

## New and little known lacebugs of the genera *Acalypta* Westw. and *Dictyonota* Curt. from the East and Central Palearctic (Heteroptera: Tingidae)

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Three new species and one new subspecies are described: *Acalypta alatoensis* sp. n. from Kirgizia and SE Kazakhstan (Terskey-Ala-Too and Zailiysk Alatau ranges), *A. gracilis flaventis* ssp. n. from mountain regions of Turkmenistan (Kopetdagh) and Tajikistan (Zeravshan, Hissar and Surkhu ranges), *Dictyonota larae* sp. n. from S Kazakhstan (near SE extremity of Balkhash Lake) and *D. nigella* sp. n. from E Kazakhstan (Kalbinsk Range). *Acalypta elegans* Horv. is recorded from Europe (Kola Peninsula) and *A. cooleyi* from Tajikistan for the first time.

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Holotypes and paratypes of new taxa described in this paper are kept in the collection of the Zoological Institute, St.Petersburg. Several specimens of *Acalypta elegans* from the Kola Peninsula and *A. cooleyi* from Tajikistan were found in the collection of the Zoological Museum, Moscow University.

### New taxa

#### *Acalypta alatoensis* sp. n.

(Fig. 1)

*Holotype*. ♂, forma brachyptera, Kirgizia, northern slopes of Terskey-Ala-Too Range, settlement Pokrovka, alt. 2550 m, 15.III.1974 (E. Dubinina).

*Paratypes*. Kazakhstan: 1 ♂, f. brachyptera, env. of Almaty, northern foothills of Zailiysk Alatau Range, a lake in valley of Big Almatinka River, 4.IX.1933 (Shnitnikov); Kirgizia: 1 ♀, f. brachyptera, northern slopes of Terskey-Ala-Too Range, 18 km S of settlement Pokrovka, alt. 2150 m, 8.VII.1988 (Jakushev).

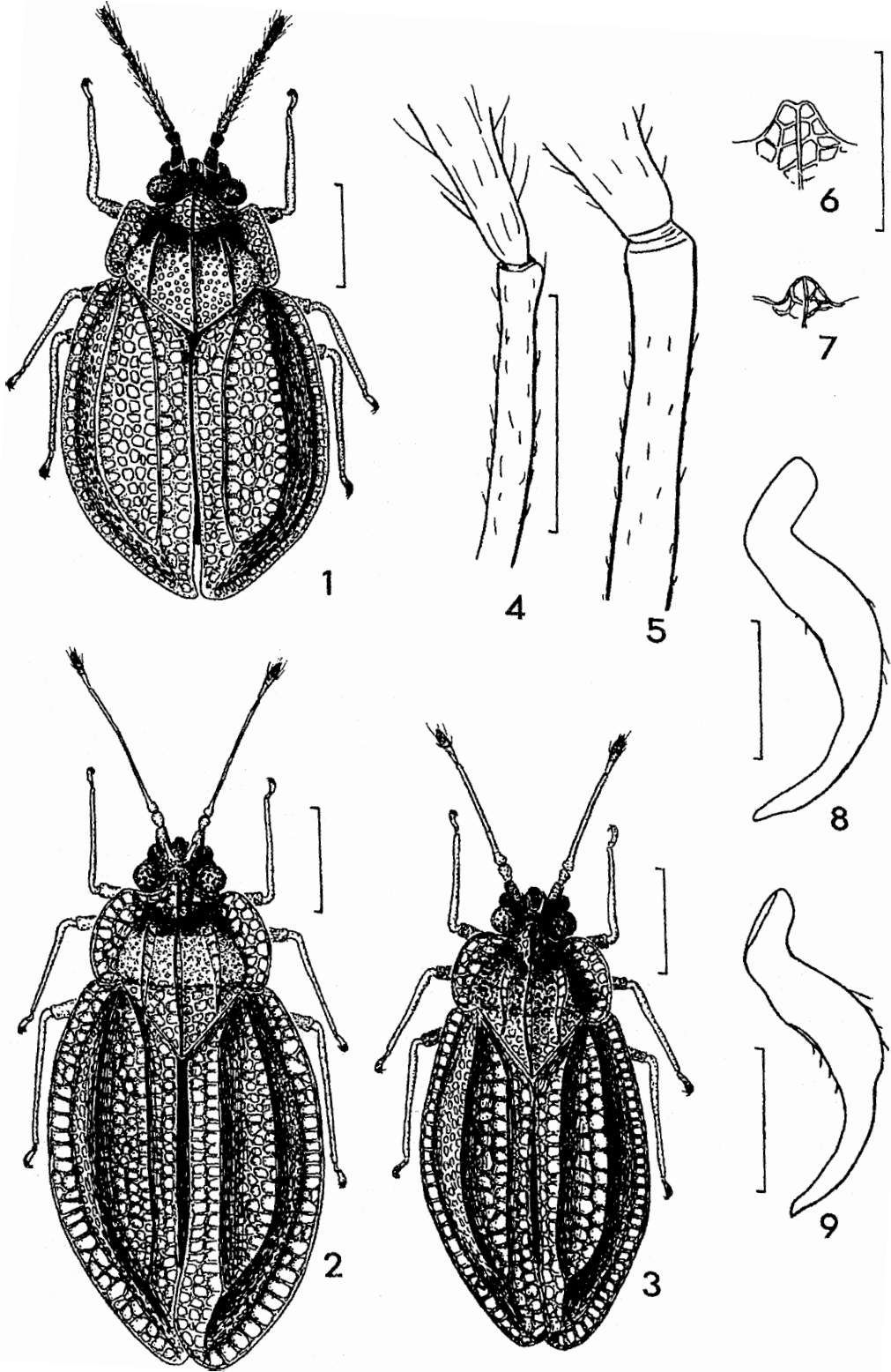
*Description*. I m a g o. Oval, broad, dorsally rather flat, brown or blackish brown; head and pronotal calli blackish brown or black.

Head with 2 rather short, parallel or hardly diverging, conic, apically blunt, brown or yellowish brown frontal spines which are significantly shorter than antennal segment I. Eyes rather strongly convex. Antennal tubercles curved towards head, with obtuse apices. Antennal segments I-III

brown, IV black; segments III and IV covered with light, slightly erected hairs; hairs in apical half of segment III not shorter than its thickness; segment III gradually tapering from base towards apex. Length of antennal segments (I-IV) in holotype ♂: 0.12, 0.09, 0.47, 0.21 mm (segments III and IV missing in both paratypes).

Pronotal disc flat, rather coarsely punctate; size of punctures gradually decreasing backwards, becoming as small as areolae of posterior pronotal process. All 3 pronotal carinae rather low (especially lateral ones), strongly depressed posteriorly, with 1 row of small areolae hardly distinct in posterior part of carinae; lateral carinae slightly converging anteriorly. Hood not strongly elevated, wide at its base, significantly angulately produced anteriorly, surpassing by its apex anterior pronotal angles and posterior margin of eyes and almost reaching level of eye middle. Paranota rather wide, almost always with 3 rows of rather small areolae of irregular shapes (in holotype, right paranotum with 2 rows of areolae only). Anterior angles of paranota distinctly, but not strongly produced anteriorly, almost rectangular; lateral margins of paranota slightly rounded or practically straight.

Brachypterous form. Costal area narrow, especially at middle of its length, with 1 row



of small areolae or with 1 areola of 2nd row at the very base of hemelytron only. Subcostal and discoidal areas in the most of their length with 4 rows of areolae or with a few areolae of 5th row in their widest part; discoidal area flat. Sutural area biseriata or with 1-3 areolae of 3rd row at the very base. Inner margins of hemelytra straight, contiguous with each other.

Body ventrally blackish brown (holotype) or brown (paratypes). Legs brown, femora slightly darker than tibiae; apices of tarsi blackish.

Length of body 2.12-2.22 mm. Width: body 1.25-1.32, pronotum 0.85-0.9, head 0.46-0.49, vertex 0.17-0.19 mm.

*Comparison.* The new species is similar to *A. platycheila* (Fieb.), but easily distinguished by the narrower paranota and costal area of hemelytra having much smaller areolae, less produced anterior angles of paranota not reaching posterior margins of eyes or only hardly surpassing them (in *A. platycheila* anterior paranotal angles reaching anterior margins of eyes), shorter frontal spines (in *A. platycheila* they are approximately as long as antennal segment I), lower pronotal carinae, especially lateral ones, shorter hood, etc.

*Biology.* In Terskey-Ala-Too Range, the species has been collected at altitudes from 2150 to 2550 m. The holotype has been captured on soil at the edge of a spruce forest composed of *Picea schrenkiana tianschanica*, the paratype also in spruce forest, "under grass".

#### *Acalypta gracilis flaventis* subsp. n.

(Figs 2, 4, 6, 8)

*Acalypta mesasiatica* (nom. nud.): Kiritshenko, 1964: 185.

*Holotype.* ♂, Turkmenistan, Central Kopetdagh, 30 km WSW of Bakharden, Ipay-Kala gorge, alt. 800 m, 29.VI.1972 (Golub).

*Paratypes.* Turkmenistan: 23 ♂, 15 ♀, 1 larva of 5th instar, as holotype, 26-30.VI.1972 (Golub). Tajikistan: 2 ♂, 7 ♀: southern slopes of Zeravshan Range, northern and southern slopes of Hissar Range (environs of Iskanderkul' Lake: Iskanderdarya, Sarytagh and Khozormech Rivers; Kondara gorge in valley of Varzob River), 23.VI., 21-26.VII., 7.VIII. 1947 (Kiritshenko, Kiryanova); 1 ♀, Surkhu Range,

25 km upstream of Nurek, alt. 900 m, 2.VI.1983 (Korotyayev).

*Description.* 1 m a g o. Oval, ♂ often rather strongly elongate, dorsally usually dirty yellow, rarely yellowish brown.

Head black or blackish brown, eyes dark red. Frons with 2 elongate yellowish brown spines often almost equal in length to antennal segment I, rarely considerably shorter than it. Antennae thin and rather long, segment III very thin and inflated at base; segment I yellowish brown, II-III yellow or brownish yellow, IV blackish brown or black, covered with slightly erected light hairs. Length of antennal segments (I-IV): 0.11-0.14, 0.06-0.07, 0.64-0.76 (♂) or 0.54-0.6 (♀), 0.17-0.21 mm.

Pronotum with 3 rather high uniseriate carinae with rather high areolae. Disc almost flat. Hood rather high, strongly produced anteriorly and greatly surpassing anterior angles of paranota, its apex reaching at least level of eye middle. Apex of hood obtuse and usually with small angulate incision. Paranota rather wide, with 2-3 rows of rather large areolae.

Brachypterous form. Hind wings absent. Costal area of hemelytra rather wide, usually with 1 row of rectangular areolae in most of its length, with several areolae of 2nd row at base or also near apex (at level of synus); sometimes costal area rather narrow and uniseriate entirely (some females); rarely this area biseriata in almost whole length. Subcostal area usually with 4 rows of areolae, sometimes with several areolae of 5th row in widest part; areolae of exteriormost row smaller than others. Discoidal area usually like a rather deep groove, with 4 rows of areolae in most of its length and with several areolae of 5th row in widest part (♂) or with 5 rows and sometimes with several areolae of 6th row in widest part (♀); total number of areolae 73-86 (♂) or 76-95 (♀). Sutural area usually entirely biseriata, sometimes (♀) with incomplete 3rd row in basal half and near apex of hemelytra. Inner margins of hemelytra slightly concave.

Body ventrally yellowish or blackish brown; legs dirty yellow or yellowish brown; femora sometimes blackish brown.

Figs 1-9. *Acalypta*. 1, *A. alatoensis* sp. n.; 2, 4, 6, 8, *A. gracilis flaventis* ssp. n., Kopetdagh; 3, 5, 7, 9, *A. gracilis gracilis* (Fall.), Voronezh Prov. General view (1-3); apical half of antennal segment III and basal half of segment IV of ♂ (4, 5) (compare diameters of segments III); hood (6, 7); parameres (8, 9). Scales: 0.5 mm (Figs 1-3, 6, 7), 0.1 mm (Figs 4, 5, 8, 9).

Length of body 2-2.65 (♂) or 2-2.42 (♀) mm. Width: body 1.05-1.3 (♂) or 1.1-1.32 (♀), pronotum 0.7-0.85, head 0.4-0.48 mm.

**Larva** (5th instar). Very similar to the larva of *A. gracilis gracilis*, distinctions between them are given in the key (see below).

**Comparison.** The main distinctions between the nominotypical and the new subspecies are as follows:

#### Imaginos

1(2). Discoidal area of hemelytra triseriate or only with 1-2 areolae of 4th row in widest part (♂), or with 4 row almost entirely (♀); total number of areolae 30-50 (♂) or 44-65 (♀). Apex of hood acute or weakly obtuse, without angulate incision or with indistinct one. Length of antennal segment III 0.5-0.64 (♂) or 0.4-0.5 (♀) mm. Body dorsally brownish or blackish grey. Body length in brachypterous and submacropterous specimens 2-2.5, in macropterous 2.4-2.5 mm. Figs 3, 5, 7, 9. Transpalaearctic subspecies . . . . .

. . . . . **A. gracilis gracilis** (Fall.)

2(1). Discoidal area with 4 rows of areolae in considerable part of its length and usually with several areolae of 5th row (♂) or with 5-6 rows (♀); total number of areolae 73-86 (♂) or 76-95 (♀). Apex of hood absolutely obtuse and usually with small angulate incision. Length of antennal segment III 0.64-0.76 (♂) or 0.54-0.6 (♀) mm. Body dorsally more or less pale: dirty yellow or yellowish brown. Only brachypterous form. Length 2-2.6 mm. Figs 2, 4, 6, 8. Mountains of Middle Asia (Kopetdagh, Hissar-Darvaz system) . . . . .

. . . . . **A. gracilis flaventis** ssp. n.

#### Larvae (5th instar)

1(2). Rudimentary lateral pronotal carinae slightly diverging anteriorly. Antennal segment III 1.4-1.8 times as long as segment IV. 1.6-1.8 mm . . . . .

. . . . . **A. gracilis gracilis** (Fieb.)

2(1). Rudimentary lateral pronotal carinae parallel. Antennal segment III 2.2 times as long as segment IV. 1.8 mm . . . . .

. . . . . **A. gracilis flaventis** ssp. n.

The transition zone between the two subspecies is apparently in the Transcaucasus. I examined several specimens from Armenia (environs of Erevan) and Azerbaijan (Belokany) which belong to the nominotypical subspecies but have noticeably wider discoidal area of hemelytra with more numerous areolae, somewhat longer and thinner antennal segment III, and paler body as compared to specimens from various localities of

Europe, Siberia, the Far East of Russia, and Mongolia.

**Biology.** Kiritshenko (1964) has collected this subspecies in Zeravshan and Hissar Ranges at roots of *Artemisia* sp., and I collected numerous specimens in Kopetdagh in moss under *Ephedra* sp.

#### *Dictyonota laeae* sp. n.

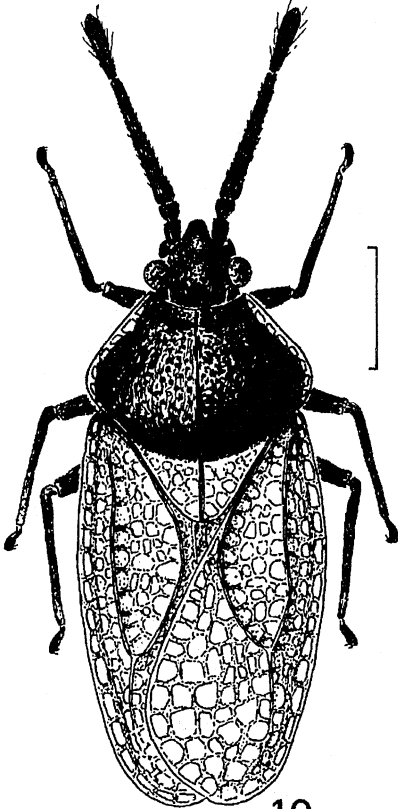
(Fig. 10)

**Holotype.** ♂, S Kazakhstan, lower reaches of Ili River, 60 km NW of Akkol', 15.VI.1983 (L. Danilovich).

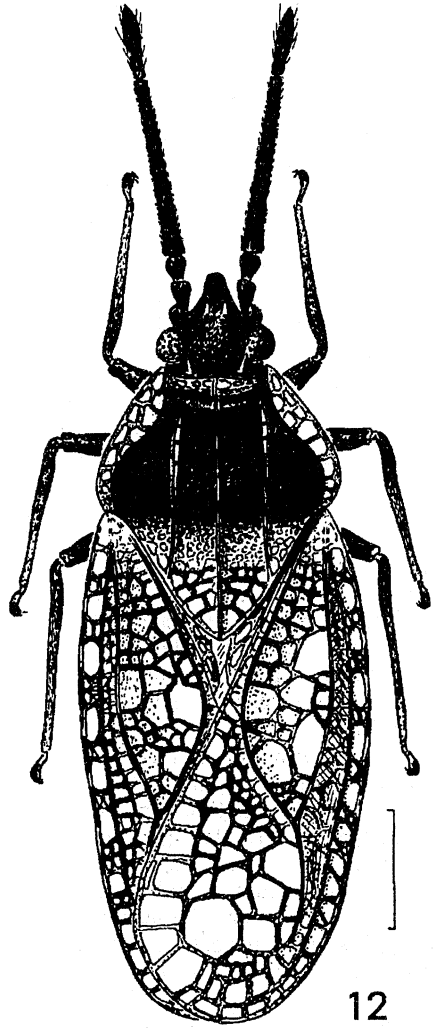
**Paratype.** 1 ♂, as holotype.

**Description.** Oval, 2.45 times as long as wide. Colour of body dorsally very contrasting: head, antennae, pronotal disc and hood (vesicula) absolutely black; net structures, i. e. posterior triangular pronotal process, paranota and hemelytra, very pale: areolae greyish white and separating veins brownish yellow.

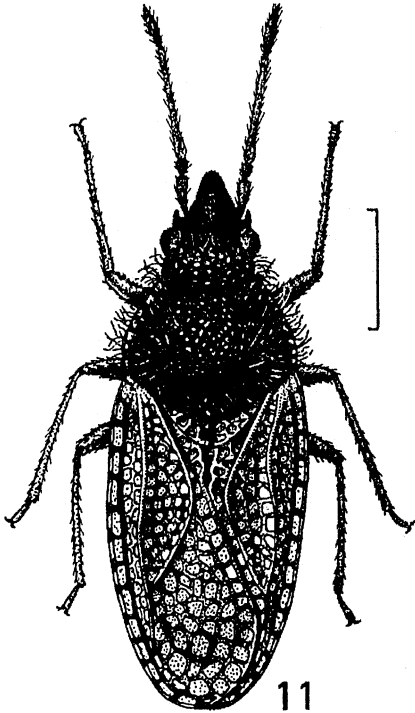
Head covered with white dust, wide, 1.97-2.07 times as wide as long. Clypeus somewhat elongate (characteristic of *Dictyonota*), its apex reaching base of antennal segment II or only slightly surpassing it. Eyes large, rather strongly convex. Frons and vertex weakly convex. Frons without distinct spines, only with 2 scarcely salient, hardly visible black tubercles at boundary between frons and clypeus. Vertex with 2 thin, rather short, straight, weakly erected, almost entirely (except apex) black spines; their apices reaching posterior margins of eyes or hardly produced in front of them. Antennal tubercles small, curved inwards at their apices. Antennae rather thick, almost entirely black; only the very apex of segment III slightly paler, brownish black. Antennal segment I thinner than others, almost cylindrical; segment II thickened towards apex; segment III at base as thick as segment II, gradually and considerably tapered towards apex; segments II and III covered with dense, short, dark, on segment II adpressed, on segment III somewhat erected hairs, those on segment III placed on small tubercles; segment IV fusiform, distinctly thicker than apex of segment III, covered with dense, short, almost adpressed hairs and in addition with not numerous, longer, erected hairs. Length of segments (I-IV): 0.1-0.11, 0.09-0.1, 0.51-0.57, 0.26-0.29 mm. Segment III twice as



10



12



11



13

long as segment IV and 1.31 times as long as width of head across eyes. Bucculae almost entirely black, with slightly paler (brownish black) lower margin.

Pronotum wide, 1-1.05 times as long as wide. Disc strongly convex, covered with light, short, semi-adpressed hairs much shorter than eye width; hood covered with longer hairs. Disc and hood covered with fine light dust, which together with hairs more or less hides pronotal surface, the latter being densely punctate. Hood low, ring-shaped, as black as disc, with extremely small areolae almost not differing in size from punctures; anterior margin of hood very weakly concave. Pronotum with only one median carina; the latter extremely low and without traces of areolae on disc, becoming distinctly higher at boundary between disc and posterior pronotal process and with several very small areolae (in holotype with 4 ones) on posterior process. Paranota narrow, entirely uniseriate. Posterior areolate pronotal process rather short, with obtuse rounded apex; its pale colour has rather distinct boundary with black colour of disc; pale colour of carina retained at posterior part of disc.

Macropterous form. Small spot of hemelytra at the very base black and blackish brown and covered with fine (holotype) or rather dense (paratype) pale dust; almost all surface of hemelytra very pale. Costal area wide, entirely uniseriate, areolae elongate and mainly rectangular. Subcostal area rather wide, biseriata almost entirely; areolae mainly quadrangular or pentagonal. Discoidal area rather short, 0.61-0.63 times as long as hemelytron, with 4-5 rows of angulate areolae in widest part. Sutural area uniseriate along clavus and vein *Cu* up to sharp curve outside of the latter, then strongly widened towards apex of hemelytra and with 6-7 rows of angulate areolae in widest part; areolae near apex of hemelytra rather large. Clavus distinctly separated from corium, weakly narrowing from base to apex, biseriata entirely. Apical part of clavi not covered dorsally by posterior pronotal process. Hypocostal lamina with 1 row of elongate areolae.

Body ventrally black, covered with white dust. Femora black or blackish brown, also covered with white dust; tibiae blackish brown in their basal half, brown in apical half, covered with very short erect light hairs.

Length: body 2.45-2.6, pronotum 0.94-1, head from apex of clypeus to posterior mar-

gins of eyes 0.21-0.22, to base of occipital spines 0.29, anterior tibia 0.54 mm. Width: body 1, pronotum 0.92-0.94, head 0.44, vertex 0.2-0.22 mm.

*Etymology.* The species is named after Mrs. Larisa P. Danilovich who collected it.

*Comparison.* The new species is rather similar to *D. gobica* Golub (Fig. 11). Both species have only one very low median pronotal carina without areolae on disc, pronotal disc covered with hairs, short posterior triangular pronotal process, and rather narrow uniseriate paranota and costal area of hemelytra. It differs very easily from *D. gobica* in the wider body and pronotum, thicker antennae, shorter head, absence of distinct frontal spines, black antennae and legs, much shorter pronotal hairs, larger areolae of hemelytra, and other characters. Body width in *D. gobica* 0.85-0.9, pronotum width 0.8-0.85, head length (to posterior margin of eyes) 0.3-0.31, head width 0.41-0.43 mm; head only 1.35-1.4 times as wide as long. The frons in *D. gobica* is with 2 very small but distinct pale spines, antennae rather thin, brown, and pronotal disc covered with very long hairs, 1.5-2 times as long as width of eye.

### ***Dictyonota nigella* sp. n.**

(Figs 12, 13)

*Holotype.* ♂, E Kazakhstan, Kalbinsk Range, 40 km NNW of Samarskoe, 5-8.VIII.1978 (Kerzhner).

*Paratypes.* 3 ♂, 3 ♀, as holotype.

*Description.* Oblong, body 2.5-2.65 times as long as wide, dorsally dark; head, antennae and pronotal disc black; veins at apex of posterior pronotal process and most veins of hemelytra blackish brown. Areolae of net structures of pronotum and hemelytra light grey or whitish.

Head width 1.25-1.42 times its length measured from apex of clypeus to posterior margins of eyes, and 1.1-1.18 times its length measured to base of occipital spines. Praeorbital part of head considerably elongate (peculiarity of *Dictyonota*) and equal to 0.58-0.68 of whole head length; apex of clypeus slightly surpassing base of antennal segment II. Frons strongly convex and descending abruptly from median line to inner margins of eyes; its median wide part rough (as emery cloth); lateral parts of frons finely punctate. Two frontal spines short, rather thin, widely separated from each other, parallel, black at their bases and becoming lighter towards yellowish brown apices, directed obliquely downwards and almost touching

with their apices the base of clypeus. Two occipital spines yellowish brown with black bases, short, hardly surpassing posterior margins of eyes by their apices, slightly erected over surface of head, rather strongly arched or hook-like. Antennal tubercles rather small, with apices curved inwards. Antennae rather thick, especially basal half of segment III; the latter gradually and not strongly tapering towards apex, covered at almost whole surface with distinct but not large tubercles with very short, thin, adpressed or scarcely erected hairs at their apices. Segment IV covered with extremely small tubercles and hairs, the latter longer and more erect than hairs on segment III. Length of antennal segments (I-IV): 0.13-0.14, 0.1-0.11, 0.69-0.73 ( $\sigma$ ) or 0.57-0.59 ( $\varphi$ ), 0.27-0.3 ( $\sigma$ ) or 0.26-0.27 ( $\varphi$ ). Segment III 1.4-1.48 ( $\sigma$ ) or 1.08-1.11 ( $\varphi$ ) times as long as width of head across eyes.

Pronotum 1.12-1.22 times as long as wide. Disc strongly convex, finely punctate. Anterior pronotal margin weakly concave. Hood (vesicula) pale, low and very weakly, angulately produced anteriorly along median line, narrow, ring-shaped, narrowing towards sides of pronotum. Posterior side of hood and anterior part of disc covered with sparse light hairs and microhairs. Remainder of pronotal surface without hairs. All 3 pronotal carinae on discal convexity low and with very low areolae, gradually becoming higher anteriorly and posteriorly, and with rather high areolae at posterior pronotal process. Paranota pale, rather narrow, with straight or very weakly convex lateral margins in most of their length, rounded at lateral pronotal angles, with 2 rows of areolae in anterior fourth to third of their length, uniseriate in the remainder. Posterior areolate pronotal process rather short, with slightly rounded lateral margins.

Macropterous form. Costal area with large areolae arranged in 1 row alternating with small areolae arranged in 2 rows. Subcostal area rather narrow, mainly biseriata or only with several (1-3) areolae of 3rd row (more developed in  $\varphi$ ); areolae of external row distinctly smaller than those of inner row. Discoidal area distinctly grooved, with 4-5 ( $\sigma$ ) or 5-6 ( $\varphi$ ) irregular rows of areolae in widest part; 2-3 areolae of external row and 2-4 of inner row considerably larger than others. Sutural (inner) area uniseriate in basal half of hemelytron along vein *Cu* up to its sharp curve

outside; areolae increasing in size posteriorly. Membrane with 6 irregular rows of areolae in widest part, several of them being very large. Clavus distinctly separated from corium, biseriata in its whole length, its posterior part (approximately 1/4 of its length) not covered by posterior pronotal process. Hemelytra overlapping by their sutural areas (membranae).

Body ventrally black, covered here and there with white dust. Bucculae distinctly becoming higher posteriorly, with light band at lower margin widened posteriorly. Apex of rostrum scarcely surpassing anterior margin of abdominal sternite III. Femora and basal half of tibiae blackish brown to black; apical halves of tibiae and tarsi brown or blackish brown; apices of tarsi blackish.

Length: body 3-3.16 ( $\sigma$ ) or 3.3-3.4 ( $\varphi$ ), pronotum 1.15-1.25, head from apex of clypeus to posterior margins of eyes 0.37-0.47, to bases of occipital spines 0.41-0.47, praeorbital part of head 0.23-0.26 mm. Width: body 1.12-1.2 ( $\sigma$ ) or 1.28-1.32 ( $\varphi$ ), pronotum 1-1.02 ( $\sigma$ ) or 1.02-1.05 ( $\varphi$ ), head 0.49 ( $\sigma$ ) or 0.53-0.54 ( $\varphi$ ) mm.

*Biology.* The species was collected from an unidentified leguminose shrub.

*Comparison.* *D. nigella* is closely related to the Mediterranean species *D. astragali* Štusač & Önder, 1982 described from Eastern Anatolia (Bitlis) and recorded later from Greece. To judge from original description and redescription (Péricart, 1983), *D. astragali* differs from *D. nigella* in the much longer head (1.19 times as long as wide), apex of clypeus reaching the level of apices of antennal segments II, narrower head (its width 0.42-0.48 mm), slightly longer occipital spines (hardly reaching level of eye middle), much longer rostrum reaching anterior margin of abdominal sternite V.

The new species is somewhat similar to the East Palaearctic *D. dlabolai* Hob. in the very dark colour and antennae (mainly segment III) covered with dense tubercles armed with short setulose hairs. The latter differs in the thicker antennae (segment III very thick, cylindrical and covered with larger tubercles armed with thicker hairs), hood inflated as ampule, and other characters. *D. nigella* is also rather similar to *D. sareptana* (Jak.); the latter easily differs in the thinner antennae, especially their segment III which has extremely small tubercles, much wider paranota having considerably rounded lateral margins, paler colour, etc.

## New records

***Acalypta elegans* Horváth, 1906**

*Acalypta nyctalis* Drake, 1928.

*New record. European Russia:* south-western part of Kola Peninsula, Kandalaksha Nature Reserve: 1 ♂, "Kurichek Island", spruce forest, 1980; 1 ♀, 1 larva of 5th instar, "Kibrinskie Ludy" (local geographical name of small low islands into Kandalaksha Gulf), rocks, 1983 (Yu. Byzova); dates of capture not indicated in both cases. Judging by the manner of labelling of the material, which was preserved on two cotton-wool layers, this species was collected in soil traps with other Heteroptera, e. g. *A. nigrina* (Fall.).

*A. elegans* was known previously from East Asia (Irkutsk Prov. to Chukotka Peninsula and Magadan Prov. in Russia; Mongolia) (Golub, 1982; Péricart & Golub, 1996) and North America, where its range is composed of two widely separated parts in the west and east of the continent (Froeschner, 1976). Thus, it can be suspected that the real distribution of *A. elegans* is circumpolar one.

***Acalypta cooleyi* Drake, 1917**

*Acalypta spinifrousa* Jing, 1980.

*New record. Tajikistan:* 2 ♂, 4 ♀, southern slopes of Zaalaysk Range, Sauksay River basin, Sasykteke River, alt. 3650 m, 10.IX.1987 (Shcherbakov); 1 ♀, Nurek Reservoir, 25 km upstream of weir, 17.V.1983 (Korotyaev).

The species was known from SE Altai, E Siberia to Far East of Russia, Mongolia, NE China, and N America.

## Acknowledgements

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## Correction to vol. 6

In the paper by E.V. Kanyukova "Hebridae of Russia and adjacent countries (Heteroptera)" on p. 231, right column, the following should be added to the list of paratypes of *Hebrus pilipes* sp. n. from Tajikistan: 13 ♂, 23 ♀, 2 larvae, Porchi-say, valley of Yavan-su River, 9-18.V.1943 (Kiritshenko).