

New Taxa of Asiatic Ant Lions (Neuroptera, Myrmeleontidae)*

V. A. KRIVOKHATSKIY [KRIVOKHATSKY]

Zoological Institute, Russian Academy of Sciences, St. Petersburg

Abstract. Several new species of ant lions from Central Asia were found in the collection of the Zoological Institute, St. Petersburg.

Key words: Ant lions; Myrmeleontidae; Neuroptera; new taxa; new genera.

In the collection of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, and in my collections two new genera and several new species of ant lions from Central Asia were found. I thank A. V. Zakharenko, A. V. Kharkov, and H. Hölzel, Eppersdorf, for their support and valuable consultations in the process of the work.

Tribe MYRMECAELURINI

Myrmecaelurus (Nohoveus) simplicis Krivokhatsky, sp. n. (Figs. 1-4).

Holotype: ♂, China, Sanzhou Oasis, Gashun Gobi, 30.VII.1895, Roborovskiy and Kozlov; paratypes: 1 ♂, with same label; 1 ♂ and 1 ♀, Dankhe River, S Sanzhou, Gashun Gobi, 27.VII.1895, Roborovskiy and Kazlov.

Pale yellow species, length of forewing 27 mm, length of hindwing 20 mm.

Head yellow, with brown band between antennae, 2 spots above eyes, and longitudinal occipital stripe, on sides of which small spots of same color distinct. Antennae brown, with light scape and yellow on dorsal side of club. Palpi pale yellow, last segment of labial palpi slightly, infundibuliformly swollen with split end and small reddish sensory pit.

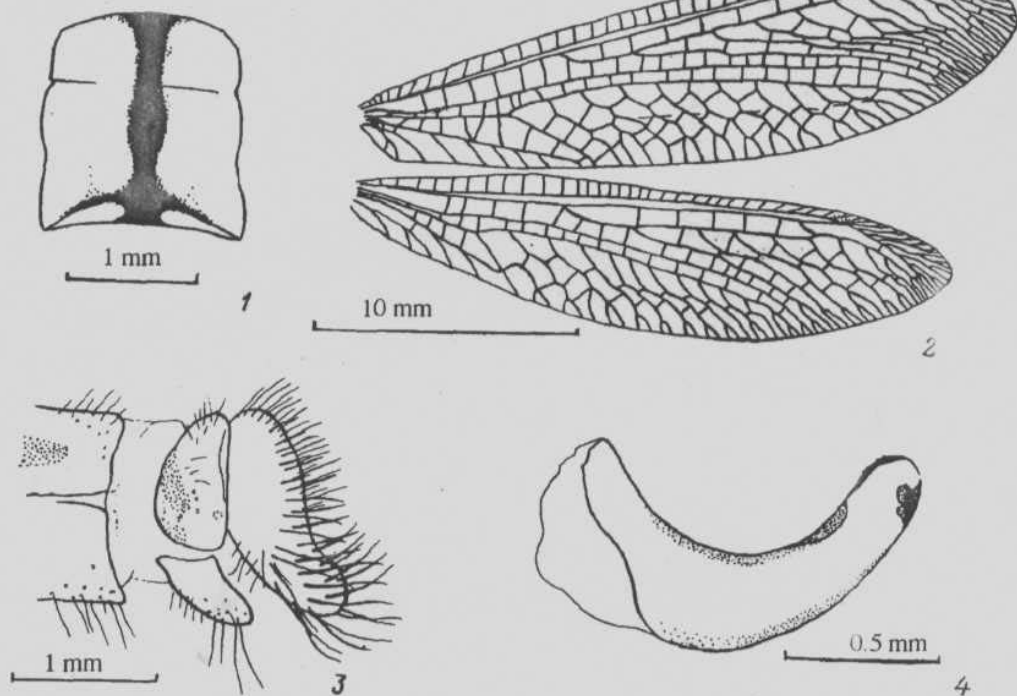
Prothorax as long as wide, with contrasty brown longitudinal stripe and brown margin of base. Mesothorax and metathorax yellow, with brown pattern.

Legs yellow, with white and brown hairs and setae, on base of forefemora and midfemora one long sensory hair. All tibiae shorter than femora, spurs of all legs longer than 1st tarsal segment.

Wings hyaline, with yellow veins, with weak darker punctation, MP of hindwings entirely pale. In presectoral area of forewing 6 (on the right 7), in hindwing 4 (5) transverse veins. Pterostigma whitish, in apical area of hindwing transverse veins absent.

Abdomen shorter than wings, with white hairs. Abdominal tergites yellow, on dorsal side with 2 lateral, brown stripes distinct on first 3 segments. Sternites brown, apex of second sternite with

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Figs. 1-4. *Myrmecaelurus (Nohoveus) simplicis* sp. n.: 1 - pronotum, 2 - wings, 3 - end of abdomen of ♂, 4 - tergalia of ♂ in lateral view.

triangular yellow spot. On end of VI and VII tergites brushes of dark brown hairs present. Ectoprocts and genitalia typical of the subgenus.

Paratypes completely similar to holotype. In pattern of pronotum and head the new species is close to *M. badkhyssi* Kriv., from which it differs in absence of wing pattern.

Myrmecaelurus (Aspoeckina) carlic Krivokhatsky, sp. n. (Figs. 5-8).

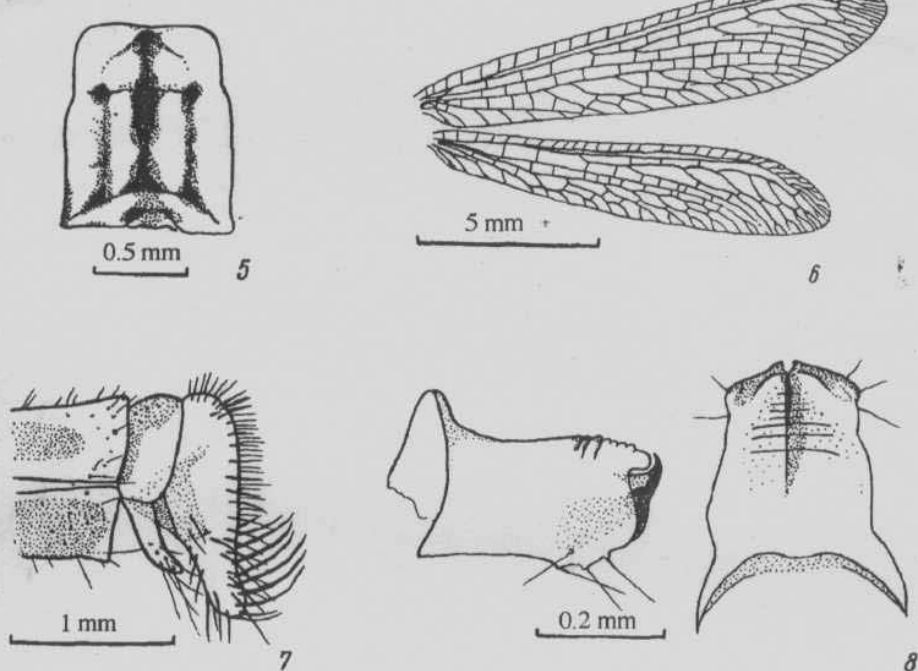
Holotype: ♂, Turkmenistan. Repetek, at light, 12.VII.1981, Krivokhatskiy.

Body very small. Length of forewing 13, hindwing 12, and abdomen 12.5 mm.

Head yellow, with diffused pale brown pattern, face with thin brown longitudinal stripe extended to clypeus. Trapezoid spot between antennae, frons and occiput with unclear pale brown spots and decumbent black hairs. Antennae long, pale brown, with paler club. Palpi yellow, last segment of labial palpi infundibuliformly swollen, with brown sensory pit.

Prothorax longer than wide, with 3 longitudinal brown stripes and thin brown margin in distal part. Pattern extended on mesothorax and metathorax. Entire thorax with sparse, white hairs.

Legs entirely yellow. Femora with white, tibia with dark hairs and seta, bases of forefemora and



Figs. 5-8. *Myrmecaelurus (Aspoeckina) carlic* sp. n.: 5 - pronotum, 6 - wings, 7 - end of abdomen of ♂, 8 - genitalia of ♂ in lateral and dorsal view.

midfemora with long sensory hairs. Spurs slightly longer (on hindlegs slightly shorter) than 1st segment of tarsus.

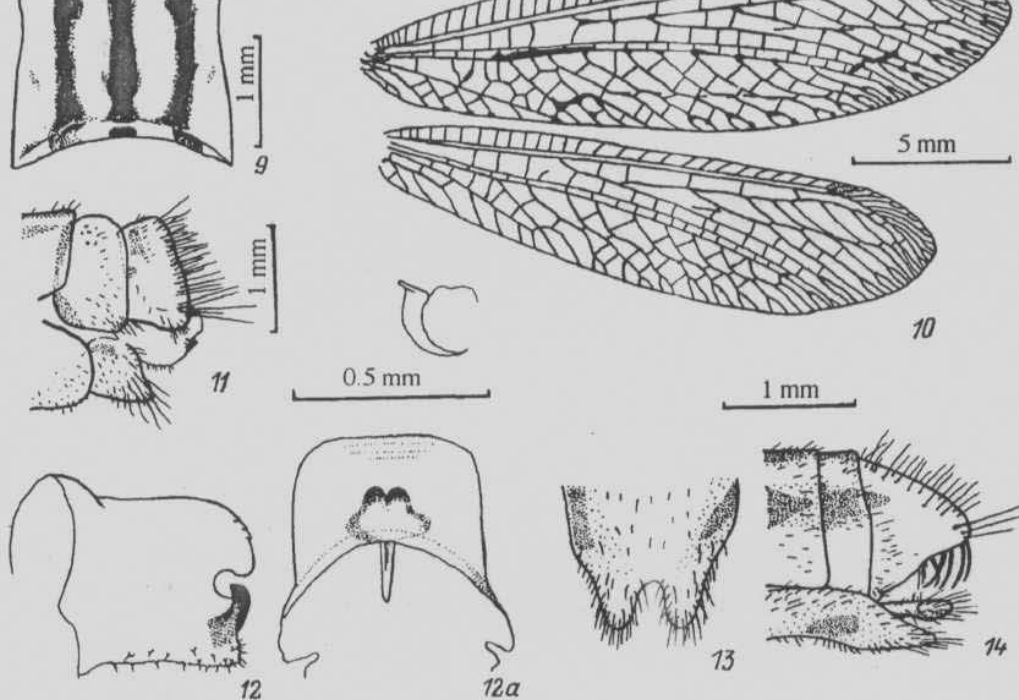
Wings narrow (width of forewing 3 mm), lanceolate, with pale veins, punctate with brown. Membrane without shades. Presectoral area of forewing with 3, presectoral area of hindwing with 3 (on right wing with 2) transverse veins. Apical area of hindwing without stepped transverse veins. Banks line and pterostigma developed.

Abdomen brown, with 2 pairs of lateral yellow stripes on tergites disappearing to end of abdomen, long, weakly curved, with long white hairs. Tergites I-IV with longest silky hairs forming tuft on end of tergite IV. Tergites VI and VII with paired tufts of red hairs, longest on tergite VI. Ectoprocts long, cylindrical, considerably protruding beyond margin of abdomen. Genitalia typical of the subgenus. ♀ not known.

This species is close to *M. (A.) caudata* (Nav.), from which it differs in small size, narrower wings, pattern of pronotum, and presence of tuft of silky hairs on tergite IV only.

HOLZUZUS Krivokhatsky, gen. n.

In appearance and pattern of body and wings, this genus is close to *Lopezus* Navas, 1913, from which it differs in presence of two pairs of tufts on abdomen ♂ and emarginate abdominal sternite VII of ♀. These characters are typical of genus *Iranoleon* Hölzel, 1968; however, in structure of genitalia



Figs. 9-14. *Holzezus compactus* gen. & sp. n.: 9 - pronotum, 10 - wings, 11 - end of abdomen of ♂, 12 - epandrium in lateral view, 12a - gonarcus and parameres in lateral and dorsal views, 13 - sternite VII of ♀, 14 - end of abdomen of ♀.

of ♂ and in its pale color and especially in shape of wings it is close to the genus *Lopezus*. Also, in apical area of hindwing of the new genus series of stepped transverse veins are absent, as in subgenera *Nohoveus* Navás, 1919, and *Aspoeckina* Hölzel, 1969, genus *Mymecaelurus* Costa, 1855, and some species of *Lopezus*.

In the presectoral area of forewing 5, and in the presectoral area of the hindwing 3-5 transverse veins are present.

Type species *Holzezus compactus* sp. n.

Holzezus compactus Krivokhatsky, sp. n. (Figs. 9-14)

Holotype: ♂, Turkmenistan, Repetek, Kyzyl-Yar, at light, 10.VII.1981, Krivokhatskiy; paratypes: 1 ♀, (? , without abdomen), with same label; 1 ♂, Bayram-Ali, 3.VII.1933, at light, P. Bogush; 1 ♀, Uzbekistan: Kuskan-Tau Mountains, 14-VII.1960. G. Dorokhova; 1 ♂, Mongolia: vicinity of Ehkhiyn-Gol, 16-17.VII.1985, A. Gorokhov; 1 ♂ Iran: Nekhi-Bendan and Khorasan, Iran, 26.IV.1901. Zarudny.

Sturdy, with thick short abdomen, with spotty, lanceolate wings. Length of forewing 21.5, width 6, length of hindwing 18, and abdomen 12 mm.

on each segment. Palpi yellow, last segment of labial palpi greatly swollen, around sensory pit with wide brown spot.

Prothorax not significantly wider than long, yellow, with 3 bright brown longitudinal stripes; among them lateral stripes converging anteriorly. Pronotum with short, sparse, white hairs, on sides with several long white setae. On mesothorax and metathorax pattern of 5-7 stripes is evident. Mesoscutellum slightly convex.

Wings evenly wide, lanceolate, membrane cloudy, longitudinal veins pale and with brown lines. Along *Cu*, in area of last fork of *CuA* and from regma to apical area, and also in forks of longitudinal veins of forewing membrane darkened. In hindwing pattern almost absent. In presectoral area of forewing 5, in presectoral area of hindwing 3 transverse veins. In apical area of hindwing series of transverse stepped veins absent. Stigma black, milk-white on margins, in hindwing this is poorly developed.

Coxae pale, with 2 brown spots near base and near middle. Femora yellow on inner side, brown on outer side (hindfemora almost entirely brown), with short white hairs and setae. Hindfemora with several black and white spines and several black setae near apex. At base of each femur 1 sensory hair present. Tibia with white and black hairs and setae. Black setae on apex of midtibia very long, reaching 4th tarsal segment. Foretibia and midtibia shorter and hindtibia longer than femora. Tarsi of all legs shorter than tibia, yellow with brown apices of all segments. Spurs approximately of same size, on hindlegs slightly shorter than 1st tarsal segment, brick-red, and curved.

Abdomen short and thick, with short, white hairs, sternites VI-VII with black apical hairs. Sternite brown, with ventral longitudinal yellow stripe, tergites brown, with continuous dorsal black stripe and lateral chain-like yellow pattern. Abdomen tergites VI and VII with paired, thick and short tufts of silky hairs. Ectoproct short, cylindrical, far from reaching margin of abdomen. Genitalia of ♂ compact, with developed epandrium. ♀s with sternite VII bearing deep notch.

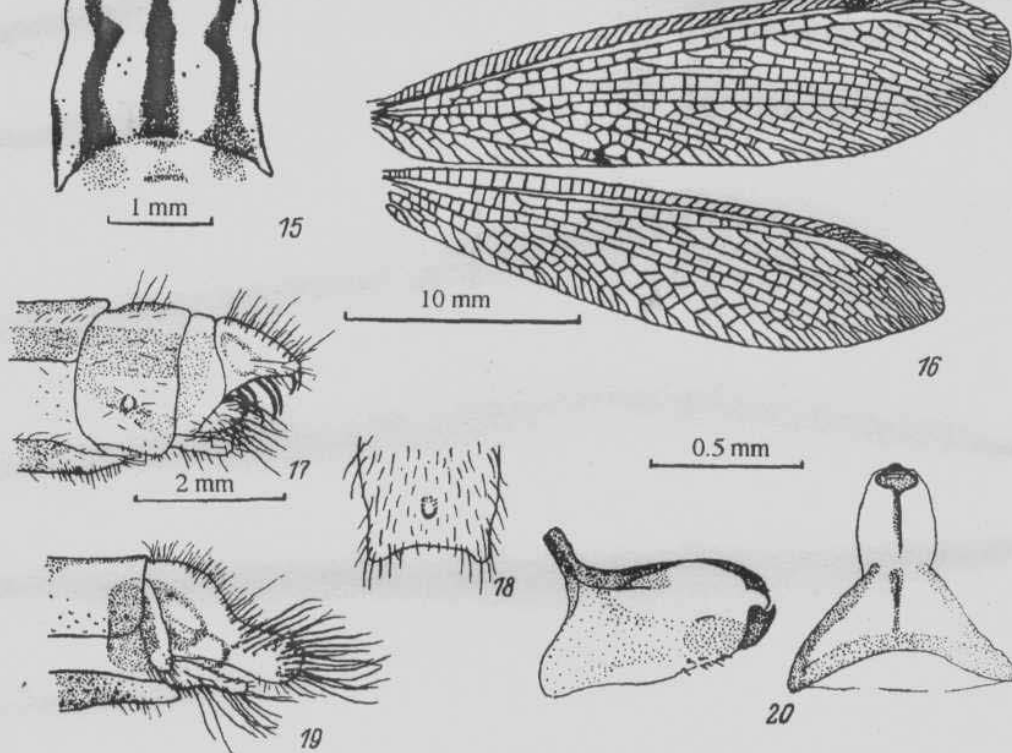
Paratypes vary in intensity of color of body and wings and in size; length of forewing ranges from 18 to 22.5 mm. Possible in large series part of these characters would appear to be associated with different geographic localities and then they may be evaluated as specific ones. Thus, 2 specimens from Mongolia and Repetek without darkened area along *Cu*, and in 1 ♀ from Iran shades on wings are very pale and mesoscutellum without longitudinal brown stripe, pale, and very convex. Such characters as presence of very long hairs on apices of midtibia not known in any other representative of tribe appeared to be very constant in all forms.

The species is distributed in the arid zone and is characterized by Turan-Gobi type of range, but has never been recorded in the sandy desert. Thus, in the Karakum Desert it was caught only at 20 km from Repetek, on clay takyr of Tertiary rocks and in the Merv Oasis (Bairam-Aly) without sandy areas.

Tribe ISOLEONTINI

Mongoleon pilosus Krivokhatsky sp. n. (Figs. 15-20).

Holotype: ♀, China, Bukhan-Kub, Ontsin-Gol, spur of Entsin Gol (Inner Mongolia, Ontsin-Gol, tributary of Edzin-Gol), 3.VI.1926, P. K. Kozlov; 1 ♀ with same label; 1 ♂. "Etszin-Gol—Orok-Nor,



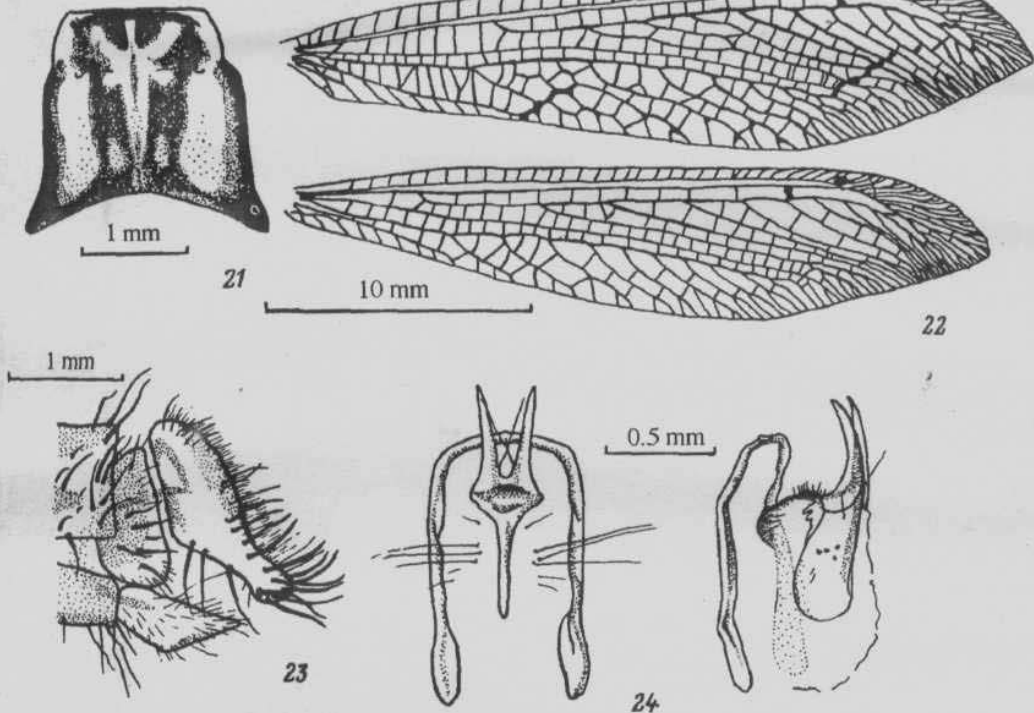
Figs. 15-20. *Mongoleon pilosus* sp. n.: 15 - pronotum, 16 - wings, 17 - end of abdomen of ♀, 18 - sternite VII of ♀, 19 - end of abdomen of ♂s, 20 - genitalia of ♂ in lateral and dorsal views.

Gobi, Mong" (according to date of collection, Inner Mongolia, Edzin-Gol River), 17.VI.1926, P. K. Kozlov.

Large, pale ferrugineous, densely pubescent species, wings with very dense venation. Length of forewings 28 (in paratypes, ♂-27 and ♀-24), hindwings 25 (25 and 22), length of abdomen 20 (20 and 22) mm.

Head ferrugineous, with dark sutures, with dark brown, wide spot above antennae, 2 transverse stripes on frons and occiput interrupted in middle, with tufts of white on occiput with mixture of brown hairs. Antennae in all specimens broken. Palpi ferrugineous, last segment of labial palpi swollen, infundibuliform, slightly larger, with oval sensory pit. Eyes not large, on their margin near frons with several white setae.

Prothorax approximately as long as wide, with 3 complete, white longitudinal, dark brown stripes converging anteriorly and with one pair of lateral narrow stripes separated from margin of pronotum. Mesothorax and metathorax ferrugineous, with dark brown pattern. Entire thorax dorsally with dense, shaggy, white and dark hairs.



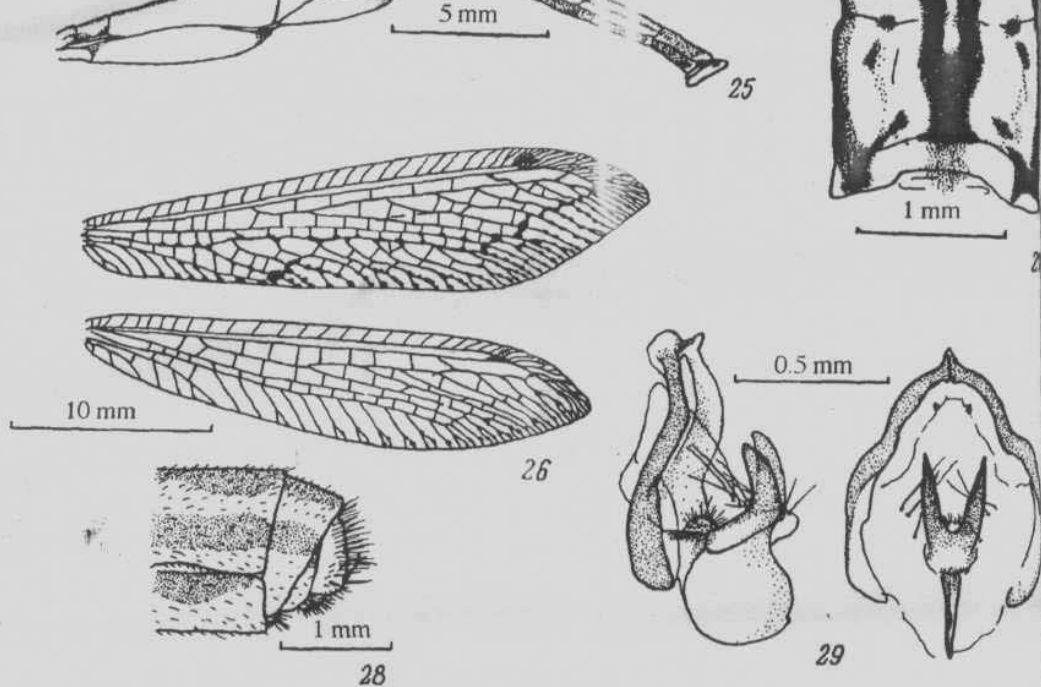
Figs. 21-24. *Distonemurus desertus* gen. et. sp. n. 21 - pronotum, 22 - wings, 23 - end of abdomen of ♂, 24 - genitalia of ♂ in dorsal and lateral views.

Legs ferrugineous, with dark pattern. Forefemora and midfemora longer than tibia, hindfemora shorter than tibia, densely covered with short, white hairs. Anterior and middle spurs slightly shorter than 1st tarsal segment and posterior spurs considerably shorter than 1st tarsal segment. Tarsi slender, long, and slightly shorter than tibia, 5th segment longest, approximately as long as 2nd-4th segments together. All segments of midtarsi and hindtarsi with long hairs extending beyond apex of following segment.

Wings narrow, lanceolate. Longitudinal veins with dark spots, membrane of forewing darkened in end of apical area and slightly darkened at forks of longitudinal veins. Costal area of forewing wide at base, with frequent transverse veins, cells 3 times as long as wide. Transverse veins in basal 1/3 of costal area may be connected or branched. Branching of *R*s above *Cu*-branch, presectoral area in distal half in 2 rows. *CuA* area entirely in 2 rows. Posterior Banks lines weakly developed, stigma opaque and darkened in middle. Hindwings with simple, weakly spotted venation, 2 row areas absent and presectoral area with 4 transverse veins.

Abdomen dark brown, densely pubescent, tergites with pair of pale longitudinal stripes, sternite VII of ♀ with lateral processes.

Paratypes differ little from holotype. ♂ lacks axillary plates, abdomen especially pubescent,



Figs. 25-29. *Quinemurus metamerus* sp. n.: 25 - abdomen of ♂, 26 - wings, 27 - pronotum, 28 - genitalia of ♂ in lateral and dorsal views, 29 - end of abdomen of ♀.

ectoproct and genitalia typical of genus. It differs from known species in denser venation of forewings and shaggy pubescence of thorax and head.

Tribe DISTOLEONINI

Genus *DISTINEMURUS* Krivokhatsky, gen. n.

The genus is close to *Distoleon* Banks, 1910, in appearance and structure of wings and genitalia. However, shape of ♂ ectoproct is like that of *Defimeus* Navas, 1912, from which it differs in ratio of length of segments of tarsi and spurs and presence of long *Cup* of forewing and shape of wings.

Type species *Distonemurus desertus* sp. n.

Dystonemurus desertus Krivokhatsky, sp. n. (Figs. 21-24).

Holotype: ♂, Turkmenistan, E Karakumy Desert, Repetek, at light, 11.VI.1982, V. Krivokhatskiy.

Body large and pale brown. Length of forewing 28, hindwing 27.5 and abdomen 25 mm.

last segment of labial palpi swollen, with brown spot around sensory pit.

Prothorax wider than long, brown, with yellow pattern resembling Russian letter *Zh*, with sparse white hairs, longest on margins. Mesothorax and metathorax brown, with yellow pattern, almost bare epimeres with long white hairs.

Wings narrow, with pointed apex. All longitudinal veins of forewings and hindwings yellow, with brown lines, transverse veins yellow, brown, or bicolored. Membrane hyaline, with oblique shades in radial areas and with darkened areas in terminal forks of longitudinal veins of forewing. In presectoral area of forewing 7 veins, in presectoral area of hindwing 1 transverse vein. *Cup* of forewing oblique, longitudinal connected with *Cu* by transverse vein. Pterostigma bright, bicolored, in distal part black, and in apical part yellow, smaller in hindwings.

Legs yellow, with brown spots, forefemora, besides this, with brown stripes on outer side. Tibia of all legs shorter than femora, with pale brick-red, slightly curved spurs reaching middle of 4th segment of foretarsus and midtarsus. Tarsal segments yellow, with black apices, 1st segment as long as 2nd and 3rd segments together, 5th segment longer than 1st-4th segments together.

Abdomen brown, with yellow spots on sides of tergites, 2 spots on each tergite in middle and in apical area, but with different intensity of color in different tergites. Ectoproct short, cylindrical, genitalia as in Fig. 24.

Quinemorus metamerus Krivokhatsky, sp. n. (Figs. 25-29).

Holotype: ♂, Turkmenistan, Repetek, building, at light, 29.VIII.1990, V. Krivokhatskiy, paratypes: Repetek, at light, 1 ♀, 17.VIII.1981; 2 ♀s, 1 ♂, 28.VIII.1981; 2 ♀s, 11.IX.1981; 2 ♂s, 11.IX.1982; 1 ♂, 4 ♀s, 19.VIII.1990; 1 ♂, 29.VIII.1990; 1 ♂, 30.VIII.1990, V. Krivokhatskiy, 1 ♂, Uzbekistan, Shafirkan, Bukhara Prov., 4.IX.1971, M. I. Falkovich.

Pale brown, length of forewing 20 (in paratypes: ♂ 14-21, ♀ 19-23), hindwing 17.5 (13-18, 17-20) and length of abdomen 25 (16-25, 13-17) mm.

Head pale yellow, face with long white hairs, transverse, dark brown band above antennae, cervix and occiput with complex pattern of light and dark brown spots. Antenna pale, each segment of flagellum dorsally with brown semiannulus. Palpi yellow, sensory pit on last segment of labial palpi ferruginous.

Prothorax pale, wider than long, with tufts of thick white setae. On sides of pronotum setae long, curved anteriorly, and with swollen apices. Pattern consisting of brown longitudinal stripe split from middle to apex, 2 lateral, broad, brown stripes, and 2 narrow, interrupted zigzag lines between them. Mesothorax and metathorax pale and with complex pattern.

Coxae yellow, with brown spots, forecoxae with 2 ridges of white, anteriorly curved setae with swollen apices. Femora yellow, darkened outwardly, especially in forelegs, with white setae, with single, long, black sensory hairs at bases of forefemora and midfemora. In basal 1/3 of hindfemora one shorter sensory hair. Forefemora with several longer setae with swollen apices. Tibia shorter than femora, with long spines, only white spines in midtibia and only black spines in hindtibia. Foretibia and hindtibia with narrow brown annulus in basal 1/3. Spurs ferruginous, weakly curved on foretibia

Wings narrow, hyaline, with brown pattern. All longitudinal veins pale, with brown punctation. Hindwings *MPI* and *CuA* almost entirely white. Presectoral area of forewing with 5 (in right wing with 6) transverse veins. Pterostigma developed. Forewings with small brown spots along *Cu* and terminal longitudinal veins with brown stripe in outer radial area and spot on apex of *CuA*. Hindwings almost without pattern. Medial area of hindwings simple and without transverse veins.

Abdomen of ♂ longer than wing, pale brown, with distinct brown, dorsal stripes on segments I-VI. Sternites I and II pale brown and sternites IV-VII dark brown. Segments II and III drop-like, swollen and divided by constriction, between segments IV and V sharply bent, from which abdomen is directed downward at an angle. Ectoprocts 4-5 times as wide as long, protruding beyond apical and lateral margins of abdomen, genitalia as in Fig. 29.

This species is very variable in size and in color, part of ♂s with body more yellow, with orange dorsal stripe on abdomen, and with hardly developed pattern on wings. ♀s, quite opposite, with more contrasty colored wings, pattern of their abdomen brighter, and with uninterrupted brown lateral stripes on tergites and sternites. Part of paratypes without sensory hair on hindfemora and color of spines of legs is variable.

The new species differs from the Arabian *Q. cinereus* Kimm., the ♂ of which is still not described, in the least spotty pattern of *Rs* of forewing.

According to special observations conducted in Repetek, the species flies to light only in areas with stationary sand and is absent in dune sand regions.