Lacebugs of the genus *Dictyla* Stål of the Central and East Palaearctic (Heteroptera: Tingidae)

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Five new species are described: *D. nervosa* sp. n. (imago, larva) from Kazakhstan, *D. mira* sp. n. (imago) from Armenia, *D. plana* sp. n. (imago, larva) from Georgia, *D. ditis* sp. n. (imago, larva) from SE Kazakhstan, Uzbekistan, Tajikistan, Afghanistan, *D. lopatini* sp. n. (imago, larva) from Tajikistan. Larvae of *D. subdola* (Horv.), *D. fulvescens* (Kir.), and *D. concinna* Golub are described for the first time. A key to the imagos of 22 species and a key to 5th instar larvae of 15 species from the Central and East Palaearctic are given. New faunistic records for *D. sahlbergi* (Horv.), *D. concinna* Golub and *D. sima* Seid. are included, a lectotype of *D. sahlbergi* is designated. Geographical variability of *D. nassata* (Put.) is discussed.

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The paper is based on the extensive collections of the Zoological Institute, St.Peterburg (ZIN). Material of some species from the Museum National d'Histoire Naturelle, Paris and the Zoological Museum, University of Moscow was used as well. Holotypes and paratypes of the new species are kept in ZIN. All species included in keys are represented in central and eastern parts of the Palaearctic Region. 5 Mediterranean species (*D. aridula* Linnavuori, *D. indigena* (Wollaston), *D. lithospermi* Ribes, *D. ruficeps* (Horv.), *D. variabilis* D.Rodr.) and 7 species (*D. evidens* (Drake), *D. sauteri* (Drake) and others) from the extreme south-eastern part of Palaearctic Region (e.g. Taiwan) are not included.

For detailed data on the distribution of Palaearctic species see Péricart (1983) and Péricart & Golub (1996). New records are marked with !.

Key to species of *Dictyla* from the Central and East Palaearctic

Imagos

1(42). Hemelytra and apex of posterior pronotal process without tumid elevations. Costal area of hemelytra horizontal or feebly reflexed upward, uniseriate at least in middle.

2(5). Head with 5 spines: 3 frontal and 2 occipital, the latter slender, elongate, appressed to head, sometimes entirely hidden under hood (collar) of pronotum.

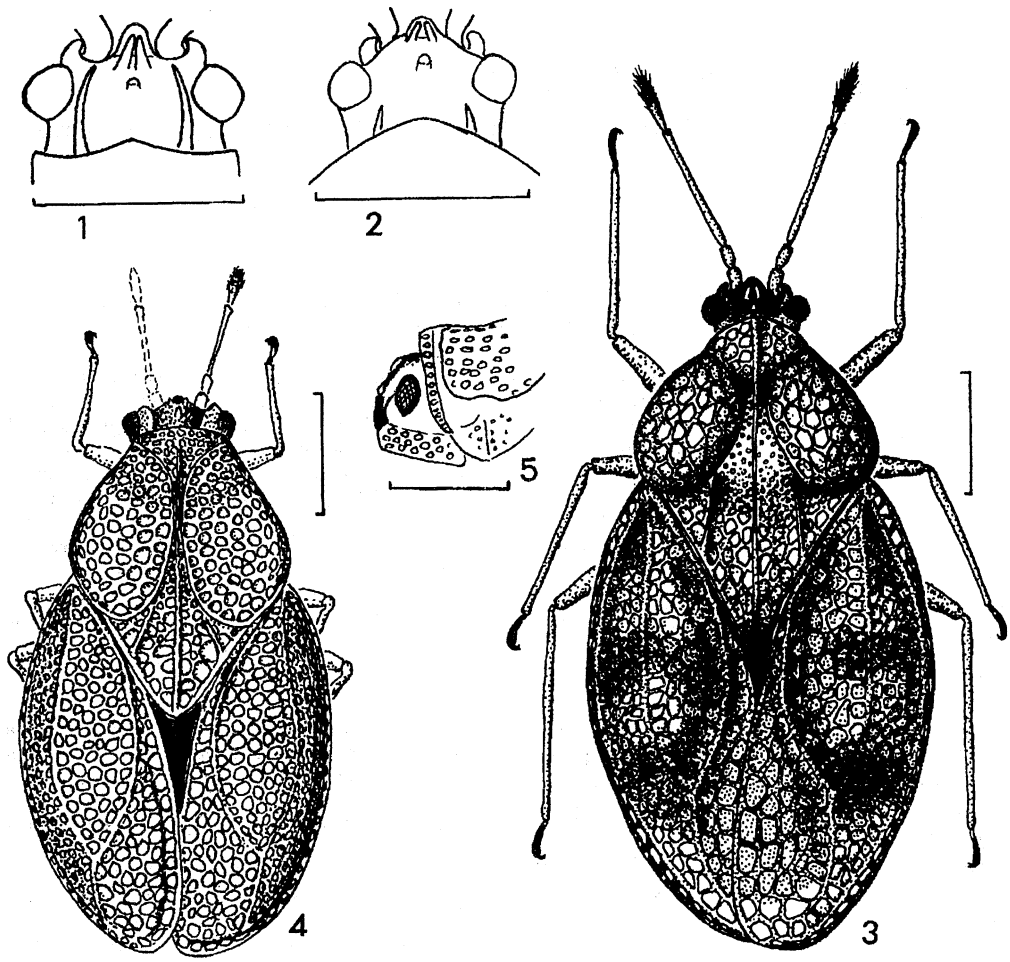
3(4). Occipital spines very long, extending forward beyond anterior edge of eye and almost reaching base of antennae (Fig. 1). Distal (outer) margins of reflexed paranota contiguous with median pronotal carina. Antennal segment IV entirely yellow. 2.7-3.3 mm. Steppe and semi-desert territories of the Palaearctic, from Romania to Kazakhstan, Turkmenistan and Mongolia . . . . . **D. montandoni** (Horv.)

4(3). Occipital spines rather short, not surpassing middle of eyes, usually slightly surpassing their posterior edge or even not reaching it (Fig. 2). Distal margins of reflexed paranota not reaching median carina. Antennal segment IV at least in apical half brown or brownish black. 3.15-3.4 mm. Fig. 3. South Kazakhstan . . . . . **D. nervosa** sp. n.

5(2). Head only with 2-3 frontal spines; sometimes the latter extremely small or indistinct. Occipital spines absent.

6(35). Distal margins of paranota reaching lateral pronotal carinae (Figs 9, 10, 12, 13), if not then distance between lateral carina and paranotum not greater than eye width and in this case either lateral carinae distinctly converging anteriorly or, if carinae parallel, pronotal disc not black (Fig. 30).

7(20). Paranota appressed to pronotal disc along their whole surface or only hardly raised, not bulbous, extending completely or almost completely over the anterior half of disc and in posterior half usually leaving open only rather small triangular



Figs 1-5. *Dictyla*, imago. **1**, *D. montandoni* Horv.; **2, 3**, *D. nervosa* sp. n.; **4, 5**. *D. mira* sp. n. Head, dorsal view (1, 2); general view (3, 4); head, lateral view (5). Scale: 0.5 mm.

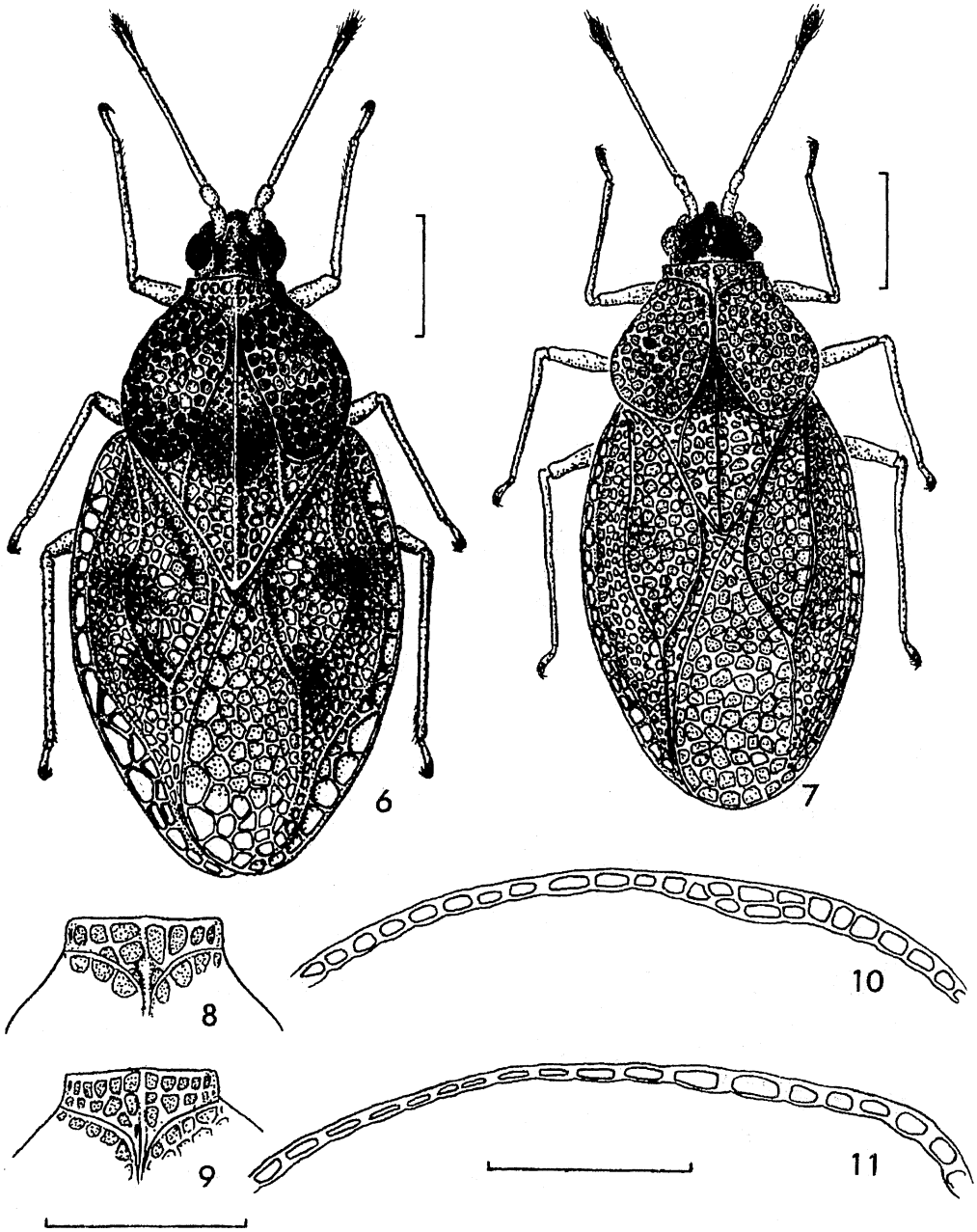
area; distal margins of paranota almost contiguous or contiguous with median carina. Lateral pronotal carinae (except *D. orientalis*) strongly converging anteriorly; all carinae very low, with rudimentary or indistinct areolae.

8(9). Hemelytra entirely convex; vein *R+M* not raised as keel, strongly flattened out in its posterior half. Antennae very short, length of segment III 1.1 times vertex width and 0.69 times width of head across eyes. All three frontal spines directed downwards; apices of paired spines touching upper edge of clypeus (Fig. 5). 2.35 mm. Fig. 4. Armenia ..... **D. mira** sp. n.

9(8). Discoidal and sutural areas of hemelytra flat; all veins bordering areas keel-shaped. Antennae rather long, length of segment III 1.7-2.8 times vertex width and 0.9-1.5 times head width. Unpaired frontal spine, if present, directed obliquely upwards; paired spines directed forwards and only slightly downwards, not touching clypeus.

10(11). Distal margins of paranota slightly concave in their posterior half and leaving open a rather broad area of pronotal disc, only touching lateral carinae. Subcostal area of hemelytra with 5 rows of areolae in anteapical part (synus). Costal area rather broad, biseriate at base and in anteapical part. 2.85 mm. Fig. 6. Far East of Russia .... **D. orientalis** Golub

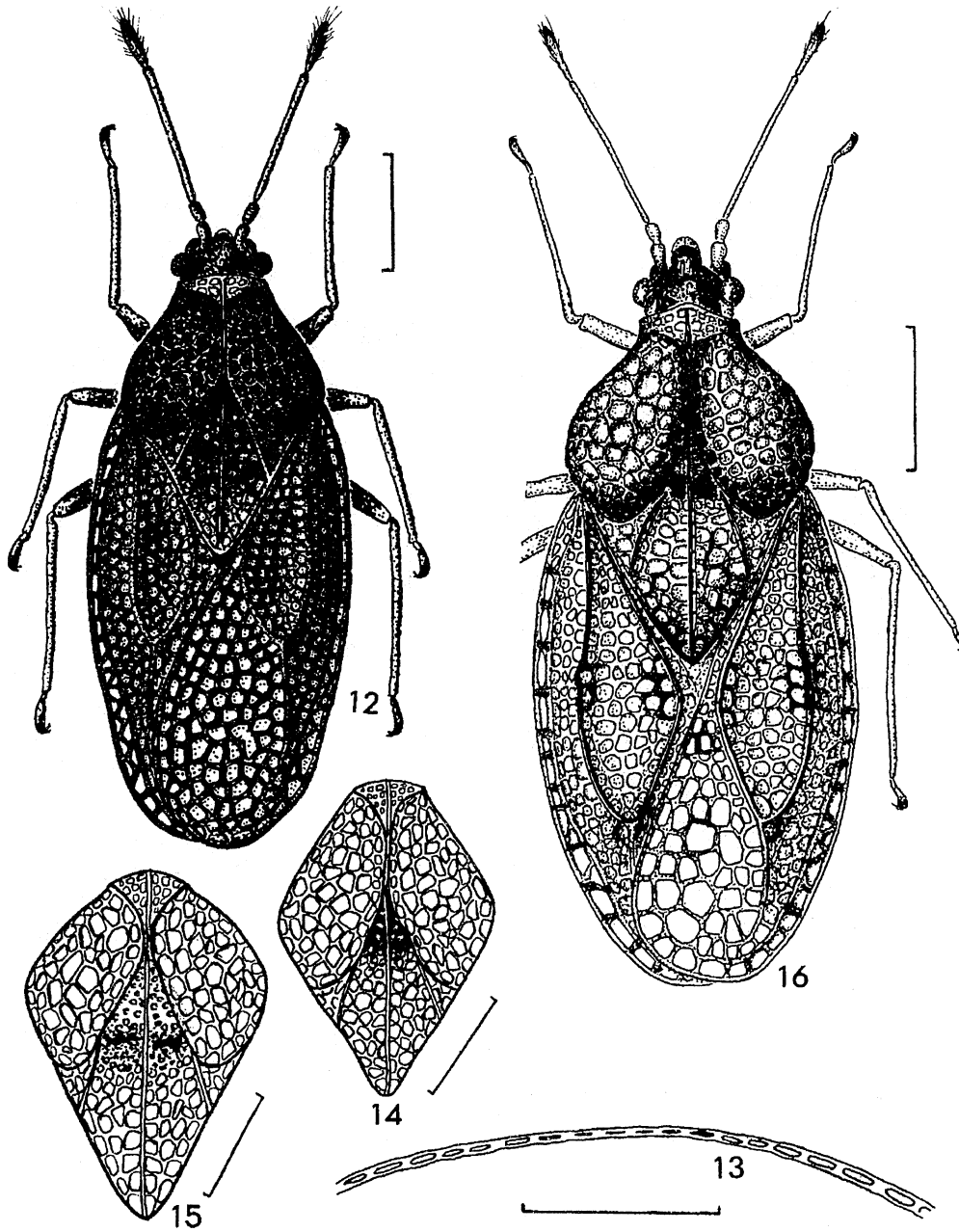
11(10). Distal margins of paranota slightly convex in their posterior half and leaving open a narrow area of disc, usually pressed intimately against lateral carinae or even covering their anterior ends (Figs 9, 10, 12). Subcostal area with 3-4 rows of areolae. Costal area usually narrow, completely uniseriate or even without distinct areolae



Figs 6-11. *Dictyla*, imago. **6**, *D. orientalis* Golub; **7, 8, 10**, *D. plana* sp. n.; **9, 11**, *D. subdola* Horv. (Central Kazakhstan). General view (6, 7); hood (8, 9); costal area of hemelytron (10, 11). Scale: 0.5 mm.

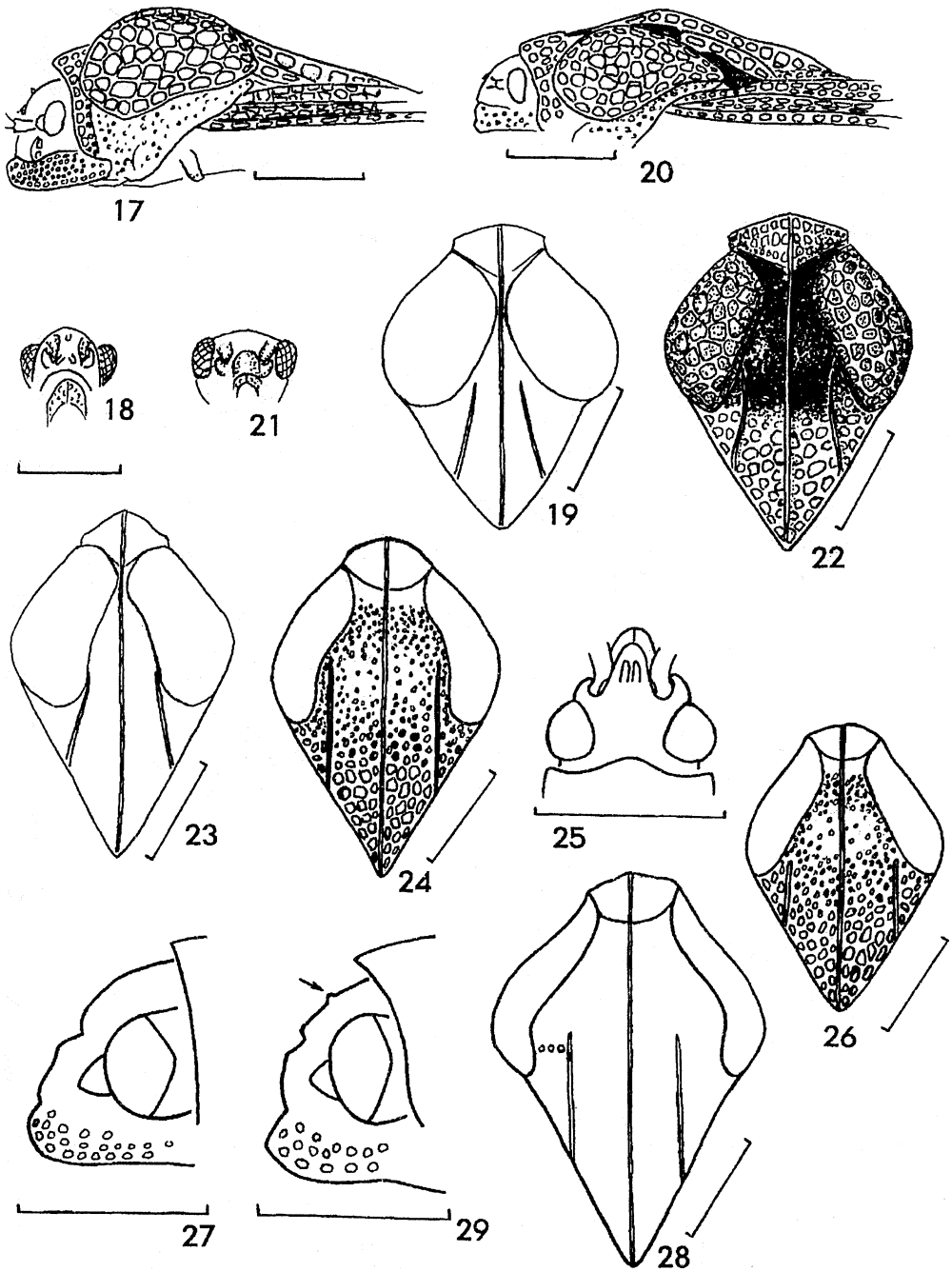
in its middle part, if more or less dilated then with small areolae of 2nd row in anteapical area only.

12(13). Median pronotal carina slightly inflated at base of hood as very small nodule (Fig. 8). Pronotal disc feebly convex in anterior half, often almost flat. Costal area moderately broad,mostly with 1 row of rather large, oval and rectangular areolae, with several areolae of 2nd row in anteapical area (Fig. 10). Body dorsally testaceous, only with several not large, brown maculae. 1.8-2 mm. Fig. 7. Georgia ..... **D. plana** sp. n.

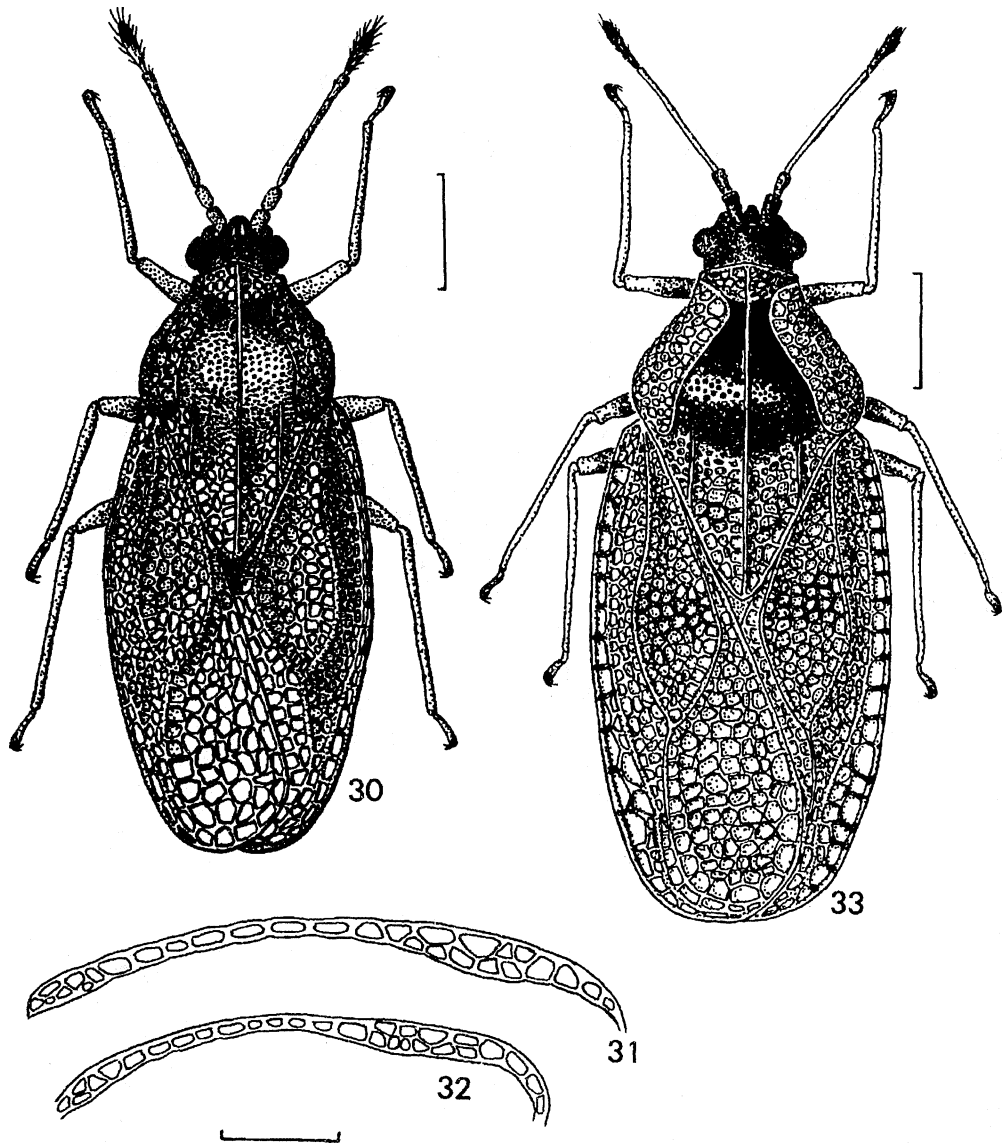


Figs 12-16. *Dictyla*, imago. **12**, *D. nigra* Golub; **13**, *D. minuta* Golub; **14**, *D. platyoma* Fieb.; **15**, *D. subdola* Horv General view (12, 16); costal area of hemelytron (13); pronotum, dorsal view (14, 15). Scale: 0.5 mm.

13(12). Median pronotal carina without nodule at base of hood (Fig. 9). Pronotal disc distinctly and usually rather strongly convex. Costal area entirely narrow, usually with 1 row of small areolae (Fig. 11) or in much of its length even without distinct areolae, but if with several small areolae of 2nd row at anteapical point, then body entirely black or blackish brown (*D. nigra*).



Figs 17-29. *Dictyla*, imago. **17, 18**, *D. ditis* sp. n.; **19-21**, *D. sahlbergi* Horv.; **22**, *D. humuli* F.; **23**, *D. nassata* Put. (Corsica); **24, 25**, *D. fulvescens* Kir.; **26**, *D. concinna* Golub; **27, 28**, *D. echii* Schrk; **29**, *D. triconula* Seid. Head and anterior part of body, lateral view (17, 20); head, frontal view (18, 21); pronotum, dorsal view (19, 22-24, 28); head, dorsal view (25); head, lateral view (27, 29). Scale: 0.5 mm.



Figs 30-33. *Dictyla*, imago. **30**, *D. concinna* Golub; **31**, *D. echii* Schrk. (Azerbaijan); **32**, *D. sima* Seid. (Tajikistan, Gissar Range); **33**, *D. lopatini* sp. n. General view (30, 33); costal area of hemelytron (31, 32). Scale: 0.5 mm.

14(15). Costal area of hemelytra with 2-5 areolae of 2nd row in the widest part (anteapical area); all areolae of costal area pronounced. Body blackish brown or black. Pronotal sides very slightly concave immediately behind hood. 2.5-3.05 mm. Fig. 12. Eastern part of Palaearctic, from Baikal to Korea ..... **D. nigra** Golub

15(14). Costal area with 1 row of areolae (sometimes with 1-3 extremely small areolae of 2nd row at the very base), sometimes areolae extremely narrow or indistinct in middle of area. Body dorsally brown or brownish yellow. Pronotal sides in anterior half slightly convex or straight.

16(17). Costal area very narrow, in middle part keel-shaped, as a rule without areolae or with rudimentary ones (Fig. 13). Sutural area with 4-6 rows of areolae in the widest part. Small: 1.8-2.35 mm. Far East of Russia, Mongolia .... **D. minuta** Golub

17(16). Costal area narrowly lamellate, with distinct (even though very narrow) areolae in middle part. Sutural area with 7-9 rows of areolae in the widest part. Larger: 2.35-3.4 mm.

18(19). Subcostal area with 3 rows of not very small areolae or in addition with only several areolae not ranged in a 4th row; areolae of external and

internal rows more or less regular in form, mainly rectangular. Discoidal area with 4 rows of areolae in widest part. Paranota as a rule leaving open posteriorly a very small, usually black or brown area of disc with only several punctures (Fig. 14). On the average smaller: 2.35-3.25 mm. Fig.14. Transpalaearctic species, distributed from forest zone to desert zone ..... **D. platyoma** (Fieb.)

19(18). Subcostal area at least in anterior third, more often in most of its length, with 4 rows of very small areolae of irregular, angulate and roundish form. Discoidal area with 5-6 rows of areolae. Paranota not covering posteriorly a fairly large, brownish yellow area of disc which is sometimes continued in anterior part of disc as narrow longitudinal stripe (Fig. 15). On the average larger: 2.6-3.4 mm. Eastern part of Palaearctic, from steppe zone to desert zone .... **D. subdola** (Horv.)

20(7). Paranota usually not appressed to disc, more or less convex or even inflated, but if appressed entirely (*D. fulvescens*, *D. concinna*) then leaving widely uncovered the disc along the whole median line, their distal margins far apart from median and lateral carinae, the latter being parallel. If paranota covering most of disc surface, then pronotal carinae, especially lateral ones, distinctly areolate or even with large areolae.

21(32). Paranota distinctly convex or bulbously inflated; through their semi-transparent areolae often void between paranotum and disc surface visible. Frons with 3 spines, if with 2 then either (*D. lupuli*) pronotal disc, antennal segments I-II and femora black, or (*D. nassata*, partially) lateral pronotal carinae converging anteriorly.

22(23). Paranota strongly inflated, raised higher than median carina (Fig. 17), almost hemispherical, covering above almost entire disc, meeting or almost meeting with their distal margins and touching median carina over considerable length. Pronotal carinae high, with large areolae; in macropterous specimens, highest areolae only slightly lower than height of eye. Frons abrupt from median line to inner margins of eyes (Fig. 18). 2.6-3.5 mm. Fig. 16. Kazakhstan (Asian part), Uzbekistan, Tajikistan, Afghanistan .... **D. ditis** sp. n.

23(22). Paranota not inflated as hemispheres, not meeting with each other and with median carina or only touching it in a single point and not raised significantly above it (Figs 19, 20); if paranota inflated rather strongly (but not spherical!), then their distal margins widely separated from each other (*D. humuli*; Fig. 22). Pronotal carinae not high, their areolae approximately 3 times lower than eye height or even indistinct (*D. humuli*). Frons more or less declivous from median line to inner margins of eyes (Fig. 21).

24(27). Lateral pronotal carinae distinctly converging anteriorly, lamellate, with distinct, even though small areolae (Fig. 20). Distal margins of paranota feebly separated from each other or even contiguous with median carina.

25(26). Lateral pronotal carinae rather strongly converging anteriorly, distance between their posterior ends twice that between anterior ones, the latter usually not reaching markedly the highest point of disc; distal margin of paranota usually touching or almost touching median carina and each other anteriorly; pronotal sides distinctly rounded in front of their lateral angles (Fig. 19). Unpaired frontal spine, when present, usually separated from the paired spines by a distance approximately twice their length. 2.4-2.9 mm. S Kazakhstan, Uzbekistan!, Tajikistan! .... **D. sahlbergi** (Horv.)

26(25). Lateral pronotal carinae not strongly converging anteriorly, distance between their posterior ends 1.5 times that between anterior ones, the latter almost reaching highest point of disc; distal margins of paranota very rarely touching each other and median carina, distinctly separated; pronotal sides very feebly rounded or practically straight in front of lateral angles (Fig. 23). Unpaired frontal spine usually separated from the paired spines by a distance not or slightly greater than their length. 2.3-3.5 mm. Southern part of Palaearctic from Mediterranean Region to Kazakhstan and SW China; Afrotropical and Oriental Regions ..... **D. nassata** (Put.)

27(24). Lateral pronotal carinae parallel or very slightly converging anteriorly (*D. humuli*), very low, not lamellate, without distinct areolae or with rudimentary areolae. Distal margins of paranota usually rather widely separated anteriorly.

28(29). Antennal segments I-II, femora, except apices, and pronotal disc black. Head with 2 frontal spines. 2.7-3.2 mm. Central and Southern Europe, Transcaucasia, Middle Asia (mountains and foothills), Siberia to Irkutsk ..... **D. lupuli** (F.)

29(28). Antennal segments I-II and femora yellow. Head with 3 frontal spines, unpaired one sometimes indistinct.

30(31). Pronotal disc pale, except black macula behind hood. Paranota not strongly inflated and not raised distinctly above median carina. Vein $R+M$ not humped distinctly in the middle and at confluence with *Cu*. 2.8-3.5 mm. Widely distributed in Europe ..... **D. convergens** (H.-S.)

31(30). Pronotal disc entirely black (Fig. 22). Paranota rather strongly inflated and distinctly raised above median carina. Vein $R+M$ distinctly raised in form of 2 humps in its middle and at confluence with *Cu*. 3.1-3.8 mm. Widely distributed in Europe and Asia in various zones, east to E Siberia (Angara River) ..... **D. humuli** (F.)

32(21). Paranota pressed to surface of pronotal disc; lateral carinae parallel, widely separated from each other; disc brown (Fig. 30). Head with 2 frontal spines. Antennae, except apical half of segment IV, and legs, except apices of tarsi, pale.

33(34). Lateral pronotal carinae moderately high, reaching anteriorly highest point of disc (Fig. 24). Costal area of hemelytra moderately broad, with rather large areolae mainly alternating with small ones. Bucculae distinctly surpassing apex of clypeus (Fig. 25). Colour of dorsal surface spotted and rather contrasting: black spots against a light background. Larger: 2.9-3.4 mm. Tajikistan .... **D. fulvescens** (Kir.)

34(33). Lateral pronotal carinae very low, distinctly not reaching highest point of disc (Fig. 26). Costal area narrow (especially in its middle), composed of rather narrow areolae. Bucculae hardly surpassing apex of clypeus. Body dorsally more or less uniformly yellowish brown, only pronotal disc and small spots on hemelytra darker. Smaller: 2.6-2.75 mm. Fig. 30. S Kazakhstan (Dzhambul Prov.), Kyrgyzstan, Uzbekistan! (Ugam Range) ..... **D. concinna** Golub

35(6). Distal margins of paranota almost entirely and usually strongly concave, widely separated from lateral and median carinae; distance between distal paranotal margin and anterior end of lateral carina almost always (except *D. lopatini*) greater than eye width; lateral carinae parallel (Figs 28, 33); widely open disc black or almost black (Fig. 33).

36(41). Paranota rather narrow, with 3-4 rows of areolae anteriorly and 3 rows posteriorly; their distal margins strongly concave, minimum distance between them and lateral carinae 1.2 times eye width; disc in this place with 3 (sometimes 4) punctures (Fig. 28). Width of head 1.6-1.8 times the distance between paranotal margins anteriorly (behind hood).

37(40). Paranota entirely pressed to pronotal disc or only hardly raised, but not inflated. Frons with 2 extremely small tubercles (Fig. 27) or without tubercles.

38(39). Antennal segment I and II, trochanters and at least apical half of tarsi almost always black or blackish brown, rarely (in teneral specimens) one or two of these structures pale: yellowish brown or yellow. Costal area of hemelytra moderately broad and with rather large areolae (Fig. 31). On the average larger: 2.95-3.8 mm. Most of Palaearctic, east to Yenisey River ..... **D. echii** (Schrk.)

39(38). Antennal segment II or sometimes also apex of segment I, trochanters and tarsi, excepting their apices, pale: yellow, brownish or reddish yellow. Costal area rather narrow in middle (Fig. 32). On the average smaller: 2.75-3.15 mm. Turkey (terra typica), Turkmenistan!, Uzbekistan!, Tajikistan! ..... **D. sima** Seid.

40(37). Paranota not pressed entirely to disc, slightly inflated. Head with 3 (Fig. 29), rarely with 2 very small tubercles. 3-3.5 mm. East Mediterranean species ..... **D. triconula** (Seid.)

41(36). Paranota rather broad, with 5 incomplete rows of areolae anteriorly and with 4 rows posteriorly; their distal margins not strongly concave, minimum distance between them and lateral carinae half of eye width; disc in this place with only 2 punctures (Fig. 33). Width of head 2.65-2.75 times the distance between paranotal margins anteriorly, behind hood. 3.3-3.7 mm. Tajikistan (West Pamirs) ..... **D. lopatini** sp. n.

42(1). Each hemelytron with 2 large tumid elevations; a similar elevation also at apex of posterior pronotal process. Costal area of hemelytra reflexed upwards vertically or almost vertically, entirely with 2 rows of areolae. 2.5-3.8 mm. Central and Southern Europe, Turkey, Kazakhstan, Kyrgyzstan, Uzbekistan ..... **D. rotundata** (H.-S.)

L a r v a e (5th instar)

1(4). Occipital spines absent. 2 frontal spines extremely small or absent. Pronotum, lobes of hemelytra and abdomen without spines, except extremely small, not always obvious median tubercle at posterior margin of abdominal tergite H (Fig. 34).

2(3). Posterior margin of abdominal segment IX with 2 very small but distinct processes. Posterolateral angles of abdominal segments IV-VIII weakly but obviously prominent. 2.3-2.75 mm (Fig. 35) ..... **D. echii** (Schrk.)

3(2). Posterior margin of abdominal segment IX without obvious processes, at most angulate. Only IV-VI segments with more or less obviously prominent posterolateral angles. 2.38-2.45 mm. Fig. 34 ..... **D. lopatini** sp. n.

4(1). Head with pair of occipital spines, 2 or 3 frontal spines always obvious (even when small), often long.

5(10). Pronotum and mesonotum without median spines or only mesonotum with 2 very short spines scarcely prominent from under posterior pronotal process. Lateral margins of pronotum and lobes of hemelytra without distinct spines, at most (*D. lupuli*) lateral pronotal margins with several very small protuberances.

6(9). Abdominal tergites without median spines.

7(8). Anterior edge of pronotum slightly arched. A little larger: length 2.08-2.38 mm. Antennal segment III 1.10-1.14 times as long as width of head. Fig. 35 ..... **D. fulvescens** (Kir.)

8(7). Anterior edge of pronotum straight. A little smaller: length 1.92-1.95 mm. Antennal segment III 0.8-1.0 times as long as width of head. Fig. 37 ..... **D. concinna** Golub

9(6). Abdominal tergites II and V, sometimes also VIII, with very small median spine. 2-2.1 mm ... . **D. lupuli** (H.-S.)

10(5). Pronotum with 2 pairs, mesonotum with 1 pair of rather long median spines, not shorter than antennal segment I. Lateral margins of pronotum and lobes of hemelytra as a rule with at least 1 small spine, more often with 3 or 4 distinct spines (Figs 38-40).

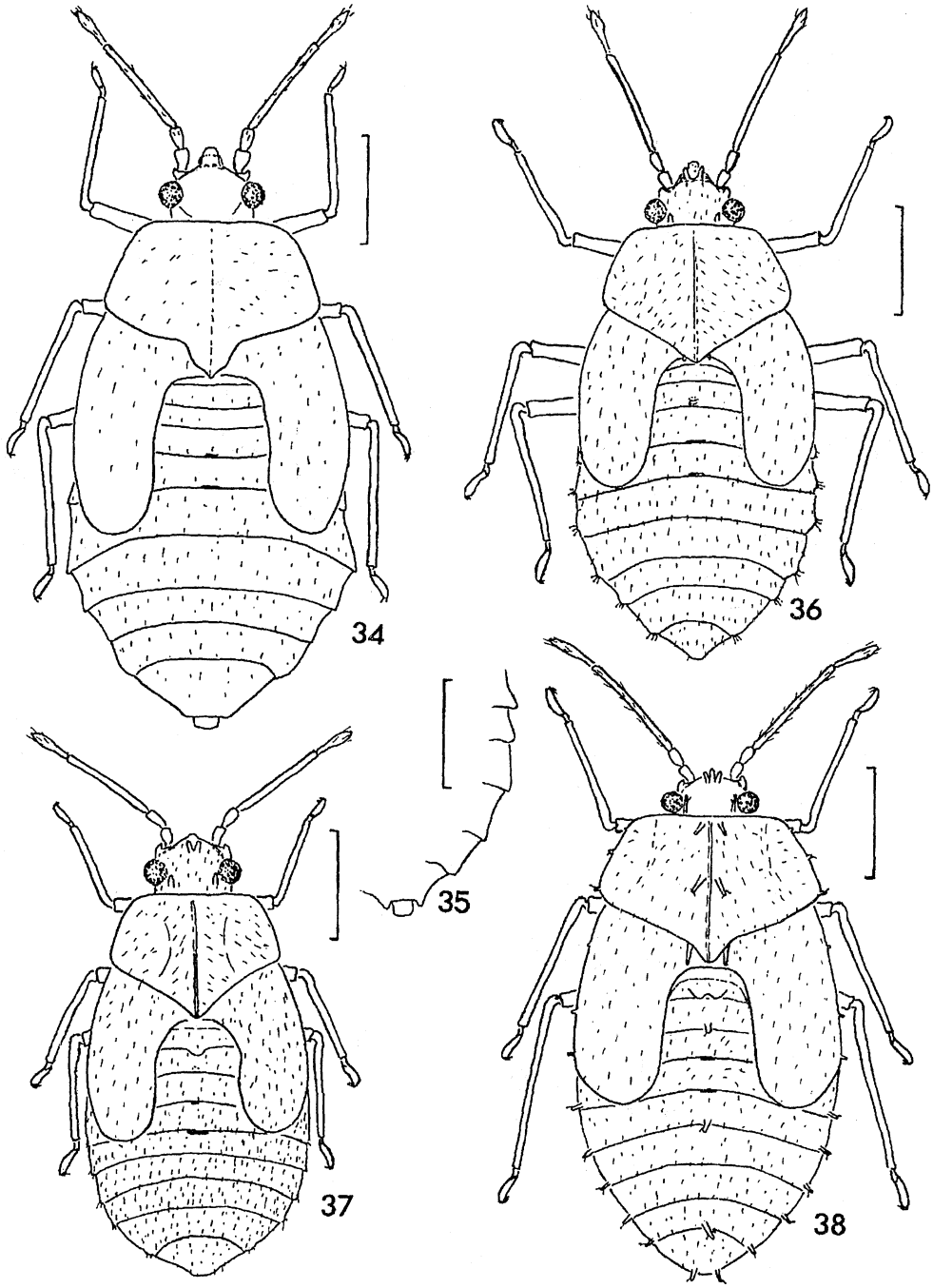
11(12). Abdominal tergite VI with a long median spine. 1.9 mm ..... **D. montandoni** (Horv.)

12(11). Abdominal tergite VI without median spine.

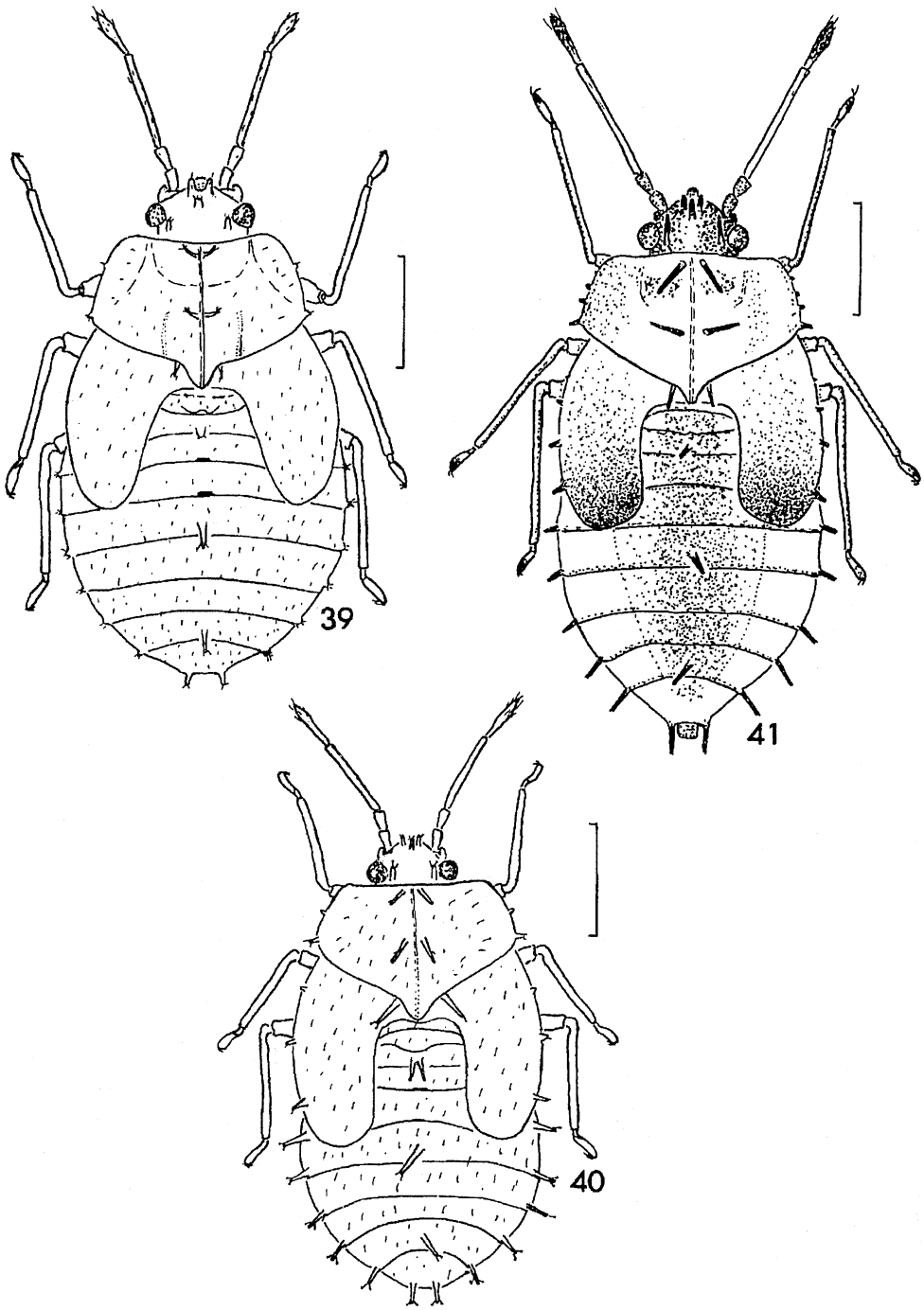
13(18). Marginal abdominal spines short, as a rule even longest of them distinctly shorter than width of eye; if spines almost equal to width of eye (some specimens of *D. subdola*) then median spine of abdominal tergite V very small, several times shorter than this tergite.

14(17). Median spine of abdominal tergite V very small, 2-4 times shorter than this tergite.

15(16). Median spines of pronotum extremely short, in form of hardly raised tubercles or even indistinct. Marginal abdominal spines very small, hardly longer than their diameters at bases. A little smaller: 1.8-1.9 mm ..... **D. platyoma** (Fieb.)



Figs 34-38. *Dictyla*, larvae, 5th instar. **34**, *D. lopatini* sp. n.; **35**, *D. echii* Schrk. (SE Kazakhstan); **36**, *D. fulvescens* Kir. (Tajikistan); **37**, *D. concinna* Golub (SE Kazakhstan); **38**, *D. subdola* Horv. (Turkmenistan). General view (34, 36-38); abdomen, right side and apex (35). Scale: 0.5 mm.



Figs 39-41. *Dictyla*, larvae, 5th instar, general view. **39**, *D. nervosa* sp. n.; **40**, *D. plana* sp. n.; **41**, *D. ditis* sp. n. Scale: 0.5 mm.

16(15). Median spines of pronotum approximately as long as width of eye. Marginal abdominal spines distinctly longer than their diameters at bases. Larger: 2.14-2.21 mm. Fig. 38 . . . . . **D. subdola** (Horv.)

17(14). Median spine of abdominal tergite V almost as long as this tergite along its median line. 2.05-2.15 mm. Fig. 39 . . . . . **D. nervosa** sp. n.

18(13). Marginal abdominal spines rather long, usually not shorter than width of eye, but if most of them (except spines of segment IX) shorter (some specimens of *D. nassata*), then median spine of tergite V rather long, not shorter or only slightly shorter than this tergite.

19(20). Abdominal tergite II with two median spines or with one which is bifurcated in its apical half. 1.83-1.97 mm. Fig. 40 . . . . . **D. plana** sp. n.

20(19). Abdominal tergite II with one simple median spine.

21(22). Pronotum and hemelytral lobes with 3 pairs of marginal spines each (anterior of them on pronotum and all or almost all on hemelytral lobes may be very short). Marginal abdominal spines, except those of segment IX, usually rather short, not longer than antennal segment I. 2.2-2.6 mm . . . . . **D. nassata** (Put.)

22(21). Pronotum and hemelytral lobes with 4 pairs of marginal spines each (anterior of them may be very short, on pronotum even absent). Marginal spines of all abdominal segments long (as median ones), not shorter than antennal segments I and II combined.

23(24). Body, including legs and antennae, uniformly black or blackish brown. 2.3-2.65 mm . . . . . **D. convergens** (H.-S.)

24(23). Body dorsally two-coloured: either black with yellow symmetrical spots or mostly brownish yellow with black or blackish brown areas. Antennal segment III and tibiae pale.

25(26). Pronotum, except spines, and basal half of hemelytral lobes pale, brownish yellow, the latter gradually darkening towards apices, their apices black or blackish brown. Abdomen entirely pale or at most with wide median dark band not having clearly outlined boundaries. Marginal spines on all parts of body with obtuse apices. 2.5-2.65 mm. Fig. 41 . . . . . **D. ditis** sp. n.

26(25). Body dorsally mostly black, with the following pale areas: anterior corners of pronotum (sometimes also posterior process and median stripe), bases of hemelytral lobes, anterolateral corners of abdominal tergites or also median areas of tergites II-IV; all contrasting spots with clearly outlined boundaries. Marginal spines of body with acute or almost acute apices.

27(28). Abdominal tergites II-IV black, not differing in colour from other tergites. Basal half of antennal segment IV and segments of tarsi pale. Posterior pronotal process rather strongly stretched out, like an acute tongue. 2.7-2.8 mm . . . . . **D. humuli** (F.)

28(27). Abdominal tergites II-IV pale, distinctly differing in colour from other tergites. Antennal segment IV and tarsi entirely or almost entirely black. Posterior pronotal process not srtongly stretched out. 2.55-2.7 mm . . **D. rotundata** (H.-S.)

DESCRIPTIONS OF NEW SPECIES

Dictyla nervosa sp. n.
(Figs 3, 39)

Holotype. ♂, **S Kazakhstan**, Karatau Range, 20 km of Kentau, 26.V.1966 (Kerzhner).

Paratypes. **S Kazakhstan**: 50 ♂, 71 ♀, 6 larvae of 5th stage, as holotype; 2 ♀, "N Muyun-Kum, Batish-Kuduk" (evidently northern part of Moyynkum Sand), 2.V.1953 (L. Serkova); 1 ♂, 2 ♀, lower reaches of Chu River, "locality Ak-aral", 27.V.1953 (L. Serkova).

Description. I m a g o (Fig. 3). Oval, length of body 1.9-2.1 times its width. Dorsal colour rather variable: mainly pale, brownish yellow or testaceous with blackish spots to mainly dark brown with pale spots. Areolate structures of pronotum and hemelytra with thick veins.

Head reddish brown to black, with yellow postorbital spots, with 5 short, yellow, often very pale spines: 3 frontal and 2 occipital. Anterior (paired) frontal spines thin, almost cylindrical, with obtuse apices, a little shorter than antennal segment II, their apices directed forward and slightly downward. Unpaired frontal spine thicker and shorter than paired ones, often like a small tubercle, with obtuse apex, directed obliquely upwards; distance between unpaired and paired spines approximately equal to length of the latter. Occipital spines very thin, pale yellow to brownish yellow or brown, pressed to head, often hidden under hood of pronotum. Apices of occipital spines usually only reaching posterior margin of eyes or slightly surpassing it, at most reaching middle of eyes. Antennae slender, segments I-III and base of segment IV yellow, most of segment IV blackish brown or black, this segment clothed with rather long, a little raised hairs. Length of segments (I-IV): 0.1-0.11, 0.1-0.11, 0.56-0.64, 0.22-0.26 mm. Segment III 2.2-3 times as long as segment IV and 1.25-1.32 times as long as width of head. Frons descending from median line to inner margins of eyes rather abruptly. Clypeus blackish brown or black. Bucculae pale, yellow or yellowish brown, with 3 horizontal rows of small areolae.

Pronotum with raised hood, angulately prominent anteriorly. Reflexed paranota wide, with 7-8 irregular rows of areolae in widest part, not pressed to pronotal disc, distinctly convex, but not inflated bulbously; there is rather small void between paranota and surface of pronotal disc. Distal margins of paranota anteriorly convex, hardly or dis-

tinctly not reaching median carina, backwards straight and considerably diverging; paranota not covering considerable part of disc surface. Lateral carinae distinctly converging anteriorly, not reaching considerably the highest point of disc, not or hardly touching distal margins of paranota by their anterior parts.

Macropterous and submacropterous forms, the latter with both pairs of wings slightly abbreviated. Costal area of hemelytron rather narrow and in its middle part very narrow, almost entirely uniseriate, sometimes with very narrow or dash-like areolae; 1-2 very small areolae of 2nd row usually present in anterior synus and in the very base of area. Subcostal area triseriate or with several areolae of 4th row. Discoidal and sutural (inner) areas respectively with 5 (♂) or 6 (♀) and 6 (♂) or 7 (♀) rows of areolae in their widest part.

Thorax ventrally yellowish brown; abdomen black or dark brown. Legs yellow; apices of tarsi black.

Length: body 2.7-3.4, pronotum 1.35-1.63 mm. Width: body 1.35-1.65, pronotum 1-1.25, head 0.46-0.48, vertex 0.23-0.24 mm.

L a r v a (5th instar; Fig. 39). Oval, body 1.7-1.75 times as long as wide, almost entirely blackish brown, strongly shining; posterior triangular pronotal process and spots at sides of abdominal tergites brownish yellow. Pronotum, hemelytral lobes and abdominal segments covered with tiny, fine, erect pale hairs slightly pestle-shaped on their apices. Pestle-shaped hairs covering also apices of all spinose processes of body.

Head with 5 rather short and thick brown spines: 3 frontal and 2 occipital. Anterior (paired) frontal and occipital spines slightly shorter than antennal segment I, unpaired frontal spine a little shorter and thicker than paired ones. Antennae brown, slightly paler than surface of head; length of segments (I-IV): 0.1, 0.1, 0.47-0.48, 0.23-0.24 mm. Segment III 1.94-2.03 times as long as segment IV, its length equal to width of head.

Pronotum 1.41-1.54 times as wide as long, with 2 pairs of rather short median spines: near anterior margin and approximately in the middle. Anterior spines as long as occipital spines and thinner than those. Lateral margin of pronotum with 2 very short processes, anterior of them sometimes hardly visible. Mesonotum with 2 moderately long median spines, jutting out from under posterior pronotal process, with diverging apices. Lateral margin of hemelytral lobes with 2-3 very short processes, anteriormost of them sometimes hardly visible.

Abdominal tergites II, V and VIII with erect unpaired median process; spine on tergite V slightly shorter than respective segment. Posterolateral angles of abdominal segments IV-VIII with very short conic tubercle. Posterior margin of segment IX with a pair of short, almost cylindrical obtuse spines. Legs blackish brown, slightly paler than ventral surface of body.

Length: body 2.05-2.15, pronotum 0.6-0.68 mm. Width: abdomen 1.18-1.28, pronotum 0.92-0.95, head 0.47-0.48 mm.

Comparison. The imago is very similar to that of *D. montandoni* (Horv.), but the latter can be easily distinguished from the new species by the following peculiarities: much longer occipital spines, their apices crossing anterior margin of eye (Fig. 1); broader paranota with distal margins reaching median pronotal carinae and touching it and each other for some extent; 4th antennal segment, except its apex, pale; costal area of hemelytra broader. The Mediterranean species *D. indigena* (Wollaston), also having 5 cephalic spines, can be separated from *D. nervosa* by considerably broader costal area, longer lateral carinae of pronotum reaching the highest point of disc convexity, different shape of paranota, etc.

The larvae of the new species are more similar to those of *D. subdola*, *D. nassata* and also of *D. platyoma* in having 5 cephalic processes and unpaired median process on abdominal tergites II, V and VIII. Distinctions from these species are given in the key.

Dictyla mira sp. n.
(Fig. 4)

Holotype. ♀, **Armenia**, Mendzhivan' on Arax River, 4-5.VI.1933 (Luk'janovich).

Description. I m a g o. Rather small, broad, oval, brownish yellow dorsally. Veins of areolate structures with brown areas.

Head broad and short, weakly produced in front of eyes, strongly convex, almost spherical dorsally, its width 2.28 times its length. Frons and vertex reddish brown; clypeus black. Head with 3 yellow, rather short frontal spines directed downward. Unpaired spine pressed to head in its entire length. Paired frontal spines almost pressed to head and touching upper margin of very short clypeus. Eyes black, weakly convex; vertex 3.23 times broader than eye. Frons

and vertex near inner margin of each eye with broad, arched, yellow band. Antennae slender and short; segments I and II cylindrical; segment III very thin, with slightly thickened apex; segment IV fusiform; segments I-III and base of IV yellow, apical half of segment IV dark brown; segment IV clothed with very fine, pale hairs. Length of antennal segments (I-IV): 0.08, 0.08, 0.33, 0.2 mm (left antenna missing); segment III 1.1 times longer than width of vertex and 0.69 times longer than width of head across eyes. Bucculae brownish yellow, scarcely produced in front of anterior edge of clypeus.

Pronotum nearly flat; its disc almost entirely covered with reflexed and pressed paranota, the latter in the widest part with 7 irregular rows of areolae of various form. Distal margins of paranota almost touching median carina over a considerable extent, posteriorly concave and leaving open a small triangular area of pronotal disc. Hood low, with 1 row of distinct areolae along its anterior margin followed by 2 rows of badly visible areolae. Anterior edge of pronotum straight. Pronotal carinae very low, without areolae, only median carina with several rudimentary, hardly visible areolae in its posterior half. Lateral carinae short, distinctly converging anteriorly, vein-like, more elevated than those on posterior process of pronotum, anteriorly touching or almost touching distal margins of paranota. Apex of pronotal posterior process slightly rounded.

Brachypterous form. Metathoracic wings absent. Hemelytra very convex, slightly longer than abdomen, not contiguous at the base of hemelytra and leaving open a triangular elongated area of dorsal surface of abdomen. Veins bordering areas (*R+M*, *Cu*, *R+M+Cu*) low; *R+M* almost not elevated in its posterior half. Costal area in basal half very narrow, with 1 row of extremely narrow areolae or with their tracks only, widening in its posterior half and with almost square, rectangular and oval, small (but distinct) areolae near apex. Subcostal area descending outside abruptly, almost vertical, with 5 irregular rows of areolae in widest part; areolae of two external rows not very clearly outlined and difficult to see individually. Discoidal area with 5 irregular rows and with several separate areolae of 6th row in widest part. Sutural area also with 5 rows and several areolae of 6th row. Hypocostal lamina uniseriate.

Abdominal tergites black. Thorax ventrally yellowish brown; abdomen black. Legs yellow; apices of tarsi blackish brown.

Length: body 2.35, pronotum 1.2, head 0.21 mm. Width: body 1.28, pronotum 0.9, head 0.48, vertex 0.3, eye 0.09 mm.

Comparison. The new species is somewhat similar to *D. platyoma*, *D. subdola*, *D. minuta* and *D. aridula* Linnavuori (the last described from Israel) in the paranota broad and pressed to disc and very low and anteriorly converging lateral pronotal carinae; in addition, it shares with *D. aridula* the broadly oval body shape. The following characters separate *D. mira* from all other Palaearctic species of *Dictyla*: very convex hemelytra with very low veins bordering the areas, especially *R+M*; very broad and short head, 1.48 times broader than length of antennal segment III; feebly convex, very narrow eyes; almost flat pronotum.

Dictyla plana sp. n.
(Figs 7, 8, 10, 40)

Holotype. ♂, **Georgia**, lower reaches of Kurtskhana River, south of Abastumani, 24.VI.1949 (Kiritshenko).

Paratypes. 14 ♂, 15 ♀, 3 larvae of 5th instar, as holotype.

Description. I m a g o (Figs 7, 8, 10). Oval (♀ rather broad), dorsally brownish yellow; areolate structures with some brown spots.

Head black, with 3 short slender frontal spines. Unpaired spine slightly thicker and shorter than paired ones, directed upward. Paired spines parallel, directed obliquely forward and slightly downward, distance between them equal to or slightly greater than their length. Antennae slender, segments I-III yellow or brownish rufous, segment IV brown. Length of antennal segments (I-IV): ♂ 0.13, 0.11, 0.53-0.58, 0.21-0.27, ♀ 0.1-0.11, 0.11, 0.52-0.6, 0.21-0.22 mm. Bucculae hardly surpassing anterior edge of clypeus anteriorly, slightly surpassing hind margin of eye posteriorly, rather low, at their highest point (near hind edge) with only 2 distinct rows of areolae.

Pronotum weakly convex, rather broad, 1.34-1.4 (♂) or 1.24-1.45 (♀) times as broad as long. Reflexed paranota broad, pressed to disc, with 7-8 rows of rather large areolae; distal margins of paranota reaching or almost reaching median carina, posteriorly leaving open rather broad blackish brown or black area of disc. Median carina distinctly elevated and slightly higher than paranota in area of their contact, very slightly inflated in form of a min-

ute nodule anteriorly, at point of contact with hood, with a row of several small areolae at base of posterior pronotal process. Lateral pronotal carinae very low, vein-like, hardly higher than veins of posterior pronotal process, without areolae, very slightly converging anteriorly or parallel in most of their length, except anterior ends curved towards each other. Lateral carinae short, hardly extending forward on disc, their anterior ends concealed under paranota. Anterior edge of pronotum straight or very slightly angulate. Hood with 1 row of areolae along anterior edge and several areolae of 2nd row in widest part (along median line). Sides of pronotum anterior to its lateral angles straight or slightly S-shaped.

Macropterous form. Veins *R+M* and *Cu* high, keel-like. Costal area rather broad, uniseriate, with rather large, rectangular and oval areolae; posteriorly, in synus, with 2-5 areolae of 2nd row. Subcostal area with 4 rows of areolae or with several areolae of 5th row. Discoidal area with 4 (♂) or 4-5 (♀) rows of areolae at broadest point. Sutural area with 6 (♂) or 6-7 (♀) rows of rather large areolae in widest part.

Body ventrally black, thorax with yellowish brown areas. Femora brown or blackish brown in proximal half, becoming yellow or brownish yellow towards apex; apices of tarsi blackish.

Length: body ♂ 2.45-2.6, ♀ 2.75-2.92; pronotum ♂ 1.17-1.23, ♀ 1.28-1.38; head 0.21-0.24 mm. Width: body ♂ 1.12-1.25, ♀ 1.35-1.51; pronotum ♂ 0.84-0.88, ♀ 0.88-1.14; head ♂ 0.43-0.45, ♀ 0.47-0.5; vertex ♂ 0.21-0.26, ♀ 0.24-0.27 mm.

L a r v a (5th instar; Fig. 40). Oval, body 1.75-1.78 times as long as wide, dorsally brown or blackish brown; anterior and posterior margins of pronotum, sides of hemelytral lobes and abdominal tergites yellow. Pronotum, hemelytral lobes and abdomen, also all spines of body covered with erect, light, setaceous hairs slightly pestle-shaped at their apices.

Head above black or brownish black, shining, strongly convex, with 5 obtuse or slightly acuminate, yellow or brownish yellow spines: 3 frontal and 2 occipital. Frontal paired spines parallel or with slightly diverging apices, directed forward. Unpaired frontal spine and 2 occipital spines directed obliquely upwards. Antennal segments I and II yellowish brown, segment III at apex and segment IV entirely brown or blackish brown. Length of antennal segments (I-IV): 0.1, 0.1, 0.41-0.43, 0.21 mm.

Pronotum 1.42-1.46 times wider than long, with straight anterior margin. Lateral pronotal margins rounded, with 2 spines each: approximately at middle of margins and at posterolateral angles of pronotum; posterior spines longer than anterior ones. 2 pairs of rather long median spines: near anterior margin of pronotum and just after its middle. Mesonotum with a pair of median spines.

Lateral margins of hemelytral lobes with 3 spines; anteriormost of them shortest, as minute dark tubercles in anterior third of lateral margins; middle and posterior spines moderately long, posterior being the longest; middle spines located near middle of lateral margins, posterior ones at their posterior third.

Abdominal tergite II near posterior margin with 2 pale, erect median spines, the latter shorter than spines of mesonotum. Abdominal tergites V and VIII each with 1 high, obtuse median spine near their posterior margins. Posterolateral angles of abdominal segments IV-IX each with 1 rather long marginal obtuse spine bearing at apex 1-2 hairs with pestle-shaped tips.

Abdomen ventrally blackish brown; femora brown; tibiae yellowish brown; tarsi blackish brown.

Length: body 1.83-1.97, pronotum 0.56-0.58, head 0.2 mm. Width: abdomen 1.03-1.13, pronotum 0.81-0.86, head 0.41-0.42 mm.

Comparison. The new species (imago and larva) is closely allied to *D. platyoma* and *D. subdola*. The main characters to distinguish these species are given above in keys. In addition, the imago of *D. plana* differs from those of *D. platyoma* and *D. subdola* in the shorter bucculae (in the two related species they are considerably produced backwards beyond posterior margins of eyes). The larvae of *D. platyoma* have shorter (0.36-0.38 mm) and those of *D. subdola*, on the contrary, longer (0.48-0.51 mm) antennal segment III. The larvae of *D. subdola* are larger than those of *D. plana*.

Dictyla ditis sp. n.
(Fig. 16-18, 41)

Holotype. ♂ f. macroptera, **Tajikistan**, Stalinabad [Dushanbe], 6.VIII.1944 (Kiritshenko).

Paratypes. **Kazakhstan**: *Chimkent Prov.*: 1 ♂, 4 ♀, "Tyube-kuduk" near Saryagach, 8.VIII.1925 (Prinada); 1 ♀, Ugam Range, 50 km N of Khumsan, 11.V.1983 (Zaslavskiy). **Uzbekistan**: *Samarkand Prov.*: 1 ♂, "Changyr', near Khatyrchi" (env. of Kattakurgan), 8.VI.1930 (L. Zimin); 5 ♂, 6 ♀, 7 larvae

(3rd-5th instars), env. of Khavast (without date and name of collector); 1 ♀, 2 larvae of 5th instar, 1 larva of 4th instar, 9 skins of larvae of 3rd-5th instars, Agalyk, c. 20 km S of Samarkand, 11.VIII.1965 (Khaydarova). **Tajikistan**: 4 ♂, 4 ♀, Isfara, 50 km SW of Kokand, 25, 28.IV.1920 (Arkhangelskiy); 1 ♂, southern slopes of Zeravshan Range, right bank of Iskanderdar'ya River near its sources, 16.VII.1947 (Kiritshenko); 1 ♂, 3 ♀, Dushanbe, 24.V.1934, 27,28.VI.1935 (Gussakovskij); 75 ♂, 82 ♀, Dushanbe, 12, 16, 20.VI, 11.VII, 21.VIII, 24.X.1943, 25.I, 9-10.IV, 13,14.V, 16.VI, 6.VII.1944 (Kiritshenko); 8 ♂, 8 ♀, Kondara gorge, valley of Varzob River, 36 km N of Dushanbe, alt. 1100 m, 24.VI, 8-9.IX.1937, 20.VII, 23.VIII.1938 (Gussakovskiy); 1 ♂, same locality, 20.VIII.1972 (Kerzhner); 13 ♂, 13 ♀, Navabadskiy and Lyuchob River, env. of Dushanbe, 20, 25.I, 19, 20.IV.1944 (Kiritshenko). **Afghanistan**: 3 ♂, c. 250 km SW of Kabul, northern spurs of Mazar Range, N of Shakhristan, 17.VII.1970 (Kabakov).

Description. I m a g o. Oval, rather broad; body 2.1-2.2 times as long as wide, dorsally yellowish brown or greyish with dark brown or almost black maculae at some areas of pronotum and hemelytra. Areolae of reticulate structures rather large.

Head black, with 3 small, yellow or brownish yellow frontal spines. Distance between unpaired and paired spines about twice the length of paired spine. Frons strongly convex, descending abruptly from median line to inner margins of eyes and in front to base of clypeus. Head beyond eyes with large yellowish or reddish brown maculae. Antennae slender, segments I, III and basal half of IV yellow or brownish yellow, apical half of segment IV fuscous; segment III clothed with light, extremely short, appressed hairs; IV segment with rather long, erect hairs. Length of antennal segments (I-IV): 0.1-0.11, 0.1-0.11, 0.64-0.74 (♂) or 0.61-0.73 (♀), 0.27-0.3 mm; segment III 2.25-2.54 (♂) or 2.42-2.45 (♀) times longer than IV and 1.28-1.48 (♂) or 1.28-1.31 (♀) longer than width of head across eyes. Bucculae high, distinctly produced in front of anterior edge of clypeus.

Pronotal disc considerably swollen, almost entirely hidden under reflexed paranota; the latter strongly inflated and raised higher than median pronotal carina, distinctly projecting outwards of discal sides. Distal margins of paranota meeting with each other and touching median carina over its considerable length, sometimes not meeting and leaving a narrow slit with median carina between them. Each paranotum with approximately 7 irregular rows of areolae in widest part. Only very small triangular area beyond hood and rather small triangular area in posterior half of disc not covered by paranota, blackish brown or brown. Median carina at base of posterior pronotal process and lateral carinae throughout rather high, especially in macropterous specimens, with distinct and often large areolae, the latter as high as half eye to entire eye. Lateral carinae strongly converging anteriorly (distance between their posterior ends 2-2.2 times that between anterior ends), slightly produced anteriorly on disc and touching or almost touching distal margins of paranota. Hood rather high, distinctly angulate in front. Posterior process of paranotum distinctly raised along median line.

Macropterous and submacropterous forms. Costal area rather wide, mostly uniseriate, with several (sometimes 1-2) areolae of 2nd row at base and in anteapical synus. Subcostal area with 3 rows of angulate areolae. Discoidal and sutural areas with respectively 5-6 and 6-7 rows of angulate areolae in their widest parts. Veins *R+M* and *Cu* strongly raised in form of carinae.

Body ventrally blackish brown or black; posterior margins of prosternum and metasternum with oblique brownish yellow band; sternal laminae yellow. Femora brownish yellow; tibiae and basal half of tarsi yellow; apices of tarsi blackish.

Length: body 2.9-3.5, pronotum 1.48-1.62 mm. Width: body 1.3-1.6; pronotum 1.08-1.22; head ♂ 0.48-0.5, ♀ 0.5-0.6; vertex 0.26-0.28 mm.

L a r v a (5th instar; Fig. 41). Oval, body 1.8-2 times longer than wide, dorsally mostly brownish yellow, with some symmetrical blackish brown or black areas. Pronotum, hemelytral lobes and abdominal tergites covered with erect, light, short hairs slightly pestle-shaped on their apices. All spines of body with blunt, serrated apices.

Head dark brown, with rather narrow median lighter stripe and maculae of the same colour near anterior inner angle of eyes; armed with 5 rather long spines directed obliquely upwards and in front, 3 of them being frontal and 2 occipital. Unpaired frontal spine approximately as long as diameter of eye and 1.5 times longer than paired spines; distance between unpaired and paired spines subequal to length of the latter. Occipital spines longer than frontal ones. Length of antennal segments (I-IV): 0.1, 0.1, 0.53-0.56, 0.24-0.27 mm. Antennal segment IV covered with light, erect, rather long hairs.

Pronotum 1.45-1.6 times wider than long, with 2 pairs of median and 4 pairs of mar-

ginal dark brown spines against a lighter background. Median spines long, distinctly longer than antennal segments I and II combined, anterior pair a little longer than posterior one. Marginal spines shorter than median ones, slightly thinning towards their apices; anterior marginal spines shorter than posterior ones, the anteriormost being extremely short, in form of hardly visible protuberances. Rudiments of lateral pronotal carinae feebly marked. Mesonotum with a pair of very long median spines.

Hemelytral lobes gradually darkening towards their apices, the latter black or blackish brown; their margins with 4 dark brown spines slightly darkening towards their apices.

Abdomen dorsally brownish yellow, with wide fuscous median band having indistinct boundaries; often also with narrow fuscous transverse stripe at posterior margin of each tergite. All abdominal spines dark brown. Abdominal tergites II, V and VIII with 1 long median spine, that on tergite VIII being the longest. Posterolateral angles of each abdominal segment with 1 long spiniform process; length of processes increasing from anterior segments to posterior ones; spines of posterior segments approximately 1.5 times longer than those of anterior ones and than eye width.

Length: body 2.5-2.65, pronotum 0.68-0.72 mm. Width: abdomen 1.3-1.4, pronotum 1.05-1.08, head 0,5 mm.

Host plant. Imagos and larvae were collected in Uzbekistan on *Trichodesma incanum* (Boraginaceae).

Comparison. The imago of the new species are very similar to those of *D. nassata* and especially *D. sahlbergi* (see Key). The new species differs in the more inflated paranota almost entirely covering the disc, raising higher than median carina and usually touching it over significant extent. *D. sahlbergi* is a smaller species, having biseriate subcostal hemelytral area or only several separate areolae of the 3rd row. In the form and width of reflexed paranota and the lateral pronotal carinae strongly converging anteriorly, the new species resembles the Mediterranean species *D. ruficeps* (Horv.). The latter (I examined 2 specimens from Tunisia) differs from *D. ditis* in the smaller size (body length 2.3-2.6 mm), discoidal and sutural hemelytral areas having respectively 4 and 5-6 rows of areolae, considerably shorter antennae (length of segment III 0.41-0.53 mm).

D. ditis is also similar to *D. affinis* Duarte Rodrigues described from South Africa, but the latter differs in the small laterodorsal depression on anterior part of each paranotum, lateral pronotal carinae less converging anteriorly, narrower costal area, slightly shorter antennae, smaller body size (length 2.7 mm) and other characters.

The larvae of *D. ditis* are most similar to those of *D. convergens*, *D. humuli* and *D. rotundata*. The larvae of these four species have rather long spines on all parts of the body, lateral margins of pronotum and hemelytral lobes with 4 spines (anteriormost of them sometimes extremely small or lacking). The larvae of *D. nassata* differ from those of all species of this group in having only 3 marginal spines on pronotum and hemelytral lobes and all spines of the body shorter. The larvae of *D. convergens* differ from those of *D. ditis* in the black body and slightly shorter and finer spines with acute apices on all parts of body. Larvae of *D. humuli* and *D. rotundata* differ from those of *D. ditis* in the prevalence of black colour on the dorsal side of body with yellow maculae only. In addition, the larvae of *D. rotundata* differ from those of the new species in the longer and slender spines with acute apices.

Dictyla lopatini sp. n.
(Figs 33, 34)

Holotype. ♂, **Tajikistan,** Shugnan Range, env. of Sardym, 5.VIII.1960 (Lopatin).

Paratypes. **Tajikistan**: 1 ♂, 13 ♀, as holotype; 4 ♂, 14 ♀, Khorog, Botanical garden, 22.VII.1964 (Sugonjaev); 4 larvae of 5th instar, same locality, 26.VII.1966 (L. Zimin); 1 ♂, 1 ♀, Sakhchar, 12 km from Khorog, 26.VIII.1937 (Luppova); 2 ♂, 1 ♀, Rushan ("Roshan"), near interflow of Pyandzh and Bartang Rivers, 1, 4.VIII.1897 (Kaznakov); 2 ♀, "Valley of Gunt and Bartang, Roshan, eastern Bukhara" (no date and collector).

Description. I m a g o (Fig. 33). Oval, body dorsally brownish yellow, head and pronotal disc black, postorbital maculae yellow. Hemelytra with some areas brown.

Head with 2 very small, often hardly visible frontal tubercles. Antennae slender, segments I-III smooth, IV covered with light hairs, segment I black, II brown or blackish brown, III most slender, yellow, IV yellowish brown at base, brown or blackish brown in most of its length. Length of antennal segments (I-IV): 0.11, 0.09-0.11, 0.56-0.58 (♂) or 0.58-0.61 (♀), 0.26-0.28 mm. Segment III 1.16-1.24 (♂) or 1.08-1.21 (♀) times as long as width of head. Bucculae scarcely pro-

duced in front of anterior edge of clypeus and far extending beyond posterior margin of eyes.

Pronotum 1.36-1.44 times longer than wide, with almost straight lateral margins in front of lateral angles. Pronotal disc swollen, coarsely punctured. Reflexed paranota pale yellow, rather broad, but not covering considerable part of disc surface, with 5 incomplete rows of areolae anteriorly and 4 rows posteriorly, at level of anterior ends of lateral carinae. Paranota anteriorly overlying posterior part of hood. Distal margins of paranota weakly concave, coming rather close to lateral carinae; disc in the narrowest interval between carina and distal paranotal margin with only 2 punctures. Distal paranotal margins strongly convergent anteriorly (behind hood), minimum distance between them 1.5 times smaller than length of antennal segment IV. Pronotal carinae low; median carina with traces of areolae only and at highest point of disc without such traces. Lateral carinae with 1 row of very small areolae, parallel, reaching or almost reaching the highest point of disc anteriorly. Hood weakly produced in front, with 3 small areolae along median line on each side. Posterior pronotal projection slightly raised along median line.

Macropterous form. Veins *R+M* and *Cu* raised as carinae, the former distinctly S-shaped. Costal area rather wide, with 1 row of elongate, more or less rectangular, rather large areolae at middle, with 2 rows of mostly triangualar areolae at base and in posterior third (at the level of synus of subcostal area), areolae of external row considerably larger than areolae of inner row. Subcostal area triseriate in most of its length, discoidal and sutural areas with 6-7 and 7 rows of areolae respectively in their widest part.

Body ventrally almost entirely black. Femora mostly blackish brown with yellowish brown apices; tarsi yellowish brown with blackish apices.

Length: body 3-3.4, pronotum 1.4-1.7 mm. Width: body ♂ 1.32-1.38, ♀ 1.38-1.60; pronotum 1-1.2, head ♂ 0.47-0.48, ♀ 0.48-0.53; vertex ♂ 0.22-0.24, ♀ 0.24-0.26mm.

L a r v a (5th instar; Fig. 34). Body 1.75-1.95 times longer than wide, entirely, including antennae and legs, black or almost black. Pronotum, hemelytral lobes and abdominal tergites without spines, except very small and not always distinct protuberance at middle of posterior margin of abdominal tergite II, the latter covered with very short light hairs indistinctly pestle-shaped at apices.

Head with 2 extremely small frontal tubercles. Length of antennal segments (I-IV): 0.1, 0.1, 0.43-0.46, 0.21-0.25 mm. Pronotum 1.31-1.36 times wider than long; its anterior margin straight; anterolateral angles rather widely rounded; lateral margins diverging posteriorly and slightly concave approximately at middle. Abdominal segments IV-VI with slightly prominent angles, angles of segments VII and VIII practically not prominent. Posterior margin of segment IX without processes, only slightly angulate.

Length: body 2.38-2.45, pronotum 0.72-0.74 mm. Width: abdomen 1.25-1.34, pronotum 0.95-1, head 0.43-0.47 mm.

Comparison. D. lopatini is closely related to *D. echii* and differs from it mainly in the considerably wider reflexed paranota in imago (see Key). In addition, pronotum in imago of *D. lopatini* is on the average narrower, 1.36-1.44 times longer than wide; this ratio in *D. echii* is 1.3-1.4. The differences between larvae of both species are given in the key.

DESCRIPTIONS OF HITHERTO UNKNOWN LARVAE (5th instar)

Dictyla subdola (Horv.)

(Fig. 38)

Material. Larvae from southern Turkmenistan.

Description. Elongate, body 1.85-2.15 times longer than wide, entirely, including antennae and legs, brown, often almost black, with some slightly paler areas; entirely, including all spines, covered with erect, short, pale hairs pestle-shaped at apices.

Head with 5 spines, all directed obliquely upwards. 3 frontal spines with obtuse apices and not longer than antennal segment I; 2 occipital spines slightly longer, thinner and with more acute apices. Length of antennal segments (I-IV): 0.1, 0.1, 0.48-0.51, 0.24 mm; segment III 2-2.1 times longer than segment IV and 1.04-1.12 times longer than head width.

Pronotum 1.4-1.5 times wider than long, with 2 pairs of rather short median spines (shorter than occipital spines): very close to anterior edge of pronotum and approximately in its middle; spines of each pair with diverging apices. Pronotal margins with 3 very short spines each; anterior of them extremely short, often practically absent; 2

posterior marginal spines always distinct, with obtuse apices. Mesonotum with 2 rather long median spines jutting out from under posterior pronotal process and having acute diverging apices; their length approximately equal to eye width. Margins of hemelytral lobes with 3 very short spines; anterior of them as extremely small tubercles with pointed apex or practically absent; 2 posterior spines distinct, with obtuse apices.

Abdominal tergites II, V and VIII armed with 1 erect median spine rach, all spines 2-4 times shorter than segment along median line. Posterolateral angles of segments IV-VIII armed with 1 rather short spine blunt at apex; posterior margin of IX segment with a pair of similar spines; marginal abdominal spines shorter than antennal segment I, but longer than their own diameter at base.

Length: body 2.14-2.21, pronotum 0.64-0.67 mm. Width: abdomen 1.04-1.16, pronotum 0.94-0.97, head 0.44-0.48 mm.

Comparison. Very closely related to larvae of *D. platyoma*, differing from them in the longer median spines of pronotum and marginal spines of abdomen (see key). In addition, the larvae of *D. platyoma* are a little smaller and with shorter antennal segment III.

Dictyla fulvescens (Kir.)
(Fig. 36)

Material. Larvae from Tajikistan (valley of Varzob River).

Description. Body elongate, 1.84-2.2 times longer than wide, fuscous black, with paler areas on sides of pronotum, in middle and apical portions of hemelytral lobes, often also on sides of abdominal tergites; sometimes entire abdominal tergites II and III paler than the rest of dorsal surface. Body, including spines of head, covered with erect, short, light hairs slightly pestle-shaped at apices.

Head black, with 4 short and rather thick spines with obtuse apices: 2 frontal and 2 occipital; all spines shorter than antennal segment I. Frontal spines with diverging apices, directed forward and slightly downward; occipital spines directed obliquely upward. Antennae blackish brown or almost black, segment III (or only its apical half) lighter than others. Length of antennal segments (I-IV): 0.1, 0.09-0.1, 0.46-0.5, 0.24-0.27 mm, segment III 1.74-1.94 times longer than IV and 1.07-1.14 times longer than head width.

Pronotum 1.29-1.45 times wider than long, without median and marginal spines; its anterior margin slightly arched. Rudimentary median carina expressed as hardly raised light line; traces of lateral carinae absent. Lateral margins of pronotum very weakly rounded. Mesonotum with 2 very small median spines scarcely prominent from under posterior pronotal process. Lateral margins of hemelytral lobes without spines.

Only abdominal tergite II with extremely small, often badly visible median tubercle. Posterolateral angles of abdominal segments slightly prominent sidewards, tooth-like (as very small teeth); angles of segment VIII sometimes not prominent.

Length: body 2.08-2.38, pronotum 0.62 mm. Width: abdomen 1.08-1.12, pronotum 0.8-0.9, head 0.49-0.55 mm.

Comparison. The larvae of this species are closely related to larvae of *D. concinna* (distinctions are given in the key and in diagnosis of the latter). They are also more or less similar to larvae of *D. lupuli*, but differ in the very small median spines on mesonotum and absence of median spines on abdominal tergites V and VIII.

Dictyla concinna Golub

Material. Larvae from South Kazakhstan (Dzhambul Prov.) collected together with imago on the same plant of Boraginaceae by I.M. Kerzhner.

Diagnosis. Very similar to larvae of *D. nassata*, differing in shorter antennal segment III and smaller ratio of its length to width of head, straight anterior margin of pronotum and also thicker microchaetae covering body surface.

Length: body 1.92-1.95, pronotum 0.72-0.74, antennal segments (I-IV) 0.08, 0.09-0.1, 0.34, 0.23-0.24 mm. Width: abdomen 1.25-1.34, pronotum 0.95-1, head 0.43-0.47 mm.

Body 1.81-1.83 times longer than wide. Antennal segment III 1.41-1.5 times longer than segment IV and 0.8 times longer than head width. Pronotum 1.3 times wider than long.

NEW RECORDS AND NOTES

Dictyla sahlbergi (Horv.)

Lectotype designation. Described from South Kazakhstan. Syntypes are deposited in ZIN (1 specimen), Hungarian Natural History Museum (Budapest) and Zoological Museum, University of Helsinki (Péricart & Golub, 1996). Lectotype (designated here, deposited in ZIN): ♂ with golden circle and labels: "Bekljar-bek" (printed), "J. Sahlb" (printed), "Spec. typ." (printed), "71" (hand-written), "J. Sahl-

Table. Dimensions of *Dictyla nassata* from various regions

Character	Sex	Region, number of specimens examined			
		Mediterranean Region 16 ♂, 13 ♀	Crimea and W Caucasus 16 ♂, 28 ♀	Steppe zone of East Europe 12 ♂, 19 ♀	Steppes E of Volga, S Urals and Central Kazakhstan 7 ♂, 8 ♀
Body length, mm	♂	2.82-3.62	2.70-3.12	2.68-2.96	2.40-2.88
	♀	2.88-3.45	2.75-3.34	2.95-3.22	2.52-3.18
Body width, mm	♂	1.25-1.58	1.28-1.45	1.12-1.30	1.00-1.18
	♀	1.26-1.62	1.32-1.55	1.25-1.42	1.20-1.40
Pronotum width, mm	♂	1.00-1.22	1.02-1.15	0.95-1.02	0.90-1.00
	♀	1.08-1.20	1.05-1.19	1.05-1.12	0.90-1.12
Antennal segment III length, mm	♂	0.57-0.78	0.53-0.71	0.59-0.76	0.51-0.74
	♀	0.54-0.74	0.54-0.80	0.61-0.74	0.49-0.79
Antennal segment III/head width	♂	1.23-1.66	1.12-1.51	1.41-1.76	1.20-1.73
	♀	1.17-1.48	1.15-1.51	1.34-1.62	1.20-1.67

berg 909" (printed), "*Monanthia sahlbergi* Horv. Horváth det." (hand-written by G. Horváth). "Bekljar-bek" is former post-station (not existing at present) near current railway station Saryagach in the Chimkent Prov. of Kazakhstan, at the boundary with Uzbekistan (20-30 km NW of Tashkent).

Other specimens examined. **Uzbekistan:** 1 ♂, 1 ♀, Amankutan, S of Samarkand, 13.VI, 6.VIII.1932 (Gussakovskiy); 3 ♂, 3 ♀, Samarkand Prov., railway station Kuropatkino, 28.IV.1931 (Gussakovskiy); 1 ♀, Namangan Prov., 5 km of [Uzbek]-Gava, 18.VII. 1937 (Kiritshenko). **Tajikistan:** 1 ♂, settlement Novabadski near Dushanbe, 13.V.1944 (Kiritshenko); 2 ♂, 10 ♀, near settlements Ordzhonikidzeabad and Yavan (label: "Ozar-bulak, Rengan-Tau"), 5.V.1942 (Luppova).

Variability. The variability is rather significant as to size: length of body 2.4-2.9, width of body 1-1.3, length of pronotum 1.15-1.45, its width 0.85-1.1, width of head 0.41 – 0.46, length of antennal segments (I-IV) 0.09-0.11, 0.07-0.1, 0.49-0.58 (♂) or 0.61-0.63 (♀), 0.23-0.26 mm. The lectotype is one of the smallest examined specimens and evidently a teneral one, judging by its pale colour.

Dictyla concinna Golub

New record. **Uzbekistan:** Ugam Range, settlement Sidzhak.

Dictyla sima Seid.

New records. **Turkmenistan:** West Kopetdagh, 30 km WSW of Bakharden. **Uzbekistan:** Ugam Range, settlement Sidzhak; south-western foothills of Zeravshan Range, Kitab. **Tadjikistan:** "prov. Syr-Darja, Iskander"; southern spurs of Gissar Range, Ordzhonikidzeabad – Rakhaty. I examined one paratype (♂).

Dictyla nassata (Put.)

Variability. It is known that *D. nassata* demonstrates significant individual variability in the size and colour of body, dimensions of areolae, width of costal area and so on. According to Péricart (1982, 1983), *D. putoni* (Mont.) is only an infraspecific form of *D. nassata* representing small and pale specimens. His opinion is well grounded. *D. nassata* was described from Spain and *D. putoni* from Romania (Moldavia, valley of Barlad River). I tried to analyse geographical variability of *D. nassata* in several characters (see Table).

The examined material from the Mediterranean Region originates from France, Spain, Portugal, Italy, Morocco, Tunisia, Algeria, and also Ethiopia. As to the steppe zone of East Europe, dimensions in the Table concern specimens from one locality – Askania Nova Nature Reserve (South Ukraine); measurements of specimens from other localities of the steppe zone are within the limits of variability in the named population.

As it is shown by the Table, along with significant individual variability (within a population) there is a tendency to decrease of body dimensions from west to east. In males, the length and width of body and width of pronotum are almost not overlapping in two extreme parts of the range (Mediterranean Region on the one hand,

steppes east of Volga and Central Kazakhstan on the other hand). These distinctions in females are less sharp. The length of antennal segment III is nearly the same in all populations and what is more, maximum value of segment III length and ratio its length/head width in specimens from the steppe zone is even somewhat greater than in those from the Mediterranean Region, Caucasus and Crimea. Though the easternmost and westernmost populations clearly differ from each other, the intermediate populations are transitional between them.

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