

# NEW CHROTOGONUS SERV. SPECIES FROM EAST AND CENTRAL ASIA (ORTHOPTERA — ACRIDIDAE)

by

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Several students all over the world have recently made a thorough study of the *Chrotogonus* species. The genus was described by Serville in 1838, for the species *Ommexechea lugubris* Blanchard, 1836. Following Walker's, Stål's, and I. Bolivar's revisions, Kirby, Jacobson, Innes and Kevan did excellent classificatory work. In its course, Kevan divided the genus into three subgenera in 1952 (*Chrotogonus* Serv., *Shoacris* Kevan, and *Obbiacris* Kevan). It is soon apparent from the papers of the above workers that they had but meagre materials from the eastern and central Asiatic faunal regions. The faunas of these areas are still very insufficiently known. In the last few years, some materials found their way into the Zoological Department of the Hungarian Natural History Museum, — partly from China, partly from Kazakhstan. A larger amount of the Pydgomorphids originates from east to central China and Kazakhstan: the identification of the *Chrotogonus* species contained in this material is submitted below.

## Genus *Chrotogonus* Serv.

*Chrotogonus* Serville, Ins. Orth., p. 702 (1838); Bolivar, An. Soc. Espan., 13: 21, 37, 439 [1884]; Jacobson & Bianchi, Prem. i Lozhn. Ross. Imp. pp. 171, 198, 288 (1902); Kevan, Mitt. Schweiz. ent. Ges., 25 p: 95 (1952).

### Key for the Identification of East and Central Asiatic Species

- 1 [4] Femur of hind leg short, thick: twice or two and a half times as long as wide. 5—6 spines, disregarding long terminatory ones, on external sides of hind tibia. Laterally declining portion (lateral lobe) of pronotum with its posterior-inferior corner bending upwards, extruding from body like a ledge (fig. 1).
- 2 [3] Tegmen short, not extending to praeapical thickening of hind femur when laid alongside abdomen (in repose). Inclinate posterior-inferior corner of lateral lobe of pronotum rounded, blunt (fig. 3). Femur of hind leg twice as long as wide, its anterio-inferior angle almost obtuse (fig. 15). Lateral tooth on lower genital appendage of female set low, appendage apically blunt (fig. 16) (China) *armatus*, sp. nov.
- 3 [2] Tegmen long, extending to praeapical thickening of hind femur when in repose along abdomen, in deed, almost reaching femoral apex. Inclinate posterior-inferior corner of lateral lobe of pronotum sharply rounded (fig. 4). Femur of hind leg two and a half times as long as wide, its anterio-inferior angle pointed (fig. 19). Lateral tooth on lower genital appendage of female set low, appendage apically sharp (fig. 21) (China) . . . . . *changi*, sp. nov.

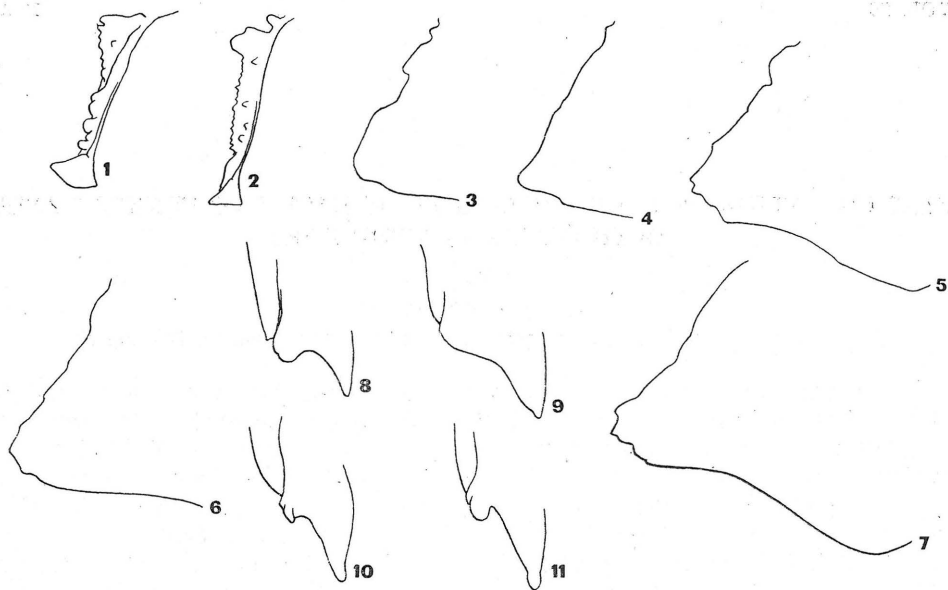


Fig. 1. *Chrotogonus armatus*, sp. nov.; fig. 2. *Ch. turanicus* Kuthy, posterior view of lateral lobe of pronotum; fig. 3. Postero-lateral corner of pronotum, viewed from above, of *Ch. armatus*, sp. nov.; fig. 4. *Ch. changi*, sp. nov.; fig. 5. *Ch. turanicus* Kuthy; fig. 6. *Ch. robertsi* Kirby; fig. 7. *Ch. skopini*, sp. nov.; fig. 8. Posterior view of lower genital appendage of female of *Ch. turanicus* Kuthy; fig. 9. *Ch. skopini*, sp. nov.; fig. 10. *Ch. russicus*, sp. nov.; fig. 11. *Ch. robertsi* Kirby.

- 4 (1) Femur of hind leg long, at least three times as long as wide, or even longer. 7—8 spines on external sides of hind tibia, disregarding long terminal ones. Postero-inferior lateral lobe of pronotum not inclinate like ledge, hardly extruding from thorax (fig. 2).
- 5 (8) Projecting tooth on postero-inferior corner of lateral lobe of pronotum terminating in two points (fig. 5).
- 6 (7) Tegmen not extending to femoral apex when in repose alongside abdomen. A tooth-like projection on narrow side of lower genital appendage of female (fig. 8). Costal field of tegmen strongly widening in basal third. Posterior margin of pronotum strongly sinuous (fig. 5) (Kazakhstan) . . . **turanicus** Kuthy
- 7 (6) Tegmen extending to, or even protruding beyond, hind femoral apex when in repose alongside abdomen. No tooth on rather broad side of lower genital appendage of female, surface smooth (fig. 9). No widening on costal field of tegmen. Posterior margin of pronotum weakly sinuous (fig. 7) (Kazakhstan) . . . **skopini**, sp. nov.
- 8 (5) Projection of postero-inferior corner of lateral lobe of pronotum terminating in a single, occasionally sharper, tooth (fig. 6).
- 9 (10) Rib-pair between antennal bases curving in a weak arch below antennae, when viewed laterally; rib-pair of female low, first antennal joint extending beyond it by half its length; that of male as high as length of first antennal joint. Lateral tooth on lower genital appendage of female angular (fig. 10) (Kazakhstan, Turkestan) . . . **russicus**, sp. nov.
- 10 (9) Rib-pair between antennal bases curving in a strong arch below antennae, when viewed laterally; pair of ribs high in both sexes, extending to distal end of first antennal joint. Lateral tooth on lower genital appendage of female rounded (fig. 11) (Iran, Afghanistan, Kazakhstan, Pakistan) . . . **robertsi** Kirby

**Chrotogonus armatus**, sp. nov.

(figs. 12—16)

Head, when viewed from above, yellowish brown, triangular, as long as wide; eyes situated medially on upper lateral rim, with a greater and deeper pit between them on vertex, and a more shallow and smaller hollow both on lateral sides and further behind. Preocellar portion (apical section) of vertex slightly wider than long, terminally tapering and continuing in two platelike ribs stretching between antennae to facial region. When viewed laterally, top of head strongly projecting, trapezoidal, first joint of laterally originating antennae not reaching end of ledge. Upper portion of eyes wide, lower one narrower. Plates of head ornamented by smaller to larger, spiniform or antenna-shaped protuberances. A narrow, low rib extending from antennal base to below eye. On each side of ocellus in center of face, another flat, sinuous rib.

Antennae emitted about centrally between eyes and end of vertex; 14-jointed; penultimate and third joints long, with 1—2 slightly visible transversal furrows. First joint somewhat arched, wide, thick, lower surface deep brown, almost black. Other parts of antennae sandy yellow with scattered black spots.

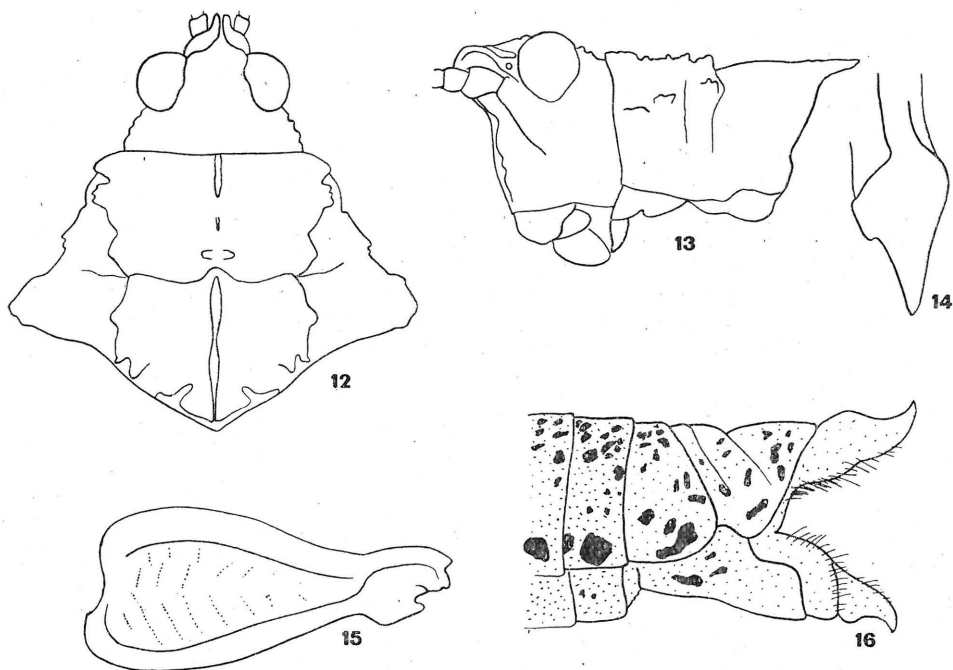


Fig. 12. *Chrotogonus armatus*, sp. nov., head and pronotum from above; fig. 13. Same, laterally; fig. 14. Same, posterior view of lower genital appendage of female; fig. 15. Same, hind femur laterally; fig. 16. Same, distal end of female abdomen, laterally.

Surface of pronotum exceedingly rough, covered by smaller to greater, antenna-shaped excrescences; sandy yellow. Border of pro- and mesozones obsolete, but pro- and mesozones well distinct. Centrally of anterio-lateral section of prozone, a larger pair of protuberances on each side, first pair sharper, posterior one blunter terminating in a number of points. Prozone of about equal length with metazone, this latter, however, very narrow, twice as narrow as prozone. Metazone extending strongly backwards, covering bases of tegmens; its posterior apex sharp, with an obtuse angle. When viewed laterally, pronotum yellowish brown with black spots; rate of zones different: prozone slightly narrower than metazone, while mesozone 2.5 times narrower than prozone. Laterally declining section of pronotum (lateral lobe) with an obtuse-angled anterio-inferior corner; while postero-inferior corner jutting out like ledge from body, strong and thick. Breast yellowish brown, its anterior portion (neck) with narrow rim.

Tegmen rough, yellowish brown; a strong, well discernible row of protuberances (5—6 of them conspicuously high) on its median section. Tegmen short, not reaching end (indeed, not even interior margin of preterminal muscular thickening) of hind femur when in repose along abdomen. Hind wing rudimentary, colorless, extending to end of first abdominal segment.

Legs yellowish brown, with black spots. Hind femur thick, short, twice as long as wide; its anterio-inferior corner almost blunt. 5—6 spines, disregarding long, terminal ones, on exterior side of hind tibia.

Abdomen yellowish, of a greasy shine; an extensive, black pattern consisting of smaller spots on dorsal surface, and a row made of larger spots along lateral line. Upper genital appendages of female thick, short, strongly arcuate terminally, apices blunt; lower genital appendages slightly arched, apically blunt; tooth on external side low.

Length of body: 24 mm; tegmen: 11.5; hind femur: 9.2; width of hind femur: 4.5; length of hind tibia: 8; antennae: 6 mm.

Holotype female: China, Badeling (40 km NW of Peking) 7 August, 1960, leg. Dr. H. Steinmann. Deposited in the Zoological Department of the Hungarian Natural History Museum, Budapest.

### ***Chrotogonus changi*, sp. nov.**

(figs. 17—21)

Head greyish brown when viewed from above; with extruding ribs, well visible on top of head (section in front of eyes), decurrent as a narrow plate-shaped pair between antennae to facial portion. Anterior pair of ribs short. Head short, wide, wider than long. Eyes large, with recurrent section of anterior rib well discernible at their inner rim; posterior ends of this section each terminating in a low but sharp peg. When viewed laterally, top of head protruding, with first joint of laterally emergent antennae extending beyond it. Face sandy yellow, ornamented with larger, scattered, blackish spots. Lateral facial rib, emitted from

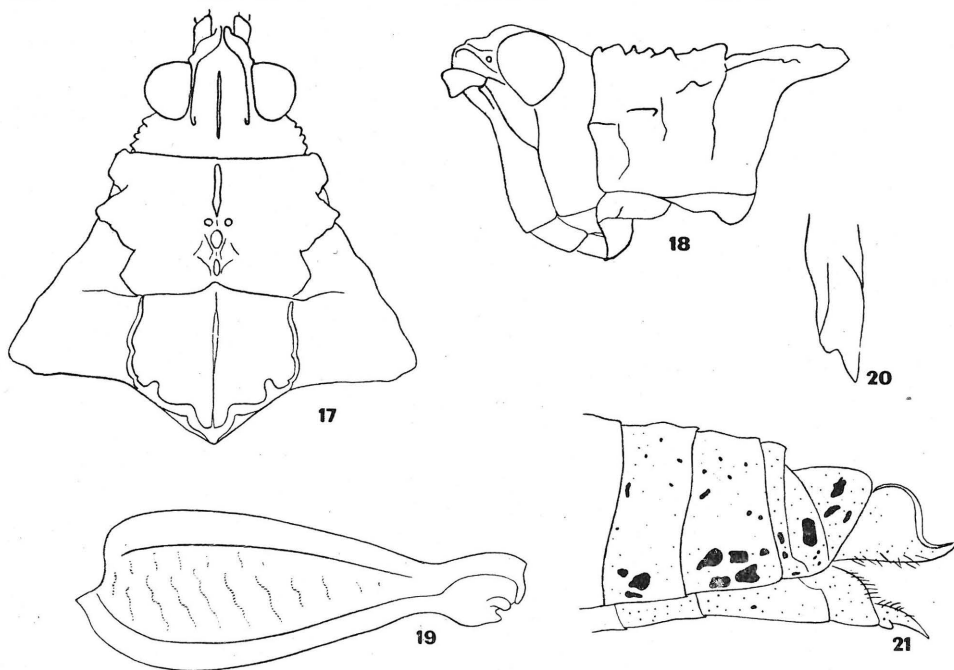


Fig. 17. *Chrotogonus changi*, sp. nov., head and pronotum, from above; fig. 18. Same, laterally; fig. 19. Same, hind femur laterally; fig. 20. Lower genital appendage of female, posteriorly; fig. 21. Distal end of female abdomen, laterally.

antennae, arching below eyes and joining rib excurrent from below eyes, terminating at margin of facial plate in a larger, protruding peg, directed downwards. Head ornamented with scattered, smaller to larger, and higher to lower, protuberances.

Antennae originating below projecting top of head, in about median line of eyes; pruinose grey with a black pattern; 14-jointed; slight transverse furrows on third and penultimate joints; lower surface marked with smaller and larger black spots.

Pronotum, when viewed from above, rufous, yellow, wide, pentagonal. Combined width of pro- and mesozones equals that of metazone. In centre of antero-lateral section of prozone, two pairs of projecting, peg-shaped spines, anterior pair wider, blunter, flatter, posterior one longer, sharper. Surface of pronotum marked by larger, protruding excrescences, some black. Posterior corner of metazone elongate, projecting over bases of tegmens, pointed, almost rectangular. When viewed laterally, laterally decumbent section of pronotum (lateral lobe) with a visibly rounded antero-inferior angle; its postero-inferior corner pointed upwards, ledge-like, thick, apically truncate. Delimitation of zones well discernible: prozone almost as wide as combined width of meso- and metazonas. Breast rufous brown, its anterior rim broad.

Tegmen excessively rough, with a larger, protruding row of 8—9 protuberances situated centrally along its middle; ornamented with black spots; short, but extending to, or nearly reaching, apex of hind femur when in repose along abdomen. Hind wing rudimentary, extending to end of second abdominal segment, colorless.

Legs rufous yellowish brown, with well visible, dark grey, transversal stripes on tibiae; femora with rows of scattered black spots. Hind femur wide, short, 2.5 times longer than wide; its antero-inferior corner excised, pointed. Six spines, disregarding last long ones, on exterior side of hind tibia.

Abdomen shiny, yellowish brown, with some smaller, scattered, black markings medially on dorsal plates; a pattern consisting of numerous, minute black dots on lateral sections of segments. Upper genital appendages of females with curved, pointed apices; lower appendages arcuate, apically sharp, tooth on external sides high.

Length of body: 23 mm; tegmen: 13; hind femur: 10; width of hind femur: 4; length of hind tibia: 8; antenna: 5.5 mm.

Holotype female: China, Badeling (40 km NW of Peking), 7 August, 1960, leg. Chang You-we and Dr. H. Steinmann. Deposited in the Zoological Department of the Hungarian Natural History Museum, Budapest.

I dedicate the new species to my Chinese colleague and companion.

### ***Chrotogonus skopini*, sp. nov.**

(figs. 22—26)

Head rufous yellowish brown, short, wide, slightly shorter than wide. Top of head [section in front of eyes] with a broad, ledge-shaped extension; low in middle where two plate-shaped rib-pair decurrent anteriorad between antennae toward facial portion; ribs hardly visible when viewed from above, as long as length of first antennal joint. A deep hollow on surface of top of head. Rib margin of interior rim of ledge-shaped protrusion flat, but elevated at inner corner of eyes, extending outwards (toward eyes), then, flattening, extends like a disconnected row of protuberances to posterior margin of eyes, terminating in a larger protuberance. Top of head, when viewed laterally, short; pair of ribs between antennae separated twice by transversal furrows above central ocellus. Face yellow, marked with extensive, deep brown spots; also ornamented by flat, lentil-shaped, shiny protuberances. Rib emitted below eye arching below it, joining other rib from under eye, terminating in a big, guttiform peg, longer than margin of facial segment, also projecting from face but parallel with it.

Antenna 13-jointed, greyish brown, shiny, with an extensive dark coloration on its surface; joints short, but penultimate one as long as combined length of four preceding joints.

Pronotum yellowish brown, with some larger, extruding protuberances. Centrally of antero-lateral portion of prozone, two larger protuberances: anterior projecting, polydentate, posterior reclinate, un-

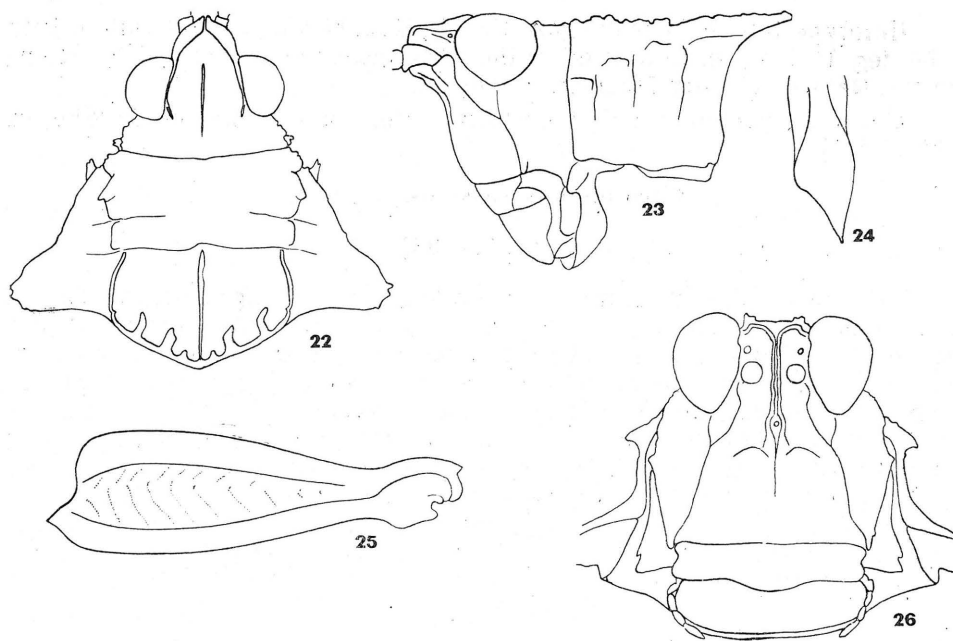


Fig. 22. *Chrotogonus skopini*, sp. nov., head and pronotum from above; fig. 23. Same, laterally; fig. 24. Lower genital appendage of female posteriorly; fig. 25. Same, hind femur, laterally; fig. 26. Same, head, anteriorly.

divided. Pronotum wide, a bidentate protrusion on posterior corner of its metazone. Prozone and mesozone, combined, nearly as wide as metazone. When viewed laterally, antero-inferior corner of lateral lobe of pronotum rounded: posterior portion of inferior margin not extruding like a rim or ledge, yet somewhat extended, its surface covered by lentil-shaped protuberances, with some larger, more protruding ones among them. Breast yellow, its anterior portion (neck) wide.

Tegmen rough, short, greyish red, extending to apex of hind femur when at rest along abdomen. Hind wing well developed, reaching end of tegmen when in repose, its base pale pinkish, otherwise colorless.

Legs greyish yellow, marked with black spots. Hind femur long, more than three times as long as wide. Disregarding long terminal spines, 8 spines on external side of hind tibia.

Abdomen shiny, yellow, with a connected, yellowish brown pattern centrally of its dorsal plates; a larger black spot on lateral margin of each segment. Distal end of upper genital appendage of female straight, apically blunt; lower appendages straight, with only their apices slightly curved, flat, blunt, lateral tooth flat, hardly visible.

Length of body: 20 mm; tegmen: 15; hind femur: 10; width of hind femur: 3.1; length of hind tibia: 8.7; antenna: 5.5 mm.

Holotype female: Kopchegan, Flo Ili, Kazakhstan, Soviet Union, July 1958, leg. N. Skopin. Deposited in the Zoological Department of the Hungarian Natural History Museum, Budapest.

The new species is dedicated to my friend and colleague, N. Skopin (Alma-Ata).

***Chrotogonus russicus*, sp. nov.**

(figs. 27—33)

Head, when viewed from above, as long as wide, light brown. Top of head [section in front of eyes] short, first antennal joint extending beyond it by almost its half length. Eyes large, wider than top of head, and wider than section of head behind eyes. Central hollow of head in front of eyes wide but shallow; central suture visible only for a short stretch between eyes. When viewed laterally, top of head short, equalling about  $\frac{2}{3}$  of width of eyes. Facial plate marked with rather distinct protuberances; segment light brown, protuberances yellow. Low rib below antennae originating between articulation of antennae and eyes, below lateral ocellus, arching below eye and extending to margin of facial plate to end in a guttiform peg.

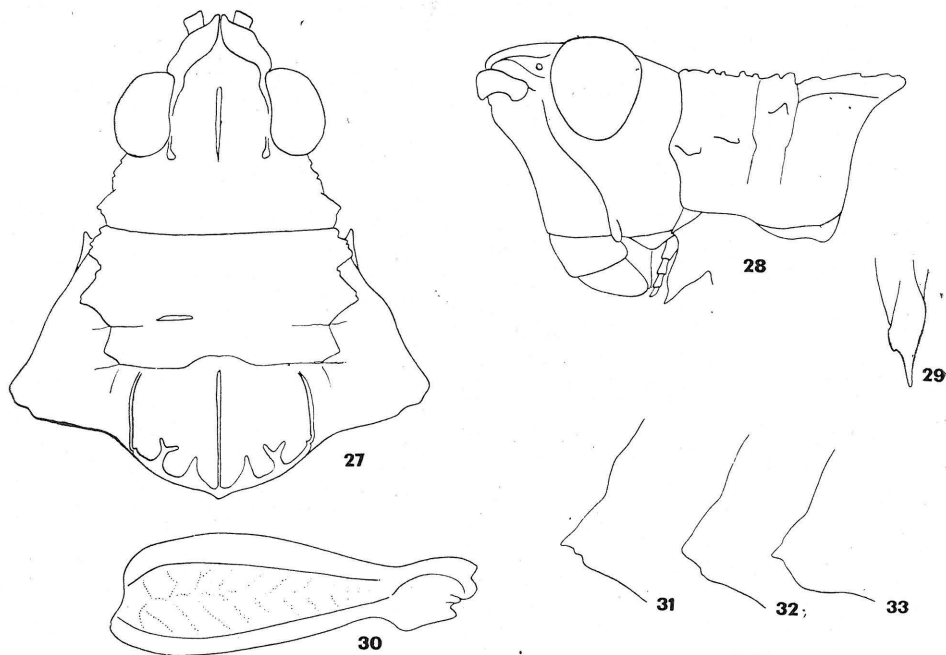


Fig. 27. *Chrotogonus russicus*, sp. nov., head and pronotum from above; fig. 28. Same, laterally; fig. 29. Lower genital appendage of female, posteriorly; fig. 30. Same, hind femur, laterally; figs. 31—33. Postero-lateral corner of male pronotum, from above.



Pronotum yellowish brown, ornamented with smaller and larger protuberances, visibly segregated into three zones; prozone about twice as long as mesozone and about  $\frac{2}{3}$  of metazone; centrally of its antero-lateral section, two, roughly equally large, extruding protuberances; protuberance of mesozone blunt. Postero-central corner of metazone shaped like a crest or shield. Laterally decumbent portion (lateral lobe) of segment, that is, corner of its postero-inferior margin terminating in projecting, unidentate apex. Anterior rim of lateral lobe sinuous, posterior one straight. Pronotum, when viewed laterally, yellowish brown, covered with yellow protuberances. Prozone slightly wider than metazone. Breast ochreous yellow, its anterior ledge (neck) wide.

Tegmen yellowish brown, rough, that of female extending only slightly, that of male considerably beyond, apex of hind femur when at rest along abdomen. Costal field strongly widening. Hind wing well developed, as long as tegmen, aqueous clear, hyaline.

Legs greyish-yellowish brown, with darker, indistinct stripes and spots. Hind femur long, its upper edge ornamented by dense, lower edge by scarce, hairs. Hind tibia pale yellowish grey, bearing 7 spines externally, disregarding long terminal ones.

Abdomen yellow, of a greasy shine; upper portion ornamented with larger, deep yellowish brown blotches, lateral one with paired, black spots. End of upper genital appendage of female slightly arched, apically sharp; lateral tooth of lower appendage strong, rounded. Pair of cerci of male short, half as long as last segment.

**Diagnostic measurements in mm. of *Chrotogonus russicus*, sp. nov.**

	female	male
length of body	17.5	12.3
length of tegmen	13.0	12.0
length of hind femur	9.1	7.0
width of hind femur	2.6	2.1
length of antenna	5.0	4.0
length of hind tibia	7.5	5.1

Holotype female: Kopchegan, Flo Ili, Kazakhstan, Soviet Union, July, 1958, leg. N. Skopin; Allotype male: Flo Ili, Kazakhstan, Soviet Union, June, 1957. Paratypes: Ilysk, Turkestan, male, leg. Almásy; Mussa-Kuduc, Golodnaya step, Soviet Union, July, 1957, male, leg. N. Skopin. All types deposited in the Zoological Department of the Hungarian Natural History Museum, Budapest.

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