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# New Beetles of the Family Cupedidae from the Mesozoic of Mongolia. Ommatini, Mesocupedini, Priacmini

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**Abstract**—Thirteen new species of cupedid beetles assigned to six genera are described from seven Middle–Upper Jurassic and Lower Cretaceous localities. A new species of *Cionocoleus* based on a nearly complete specimen is described; the genus is redefined and transferred from the Schizocoleidae to the Cupedidae *incertae sedis*.

A previous paper (Ponomarenko, 1994) contained descriptions of cupedid beetles from the Jurassic and Cretaceous of Mongolia, belonging to the tribes Brochocoleini and Notocupedini. The remaining taxa known by quite representative material are described in this paper. Numerous specimens belonging to other species remain undescribed due to inadequate preservation.

The beetles described were collected in the localities listed below; for more detailed data, see Sinitsa (1993).

Bakhar. Mongolia, Bayan-Khongor Aimak, Gobi Altai, 12 km north of Tsetsen-Ula Mt. (Bakhar locality, outcrops 268 and 275); Middle or basal Upper Jurassic, Bakhar Group, Togo-Khuduk sequence.

Khoutiin-Khotgor. Mongolia, Middle Gobi Aimak, 23 km southwest of Bayan-Zhargalan Somon, Khoutiin-Khotgor Depression; uppermost Upper Jurassic, Ulan-Ereg Formation.

Anda-Khuduk. Mongolia, Uver-Khangai Aimak, Ushugiin-Nuru Range, western sources of Shand-Gol Sair near Anda-Khuduk Well; Lower Cretaceous, Hauterivian–Barremian, Anda-Khuduk Formation.

Bon-Tsagan. Mongolia, Bayan-Khongor Aimak, foothills of Dund-Ula, south of Bon-Tsagan-Nur Lake; Lower Cretaceous, ?Aptian; outcrop 23: Dund-Argalant Group, Ulan-Argalant sequence; other outcrops: Bon-Tsagan Group, Khurilt sequence.

Shar-Tologoi. Mongolia, Bayan-Khongor Aimak, southeast of the Ikh-Bogdo Mountain, 33 km north of Bayan-Leg Somon; Lower Cretaceous, ?Aptian, Bon-Tsagan Group, Shar-Tologoi sequence.

Khurilt. Mongolia, Bayan-Khongor Aimak, Gobi Altai, 6 km north of the Tsetsen-Ula Mountain, Khurilt-Ulan-Bulak; Lower Cretaceous, ?Aptian, Bon-Tsagan Group, Khurilt sequence.

Kholbotu. Mongolia, Bayan-Khongor Aimak, Gobi Altai, northwest of the Tsetsen-Ula Mountain, Kholbotu-Sair; Lower Cretaceous, ?Aptian, Bon-Tsagan Group, Khurilt sequence.

## Subfamily Ommatinae Sharp et Muir, 1912

## Tribe Ommatini Sharp et Muir, 1912

### Genus *Tetraphalerus* Waterhouse, 1901

#### *Tetraphalerus glabratus* Ponomarenko, sp. nov.

Plate 6, figs. 1 and 2

Etymology. From Latin *glabrus* (smooth).

Holotype. PIN, no. 3791/3379, beetle lacking most legs (part and counterpart); Bakhar, outcrop 268; Middle or Upper Jurassic, Togo-Khuduk sequence.

Description (Fig. 1). Quite large, elongate, flattened beetle. Head slightly longer than wide, triangular, broadest at occiput. Genae slightly shorter than eyes, temples longer than eyes, occiput sloped, neck-like constriction not sharp, temples not projecting laterad. Vertex with two oval flat prominences, their posterior part broadened. Antenna setaceous, extending beyond anterior pronotal margin. Pronotum slightly wider than long, very weakly narrowing forwards and backwards, sides flattened. Pronotal disc with weak longitudinal elevation subdivided by two longitudinal depressions. Metasternum transverse, 1.5 times as broad as long. Elytron twice as long as broad, with tip not drawn out tail-like. Epipleura quite narrow. Veins very poorly traceable, almost invisible, cells indistinct. Last abdominal sternum 1.3 times as long as penultimate one. Body quite evenly covered with not very large tubercles.

Measurements (mm): total length 14–16, width 4.5–5.3, elytron length 10–11.

Comparison. Distinct from most species by the elytron almost lacking veins and cells; from *T. aphalerates* Ponomarenko, 1969 and the beetle described as *Tetraphalerites oligocenicus* Crowson, 1962, both similar in this character, distinguishable by the narrow epipleura and (from the first species) also by shorter head.

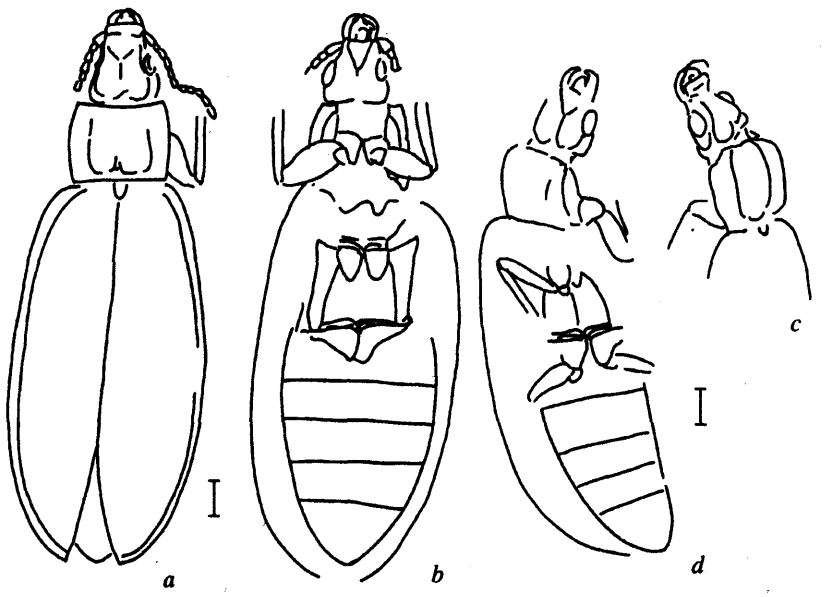



**Fig. 1.** *Tetraphalerus glabratus* sp. nov.; holotype PIN, no. 3791/3379: (*a*) from above, (*b*) from below; paratype PIN, no. 3791/4700: (*c*) from above, (*d*) from below; Bakhar, Middle or Upper Jurassic. Scale unit in all figures 1 mm.

Material. Besides the holotype, from same locality (outcrop 275) the paratypes no. 3791/4700 (almost complete beetle) and no. 3791/4248 (abdomen).

***Tetraphalerus collaris* Ponomarenko, sp. nov.**

Plate 6, fig. 3

Etymology. From Latin *collum* (neck).

Holotype. PIN, no. 3559/1629, beetle lacking most of abdomen and legs (part and counterpart); Bon-Tsagan, outcrop 45, bed 19; Lower Cretaceous, Khurilt sequence.

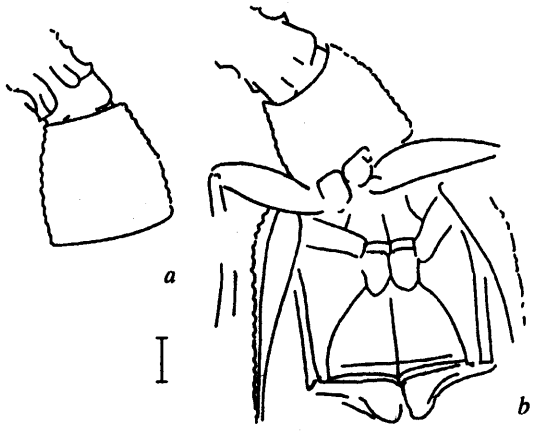



**Fig. 2.** *Tetraphalerus collaris* sp. nov.; holotype PIN, no. 3559/1629: (*a*) from above, (*b*) from below; Bon-Tsagan, Lower Cretaceous.

Description (Fig. 2). Quite large, elongate, flattened beetle. Head more than twice longer than broad, subrectangular, extended and somewhat broadened before antennal bases. Genae and temples longer than eyes, occiput truncate, neck-like constriction abrupt, temples protruding laterad. Vertex with two pairs of oblique carinae which are more raised posteriorly. Pronotum arcuately narrowed forwards, 1.5 times as long as broad at anterior margin; sides flattened; anterior margin 1.5 times shorter than posterior one. Pronotal disc with weak longitudinal depressions. Metasternum transverse, 1.5 times as broad as long. Epipleura narrow, broadening anteriorly from the middle of metasternum. Main veins of elytron barely distinguishable from intermediate ones; veins and cells poorly traceable. Fore femora thickened. Body quite evenly covered with large tubercles.

Measurements (mm): length as preserved 11, estimated total length about 20, width 7.0, elytron length about 12.

Comparison. The largest species of the genus. From other large species (*T. grandis* Ponomarenko, 1964 and *T. maximus* Ponomarenko, 1968) distinct by the long and anteriorly strongly narrowed pronotum.

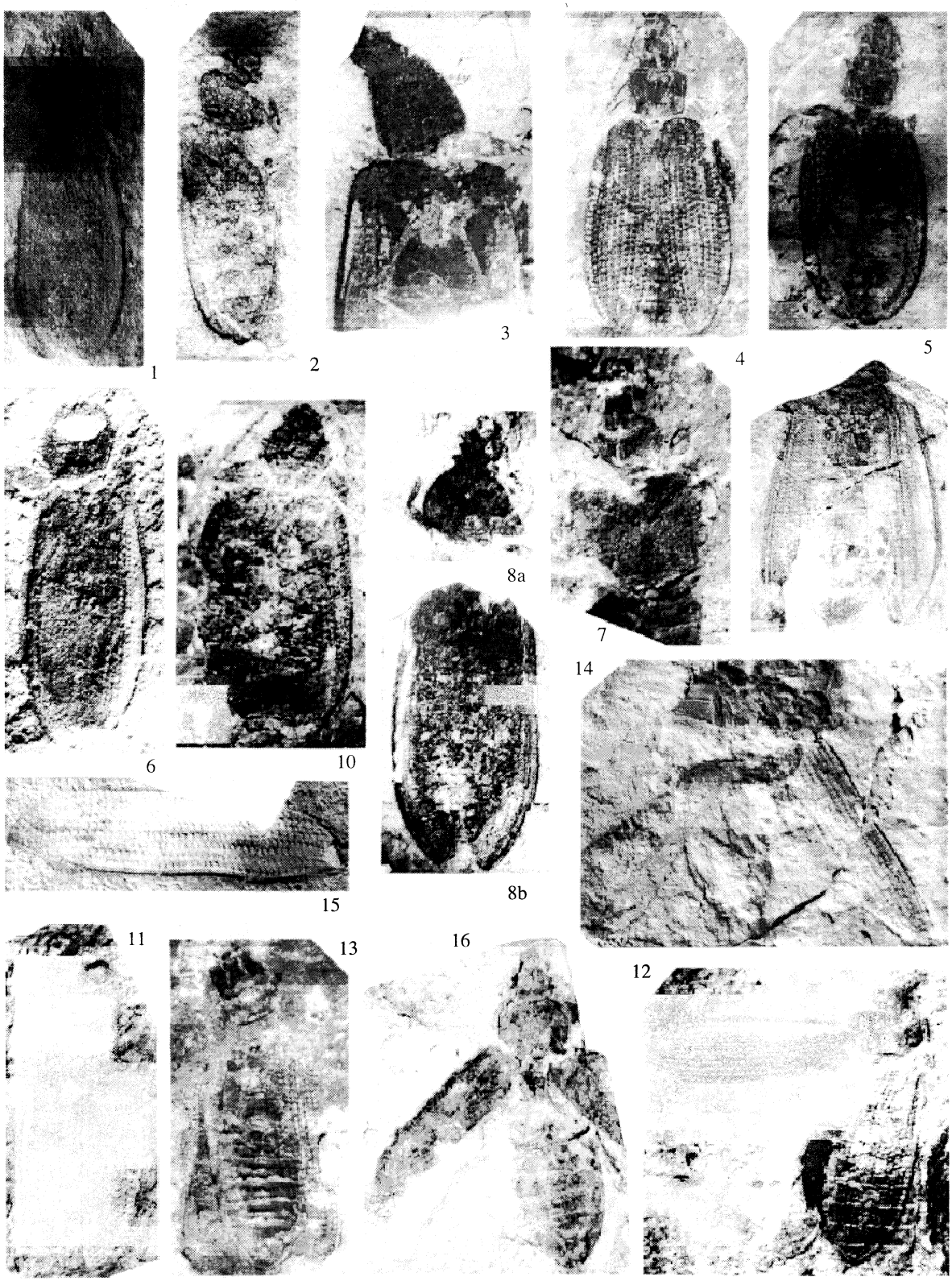
Material. Holotype.

***Tetraphalerus bontsaganensis* Ponomarenko, sp. nov.**

Plate 6, figs. 4 and 5

Etymology. From the Bon-Tsagan locality.

Plate 6



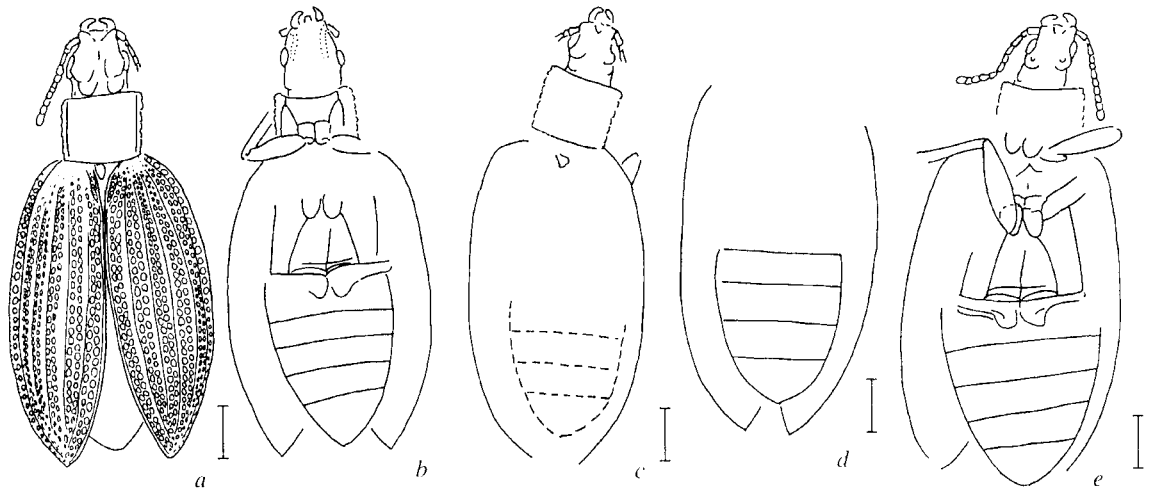



**Fig. 3.** *Tetraphalerus bontsaganensis* sp. nov.; holotype PIN, no. 3559/6051: (*a*) from above, (*b*) from below; paratypes: (*c*) PIN, no. 3559/1635, (*d*) PIN, no.3559/1662, Bon-Tsagan, Lower Cretaceous; (*e*) PIN, no. 3790/278, Khurilt, Lower Cretaceous.

Holotype. PIN, no. 3559/6051, almost complete beetle (part and counterpart); Bon-Tsagan, outcrop 87, bed 8; Lower Cretaceous, Khurilt sequence.

Description (Fig. 3). Not large, flattened beetle. Head 1.5 times as long as wide, distinctly narrowed forwards. Genae and temples not longer than eyes; occiput truncate. Neck-like constriction not sharp; temples not projecting laterad. Vertex with two oval flat prominences which are narrowed posteriorly. Antenna weakly moniliform, reaching beyond anterior pronotal margin; its first and third segments much longer than others, apical one swollen. Pronotum nearly as wide as long, weakly broadened forwards; sides of pronotum with a sharp groove. Metasternum transverse, 1.7 times as wide as long. Elytron 2.5 times as long as wide, with tip not drawn out tail-like. Epipleura with broad rim bearing a row of cells. Main veins of elytron barely distinguishable from intermediate ones, cells distinct. Last sternum 1.3 times longer than penultimate one; abdomen narrowing from the base of third sternum. Body densely, evenly covered with tubercles which are largest on the ventral head surface and metasternum.

Measurements (mm): total length 8–10, width 3.3–3.6, elytron length 5.0–6.6.

Comparison. In proportions of the head and pronotum similar to *T. verrucosus* Ponomarenko, 1966 and *T. ochotensis* Ponomarenko, 1993, being distinct from them in the head less elongate, and pronotum broadened forwards.

Explanation of Plate 6

**Figs. 1, 2.** *Tetraphalerus glabratus* sp. nov.: (1) holotype PIN, no. 3791/3379, ×3.8, (2) paratype PIN, no. 3791/4700, ×3.6; Bakhar, Middle or Upper Jurassic.

**Fig. 3.** *Tetraphalerus collaris* sp. nov.; holotype PIN, no. 3559/1629, ×5.8; Bon-Tsagan, Lower Cretaceous.

**Figs. 4, 5.** *Tetraphalerus bontsaganensis* sp. nov.: (4) holotype PIN, no. 3559/6051, ×4.6, (5) paratype PIN, no. 3559/1635, ×4.3; Bon-Tsagan, Lower Cretaceous.

**Fig. 6.** *Tetraphalerus longicollis* sp. nov; holotype PIN, no. 3559/1578, ×7.6; Bon-Tsagan, Lower Cretaceous.

**Fig. 7.** *Tetraphalerus notatus* sp. nov.; holotype PIN, no. 3559/6053, ×9.0; Bon-Tsagan, Lower Cretaceous.

**Fig. 8.** *Omma gobiense* sp. nov.; holotype PIN, no. 3688/1173, ×3.0: (a) head and prothorax, (b) thorax and abdomen; Khoutiin-Khotgor, Upper Jurassic.

**Fig. 9.** *Omma altajense* sp. nov.; holotype PIN, no. 3791/4716, ×2.8; Bakhar, Middle or Upper Jurassic.

**Fig. 10.** *Omma antennatum* sp. nov.; holotype PIN, no. 3559/6048, ×5.4; Bon-Tsagan, Lower Cretaceous.

**Fig. 11, 12.** *Anaglyphites mongolicus* sp. nov.: (11) holotype PIN, no. 3559/1608, ×10, Bon-Tsagan, Lower Cretaceous; (12) paratype PIN, no. 3790/277, ×8, Khurilt, Lower Cretaceous.

**Fig. 13.** *Priacmopsis minimus* sp. nov.; holotype PIN, no. 3559/6052, ×7.0; Bon-Tsagan, Lower Cretaceous.

**Fig. 14.** *Priacma oculata* sp. nov.; holotype PIN, no. 4271/182, ×5.0; Shar-Tologoi, Lower Cretaceous.

**Fig. 15.** *Priacma longicapitis* sp. nov.; paratype PIN, no. 4271/175, ×4.0; Shar-Tologoi, Lower Cretaceous.

**Fig. 16.** *Cionocoleus ommamimus* sp. nov.; holotype PIN, no. 467/74, ×2.6; Anda-Khuduk, Lower Cretaceous, Anda-Khuduk Formation.

Material. Holotype and paratypes no. 3559/1635 (nearly complete beetle), no. 3559/1594 (a pair of elytra, metasternum and abdomen) from outcrop 34, bed 3; no. 3559/1600 (a pair of elytra, metasternum and abdomen) from outcrop 35; no. 3559/1662 (a pair of elytra, metathorax and abdomen) and no. 3559/1641 (isolated elytron) from outcrop 45 of same locality; no. 3790/278 (almost complete beetle) from Khurilt locality, outcrop 206; no. 3147/253 (isolated elytron) from Kholbotu locality.

***Tetraphalerus longicollis* Ponomarenko, sp. nov.**

Plate 6, fig. 6

Etymology. From Latin *longus* (long) and *collum* (neck).

Holotype. PIN, no. 3559/1578, beetle lacking head and most of legs (part and counterpart); Bon-Tsagan, outcrop 23, bed 22; Lower Cretaceous, Ulan-Argalant sequence.

Description (Fig. 4). Not large, flattened beetle. Head 1.7 times as long as wide, abruptly narrowed before eyes, slightly broadened towards antennal bases. Genae longer than eyes, temples nearly as long as eyes. Occiput truncate, neck-like constriction sharp; temples rectangular, not projecting laterad. Vertex with two oval flat prominences which are narrowed posteriorly. Pronotum slightly longer than wide, narrowed forwards and backwards, widest in anterior third. Metasternum transverse, 1.7 times as wide as long. Elytron 3.5 times as long as wide, with tip not drawn out tail-like. Epipleura with not broad rim bearing a row of cells. Main veins of elytron barely distinguishable from intermediate ones, cells distinct. Abdomen narrowing from the base of third sternum; last sternum 1.4 times longer than penultimate one. Body densely, evenly covered with tubercles which are largest on the pronotum and edge of elytra, so that the lateral edge of elytron seems serrate.

Measurements (mm): total length 7.0–7.5, width 3.0–3.3, head length 1.2, length of pronotum 1.5–1.7, elytron length 4.8–5.7.

Comparison. In most characters very similar to *T. verrucosus* Ponomarenko, 1966, being distinct in the longer head abruptly narrowed before eyes, rectangular temples, and longer pronotum.

Material. Holotype and paratypes no. 3559/1634 (incomplete beetle) and no. 3559/1666 (fragment of elytra and abdomen) from outcrop 45; no. 3559/1620 (elytra and abdomen) and no. 3559/1611 (fragment of elytron) from outcrop 35; no. 3559/6042 (incomplete beetle) and no. 3559/6033 (fragment of elytron) from outcrop 87, bed 8 of same locality, all the paratypes from Khurilt sequence; nos. 4271/176 and 179 (incomplete elytra) from Shar-Tologoi locality, outcrop 368, bed 5, Shar-Tologoi sequence.

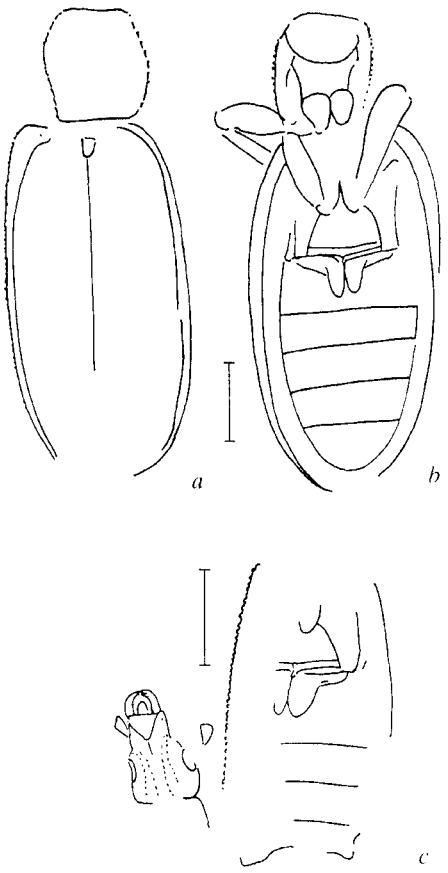



**Fig. 4.** *Tetraphalerus longicollis* sp. nov; holotype PIN, no. 3559/1578: (*a*) from above, (*b*) from below; (*c*) paratype PIN, no. 3559/1634; Bon-Tsagan, Lower Cretaceous.

***Tetraphalerus notatus* Ponomarenko, sp. nov.**

Plate 6, fig. 7

Etymology. From Greek *notum* (back).

Holotype. PIN, no. 3559/6053, beetle lacking most of abdomen (part and counterpart); Bon-Tsagan, outcrop 87, bed 8; Lower Cretaceous, Khurilt sequence.

Description (Fig. 5). Not large, flattened beetle. Head slightly longer than wide, distinctly narrowed forwards. Genae and temples not longer than eyes; occiput truncate. Neck-like constriction not sharp; temples not projecting laterad. Vertex with two oval flat prominences. Antenna weakly moniliform, with first and third segments much longer than others. Pronotum 1.8 times as wide as long, arcuately narrowed in anterior half, with sides flattened. Metasternum transverse, 1.3 times as wide as long. Elytron 2.7 times as long as wide, with tip not drawn out tail-like. Epipleura with not broad rim lacking cells. Main veins of elytron barely distinguishable from intermediate ones, cells distinct. Abdomen narrowing from the base of third

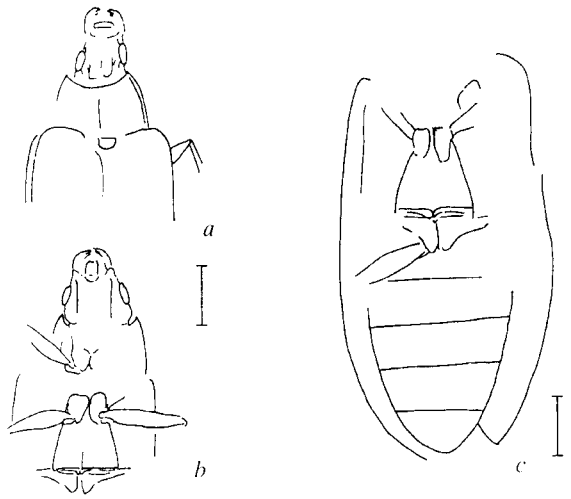


Fig. 5. *Tetraphalerus notatus* sp. nov.; holotype PIN, no. 3559/6053: (*a*) from above, (*b*) from below; (*c*) paratype PIN, no. 3559/6029; Bon-Tsagan, Lower Cretaceous.

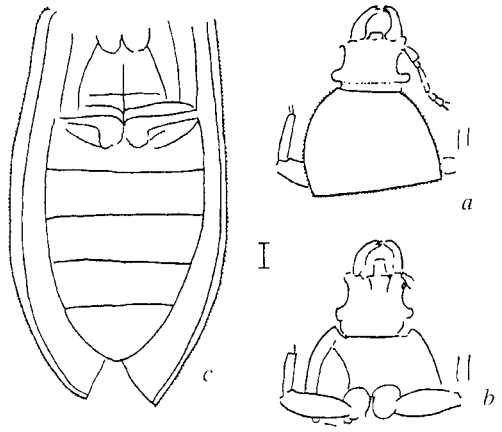


Fig. 6. *Omma gobiense* sp. nov.; holotype PIN, no. 3688/1173: (*a*) head and prothorax from above, (*b*) head and prothorax from below, (*c*) thorax and abdomen from below; Khoutiin-Khotgor, Upper Jurassic.

sternum; last sternum 1.5 times longer than penultimate one. Body densely, evenly covered with tubercles which are largest on the ventral head surface and metasternum.

Measurements (mm): total length 8–11, width 3.6–5.0, elytron length 6.0–8.0.

Comparison. Distinct from all species of the genus in the shortest pronotum, differing from other species with short pronotum by the short head.

Material. Holotype and paratypes no. 3559/6029 and no. 3559/6056 (beetles lacking head and pronotum) from same outcrop; nos. 3559/1596, 1597, 1620 (beetles lacking head and pronotum) and no. 3559/1654 (isolated elytron) from outcrop 45, same locality; no. 3147/253 (isolated elytron) from Kholbotu locality; all from Khurilt sequence.

## Genus *Omma* Newman, 1839

### *Omma gobiense* Ponomarenko, sp. nov.

Plate 6, fig. 8

Etymology. From the Gobi Desert.

Holotype. PIN, no. 3688/1173, almost complete beetle (head and pronotum lying apart; part and counterpart); Khoutiin-Khotgor; Upper Jurassic, Ulan-Ereg Formation.

Description (Fig. 6). Quite large, wide, flattened beetle. Head slightly longer than wide, not narrowed forwards. Genae and temples shorter than eyes; temples projecting; occiput truncate; neck-like constriction weak. Antenna reaching far beyond anterior pronotal margin. Pronotum transverse, 1.4 times as wide as long, strongly narrowed forwards; its anterior margin straight, not wider than head. Metasternum quite long, 1.7 times as wide as long. Elytron almost 4 times as long as wide. Epipleura not wide, with a row of distinct cells. Main veins of elytron barely distinguishable from intermediate ones, cells poorly visible. Last sternum of abdomen 1.3 times longer than penultimate one. Body quite evenly covered with not very large tubercles.

Measurements (mm): total length 22.7, width 8.0; elytron length 16.0.

Comparison. In the large size and quite long pronotum similar to the recent *O. stanleyi* Newman, 1839, Upper Jurassic *O. brevipes* Deichmüller, 1886 and Lower Cretaceous *O. sibiricum* Ponomarenko, 1966. Distinct from the former in the neck-like constriction weak, and both metasternum and last abdominal sternum shorter, from the two others in the pronotum more narrowed forwards, and last abdominal sternum shorter.

Material. Holotype.

### *Omma altajense* Ponomarenko, sp. nov.

Plate 6, fig. 9

Etymology. From the Altai Mountains.

Holotype. PIN, no. 3791/4716, beetle lacking head and pronotum (part and counterpart); Bakhar, outcrop 275; Middle or Upper Jurassic, Togo-Khuduk sequence.

Description (Fig. 7). Quite large, wide, flattened beetle. Metasternum weakly narrowed forwards, twice as wide as long. Longitudinal groove and paracoxal suture hardly traceable. Metepistern broad, weakly narrowed forwards, its width anteriorly only slightly less than its length. Elytron three times as long as wide. Epipleura not broad, with a row of poorly traceable cells. Main veins of elytron barely distinguishable from intermediate ones, cells indistinct. Last abdom-

inal sternum 1.5 times longer than penultimate one, quite strongly narrowed and pointed posteriorly. Body quite evenly covered with not very large tubercles.

Measurements (mm): total length about 25, width 11; elytron length 18.0.

Comparison. In the large size and quite long pronotum similar to the recent *O. stanleyi* Newman, 1839, Lower Cretaceous *O. sibiricum* Ponomarenko, 1966 and Upper Jurassic *O. zitteli* Oppenheim, 1888, *O. brevipes* Deichmüller, 1886, and *O. gobiense* sp. nov. Distinct in the shorter metasternum and longer, pointed last abdominal sternum.

Material. Holotype.

***Omma antennatum* Ponomarenko, sp. nov.**

Plate 6, fig. 10

Etymology. From Latin *antenna* (yard, antenna).

Holotype. PIN, no. 3559/6048, almost complete beetle (part and counterpart); Bon-Tsagan, outcrop 87, bed 8; Lower cretaceous, Khurilt sequence.

Description (Fig. 8). Not large, broad, flattened beetle. Head nearly as long as wide, narrowed forwards. Genae and temples much shorter than eyes; temples projecting, occiput truncate, neck-like constriction weak. Antenna reaching beyond the base of pronotum. Pronotum transverse, narrowed in anterior third, 1.5 times as wide as long; its anterior margin straight, not wider than head. Metasternum quite long and very narrow, slightly shorter than wide. Elytron three times longer than wide, with narrow epipleural rim. Main veins of elytron barely distinguishable from intermediate ones, cells indistinct. Femora only little projecting beyond lateral body contour, fore femora swollen. Abdomen narrowed from the base of third sternum; its last sternum 1.5 times longer than penultimate one. Body quite evenly covered with not very large tubercles.

Measurements (mm): total length 11.5, width 5.0; elytron length 8.4.

Comparison. In proportions of the head and pronotum similar to the Upper Jurassic *O. pilosum* (Ponomarenko, 1964), differing in the long antennae, narrow metasternum, and abdomen more narrowed backwards with longer last sternum.

Material. Holotype.

## Subfamily Cupedinae Laporte, 1836
## Tribe Mesocupedini Ponomarenko, 1969
## Genus *Anaglyphites* Ponomarenko, 1964

***Anaglyphites mongolicus* Ponomarenko, sp. nov.**

Plate 6, figs. 11 and 12

Etymology. From Mongolia.

Holotype. PIN, no. 3559/1608, beetle lacking antennae and legs (part and counterpart); Bon-Tsagan, outcrop 35; Lower Cretaceous, Khurilt sequence.

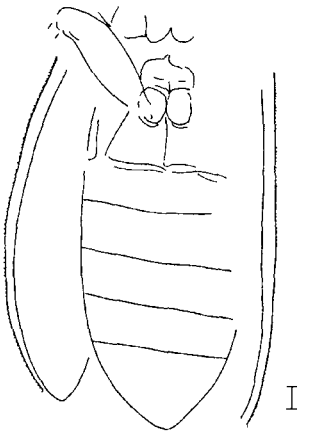


**Fig. 7.** *Omma altajense* sp. nov.; holotype PIN, no. 3791/4716; Bakhar, Middle or Upper Jurassic.

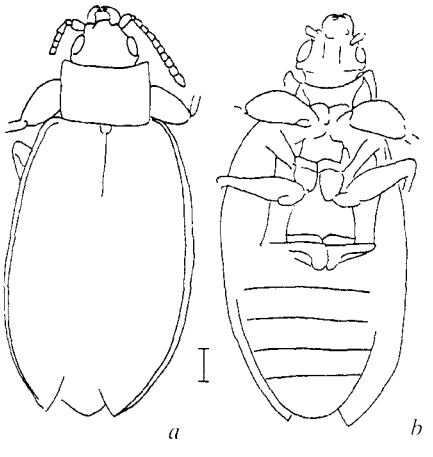


**Fig. 8.** *Omma antennatum* sp. nov.; holotype PIN, no. 3559/6048: (*a*) from above, (*b*) from below; Bon-Tsagan, Lower Cretaceous.

Description (Fig. 9). Not large, flattened beetle. Head, excluding long 'neck' drawn into prothorax, nearly as long as wide, narrowed forwards. Ventral head surface with grooves for inserting antennae. Genae and temples much shorter than eyes; temples rounded, occiput sloped, neck-like constriction weak. Pronotum transverse, nearly 1.5 times as wide as long, narrowed towards base; its anterior margin straight, not wider than head, lateral margins rounded. Prosternal process narrow, narrower than fore coxa, the coxae small and rounded. Metasternum transverse, 1.4 times as wide (at posterior margin) as long. Elytron 3.3 times as long as wide; epipleural rim narrow, with a row of cells in basal half. Main veins of elytron barely distinguishable from intermediate ones; cells subquadrate;

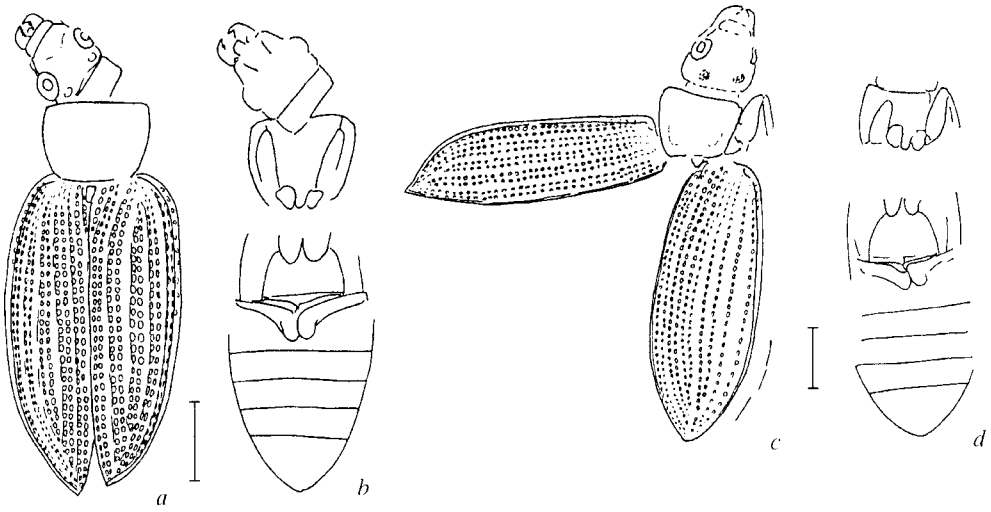



**Fig. 9.** *Anaglyphites mongolicus* sp. nov.; holotype PIN, no. 3559/1608: (*a*) from above, (*b*) from below, Bon-Tsagan, Lower Cretaceous; paratype PIN, no. 3790/277: (*c*) from above, (*d*) from below, Khurilt, Lower Cretaceous.

two posterior main veins joining the previous one. Abdomen narrowed from the base of third sternum, its last sternum twice longer than penultimate one. Body evenly covered with large tubercles.

Measurements (mm): total length 6.3, width 2.3–2.4; elytron length 4.0–4.2.

Comparison. In the pronotum narrowed backwards, similar only to *A. paulus* Ponomarenko, 1964, differing in the much larger size and longer last abdominal sternum.

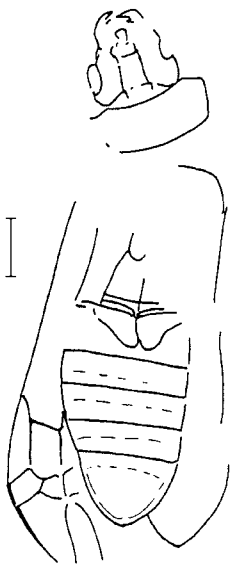


**Fig. 10.** *Priacmopsis minimus* sp. nov.; holotype PIN, no. 3559/6052; Bon-Tsagan, Lower Cretaceous.

Material. Holotype and paratypes no. 3559/6055 (isolated elytron) from outcrop 87, bed 8 of the same locality, and no. 3790/277 (beetle lacking legs and antennae) from Khurilt locality, outcrop 206, bed 4; all from Khurilt sequence.

### Tribe Priacmini Crowson, 1962

### Genus *Priacmopsis* Ponomarenko, 1966

***Priacmopsis minimus* Ponomarenko, sp. nov.**

Plate 6, fig. 13

Etymology. Latin *minimus* (small).

Holotype. PIN, no. 3559/6052, beetle lacking head and antennae (part and counterpart); Bon-Tsagan, outcrop 87, bed 8; Lower Cretaceous, Khurilt sequence.

Description (Fig. 10). Not large, elongate, subcylindrical beetle. Head transverse, abruptly narrowed before eyes; its length without mandibles a quarter less than width. Ventral head surface with grooves for inserting antennae. Genae and temples much shorter than eyes; temples rounded, occiput sloped and incised, neck-like constriction weak. Pronotum strongly transverse, distinctly wider than head, narrowed towards base, nearly twice as wide as long; its anterior margin weakly concave, lateral ones rounded, anterior angles oblique. Prosternal process narrow, narrower than fore coxa; the coxae small, rounded. Metasternum trapezoidal, transverse, 1.3 times as wide (at posterior margin) as long. Elytron 3.5 times as long as wide; epipleural rim narrow. Main veins of elytron barely distinguishable from intermediate ones; cells subquadrate; more than 45 cells along elytron. Main veins joining pairwise. In the wing the proximal RS section (up to crossvein *rm*) much shorter than distal one. Abdomen con-

vex, narrowed from the base of third sternum, its last sternum 2.6 times longer than penultimate one. In middle abdominal sterna the anterior half shaft-like, abruptly elevated above posterior one. Abdominal apex rounded. Body evenly covered with small tubercles, forming transverse wrinkles on pronotum and elevated parts of sterna.

Measurements (mm): total length 9.0, width 3.0; elytron length 6.0.

Comparison. Distinct in the much smaller size, weak neck-like constriction, and narrower prosternal process.

Material. Holotype and paratype no. 3559/1628, isolated elytron from outcrop 45 of same locality, both from Khurilt sequence.

### Genus *Priacma* LeConte, 1874

***Priacma oculata* Ponomarenko, sp. nov.**

Plate 6, fig. 14

Etymology. From Latin *oculus* (eye).

Holotype. PIN, no. 4271/182, torn beetle lacking antennae, abdomen and most of legs (part and counterpart); Shar-Tologoi, outcrop 382, bed 1; Lower Cretaceous, Shar-Tologoi sequence.

Description (Fig. 11). Not large, subcylindrical beetle. Head transverse, abruptly narrowed before eyes; its length without mandibles and neck-like constriction a third less than width. Ventral head surface with grooves for inserting antennae. Eyes large, genae and temples much shorter than eyes; temples rounded, occiput sloped and incised, neck-like constriction scarcely indicated. Pronotum transverse, somewhat wider than head, narrowed towards base; its length a third less than width; its anterior margin nearly straight, lateral ones rounded, anterior angles oblique. Prosternal process narrow, narrower than fore coxa; the coxae small, elongate lengthwise. Metasternum trapezoidal, slightly wider (at posterior margin) than long; its lateral margins straight. Hind coxae triangular, nearly as wide as long. Femora scarcely broadened in the middle, anterior ones reaching far beyond the anterior angles of pronotum. Elytron four times as long as wide; epipleural rim narrow. Main veins of elytron barely distinguishable from intermediate ones; cells subquadrate; more than 45 cells along elytron. Main veins joining pairwise. In the wing the proximal RS section (up to crossvein *rm*) shorter than distal one. Body densely covered with small tubercles, turning larger on elytra and masking the cells.

Measurements (mm): total length about 12, width 4.5; elytron length 9.0.

Comparison. Distinct from recent *Priacma serrata* (LeConte, 1861) in the smaller size, large eyes, weak neck-like constriction, not attenuate anterior angles of shorter pronotum, longer fore legs, and lack of spinules along the outer margin of elytra. From Lower Cretaceous *P. corrugata* Ponomarenko, 1986 distinct in the longer metasternum with straight lateral margins.

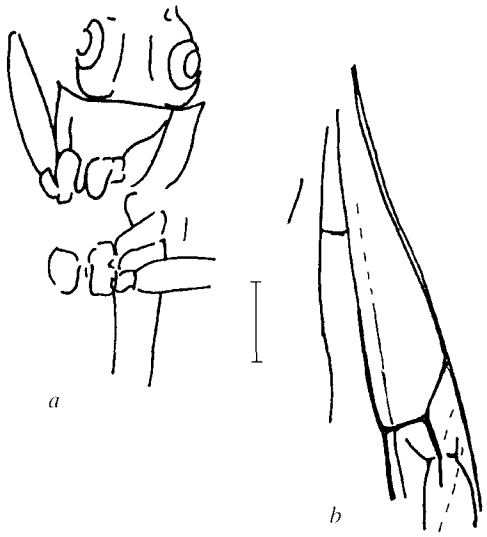



**Fig. 11.** *Priacma oculata* sp. nov.; holotype PIN, no. 4271/182: (*a*) head and thorax, (*b*) wing; Shar-Tologoi, Lower Cretaceous.

Material. Holotype.

***Priacma longicapitis* Ponomarenko, sp. nov.**

Plate 6, fig. 15

Etymology. From Latin *longus* (long) and *caput* (head).

Holotype. PIN, no. 4271/186, isolated head lacking antennae (part and counterpart); Shar-Tologoi, outcrop 382, bed 5; Lower Cretaceous, Shar-Tologoi sequence.

Description (Fig. 12). Quite large, subcylindrical beetle. Head without mandibles and neck-like constriction slightly longer than wide, abruptly narrowed before eyes. Mandibles large, with teeth in horizontal plane. Dorsal head surface with rounded prominences in the middle and on temples. Ventral head surface with grooves for inserting antennae. Gular plate narrowed backwards. Eyes large, genae shorter than eyes, temples rounded and longer than eyes, occiput sloped and incised, neck-like constriction distinct. Elytron 4 times as long as wide; epipleural rim narrow. Main veins of elytron barely distinguishable from intermediate ones; cells subquadrate; more than 45 cells along elytron. Main veins joining pairwise. Body densely covered with small tubercles, turning larger on ventral head surface, and not masking the cells on elytra.

Measurements (mm): total length about 22, width 8; elytron length 15.0, width 4.0.

Comparison. Distinct from the recent *P. serrata* (LeConte, 1861) in the larger size, weaker neck-like

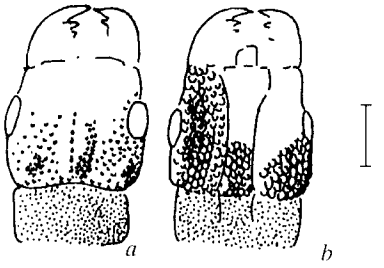


Fig. 12. *Priacma longicapitis* sp. nov.; holotype PIN, no. 4271/186: (*a*) from above, (*b*) from below; Shar-Tologoi, Lower Cretaceous.

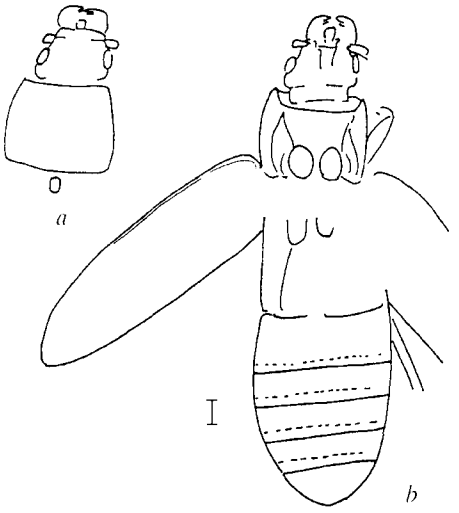


Fig. 13. *Cionocoleus ommamimus* sp. nov.; holotype PIN, no. 467/74: (*a*) head and pronotum from above, (*b*) from below; Anda-Khuduk, Lower Cretaceous, Anda-Khuduk Formation.

constriction, and lack of spinules along outer margin of elytra. From Lower Cretaceous *P. corrugata* Ponomarenko, 1986 and *P. oculata* sp. nov. distinct in the much larger size and longer head, from the latter also in the smaller eyes and more distinct neck-like constriction.

Remarks. The species is represented by two isolated sclerites, collected in different beds and therefore certainly not belonging to the same specimen. They were united so far as agreed in size and belong to the subfamily Cupedinae, extremely rare at that time, although it is impossible to prove they are conspecific. Nearly all the characters observed in them indicate that they belong to the tribe Priacmini, although the Cupedini cannot be completely excluded. The head is most similar to that of the recent *P. serrata* (LeConte, 1861), and therefore this material was described under the genus *Priacma*.

Material. Holotype and specimen no. 4271/175, isolated elytron from same locality, outcrop 368, bed 5.

### Cupedidae incertae sedis
### Genus *Cionocoleus* Ren, 1995

Type species. *C. magicus* Ren, 1995, Lower Cretaceous of China, Beijing.

Diagnosis. Beetle with tuberculate integument characteristic of cupedids, but without trace of cells on elytra, which are flattened on disc and rounded at apex.

Composition. Type species and one more species from the Lower Cretaceous of Mongolia.

Remarks. The genus was correctly described in Archostemata on account of the characteristic integument (Ren, 1995), but its assignment to the family Schizocoleidae Rohdendorf, 1961 seems unjustified due to absence of the most typical character of the family, a coupling lobe on the underside of the elytron, usually seen on fossils as a short longitudinal groove (which gave the name to the family). The elytron (as noted in the original description) is dissimilar to those of schizocoleids having a convex disc and acuminate apex. Beetles with elytra conforming to the above diagnosis occur in many localities, but are all insufficiently preserved to determine their systematic position unambiguously. The most completely preserved one is described below as a new species, although it could be distinguished from the type by the size alone; elytra of these beetles lack structures which are useful as diagnostic characters. Similar elytra in the Bon-Tsagan locality are clearly distinct in size from both the type species and newly described one.

***Cionocoleus ommamimus* Ponomarenko, sp. nov.**

Plate 6, fig. 16

Etymology. From the genus *Omma* and Latin *mimus* (mime).

Holotype. PIN, no. 467/74, beetle lacking antennae and most of legs (negative impression); Anda-Khuduk; Lower Cretaceous, Anda-Khuduk Formation.

Description (Fig. 13). Quite large, flattened beetle. Head transverse, abruptly narrowed before eyes; its length without mandibles and neck-like constriction a third less than width. Eyes not large, convex; genae slightly shorter than eyes; temples rounded, twice shorter than eyes; occiput straight; neck-like constriction distinct. Mandibles with teeth in vertical plane. Pronotum transverse, wider than head, narrowed towards base and apex; its length a third less than width; its anterior margin nearly straight, lateral ones rounded, anterior angles nearly 90°. Fore coxae quite large, rounded. Metasternum trapezoidal, slightly wider (at posterior margin) than long; its lateral margins straight. Fore femora very feebly broadened in the middle, hind ones scarcely projecting beyond lateral body contour. Elytron 3.5 times as long as wide; epipleural rim narrow. Abdomen nearly as long as thorax,

narrowed from the middle of third sternum; its last sternum 1.5 times longer and a third narrower than penultimate one. Sterna feebly elevated before posterior margin, so that it seems fringed. Body densely covered with tubercles, larger ones on dorsal side and distinctly smaller on ventral one.

Measurements (mm): total length about 25, width 7; elytron length 14.

Comparison. Distinct from the type species in the larger size.

Remarks. As can be seen, the beetle in almost all characters, except for smooth elytra, is similar to beetles of the genus *Omma*. It remains unclear whether the fore coxae were separated from the process or were contiguous; hence the genus could not be placed in any subfamily. The presence of cells in cupedid elytra and retention of a primary wing membrane in these cells were regarded as characters of high taxonomical value, and Machatschke (1962) even suggested excluding the group from all the other beetles. However, a recent endogeic *Crowsoniella relicta* Pace, 1970 is now known, likewise combining all other cupedid characters with a smooth elytra. Almost smooth elytra are recorded in *Tetraphalerites oligocenicus* Crowson, 1962, *Brochocoleus aphaleratus* (Ponomarenko, 1969) and the above described *T. glabrus*.

In the same locality an incomplete beetle no. 3145/748 was found, matching the holotype in size and almost all examinable characters, but differing in elytral sculpture: besides dense rounded tubercles, four rows of larger oval ones clearly trace the course of the main veins of the cupedid elytron. This feature contradicts the generic diagnosis, and it remains uncertain whether it is a character of a separate taxon or a result of some peculiarities of preservation.

Material. Holotype.

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