

**Notes on possible existence of the genus *Blackburneus* in Asia
(Coleoptera: Scarabaeidae: Aphodiinae: Aphodiini)**

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Abstract. Two Asian species of Aphodiini possibly belonging to the genus *Blackburneus* Schmidt, 1913 are dealt with. New combinations are proposed as follows: *Blackburneus* (?) *stebnickae* (Pittino, 1988) comb. nov., and *Blackburneus* (?) *strandi* (Balthasar, 1935) comb. nov. A redescription of the latter species, important differentiating characters and detailed photos are presented. Taxonomical problems of the genus are discussed.

INTRODUCTION

Species of the genus *Blackburneus* A. Schmidt, 1913 are similar to those of the genus *Koshantschikovius* A. Schmidt, 1913. These two taxa were proposed (as subgenera of *Aphodius* Hellwig, 1798) by Schmidt (1913) and differentiated from each other based on the presence (in *Koshantschikovius*) or absence (in *Blackburneus*) of the pronotum basal margin line, and they were treated as two separate subgenera or species groups in this way within the framework of world fauna of Aphodiinae by Schmidt (1922), of the Palearctic and Oriental fauna by Balthasar (1964) and of Afrotropical fauna by Endrődi (1960, 1964) and Endrődi & Rakovič (1981). Landin (1967) studied Afrotropical species and synonymized *Koshantschikovius* with *Blackburneus* based on an allegation concerning the bordered or non-bordered pronotal base that: “This single (and sometimes less distinctive) character does not seem to justify splitting an otherwise uniform group of closely related species”. This allegation may be considered as disputable, but in a monograph dealing with the American fauna, Gordon & Skelley (2007) treated 11 species within the genus *Blackburneus* irrespective of the bordered or non-bordered pronotum base. In a more present work dealing mostly with the American fauna, Dellacasa et al. (2011) transferred ten Nearctic and Neotropical species into the genus *Alloblackburneus* Bordat, 2009 (and described two new species within the genus). The genus *Alloblackburneus* was proposed by Bordat (2009) to include two Afrotropical species having bordered base of the pronotum.

The study of the two species presented here can be taken into account in considering the possible occurrence of the genus in the Oriental Region.

MATERIAL AND METHODS

Specimens were examined with the Olympus SZ61, MBS-10 and SZP 1120-T stereomicroscopes. Measurements were taken with an ocular grid. The elytra length is considered as a distance between a line connecting anterior margin of elytra (at humeri) and elytral apex (along the elytral suture). The photographs published here were taken by using a Meopta laboratory microscope and CMEX 5 digital camera with the Helicon Focus 3.20.2 Pro software.

Male genitalia (aedeagi) were treated by boiling with a 10% sodium hydroxide solution. Their photos were taken in glycerol.

Exact label data (as shown on white labels) are cited for the material examined. Individual lines within each label are separated by slashes “/”; double slash “//” stands for the separation of individual labels. Information in quotation marks indicates the original spelling. Our remarks and additional comments are found in brackets. Type specimens are provided with pale green labels specifying numbers related to the photo-documentation system by the first author (LM); the numbers printed on the pale green labels are employed below, throughout both the texts and legends to figures, to provide unambiguous specification of the specimen concerned.

Morphological terminology concerning the epipharyngeal structures was adopted from Dellacasa et al. (2010).

TAXONOMY

Genus *Blackburneus* A. Schmidt, 1913-

Aphodius (*Blackburneus*) A. Schmidt, 1913: 137.

Aphodius (*Blackburneus*): Schmidt 1922: 146, Balthasar 1964: 178, Dellacasa 1988: 99.

Aphodius, species group *Blackburneus*: Endrődi 1960: 186, Endrődi 1964: 242, Endrődi & Rakovič 1981: 50.

Blackburneus: Paulian 1942: 75, Dellacasa et al. 2001: 102, Gordon & Skelley 2008: 348.

Type species. *Aphodius furcatus* Schmidt, 1909 (by subsequent designation of Paulian (1942)).

Blackburneus (?) *stebnickae* (Pittino, 1988) comb. nov.

(Figs. 1-14)

Aphodius (*Blackburneus*) *stebnickae* Pittino, 1988: 112, figs 1, 5, 6.

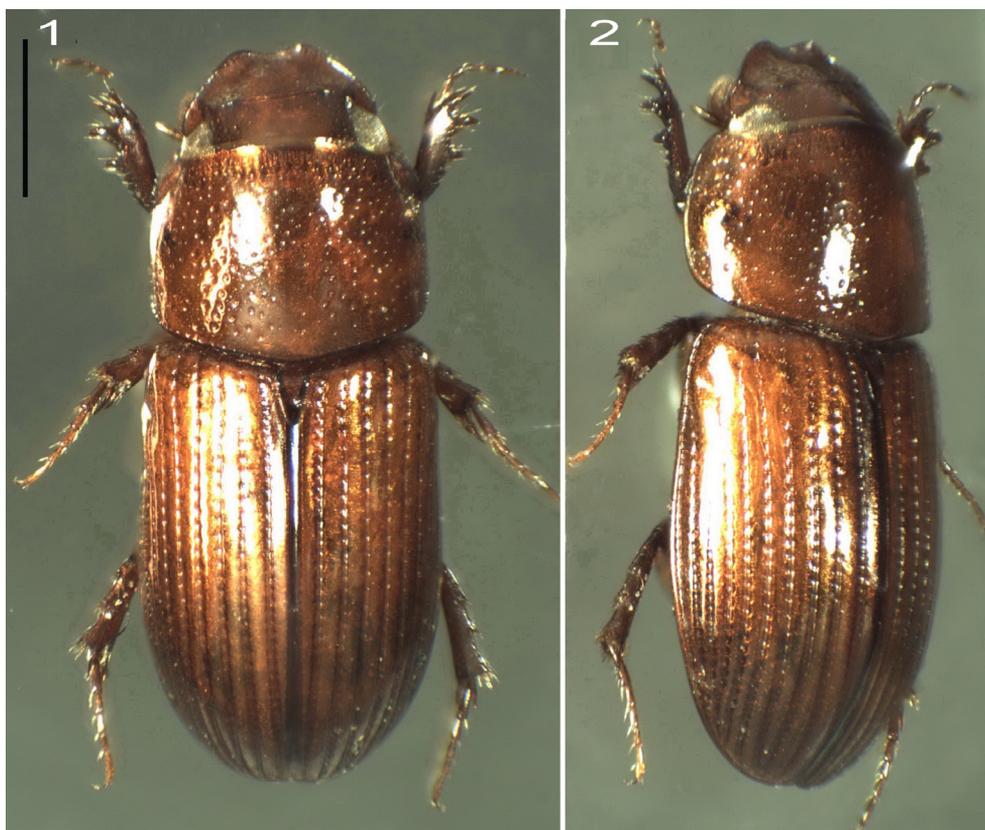
Aphodius (*Blackburneus*) *stebnickae*: Dellacasa 1988: 372 (catalogue).

Type locality. “India orientalis, Nagpore [= East India, Chota Nagpur Plateau]”.

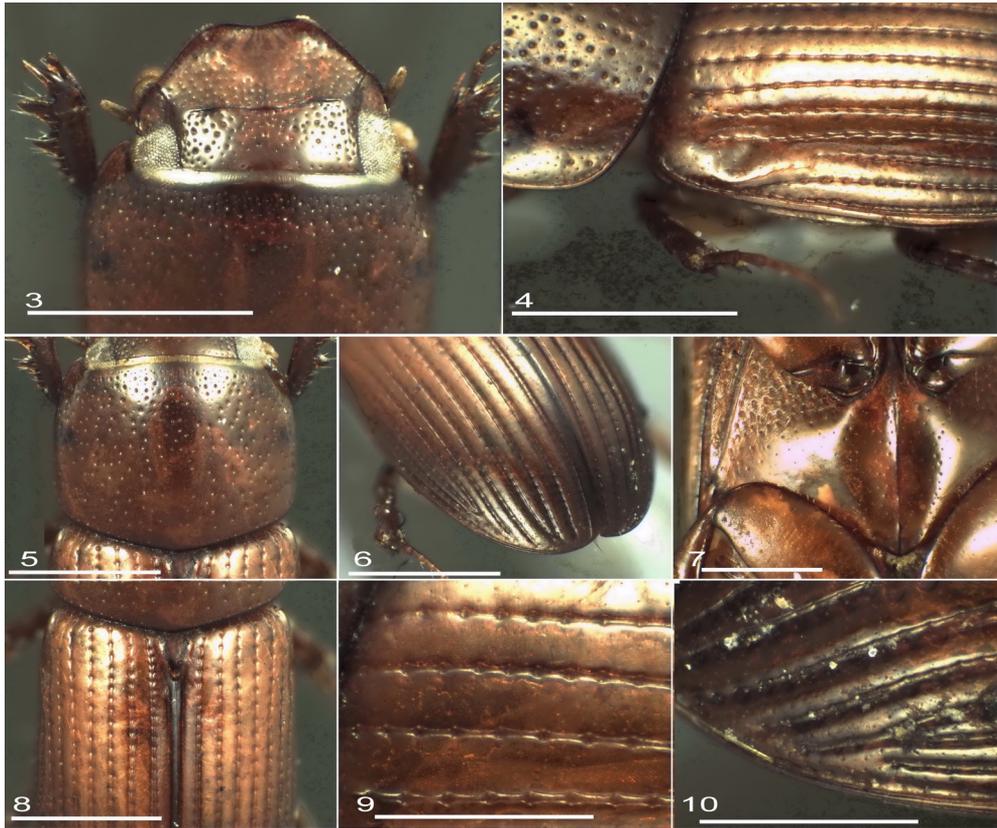
Material studied. A specimen from National Museum Praha, Czech Republic equipped with labels shown in Fig. 14.

Note. No redescription is needed, but we offer the following photographs depicting the habitus (dorsal and dorsolateral view – Figs. 1 and 2, respectively), head (Fig. 3), posterior pronotal angle (Fig. 4), pronotum (Fig. 5), posterior part of elytra (Fig. 6), metaventral plate (Fig. 7), anterior part of elytra including scutellum (Fig. 8), sculpture of elytral striae and intervals (Fig. 9), elytral apex (Fig. 10), epipharynx (Fig. 11), lateral view of aedeagus (Fig. 12) and ventral view of aedeagus (Fig. 13).

Additional description of epipharynx (Fig. 11). Anterior margin almost straight, angulate anterolaterally; epitorma broadly, regularly widened posteriad; mesoepitorma with irregular transversal row of six ankosensilla; nesium with one arcuate row of small ankosensilla and with spot of large angsensilla posterobasally; corypha distinctly exceeding anterior margin, with two long, stout spinules and four shorter ones; zygom with two rows of ankosensilla; acropariae with irregular row of stout macrosetae; apophobae with long macrosetation posteriorly; prophobae densely, shortly macrosetaceous; chaetoparia with row of more than 30 stout macrosetae; tormae long, acute apically.



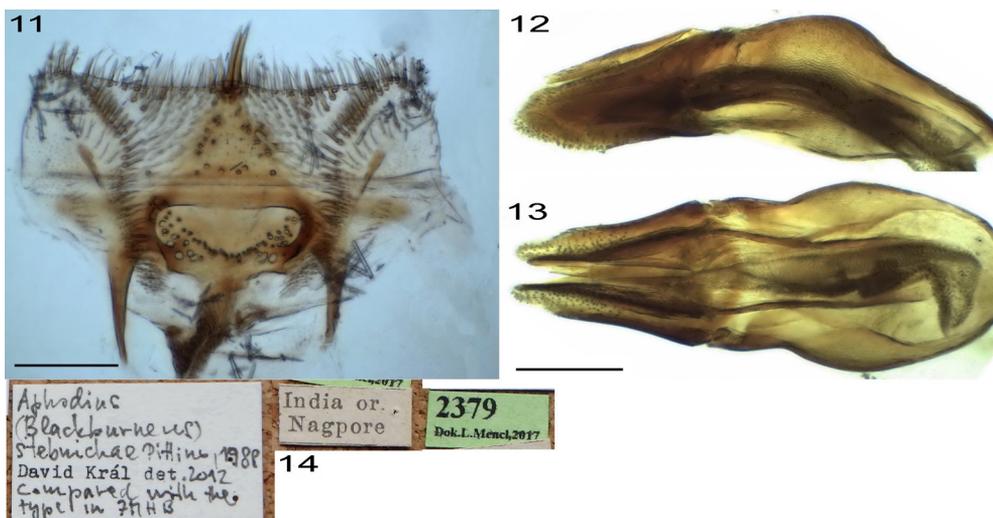
Figs. 1-2. *Blackburneus* (?) *stebnickae* (Pittino, 1988), topotype, ♂, habitus: 1- dorsal view; 2- dorsolateral view. Scale line 1.0 mm. Photographs by L. Mencl.



Figs. 3-10. *Blackburneus* (?) *stebnickae* (Pittino, 1988), topotype, ♂, details: 3- head and anterior area of pronotum, dorsal view; 4- left posterior angle of pronotum and humeral area of left elytron, lateral view; 5- pronotum, dorsal view; 6- elytral apex, dorsal view; 7- metaventral plate, ventral view; 8- basal area of elytra and scutellum, dorsal view; 9- sculpture of elytral striae (left elytron, area adjacent to base); 10- elytral apex (right elytron, dorsal view). Scale lines 1.0 mm. Photographs by L. Mencl.

Differential diagnosis. Compared to the next species, *Blackburneus* (?) *stebnickae* comb. nov. is strongly shiny, its clypeus anterior margin is distinctly emarginate and elytra are subparallel.

Distribution. The location specified on labels in types as well as in the specimen studied here, “India or., Nagpore”, is most likely to concern the Chota Nagpur Plateau in eastern India, in northwestern Chhattisgarh and central Jharkhand states.



Figs. 11-14. *Blackburneus* (?) *stebnickae* (Pittino, 1988), topotype, ♂, epipharynx, aedeagus and labels pinned under specimen: 11- epipharynx; 12- aedeagus, lateral view; 13- aedeagus, ventral view; 14- labels pinned under specimen. Scale lines 0.1 mm for Fig. 11, 0.2 mm for Figs. 12-13. Photographs by L. Mencl.

***Blackburneus* (?) *strandii* (Balthasar, 1935) comb. nov.**
(Figs. 15-26)

Aphodius (*Koshantschikovius* ?) *Strandi* Balthasar, 1935: 254.

Aphodius (*Koshantschikovius* ?) *strandii*: Balthasar 1964: 300 (monograph).

Aphodius (*Koshantschikovius* ?) *strandii*: Dellacasa 1988: 381 (catalogue).

Type locality. “India orientalis, Nagpore [= East India, Chota Nagpur Plateau]”.

Type material studied. Lectotype (by present designation), ♂ (National Museum Praha, Czech Republic), “India or. / Nagpore [white, printed label] // TYPUS [red, printed label] // Strandii / m. [white, handwritten label] // 2363 / Dok.L.Mencl 2017 [pale green, printed label] // *Blackburneus strandii* (Balth.) comb. nov. M. Rakovič, / D. Král & L. Mencl / det. 2018. [red, printed label]. See also Fig. 26 for photos of labels.

Note. In the original Balthasar’s work, neither the number of specimens nor the place of the type deposition are specified. In the National Museum Praha, there is only the specimen studied here. It should be considered as lectotype.

Lectotype redescription. Small (5.1 mm), oblong oval (length to width ratio of 1.70), widest at half elytra length. Glabrous, moderately shagreened and thus not quite shining, yellowish to reddish brown throughout dorsal surface; head mostly darker with lighter lateral margins and genae; pronotum darker on disc, lighter laterally and posteriorly; elytra moderately lighter on disc, moderately darker laterally and apically, with slightly darker sutural interval; legs also yellowish brown; lighter and darker areas on head, pronotum and elytra surface not distinctly delimited (Figs. 15-16).

Head (Fig. 18) moderately convex in its central part, flat along margins, with fine, but distinct frontoclypeal suture bearing no tubercles (horns). Clypeus truncate (not emarginate) anteriorly, with moderately narrowly lighter margins; its lateral margins straight, not quite aligned with anterior margins of genae; genae at most slightly more protruding than eyes. Head surface finely densely punctate, without difference between puncture sizes and densities in front of and behind frontoclypeal surface.

Epipharynx (Fig. 23). Anterior margin almost straight, regularly rounded anterolaterally; epitorma slender, narrow, regularly widened posteriad, nesium with two rows of small ankosensilla; corypha not exceeding anterior margin, only with two long, stout spinules; zygom nude; acropariae with markedly dense, long macrosetation; apophobae with long macrosetation posteriorly; prophobae considerably densely macrosetaceous; chaetopariae slender, densely macrosetaceous; tormae damaged.

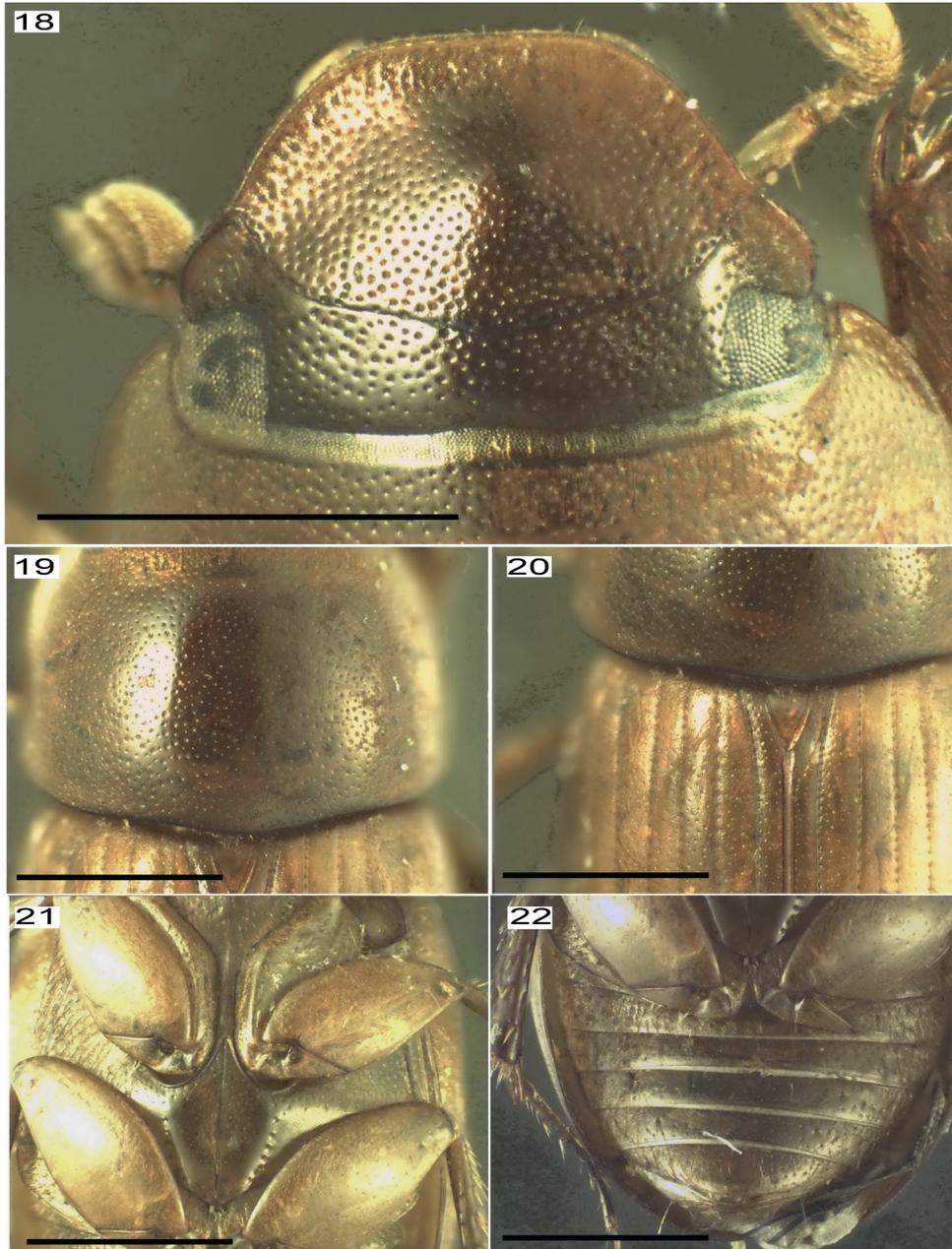
Pronotum (Fig. 19) transversal (length-to-width ratio of 0.686), widest behind midlength, lateral margins more arcuate anteriorly, straighter posteriorly, posterior corners quite rounded, base distinctly sinuate against elytral interval 3 on each side, not bordered. Punctuation on surface fine, punctures similar to those on head in size, but moderately less dense.

Scutellum (Fig. 20) small, narrow triangular, its surface nearly impunctate (at most few poorly distinct punctures observable anteriorly even under high magnification).

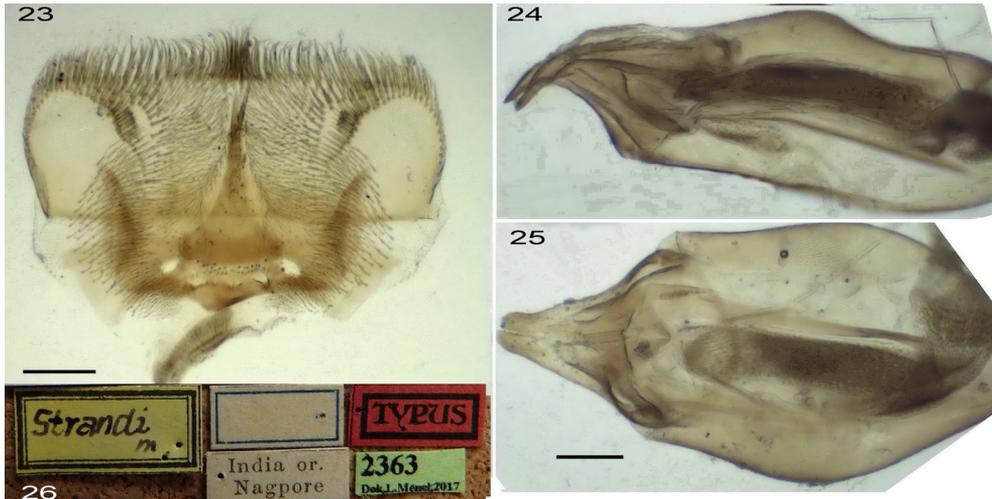
Elytra only moderately longer than wide (length-to-width ratio of 1.29), moderately wider than pronotum (elytra width to pronotum width ratio of 1.12), without humeral denticles, with ten striae and ten intervals, with sides continuously arcuate from humeri to apex. Striae narrow, but distinct, finely punctate. Intervals only moderately convex on disc, flat on apex, with very fine but distinct punctures, mostly about 3 microscopic punctures per interval width, not arranged in rows.



Figs. 15-17. *Blackburneus (?) strandi* (Balthasar, 1935), lectotype, ♂, habitus: 15- dorsal view; 16- dorsolateral view; 17- ventral view. Scale line 1 mm. Photographs by L. Mencl.



Figs. 18-22. *Blackburneus* (?) *strandii* (Balthasar, 1935), lectotype, ♂, details: 18- head and anterior margin of pronotum, dorsal view; 19- pronotum, dorsal view; 20- basal area of elytra and scutellum, dorsal view; 21- meso- and metafemora and metaventral plate, ventral view; 22- abdominal ventrites, ventral view. Scale lines 1 mm. Photographs by L. Mencl.



Figs. 23-26. *Blackburneus* (?) *strand*i (Balthasar, 1935), lectotype, ♂, epipharynx, aedeagus and labels pinned under type specimen: 23- epipharynx; 24- aedeagus, lateral view; 25- aedeagus, dorsal view; 26- labels pinned under type specimen. Scale lines 0.1 mm. Photographs by L. Menck.

Protibia with three large outer teeth in apical part and four small denticles in basal part; upper face with medium-sized punctures; apical spine arcuately bent outward and downward. Apices of meso- and metatibiae fringed with unequal spinules; basal metatarsomere shorter than superior apical spine of metatibia and about as long as metatarsites 2 to 4 combined.

Pygidium with two pygidial macrosetae (Fig. 22).

Underside as in Fig. 17. Matte, yellowish brown (paler than dorsal side). Femora prevalently glabrous, at most with indistinct, scarce punctures (Figs. 17 and 21). Metaventral plate with narrow midline furrow (Fig. 21). Abdominal ventrites macrosetaceous (Fig. 22). Aedeagus as in Figs. 24-25.

Sexual dimorphism. Female unknown.

Variability. Unknown.

Differential diagnosis. Compared to the preceding species, *Blackburneus* (?) *strand*i is rather matte its clypeus anterior margin is straight, not emarginate and elytra are distinctly broader behind.

Distribution. East India (the Chota Nagpur Plateau - see the paragraph Distribution in the description of the preceding species for explanation).

DISCUSSION

The revisional essay of genus-group taxa (Dellacasa et al. 2001) comprises the following information on the *Blackburneus* distribution: “Afrotropical (?) Oriental (?) and Neotropical region”; this information is followed by an important remark: “Due to the peculiar features of the type species designated by Paulian, the number of taxa pertaining to *Blackburneus* could be remarkably reduced and it is probable that only Neotropical species are going to be assigned to it”.

Results of studying the two species are in support of a conclusion that the placement of particular species in the genus *Blackburneus* is quite provisional (see also the next paragraph here) and can be employed just for practical reasons for grouping relatively small, glabrous, yellowish brown to reddish brown Asian Aphodiini having the clypeofrontal suture without tubercles, the pronotum base not bordered (without margin line), elytral intervals flat or more or less convex (but not costate) and apices of metatibiae fimbriate with unequal (not very numerous) spinules. The shape of the aedeagus (in the case of the *Blackburneus* (?) *stebnickae*) or the structure of the epipharynx (in the case of the *Blackburneus* (?) *strandii*) are quite different from respective features found in *Blackburneus* and its allies as known from the literature available, which is cited above (for example Bordat 2009, Dellacasa et al 2001, Dellacasa et al. 2011). A further Asian species considered within the taxon *Blackburneus* is mentioned in monographs by Schmidt (1922) or Balthasar (1964) as *Aphodius* (*Blackburneus*) *minutissimus* A. Schmidt, 1908; this species is not discussed here, but we intend to solve its status in a next work in the near future.

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