Russian Entomol. J. 13(1–2): 53–68

About genera *Anobium* Fabricius, 1775, and *Cacotemnus* LeConte, 1861 (Coleoptera: Anobiidae)

О родах *Anobium* Fabricius, 1775 и *Cacotemnus* LeConte, 1861 (Coleoptera: Anobiidae)

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KEY WORDS: Coleoptera, Anobiidae, Anobiinae, *Anobium, Cacotemnus*, new species, keys, Eurasia, Palaearctics.

КЛЮЧЕВЫЕ СЛОВА: Coleoptera, Anobiidae, Anobiinae, *Anobium, Cacotemnus*, новые виды, определительные таблицы, Евразия, Палеарктика.

ABSTRACT. Descriptions and volume of genera *Anobium* Fabricius, 1775, and *Cacotemnus* LeConte, 1861, are verified for Eurasian Palaearctics. Four new species from the genus *Cacotemnus (C. demokidovi, C. panfilovi, C. parfentievi, C. zavadskiyi* spp.n.) are described. New keys to palaearctic species of *Anobium* and *Cacotemnus* are composed.

РЕЗЮМЕ. Уточнены характеристики и объем родов *Anobium* Fabricius, 1775, и *Cacotemnus* LeConte, 1861, в евразийской Палеарктике. Описаны 4 новых вида из рода *Cacotemnus* и составлены новые определительные таблицы для палеарктических видов *Anobium* и *Cacotemnus*.

For very long time the european representatives of the genus *Cacotemnus* LeConte, 1961 (*C. rufipes* (Fabricius, 1774) and *C. thomsoni* (Kraatz, 1881)), together with some *Anobium* species (*A. coctatum* Arrago, 1830, *A. fulvicorne* Sturm, 1837, *A. nitidum* Herbst, 1793, *A. rufipenne* Duftschmid, 1825), were included in the genus *Anobium* Fabricius, 1775 [Dominik, 1955; Cymorek, 1959; Español, 1960; Arnoldi, 1965; White, 1965; Lohse et al., 1969], forming the subgenus *Hadrobregmus* Thomson, 1859. But Español [1960] noted the difference of these species from other *Anobium* species. And Karapetian made these two species into subgenus *Cacotemnus* of the genus *Anobium* Fabricius, 1775 [Karapetian, 1980]. At last White separated the genus *Hadrobregmus* together with species of subgenus *Coelosthetus* LeConte, 1861, from the genus *Anobium* [White, 1973], and divided the genus *Anobium* in two parts: *Anobium* s.str. (with large depression in the centre of all thoracic sternites) and subgenus *Hemicoelus* LeConte, 1961, with the rest species of *Anobium*. But White regarded *Cacotemnus* as synonym of *Hemicoelus* [White, 1973], in spite of the difference between these genera indicated by LeConte [LeConte, 1861]. Logvinovskij [1985] followed White's opinion. Knutson [1963] confirmed the validity of the genus *Cacotemnus* while revising the american *Hadrobregmus* on the base of studying of genital apparatus and venation. I agreed with his conclusions [Toskina, 1974]. At last Español confirmed the validity of the genus *Cacotemnus* in one of his last articles [Español, Blas, 1991].

In spite of the fact that species of the genera *Cacotemnus* and *Anobium* have considerable external similarity at first sight, these genera diverge far after investigation of their genital apparatus. And moreover the genus *Cacotemnus* LeConte is closer to the genus *Oligomerus* Redtenbacher, 1849, than to the genus *Anobium* [Toskina, 1974]. First of all, *Cacotemnus* species have large aedeagus: genital ring of the aedeagus system reaches the 2nd abdominal sternite (as in the case of *Oligomerus* species), secondly, middle lobe of the aedeagus consists of one piece, endofallus (internal sac) usually with large spines (the same for the *Oligomerus* species). As to the species of *Anobium*, their genital ring of the aedeagus system reaches only the 3rd abdominal sternite, middle lobe of aedeagus has complicated form and from the side looks like a of fork with ends of different length, endofallus has no spines.

Outwardly beetles of the genus *Cacotemnus* differ from those of the genus *Anobium* by streched ends of elytra; by pronotum with low sharp elevation, with rounded posterior angles, and with nearly straight sharp lateral edge; thoracic sternites being always without depression in the centre, procoxae and mesocoxae separated by neither more than a half of coxa diameter. Species of this genus differ one from another by antennae and surface structures, and also by forms of mesosternal median lamina. Sexual dimorfism makes strongly difficult the determinination of species by difference in antennal segments.

Beetles of the genus *Anobium* usually have pronotum with high cuneiform elevation (except *A. pusillum*

(Fall, 1905) from North America), with angularly curved sharp lateral edge; elytral ends either regularly rounded together or truncated but never stretched; pro- and mesocoxae broadly extended, separated by no less than a coxa diameter; mesosternum sometimes without depression between coxae, but more often with a depression of different size, extending to metasternum in some species. So size and form of thoracic depression are specific characters not generic. It happens rarely.

As a result I propose a new keys to Palaearctic Eurasian species (without Japanese species) of genera *Anobium* and *Cacotemnus*, with description of 4 new *Cacotemnus* species from the Caucasus and Middle Asia.

I used the keys from the works of Cymorek [1959], Lohse et al. [1969], Karapetian [1980], Logvinovskij [1985], together with data from the article by Español [1960] to compose a new key to Euro-Asian *Anobium*.

Genus *Anobium* Fabricius, 1775

New key to species of *Anobium* from Palaearctic Eurasia (without Japanese species)

1 (6). Middle basal depression on metasternum extends behind the centre.

2 (3). Inner edges of antennal funicle segments rounded; antennal 3rd segment 3 times about as long as wide (Figs 1, 2). Elytra rounded regularly at the end, their ends not truncated (Fig. 3), 3rd and 5th interspaces more convex than neighbouring ones. Aedeagus: paramere ends narrow, strongly stretched and without lobe-shape outgrowths. Pseudopositor: styles narrow, stick-shaped, coxites comparatively short (Fig.4). The whole beetle dark castaneum-brown, sometimes almost black; top of pronotal elevation sometimes reddish. Length 3–5 mm. Europe, Sibiria, North America, Australia .... *A.punctatum* (DeGeer, 1774)

3 (2). Inner edges of antennal funicle segments angular; 3rd antennal segment more short (Fig. 5). Interspaces flat, not extended or thickened at the apex.

4 (5). Pronotal base without rectangular notch before sharp lateral edge (Fig. 6). Eyes separated by 1.7 (♀) vertical eye diameter. Elytra 2 times as long as wide, their ends indistinctly truncated. 1st–2nd and 3rd–4th puncture rows reach elytra apex, but their ends are a little disarranged; 5th–6th and 7th–8th puncture rows not reach elytron apex (Fig. 7). Surface of metasternum with convex but not sharp granules, separated approximately by 0.5–1.0 granule diameter (Fig. 8). Aedeagus: lobe of parameres not divided on apex, its lateral outgrowth is more long than the lobe itself and sharpen on the end. Pseudopositor: styles bottle-shaped, and of very dark colour [Cymorek, 1957]. Dark grey-brown, pubescence fine, yellowish. Length 2.1–4.1 mm. Central Europe .... *A.inexspectatum* Lohse, 1954.

5 (4). Pronotal base with rectangular notch before hind angles (Fig. 9). Eyes separated by 1.4 vertical eye diameter. Elytra 2 times as long as wide (at the shoulders), their ends distinctly truncated. 1st–2nd, 3rd–4th, and 5th–6th puncture rows not reach elytron apex because run into the oblique 7th row; 7th–8th and 9th–10th puncture rows reach elytron apex (Fig. 10). Surface of metasternum covered with high granules, separated by 2–4 granule diameters in the centre (Fig. 11), but becoming a little denser on sides, where among more large granules there are very small sharp ones. Aedeagus: parameres with divided apex and with short rounded side outgrowth; pseudopositor: styles slightly bulging near base [Cymorek, 1957]. Dark brown, pubescence fine, brownish. Length 2.4–4.1 mm. Krasnodar Prov., Germany, France, Spain*A. hederae* Ihssens, 1949

6 (1). Middle basal depression on metasternum or absent either not reaching its centre.

7 (14). Metasternum without distinct outlined basal depression.

8 (13). Pronotal sharp lateral edge with small dents.

9 (12). Pronotal sharp lateral edge right.

10(11). Pronotal posterior angles distinct (Fig. 12). Granulation large, high, heterogeneous on pronotum (Fig. 13). Antennal club 1.6 times longer than the rest part of antenna (Fig. 14). Elytra with distinctly truncated apices, elytral declivity without disarranged punctures (Fig. 15). Interspaces flat. Third and 4th tarsi segments not emarginate dorsally (Fig. 16). Aedeagus: paramere with long outside lateral outgrowth, inner lateral lobe triangular and more than 3 times as short as outside outgrowth. Pseudopositor: styles almost stick-form, with slightly convex inner side, nearly 2 times as short as curved coxites [Cymorek, 1959]. Blackish-brown, elytra tinged with reddish, seldom brownish-red. Pubescence hardly visible. Length 2.5–4.3 mm. North and central Europe, Krasnodar Prov., Caucasus ..... *A. nitidum* Herbst, 1793

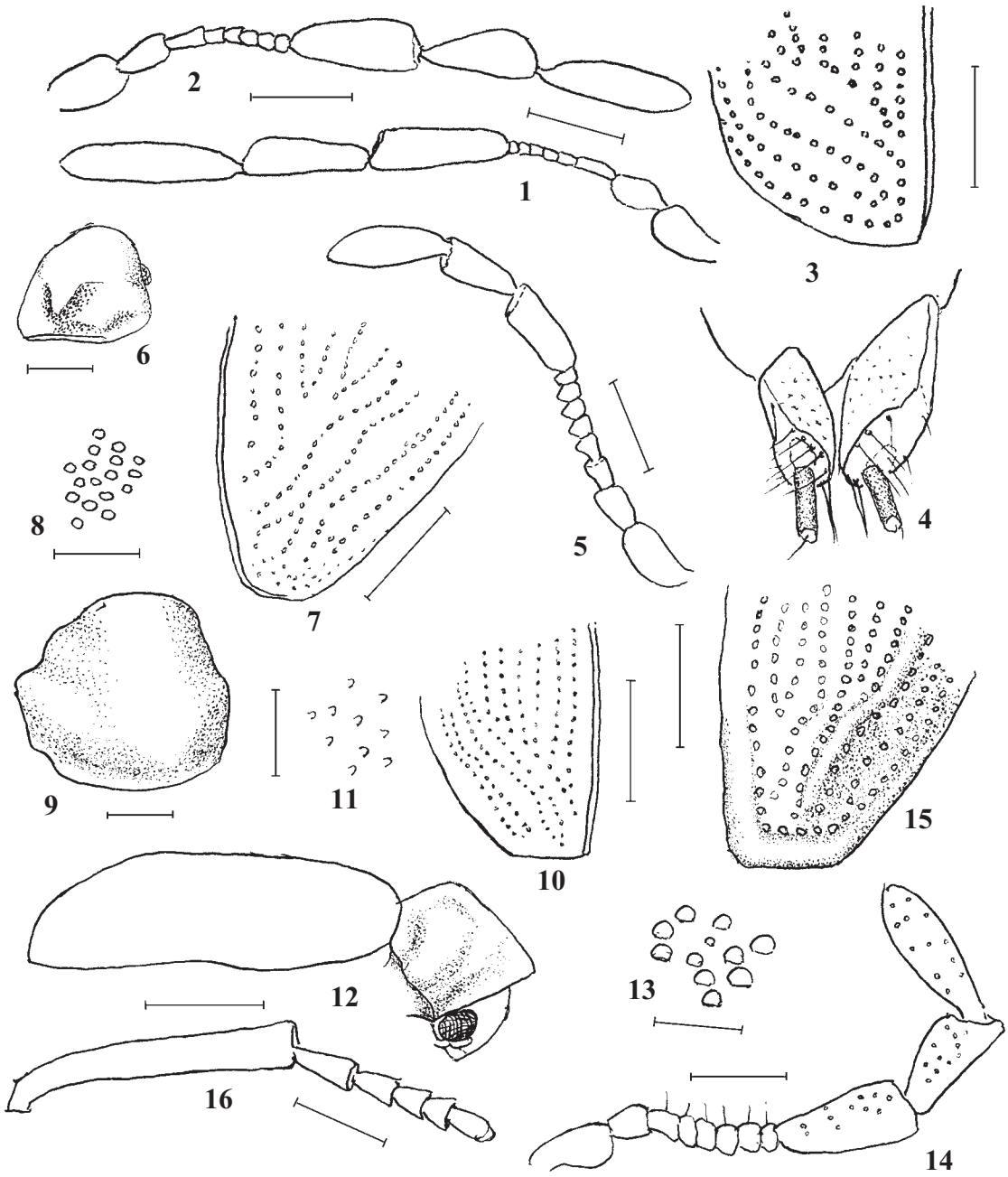
11(10). Pronotal posterior angles rounded. Antennal club 2 times as long as the rest part of antenna. Elytra with indistinctly and narrowly truncated apices; declivity of elytra with disarranged punctures. Interspaces slightly convex. Aedeagus: distal part of paramere not less than 2 times as long as each of two inner paramere lobes. Dark greyish-brown, pubescence hardly visible, light. Length 2.8–3.4 mm. Ussuriisk .... *A. ussuriensis* Karapetian, 1980.

12(9). Pronotal sharp lateral edge perceptibly curved at the middle. Posterior angles rounded. Elytral apices narrowly truncated; puncture rows with large, deep punctures, getting smaller and disarranged on elytral ends. Interspaces slightly convex. Aedeagus: distal part of paramere more than 2 times as long as each of two inner paramere lobes (according to the figure [Logvinovskij, 1985]). Dark greyish-brown, pubescence very fine, light. Length 3–3.9 mm. Kunashir and Sakhalin Islands, Ussuriisk ... . *A. alexandri* Logvinovskij, 1981.

13(8). Pronotal sharp lateral edge not dentate. Pronotum with small granulation; granules looking like grains and separated by 1–1.5 granule diameter (Fig. 17). Elytra 2.2 times as long as wide; their apices truncated broadly and distinctly. Interspaces convex every other one. Puncture rows on elytral end become a group of disarranged punctures (Fig. 18). Tarsi broad, their 3rd and 4th segment emarginate on dorsal side (Fig. 19). Aedeagus: outside lateral outgrowth of paramere 2 times as long as its inner lobe. Pseudopositor: styles thin, stick-shaped, 1.5 times as short as coxites; style apex shortly divided on two parts and provided with flat lobe on inner side; coxites conic (Fig. 20). Dark grey-brown; pubescence greyish, covering all surface. Length 3.8–4.8 mm. Middle and South Europe, Crimea, the Caucasus, Asia Minor ..... *A. costatum* Arrago, 1830.

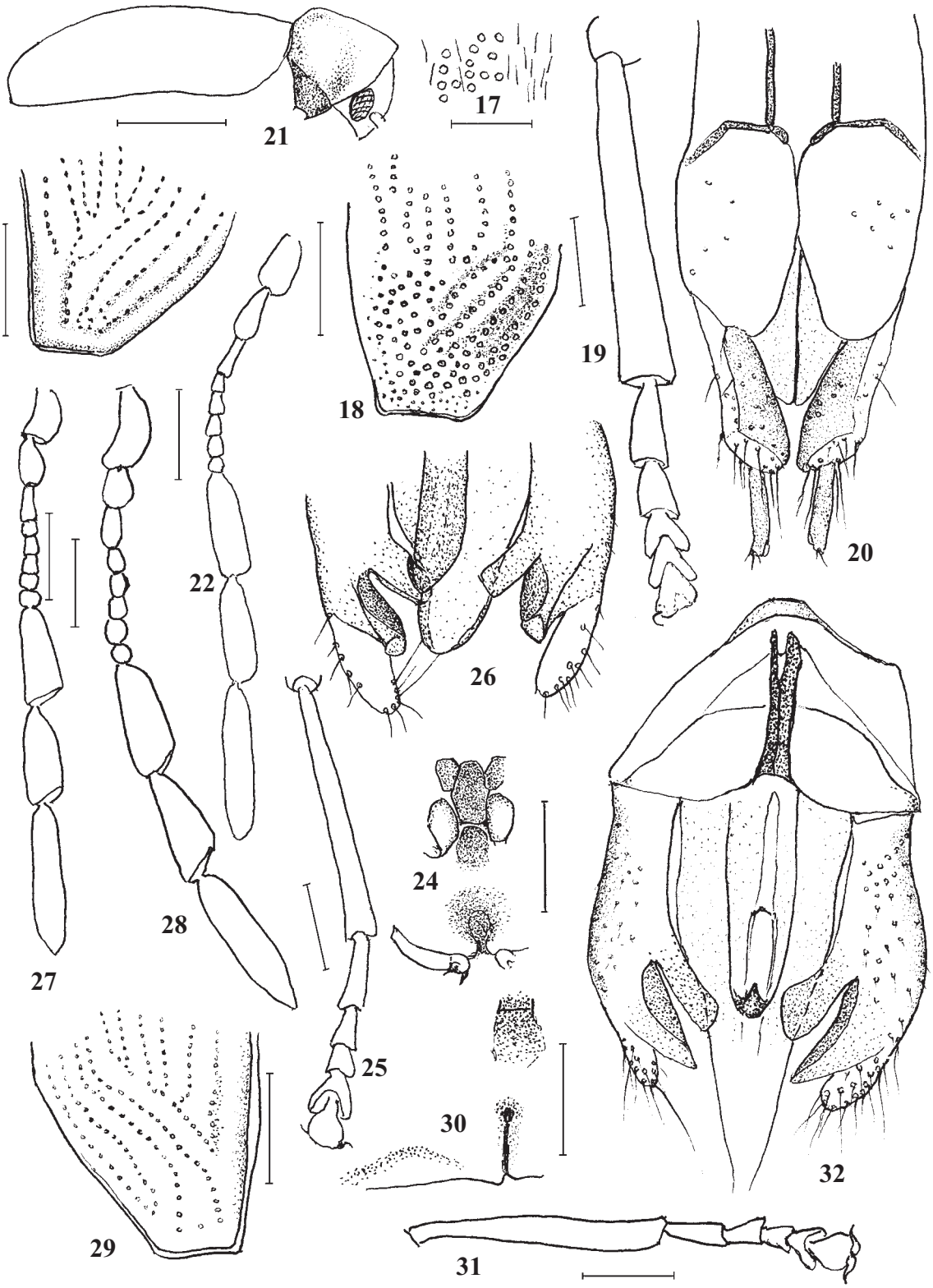
14(7). Metasternum with small but distinctly marked basal depression.

15(16). Pronotal sharp lateral edge interrupted in the middle; posterior angles distinct (Fig. 21). Antennal club 1.5 times as long as the rest part of antenna (Fig. 22). Elytral



Figs 1–16. *Anobium* spp.: 1–4 — *A. punctatum* (DeGeer): 1 — antenna, ♂; 2 — the same, ♀; 3 — apex of left elytron; 4 — end of pseudopositor; 5–8 — *A. inexspectatum* Lohse: 5 — antenna, ♀; 6 — pronotum; 7 — apex of right elytron; 8 — granulation on surface of metasternum; 9–11 — *A. hederae* Ihssens: 9 — pronotum; 10 — apex of left elytron; 11 — granulation on surface of metasternum; 12–16 — *A. nitidum* Herbst: 12 — body, lateral view; 13 — granulation on pronotal disk; 14 — antenna (inside view); 15 — apex of right elytron; 16 — hind tibia and tarsus. Scale: 0.1 mm (8, 11, 13); 0.2 mm (1, 2, 5, 14, 16); 0.5 mm (3, 6, 7, 9, 10, 15); 1.0 mm (12); x120 (4).

Рис. 1–16. *Anobium* spp.: 1–4 —*A. punctatum* (DeGeer): 1 — усик, ♂; 2 — то же, ♀; 3 — вершина левого надкрылья; 4 — конец ложного яйцеклада.; 5–8 — *A. inexspectatum* Lohse: 5 — усик, ♀; 6 — переднеспинка; 7 — вершина правого надкрылья; 8 — грануляция на поверхности заднегруди; 9–11 — *A. hederae* Ihssens: 9 — переднеспинка; 10 — вершина левого надкрылья; 11 — грануляция на поверхности заднегруди; 12–16 — *A. nitidum* Herbst: 12 — вид тела сбоку; 13 — грануляция на диске переднеспинки; 14 — усик (вид с внутренней стороны); 15 — вершина правого надкрылья; 16 — голень и лапка задней ноги. Масштаб: 0,1 мм (8, 11, 13); 0,2 мм (1, 2, 5, 14, 16); 0,5 мм (3, 6, 7, 9, 10, 15); 1,0 мм (12); x120 (4).



Figs 17–32. *Anobium* spp.: 17–20 — *A. costatum* Arrago: 17 — granulation on pronotal disk; 18 — apex of right elytron; 19 — hind tibia and tarsus; 20 — end of pseudopositor; 21–26 — *A. rufipenne* Duftschmid: 21 — body, lateral view; 22 — antenna, ♂; 23 — apex of right elytron; 24 — meso- and metasternum (middle part); 25 — hind tibia and tarsus; 26 — end of aedeagus; 27–32 — *A. fulvicorne* Sturm: 27 — antenna, ♂; 28 — the same, ♀; 29 — apex of left elytron; 30 — metasternum (middle part); 31 — hind tibia and tarsus; 32 — aedeagus. Scale: 0.1 mm (17); 0.2 mm (19, 22, 25, 27, 28, 31); 0.5 mm (18, 23, 24, 29, 30); 1.0 mm (21); x120 (20, 26, 32).

apices narrowly but distinctly truncated. Near-sutural interspace rhomboidly expanded and more convex near elytron apex. Puncture rows distinct till the apex (Fig. 23). Distal median groove looks as broadly rounded or transverse depression (Fig. 24). Forth tarsal segment strongly emarginate on dorsal side (Fig. 25). Aedeagus: paramere with two inner lobes; outside lateral outgrowth longer than upper inner lobe, lower lobe with transversal truncated apex (Fig. 26). Pseudopositor: styles and coxites slightly dolioform. Head, pronotum (often with reddish apical margin), and metasternum black; elytra dark or reddish-brown, antennae and tibiae light brown, tarsi yellow. Length 3.4–3.7 mm, width 1.25–1.35 mm. The Caucasus (Georgia), Germany, France .... *A. rufipenne* Duftschmid, 1825.

16(15). Sharp lateral edge without interruption.

17(18). Ninth segment of antenna (1st club segment) 2.5 times as wide as segments of funicle; antennal club 1.5 times (♂) as long as the rest part of antenna (Figs 27, 28). Posterior angles of pronotum obtuse. Elitral apices narrowly and not distinctly truncated; near-sutural interspace not forming rhomboid convexity on the declivity. Puncture rows grouped in pairs on the elytra end and rest distinct till apex; 7th–8th and 9th–10th rows go till apex, but three first pairs not reach the apex because run into oblique 7th–8th pair (Fig. 29). Distal median groove only slightly widen on its top (Fig. 30). Forth tarsi segment strongly emarginate on dorsal side (Fig. 31). Aedeagus: paramere with two lobes on inner side; outside lateral outgrowth shorter than upper inner lobe, lower lobe with acute end (Fig. 32). Pseudopositor: styles stick-shaped, narrowed at the very apex; coxites straight, broad, 1.5 times as long as styles [Cymorek, 1959]. Black, antennae and tarsi brown. Length 2.7–4.2 mm. South Europe, Caucasus ..... *A. fulvicorne* Sturm, 1837

a) Pronotum and elytra brownish-red. Krasnodar Prov., Caucasus, Turkey .. *A. fulvicorne* ab. *rubrum* Reitter, 1897.

b) Head, pronotum, metasternum black, elytra reddish-brown, tarsi brown. South Europe, Caucasus .... *A. fulvicorne*. ab. *demelti* Cymorek, 1959.

18(17). Antennal club segments more narrow: 9th segment less than 2 times as wide as funicle segments [Karapetian, 1980, p.302, Fig.2]. Antennal club 1.7 times (♂) as long as the rest part of antenna. Posterior angles of pronotum rounded. Elytra with broadly truncated ends; first six rows grouped in pairs nearly end but not reaching the apex and forming convex triangular space on declivity; puncture ring placed in the middle of this space. Aedeagus: paramere with horseshue-shaped lobe on inner side. Reddish-grey-brown, pubescence hardly visible. Length 3.3–3.9 mm. Armenia ..... *A. khnzoriani* Karapetian, 1980.

I think that *A. alexandri* Logvinovskij, 1981, is the junior synonym of *A. ussuriensis* Karapetian, 1980. Unfortunately, I didn't see yet the type specimen of *A. ussuriensis*. But the descriptions of these both species and figures of aedeagus are very similar [Karapetian, 1980; Logvinovskij, 1985]. Small difference in figures can be attributed to a certain extent to inaccuracy in representation of the same aedeagus by different authors; partly, indistinct representations of the middle part (penis) makes it difficult to compare. Karapetian in her description does not say about curve of lateral edge of pronotum. The specimen of the ZMUM collection, originated from Ussuriisk Terr., has curved dentate lateral edge of pronotum and is similar by other details to *Anobium alexandri* Logvinovskij, 1981, from Kunashir and Sakhalin Islands. Until the matter will be settled I retain both species in the key.

Genus *Cacotemnus* LeConte, 1861

First of all I had to point out that Logvinovskij [1985] was wrong to bring together the species *C albidus* Toskina, 1976, and *C. captiosus* Toskina, 1976, to *Hemicoelus rufipes* (Fabricius, 1774) (now *Cacotemnus rufipes* (Fabricius, 1774)). One glance over the representatives of these species is sufficient to make it clear. Comparison of their genital apparatus proves this fact.

Species of the genus *Cacotemnus* are hardly distinguished by shape of pronotum and differ mainly by structure of antennal segments and granulation on surface. I added also the shape of median lamina of mesosternum. When it was possible I indicated the morphological differences in pseudopositors, mainly its apical part. Below I give descriptions of 4 new species and the key to Eurasian species of the genus *Cacotemnus* (missing the Japanese species).

All materials deposite in Zoological Institute of the Russian Academy of Science (ZIN) and in Zoological Museum of the Moscow State University (ZMUM).

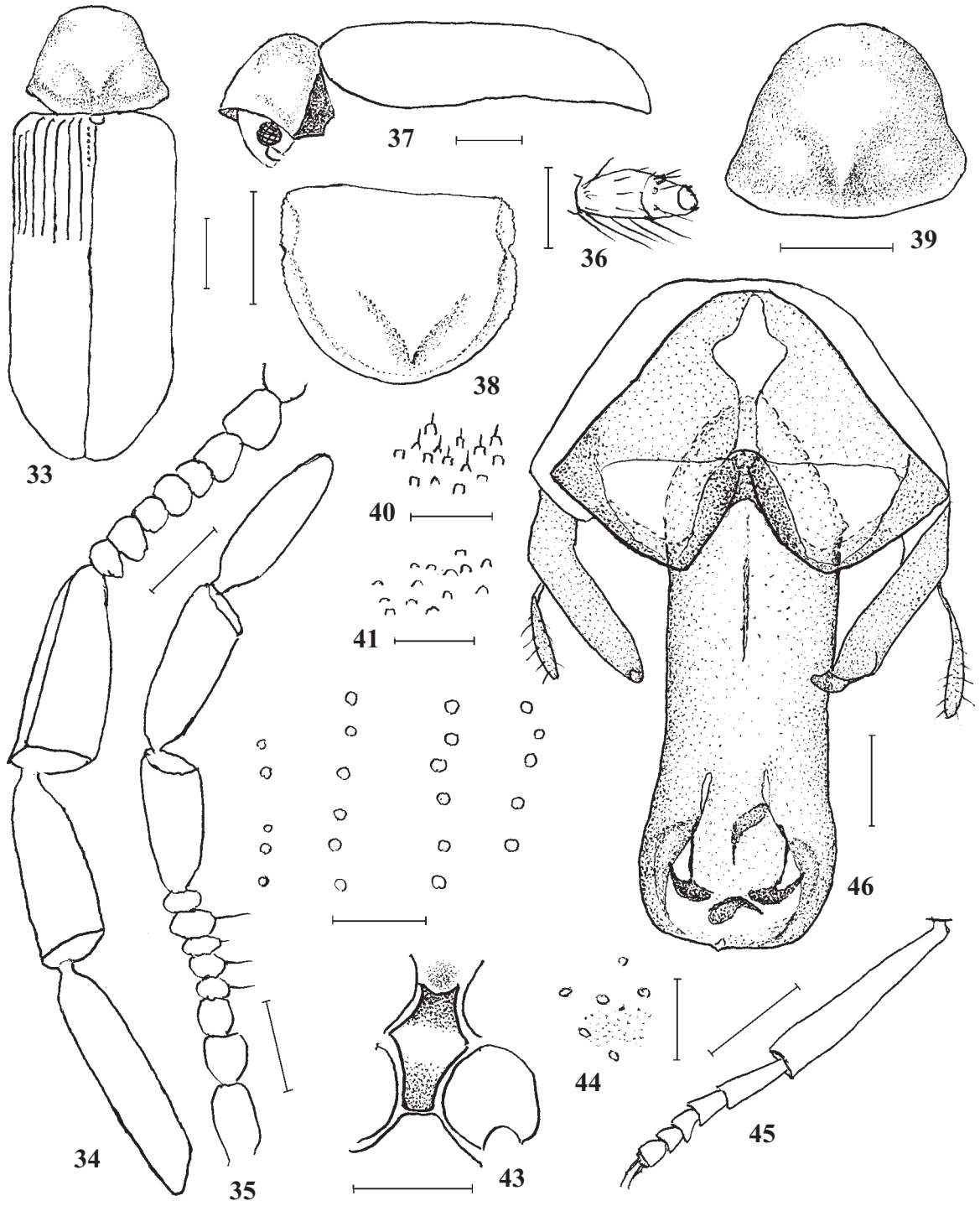
Cacotemnus demokidovi **sp.n.**

Figs 33–48.

DESCRIPTION. General view. Beetles from reddish-brown till almost black; antennae, mouth palpi, and legs brown. Pubescence very fine, raised, yellowish-grey. Body nearly 3 times as long as wide (Fig. 33).

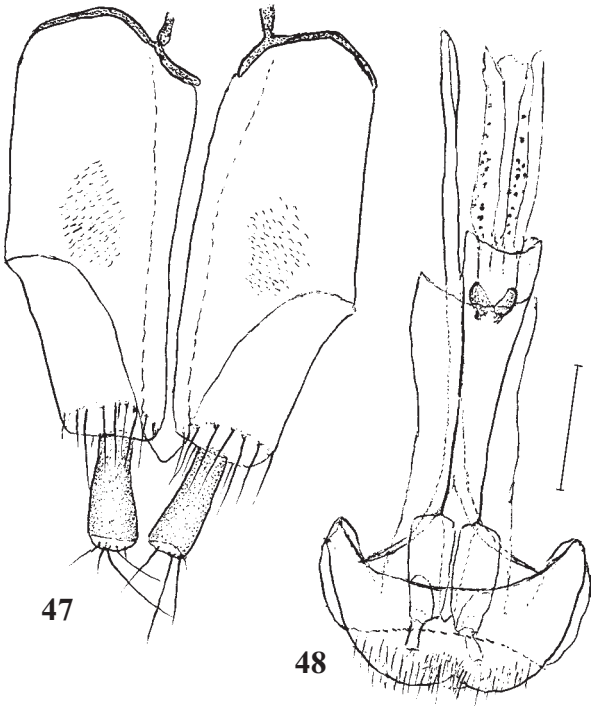
Head. Frons being covered with inclined, very fine hairs, with carina forming sometimes a little bulge between eyes. Eyes convex, almost round (slightly oval), separated by 1.8(♂)–2(♀) vertical eye diameters. Antennae: 2nd and 3rd segment longitudinal, 4th–8th segment transversal, in addition the 5th and 7th segment a bit larger than neighbouring ones. 9th and 10th segment of a little elongate-triangular form. ♂: 9th segment almost 2 times as wide as 6th–8th segment, 2.5 times as long as wide and nearly being equal to as 3rd–8th segment combined; 11th segment 5 times as long as wide and nearly equal to 2nd–8th segment combined (Fig. 34, holotype). ♀: 9th segment a little more than 1.5 times as wide as 6th–8th segment, 2 times as long as wide; 11th segment a little longer than 3rd–8th segment combined, and 3.7 times as long as wide (Fig. 35).

Рис. 17–32. *Anobium* spp.: 17–20 — *A. costatum* Arrago: 17 — грануляция на диске переднеспинки; 18 — вершина правого надкрылья; 19 — голень и лапка задней ноги; 20 — конец ложного яйцеклада; 21–26 — *A. rufipenne* Duftschmid: 21 — вид тела сбоку; 22 — усик, ♂; 23 — вершина правого надкрылья; 24 — средне- и заднегрудь (середина); 25 — голень и лапка задней ноги; 26 — конец эдеагуса; 27–32 — *A. fulvicorne* Sturm: 27 — усик, ♂; 28 — то же, ♀; 29 — вершина левого надкрылья; 30 — заднегрудь (середина); 31 — голень и лапка задней ноги; 32 — эдеагус. Масштаб: 0,1 мм (17); 0,2 мм (19, 22, 25, 27, 28, 31); 0,5 мм (18, 23, 24, 29, 30); 1,0 мм (21); x120 (20, 26, 32).



Figs 33–46. *Cacotemnus demokidovi* sp.n.: 33 — general view; 34 — antenna, ♂ (holotype); 35 — the same, ♀; 36 — last segment of maxillary palpi (view of inner side); 37 — body, lateral view; 38 — pronotum, view from above; 39 — pronotum; 40 — granulation on pronotal disk (length of hairs of pubescence is shown); 41 — the same on pronotal side; 42 — puncture rows on elytral disk; 43 — median lamina of mesosternum; 44 — structure of surface of metasternum; 45 — hind tibia and tarsus; 46 — aedeagus (holotype). Scale: 0.1 mm (36, 40, 41, 44); 0.2 mm (34, 35, 42, 43, 46); 0.5 mm (45); 1.0 mm (33, 37–39).

Рис. 33–46. *Cacotemnus demokidovi* sp.n.: 33 — общий вид; 34 — усик, ♂ (голотип); 35 — то же, ♀; 36 — последний членик челюстного щупика (вид с внутренней стороны); 37 — вид тела сбоку; 38 — переднеспинка, вид сверху; 39 — переднеспинка; 40 — грануляция на диске переднеспинки (показана длина волосков опушения); 41 — то же на боку переднеспинки; 42 — ряды точек на диске надкрыльев; 43 — срединная пластинка среднегруди; 44 — структура поверхности заднегруди; 45 — голень и лапка задней ноги; 46 — эдеагус (голотип). Масштаб: 0,1 мм (36, 40, 41, 44); 0,2 мм (34, 35, 42, 43, 46); 0,5 мм (45); 1,0 мм (33, 37–39).



Figs 47–48. *Cacotemnus demokidovi* sp.n.: 47 — end of pseudopositor; 48 — the whole pseudopositor (with 7th sternite and 8 tergite) (outline). Scale: 0.5 mm (48); x120 (47).

Рис. 47–48. *Cacotemnus demokidovi* sp.n.: 47 — конец ложного яйцеклада; 48 — весь яйцеклад (схематическое изображение) с 7-м стернитом и 8-м тергитом. Масштаб: 0,5 мм (48); x120 (47).

Last segment of maxillary palpi 2.5 times as long as wide; upper side more convex, top cut; the segment is divided by transversal ledge on two parts a bit farther the middle; strong chaeta sitting on edge of ledge on lower side; finger shaped projection disposed on upper edge of ledge on inner side (Fig. 36).

Pronotum narrower than elytra, 1.1 times as wide as long. Sharp lateral edge looks straight and anterior angle looks right as seen from side (Fig. 37); but lateral edge looks concave in the middle and slightly and finely dentate as seen from above (Fig. 38). Posterior angles indistinct, rounded. The base and sides flattened rather broadly along the whole length (Fig. 39). Granulation uneven and heterogeneous: granules partly more coarse and with flat tops, partly more fine and pointed with some tops directed back on pronotum disk (Fig. 40); but on sides granules more low, sparse and blunt (Fig. 41). Pubescence very fine, partly inclined and partly raised.

Scutellum semi-oval.

Elytra 2.3(♂)–2.2 (♀) times as long as wide and 3.1 (♂)–3(♀) times longer than pronotum. Interspaces more or less equal and not strongly convex. Punctures in puncture striae on disk usually separated by 1.5–2 puncture diameters (Fig. 42, holotype). Elytral apex with very small place with punctures in disorder.

Thoracic sternites. Mesocoxae separated by nearly 0.5 coxa diameter. Median lamina about 1.5 times as long as wide, with almost straight apical end and concave basal one, and with angulate lateral sides; lamina usually convex transversally in the middle; prosternum with depression above basal end of mesosternum (Fig. 43, paratype). Metasternum surface has very fine structure, nearly wrinkle, with sparse indistinct granules (Fig. 44).

Legs. Femoral plaque with distinct tooth. Metatibia with very little two spures. Metatarsus 0.8 times as short as its tibia; 1st tarsal segment 2 times as long as the 2nd one, 2nd segment 1.4 times as long as the 3rd one, 3rd segment 1,25 times longer than the 4th one, 4th segment cut out a little on the dorsal side; 5th segment shorter than the 2nd one and has two long claws (Fig. 45).

Abdomen. First suture straight. Aedeagus: penis widened as claviform in distal third; median protrusion in distal third of penis ends with two spines directed in the opposite sides. Distal margin of penis straightened a little. Endofallus with two spines. Parameres with foot-form ends and with comparatively short lateral outgrowths (Fig. 46, holotype). Pseudopositor: style 2.5 times as long as wide, widened to convex top, inner side slightly concave. Coxite about 2 times as long as its width near apex, and 1.6 times as long as style, looks as concave lamina narrowed to base and attached obliquely to outer side of paraproct; coxite apex surrounded by large chaetae (Fig. 47). Outline of pseudopositor as shown in Fig. 48.

Length 5.5–6.3 mm, width 1.8–2.2 mm.

Material. Holotype, ♂: Ardon, Vladik[avkaz], environs of Terskaya area, 3–6.VI.[1]900 (Demokidov). 7 Paratypes: 4 spec. with the same label, 1 spec.: Vladikavkaz, North Caucasus, 6.VI.[1]922 (M. Ryabov), ZIN. 1 spec. with 1st label, and 1 spec. at the same place, 28.IV.[1]900 (Demokidov), ZMUM.

DIAGNOSIS. New species closely related to *Cacotemnus rufipes* and differs from the latter by narrower segments of antennal club, elongated form of median lamina of mesosternum with concave basal margin of this lamina, also by wide distance between mesocoxae, equal to about 0.5 coxa diameter (not more than 0.25–0.3 coxa diameter and median lamina with straight basal margin in the case of *C. rufipes*); and also differs by the following characters in structures of aedeagus and pseudopositor: median protrusion in distal third of penis ends with two spines (two pairs of spines disposed by semicircle around median protrusion in *C. rufipes*), style 2.5 times as long as wide and attached to concave coxite (style 3 times as long as wide and attached to coxite of rectangular form in *C. rufipes*).

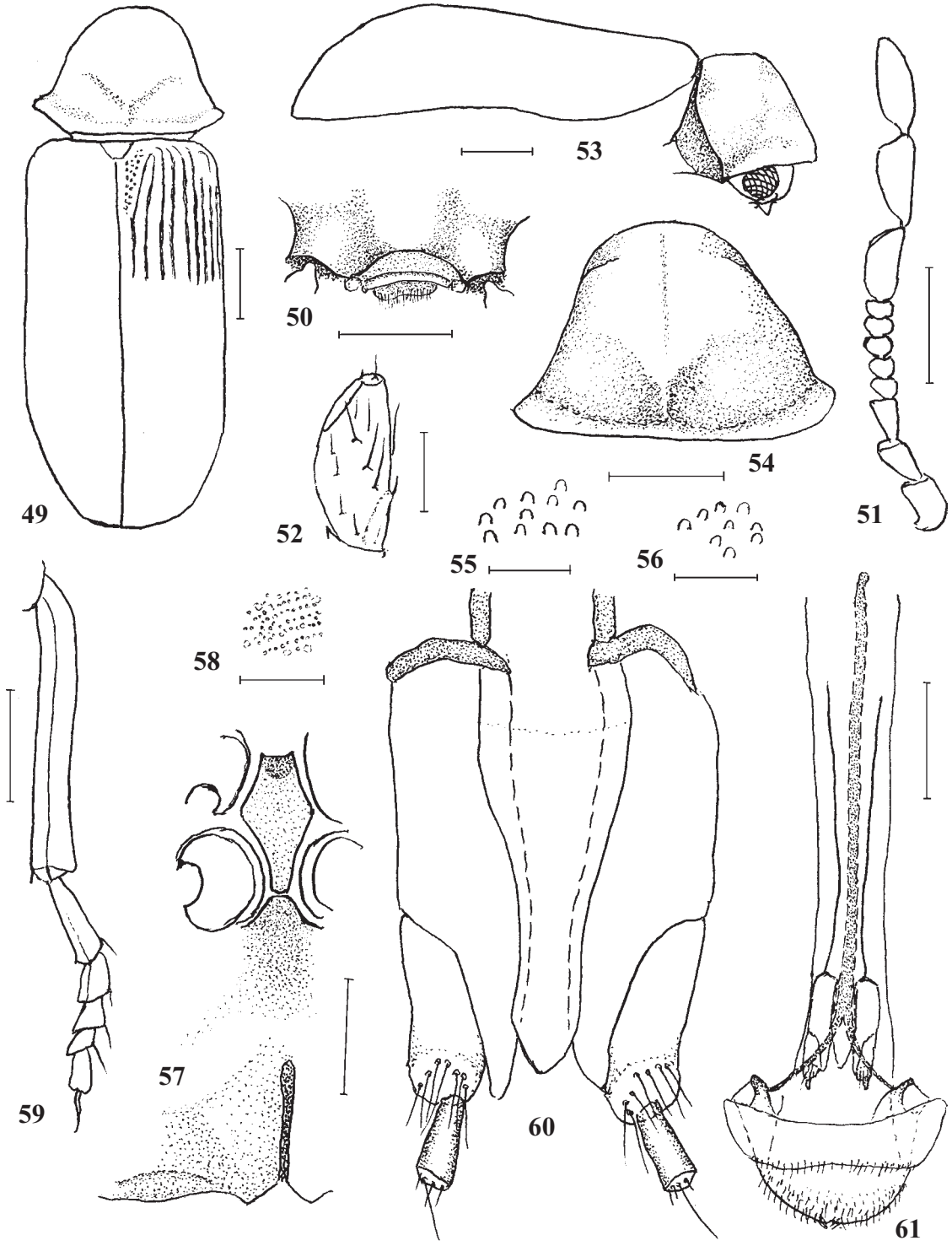
ETYMOLOGY. The species is named in honour of entomologist K.E. Demokidov as the 1st collector of the series of these beetles.

Cacotemnus panfilovi **sp.n.**
Figs 49–61.

DESCRIPTION. General view. Beetle dark-brown, elytra reddish; antennae, mouth palpi, legs dark-brown. Pubescence fine, yellowish, raised. Body 3 times as long as wide (Fig. 49).

Head. Frons covered with bristling hairs, convex, perceptibly bulging above antennal fossae (Fig. 50). Eyes round, convex, small, separated by 2.5 vertical eye diameters. Antennae: club consists of narrow segments, i.e. 9th segment only 1.2 times as wide as 6th–8th segment. 2nd and 3rd segments longitudinal, 4th–8th segment transversal. 9th and 10th segment with perceptibly oblique apex; 9th segment more than 2 times as long as wide and approximately equal to length of 4th–8th segment combined (Fig. 51). Last segment of maxillary palpi 2.3 times as long as wide, with cut top having tubercle with chaeta; upper side convex, lower side almost straight (Fig. 52).

Pronotum 1.15 times as wide as long, nearly as wide as elytra, anterior angles right, posterior angles rounded. Sharp lateral edge slightly curved on one third away from anterior angle; sides slightly and broadly bulging (Fig. 53). Base and sharp lateral edge flattened along their length, more strongly to anterior margin. Gibbosity low, broad, with fine median line (Fig. 54). Surface of disk and sides covered with rather



Figs 49–61. *Cacotemnus panfilovi* sp.n.: 49 — general view; 50 — frons; 51 — antenna; 52 — last segment of maxillary palpi (view of inner side); 53 — body, lateral view; 54 — pronotum; 55 — granulation on pronotal disk; 56 — the same on pronotal side; 57 — meso- and metasternum (middle part); 58 — structure of surface of metasternum; 59 — hind tibia and tarsus; 60 — end of pseudopositor; 61 — pseudopositor with 7th sternite and 8th tergite (outline). Scale: 0.1 mm (52, 55, 56, 58); 0.5 mm (50, 51, 57, 59, 61); 1.0 mm (49, 53, 54); x120 (60).

Рис. 49–61. *Cacotemnus panfilovi* sp.n.: 49 — общий вид; 50 — лоб; 51 — усик; 52 — последний членик челюстного щупика (вид с внутренней стороны); 53 — вид тела сбоку; 54 — переднеспинка; 55 — грануляция на диске переднеспинки; 56 — то же на боку переднеспинки; 57 — средне- и заднегрудь (середина); 58 — структура поверхности заднегруди; 59 — голень и лапка задней ноги; 60 — конец ложного яйцеклада; 61 — весь яйцеклад (схематическое изображение) с 7-м стернитом и 8-м тергитом. Масштаб: 0,1 мм (52, 55, 56, 58); 0,5 мм (50, 51, 57, 59, 61); 1,0 мм (49, 53, 54); x120 (60).

high, homogeneous, round granules, arranged unevenly (Figs 55, 56).

Scutellum ob-trapeziform.

Elytra 2.3 times as long as wide and 2.7 times longer than pronotum. Basal part with granulation. Elytral apices flattened and with very small area of disarranged punctures. 3rd and 5th interspace (counting from the suture) a little higher and broader than neighbouring ones on basal third of elytra. Small punctures arranged very densely in puncture striae. Row near scutellum looks like a group of punctures (Fig.49).

Thoracic sternites. Mesocoxae separated by one third of coxa diameter. Median lamina of mesosternum with angulate lateral margins, straight apical and nearly straight basal margins (Fig. 57). Surface of metasternum covered with very small and dense granules, nearly wrinkled (Fig. 58). Arcuate wrinkle runs above distal margin.

Legs. Femoral plaque with short obtuse tooth. Hind tarsus 0.7 times as long as its tibia; the latter with two very small spurs; 1st segment 2 times as long as the 2nd one, 2nd segment 1.5 times longer than the 3rd one, 3rd segment 1.25 times as long as the 4th one; 4th segment emarginate about at third on dorsal side; 5th segment narrow, nearly the same length as the length of the 2nd segment (Fig. 59).

Abdomen. 1st suture straight. Pseudopositor: style more than 2 times as long as wide and 2.5 times shorter than coxite; style is widening a little to horizontally cut top. Coxite 3.25 times as long as wide, a little concave before apex, with about ten large chaetae on top, narrowing to base; and attached to oblique ledge on outer side of paraproct and 2.3 times shorter than the latter (Fig. 60). Outline of general view of pseudopositor as shown in Fig. 61. 7th sternite semicircular.

Length 7.6 mm, width 2.5 mm. Male unknown.

Material. Holotype, ♀: [Krasnodar Prov.], Caucasus Reserve, Guzeripl', 6.VII.1959 (Panfilov), ZMUM.

DIAGNOSIS. This species is closely related to *Cacotemnus rufipes* and differs from the latter by narrow and with obliquely cut apices 9th and 10th club segments (wide and elongate-triangular in *C. rufipes*); by elongate form of median lamina (this lamina comparatively short in *C. rufipes*, 1.3 times as long as wide); by different ratios of pseudopositor parts, specifically, more short styles.

ETYMOLOGY. This species is named in honour of known entomologist D.V. Panfilov who had collected this beetle.

Cacotemnus parfentievi **sp.n.**
Figs 62–75.

DESCRIPTION. General view. Head and pronotum dark-brown; elytra, antennae, mouth palpi, tarsi reddish-brown. Pubescence yellowish, tiny, raised. Elytral interspaces thickened every other. Body 2.8 times as long as wide (Fig. 62).

Head. Frons convex, perceptibly bulging above antennal bases (Fig. 63). Eyes round, convex, separated by 1.4 eye vertical diameter. Antennae: 2nd, 3rd, and 5th segment longitudinal; 4th segment as long as wide; 6th–8th segment transversal, but 8th segment 2 times as short as the 7th one. Club segments very long: 9th segment equals to about 2nd–8th segment combined, 4.7 times as long as wide, flattened, with transversal rows of fine chaetae on inner side, 1.5 times wider than 6th–8th segment (Fig. 64, holotype); 10th and 11th segment absent (holotype); 10th segment almost equal to the 9th, and 11th segment 7 times as long as wide (paratype) (Fig. 65). Last segment of maxillary palpi 2.2 times as long as wide, with long chaeta near apex and with cut top, its upper side more convex than the lower one (Fig. 66). Last segment of labial palpi is dolabriform.

Pronotum nearly 1.2 times as wide as long, narrower than elytra; its posterior angles rounded, and anterior angles acute because of strongly curved sharp lateral edge (Fig. 67). Sides bulging. Sharp lateral edge with small teeth. Basal flattening rather narrow near posterior angles. Median gibbosity begins nearly from base, with longitudinal elevation along gibbosity, and with tiny median line (Fig. 68). Surface of disk covered with high granules separated by about 1–2 their diameters (Fig. 69). The granulation of sides is similar (Fig. 70).

Scutellum broad, semicircular.

Elytra 2.2 times as long as wide and 2.9 times longer than pronotum. Odd interspaces (counting from the suture) more strongly convex and wider than even ones. Punctures large in puncture striae and separated one from the other by a small distance. Puncture stria near scutellum is long, and interspace near suture looks here as split in two and flattened (Fig. 62).

Thoracic sternites. Mesocoxae separated approximately by 0.25 coxa diameter; distance between procoxae twice as wide as the same of mesocoxae. Median lamina of mesosternum is narrow: 2 times as long as wide, with angulate lateral sides and acuminate apical end. Median distal groove does not reach the centre of metasternum (Fig. 71). Surface on sides of metasternum with dense, fine granules and also with more high granules between them (Fig. 72), but with flattened, thinned out platelets in the shining centre (Fig. 73).

Legs. Femoral plaque with obtuse tooth. Metatarsus about 0.75 times as long as metatibia; 1st segment 1.5 times as long as the 2nd one; 2nd segment 1.7 times as long as the 3rd one; 3rd segment 1.2 times as long as the 4th one; 5th segment 0.25 times shorter than the 2nd one and 1.5 times longer than the 4th segment but narrower than the latter (Fig. 74).

Abdomen. First abdominal suture curved backwards in the centre. Aedeagus (paratype): penis strongly widened in distal third, its apical margin almost straight. Two pairs of spines forming semicircle around middle protrusion in distal part of penis. The spines directed in opposite way in each pair: one spine out and another spine to the centre. Small spine placed at either side of protrusion base. Endofallus with 1 sclerite in the middle. Parameres thin, with foot-form end; their lateral outgrowth long and with small bundle of short chaetae on cut top (Fig. 75).

Length 5.2–5.3 mm, width 1.8–1.9 mm.

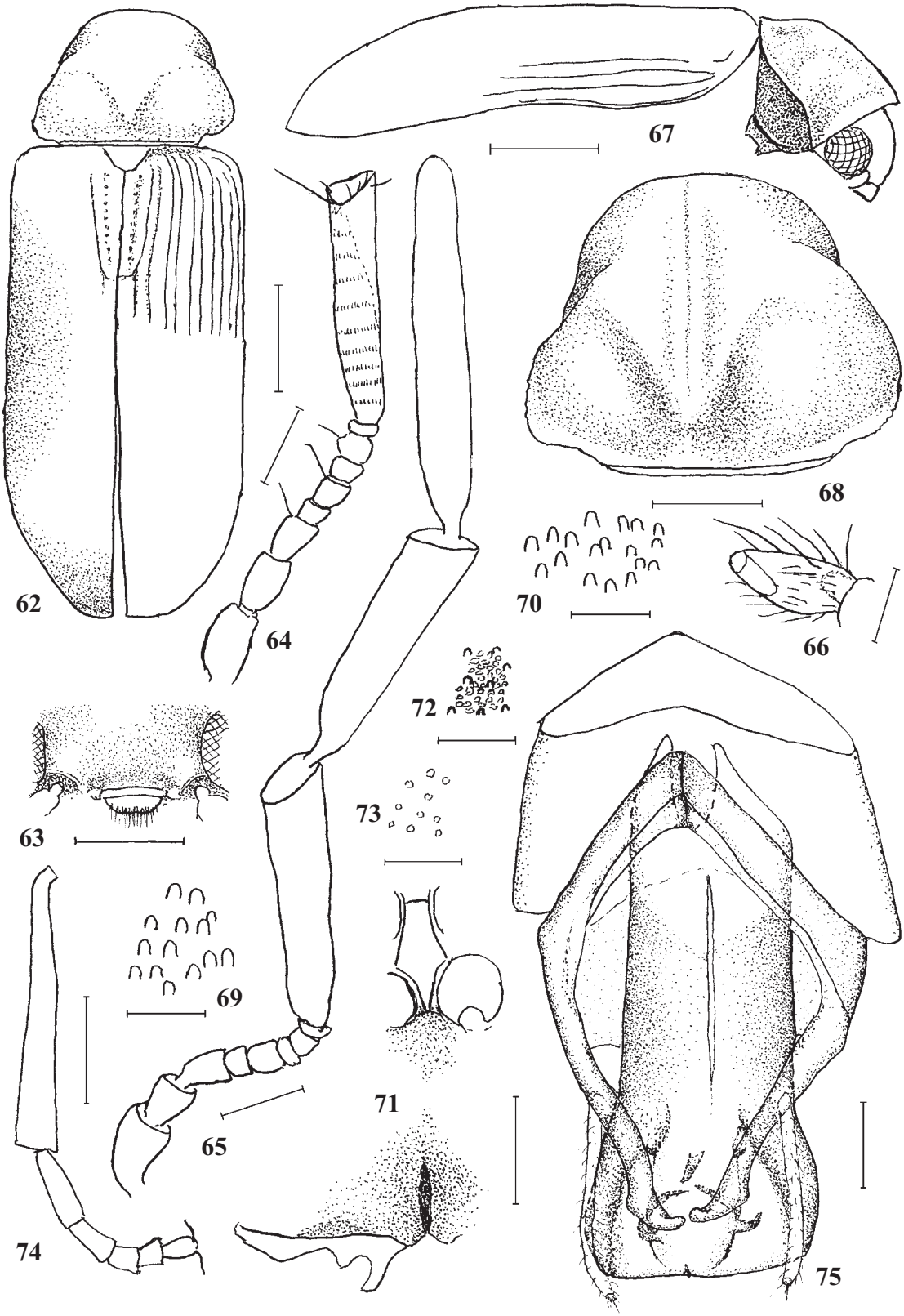
Material. Holotype: [Uzbekistan], Ak-Terek, Arslanbob Forestry, 18.VI.[19]32.(Parfentiev). Tunnels in rowan-tree. Paratype, ♂: [Uzbekistan], Jelalabad, 9.VII.[19]32 (Parfentiev). ZIN.

DIAGNOSIS. New species differs from the majority of known and new species by antennal club with very long segments (comparatively short in *C.albidus*, *C. demokidovi* sp.n., *C. panfilovi* sp.n., and *Cacotemnus rufipes*), by high and large granules on pronotum, increased every other interspace on elytra, by mesosternum with narrow and long median lamina having angulate lateral sides (granulation low and comparatively small on pronotum, elytral interspaces more or less homogeneous in *C. captiosus* and in *C. thomsoni* (Kraatz), median lamina shorter and with rounded lateral margins in *C. thomsoni*). The new species also differs from other species by details of aedeagus.

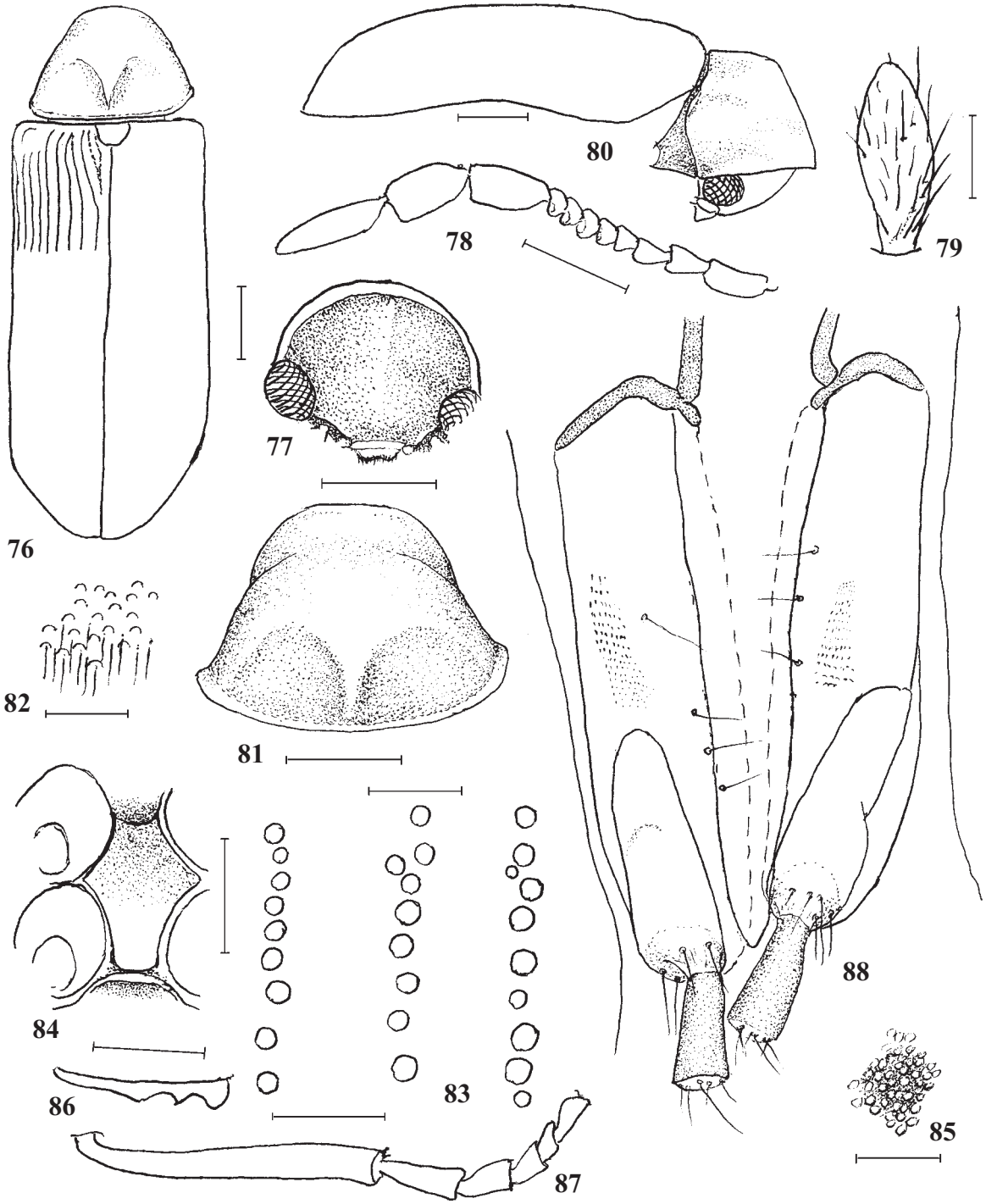
ETYMOLOGY. The species is named in honour of known entomologist V.Ya. Parfentiev who studied the family Anobiidae and collected these beetles.

Cacotemnus zavadskii **sp.n.**
Figs 76–88.

DESCRIPTION. General view. Head, pronotum, metasternum black; elytra, antenna, mouth palpi, tibiae, and tarsi



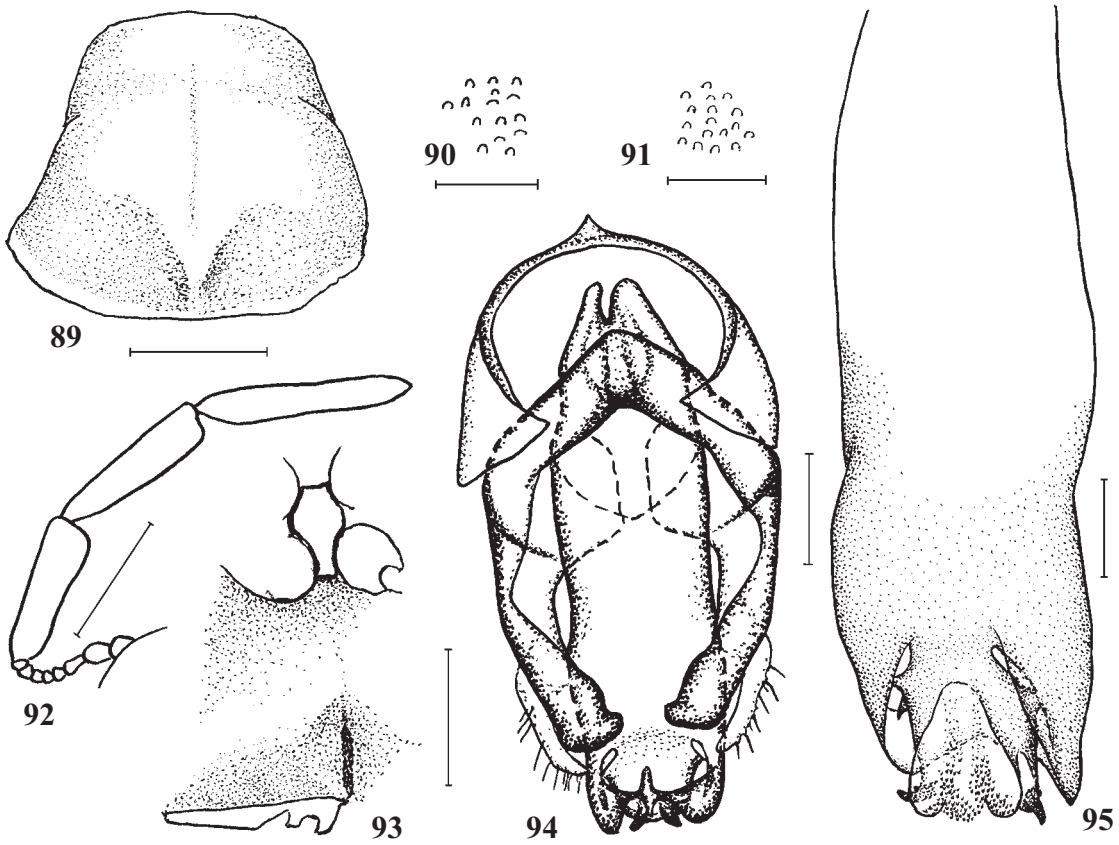
Figs 62–75. *Cacotemnus parfentievi* sp.n.: 62 — general view; 63 — frons; 64 — antenna (holotype); 65 the same (paratype); 66 — last segment of maxillary palpi; 67 — body, lateral view; 68 — pronotum; 69 — granulation on pronotal disk; 70 — the same on pronotal sides; 71 — meso- and metasternum (middle part); 72 — structure of surface on sides of metasternum; 73 — the same on the middle part of metasternum; 74 — hind tibia and tarsus; 75 — aedeagus. Scale: 0.1 mm (66, 69, 70, 72, 73); 0.2 mm (64, 65, 75); 0.5 mm (63, 68, 71, 74); 1.0 mm (62, 67).



Figs 76–88. *Cacotemnus zavadskii* sp.n.: 76 — general view; 77 — frons; 78 — antenna; 79 — last segment of maxillary palpi; 80 — body, lateral view; 81 — pronotum; 82 — granulation on pronotal disk; 83 — puncture striae on elytral disk; 84 — median lamina of mesosternum; 85 — structure of surface of mesosternum; 86 — femoral plaque; 87 — hind tibia and tarsus; 88 — end of pseudopositor. Scale: 0.1 mm (79, 82, 85); 0.2 mm (83); 0.5 mm (78, 84, 87); 1.0 mm (76, 77, 80, 81, 86); x120 (88).

Рис. 76–88. *Cacotemnus zavadskii* sp.n.: 76 — общий вид; 77 — лоб; 78 — усик; 79 — последний членик челюстного щупика; 80 — вид тела сбоку; 81 — переднеспинка; 82 — грануляция на диске переднеспинки; 83 — точечные ряды на диске надкрыльев; 84 — срединная пластинка среднегруди; 85 — структура поверхности заднегруди; 86 — бедреная покрышка; 87 — голень и лапка задней ноги; 88 — конец ложного яйцеклада. Масштаб: 0,1 мм (79, 82, 85); 0,2 мм (83); 0,5 мм (78, 84, 87); 1,0 мм (76, 77, 80, 81, 86); x120 (88).

Рис. 62–75. *Cacotemnus parfentievi* sp.n.: 62 — общий вид; 63 — лоб; 64 — усик (голотип); 65 — то же (паратип); 66 — последний членик челюстного щупика; 67 — вид тела сбоку; 68 — переднеспинка; 69 грануляция на диске переднеспинки; 70 — то же на боках переднеспинки; 71 — средне- и заднегрудь (середина); 72 — структура поверхности заднегруди на боках; 73 — то же в центре заднегруди; 74 — голень и лапка задней ноги; 75 — эдеагус. Масштаб: 0,1 мм (66, 69, 70, 72, 73); 0,2 мм (64, 65, 75); 0,5 мм (63, 68, 71, 74); 1,0 мм (62, 67).



Figs 89–95. *Cacotemnus thomsoni* (Kraatz), ♂: 89 — pronotum; 90 — granulation on pronotal disk; 91 — the same on pronotal sides; 92 — antenna; 93 — meso- and metasternum (middle part); 94 — aedeagus (dorsal view); 95 — penis (ventral view). Scale: 0.1 mm (90, 91, 95); 0.2 mm (94); 0.5 mm (89, 92, 93).

Рис. 89–95. *Cacotemnus thomsoni* (Kraatz), ♂: 89 — переднеспинка; 90 — грануляция на диске переднеспинки; 91 — то же на боках переднеспинки; 92 — усик; 93 — средне- и заднегрудь (середина); 94 — эдеагус (вид со спинной стороны); 95 — пенис (вид с брюшной стороны). Масштаб: 0,1 мм (90, 91, 95); 0,2 мм (94); 0,5 мм (89, 92, 93).

dark-brown. Pubescence fine, yellowish, laid on frons and pronotum, and fine, brownish-yellowish, raised on elytra. Body 2.8 times as long as wide (Fig. 76).

Head. Frons with distinct carina on its upper part, convex between eyes (Fig. 77). Eyes round, convex, small, separated by 2.2 vertical eye diameters. Antennae with very short club (♀); 2nd and 3rd segment longitudinal, 4th segment as long as wide, 5th–8th segment slightly transversal; 9th segment 1.5 times as wide as 6th–8th segment, parallel-sided, 2 times as long as wide, and equal to about the length of the 5th–8th segments combined; 10th segment approximately similar to the 9th one; 11th segment 3.5 times as long as wide and equals to the length of 3rd–7th segments combined (Fig. 78). Last segment of maxillary palpi 2.7 times as long as wide, with more strongly convex upper side and some large chaetae on lower side (Fig. 79).

Pronotum 1.1 times as wide as long, a little narrower than elytra. Sharp lateral edge not curved and not dentated, narrowly flattened along all the length, a little wider to anterior angles. Anterior angles right, posterior ones obtuse, rounded (Fig. 80). Sides broadly bulging, but bulging absent near median gibbosity (Fig. 81). Surface covered with rather small, rounded granules, separated by 1–2 their diameters on disk, pubescence rather long, appressed (Fig. 82), the same granulation and pubescence are on the sides.

Scutellum large, semi-oval.

Elytra 2.2 times as long as wide and 2.9 times as long as pronotum. Interspaces strongly convex, of more or less equal width. Punctures small, separated by 0-0.5, sometimes 1 puncture diameter in puncture striae (Fig. 83). Area with disarranged punctures on the elytral apex is very small.

Thoracic sternites. Mesocoxae separated by 0.5 coxa diameter, and this distance nearly equals to the distance between procoxae. Median lamina of mesosternum 1.5 times as long as wide; its basal margin slightly concave, lateral margins angulate, front part lowered. Basal part of metasternum margin between mesocoxae perceptibly thickened (Fig. 84). Surface of metasternum with dense, fine, low granulation, almost wrinkled (Fig. 85), more or less even as in the middle as on the sides.

Legs. Femoral plaque with obtuse and short tooth (Fig. 86). Tibia with two marked spures. Hind tarsus is about 0.8 times as long as its tibia; 1st segment 1.5 times as long as the 2nd one, 2nd segment 1.3 times as long as the 3rd one, 3rd segment 1.5 times as long as the 4th one; 4th segment emarginate on dorsal side; 5th segment 2 times as thin as the 2nd one and a little shorter than the latter (Fig. 87).

Abdomen. First abdominal suture straight. Pseudopositor: style widening to nearly flat apex, 2.2 times as long as wide and sits on bulging of a slightly oblique coxite apex.

Coxite 3.5 times as long as wide and 2.5 times as long as style, narrowing to base, 2.2 times as short as paraproct and situated on almost horizontal ledge on outside of paraproct (Fig. 88) Apodema wide, with obtuse distal ends. Seventh sternite nearly square.

Length 8.2 mm, width 2.9 mm. Male unknown.

Material. Holotype, ♀: [Azerbaijan], Baku Area, former Kuba Distr., Sudur. 14.VII.1900 (Zavadskiy). ZMUM.

DIAGNOSIS. New species differs from other *Cacotemnus* species with short segments of club by median lamina of mesosternum with very wide apical margin, by wide distance between mesocoxae being equal to 0.5 coxa diameter, by appressed pubescence, and comparatively homogeneous, dense, rounded granulation all over the pronotum; by very short 9th and 10th antennal segment with parallel sides and each of them 2 times as long as wide (9th segment 3 times as long as wide, and median lamina of mesosternum with rounded lateral sides in *C. thomsoni*; distance between mesocoxae no more than 0.25–0.3 coxa diameter in *C. albidus*, *C. rufipes*, and *C. panfilovi* sp.n.; 9th and 10th antennal segment elongate-triangular, granulation differs on pronotal disk and its sides, and pubescence raised in *C. demokidovi* sp.n.).

ETYMOLOGY. The species is named in honour of zoologist A.M.Zavadskiy, who had collected this beetle.

Beetles of the genus *Cacotemnus* closely related to *C. demokidovi* sp.n. can be found in the south of Russia (Northern Caucasus) and Ukraine (Khar'kov Area), but they differ from *C. demokidovi* sp.n. by shorter segments of antennal club, and by median protrusion with 4 spines instead 2 in widen distal part of penis. I considered available material insufficient to describe probable subspecies and include it into key.

KEY TO THE EURASIAN PALAEARCTIC SPECIES OF THE GENUS *CACOTEMNUS* (WITHOUT JAPANESE SPECIES)

1(8). Length of 9th or at any rate of 11th antennal segment no less than the length of 2nd–8th antennal segment combined.

2(3). Gibbosity on pronotum divided by deep stria. Elytral ends with disarranged puncturation. Body grey-brown or blackish grey-brown. Length 6.1–6.8 mm. Kirghizia .... *Cacotemnus kompanzevi* (Logvinovskij, 1979)

3(2). Pronotal gibbosity not divided with deep stria, sometimes gibbosity only with weak middle line.

4(7). Elytra 2.2–2.3 times as long as wide. Antenna: 11th segment 6–7 times as long as wide.

5(6). Interspaces, counting from the suture, either other more wide and convex. Pronotal sharp lateral edge provided with fine teeth and curved up perceptibly in the middle, so anterior angles look acute. Either side bulging near gibbosity. Granules large, high, rather acute on pronotal disk and sides. Antennae: 9th segment 2.5 times as wide as the 6th–8th segment. Mesocoxae separated by not more than 0.25 coxa diameter; median lamina of mesosternum 2 times as long as wide, with angulate lateral sides and acuminate apical end. Aedeagus: distal part of penis strongly dilated, its apical margin looks like as almost straight horizontal line; two pairs of spines form semicircle around middle protrusion in the distal part of penis. The spines directed in opposite way in each pair. Protrusion base with small spine at each side. Endofallus with 1 sclerite in the middle. Dark-brown; antennae, mouth palpi, and tarsi light-brown. Pubescence very fine, yellowish, raised. Length 5.2–5.3 mm, width 1.8–1.9 mm. Uzbekistan ..... *C. parfentievi* sp.n.

6(5). Interspaces more or less of equal width and convexity. Sharp lateral edge of pronotum slightly curved in the middle, anterior angles right. Sides without distinct bulging near middle gibbosity (Fig. 89). Granules comparatively small, low, blunt on disk and sides of pronotum (Fig. 90, 91). Antennae: 9th segment 3 times as wide as 6th–8th segment (Fig. 92). Mesocoxae separated by one third of coxa diameter. Median lamina of mesosternum 1.5 times as long as wide, with concave basal margin, rounded lateral sides and blunt apical end (Fig. 93). Aedeagus: penis not dilated as claviform in its distal part (Fig. 94). Endofallus with fine, very small, numerous spines and two large spines on the end, semicircle absent (Fig. 95). From reddish-brown till almost black; antennae from light- till reddish-brown. Pubescence very fine, yellowish, appressed. Length 4.5–5.4 mm, width 1.5–1.9 mm. North Europe, Siberia? *C. thomsoni* (Kraatz, 1881), ♂.

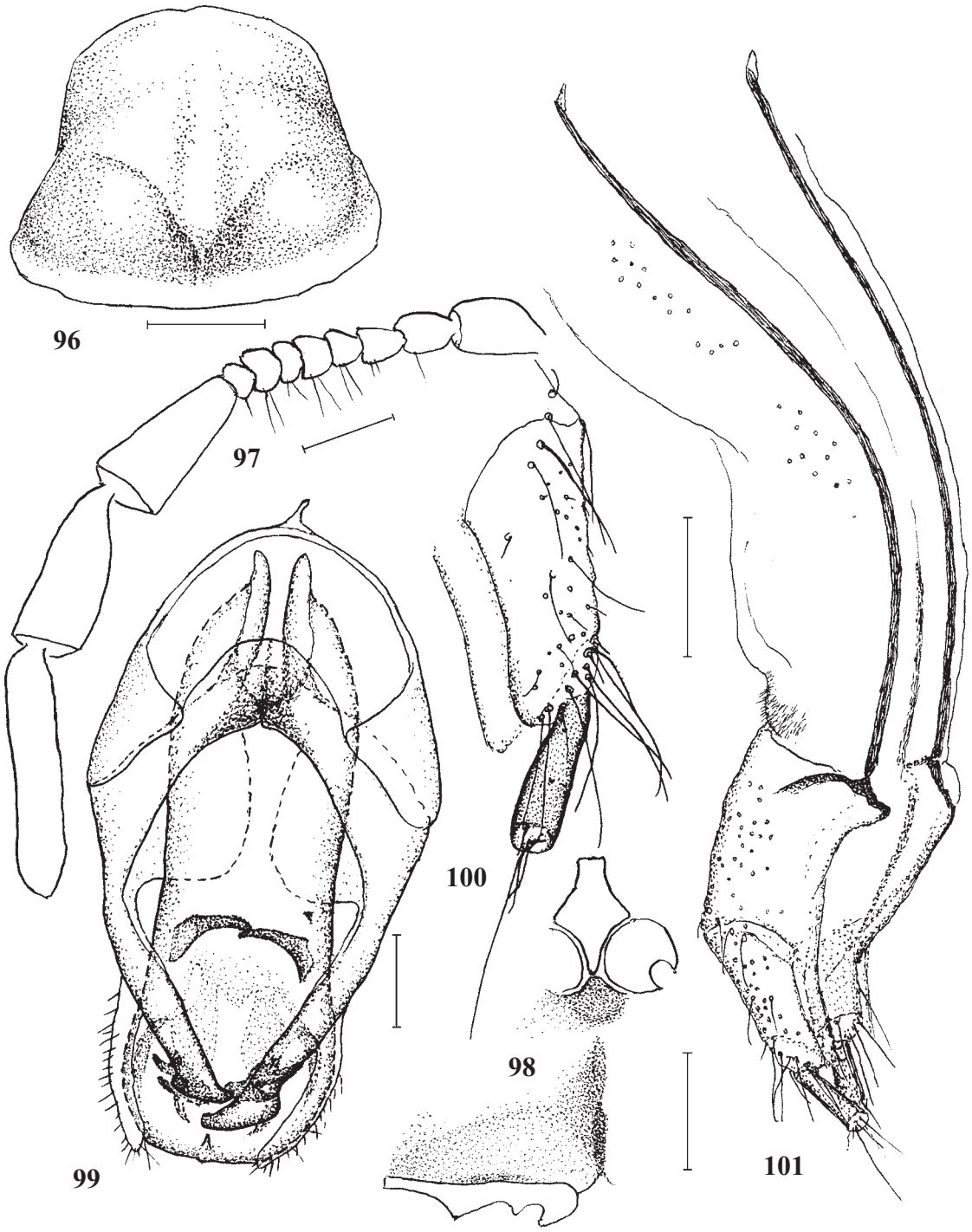
7(4). Elytra 2.5 times as long as wide; interspaces slightly convex, of more or less equal width. Antennae: 11th segment 5 times as long as wide and longer than 1st–8th segment combined (♂); 9th segment 2.5 times as wide as 6th–8th segment. Granules small, short, rounded, rather dense on disk and sides of pronotum; sharp lateral edge without teeth. Mesocoxae separated by less than 0.25 coxa diameter. Aedeagus: distal third of penis dilated as claviform, where system of sclerites forms semicircle with one big spine on each side of median protrusion of penis [Toskina, 1976]. Median part of endofallus without spines (probably they were lost). Dark grey-brown, almost black, pubescence light. Length 5.5 mm, width 1.8 mm. Khabarovsk Prov. (Amur Lagoon) .... *C. captiosus* Toskina, 1976.

8(1). Length of 9th antennal segment less than length of 2nd–8th segment combined.

9(12). Mesocoxae separated by 0.25 (maximum 0.3) coxa diameter.

10(11). Median gibbosity on pronotum distinct, high; sides perceptibly bulging (Fig. 96). Antennae: 9th segment elongate-triangular (Fig. 97). Median lamina of mesosternum with acuminate lateral sides and straight basal margin (Fig. 98). Aedeagus: penis widened as claviform in its basal third, apical edge rounded; median protrusion in this widening with two pairs of spines; spines arranged as semicircle around median protrusion and directed laterally. Endofallus with 2 large spines and often with additional sclerite in middle part (Fig. 99). Pseudopositor: style 3 times as long as wide and 2 times as short as coxite, dilating to apex, and with long chaeta on the end. Coxite 2.6 times as long as wide in its middle, slightly dilating to base, and placed on slightly oblique ledge on outside of paraproct (Figs 100, 101). Beetles from reddish dark-brown till almost black; antennae, mouth palpi, and legs perceptibly lighter: reddish or light-brown. Pubescence yellowish, very fine, raised. Length 5–7 mm, width 1.6–2.5 mm. The whole Middle Europe, Siberia?. Larvae in deciduous and coniferous dead wood .... *C. rufipes* (Fabricius, 1794)

11(10). Median gibbosity of pronotum worn off, sides slightly bulging. Antennae: 9th segment with parallel sides. Median lamina of metasternum with acuminate concave basal margin. Aedeagus: penis slightly dilated in distal quarter, apical edge almost straight; system of spines around median protrusion in distal part of penis consists of 6 spines combined in threes; endofallus with two compara-



Figs 96–101. *Cacotemnus rufipes* (Fabricius): 96 — pronotum; 97 — antenna of male; 98 — meso- and metasternum (middle part); 99 — aedeagus; 100 — coxite and style; 101 — pseudopositor. Scale: 0.2 mm (97, 99, 101); 0.5 mm (96, 98); x80 (101); x120 (100).

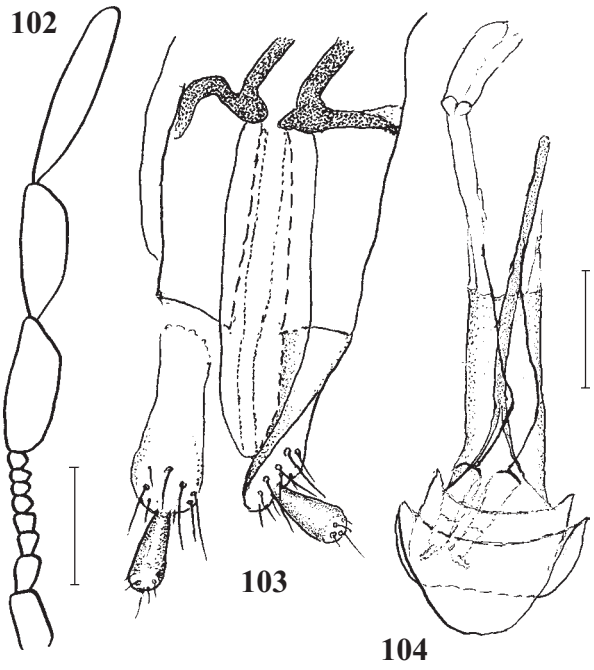
Рис. 96–101. *Cacotemnus rufipes* (Fabricius): 96 — переднеспинка; 97 — усик самца; 98 — средне- и заднегрудь (середина); 99 — эдеагус; 100 — коксит и стиль; 101 — ложный яйцеклад. Масштаб: 0,2 мм (97, 99, 101); 0,5 мм (96, 98); x80 (101); x120 (100).

tively thin spines in middle part [Toskina, 1976]. Beetles light-brown, reddish; pubescence very fine, whitish, raised. Length 5–6.5 mm, width 2–2.5 mm. East Kazakhstan, mountains ..... *C. albidus* Toskina, 1976.

12(9). Mesocoxae separated by not less than one third of coxa diameter.

13(16). Mesocoxae separated by nearly one third of coxa diameter.

14(15). 9th antennal segment 2 times as wide as 6th–8th segment, more than 3 times as long as wide, and almost equal to length of 2nd–8th segment combined (Fig. 102). Eyes large, separated by 1.5–1.7 vertical eye diameters. Medi-



Figs 102–104. *Cacotemnus thomsoni* (Kraatz), ♀: 102 — antenna; 103 — end of pseudopositor; 104 — pseudopositor with 7th sternite and 8th tergite (outline). Scale: 0.5 mm (102, 104); x120 (103).

Рис. 102–104. *Cacotemnus thomsoni* (Kraatz), ♀: 102 — усик; 103 — конец ложного яйцеклада; 104 — яйцеклад с 7-м стернитом и 8-м тергитом (схематическое изображение). Масштаб: 0,5 мм (102, 104); x120 (103).

an lamina of mesosternum 1.5 times as long as wide, its lateral sides rounded (Fig. 93). Pseudopositor: style dilated to apex, 2 times as long as wide, 2.5 times as short as coxite; coxite with strongly oblique apex, a little narrowing to the middle of its length and after that dilating to base; coxite placed on top of paraproct (Fig. 103). The whole pseodopositor (outline) as shown in Fig. 104. Beetles from brown till almost black. Length 4.5–7.0 mm, width 1.5–2.5 mm. North Europe, Siberia? .... *C. thomsoni* (Kraatz, 1881), ♀

15(14). 9th and 10th antennal segment barely (1.2 times) as wide as 6th–8th funicle segment, more than 2 times as long as wide, their apices perceptibly oblique, each of them equals nearly to the length of 5th–8th segments combined. Eyes small, separated by 2.5 vertical eye diameters. Median lamina of mesosternum 2 times as long as wide, with angulate lateral sides. Pseudopositor: style 2 times as long as wide, evenly widening to horisontally cup top. Coxite 2.5 times longer than style, and 3 times as long as wide, concave before apex, and attached to oblique ledge on outside of paraproct. Dark-brown, elytra reddish. Pubescence fine, raised, yellowish. Length 7.6 mm, width 2.5 mm. Krasnodar Prov. ..... *C. panfilovi* sp.n.

16(13). Mesocoxae separated by not less than 0.5 coxa diameter. 9th antennal segment 1.5 times as wide as 6th–8th funicle segment. Pseudopositor: coxites attached to ledge on outside of paraproct.

17(18). Pronotal surface covered with homogeneous granulation; granules rather low, round, pubescence appressed, well visible. Median lamina of mesosternum with wide apical end which nearly equals to the width of the basal end. Basal part of margin of metasternum thickened between mesocoxae. Pseudopositor: style 2 times as long as wide, dilated gradually to almost flat top and placed on bulge of coxite apex; coxite 2.5 times as long as style, and 3.5 times as long as its thickness near apex, narrowed to base and attached to nearly horizontal ledge of paraproct. 7th sternite nearly square. Head, pronotum, metasternum black, elytra, antennae, and legs dark-brown. Pubescence yellowish, appressed on pronotum, and brownish-yellowish, raised on elytra. Length 8.2 mm, width 2.9 mm. Azerbaijan ..... *C. zavadskii* sp.n.

18(17). Granulation higher on pronotal disk than on its sides, granules partly blunt, partly tapering. Pubescence very fine, raised, partly erected. Apical end of median lamina of mesosternum a little narrower than its basal margin. Basal part of margin of metasternum without thickening between mesocoxae. Pseudopositor: style more than 2.5 times as long as wide, with convex top, inner side slightly concave. Coxite nearly 2 times as long as its thickness near apex, looks as concave lamina narrowing to base, and 1.6 times as long as style. Aedeagus: median protrusion ends with two spines directed to opposite sides; endofallus with two spines. 7th sternite semicircular. Beetles from reddish-brown till almost black, antennae, mouth palpi and tarsi brown. Pubescence yellowish-grey. Length 5.5–6.3 mm, width 1.8–2.2 mm. North Caucasus .... *C. demokidovi* sp.n.

ACKNOWLEDGEMENTS. The author is sincerely grateful to Dr. O. Merkl (HMNH), Dr. G.S.Medvedev, and senior laboratory assistant A.K. Chistyakova (ZIN) for providing with type materials, and also Dr. E.P. Narchuk (ZIN) and programmer N.L. Klepikova (Moscow) for great help in this work.

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