

## On the Taxonomy of South African Digger Wasps of the Tribe Oxybelini (Hymenoptera, Crabronidae)

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**Abstract**—Three South African species of digger wasps of the tribe Oxybelini, initially described in the genus *Belomicrus* A. Costa, *B. (Nototis) bicornutus* Arnold, *B. (Nototis) crassus* Arnold, and *B. ferrieri* Kohl, are considered to be members of the separate genera *Nototis* Arnold, 1927, *Belarnoldus* gen. n., and *Belokohlus* gen. n., respectively. The new species *Nototis falcidens* and the previously unknown male of *N. bicornutus* and female of *B. crassus* are described. The lectotype of *B. ferrieri* is designated.

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The fauna of digger wasps of the tribe Oxybelini of the Ethiopian Region is presented by a group of the genera either confined to this territory (*Belomicrinus* Antropov, 2000, *Brimocelus* Arnold, 1927, *Gessus* Antropov, 2001, *Minimicroides* Antropov, 2000, and *Wojus* Antropov, 1999), or partly extending into the Palaearctic Region in the north (*Belomicroides* Kohl, 1899 and *Oxybelomorpha* Brauns, 1897). The only exception is the genus *Oxybelus* Latreille, 1796 distributed almost everywhere, except for the Australian Region, where representatives of the tribe Oxybelini have not been found.

However, in addition to the Ethiopian taxa listed above, three more oxybeline species were described, *Belomicrus ferrieri* Kohl, 1924, *B. (Nototis) bicornutus* Arnold, 1927, and *B. (Nototis) crassus* Arnold, 1936, but their taxonomic position was uncertain until now. Initially all the species were placed in the genus *Belomicrus* A. Costa, 1871 on the basis of a rather formal character, the presence of longitudinal lateral ridges on the metasomal tergites. Recent data show that this character is also typical of several other related genera of the tribe (*Belomicrinus*, *Guichardus* Antropov, 2007, *Oxybelomorpha*, and *Wojus*), which differ from *Belomicrus* in other morphological characters. At the same time, each of these three species significantly differs not only from other species of the genus *Belomicrus*, but also from the other genera of the tribe Oxybelini. The following most important characters should be listed: in the tribe Oxybelini, only *B. bicornutus* possesses the hypertrophied teeth at the inner margin of the mandible, distinctive sinuous

pronotal collar, clearly postfurcal vein *cu-a* of the fore wing, and long raised pubescence of the body; only *B. crassus* bears a ventral carina on the scape; and only *B. ferrieri* possesses the five-toothed apical margin of the clypeus of the female and also the well-developed median carinae on the scutum and scutellum. Other distinctions from species of the genus *Belomicrus* are listed below.

Another important, in my opinion, fact is the presence of a wide disjunction between the range of the genus *Belomicrus*, distributed in the Holarctic Region, and those of these three species known only in the southernmost part of the Ethiopian Region.

As a result, after detailed examination of the material available I have concluded that these South African species should be regarded as representatives of separate relict genera, sister groups of the genus *Belomicrus* (s. str.)

The study is based on examination of the material from collections of the following museums: Albany Museum Collection, Grahamstown, South Africa [AMC]; Natural History Museum, London, UK [BMNH]; California Academy of Sciences, San Francisco, USA [CAS]; Landesmuseum, Biologiezentrum, Linz, Österreich [LM]; National Collection of Insects, Pretoria, South Africa [NCI]; Naturhistorisches Museum Wien, Österreich [NHMW]; South African Museum, Cape Town [SAM]; Transvaal Museum, Pretoria, South Africa [TM]; United States National Museum, Washington, D.C., USA [USNM].

*Nototis* Arnold, 1927, stat. n.

Type species *Belomicrus (Nototis) bicornutus* Arnold, 1927, by monotypy.

*Belomicrus (Nototis)* Arnold, 1927 : 64; 1930 : 14; 1936 : 32;—Pate, 1937 : 43; 1938 : 375.

*Belomicrus*: Pate, 1940a : 12;—Pate, 1940b : 221, 243;—Bohart and Menke, 1976 : 46.

**Diagnosis.** Head distinctly wider than long in front view; inner orbits of eyes converging in middle part and slightly diverging in upper and lower parts; vertex without lateral tubercles or spines; temple regularly convex; occipital carina not closed; median lobe of clypeus strongly depressed in middle, bounded at sides by oblique ridges; mandible long, with large basal tooth at inner margin, without developed ventral lobe on outer side; palpal formula 6–4; scape of female without carina; flagellar segments longer than wide; psammophores on temple and mandible developed in female, very sparser in male.

Pronotal collar short, sinuous, with transverse ridges between dorsal part and rounded pronotal lobe; scutum without median carina; scutellum with wide and superficial median depression, without longitudinal carina and posterolateral lobes; postscutellum without longitudinal or transverse carinae, with rounded squamae depressed on upper side; mesopleuron with fine episternal sulcus and poorly developed hypersternaulus; acetabular carina, omaulus, sternaulus, verticaulus, and precoxal tooth absent; dorsal ridge of metapleuron not widened; fore coxa of male unmodified; fore femur of female without outer ridge; tarsi long and slender, 1st segment of middle tarsus more than twice as long as half of middle tibia; psammophores on fore coxa and femur developed in both sexes; digging rake on fore tarsus well developed in female, poorly developed in male.

Median vein of fore wing with strong break; pterostigma slightly longer than wide; marginal cell pointed or narrowly rounded at apex; additional cell absent; *cu-a* of fore wing postfurcal; hind wing with entire venation and developed jugal lobe.

Propodeum with slender mucro roundly pointed at apex, entire lateral carinae, and without separated dorsal area.

Metasomal tergites strongly flattened, tergite I with median depression at base, without dorsal pit; pygidial plate of female very wide, almost not bounded by

ridges; apical metasomal sternite of female unmodified; metasomal tergites II–III of male with basolateral sensory areas.

Pubescence of head, mesosoma, and metasoma sparse, raised, very long.

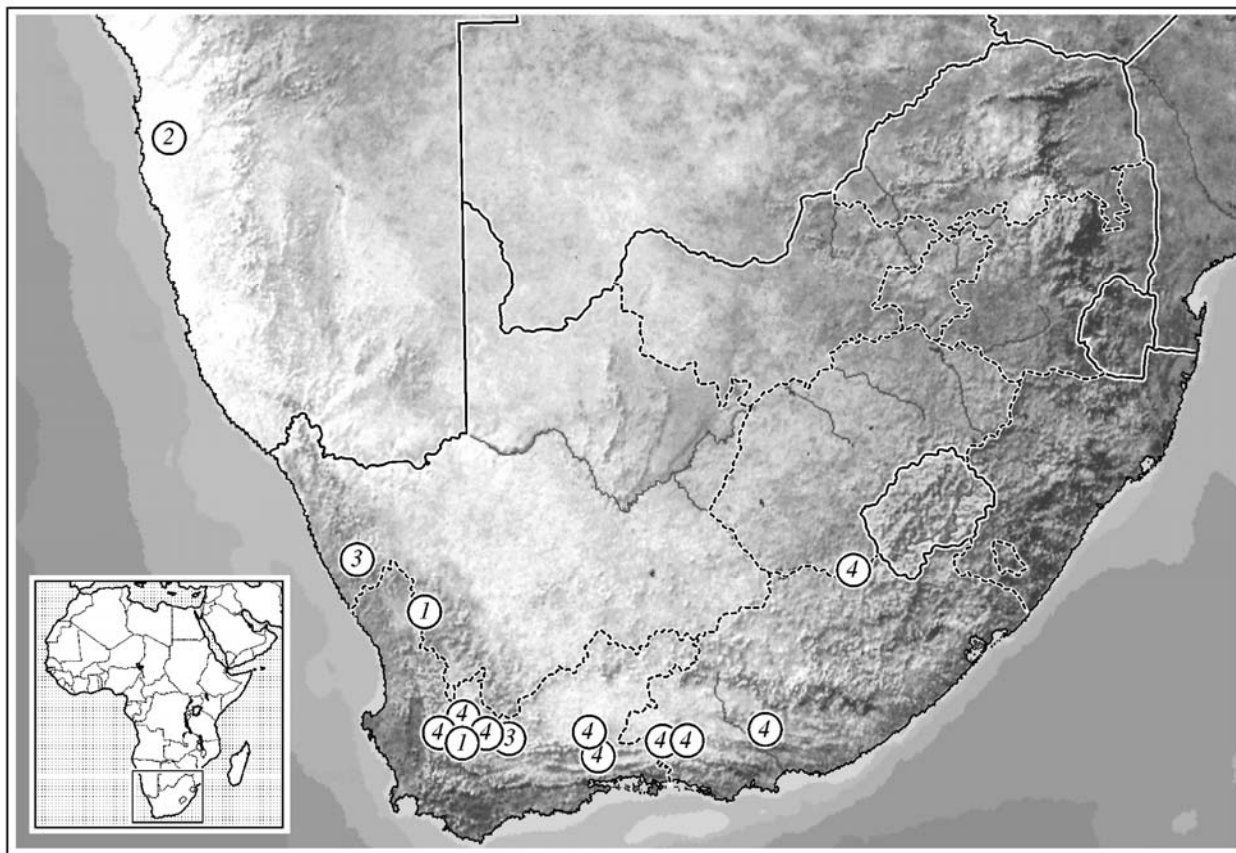
**Differential diagnosis.** The genus *Nototis* Arnold, 1927 differs from the all known genera of Oxybelini first of all in the elongate mandible bearing no separated ventral lobe on the outer side, but a large basal tooth at the inner margin, in the sinuous pronotal collar, postfurcal vein *cu-a* of the fore wing, and in the very long, sparse pubescence of the body. In addition, *Nototis* differs from the all oxybeline genera with the lateral ridges on the metasomal tergites in the presence of the basolateral sensory areas on tergites II–III of the male. Among members of the tribe, such areas are observed only in the genus *Belomicroides*, representatives of which possess no lateral ridges on the metasomal tergites.

**Notes.** Describing the subgenus *Nototis*, Arnold (1927) listed the following differential characters of the subgenus: large sharp tooth at inner margin of mandible, widened middle part of ventral margin of mandible, long antennal flagellum with elongate segments, irregular and rather sparse punctation against shining background, large oval squamae of postscutellum, and very flat metasoma. However, as it will be indicated below, the middle part of the ventral margin of the mandible widens weakly in the male of *N. bicornutus* and does not widen in the female of *N. falcidens* sp. n. At the same time, Arnold attached no significance to such essential characters as the postfurcal position of the vein *cu-a* of the fore wing and to the raised, sparse, but very long pubescence of the head and mesosoma.

In conclusion, *B. crassus*, described later in the same subgenus, does not possess most of the characters listed, except for the elongate flagellar segments, and I cannot agree to the placement of this species in *Nototis*, especially since Arnold has adduced no arguments.

**Distribution.** South Africa (Cape Province, Namibia) (Fig. 1, 1, 2).

**Etymology.** According to the first case of usage, the genus name, originating from the Greece νοτος (south), should be considered a noun of masculine gender.



**Fig. 1.** Distribution of species of *Nototis*, *Belomicrotus* gen. n., and *Belomicrotus* gen. n.: (1) *N. bicornutus* (Arnold), (2) *N. falcidens* sp. n., (3) *B. crassus* (Arnold), (4) *B. ferrieri* (Kohl).

***Nototis bicornutus* (Arnold, 1927)**

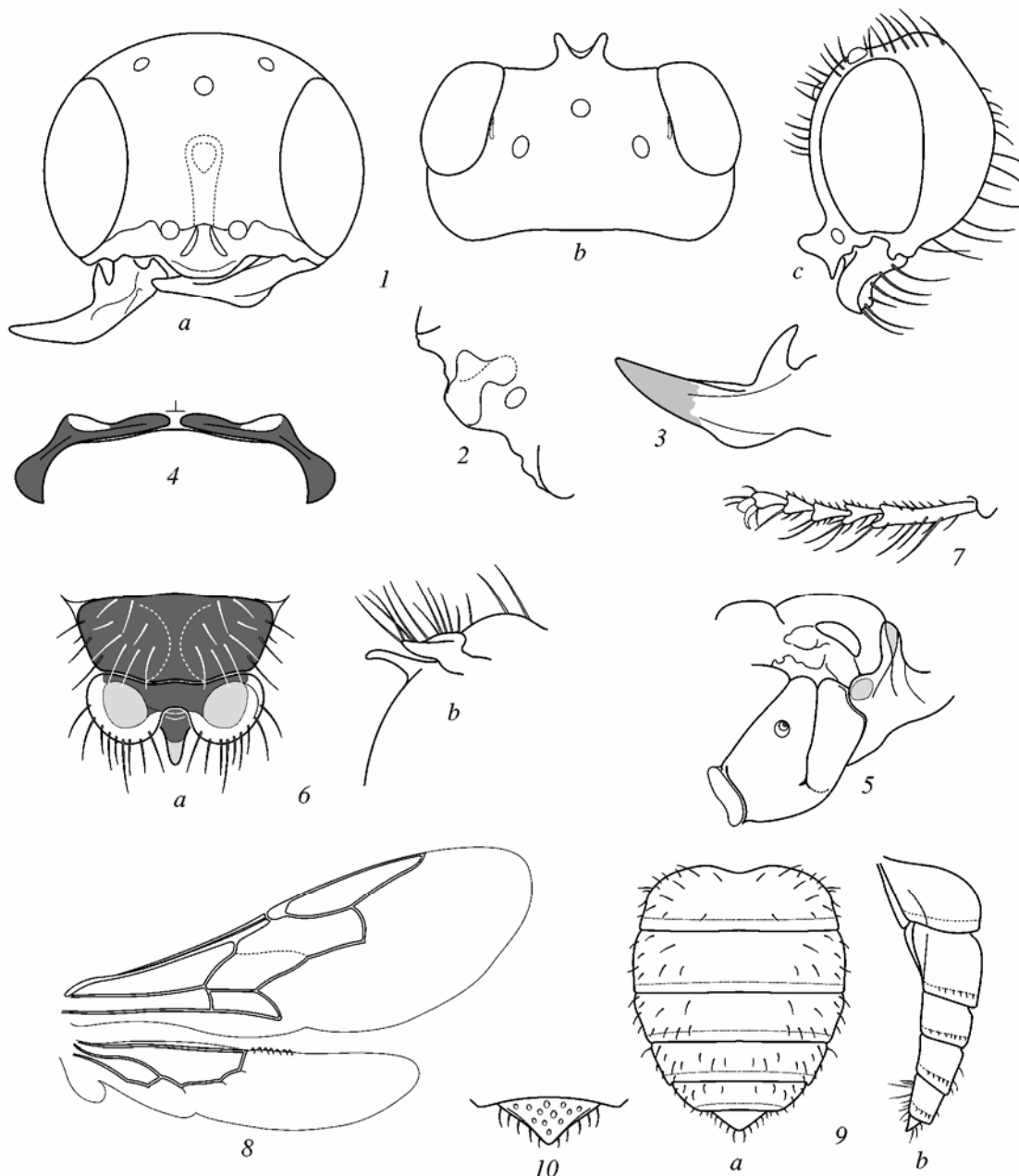
*Belomicrotus* (*Nototis*) *bicornutus* Arnold, 1927 : 64, ♀. South Africa, Cape Province [BMNH]. The holotype has been examined.—Pate, 1937 : 43; 1938 : 375.

*Belomicrotus bicornutus*: Pate, 1940b : 243;—Bohart and Menke, 1976 : 46, 363.

**Material.** Holotype: ♀, "South Africa. R.E. Turner Brit. Mus., 1924–518," "Cape Province, Little Karroo, 38 m. E of Ceres, 17–25.XI.1924," "TYPE ♀, *Belomicrotus* (sg. *Nototis*) *bicornutus*, G. Arnold," "249," "B.M. TYPE HYM. 21.1.150" [BMNH]. Other material: 1 ♀: "R.S.A.: N. Cape, 50 km W Loriesfontein, 14.X.1999 (Marek Halada)" [LM].

**Description. Female.** Head rounded in front view, wider than long (Fig. 2, 1a). Inner orbits of eyes approximate in middle of frons, diverging in upper and lower parts. Lower part of frons with median depression between clypeus and median pit, diameter of pit nearly twice diameter of median ocellus; upper part of frons convex. Vertex regularly convex, without lateral

angles or spines; orbital foveae poorly outlined, fine, adjoining eye orbit, matt. Median lobe of clypeus (Fig. 2, 1a, 1c, 2) convex at base, depressed on rest of surface, bounded at sides by two oblique flat triangular prominences with rounded apices; apical edging straight in front view, without distinct lateral angles. Antenna slender, all flagellar segments longer than wide. Mandible (Fig. 2, 3) with large basal tooth at inner margin, not widened at apex, with flat obtuse-angled widening in middle of ventral margin, without separated basal lobe. Pronotum before collar without median part bounded by lateral carinae; pronotal collar with distinct median depression, sinuous, narrow along entire length, without transverse ridges (Fig. 2, 4). Scutum wider than long, convex, slightly higher than maximum height of pronotal collar (Fig. 2, 5); admedian lines in form of short grooves; parapsidal lines absent; adlateral lines in form of short fine grooves. Scutellum (Fig. 2, 6a, 6b) wider than long, with wide median depression, without developed posterolateral lobes. Postscutellum with smooth, rounded, medially depressed squamae. Meso-



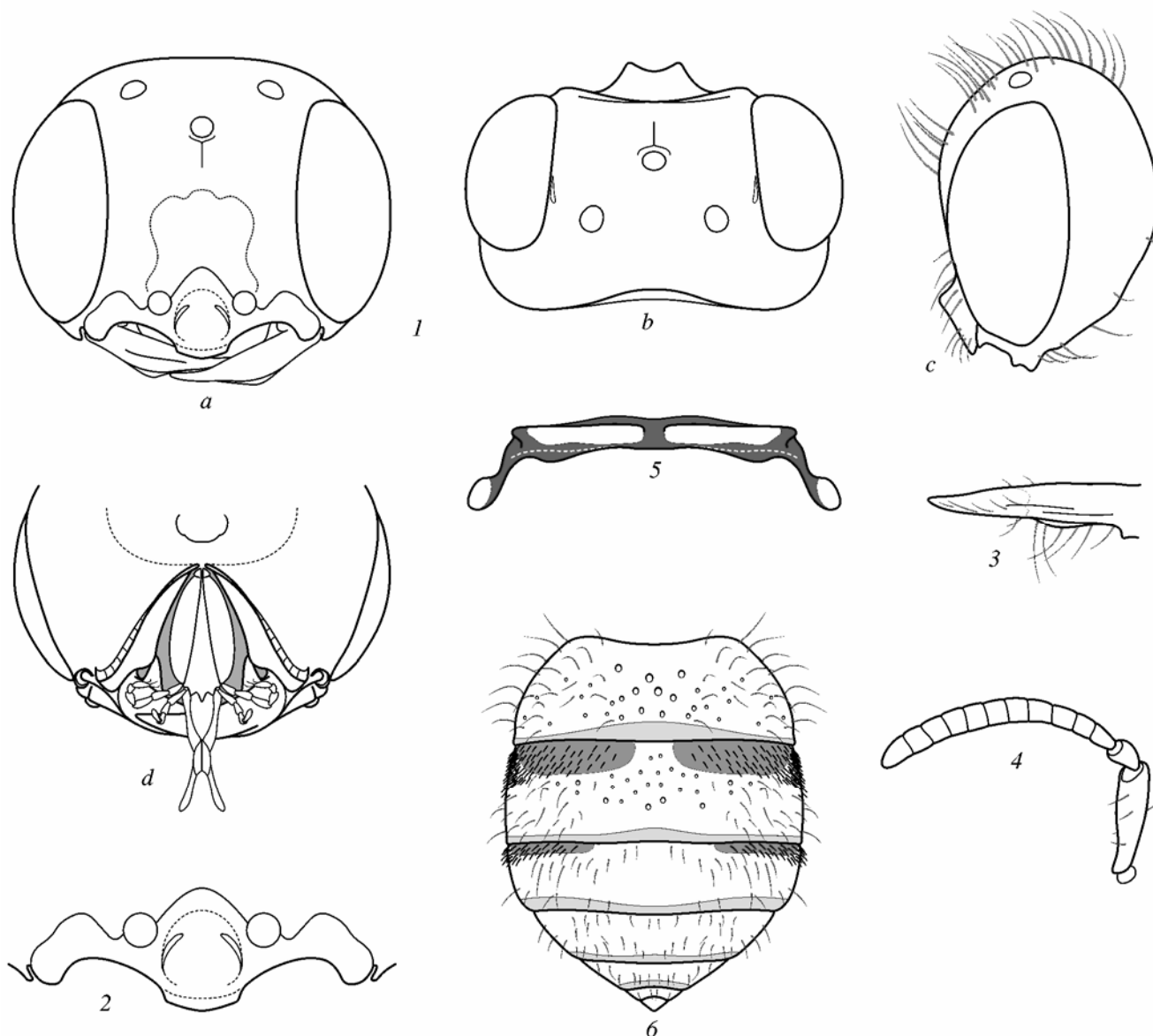
**Fig. 2.** *Nototis bicornutus*, holotype, female: (1) head [(a) in front, (b) dorsal, (c) lateral view]; (2) clypeus, anterolateral view; (3) mandible, front view; (4) pronotal collar, dorsal view; (5) pro- and mesothorax, lateral view; (6) scutellum, postscutellum, and mucro of propodeum [(a) dorsal and (b) lateral view]; (7) outer surface of fore tarsus; (8) wings; (9) metasoma [(a) dorsal, (b) lateral view]; (10) metasomal tergite VI, dorsal view.

pleuron with fine episternal sulcus and short trace of hypersternaulus. Metapleuron without widened dorsal ridge.

Propodeum short, rounded, with fine lateral carinae, without separated dorsal area; mucro of propodeum slender, pointed at apex, without apical emargination. Metasoma (Fig. 2, 9a, 9b) strongly flattened dorsoventrally; tergite I with median depression at anterior end,

without apical pit; tergite VI (Fig. 2, 10) with very wide ( $\geq 90^\circ$ ) pygidial plate bounded by weak ridges near apex; metasomal sternites flat.

Sculpture of body formed by distinct punctures of various size against shining background: at sides of upper part of frons distance between punctures ( $d$ ) equal to 1–3 diameters of punctures ( $\emptyset$ ); on vertex  $d = 1-2\emptyset$ ; on temple punctures very sparse; scutum



**Fig. 3.** *Nototis bicornutus*, male: (1) head [(a) front, (b) dorsal, (c) lateral view; (d) lower part, posterior view]; (2) clypeus, front view; (3) mandible, view on outer side; (4) antenna, front view; (5) pronotal collar, dorsal view; (6) metasoma, dorsal view.

and scutellum with sparse punctures developed mainly in middle of posterior part ( $d = 2-6\emptyset$ ); mesopleuron with coarse punctures ( $d = 2-4\emptyset$ ) in lower part and with fine punctures in upper part ( $d \geq 6\emptyset$ ); metasomal tergite I with dense punctures at sides and along curve ( $d = 1-2\emptyset$ ) and with sparse punctures at base and in middle of posterior part ( $d = 3-5\emptyset$ ); metasomal tergites II–V with rather irregularly arranged punctures ( $d = 2-4\emptyset$ ) becoming smaller from tergite II to tergite V; metasomal tergite VI with dense ( $d = 1-2\emptyset$ ) punctures against densely shagreened background. Surface of propodeum with dense minute alveolation, matt.

Pubescence of body rather sparse, very long, mostly raised, reddish rufous (length of hairs no more than 1.5–2.0 times diameter of anterior ocellus), metasomal tergites also with sparse semi-recumbent hairs (their length about equal to diameter of anterior ocellus); all femora with rows of long setae becoming shorter from fore to hind femur. Psammophore on temple formed by several setae; that on mandible sparse, length of setae slightly exceeding basal width of mandible (Fig. 2, 1c). Digging rake of fore tarsus (Fig. 2, 7) formed by fine setae of various length; maximum length of setae on 1st segment 1.5–2.0 times width of segment.

Body mainly black; apical edging of metasomal tergite V whitish; lateral spots of pronotal collar, outer margins of squamae of postscutellum, apex of mucro of propodeum, and spot at base of hind tibia whitish yellow; fore and middle tibiae yellow on outer surfaces; mandible in middle, tarsi, and pronotal lobes reddish rufous; apex of mandible, fore and middle tibiae on inner surfaces, hind tibia mainly (except for black inner spot in middle), and pygidial plate reddish brown.

Body length 4.2 mm.

**Male** (described for the first time) mainly similar to female in sculpture and pubescence of body and characters not associated with sex. Head moderately wider than long in front view; inner orbits of eyes weakly approximate in middle of frons (Fig. 3, 1a); lower part of frons behind appressed scape distinctly depressed; upper part of frons moderately convex, with short deep groove before median ocellus; median lobe of clypeus bounded at sides by less strong carinae curved outwards and not forming high prominences (Fig. 3, 1a, 2); mandible with less strong both inner tooth (Fig. 3, 1a, 1d) and ventral widening, but with rectangular prominence at base (Fig. 3, 3), yellow in middle; flagellar segments (except for apical one) shorter, slightly longer than wide at base and nearly as long as wide at apex of flagellum (Fig. 3, 4). Long transverse spots of pronotal collar and pronotal lobes whitish yellow (Fig. 3, 5); digging rake weak, formed on 1st segment of fore tarsus by no more than two fine raised setae, length of which slightly exceeding width of segment; *cu-a* weakly postfurcal. Sides of bases of metasomal tergites II and III with shallowly depressed, transverse, minutely alveolate sensory areas (wide and long on tergite II and narrower and short on tergite III) matt against shining background and bounded on outer side by spots of dense short semi-recumbent hairs (Fig. 3, 6); tergite VII weakly convex, ovally rounded at apex, with short lateral ridges.

Body length 3.0 mm.

**Differential diagnosis.** The female of *N. bicornutus* differs from that of *N. falcidens* sp. n. described below in the following characters: median lobe of clypeus with more strongly developed lateral ridges, without lateral angles of apical margin; mandible shorter and wider, sharp at apex and widened in middle of ventral margin; less high pronotal collar with middle part not separated from lateral parts by longitudinal carinae; pygidial plate of metasoma wider; and lateral parts of

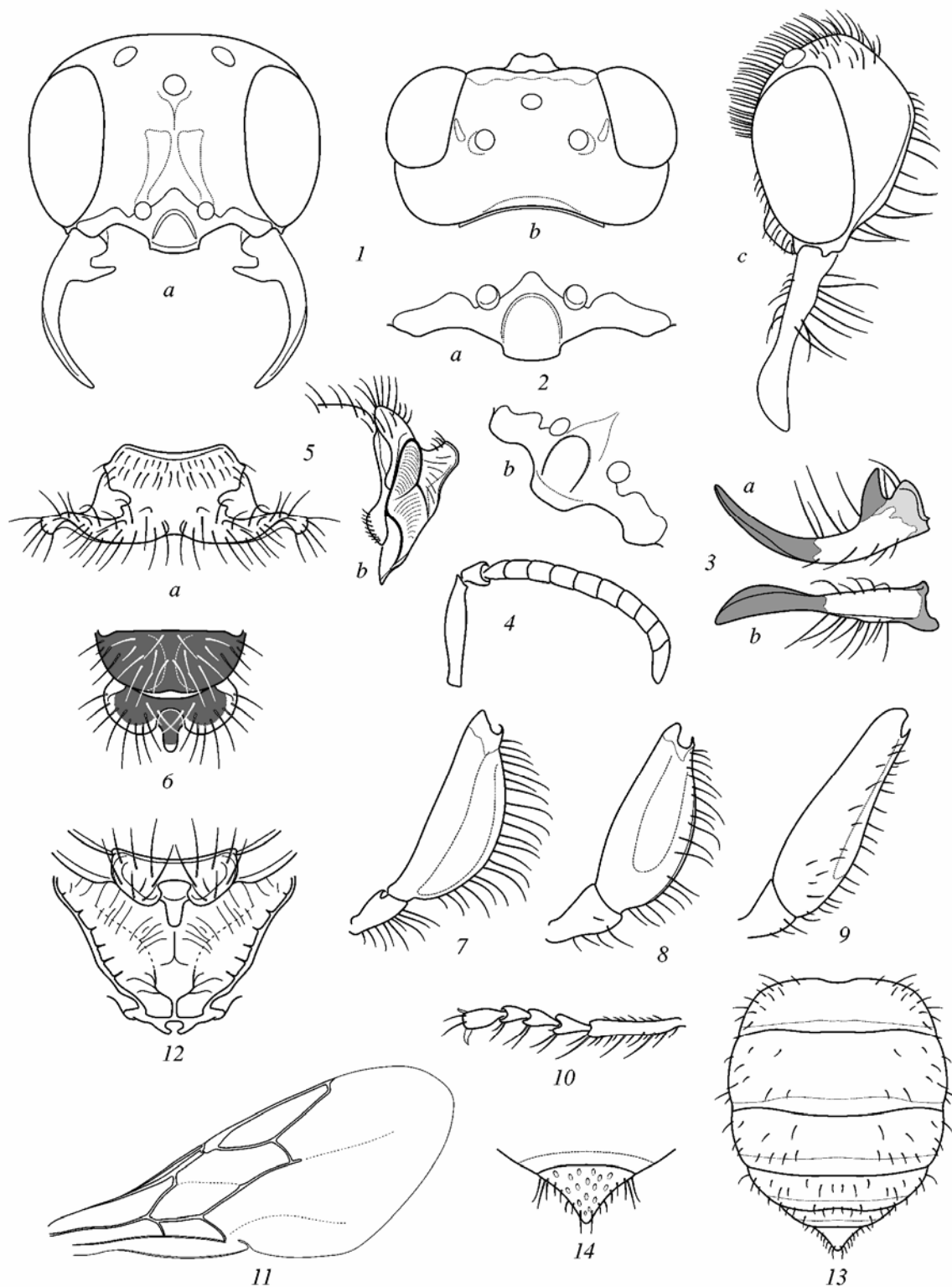
pronotal collar and apical band of metasomal tergite V of female with pale spots.

*Nototis falcidens* Antropov, sp. n.

**Material.** Holotype: ♀: "SOUTH WEST AFRICA, Namib/Naukluft Park, Kuiseb R nr Gobabeb, 23.34S 15.03E, 18.II–20.III.1983 (Nat. Coll. Kuiseb Survey)," "Malaise Trap," "NATIONAL COLL. OF INSECTS, Pretoria, S.Afr." [NCI]. Paratype: ♀, "SOUTH WEST AFRICA, Namib/Naukluft Park, Kuiseb R nr Gobabeb, 23.34S 15.03E, 18.II–20.III.1983 (Nat. Coll. Kuiseb Survey)," "Malaise Trap," "NATIONAL COLL. OF INSECTS, Pretoria, S. Afr." [NCI].

**Description. Female.** Head rounded in front view, distinctly wider than long (Fig. 4, 1a). Inner orbits of eyes diverging in upper and lower parts, converging at level of middle of frons. Lower part of frons with convex median carina in middle and with vertical depressions at sides of median carina behind appressed scape, flat near inner orbits of eyes; upper part of frons weakly convex, nearly flat, with short median groove below median ocellus. Vertex regularly convex, without lateral tubercles or spines, with narrow deep depressions at sides of lateral ocelli; orbital foveae small, oval, pointed in front view, depressed, matt, impunctate (Fig. 4, 1b). Temple moderately convex. Occiput in upper part shallowly depressed above fine occipital carina not reaching hypostomal carina. Median lobe of clypeus (Fig. 4, 2a, 2b) convex in upper part, ovally depressed in lower part, bounded on upper and lateral sides by projecting carinae; apical margin bounded by distinct lateral angles and separated by distinct bend. Mandible (Fig. 4, 1c, 3a, 3b) long, crescent, sharp and distinctly widened at apex, narrowed in middle, with large sharp triangular basal tooth at inner margin (length of tooth not exceeding basal width of mandible), without median widening and separated basal lobe at ventral margin. Scape slender, oval in cross-section, without longitudinal ridge; all flagellar segments longer than wide (Fig. 4, 4).

Pronotum (Fig. 4, 5a, b) rather short; pronotal collar with distinct median depression, without distinct lateral angles, sides with sharp vertical ridges reaching small pronotal lobes; before carina, flat rectangular plate separated from sides of pronotum by curved ridges bounding deep oval lateral depressions. Scutum moderately convex, slightly lower than level of lateral prominences of pronotal collar; admedian lines nearly absent; parapsidal lines absent; adlateral lines in form



**Fig. 4.** *Nototis falcidens* sp. n., female: (1) head [(a) front, (b) dorsal, (c) lateral view]; (2) clypeus [(a) front and (b) anterolateral view]; (3) mandible [(a) front view, (b) view on outer side]; (4) antenna, front view; (5) pronotal collar [(a) dorsal (b) lateral view]; (6) scutellum, postsutellum, and mucro of propodeum, dorsal view; (7) fore trochanter and femur, inner surfaces; (8) middle trochanter and femur, front view; (9) hind trochanter and femur, view on outer side; (10) fore tarsus, view on outer side; (11) fore wing; (12) propodeum, posterior view; (13) metasoma, dorsal view; (14) metasomal tergite VI, dorsal view.

of short fine grooves; groove between scutum and scutellum very fine, ecarinate. Scutellum (Fig. 4, 6) wider than long, with moderately convex sides, with shallow median depression widened in posterior part; posterolateral lobes not developed; postscutellum ovals convex in middle, its sides with smooth rounded transparent squamae slightly depressed on upper side. Mesopleuron distinctly convex; episternal sulcus distinct and fine; hypersternaulus distinct in anterior part, smoothened in posterior part; acetabular carina, omaulus, sternaulus, and verticulus absent; precoxal tooth not developed. Metapleuron narrow, weakly convex in upper part, without widened dorsal ridge. Legs slender, tarsal segments longer than wide, apical segment no less than twice as long as preceding one; hind tibia weakly sinuous on outer surface; fore femur with preapical depression on anterior surface, without longitudinal ventral carina; hind femur weakly widened at base, narrowed toward apex, without apical widening and separated lobe (Fig. 4, 9). Fore wing (Fig. 4, 11) with marginal cell narrowly ovals obtused at apex; additional cell not developed; pterostigma nearly as long as wide; median vein distinctly broken outwards; hind wing with 7 hamuli of outer row.

Propodeum (Fig. 4, 12) with entire fine lateral carinae not widened in upper angles; dorsal area not separated; posterior side with fine median carina at apex and with wide, ovals cordate median pit bounded by fine carinae mainly from below; mucro of propodeum slender, shallowly depressed medially on upper side, roundly pointed at apex, without apical emargination.

Metasoma (Fig. 4, 13) distinctly flattened dorsoventrally; tergite I with short median depression at base and without apical pit; middle tergites shallowly depressed at bases; tergites I–V with distinct transparent apical bands; tergite VI weakly convex, with nearly rectangular apex, lateral carinae nearly absent (Fig. 4, 14); sternites flat, apical one weakly convex.

Sculpture of body mainly formed by more or less distinct punctures separated by distinct interspaces. Sides of lower part of frons with dense and very fine punctures ( $d = 1\varnothing$ ); upper part of frons with much larger punctures ( $d = 1-2\varnothing$ , reaching  $3\varnothing$  at sides); vertex with similar punctures in middle and with smaller and sparser punctures at sides and in posterior part; occiput without punctures and striae; temple without striae and with very sparse punctures ( $d = 1-8\varnothing$ ), separated from posterior side of head by row of dis-

tinct punctures at bases of raised setae of psammophore; depressed part of median lobe of clypeus and its apical margin smooth, without sculpture. Pronotal collar with irregular punctures at bases of raised hairs; scutum with very irregular fine punctures ( $d = 5-8\varnothing$ ); scutum with several punctures at sides of median depression; postscutellum without punctation; mesopleuron distinctly punctate in lower part ( $d = 2-3\varnothing$ ), with scattered punctures before episternal sulcus, nearly impunctate behind it; lower part of metapleuron finely and densely rugose, upper part smooth. Propodeum semi-matt, its posterior and upper surfaces with dense fine radial costae most distinct near lateral carinae and in anterior angles; sides of propodeum with fine oblique wrinkles. Metasomal tergites with very weak punctation: tergite I in anterior part with fine punctures at bases of raised hairs; tergites II–V with vague punctures mainly situated at border with transparent apical bands; tergite VI with more regular and coarser punctures ( $d = 1-2\varnothing$ ); metasomal sternites impunctate, with inconspicuous minute striation.

Pubescence of body sparse, nearly concealing sculpture of surface only on lateral lobes of clypeus and at sides of lower part of frons. Hairs on frons, vertex, pronotum, scutum, scutellum, and postscutellum raised, fine, silvery, and rather sparse, not concealing sculpture of body; length of hairs on frons no less than 1.5 times diameter of anterior ocellus; length of those on vertex, pronotum, scutum, scutellum, and postscutellum twice diameter of anterior ocellus (Fig. 4, 1c; 5a, 5b; 6); mesopleuron with shorter semi-recumbent hairs on anterior part, mainly glabrous; propodeum glabrous; metasomal tergite I with raised hairs with recurved apices, their length 1.5 times diameter of anterior ocellus; other tergites with very sparse, semi-recumbent hairs approximately equal to diameter of anterior ocellus and also with recumbent minute pubescence not concealing sculpture of surface; tergite VI with sparse short semi-recumbent hairs; sternites mainly glabrous, except for sparse raised preapical setae. Psammophore of temple formed by fine setae, length of which exceeding basal width of mandible; maximum length of setae of psammophore on mandible twice basal width of mandible (Fig. 4, 1c). Fore trochanter with sparse long setae curved forwards, length of setae exceeding width of trochanter. Fore (Fig. 4, 7) and middle (Fig. 4, 8) femora with rows of regularly arranged setae along ventral margin: length of setae on fore femur exceed-



ing width of femur, length of those on middle femur subequal to half width of femur; hind femur (Fig. 4, 9) with less regularly arranged setae, length of which subequal to width of 1st segment of hind tarsus. Digging rake of fore tarsus (Fig. 4, 10) consisting of fine setae: 1st segment with 4 long setae, length of which 2.5 times width of segment; pair of outer apical setae on 2nd–4th segments longer than segments. Hind tibia with long fine spines on outer side, length of spines equal to half of maximum width of tibia.

Body mainly black. Outer margins of transparent squamae of postscutellum and apical part of mucro of propodeum yellowish white; transparent apical edgings of metasomal tergites II–V whitish; basal half of mandible yellowish rufous; fore tibia entirely, and middle and hind tibiae in basal halves yellowish rufous; tarsi mainly rufous; middle and hind tibiae rufescent brown in apical halves; apical half and inner tooth of mandible reddish brown; tegulae and costal lamellae brownish; antennae dark brownish.

Body length 3.9 mm.

**Male** unknown.

**Differential diagnosis.** The female of *N. falcidens* sp. n. differs from that of *N. bicornutus* in the following characters: lateral ridges of median lobe of clypeus less strong, forming no flat triangular prominences; apical edging of this lobe narrower, with developed lateral angles; mandible longer and narrower, widened at apex and narrowed in middle; pronotal collar higher; median part of pronotum separated from lateral parts by longitudinal carinae; pygidial plate of metasoma narrower; pronotal collar and metasomal tergite without pale spots.

**Etymology.** The species name originates from the Latin “falci” (crescent-like) and “dens” (tooth), indicates the crescent shape of the mandible.

***Belarnoldus* Antropov gen. n.**

Type species *Belomicrus (Nototis) crassus* Arnold, 1936.

**Diagnosis.** Head rounded in front view; lower part of frons behind scape strongly depressed; inner orbits of eyes diverging in upper and lower parts, slightly approximate in middle; vertex without lateral tubercles or spines; orbital foveae flat; temple regularly convex; occipital carina not closed; median lobe of clypeus with lateral angles and separated apical edging; mandible with short obtuse-angled tooth in middle of inner

margin, with strong ventral lobe rounded at apex and separated by longitudinal groove; palpal formula 6–4; scape compressed and bearing ventral carina in female (Fig. 5, 4) and oval, ecarinate in male; flagellar segments unmodified, longer than wide; psammophores on temple and mandible very sparse in female, absent in male.

Pronotal collar without lateral angles, collar and pronotal lobes rounded, without carinae; scutum with fine, but distinct median carina; scutellum with distinct posterolateral lobes and deep median depression widened in posterior part; postscutellum without longitudinal or transverse carinae, with wide squamae depressed on upper sides; mesopleuron with episternal sulcus and more or less developed hypersternaulus, without acetabular carina, omaulus, sternaulus, and verticulus; precoxal tooth large, triangular; metapleuron without widened dorsal ridge; fore coxa of male depressed on lower surface; fore femur of female without outer ridge; tarsi slender and long, 1st segment of middle tarsus more than twice as long as half of middle tibia; psammophores on fore coxa and femur weak in female, absent in male; digging rake on fore tarsus developed in female, absent in male.

Pterostigma slightly longer than wide; marginal cell narrowly rounded at apex; additional cell absent; median vein of fore wing with weak break; *cu-a* of fore wing antefurcal; hind wing with developed cells and jugal lobe (Fig. 5, 11).

Propodeum with fine mucro roundly pointed at apex, with entirely developed lateral carinae, without separated dorsal area.

Metasomal tergites moderately convex; tergite I with median depression, without apical pit; tergites II–IV with deep transverse depressions at bases, without sensory areas in male; pygidial plate of female bounded by ridges, flat, very wide ( $= 90^\circ$ ); apical sternite of female unmodified.

Head, mesosoma, propodeum, and metasomal tergites nearly glabrous.

**Differential diagnosis.** *Belarnoldus* gen. n. differs from the all genera of the tribe Oxybelini in the compressed scape of the female, bearing a longitudinal ventral carina. *Belarnoldus* is similar to *Nototis* in the elongate flagellar segments, short pterostigma, elongate tarsal segments, and wide flat pygidial plate, but differs from it in the shape of the median lobe of the clypeus without lateral prominences, absence of a hy-

peritrophied basal tooth at the inner margin of the mandible, presence of a sharply separated lobe at its ventral margin, presence of the median carina of the scutum, and also in the convex metasomal tergites and nearly glabrous body. *Belarnoldus* is similar to *Belokohlus* gen. n. in the presence of the fine, but distinct median carina of the scutum, but differs from it in the absence of the median carina on the scutellum, presence of the sharply separated lobe at the ventral margin of the mandible, in the elongate flagellar segments, absence of omaulus, in the unmodified apex of the hind femur, wide flat pygidial plate, and nearly glabrous body. The genus is similar to *Belomicroides* and *Guichardus* in the depressed fore coxa of the male and scutellum, but differs from the former in the developed squamae of the postscutellum and mucro of the propodeum, presence of lateral ridges on the metasomal tergites, and in the wide flat pygidial plate, from the latter, in the shape of the median lobe of the clypeus without separated plate and lateral emarginations, presence of the sharply separated lobe at the ventral margin of the mandible, and in the psammophores on the temple and mandible and digging rake on the fore tarsus of the female.

**Distribution.** Cape Province South Africa (Fig. 1, 3).

**Etymology.** The genus name is of masculine gender, consists of a part of the genus name *Belomicrus* and the name of a well-known South African hymenopterologist of the beginning of XX century, George Arnold.

*Belarnoldus crassus* (Arnold, 1936)

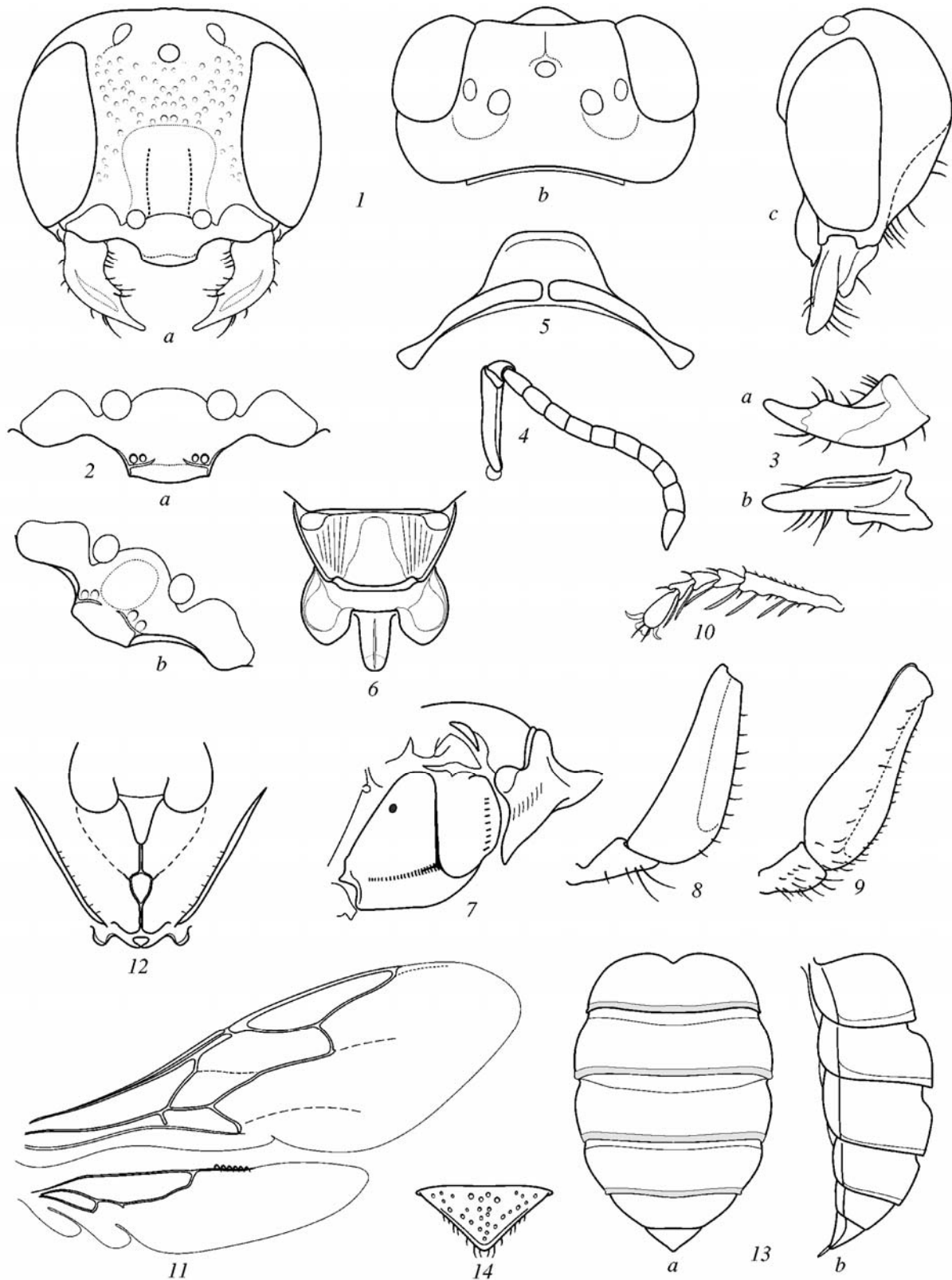
*Belomicrus* (*Nototis*) *crassus* Arnold, 1936 : 32, ♂, South Africa, Cape Province [BMNH]. The holotype has been examined.

*Belomicrus crassus*: Pate, 1940b : 243;—Bohart and Menke, 1976 : 363.

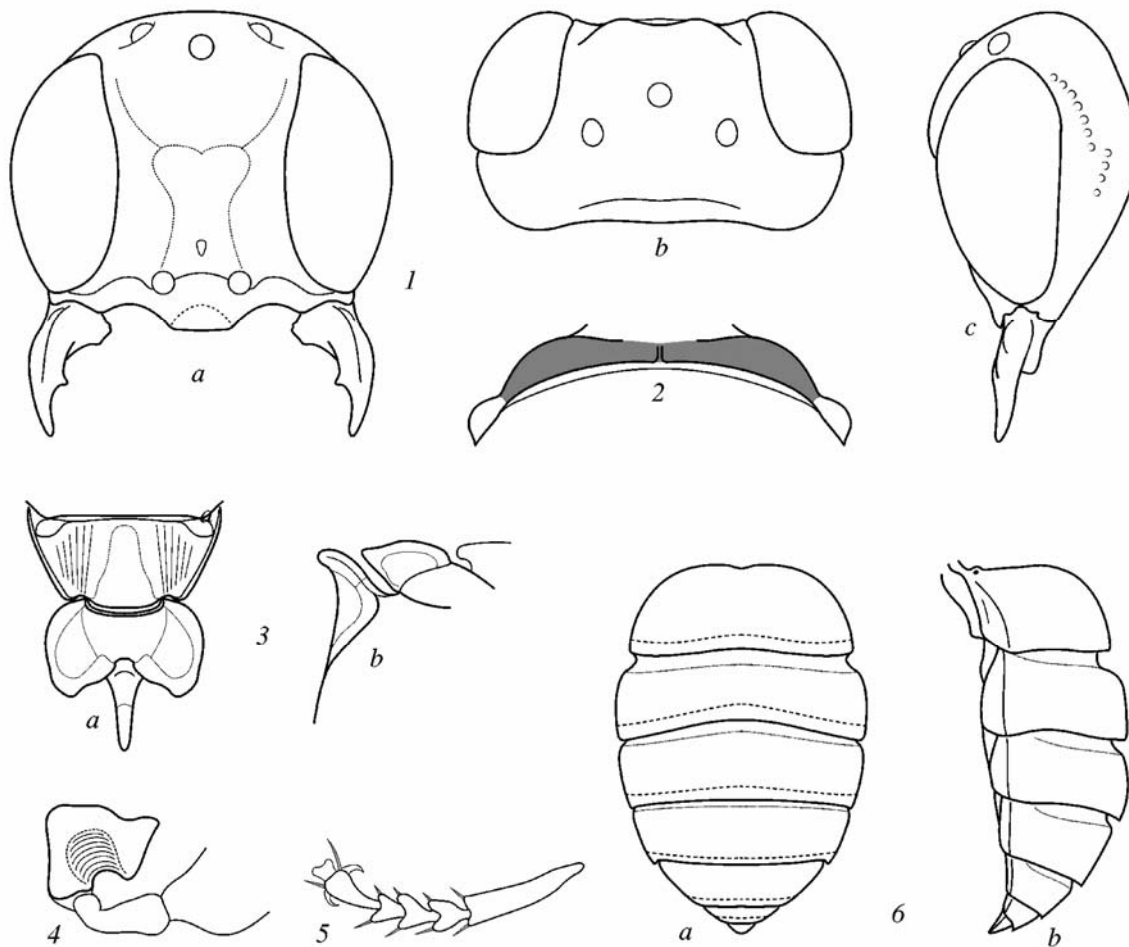
**Material.** Holotype: ♂, "S. Africa. R.E. Turner. Brit. Mus., 1928–522," "Cape Province, Matjesfontein, 7–13.XI.1928," "TYPE ♂, *Belomicrus* (sg. *Nototis*) *crassus*, G. Arnold," "B.M. TYPE HYM. 21.1.151" [BMNH]. Other material: 1 ♀: "SOUTH AFRICA, C.P., Farm Arkoep, 6 km N Kamieskroon, 30.19S 17.56E, 1–2.X.1990 (CD. Eardley)," "NATIONAL COLL. OF INSECTS, Pretoria, S. Afr." [NCI]; 1 ♀: "R.S.A.: N. Cape, 50 km SW Springbok vadi Buffels, 18.X.1999 (M. Halada)" [LM].

**Description. Female** (described for the first time). Head rounded in front view (Fig. 5, 1a), slightly square. Lower part of frons behind appressed scape deeply depressed, with two vertical grooves and fine median pit; upper part of frons above apex of scape distinctly convex, with distinct median groove deepest near median ocellus. Inner orbits of eyes weakly diverging in upper part, slightly more strongly diverging in lower part, moderately approximate in middle; temple regularly rounded. Vertex moderately convex, without lateral tubercles or spines, with strong depressions behind lateral ocelli; orbital foveae small, oval, not edged, flat, shallow, matt, impunctate (Fig. 5, 1b). Occiput distinctly depressed near occipital carina; occipital carina not reaching hypostomal one. Median lobe of clypeus (Fig. 5, 2a, 2b) with upper margin roundly convex in middle; its anterior margin roundly truncate, bounded by obtuse lateral angles; slightly oblique, fine carinae separating flat apical edging running from lateral angles to median line. Mandible (Fig. 5, 3a, 3b) with obtuse-angled tooth at inner margin more closely to apex, thickened on outer side near base, with ventral lobe rounded at apex and separated by deep groove. Scape (Fig. 5, 4) compressed, with slightly rounded carina along entire anterior side; flagellar segments unmodified, length of all exceeding their maximum width.

Pronotum short, with collar slightly lower than level of scutum, with distinct median groove and posterior edging; pronotal collar and pronotal lobes rounded, without distinct angles and ridges (Fig. 5, 5). Scutum regularly convex; admedian lines fine, strongly approximate, reaching middle of scutum, bounding fine, but distinct median costa; parapsidal lines absent; adlateral lines indistinct against background of sculpture. Scutellum wider than long, trapeziform, with slightly rounded posterior margin, with deep median depression distinctly widened in posterior part, and with short, but distinct posterolateral lobes. Postscutellum short in middle, transversely convex, without longitudinal or transverse carina; squamae of postscutellum strongly widened, oval, with slightly angular posterior margins, strongly depressed on upper side; distance between inner margins at bases of squamae subequal to their width (Fig. 5, 6). Mesopleuron regularly convex; episternal sulcus distinct, striate; hypersternaulus distinct in anterior part, not reaching margin of mesopleuron in posterior part; acetabular carina, omaulus, sternaulus, and verticaulus absent; precoxal tooth flat, triangular (Fig. 5, 7).



**Fig. 5.** *Belarnoldus crassus*, female: (1) head [(a) front, (b) dorsal, (c) lateral view]; (2) clypeus [(a) front view, (b) anterolateral view]; (3) mandible [(a) front view, (b) view on outer side]; (4) antenna, front view; (5) pronotal collar, dorsal view; (6) scutellum, postscutellum, and mucro of propodeum, dorsal view; (7) pro- and mesothorax, lateral view; (8) fore trochanter and femur, view on inner surface; (9) hind trochanter and femur, view on outer side; (10) fore tarsus, view on outer side; (11) wings; (12) propodeum, posterior view; (13) metasoma [(a) dorsal, (b) lateral view]; (14) metasomal tergite VI, dorsal view.



**Fig. 6.** *Belarnoldus crassus*, male: (1) head [(a) front, (b) dorsal, (c) lateral view]; (2) pronotal collar, dorsal view; (3) scutellum, postscutellum, and mucro of propodeum [(a) dorsal, (b) lateral view]; (4) fore coxa and trochanters, ventral view; (5) fore tarsus, view on outer side; (6) metasoma [(a) dorsal, (b) lateral view].

Metapleuron unmodified, without widened dorsal ridge. Fore femur flattened on inner surface, rounded at base, without sharp outer costa (Fig. 5, 8). Hind femur (Fig. 5, 9) widened at base, narrowed toward apex, without apical widening, with fine dorsal carina projecting beyond middle of femur; apical segment of all tarsi longer than wide, about twice as long as penultimate one. Hind wing with 6 hamuli.

Propodeum with developed lateral carinae; posterior part with small median pit bounded by fine ridges at all sides; dorsal area not bounded (Fig. 5, 12); mucro of propodeum triangular in lateral view, narrow on upper side, with deep median depression, not widened at apex and without apical emargination.

All metasomal tergites with developed lateral ridges; tergite I with deep median depression from base to middle, without dorsal pit; tergites II–IV distinctly convex, each with deep transverse depression at

base (Fig. 5, 13a, 13b); tergite VI flat, with wide pygidial plate bounded at sides by fine ridges (Fig. 5, 14). Sternites flat, unmodified.

Sculpture of body mainly formed by very distinct punctation against shining background. Lower part of frons smooth in middle, with fine and dense punctures at sides ( $d = \emptyset$ ); frons in upper part and vertex with larger (diameter of punctures subequal to  $1/4$ – $1/3$  of diameter of median ocellus) and sparse punctures:  $d = 1$ – $2\emptyset$  on frons,  $d \sim \emptyset$  on vertex; occiput with sparse punctures among dense striae; temple with vertically elongate punctures in upper part ( $d = \emptyset$ ) and with vertically elongate, sparse punctures in lower part ( $d = 1$ – $4\emptyset$ ) among vertical wrinkles. Pronotum with fine regular striae. Punctures of scutum dense and regular, finer along anterior margin and in anterior angles, but coarser, elongate in middle, merging into longitudinal wrinkles from middle to posterior margin.

Scutellum with punctures among striae at sides of smooth median depression. Postscutellum in middle and squamae smooth. Punctuation of mesopleuron as dense as that of scutum, but finer; lower side of mesothorax with sparse, disappearing punctures; mesopleuron with regular punctuation below hypersternaulus ( $d = \emptyset$  or slightly  $d \leq \emptyset$ ); above hypersternaulus, punctures larger and denser (especially in posterior part) and elongate to form striae. Metapleuron finely striate. Propodeum matt, with regular dense minute alveolation over entire surface, with fine striae only at sides near lateral carinae. Metasomal tergites I–IV densely and regularly punctate;  $d \leq \emptyset$  on convex parts, punctures becoming smaller from base toward apex of metasoma; depressions at bases of tergites II–IV with similarly dense, but finer punctuation; apical edgings of tergites I–III with smoothened minute punctures and minute striae; tergite V with more strongly smoothened sparse punctuation, mainly with minute striation; tergite VI with scattered punctures in middle ( $d \geq 3\emptyset$ ) and denser punctures along lateral carinae. Metasomal sternites, except for apical one, smooth, impunctate, with poorly outlined minute wrinkles.

Pubescence of body very scanty, disappearing, visible mainly on legs and on metasomal sternites, formed there by sparse setae. Psammophore of temple formed by very sparse and fine setae, length of which not exceeding basal width of mandible (Fig. 5, 1c); ventral margin of mandible with scattered setae as long as, or slightly shorter than setae of psammophore (Fig. 5, 3b); fore trochanter with sparse straight setae, length of which not exceeding width of trochanter; fore femur (Fig. 5, 8) with sparse row of fine and straight setae along outer margin, length of setae slightly exceeding width of 1st segment of fore tarsus. Digging rake of fore tarsus (Fig. 5, 10) formed by fine flattened setae; 1st segment with 4 setae, length of which twice width of segment.

Body mainly black. Apical part of median lobe of clypeus and mandible mainly reddish brown; apical edging of clypeus, ventral lobes of mandible, medially translucent squamae of postscutellum, and all tarsi brownish; narrow apical edgings of metasomal tergites I–III dark brownish.

Body length 3.8 mm.

**Male** similar to female in main characters not associated with sex, differing as follows: tooth at inner margin of mandible more slender (Fig. 6, 1a), orbital foveae absent (Fig. 6, 1b), fore coxa depressed ven-

trally (Fig. 6, 4), mucro of propodeum relatively longer (Fig. 6, 3), temple and mandible without developed setae of psammophore (Fig. 6, 1c), fore tarsus without digging rake (Fig. 6, 5), pronotal lobes (Fig. 6, 2), margins of squamae, and apex of mucro of propodeum (Fig. 6, 3a, 3b) white, and body slightly smaller.

Body length 2.7 mm.

***Belokohlus*** Antropov gen. n.

Type species *Belomicrus ferrieri* Kohl, 1924.

**Diagnosis.** Head slightly wider than long in front view; lower part of frons behind scape moderately depressed; inner orbits of eyes converging in lower part; vertex regularly convex, without tubercles or spines; orbital foveae slit-like; temple regularly convex; occipital carina not closed; apical margin of median lobe of clypeus with 5 teeth in female (Fig. 7, 1a) and 3 teeth in male (Fig. 8, 1a) and with separated depressed areas between them; mandible with small notch and tooth on inner surface, without ventral lobe, with weak ventral widening at base, with apical widening in female, without apical widening in male; palpal formula 6–4; scape oval, without carina; flagellar segments as long as wide in female and wider than long in male; psammophores on temple and mandible strongly developed in female, weak in male.

Pronotum in anterior part with median area bounded by sharp carinae; pronotal collar without transverse ridges, with weak lateral angles in female, without angles in male; scutum and scutellum with median carina distinct in female and less distinct in male; scutellum without median depression, but with developed posterolateral lobes; postscutellum without longitudinal or transverse carina, with rounded squamae depressed on upper side; mesopleuron on upper side flat, with episternal sulcus and more or less developed hypersternaulus, without acetabular carina, sternaulus, and verticulus; omaulus developed nearly as far as lower angle of episternal sulcus; precoxal tooth triangular; dorsal ridge of metapleuron not widened; fore coxa of male unmodified (Fig. 8, 5); fore femur of female with sharp outer ridge (Fig. 7, 6); tarsi relatively short, 1st segment of middle tarsus less than half as long as middle tibia; 1st segment of hind tarsus widely compressed before apex, more distinctly in female and less distinctly in male; psammophores on fore coxa and femur developed in female, shorter in male; digging rake on fore tarsus more or less developed in female, absent in male.

Median vein of fore wing curved, but without break; pterostigma much longer than wide; marginal cell narrowly rounded at apex; additional cell absent; *cu-a* antefurcal; hind wing (Fig. 7, 9) with 6 hamuli.

Propodeum with mucro roundly pointed at apex and bearing no apical emargination, with entire lateral carinae and without separated dorsal area.

Metasomal tergites, especially penultimate one, strongly convex, those of male without sensory areas; tergite I with wide, but superficial dorsal pit in female, nearly without it in male; tergites II–IV without deep transverse depressions at bases; pygidial plate of female strongly narrowed, bounded by ridges; sternite VI of female distinctly compressed, with distinct median carina at apex.

Pubescence of head and mesosoma short, sparse, mainly recumbent.

**Differential diagnosis.** *Belokohlus* gen. n. differs from the all oxybeline genera with the lateral ridges on the metasomal tergites in the presence of the median carinae on the scutum and scutellum and in the five-toothed clypeus of the female. In addition, the genus described is similar to *Oxybelomorpha* in the structure of the pronotum with the median part bounded by sharp teeth and in the scutellum with the developed posterolateral lobes, but differs from it in the absence of sternaulus and verticulus and also in the compressed apical metasomal segment of the female; in the latter character, *Belokohlus* gen. n. is similar to some species of *Belomicrus* (e.g., the Central Asian *B. glaber* Kazenas, 1993 and *B. tridentifer* Kazenas, 1993, both characterized by narrowed pygidial plate), but also differs from them in the presence of the omaulus and posterolateral lobes of the scutellum and in the compressed apical sternite (this character occurs only in the genera *Belomicroides* and *Pseudomicroides*, in which propodeum forming no mucro and metasomal tergites bearing no lateral ridges).

**Etymology.** The genus name of masculine gender, combines a part of the genus name *Belomicrus* and the name of a well-known Austrian hymenopterologist of the end of XIX–beginning of XX century, F.F. Kohl.

***Belokohlus ferrieri* (Kohl, 1924)**

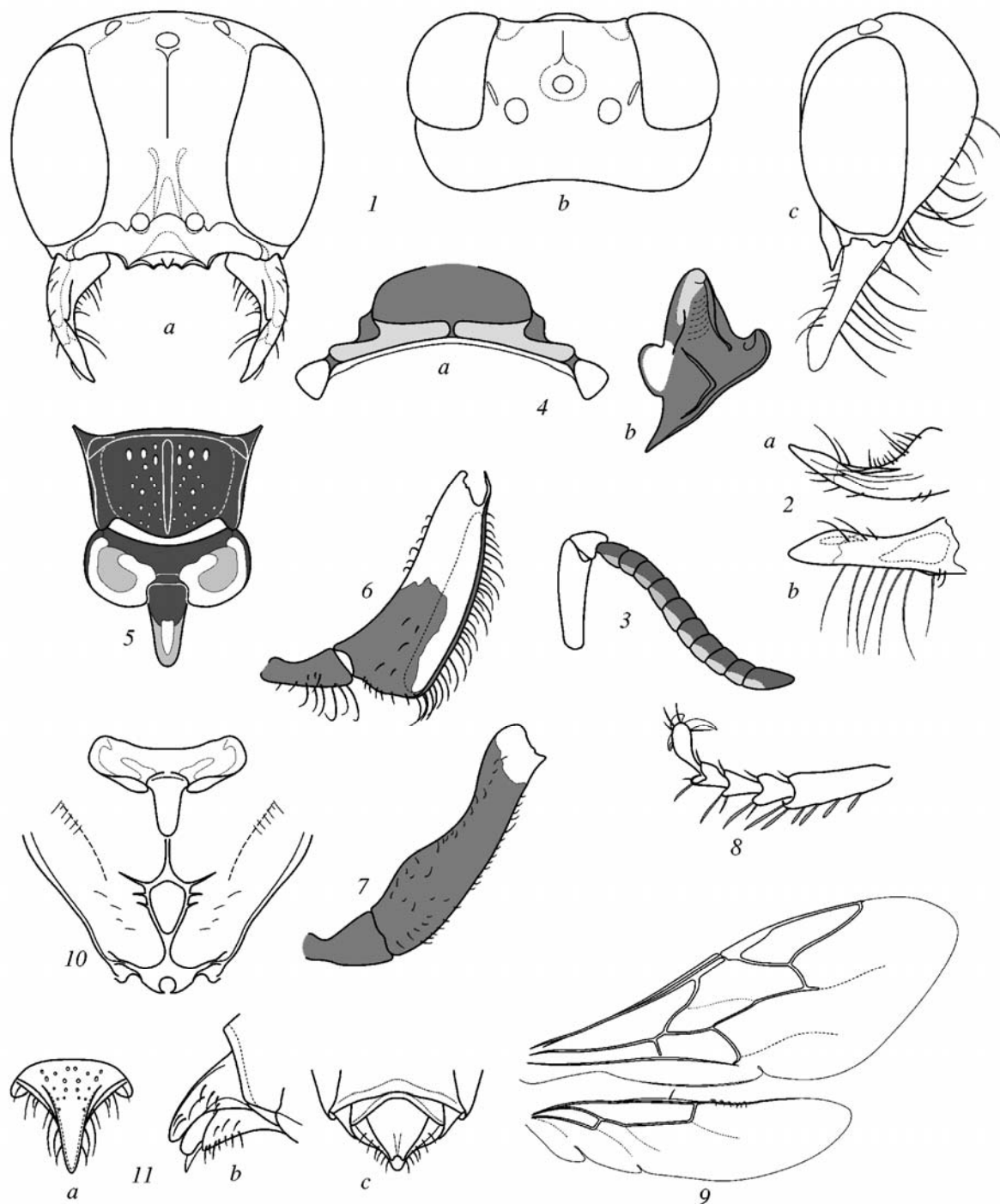
*Belomicrus ferrieri* Kohl, 1924 : 265, ♀, ♂. South Africa, Cape Province [TM]. Lectotype designated here.—Arnold, 1927 : 72.

*Belomicrus ferrieri*: Pate, 1940b : 233;—Bohart and Menke, 1976 : 363;—Dollfuss, 1989 : 7.

**Material.** Lectotype: ♀: “Sunday river, Capland, 27.12.97, Dr. Brauns,” “BELOMICRUS ferrieri Kohl, Transvaal Museum,” “COLLECTION TRANSVAAL MUSEUM” [TM]. Paralectotypes: 3 ♂, labeled as holotype; 2 ♂, “Sunday river, Capland, 27.12.97, Dr. Brauns,” “*Belomicrus ferrieri* Kohl, ♂, det. Maidl,” “BELOMICRUS ferrieri Kohl, Transvaal Museum,” “COLLECTION TRANSVAAL MUSEUM;” 1 ♂, “Sunday river, Capland, 27.12.97, Dr. Brauns” [TM]; 1 ♀, 1 ♂, “Sunday river, Capland, 27.12.97 (Dr. Hans Brauns)” [NHMW]; 1 ♀: “Sunday river, Capland, 27.12.97, Dr. Brauns,” “SOUTH AFRICAN MUSEUM ex NATIONAL MUSEUM BULAWAYO, 1981,” “SAM-HYM-AO13309” [SAM].

**Other material:** 1 ♀, “CAPE PROVINCE, Fort Beaufort, 20-1-1960 (C. Jacot-Guillarmod);” 2 ♀, 1 ♂, “CAPE PROVINCE, 43 km NEN of Ceres on road to Sutherland, 2–3.XII.1989 (F.W. and S.K. Gess)” [AMC]; 1 ♀, 5 ♂, “S. Africa, Oudtshoorn, Cape Province., 1000 ft., 9.XII.1921 (R.E. Turner);” 2 ♂, “S. Africa, Aliwal North, Dec. 1922 (R.E. Turner);” 1 ♂, “S. Africa, Cape Province, Little Karroo, 38 mi E of Ceres, 17–25.XI.1924 (R.E. Turner);” 1 ♂, “S. Africa, Cape Province, Matjesfontein, 19–31.XII.1928 (R.E. Turner)” [BMNH]; 1 ♀, 5 ♂, “SOUTH AFRICA: Eastern Cape: 9 km E Willowmore, 33°15'S 23°34'E, 28 Jan 1996, W.J. Pulawski collector;” 1 ♀, 3 ♂, “SOUTH AFRICA: Western Cape Province: Swarttrivier 7 km NW Prince Albert, 33°10'S 21°59'E, 26 Dec 1996, W.J. Pulawski collector” [CAS]; 2 ♂, “R.S.A.: Eastern Cape, 7 km S Cradock, 25.I.2000 (J. Halada)” [LM]; 1 ♂, “S. Africa, Oudtshoorn, Cape Province, 1000 ft, 9.XII.1921 (R.E. Turner);” 1 ♀, “S. Africa, Aliwal North, Cape Province, Dec. 1922 (R.E. Turner);” 1 ♂, “S. Africa, Cape Province, Matjesfontein, 19–31.XII.1928” (R.E. Turner); 1 ♂, “Willowmore, Capland, 5.2.1912 (Dr. Brauns)” [SAM]; 2 ♂, “Sunday river, Capland, 22.11.97 (Dr. Brauns);” 1 ♂, “Willowmore, Capland (Dr. Brauns);” 2 ♂, “Willowmore, Capland, 5.2.1902 (Dr. Brauns);” 1 ♂, “Willowmore, Capland, 5.2.1902 (Dr. Brauns),” “*Belomicrus capensis* Brauns” [TM]; 1 ♂, “Willowmore, Capland (Dr. Brauns),” “Paratype, No. 14395, U.S.N.M.;” 1 ♀, “Willowmore, Cape Colony, 10.3.1903 (Dr. Brauns),” “Paratype, No. 14395, U.S.N.M.,” “*Belomicrus capensis* Brauns ♀ ♂” [USNM].

**Description. Female.** Head rounded in front view (Fig. 7, 1a), slightly wider than long; inner orbits of eyes distinctly converging in lower part. Lower part of frons widely depressed medially; upper part of frons



**Fig. 7.** *Belokohlus ferrieri*, female: (1) head [(a) front, (b) dorsal, (c) lateral view]; (2) mandible [(a) front view, (b) view on outer side]; (3) antenna, front view; (4) pronotal collar [(a) dorsal, (b) lateral view]; (5) scutellum, postscutellum, and mucro of propodeum, dorsal view; (6) fore trochanter and femur, view on inner side; (7) hind trochanter and femur, view on outer side; (8) fore tarsus, view on outer side; (9) wings; (10) propodeum, posterior view; (11) apex of metasoma [(a) dorsal, (b) lateral, (c) ventral view].

moderately convex, with fine median groove. Vertex weakly convex, without lateral tubercles or spines, depressed outwards from lateral ocelli; orbital foveae (Fig. 7, 1b) in form of straight, deep, slit-like grooves with distinct borders. Temple regularly rounded. Me-

dian lobe of clypeus (Fig. 7, 1d) weakly convex at base, flattened on rest of surface, wide, bounded by sharp lateral teeth, between which pair of additional teeth and pointed median tubercle present; distance between outer teeth of median lobe twice that from

tooth to antennal socket. Mandible (Fig. 7, 2a, 2b) ovally pointed and distinctly widened at apex, without separated ventral lobe, without teeth or emarginations at inner margin, but with additional median ridge. Scape unmodified, without ventral ridge; middle flagellar segments wider than long; apical one ovally pointed at apex, about twice as long as wide (Fig. 7, 3).

Pronotum in anterior part with separated median part bounded by sharp vertical carinae passing in upper part into sharp teeth; pronotal collar (Fig. 7, 4a, 4b) with distinct median depression, rounded at sides, without transverse ridges, but with vertical lateral ridges reaching rounded pronotal lobes. Scutum regularly convex, slightly higher than highest part of pronotal collar; admedian lines fine, approximate, passing into fine, but distinct median carina in middle of scutum; parapsidal lines absent; admedian lines in form of short flattened grooves. Scutellum (Fig. 7, 5) weakly convex, rectangular, moderately rounded in posterior part between distinct posterolateral lobes rounded at apices, with median costa stronger than that on scutum. Postscutellum triangular and weakly convex in middle; its sides with large squamae rounded on outer sides and each bearing small inner tooth. Mesopleuron convex in lower part, flatly convex in upper part; episternal sulcus fine and distinct; hypersternaulus poorly developed; omaulus in form of fine carina reaching pronotal lobes in upper part; acetabular carina, sternaulus, and verticaulus absent; precoxal tooth large, triangular. Metapleuron flattened, without widened dorsal ridge.

Fore femur (Fig. 7, 6) roundly angled at base, flattened on posterior surface, longitudinal depressed on inner surface along outer margin bearing fine transparent ridge; hind femur (Fig. 7, 7) shallowly depressed on lower surface, with weakly thickened base, depressed in apical third of upper surface, with widened apex, without separated apical lobe, but with fine sharp carina nearly reaching middle of femur. Tibiae unmodified, hind one weakly sinuous on outer surface. Tarsi with short segments: 1st segment of fore tarsus flat; 2nd–4th of subequal length, approximately 0.3 times as long as 1st (Fig. 7, 8); 1st segment of middle tarsus flattened in basal half, about twice as long as 2nd segment and nearly 0.3 times as long as middle tibia; 1st segment of hind tarsus flattened at sides, about 2.5 times as long as 2nd segment and slightly longer than half of hind tibia.

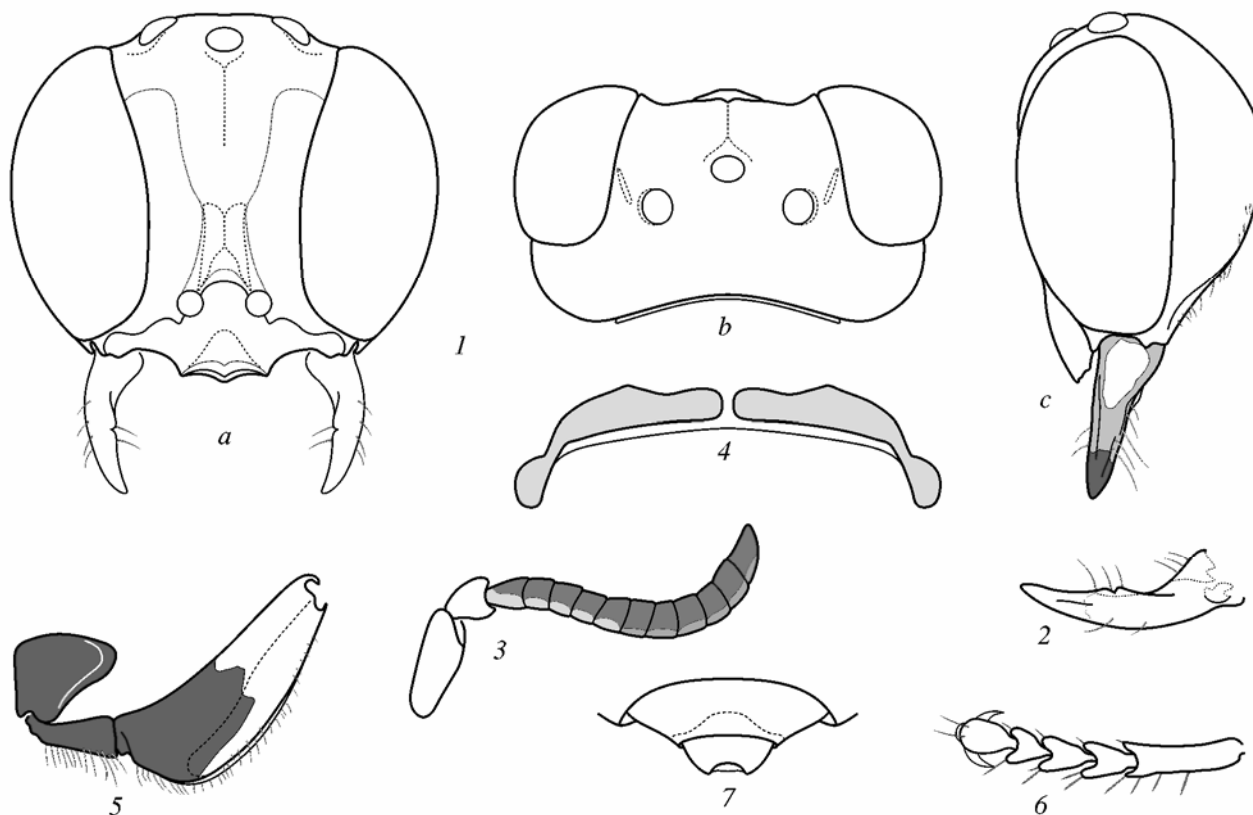
Pterostigma large, not shorter than 1st radial abscissa; median vein regularly curved; hind wing with 6 hamuli at anterior margin (Fig. 7, 9).

Propodeum rounded, with entirely developed lateral carinae widened in upper angles; dorsal area not bounded by ridges or grooves, but clearly distinguished by sculpture; posterior side of propodeum at apex (Fig. 7, 10) with short median carina and elongate oval median pit bounded by fine carinae at all sides.

Metasomal tergites strongly convex; tergite I with distinct median depression at base, without apical pit; tergites II–IV with weak basal constrictions; tergites I–V with distinct lateral ridges and narrow translucent edgings not separated from basal parts; tergite V roundly convex at apex; tergite VI flat, with long pygidial plate strongly narrowed at sides and bounded by lateral ridges (Fig. 7, 11a, 11b). Metasomal sternites flat; sternite IV with moderately oval, sternite V with strong and subtriangular median emargination at apex; sternite VI (Fig. 7, 11c) roundly convex at base, distinctly compressed near apex, with median carina.

Sculpture of body formed by more or less dense punctation against mainly semi-matt background. Clypeus and nearly entire frons concealed by recumbent pubescence; middle of upper part of frons with fine dense punctures ( $d = 1-2\emptyset$ ) sparser near ocellar triangle ( $d = 2-3\emptyset$ ); vertex with similar punctation; occiput with dense transverse folds between fine punctures ( $d = 2-4\emptyset$ ); temple in upper part with punctures as those on vertex, in lower part punctures merging into vertical folds; frons and vertex finely shagreened, semi-matt. Pronotal collar semi-matt, without distinct punctures; scutum weakly shining, with irregular punctures finest and densest in anterior angles and along anterior margin ( $d \leq 1\emptyset$ ), middle with large impunctate areas ( $d = 3-8\emptyset$ ), posterior part with short and fine irregular carinae; scutellum semi-matt, impunctate at sides, punctures near median carina smaller than those on head and scutum ( $d = 2-3\emptyset$ ); postscutellum impunctate, shining; mesopleuron semi-matt, with punctures in lower part as large as, shallower than those on vertex ( $d = 1-2\emptyset$ ), punctures in upper part similar, but sparser in anterior part ( $d = 1-5\emptyset$ ) and smaller in posterior part ( $d = 2-4\emptyset$ ); metapleuron with fine and regular rugae. Propodeum in anterior part with fine radial carinae; dorsal area differing in regular dense minute alveolation without punctures; posterior part with minute alveolation and with irregular fine carinae at border with dorsal area,





**Fig. 8.** *Belokohlus ferrieri*, male: (1) head [(a) front, (b) dorsal, (c) lateral view]; (2) mandible, front view; (3) antenna, front view; (4) pronotal collar; (5) fore coxa, trochanters, and femur, ventral view; (6) fore tarsus, view on outer side; (7) apex of metasoma, dorsal view.

strongest carinae lying along lateral carinae of propodeum; sides of propodeum smoothened on posterior and lower surfaces, with fine oblique irregular carinae on upper surface, with short irregular ridges along lower side of lateral carinae. Metasomal tergites regularly punctate, matt;  $d = 1-1.5\varnothing$  on tergites I-IV; tergite V with smaller punctures ( $d = 1\varnothing$ ); pygidial plate mainly impunctate, shining, with large elongate punctures at base ( $d = 1\varnothing$ ); metasomal sternites with very fine punctures at bases of recumbent hairs, more or less shining; sternite VI impunctate at base, with dense fine punctures near sides and apex ( $d = 1-2\varnothing$ ).

Pubescence of body mainly short, silvery, recumbent, raised on vertex; clypeus and frons (except for its upper margin) with dense recumbent pubescence concealing sculpture of surface. Setae of psammophores long, their length on temple nearly twice basal width of mandible (Fig. 1, 1c), their length at ventral margin of mandible 2.5 times basal width mandible (Fig. 7, 1c, 2b); lower surface of fore trochanter with setae becoming longer from base to apex, maximum length of setae slightly exceeding width of trochanter;

fore femur with regular row of raised setae along ventral margin, maximum length of setae slightly exceeding width of fore tibia (Fig. 7, 6). Digging rake of fore tarsus (Fig. 7, 8) rather weak, formed by flattened setae; 1st segment with 4 outer setae; outer apical paired setae on 1st-4th segments of subequal length, slightly longer than 2nd segment of tarsus; middle and hind femora with short irregular raised hairs on lower surfaces; hind tibia with 3 longitudinal rows of fine spines on outer surface, length of spines in posterior row not exceeding width of 1st segment of hind tarsus; inner surface of hind tibia covered with dense layer of short setae. Metasomal tergites with regular short, but rather dense recumbent hairs forming no spots or bands; tergite VI glabrous on upper surface, with sparse hairs at sides, length of which no less than width of 1st segment of hind tarsus; sternites with short recumbent hairs dense at sides and very sparse in middle and also with sparse preapical setae.

Body mainly black, with developed pale spots. Pronotal lobes white; scape and pedicel, base of flagellum on lower surface, base of mandible, fore femur

along ventral margin and on inner surface in apical half, middle femur at apex, small spots at apex of hind femur, spots at base of transparent tegula, outer edging of transparent squamae of postscutellum, and median line of laterally transparent mucro of propodeum, all whitish yellow; costal lamellae whitish with brownish bases; large, medially separated spots of pronotal collar and all tibiae entirely yellow; apical half of flagellum on lower surface and middle of mandible yellowish rufous; basal segments of all tarsi rufous; apical edging of median lobe of clypeus and 2nd–4th segments of all tarsi dark rufous; apex of mandible reddish brown.

Body length 4.2–4.5 mm.

**Male** mainly similar to female, except for characters associated with sex. Lower part of frons without pair of vertical grooves (Fig. 8, 1a); median lobe of clypeus narrower, flatly convex at base, with median tooth at apex and with depressed apical edging bounded by transverse carina in posterior part and by straight lateral teeth at sides, distance between teeth equal to, or slightly exceeding distance from tooth to antennal socket (Fig. 8, 1a); occipital carina distinctly longer, but also not reaching hypostomal one, orbital foveae slit-like, shorter (Fig. 8, 1b); inner margin of mandible not widened at apex, with small emargination in middle (Fig. 8, 1a, 2); flagellar segments wider than long, apical one about 1.5 times as long as wide (Fig. 8, 3). Pronotum before collar with weak longitudinal carinae, without sharp dorsal spines and separated median plate; vertical ridges at sides of pronotal collar absent (Fig. 8, 4); metasomal tergite VI with wide superficial rounded or obtuse-angled apical depression; tergite VII with shallow oval apical emargination and rounded posterior angles (Fig. 8, 7); apical margins of all sternites straight.

Temple without psammophore (only with semi-recumbent hairs not longer than diameter of anterior ocellus); ventral margin of mandible with several setae becoming longer toward apex, length of setae not exceeding basal width of mandible (Fig. 8, 7c); fore trochanter and femur without long setae of psammophore (Fig. 8, 5); digging rake on fore tarsus not developed (length of 2–3 outer setae on 1st segment nearly half width of segment) (Fig. 8, 6).

Body length 3.5 mm.

**Notes.** In order to maintain the correct and consecutive usage of the respective name, I designated as the

lectotype of *Belomicrus ferrieri* Kohl, 1924 a female from the part of the type series labeled “Sunday river, Capland, 27.12.97, Dr. Brauns” from the collections of the Transvaal Museum. Two more males from the same collection are not included in the type series, as they have been collected on 22.XII.1897, which mismatches the description. In addition, USNM collection contains two specimens (no. 14395) of *B. ferrieri*, designated as paratypes of “*Belomicrus capensis* Brauns.” These specimens do not belong to the type series of *B. ferrieri*, and the name “*B. capensis*” has not been published.

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