, 1.39 × as wide as pronotum. Terminal maxillary palpomere (Fig. 143) elongate, cylindrical, rounded at its apex.

This species is dedicated to my dearest daughter Agata Tomaszewska.

Types. Holotype ♀. India – “Assam: Mishmi Hills, Dalai Valley, Cha Che, 30.XI.1936/ Alt 6000 ft. M. Steele. B.M. 1937–324.” (BMNH).

SPECIES INCERTAE SEDIS

Endomychus rufipes, Pic 1946: 80. Holotype: Kenya, mountains Aberdare; holotype not found.

Original description: “Oblongo-subovatus, postice paulo latior, nitidus, glaber, rufo-testaceus. Antennis nigris, articulis 2 basibus rufis, his gracilibus, articulo octo latiore et tribus ultimis dilatatis. Thorace breve et lato, angulis anticis latis et paulo prolongatis, lateraliter fere recto et anguste marginato, breve sulcato, in disco parum fortiter punctato. Elythris thorace paulo latioribus, sat brevibus, lateraliter, subarcuatis et late marginatis, sat minute et parum dense punctatis. Pedibus sat validis, tibiis posticis postice latioribus. Long 4 mm.”

Pic described this species from the single specimen, which could not be located at the Paris National Museum, where it ought to be deposited.

There are no species of *Endomychus* known from the type area. From Pic's brief, Latin description I could not decide if this was a proper *Endomychus* species, or not.

Endomychus nigripes Mader, 1955: 70. Holotype: China, Fukien; holotype not available for examination.

Original description: “Hell ziegelrot, Fühler und Beine schwarz, Tarsen jedoch mehr oder minder ziegelrot. Länglich-oval, mässig gewölbt, glänzend. Punktierung auf dem Kopfe fein und dichter, auf dem Halsschild sehr fein, auf den Flügeldecken ebenfalls fein, aber deutlicher. Halsschild an der Basis so breit als die beiden Schulterbeulen voneinander entfernt sind. Seiten nach vorne verengt, erst schwach einwärts konkav, dann nach aussen leicht konvex. Vorderwinkel etwas stumpfeckig, der Seitenrand schmal aufgewulstet, diese Wulst nach vorne erkennbar noch schmaler werdend. Endglied der Kieferfaster gegen zu Spitze verbreitert, breit beilförmig. Basalstrichel des Halsschildes ziemlich scharf ausgeprägt, bis zur Mitte reichend. Länge: 6 mm.”

Mader described this species from a single specimen, which should be deposited in Klapperich's or in Mader's collection. According to Mader's description and notes, *E. nigripes* is very similar to *Endomychus atrimembris* Pic, 1922, described from India, but at present *E. atrimembris* is the species of genus *Mycetina*. Without a detailed study of *E. nigripes* holotype, its status cannot be resolved.

ACKNOWLEDGEMENTS

I thank all the persons who kindly provided material for this study (cf. Material and methods). For critically and carefully reviewing this paper and for useful comments on the manuscript I am grateful to Roger Booth. Reviews by James Pakaluk and Beata Pokryszko significantly improved the manuscript. Michitaka Chūjō is acknowledged for providing information on locality of types preservation of three Formosan species. Special thanks to Adam Ślipiński for his kind continuous help during preparation of this paper.

REFERENCES

- Arrow, G.J. 1920. A contributions to the classification of the coleopterous family Endomychidae. Transactions of the Entomological Society of London. 1–83 pp., pl. 1.
- Arrow, G.J. 1920a. A list of the endomychid Coleoptera of Indo-China, with description of new species. The Annals and Magazine of Natural History, ser. 9, 5: 321–336.
- Arrow, G.J. 1925. Coleoptera. Clavicornia. Erotylidae, Languriidae and Endomychidae. In: The Fauna of British India, including Ceylon and Burma. Taylor and Francis, London, xv + 416 pp., pl. 1, map 1.
- Arrow, G.J. 1928. Coléoptères Érotylides et Endomychides de L'Indochine Française. Faune des Colonies Françaises, 2: 329–357.
- Charpentier, T. 1825. Horae Entomologicae, Adjectis Tubulis Novem Coloratis. Wratislaviae, Apud A. Gosohorsky, Bibliopolam, xvi + 255 pp., pls. 1–9.
- Chūjō, M. 1938. Some additions and revisions to the Japanese Endomychidae (Coleoptera). Transactions of the Natural History Society of Formosa, 38(182): 394–406.
- Csiki, E. 1910. Pars 12. Endomychidae, pp. 1–68. In: W. Junk and S. Schenkling (eds.), Coleopterorum Catalogus, vol. 16. W. Junk, Berlin.
- Csiki, E. 1937. Neue Endomychiden. Entomologisches Nachrichtenblatt, 11(4): 173–174.
- Fabricius, J.Ch. 1792. Entomologia Systematica Emendata et Aucta. Secundum Classes, Ordines, Genera, Species adjectis Synonymis, Locis, Observationibus, Descriptionibus. Hafniae, Impensis Christ. Gottl. Proft. Vol. 1: xx + 538 pp.
- Fabricius, J.Ch. 1801. Systema Eleutheratorum Secundum Ordines, Genera, Species adiectis Synonymis, Locis, Observationibus.

- bus, Descriptionibus. Kiliae Impensis Bibliopoli Academici Novi. Vol. 1: xxiv + 506 pp.
- Faldermann, F. 1837. Fauna entomologica Trans-Caucasica. Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou, 5: 1–412, pls. 1–15.
- Fall, C. 1901. Notes on *Dichelonycha* and *Cantharis*, with description of new species in other genera. Transactions of the American Entomological Society, 27: 277–310.
- Ganglbauer, L. 1899. Die Käfer von Mitteleuropa. Die Käfer der österreichisch-ungarischen Monarchie, Deutschlands, der Schweiz, sowie des französischen und italienischen Alpengebietes. Familienreihe Clavicornia. Sphaeritidae, Ostomidae, Byturidae, Nitidulidae, Cucujidae, Erotylidae, Phalacridae, Thorictidae, Lathridiidae, Mycetophagidae, Colydiidae, Endomychidae, Coccinellidae. C. Gerold's Sohn, Wien. Volume III, part 2, iii + 409–1046 pp.
- Gerstaecker, A. 1857. Versuch einer systematischen Auseinandersetzung der Gattungen *Eumorphus* Web. und *Endomychus* Payk. Archiv für Naturgeschichte 23(1): 211–243. Gerstaecker, A. 1858. Monographie der Endomychiden, einer Familie der Coleopteren. In: A. Gerstaecker, Entomographien. Abhandlungen in Bereich der Gliederthiere, mit besonderer Benutzung der Koenigl. Entomologischen Sammlung zu Berlin. Erster Band. W. Engelmann, Leipzig. xiv + 433 pp., 3 pls.
- Gorham, H.S. 1873. A Catalogue of the Coleopterous Group, Endomyeci, with Descriptions of New Species, and Notes. Endomyeci Recitati. Williams and Norgate, London, 64 pp., 1 pl.
- Gorham, H.S. 1875. Descriptions of new species of Endomyeci. The Transactions of the Entomological Society of London, 11–22 pp.
- Gorham, H.S. 1887. Revision of the Japanese species of the coleopterous family Endomychidae. Proceedings of the Scientific Meetings of the Zoological Society of London, 642–653 pp., pl. 53.
- Gorham, H.S. and G. Lewis. 1874. Description of a new genus and species of Coleoptera from Japan. The Entomologist's Monthly Magazine, 11: 54–55.
- Gorham, H.S. 1896. Viaggio di Leonardo Fea in Birmania e regioni vicine. LXIX. Languriidae, Erotylidae and Endomychidae. Annali del Museo Civico di Storia Naturale di Genova, serie 2a., 16: 257–302.
- Horn, G.H. 1870. Contributions to the Coleopterology of the United States. Transactions of the American Entomological Society, 3: 69–97.
- Latreille, P.A. 1810. Considérations Générales sur l'Ordre Naturel des Animaux composant les Classes des Crustacés, des Arachnides, et des Insectes, avec un Tableau Méthodique de leurs Genres disposés en Familles. F. Schoell, Paris, 444 pp.
- Lewis, G. 1893. A list of Coleoptera new to the fauna of Japan, with notices of unrecorded synonyms. The Entomologist, 26: 150–153.
- Linnaeus, C. 1758. Systema Naturae per Regna Tria Naturae, secundum Classes, Ordines, Genera, Species, cum Characteribus, Differentiis, Synonymis, Locis. Editio Decima, Reformata. Vol. 1. L. Salvii, Holmiae, 824 + iii pp.
- Mader, L. 1936. Neue Coleopteren und Notizen. Entomologische Rundschau, 54(7): 69–71.
- Mader, L. 1936a. Neue Coleopteren und Notizen. Entomologische Rundschau, 54(9): 97–101.
- Mader, L. 1941. Eine neue Endomychidae aus Japan. Entomologische Blätter, 37(4): 170.
- Mader, L. 1955. Neue Coleopteren aus Fukien (China) Helotidae, Languriidae, Erotylidae, Endomychidae, Coccinellidae. Koleopterologische Rundschau, 33(1–6): 62–78.
- Marseul, S.A. 1868. Monographie des Endomychides d'Europe et contrées limitrophes. L'Abeille, 5: 51–138.
- Motschulsky, V. 1835. Description de quelques Coléoptères, recueillis dans un voyage au Caucase et dans les provinces Transcaucasiennes Russes en 1834 et 1835. Fungicoles. Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou, 4: 321–323; pl. 9.
- Nakane, T. 1951. New or little known Coleoptera from Japan and its adjacent regions. III. Endomychidae. Insecta Matsumurana, 17(3–4): 113–118.
- Nakane, T. 1958. Notes on the Endomychidae of Japan (I). Akitu, 7: 33–36.
- Nakane, T. 1989. Notes on some little-known beetles (Coleoptera) in Japan. 4. Kita Kyūshū no Konchū, 36(1): 1–10.
- Nakane, T. 1994. Notes on some little-known beetles (Coleoptera) in Japan. 12. Kita Kyūshū no Konchū, 41(2): 81–86.
- Ohta, Y. 1931. Beitrag zur Kenntnis der Endomychiden Japans. Journal of the Faculty of Agriculture, Hokkaido Imperial University, 30(4): 205–242, pl. 3.
- Panzer, G.W.F. 1795. Entomologia Germanica Exhibens Insecta per Germaniam indigena, Secundum Classes, Ordines, Genera, Species, Adiectis, Synonymis, Locis, Observationibus. I. Eleuterata. Cum Tabulis Aeneis. Deutschlands Insectenfauna oder Entomologisches Taschenbuch für das Jahr 1795. Norimbergae, Apud Fulseckeri Haeredes. In der Felseckerschen Buchhandlung. 372 pp.
- Pic, M. 1921. Nouveautés diverses. Mélanges Exotico-Entomologiques, 34: 1–33.
- Pic, M. 1922. Nouveautés diverses. Mélanges Exotico-Entomologiques, 36: 1–32.
- Pic, M. 1927. Coléoptères de l'Indochine. Mélanges Exotico-Entomologiques, 49: 1–36.
- Pic, M. 1932. Diagnoses préliminaires. Mélanges Exotico-Entomologiques, 59: 1–36.
- Pic, M. 1946. Coléoptères Endomychides nouveaux de la mission de L'Omo. Revue Française d'Entomologie, 13(2): 80–82.
- Sasaji, H. 1978. Notes on the Japanese Endomychidae, with an establishment of a new subfamily (Coleoptera). The Memoirs of the Faculty of Education, Fukui University Series II (Natural Science), 28(1): 1–31.
- Sasaji, H. 1980. A synopsis of the Japanese Endomychidae. Coleopterists' News, 52: 1–5.
- Sasaji, H. 1983. Family Endomychidae. Check-list of Coleoptera of Japan, 21: 1–8.
- Say, T. 1825. Description of Coleopterous Insects collected in the late Expedition to the Rocky Mountains, performed by order of Mr. Calhoun, Secretary of War, under the command of Major Long. Journal of the Academy of Natural Sciences, 4: 88–99. [seen as: J.L. LeConte (ed.). 1859. A description of the Insect of North America, by Thomas Say, with illustration drawn and colored after Nature. American Entomology, London, Henry Sotheran and Co., Vol. 2.]
- Strohecker, H.F. 1943. Some fungus beetles of the family Endomychidae in The United States National Museum, mostly from Latin America and The Philippine Islands. Proceedings of the United States National Museum, 93(3168): 381–392.
- Strohecker, H.F. 1953. Coleoptera Fam. Endomychidae. In: P. Wytzman, (ed.), Genera Insectorum. Desmet-Verneuil, Bruxelles. 146 pp., 5 pls.
- Strohecker, H.F. 1986. Family: Endomychidae. A Catalogue of the Coleoptera of America North of Mexico. United States Department of Agriculture, Agricultural Handbook Number 529–98, viii + 19 pp.