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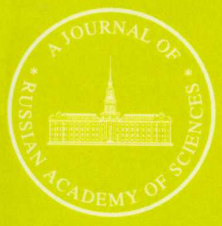

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A Revision of Digger Wasps of the Genus *Oxybelomorpha* (Hymenoptera, Crabronidae, Oxybelini): 5. The *O. moricei* and *O. patei* Species-Groups[1]

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Abstract—Two Palaearctic species groups of digger wasps of the genus *Oxybelomorpha* Brauns, 1897, *O. moricei* and *O. patei*, are revised. A new member of the *O. patei* species-group, *O. anatolei*, is described from Turkmenistan. The specific status of *O. kohliana* (von Schulthess, 1926) is resurrected.

The Palaearctic fauna of *Oxybelomorpha* is distinctly poorer than the South-African one, it comprises only 8 out of 24 known species of the genus. As it was indicated for the genera *Belomicroides* and *Pseudomicraides* (Antropov, 2001, 2002a, 2002b), the Palaearctic species-groups of *Oxybelomorpha* exhibit the following characters differing them from the South-African groups, but relating to representatives of the mainly Holarctic genus *Belomicrus* (s. str.): convex mesoscutum and scutellum usually without deep median depression, scutellum without developed posterolateral lobes (except in the *O. patei* species-group), usually very ill-defined and rounded precoxal tooth of mesopleura, and metapleura without pronounced dorsal carina. Obviously, the history of the formation of the species composition had a similar pattern in both cases.

The Palaearctic species-groups discussed in the present communication, *Oxybelomorpha moricei* and *O. patei*, are characterized by the simple metanotal scales tapered at the apices; although in species of the *O. moricei* group, these scales are plainly triangular and separated by a median emargination slightly wider than the scales, and in species of the *O. patei* group, the scales are narrow, falcately curved, and separated by an emargination distinctly wider than the scales. In addition, species of the *O. patei* group differ from the congeners in the two features typical of representatives of the other oxibeline genera possessing unmodified metasomal tergites. In particular, the inner eye orbits not approximate in the lower part of the frons are more characteristic of species of the genus *Oxybelus*, and the very short pronotal carina with a transverse ridge and with the upper margin situated distinctly below the level of the strongly convex mesoscutum, of species of the genus *Brimocelus*. However, I regard this similarity as a result of the independent evolution, rather than an evidence of close relationships between the *O. patei* species-group and the mentioned genera.

Oxybelomorpha moricei Species-group

Main characters. Median lobe of clypeus obtuse-angularly projecting, without distinct lateral angles; pronotal carina short, with distinct lateral angles and more or less distinct transverse ridges at sides; mesoscutum without median depression; semicircular scutellum without median depression and posterolateral lobes; metanotum without median carina; scales of metanotum triangular, flattened, partly transparent; metapleura without pronounced dorsal lobe; fore coxa of male without ventral depression; fore femur rounded on outer side, without sharp carina at anterior margin; hind femur weakly, if at all, modified; subdiscoidal cell of fore wing moderately widened in distal part, with oblique outer vein (Fig. 3, *8*); dorsal spine of propodeum narrow and not widened toward apex, without apical emargination; metasomal tergite I with weak dorsal pit or, usually, without it.

I include in the *O. moricei* group the following three species occurring in the southern and southeastern parts of the Mediterranean basin (Fig. 1): *O. moricei* (Kohl, 1923), *O. kohliana* (von Schulthess, 1926), and *O. waterstonii* (Kohl, 1924).

Oxybelomorpha moricei (Kohl, 1923)

Belomicrus (*Oxybelomorpha*) *moricei* Kohl, 1923 : 192. ♂: Israel [OUM]. The holotype was examined.

[1] For abbreviations of the depositories of the types and some morphological terms, see Antropov (2005).

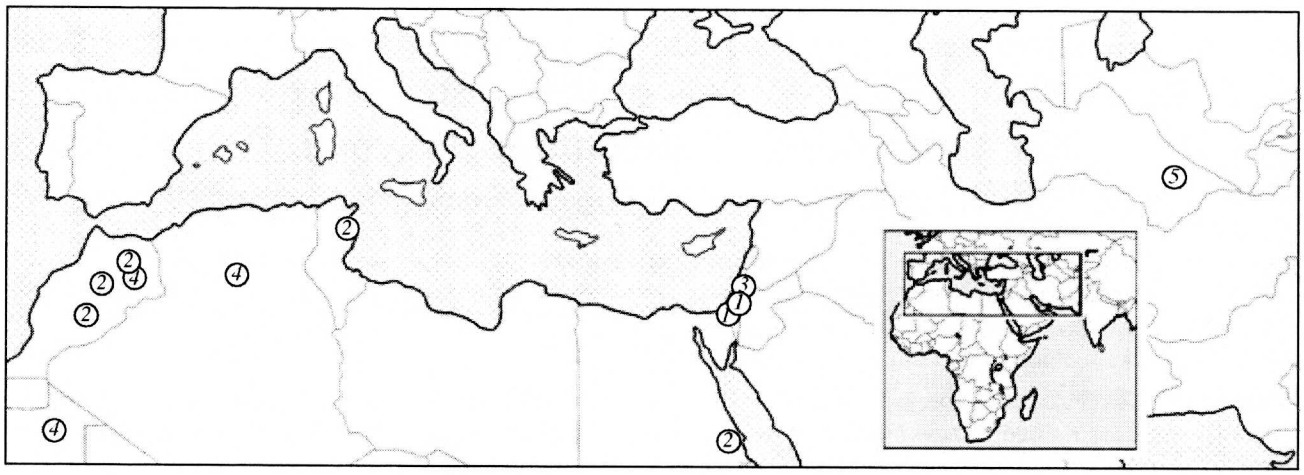

Fig. 1. Distribution of species of the *Oxybelomorpha moricei* and *O. patei* groups: (*1*) *O. moricei*, (*2*) *O. kohliana*, (*3*) *O. waterstoni*, (*4*) *O. patei*, (*5*) *O. anatolei*.

Belomicrus moricei: Pate, 1940 : 241; de Beaumont, Bytinski-Salz, and Pulawski, 1973 : 25; Bohart and Menke, 1976 : 363; Guichard, 1991 : 367; Leclercq, 1993 : 44.

Material. Holotype: ♀, "Jaffa, 19.4.99," "*Belomicrus* (= *Oxybeloides*) n. sp. det. Kohl," "*Belomicrus* Moricei det. Kohl, Type, ♀," "TYPE. Described in Konowia, II, 1923," "TYPE HYM: 435. *Belomicrus moricei* Kohl. ♀. HOPE DEPT. OXFORD," "Morice Coll. Hope Dept., University Mus., Oxford" [OUM]. Other material: 2 ♀, "ISRAEL: Beers Sheva [Beersheba], 10.X.1988 (K. Guichard); 1 ♀, "ISRAEL: Gvul Ot[Gevulot], 29.III.1986 (E. Shney-Dor)" [BMNH].

Description. Female. Head rounded in front view, distinctly wider than long; IOD = 55 : 43; lower part of frons shallowly depressed, with smooth longitudinal stripes behind appressed scapes; upper part of frons weakly convex, with fine and shallow median depression (Fig. 2, *1a*); parietal areas wide, smooth, without distinct borders, medially with oblique oval carinae (Fig. 2, *1b*); OOD : OD : POD = 12 : 8 : 21; temple rounded (Fig. 2, *1c*); median lobe of clypeus rather long, oval-triangularly projecting at lower end, with oval-triangular smooth and convex median area not separated at sides; apical margination separated at sides by rather deep grooves of merged punctures; lateral angles indistinct, distance between them about 1.2 times that from angle to antennal socket; flagellar segments slightly wider than long, except for 1st and ultimate ones. Pronotal carina short, rounded, with narrow median depression and fine dark posterior margination, bearing sharp lateral teeth (Fig. 2, *2*); combs of humeral calli sharp, extending onto pronotal carina as smoothened ridges; mesoscutum convex, without median depression; admedian lines fine, vague, approximate, reaching 1/3 of length of mesoscutum; parapsidal grooves absent; adlateral lines in the form of ill-defined short and fine grooves; scutellum distinctly wider than long in dorsal view, rounded in posterior part, without median depression, with fine carinae at sides, without posterolateral lobes (Fig. 2, *3a*); metanotum convex in middle, without median carina; scales fine, triangular, sharp at apices and separated by emargination not less than half as wide as scales; mesopleura convex at sides; precoxal tooth ill-defined, rounded; metapleural carina fine, not widened; fore femur without sharp carina at lower margin (Fig. 2, *4*); hind femur very weakly narrowed before apex, weakly widened at apex, with short carina not forming apical lobe (Fig. 2, *6*); 1st segment of hind tarsus without preapical pit. Propodeum with distinct lateral carinae extending from its apex; dorsal area not separated (Fig. 2, *7*); spine of propodeum narrow, distinctly narrower than scales, subparallel-sided, only slightly widened at apex, with shallow apical emargination (Fig. 2, *1a*, *1b*). Metasomal tergite I with weak transverse dorsal pit; tergite II and III slightly depressed at bases; posterior areas very indistinctly separated from discs; tergite VI with oval-triangular pygidial area rounded at apex (Fig. 2, *8*).

Sculpture of body formed mainly by moderate punctation against shining background. Lower part of frons with fine dense punctures ($d < \varnothing$); upper part of frons with larger punctures ($d \geq \varnothing$), intervals with very fine wrinkles in middle; sides of vertex with punctures

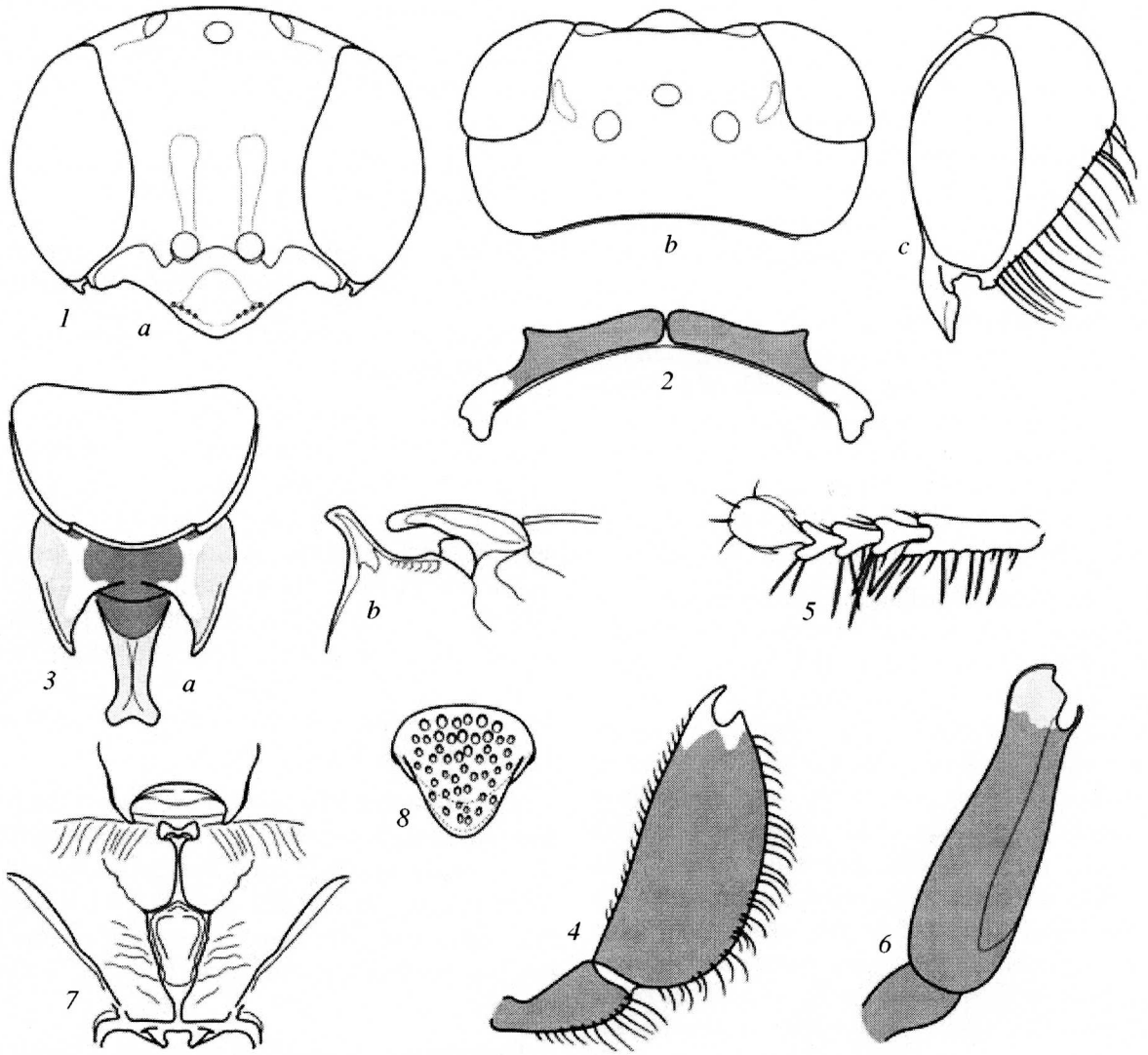

Fig. 2. *Oxybelomorpha moricei*, female: (*1*) head [(*a*) front, (*b*) dorsal, (*c*) lateral view]; (*2*) pronotal carina, dorsal view; (*3*) scutellum, metanotum, and spine of propodeum [(*a*) dorsal, (*b*) lateral view]; (*4*) fore trochanter and femur, view from inner side; (*5*) fore tarsus, view from outer side; (*6*) hind femur, view from outer side; (*7*) propodeum, posterior view; (*8*) metasomal tergite VI, dorsal view.

elongate to form transverse smoothened grooves; punctures in lower part of temple forming vertical grooves with fine wrinkles between them ($d \leq \varnothing$); middle part of median lobe of clypeus smooth, polished, impunctate. Mesoscutum with uniform punctures larger than those on frons, (d = 1–3$\varnothing$); scutellum with similarly large punctures, $d \sim \varnothing$ in middle, d = 2–5$\varnothing$ at sides; middle part of metanotum with dense contiguous punctures, matte; scales with indistinct smoothened sculpture, without punctures or radial wrinkles; mesopleura with scattered punctures smaller than those on mesoscutum, smallest punctures situated in upper part (d = 1–3$\varnothing$), d = 2–7$\varnothing$ in middle above hypersternaulus, and only scattered punctures present below hypersternaulus; metapleura with dense and regularly arranged longitudinal carinae, finely alveolate in lower part between carinae. Dorsal surface of propodeum with radial ridges and with irregular ridges near lateral carinae; intervals finely alveolate in middle, coarsely alveolate at sides; lateral margins of propodeum with short coarse irregular ridges near lateral carinae, rest of its surface finely alveolate, without regular wrinkles. Metasomal tergites with uniform punctures becoming smaller in direction from tergite I to tergite V (d = 1–2$\varnothing$); posterior areas with finer and sparser punctures (d = 2–3$\varnothing$) inconspicuous on tergites IV and V; pygidial area with coarsest longitudinally oval punctures ($d \leq \varnothing$); metasomal sternites mainly with smoothened fine transverse wrinkles; sternite V with distinct punctures at base of setae of

preapical cilia, sternite VI with coarse irregular depressions at sides.

Pubescence of body mainly not concealing cuticular sculpture, short, silvery, recumbent, erect on vertex; length of hairs there subequal to diameter of anterior ocellus; lower part of frons and lateral and posterior parts of median lobe of clypeus with dense recumbent and slightly flattened hairs concealing cuticular sculpture; length of setae of psammophore on temple and mandible distinctly exceeding width of mandibular base (Fig. 2, *1c*); setae on fore trochanter long, curved forwards, their length not less than width of trochanter; outer sides of all femora with regular row of setae gradually becoming shorter toward apex of each femur (Fig. 2, *4*); digging comb of fore tarsus well developed; length of 5 or 6 outer erect setae on 1st segment slightly exceeding width of segment (Fig. 2, *5*).

Body mainly black. Median lobe of clypeus brownish in anterior part; antennae uniformly brownish; mandible yellow in basal 2/3, reddish brown at apex. Pronotal carina black; humeral calli yellowish white; tegula transparent, rufous; basal sclerites of wings brownish rufous in middle, yellow at margins; veins of wings brownish, rufous at base of wing; fore tarsus rufous; middle and hind ones pale brownish; fore tibia mainly white, rufescent on inner side; middle tibia mainly white on outer side, rufescent brownish on inner side; hind tibia white on outer side, pale brownish on inner side; fore femur mainly dark brown, with small whitish yellow spot only at apex of outer side; middle femur mainly dark brown, yellowish rufous at apex; hind femur mainly dark brown, with small yellowish white spot at apex, especially on outer side; lateral parts of scutellum and metanotum with fine whitish preapical stripes; metanotum blackish brown in middle; scales of metanotum transparent, mainly pale on outer sides, with yellowish white stripe along inner margins. Spine of propodeum mainly black, transparent and yellowish rufous at apex. Metasoma mainly black, posterior areas transparent, discolored, whitish; apex of pygidial area reddish brown; metasomal sternites mainly brownish.

Body length 5.8 mm.

Male unknown.

Differential diagnosis. The female of *O. moricei* differs from the other species of the group in the uniformly convex median lobe of the clypeus, distinct lateral angles of the pronotal carina, and obviously darker body: pronotal carina, scutellum, femora, and metasoma, all are black.

Oxybelomorpha kohliana (von Schulthess, 1926)

Belomicrus (*Oxybelomorpha*) *kohlianus* von Schulthess, 1926a : 158. ♀: Tunis [IPZ]. The holotype was examined.

Belomicrus (*Oxybelomorpha*) *kohlianus*: von Schulthess, 1926b : 219;

Belomicrus kohlianus: Pate, 1940 : 240; de Beaumont, 1950 : 423; Bohart and Menke, 1976 : 363;

Belomicrus waterstoni Kohl: de Beaumont, 1957 : 157, 159; Guichard, 1991 : 364.

Material. Holotype: ♀, "Tunisia, Kairuan (Santschi)," "♀," "Kohlianus (det. Schulthess, 92)," "Type" (Fig. 3, *4a*) [IPZ]. Other material: 1 ♀: "Gebel Elba, Egypt, A.7.III (Dr. H. Priesner)" (Fig. 3, *4d*) [BMNH]; 1 ♀: "Maroc. Baumalne (Ksar es Sk Ouarzazate), 7.VI.1947 (J. de Beaumont)" (Fig. 3, *4c*) [MZL]; 1 ♀: "Gebel Elba, Egypt, Ai.5.III (Dr. H. Priesner)" (Fig. 3, *4b*); 1 ♂: "Marokko, 15.VI.1996, Imin'Kem, 50 km E Agdz, 5°58′N, 30°52′E (M. Schwarz)" [MS]; 3 ♂: "Morocco E, 30 km N Bouarfa, 19.V.1995 (Ma. Halada)" [LM].

The holotype. The following parts of the body are lost: entire right antenna; left antenna behind 3rd segment; entire fore left leg; 2nd–5th segments of left middle tarsus; 4th and 5th segments of left hind tarsus; 5th segment of right fore tarsus; right middle leg, including trochanter; and right hind leg behind trochanter.

Description. Female. Head rounded in front view, much wider than long; IOD = 58 : 40; lower part of frons distinctly depressed, with shining stripe and small pit at level of apices of appressed scapes; upper part of frons slightly convex, with very shallow median depression reaching median ocellus (Fig. 3, *1a*); vertex uniformly convex; parietal areas in the form of shallow, not very distinctly separated pits (Fig. 3, *1b*); OOD : OD : POD = 10 : 9 : 26; temple round-angularly widened behind eye (Fig. 3, *1c*); median lobe of clypeus angularly projecting at base, flattened in middle, with shining longitudinal area separated on upper side by rounded carinae; apical margin of clypeus round-angularly projecting, without separated edging and lateral angles (Fig. 3, *1d*, *2*). Pronotal carina short, convex, with transparent posterior margination, angularly projecting at anterior end, with ill-defined lateral angles; humeral calli with fine combs slightly extending on pronotal carina (Fig. 3, *3*); mesoscutum uniformly convex; admedian lines very fine

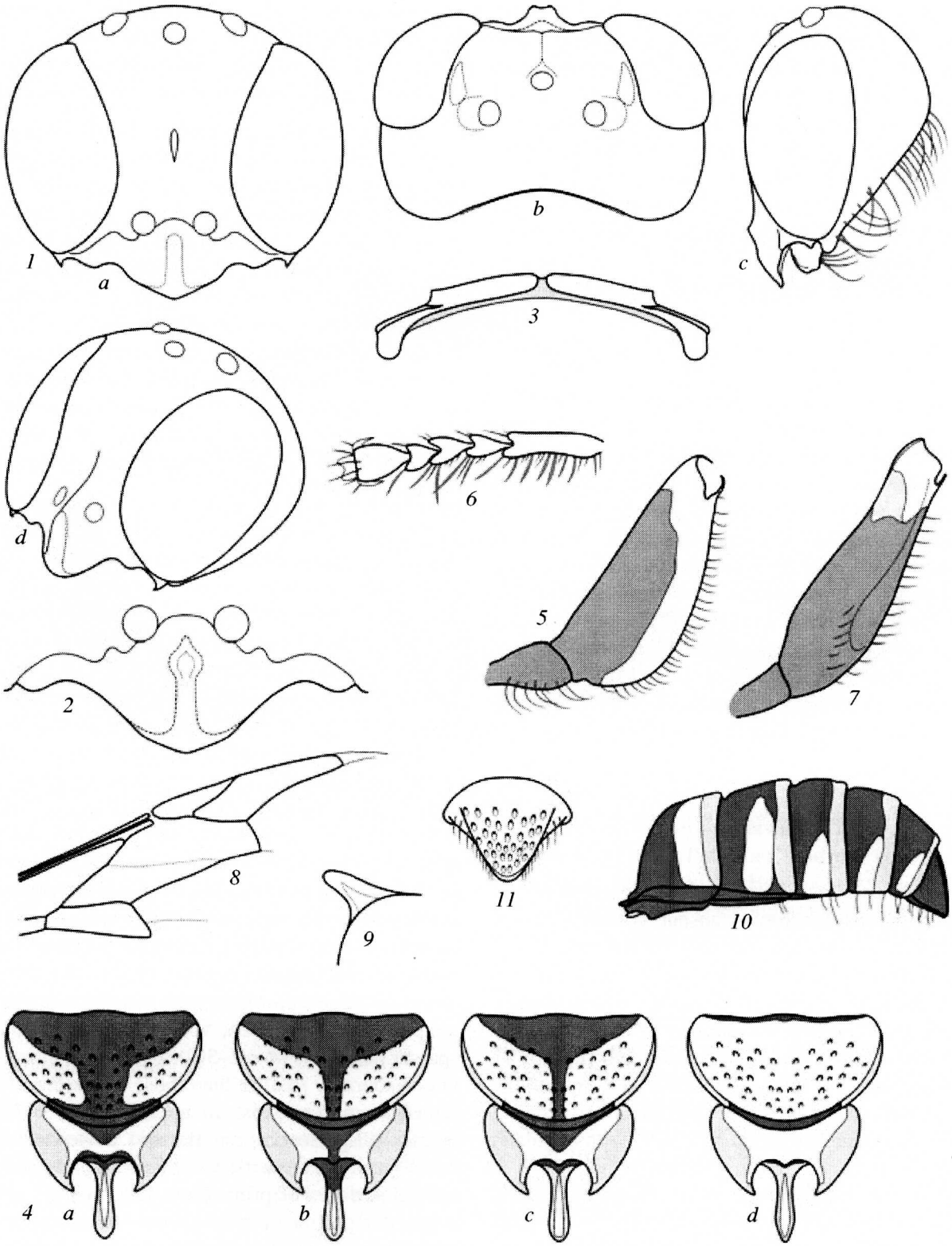

Fig. 3. *Oxybelomorpha kohliana*, female: (*1*) head [(*a*) front, (*b*) dorsal, (*c*) lateral, (*d*) anterolateral view]; (*2*) clypeus, front view; (*3*) pronotal carina, dorsal view; (*4*) scutellum, metanotum, and spine of propodeum, dorsal view (for *a–d*, see "Material"); (*5*) fore trochanter and femur, view from inner side; (*6*) fore tarsus, view from outer side; (*7*) hind femur, view from outer side; (*8*) venation of fore wing; (*9*) spine of propodeum, lateral view; (*10*) metasoma, lateral view; (*11*) metasomal tergite VI, dorsal view.

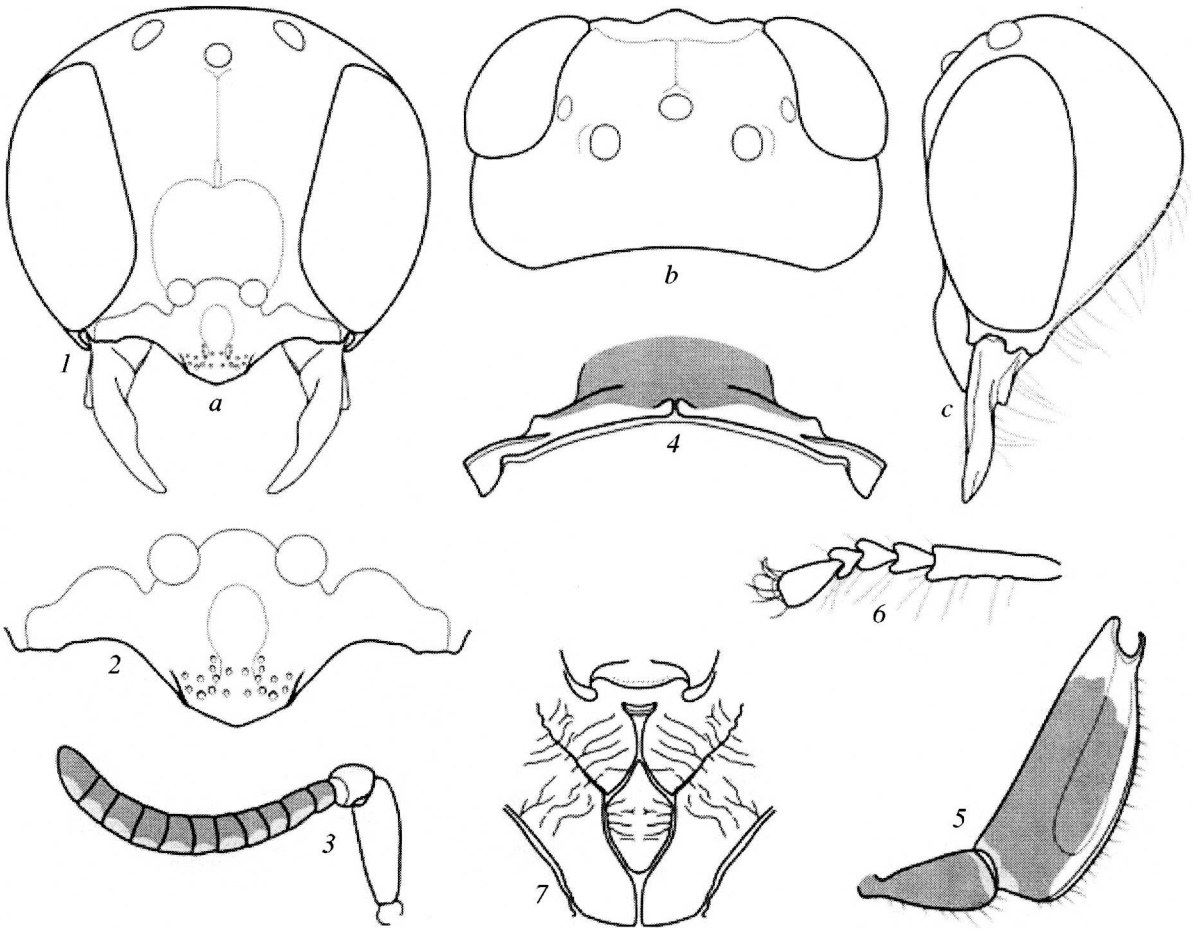

Fig. 4. *Oxybelomorpha* kohliana, male: (*1*) head [(*a*) front, (*b*) dorsal, (*c*) lateral view]; (*2*) clypeus, front view; (*3*) antenna, front view; (*4*) pronotal carina, dorsal view; (*5*) fore trochanter and femur, view from inner side; (*6*) fore tarsus, view from outer side; (*7*) propodeum, posterior view.

and approximate, not longer than 1/3 of length of mesoscutum; parapsidal grooves absent; adlateral lines in the form of fine short carinae; scutellum rounded, with fine carinae at sides, without posterolateral lobes; metanotum moderately convex in middle, with triangular scales sharp at apices and separated by oval emargination, width of which about twice its depth (Fig. 3, *4*); mesopleura convex, slightly concave anteroventrally; precoxal tooth ill-defined, rounded; metapleural carina absent; fore femur flat on anterior side, with angularly rounded outer margin, without carina or ridge (Fig. 3, *4*); hind femur not modified, without separated apical lobe, flat on inner side, not depressed (Fig. 3, *7*). Spine of propodeum fine, shallowly longitudinally depressed on anterior side, slightly widened toward apex, without apical emargination (Fig. 3, *4*, *9*); lateral carinae of propodeum entire, slightly widened in anterior part; dorsal area separated by fine carinae (as in Fig. 4, *7*); metasomal tergite I without dorsal pit.

Sculpture of body formed by punctures separated by shining intervals (except on propodeum). Frons and middle of vertex with dense fine punctures $d = \varnothing$; punctures on temple slightly sparser ($d \geq \varnothing$). Punctures on mesoscutum slightly coarser than those on temple (d = 1.5–2.0$\varnothing$); scutellum with similar, but sparser punctures (d = 2–3$\varnothing$); punctures on mesopleura considerably smaller than those on mesoscutum and scutellum, rather dense in upper part (d = 1.5–2$\varnothing$), distinctly sparser in middle and lower parts (d = 2–5$\varnothing$); metapleura with dense fine longitudinal ridges. Lateral surfaces of propodeum very densely alveolate in anterior part, with irregular carinae on upper side in posterior part; posterior surface of propodeum not outlined in upper part, with fine median carina in lower part, this carina forming in upper part bifurcate branches fused at base of spine. Punctures on metasomal tergites dense, becoming smaller in direction from tergite I to tergite V, coarsest and slightly elon-

gate on tergite VI ($d < \varnothing$) (Fig. 3, *11*); on tergite I, d = 1–2$\varnothing$; on tergites II–V, d = 1.0–1.5$\varnothing$; sternites II–V with indistinct punctation; sternite VI with dense punctures at sides of smooth median stripe.

Pubescence short, mainly not concealing cuticular sculpture, except for dense silvery recumbent pubescence in lower part of frons and on clypeus (except for longitudinal area); length of hairs on frons about half diameter of anterior ocellus; length of setae of psammophore on temple not less than, and at ventral margin of mandible 1.2–1.5 times width of mandibular base (Fig. 3, *1c*); setae on fore trochanter slightly shorter than those on temple; fore femur with regular row of setae, length of which equal to median width of 1st tarsal segment; digging comb on 1st segment of fore tarsus consisting of 6 or 7 fine erect setae, length of which slightly exceeding width of segment (Fig. 3, *6*).

Body mainly black, with pale spots. Mandibular base, entire scape, base of flagellum on lower side, pronotal carina, humeral calli, outer margin of tegula, entire tibiae (except for rufous spots on inner side), entire tarsi, entire lower side of fore femur, lower side at apex of middle femur, large posterolateral spots on scutellum, metanotum (except for median triangle at base), median stripe of spine of propodeum, preapical stripe of lateral parts of scutellum and metanotum (Fig. 3, *1a–1d*), large lateral spots on metasomal tergite I, narrower spots on tergite II, and short lateral spots on tergite III, all yellowish white (Fig. 3, *10*). Flagellum brownish on upper side. Tegula mainly brownish. Lateral spots on metasomal tergite IV, very small spots on tergite V, and entire tergite VI reddish brown; occasionally, spots on tergite V forming band and entire tergite VI yellowish white. Posterior areas of tergites I–V and metasomal sternites II–IV discolored, transparent, rufous. Outer parts of scales of metanotum transparent, whitish.

Body length 5.3 mm.

Male (described for the first time) mainly similar to female, except for characters associated with sex. Inner orbits of eyes less strongly approximate in lower part (Fig. 4, *1a*); IOD = 44 : 32; parietal areas indistinct, oval, slightly convex (Fig. 4, *1b*); OOD : OD : POD = 8 : 7 : 19; median lobe of clypeus uniformly convex, without flattened vertical area (Fig. 4, *2*); scape yellowish white; flagellar segments dark brown on upper side, rufescent on lower side (Fig. 4, *3*); pronotal carina with more distinct obtused lateral angles (Fig. 4, *4*); fore femur with fine carina along outer margin (Fig. 4, *5*). Setae of psammophore on temple and ventral margin of mandible sparser, but as long as those in female (Fig. 4, *1c*); fore trochanter without setae; setae on fore femur much sparser, their length less than width of 1st tarsal segment (Fig. 4, *5*); digging comb on 1st segment of fore tarsus consisting of 4 or 5 fine erect setae, length of which slightly exceeding maximum width of segment (Fig. 4, *6*). Scutellum uniformly black; metasomal tergites I–III with small lateral yellowish white spots becoming smaller from base to metasomal apex; apical metasomal tergite rufous.

Body length 4.8 mm.

Differential diagnosis. The female of *O. kohliana* differs from that of *O. moricei* in the presence of a pale pattern on the mesosoma, legs, and metasoma, in the median clypeal lobe flattened in the anterior part, and in less distinct lateral angles of the pronotal carina. In the characters listed, *O. kohliana* is similar to *O. waterstonii*, but differs from it in the absence of a sharp prominence in the upper part of a flat area of the median lobe of the clypeus without distinct lateral angles, large yellowish white posterolateral spots of the scutellum, propodeal spine not widened at the base, and the pale spots on metasomal tergites I–II distinctly larger than small spots on tergites III–V.

Notes. In his review of species of *Belomicrus*, Guichard (1991) indicated some differences in the coloration of the body between "a type of *B. waterstoni* [sic.] from Palestine" and not type specimen from Egypt identified by Beaumont as *B. kohlianus*, but concluded that the second name should be considered a junior synonym. According to my data, though the specimen from Egypt actually corresponds to the type of *B. kohlianus* from Tunis, these two species differ in not merely "darker coloration" of *B. waterstonii*, but also in the structure of the clypeus and spine of the propodeum and in the coloration of the scutellum and metasomal tergites: in *O. kohliana*, pale spots on tergites I–II are distinctly larger than those on tergites III–V, and in *O. waterstonii*, all these spots are small and subequal in size. I consider the conclusion about the synonymy insufficiently proved and regard *O. waterstonii* and *O. kohliana* as closely related, but separate species.

Oxybelomorpha waterstonii (Kohl, 1924)

Belomicrus waterstonii Kohl, 1924 : 263. ♀: Israel [BMNH]. The holotype was examined.

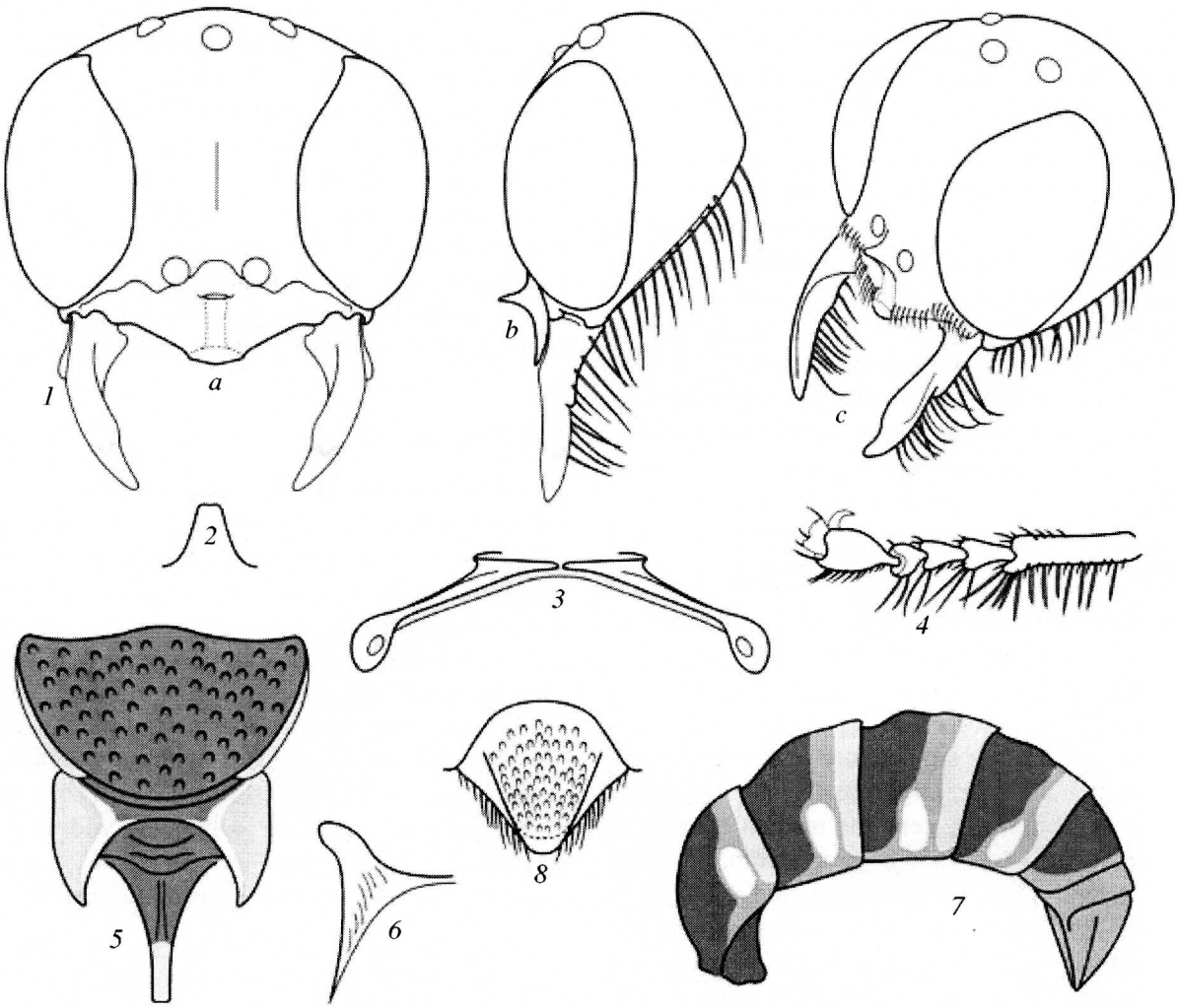

Fig. 5. *Oxybelomorpha waterstonii*, female: (*1*) head [(*a*) front, (*b*) lateral, (*c*), anterolateral view]; (*2*) prominence of clypeus, dorsal view; (*3*) pronotal carina, dorsal view; (*4*) fore tarsus, view from outer side; (*5*) scutellum, metanotum, and spine of propodeum, dorsal view; (*6*) spine of propodeum, lateral view; (*7*) metasoma, lateral view; (*8*) metasomal tergite VI. dorsal view.

Belomicrus waterstonii: de Beaumont, Bytinski-Salz, and Pulawski, 1973 : 25; Bohart and Menke, 1976 : 364; Leclercq, 1993 : 45;

Belomicrus waterstoni: Guichard, 1991 : 364.

Material. Holotype: ♀, "Holotype," "Palaestine: nr. Jerisheh, 4–7 m. N.-E. of Jaffa, 29.IV.1918 (Major E.E. Austen). 1919–53," "nr. Jerisheh, 4–7 miles N.-E. of Jaffa, 29.IV.1918," "British Museum," "Type," "*Belomicrus waterstonii* Kohl (det. Kohl), n. sp.," "*waterstoni* B.M. TYPE HYM 21.1959" [BMNH].

Description. Female. Head rounded in front view; lower part of frons moderately depressed; upper part weakly convex, with fine median depression reaching anterior ocellus (Fig. 5, *1a*); IOD = 62 : 42; vertex moderately and uniformly convex; parietal areas with oval depressions, ill-defined, without distinct border; OOD : OD : POD = 11 : 8 : 25; temple round-angularly widened (Fig. 5, *1b*); median lobe of clypeus with fine flat vertical prominence at base and with flattened median area below this prominence; this flattened area widened at apex and separated by obtuse lateral angles distance between which 0.66 times that from angle to antennal socket (Fig. 5, *1a–1c*, *2*). Pronotal carina short, convex, with distinctly projecting median part bounded by lateral carinae (Fig. 5, *3*); humeral calli with vertical combs extending onto pronotal carina nearly up to its middle; mesoscutum without deep median depression; admedian lines fine, short, strongly approximate; parapsidal grooves absent; adlateral lines in the form of weak carinae; scutellum rounded, with narrow carinae at sides, with-

out distinct posterolateral lobes; metanotum moderately convex in middle, without median carina, with triangularly elongate scales sharp at apices and separated by semicircular emargination, width of which nearly twice its depth (Fig. 5, *5*); mesopleura weakly convex; metapleural carina absent; fore femur with roundly angular outer margin, but without pronounced carina; apex of hind femur unmodified. Propodeum with entire lateral carinae, finely bounded dorsal area, and fine dorsal spine not forming apical emargination, but strongly widened at base (in dorsal view) (Fig. 5, *5*, *6*). Metasomal tergite I without dorsal pit.

Sculpture formed by punctures separated by shining intervals. Frons, vertex, mesoscutum, scutellum, mesopleura, and metasomal tergites with uniform punctation; punctures densest (d = 0.5–1.0∅) on frons (in upper part, with longitudinal wrinkles between punctures as though merging into grooves), vertex, and temple, less frequently, on mesoscutum (d = 1.0–1.5∅), scutellum (d = 1.5–2.0∅), and mesopleura (d = ∅ in upper part, and d = 3∅ in lower part). Punctures on frons and in upper part of mesopleura smallest, coarser on vertex, in lower part of mesopleura, on mesoscutum, scutellum, and metasomal tergite VI (oval punctures with intervals d = 0.5∅) (Fig. 5, *8*). Pronotal carina with ridges at sides. Upper side of propodeum with coarse plicate-alveolate sculpture.

Pubescence short (its length on frons equal to diameter of anterior ocellus, length of rest of pubescence no more than half this diameter); hairs erect on frons and vertex, curved backwards on mesoscutum, and recumbent on temple, mesopleura, and metasoma. Hairs of mesoscutum with bronze tint, others silvery. Sculpture concealed by pubescence only on clypeus and adjoining area of lower part of frons. Setae of psammophore on temple and at ventral margin of mandible dense, their length 1.5 times width of mandibular base (Fig. 5, *1b*); setae on fore trochanter slightly shorter than those on temple; outer margin of fore femur uniformly covered with setae, length of which slightly exceeding width of 1st segment of fore tarsus; digging comb on 1st segment of fore tarsus consisting of 7 fine erect setae, length of some of these setae distinctly exceeding width of segment (Fig. 5, *4*).

Body mainly black. Mandibular base, scapes, pronotal carina, humeral calli, apicolateral stripe of scutellum and metanotum, inner margins of scales of metanotum (basal part transparent), all tarsi (except for 5th or 4–5th segments), all tibiae (except for rufescent inner side), lower side of fore femur, apical half of middle femur on lower side, apex of hind femur, basal sclerites of wing, apex of spine of propodeum, small spots on metasomal tergites I–IV (tergite VI more rufous) (Fig. 5, *7*), all whitish yellow. Preapical part of mandible, flagellum on lower side, posterolateral angles of scutellum, 5th or 4–5th tarsal segments, transparent tegula, apical stripe of metasomal tergites I–V, posterior areas of metasomal sternites II–V, and most part of sternite VI, all brownish rufous.

Body length 6 mm.

Male unknown.

Differential diagnosis. In a well-developed pale pattern of the mesosoma, legs, and metasoma, in the median lobe of the clypeus flattened in the anterior part, and in the less distinct lateral angles of the pronotal carina, the female of *O. waterstonii* differs from *O. moricei*, but is similar to the female of *O. kohliana* and differs from the latter in the presence of a sharp prominence in the upper part of a flat area of the median lobe of the clypeus with pronounced lateral angles, mainly black scutellum with rufescent apical angles, propodeal spine widened at the base, and small pale spots of metasomal tergites I–V.

Notes. The specimen from Morocco mentioned as *B. waterstonii* (de Beaumont, 1957 : 159) belongs to *O. kohliana*.

Oxybelomorpha patei Species-group

Main characters. Inner orbits of eyes not approximate in lower part of frons; pronotal carina short, with more or less developed transverse ridge, situated distinctly below upper level of convex mesoscutum without median depression, but with pronounced parapsidal grooves; scutellum with developed posterolateral lobes; scales of metanotum sharp, falcate, widely spaced; precoxal tooth no more than traced; metapleura without distinct dorsal lobe; fore coxa in male and hind femur in both sexes unmodified; fore femur without outer carina; 1st segment of hind tarsus without preapical pit; subdiscoidal cell of fore wing widened in distal part, with straight outer vein (Fig. 7, *10*); dorsal spine of propodeum narrow and not widened toward apex, without apical emargination; metasomal tergite I without dorsal pit.

I include in this group the North African *O. patei* (de Beaumont, 1950) and Middle Asian *O. anatolei* sp. n.

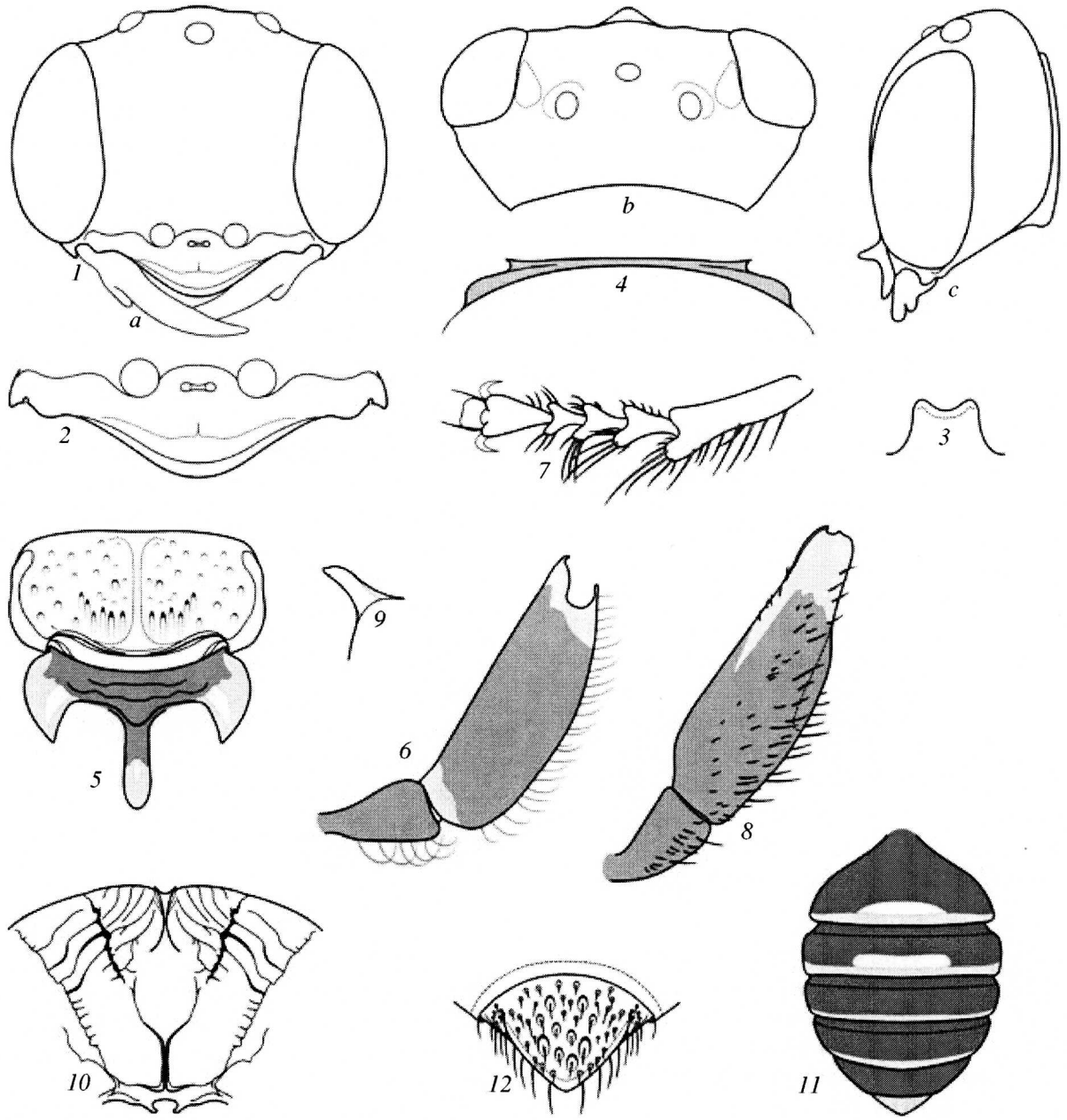

Fig. 6. *Oxybelomorpha patei*, female: (*1*) head [(*a*) front, (*b*) dorsal, (*c*) lateral view]; (*2*) clypeus, front view; (*3*) prominence of clypeus, dorsal view; (*4*) pronotal carina, dorsal view; (*5*) scutellum, metanotum, and spine of propodeum, dorsal view; (*6*) fore trochanter and femur, view from inner side; (*7*) fore tarsus, view from outer side; (*8*) hind femur, view from outer side; (*9*) spine of propodeum, lateral view; (*10*) propodeum, posterior view; (*11*) metasoma, dorsal view; (*12*) metasomal tergite VI, dorsal view.

Oxybelomorpha patei (de Beaumont, 1950)

Belomicrus patei de Beaumont, 1950 : 422, ♀: Algeria [BMNH]. The holotype was examined.—Beaumont, 1953 : 176, 1957 : 157; Bohart and Menke, 1976 : 363; Guichard, 1991 : 363; Leclercq, 1993 : 45.

Material. Holotype: ♀, "Type," "ALGERIA: Laghouat, June 1943 (K.M. Guichard B.M. 1945–39)," "Typus," "*Belomicrus patei* Beaum. ♀ (J. de Beaumont det.), Type 1949," "B.M. TYPE HYM 21.1.147" [BMNH]. Other material: 1 ♀: "ALGERIA: Laghouat, June. 1943 (K.M. Guichard—B.M. 1945–39)," "*Belomicrus patei* Beaum. (J. de Beaumont det, Paratype, 1949)" [BMNH]; 1 ♀: "MAURITANIE, Fort—Gouraud Berland xI–1948" [MNHN]; 1 ♀: "Morocco E, 30 km N Bouarfa, 19.V.1995 (Mi. Halada)" [LM].

Description. Female. Head distinctly wider than long in front view; inner orbits of eyes not approximate in lower part (Fig. 6, *1d*); IOD = 56 : 54; frons

depressed in lower part, moderately convex in upper part, with very shallow median depression; vertex uniformly convex; OOD : OD : POD = 10 : 17 : 26; parietal areas large, convex, shining, not bounded (Fig. 6, *1b*); temple with very strongly angularly projecting ends of occipital carina in posteroventral part (Fig. 6, *1c*); median lobe of clypeus with high transverse basal prominence truncate at apex (Fig. 6, *1c*, *3*), ovally projecting at anterior end, with transparent, not separated apical margination, without distinct lateral angles (Fig. 6, *2*). Pronotal carina very short, with entire sharp transverse ridge (Fig. 6, *4*), situated much lower than upper level of convex mesoscutum; admedian lines strongly approximate, forming fine groove reaching 1/3 of length of mesoscutum; parapsidal grooves rather deep, formed by 2–3 irregular rows of approximate punctures; adlateral lines in the form of short grooves; scutellum transversely rectangular, its posterior part with shallow median depression and developed posterolateral lobes; metanotum convex in middle, without median carina, with rather short falcate scales sharp at apices and separated by wide interval (Fig. 6, *5*); precoxal tooth in the form of trace, rounded; metapleural carina absent; fore femur rounded on lower side, without longitudinal carina (Fig. 6, *6*); apex of hind femur unmodified, with weak dorsal carina (Fig. 6, *8*). Spine of propodeum medially depressed on upper side, parallel-sided, with rounded apex slightly curved backwards and not forming apical emargination (Fig. 6, *5*, *9*); lateral carinae fine, but entire; median pit on upper side not closed (Fig. 6, *10*). Metasomal tergite I without dorsal pit (Fig. 6, *11*).

Sculpture of body formed by rather fine punctures separated by shining intervals (except on propodeum); punctures uniformly arranged on head and metasoma and distinctly sparser on mesoscutum and, especially, on mesopleura. Lower part of frons and clypeus (except for apical margination) with dense and fine (d = ∅) punctures; upper part of frons with similarly dense, but larger punctures; punctures at sides of vertex as those in upper part of frons, sparser (d = 2∅) in middle of vertex, denser ($d \leq$ ∅) in posterior part and merging there to form transverse grooves; punctures of temple fine and vertically elongate (d = ∅) in upper part, concealed by long dense recumbent hairs in lower part. Punctures on mesoscutum slightly larger than those in upper part of frons, dense in anterior part, along median line, and in posterior part (d = 1–2∅), scattered in middle at sides of parapsidal grooves (d > 4–5∅), contiguous along posterior margin; scutellum with larger punctures (d = 2–3∅) and rugae between them; metanotum with irregular transverse carina in middle, with smoothened alveolation in posterior part; punctures on mesopleura distinctly smaller than those on mesoscutum, very sparse, d = 2–3∅ in upper part, d = 3–6∅ on most of surface; posterior angles of mesopleura with irregular sculpture; metapleura with sparse longitudinal carinae (a total of 5 carinae present in lower part), finely alveolate between carinae. Dorsal and posterior surfaces of propodeum finely alveolate, matte; dorsal area and sides of dorsal part with more or less regular radial carinae; median pit of posterior surface very shallowly depressed, open on upper side; sides of propodeum finely alveolate, with short ridges along lateral carinae. Metasomal tergites with fine and uniform punctures (d = 1.5–2∅) becoming only slightly smaller from base to apex of metasoma; punctures on pygidial area slightly larger than those on mesoscutum, very sparse (d = 2–4∅), not forming longitudinal grooves (Fig. 6, *12*); posterior areas not separated from discs by rows of punctures, densely and very finely punctate on tergites I–IV, impunctate on tergite V; sternites mainly finely transversely striate, with fine punctures at bases of hairs, except for sternite V (d = 2–3∅) and lateral parts of sternite VI (d = 1–2∅).

Pubescence of body well developed, formed by rather long, but sparse, mainly erect and semirecumbent silvery hairs. Lower part of frons, lateral lobes of clypeus, and lower half of temple with densest recumbent hairs nearly concealing cuticular sculpture. Longest hairs (length twice diameter of anterior ocellus) situated on vertex, in lower part of temple, on scutellum, metanotum, and metasomal apex. Mesoscutum and mesopleura with slightly shorter hairs. Setae of psammophore on temple replaced by dense long hairs; length of ventral setae on mandible not less than 1.5 times width of mandibular base; fore trochanter with setae curved forwards, length of setae exceeding width of trochanter; setae of psammophore at outer margin of fore femur not distinguished against background of long hairs on lateral side of femur; digging comb on 1st segment of fore tarsus consisting of 6 or 7 straight erect setae slightly flattened at base, their length 1.5 times width of segment (Fig. 6, *7*).

Body mainly black. Median lobe of clypeus with yellowish rufous anterior margin and transparent rufous edging; mandible yellowish white in basal 2/3, then rufous, reddish brown at apex; scape brownish,

with small yellow apical spot on outer side; flagellum brownish on upper side, rufous on lower side. Pronotal carina black; humeral calli brownish in posterior part; scales of metanotum mainly transparent, with narrow yellowish white stripe along inner margins; all tarsi rufous; base of 1st tarsal segment and entire ultimate segment paler, yellowish; tibiae yellowish white on outer side, with rufous spots on inner side most distinct on hind tibia; femora mainly dark brown, rufous on inner sides at apices (fore femur, also at base); fore and middle femora with small yellow spot at apices; tegula yellow at base, transparent in other parts; basal sclerites of wings mainly yellowish white, without dark spots; veins of wings yellowish white. Dorsal spine of propodeum black at base, with transparent margins and narrow yellowish white median stripe. Metasomal tergites I and II with narrow transverse yellow spots before posterior areas; metasomal segment VI reddish rufous; posterior areas of tergites transparent, yellowish (Fig. 6, *11*).

Body length 5.5 mm.

Male unknown.

Differential diagnosis. In addition to the characters associated with the sex (shape of clypeus and occipital carina, extent of development of psammophores and digging comb), *O. patei* differs from *O. anatolei* sp. n. in the shorter, low, and uniformly black pronotal carina with a transverse ridge not interrupted at sides, in the long pubescence (longest on mesosoma and metasoma), sparser punctation of the mesopleura, radial ridges situated on lateral parts of the upper side of the propodeum, yellow rufous middle and hind tibiae, and in the presence of yellow transverse spots on metasomal tergites I and II. One more distinctive feature of *O. patei* is a sparse long pubescence of the body, usually not typical of species of the genus *Oxybelomorpha*.

Notes. Among the three specimens mentioned by Beaumont and served as the basis for description of *B. patei*, only one specimen from Laghouat (Algeria) was designated as the type. The second specimens with a similar geographical label was not designated by the author as a paratype in the description, and, thus, cannot be accepted as the paratype.

Oxybelomorpha anatolei Antropov, sp. n.

Material. Holotype: ♂: Turkmenia, Repetek, 9.V.1990 (A. Shatalkin) [ZMMU].

Description. Male. Head distinctly wider than long in front view; IOD = 53 :43; frons depressed in lower part, convex and without distinct median depression in upper part (Fig. 7, *1d*); parietal areas oval, narrowed in anterior part, slightly convex, without distinct border (Fig. 7, *1b*); OOD : OD : POD = 9 : 8 : 22; temple short, rounded (Fig. 7, *1c*); median lobe of clypeus convex, roundly projecting at anterior end, with indistinct obtuse lateral angles (Fig. 7, *2*); flagellar segments unmodified, 9–12th segments slightly wider than long; length of ultimate one 1.6 times its maximum width (Fig. 7, *4*). Pronotal carina short, with obtuse lateral angles and sharp dorsal carina in middle and on humeral calli, situated distinctly below level of mesoscutum (Fig. 7, *5*); mesoscutum distinctly convex in anterior part; admedian lines very fine, approximate, slightly longer than tegula; parapsidal grooves in the form of rows of approximate punctures, not shorter than admedian lines; adlateral lines short, hardly visible against background of punctation; scutellum distinctly wider than long, depressed medially, with distinct deflexed posterolateral lobes; metanotum convex in middle, without median carina, bearing rather short, falcate, widely spaced scales with weakly approximate sharp apices and transparent outer parts (Fig. 7, *6a*); mesopleura uniformly moderately convex; precoxal tooth absent; metapleural carina absent; fore femur rather narrow, longitudinally depressed on anterior side at apex, with rounded outer margin, without longitudinal carina (Fig. 7, *7*); apex of hind femur unmodified (Fig. 7, *9*). Propodeum with entire, fine lateral carinae extending from its apex, with separated dorsal area and median pit not closed on dorsal surface (Fig. 7, *11*); spine of propodeum depressed medially on anterior side, parallel-sided, with rounded, slightly deflexed apex not forming apical emargination, triangular in lateral view (Fig. 7, *6a*, *6b*). Metasomal tergite I without dorsal pit; tergite VII with trapeziform pygidial area.

Sculpture formed by regular dense punctures separated by shining intervals: d = 0.1–0.5∅ on frons near eyes, around parietal ocelli, in lower part of temple, and on pronotum; d = 0.5–1.0∅ on median lobe of clypeus, on vertex, in upper part of temple, in lower part of mesopleura, and on metasomal tergites IV and VII; d = 1.5–2.0∅ on frons, sides of mesoscutum, on scutellum, in anterior part of mesopleura, and on metasomal tergites I and II; and d = 2–3∅ on mesoscutum and in basal part of mesopleura. Coarsest punctures situated on metasomal tergite VI and median lobe of clypeus, and smallest ones, in lower part of frons and

on metasomal tergites IV and V. Mesoscutum in posterior part, scutellum, and metapleura with longitudinal carinae. Lateral surfaces of propodeum coarsely alveolate in posterior part, with fine oblique carinae in anterior part.

Pubescence fine, silvery, mainly semi-recumbent, erect in upper part of frons, on vertex, in posterior part of mesoscutum, and on scutellum. Densest hairs not concealing however cuticular sculpture present at lower corners of face. Setae of psammophore on temple ill-defined, their length half width of mandibular base; length of setae on mandible about 1.2–1.5 times width of mandibular base (Fig. 7, *1c*, *3*); setae on fore trochanter and femora uniform, their length less than maximum width of trochanter (Fig. 7, *7*); digging comb on 1st segment of fore tarsus consisting of 6 erect setae, length of which 1.5 times width of segment (Fig. 7, *8*).

Body mainly black. Whitish cream: spots at base of mandible; humeral calli; small spots on pronotal carina, divided into two spots (outer spots approximate with humeral calli); base of tegula; basal sclerites and bases of longitudinal veins of wings; apices of femora; fore tibia at base; middle tibia on outer side; hind tibia at base and at apex on inner side; 1st–4th segments of all tarsi in basal parts; and entire apical tarsal segments. Flagellum on lower side, mandible (except for apex), middle and hind femora at apices on upper sides, inner parts of scales of metanotum, transparent posterior areas of metasomal tergites I–VI, and entire pygidium, all rufescent.

Body length 6.0 mm.

Female unknown.

Differential diagnosis. In addition to the characters associated with the sex (shape of clypeus and occipital carina, degree of development of psammophores and digging comb), *O. anatolei* sp. n. differs from *O. patei* in the slightly more convex and higher pronotal carina with white spots and transverse ridge interrupted at sides, denser and uniform punctation of the mesopleura, dense and irregular alveolation of the lateral parts of dorsal surface of the propodeum, less strongly developed long pubescence of the mesosoma and metasoma, white middle and hind tibiae with more or less developed brownish spots, and absence of pale spots on metasomal tergites I–VI.

Etymology. The species is named for Dr. Anatolii Ivanovich Shatalkin (Zool. Mus., Moscow State University, Russia), who rendered a considerable assistance in collecting the material in Middle Asia.

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