

Revision of the Genera *Brumus* Muls. and *Exochomus* Redtb.
(Coleoptera, Coccinellidae) of the Palaearctic Region.
Part I.

Ivo Kovář

Department of Entomology, National Museum (Nat. Hist.), Praha

Taxonomy, new genus, new status, new combinations, new synonymy, lectotypes, keys, bionomy, faunistics.

Abstract: The current concept of the genera *Exochomus* Redtb., *Brumus* Muls. and their palaearctic species are revised with respect to the genus *Brumoides* Chpn. Current opinions on the classification of the above genera within the tribe Chilocorini are discussed. The poor diagnostic characters hitherto used to separate the genera *Brumus* Muls. and *Exochomus* Redtb. appeared to be adaptive ones, being subjects of parallel evolution. A new concept of the studied genera, based on further, hitherto largely neglected characters, is proposed, and the new genus *Priscibrumus* gen. n., (type-species *Exochomus puniceipennis* Semenov, 1900) is described to accommodate 6 species with uncovered lateral parts of the pronotal base. The nearctic species with a non-bordered base of pronotum are not considered members of the studied genera. The genera *Exochomus* Redtb. and *Brumoides* Chpn. are found to be closely related. The subgenus *Xanthocorus* Miyat. is considered to be a distinct genus. The following available names, originally described as varieties are considered to be valid names of species (new status): *gebleri* Weise, *septemmaculatus* Weise, *quadriguttatus* Fleischer and *cedri* Sahlberg. The following new combinations are proposed: *Brumus kiritshenkoi* (Barovskij), *B. undulatus* (Weise), *B. septemmaculatus* (Weise), *B. mongol* (Barovskij), *B. quadriguttatus* (Fleischer), *B. nigropictus* (Fairmaire), *B. cedri* (Sahlberg), *B. quadripustulatus* (L.), *Priscibrumus puniceipennis* (Semenov), *P. tri-junctus* (Kapur), *P. himalayensis* (Kapur), *P. uropygialis* (Mulsant), *P. trubetzkoi* (Barovskij), *P. lituratus* (Gorham) (all from *Exochomus* Redtenbacher). Lectotypes of the following species are designated: *E. kiritshenkoi* Bar., *E. undulatus* var. *septemmaculatus* Weise, *E. quadripustulatus* var. *cedri* Sahlberg. The following new synonymies are established: *E. kiritshenkoi* Bar., partim (Iran) = *B. gebleri* Weise; *E. georgi* Fürsch = *B. mongol* (Bar.); *E. quadripustulatus* ssp. *cordiformis* Roubal = *E. il-laesicollis* Roubal = *B. quadriguttatus* (Fleischer); *E. muelleri* Mader = *B. cedri* (Sahlberg). *B. cedri* (Sahlberg) stat. n., comb. n. is given as new for the fauna of Bulgaria, Albania, Yugoslavia and Czechoslovakia.

Introduction

The predominantly coccidophagous tribe Chilocorini, partly studied in the present paper, represents an interesting group of approximately 250 species classified in 20 genera. They are characterized by the reduced number of antennal segments and by the movable parts of the body covered to a various extent by propleura and elytral epipleura. The subjects of the present paper are palaeartic species of the genera *Brumus* Mulsant, *Exochomus* Redtenbacher as well as some species of the genus *Brumoides* Chapin. Delimitation of those genera has been based upon a few rather adaptive characters. Many species have been misinterpreted and/or insufficiently described. Generic reclassification of the above mentioned genera with a revision of the palaeartic species of *Brumus* Muls. is given in the present part of the revision.

Material and methods.

The paper is based upon the examination of over 5,000 specimens of Chilocorini. Apart from the palaeartic species of the genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn. treated in the present paper, I have examined also 10 afro-tropical and 4 nearctic species attributed to *Exochomus* Redtb. and 6 oriental and afro-tropical species of *Brumoides* Chpn. as well as representatives of the following genera of Chilocorini: *Harpasus* Muls. (2 species), *Zagreus* Muls. (2 species), *Axion* Muls. (2 species), *Arawana* Leng (2 species), *Curinus* Muls. (1 species), *Cladis* Muls. (1 species), *Paraprius* Chpn. (1 species), *Endochilus* Weise (1 species), *Orcus* Muls. (1 species), *Chilocorus* Leach (more than 20 species), *Egius* Muls (1 species), *Phaenochilus* Weise (3 species) and gen. propr. (1 species congeneric with "*Exochomus*" *isensis* Kamiya and formerly placed in the genus *Arawana* Leng. The genus *Simmondsius* Ahmad and the subgenus *Xanthocorus* Miyatake are known to me only from descriptions.

The major part of the examined material is deposited in the National Museum, Praha (MNP). Further important material, especially type-specimens, was made available by the following entomologists and institutions: N. Berti, Muséum National d'Histoire Naturelle, Paris (PMN); Dr. O. Biström, Zoological Museum, Helsingfors (HZM); T. J. Ennis, Canadian Forestry Services, Ontario; Prof. H. Fürsch, Universität Passau, Passau (UP); Dr. F. Hieke, Dr. M. Uhlig, Zoologisches Museum der Humboldt-Universität, Berlin (ZMH); V. Jordanova, Bulgarian Academy of Sciences, National Natural History Museum, Sofia (AMS); † Dr. Z. Kaszab, Dr. O. Merkl, Természettudományi Múzeum Budapest (TMB); Dr. O. L. Krizhanovskij, Dr. I. M. Kerzhner, Dr. V. P. Sem'yanov, Zoologičeskij institut, Akademii nauk SSSR, Sankt Peterburg (Leningrad) (ZIN); Dr. N. Lodos, Dr. F. Önder, Ege University, Izmir (EUI); Dr. L. R. Loseri, Museo Civico di Storia Naturelle, Trieste (MCT); Dr. I. Okáli, Slovenské národné múzeum, Bratislava (SNM); Dr. R. D. Pope, British Museum (Nat. Hist.), London (BM); Dr. M. Safavi, Ing. A. Hashemi, Ing. A. Pazuki, Ing. H. Boroumand, Plant Pests and Diseases Research Institute, Tehran (PPDI); Dr.

G. Scherer, Zoologische Staatssammlung, München (SM); Dr. A. Ślipinski, Dr. E. Kierych, Dr. H. Garbarczyk, Institut Zoologii, Polska Akademia nauk, Warszawa (IZP); Dr. J. Stehlík, Dr. P. Lauterer, Moravské muzeum, Brno (MMB). The abbreviations in parentheses are used throughout the paper to indicate the origin of the material examined.

Mounting and measurements were carried out by means of the stereoscopic microscope "Meopta" with an ocular grid or ocular micrometer. Examined specimens were moistened in a drop of water and their surface cleaned with tetrachlorethylene. In all species the number of antennal segments was verified as well as important details of the wing-venation and drawings were made of the following details: form of body, head (sometimes also mouth parts), pronotum, part of prosternum, abdominal sternite i. with femoral line, posterior legs and its details, and, where possible, genitalia of the both sexes. Where necessary, the objects were cleared with 10% solution of potassium hydroxide; after drawings having been accomplished, they were washed in water and mounted on the original label with an easily soluble methylcellulose glue "Metylan". Means of measured values and their ratios were calculated from at least 6 measurements.

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Literature

Only a minority of the presently known species of genera *Exochomus* Redtb., *Brumus* Muls., and *Brumoides* Chpn. was described and/or figured before 1850. Authors of important descriptions under *Coccinella* L. were Goeze (1777), Thunberg (1781), Fourcroy (1785), Gmelin (1790), Scriba (1791), Fabricius (1792, 1801), Townson (1797), Gebler (1830, 1841), Brullé (1832), Zoubkoff (1833), Motschulsky (1837). Some synonymies were proposed by Schönherr (1808). The first step towards the classification of the species under discussion was made by description of the genus *Chilocorus* Leach. Redtenbacher (1843) separated genera *Exochomus* Redtb. and *Platynaspis* Redtb. from *Chilocorus* Leach. His *Exochomus* originally included 2 species: *quadripustulatus* (L.) and *auritus* (Scriba), the later one originally described – but not named – by Geoffroy (1792). Mulsant (1846) proposed his family "Chilocoriens", redescribed both European species with their variation and synonymy. Mulsant (1850, 1853) detailed the classification of "Chilocoriens" and described 3 new genera including *Brumus* Muls. He subdivided the genus *Exochomus* into 4 groups,

listed and redescribed all species of the genus known at that time, including their synonymies but, however, he did not designate type-species of particular genera. Wollaston (1864) treated the fauna of the Canary Is. and placed 2 pubescent species belonging to *Exochomus* in the genus *Epilachna* Chevrolat in Dejean (1837), nec Redtenbacher, 1843. Crotch (1874) carefully revised both the older literature and Mulsant's classification. He transferred some species from *Exochomus* Redtb. to *Brumus* Muls., some others to *Platynaspis* Redtb. However, his concept of the above genera is rather vague. The positive achievement of his paper was, especially, the designation of type-species of the known genera, as well as an extensive historical review. Weise paid attention to genera *Exochomus* Redtb. and *Brumus* Muls. in his several papers (Weise, 1878, 1879, 1881, 1885, 1887, 1892, Sicard's translation, 1895, 1910), in which he briefly described some asiatic and african species and their variation. However, his evaluation of some varieties was not quite correct. He distinguished both the genera only by the presence or absence of teeth on tarsal claws. Weise's (1885) key was translated in French by Sicard (1892) and complemented by a lot of remarks on the synonymy (especially of north african species) by Bedel (1885, 1892). Nearctic species were treated by Casey (1899, 1908) and Leng (1908). Their concept is discussed below. Barovskij (1922, 1927) delimited both genera within the limits of the palaeartic fauna. He gave no definitions of genera but proposed the subdivision of *Exochomus* Redtb. into 3 subgenera. Particular species are treated as by Weise and Ganglbauer. Barovskij (1922) treated the former varieties partly as subspecies and partly as mere aberrations. The system of subgenera as proposed by Barovskij, was accepted with minor changes by Korschefsky (1932) and Mader (1955). Necessary changes in the concept of some species, subgenera and delimitation of both genera were proposed by Fürsch (1960a, b, 1961). Chapin (1965), Savoiskaya (1968, 1971, 1983a) and Miyake (1970). These problems are discussed below.

In spite of the attention paid to the larvae of this group, our knowledge remains rather poor. Binaghi (1941) described larvae of some more common species from Europe and Africa and summarized older literary data. He correctly distinguished, according to its genitalia and larva, *E. nigripennis* (Erichson), considered by other authors as a variety. Emden (1949) included in his key only the larva of 1 species of *Exochomus* Redtb. and Klausnitzer (1970a) briefly described the larva of *Brumus oblongus* (Weidenbach). Most descriptions of larvae of the fourth instar were published by Savoiskaya (1955, 1962, 1968) and a key to the larvae of the genera was published by Savoiskaya et Klausnitzer (1973). The present knowledge of the larvae of the fauna of the former USSR was summarized by Savoiskaya (1983a) who included (re-)descriptions of the iv. instar larvae of 12 palaeartic species.

Investigation of genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn. have not been limited to taxonomy, faunistics and larval taxonomy. There exist a lot of papers dealing with bionomy of many species. Valuable observations were published especially by Kapur (1942), Klausnitzer (1964, 1967, 1968), Yakhontov (1962), Hodek (1973), Savoiskaya (1983a, b), etc. However, the complete treatment of these

topics is beyond the scope of the present paper. Cytology and chromosomal morphology of *E. uropygialis* Muls and *E. lituratus* Gorham was studied by Smith (1965).

History of classification of the genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn.

Among ladybirds with dilated clypeus and concealed insertions of antennae Redtenbacher (1843) proposed the genus *Exochomus*, containing 2 species: *E. quadripustulatus* (L.) and *E. auritus* (Scriba). It was distinguished from the genera *Platynaspis* Redtb. and *Chilocorus* Leach by "simple mandibula, broad elytra, dilated broadly lunular base of pronotum, glabrous upper surface, not or feebly broadened anterior margin of head with conspicuous labrum and projecting lateral borders". Mulsant (1846) on the base of identical european species defined his family, "Chilocoriens" with 2 genera – *Chilocorus* Leach and *Exochomus* Redtb. However, he distinguished the both genera according to characters on "coxal lines" of abdominal sternite i. and legs, Later Mulsant (1850) stressed the importance of the shape of anterior legs and distinguished 2 branches: "Chilocoraires" with 2 genera and "Exochomaires" with 3 genera. He placed in the latter lineage, characterized by simple anterior tibia, the australian genus *Orcus* Muls. with incomplete "coxal line", as well as genera *Exochomus* Redtb. and *Brumus* Muls. with complete "coxal line". While the genus *Brumus* Muls., characterized by "almost horizontal epipleura and gradually narrowing clypeus, directed obliquely towards lateral margin of labrum", contained only 2 oval species, *B. desertorum* (Gebler) (= *B. octosignatus* (Gebler)) and "*B. suturalis* (F.)", the genus *Exochomus* sensu Mulsant (1850) with "epipleura strongly sloping down, much higher than thickness of femora and a non-curved clypeus abruptly narrowed towards the lateral margins of labrum" was a much larger, but very heterogenous group of 16 species of both Old and New World. Therefore Mulsant (1850) proposed, according to the form of propleural and pronotal base, subdivision of *Exochomus* Redtb. into 4 groups (*Axion*, *Clanis*, *Exochomus* and *Zagreus*) which must be considered as subgenera. Then the subgenus *Exochomus* sensu Mulsant (1850) with "posterior margin of pronotum arcuate or almost semicircular, not undulate and propleura without grooves" contained only 7 species, 4 of them palaeartic. Mulsant (1853) then involved a further 6 species (including 3 palaeartic) in the genus *Exochomus* Redtb. and in a final list of species proposed some synonymies. Kraatz (1873) revised 6 european species and remarked, that from the 2 species originally included in the genus *Exochomus* Redtb. it is "more typical", with respect to the form of clypeus and tibia, *E. auritus* (Scriba). Crotch (1873) designated *Coccinella tripustulata* DeGeer as the type-species of the genus *Exochomus* Redtb., but later, Crotch (1874) restricted his concept of the genus *Exochomus* Redtb. and raised the subgenera *Axion* Muls. and *Cladis* Muls. index (syn. *Clanis* Mulsant, text nec Hübner, 1819) to generic status but completely neglected the subgenus *Zagreus* Muls. He applied the previous designation of *C. tripustulata* DeGeer as the type-species to the nearctic genus *Axion* Muls. and as a type-species of the genus *Exochomus*

Redtb. designated *Coccinella nigromaculata* Goeze. Even though Crotch (1874) apparently followed the delimitation of genera *Exochomus* Redtb. and *Brumus* Muls. as proposed by Mulsant, his revision is in the nature of comments. He selected from the diagnostic characters of *Exochomus* Redtb. only the presence of "complete abdominal plates" meaning the closed coxal lines. The 12 world species of the genus *Exochomus* Redtb. were subdivided according to their geographical distribution, coloration and cuticular structures. Crotch (1874) accepted also the synonymy of species proposed by Mulsant (1850, 1853) and completed it substantially with synonyms of further species. He designated *Coccinella 8-signata* Gebler as the type-species of the genus *Brumus* Muls. and from diagnostic characters of the genus accepted only Mulsant's "tolerably accurate" description of the shape of clypeus. Nevertheless, he transferred according to this character 3 species from *Exochomus* Redtb. to *Brumus* Muls., so that the genus *Brumus* Muls. according to Crotch (1874) contained 7 randomly assembled species, mostly from Asia and Africa. Weise (1878) distinguished in his key to European species, 5 species of *Exochomus* Redtb. with dentate tarsal claws from the single species of *Brumus* Muls. with simple tarsal claws. He used the same character for separation of both genera also in his later key (Weise, 1885) – as well as in the French translation by Sicard (1892) – covering their palaeartic representatives. There are few differences in species included in both genera between Weise (1885, 1892) and Weise (1879) but the author added data about color variation of many species. Bedel completed the Sicard's translation of the key by Weise (1892) with valuable remarks on synonymy, especially of little known species from Europe and North Africa. Ganglbauer (1899) treated the central European species and summarized formerly published diagnostic characters of *Exochomus* Redtb. and *Brumus* Muls., which he distinguished in his key by the form of tarsal claws and elytral epipleura.

Casey (1899) separated 11 nearctic representatives of *Exochomus* Redtb. without retractible posterior legs, from the genus *Axion* Muls. with posterior legs retractible in elytral epipleura. He also mentioned in his brief definition of the genus *Exochomus* Redtb. the incomplete "metacoxal plates". Leng (1908) subdivided the nearctic species of *Exochomus* Redtb. into 3 subgenera. He placed *E. arizonicus* Casey with externally sublaminar and dilated anterior tibiae in the distinct subgenus *Arawana* Leng and the consistent group of the remaining species with simple anterior tibiae showing a trend to reduction of the tooth on tarsal claws was divided between the subgenera *Exochomus* Redtb. sensu Leng and *Brumus* Weise sensu Leng. Species with tarsal claws either strongly or finely dentate were placed in the former subgenus, while in the subgenus *Brumus* – wrongly attributed to Weise – were placed species with simple tarsal claws beside those with claws moderately thickened at the base, as well as one species with tarsal claws finely dentate in males and simple in females. As a type-species of this subgenus (*Brumus* Weise sensu Leng) designated Leng (1908) *B. septentrionis* Weise. Casey (1908) stressed the importance of structural characters constituting the subgenus *Arawana* Leng and admitted that it might be a distinct genus. On the other hand, he disputed the delimitation of the two remaining subgene-

ra by Leng (1908), which was very vague, being based only on the shape of tarsal claws. Judging from analogous colour-pattern of particular species Casey (1908) believed, that all the species belonged to a single group and considered *Brumus sensu* Leng to be a synonym of *Exochomus* Redtb. However he admitted that important differences may be found in the degree of development of dentation of tarsal claws rather than in its presence or absence. Casey (1908) examined also type-species of the genus *Brumus* Muls. – *B. octosignatus* (Gebler) and found it to differ from the nearctic species placed in *Brumus sensu* Leng (1908) by complete basal border of pronotum (meaning probably the fine bordering line of the base of pronotum), very large "post-coxal arch", much larger tarsal claws and the general scheme of colour pattern. However, he deduced no conclusions from his findings.

Weise (1910) admitted that some species of *Brumus* Muls. could still be found among little known species of *Exochomus* Redtb. and remarked, that palaeartic species of *Brumus* Muls. had simple tarsal claws. Simple separation of *Exochomus* Redtb. (tarsal claw dentate, epipleura oblique) and *Brumus* Muls. (tarsal claws simple, epipleura horizontal) by Weise (1885) and Ganglbauer (1899) was accepted also by Sicard (1909), Reitter (1911), Kuhnt (1913), Jacobson (1916), Schaufuss (1916), Mader (1927, 1955) as well as recently by Bielawski (1959a, 1984) and Fürsch (1967). Jacobson (1916) noted also the longer third tarsal segment, occurring probably only in some species of *Brumus* Muls. at his disposal. This character was then used also by Mader (1927). Barovskij (1922), who revised palaeartic species of *Exochomus* Redtb., subdivided the genus into 3 subgenera – *Exochomus* s. str., *Parexochomus* Bar. and *Anexochomus* Bar. according to the form or presence and/or degree of the development of teeth on tarsal claws. The same author (Barovskij, 1927) also delimited for the first time the genus *Brumus* Muls. of the whole palaeartic region. However, his revisions lack any definition of the two genera under discussion. Subdivision of *Exochomus* by Barovskij (1922) was accepted and completed by Korschefsky (1932) and Mader (1955). Korschefsky (1932) designated *Coccinella quadripustulata* Linnae as the type-species of *Exochomus* Redtb. Chapin (1965) revised and defined in detail all world genera of the tribe Chilocorini. He distinguished within the group characterized by presence of terminal spurs on intermediate and posterior tibiae and semi-circular "metacoxal arch"^{x)} besides *Exochomus* Redtb. and *Brumus* Muls. a further 7 genera including *Axion* Muls., *Zagreus* Muls., *Arawana* Leng and *Cladis* Muls. He proposed also a new genus *Brumoides* Chpn. to accommodate the asiatic species *Brumus suturalis* (F.) with only eight-segmented antennae. As for separation of genera *Exochomus* Redtb. and *Brumus* Muls. with ten-segmented antennae, the presence of teeth on the base of tarsal claws remains the only distinguishing character

x) The terms referring to the fine carinate line of the first abdominal sternite – used especially in generic taxonomy – are not unified in the descriptive taxonomy of Coccinellidae. Various authors used terms like "coxal, postcoxal, metacoxal or femoral line"; if simply arcuate, the line is often designated as "arch" with one of the above adjectives. The shape of this line is sometimes described also by means of the term "abdominal plate", referring to the space, delimited distally by this usually arcuate line. In the present paper is used the more frequented term femoral line.

also in this excellent paper. Chapin (1965) considered the subsequent classification of the type-species of *Exochomus* by Korschefsky (1932) to be valid and stressed invalidity of former designations by Crotch (1873, 1874) because the species designated by the latter author had not been originally included in the genus *Exochomus* Redtb. Moreover, Chapin (1965) himself subsequently designated *E. undulatus* Weise as the type-species of the subgenus *Anexochomus* Bar. and *E. pubescens* Küster as type-species of the subgenus *Parexochomus* Bar. Fürsch (1960a) included *Platynaspis bella* (Wollaston) (originally described as *Epilachna*) in *Exochomus* Redtb. and the same author (Fürsch, 1960b) described further species from Mongolia and Corea, related to *E. quadripustulatus* (L.), *illaesicollis* Roubal and *mulleri* Mader. Fürsch (1961) in his revision of african species of the group *E. flavipes* (Thunberg) found *E. nigromaculatus* (Scriba). System of the genus *Exochomus* Redtb. as proposed by Barovskij was accepted also by Miyatake (1970), who proposed a further subgenus *Xanthocorus* Miyat. from China and, on base of Fürsch (1961) elucidated the problem of validity of subsequent designation of *Coccinella nigromaculata* Goeze as the type-species of *Exochomus* Redtb. by Crotch (1874). Apart from that, Miyatake (1970) described 3 new species of *Brumoides* Chpn. from Southeast Asia, very similar to *B. suturalis* (F.). However, Savoiskaya (1968), who examined adults and larvae of 6 species from Kazakhstan, demonstrated that subdivision of the genus *Exochomus* Redtb. by Barovskij (1922) was not justified. She subdivided the *Exochomus* species of Kazakhstan according to (i) quantitative differences in larval chaetotaxy, (ii) ratio of the length of median lobe of aedeagus to the length of paramera and (iii) form of the distal end of siphon into 2 subgroups, later (Savoiskaya, 1971) named as *Exochomus* s. str. (including *Anexochomus* Bar.) and *Parexochomus* Bar. respectively. She supported in her latter paper the validity of the 2 subgenera with further differences, such as (iv) position of the teeth on tarsal claws, (v) shape of inner margin of paramera and (vi) ratio of the widths of branches of siphonal capsula. Savoiskaya (1971) designated *E. quadripustulatus* (L.) (*Coccinella quadripustulata* Linnae, 1758) as the type-species of *Exochomus* s. str., which contained also all species of *Anexochomus* Bar., and *Exochomus flavipes* (Thunberg, 1784) (= *E. nigromaculatus* (Goeze)) as the type species of *Parexochomus* Bar., containing, according to her, *E. flavipes* (Thunb.), *E. nigripennis* (Erichson), *E. melanocephalus* (Zoubkoff) and *E. semenovi* Weise. The same subdivision of *Exochomus* Redtb. was used several times in keys to larvae, e. g. Savoiskaya et Klausnitzer (1973), Savoiskaya (1983a, b). larvae of genera *Exochomus* Redtb. and *Brumus* Muls. are separated by Savoiskaya et Klausnitzer (1973) and Savoiskaya (1983a, b) only by chaetotaxy. In the diagnosis of larvae of the genus *Brumus* Muls. Savoiskaya (1983a) even admitted, that the tooth of tarsal claws may be feebly developed.

Problem of classification of genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn.

Tribus Chilocorini is undoubtedly a consistent group, characterized especially by

the following characters: (i) clypeus strongly extended laterally, (ii) antennae short, inserted ventrally, (iii) mandibles simple with additional tooth, (iv) cardo of maxilla not strongly prolonged on outer side, (v) anterior margin of pronotum deeply emarginate, lateral parts of pronotum very steep, (vi) base of elytra distinctly wider than the base of pronotum, (vii) surface showing strong trend to the reduction of pubescence, (viii) elytral epipleura broad, its inner margin reaching tip of elytra, (ix) abdomen with 5 visible sternites in females and 6 visible sternites in males, (x) tarsi cryptotetramerous, (xi) siphon of aedeagus rather strongly curved, with a well defined siphonal capsule at the base, median lobe of aedeagus not divided into 2 parts, (xii) hemisternites of ovipositor prolonged.

The genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn. represent also a very consistent group within the tribe, which may be distinguished from the rest of Chilocorini by following characters: (xiii) base of pronotum bordered, with complete bordering line, (xiv) femoral lines of the first abdominal sternite arcuate, (almost) complete, (xv) elytral epipleura without grooves for reception of distal femoral ends, (xvi) anterior tibia simple, without any tooth or laminate extension of outer margin, (xvii) intermediate and posterior tibiae with 2 terminal spurs, which are distinctly longer than remaining apical setae, (xviii) hemisternites of the ovipositor at least 3 times as long as wide, styli at their apex present, small, (xix) spermatheca pear-shaped, cornu strongly curved without terminal appendix, (xx) antennae ten-segmented (*Exochomus* Redtb., *Brumus* Muls.) to eight-segmented (*Brumoides* Chpn.).

Characters listed above (xii – xx) separate the group under discussion from a large group of world genera with abbreviated (“absent”) terminal spurs of intermediate and posterior tibiae (*Priasis* Muls., *Parapriasis* Chpn., *Endochilus* Weise, *Halmus* Muls., *Orcus* Muls., *Anisorcus* Crotch, *Chilocorus* Leach, *Egius* Muls., *Phaenochilus* Weise and *Simmondsius* Ahmad et Ghani), as well as from genera with incomplete – even though arcuate – femoral line (*Harpasus* Muls., *Zagreus* Muls.) including genera with a non-bordered pronotal base (*Axion* Muls., *Curinus* Muls., *Arawana* Leng and *Cladis* Muls.). However, to the latter complex must be transferred also the subgenus *Xanthocorus* Miyat. and nearctic species of genera *Exochomus* sensu Leng (1908) and *Brumus* sensu Leng (1908) (= *Brumoides* Chpn. partim).

The mentioned homogeneity of the group is responsible for the lack of diagnostic characters, upon which the classification of genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn. could be based. However, the available distinguishing characters are subject to parallel evolutionary trends, occurring at various rates in several evolutionary lineages, not only within Chilocorinae but also in other groups of Coccinellidae. This concerns especially the morphology of lateral body parts, e. g. various degree of descent of elytral epipleura, degree of reduction of the number of antennal segments, presence or absence and size of teeth on tarsal claws, gradual reduction of pubescence, punctation and other cuticular structures.

So the more or less horizontal, comparatively narrow and longitudinally excavate epipleuron is usually given as a characteristic feature of members of the genus

Brumus Muls. (also the formerly included *B. suturalis* (F.)), but it occurs also in several species of *Exochomus* s. str. and in 2 species of *E.* (*Paraxochomus*) Bar. Legs in these species are comparatively slender, with distal ends of posterior femora more or less reaching to the outer margin of epipleuron, or even reaching over it. In remaining species of *Exochomus* Redtb. the excavate epipleura are descending ventrolaterad and distal ends of posterior femora do not reach them, being completely concealed in the epipleural space; legs are consequently stouter. The epipleural space is rather shallow in species of *E.* (*Anexochomus*) Bar., but deeper in species of *Exochomus flavipes* – group sensu Fürsch (1961). Analogous trend may be observed in development of propleura and in the degree of lateral extension of clypeus.

With extension of clypeus is apparently correlated also reduction of the number of antennal segments, ranging between 10 - 7 in Chilocorini in contrast to 11 segments usually occurring in other Coccinellidae. Chapin (1965) used the number of antennal segments as generic character in many cases and he also described the genus *Brumoides* Chpn. with eight-segmented antennae. He included in the latter genus not only *Brumus suturalis* (F.) with bordered pronotal base, but also several nearctic species of *Brumus* sensu Leng (1908) with non-bordered base of pronotum. Judging from the common trend, it seems more probable, that reduction of the number of antennal segments from 10 to 8 may have taken place independently in several evolutionary lineages rather than parallel reduction of the bordering line of pronotal base both in nearctic species of *Exochomus* sensu Leng (1908) with ten-segmented antennae and *Brumus* sensu Leng (1908) with eight-segmented antennae. Moreover – as already mentioned above – the presence of bordering line of pronotal base seems to be a general feature of all nearctic and neotropical genera of Chilocorini. The probability of parallel reduction of number of antennal segments is suggested also by occurrence of nine-segmented antennae in an undescribed species of *Exochomus* Redtb. It seems that reduction of number of antennal segments took place by means of fusion of 1 - 2 pairs of proximal antennal segments rather than fusion of segments of antennal club; however, hypothesis cannot be supported by sufficient arguments.

Preceding authors distinguished several types of tarsal claws within *Exochomus* Redtb. Large tooth at the base of rather strongly curved claws is gradually reduced and the claw becomes straight in several grades corresponding with subgenera as proposed by Barovskij (1922). However, there are no sharp demarcation lines separating those grades, which seems to pass fluently into each other. Tooth of tarsal claws completely disappears in *Brumus* Muls. and *Brumoides* Chpn., but the claws may be short and strongly curved. Detailed examination revealed that the tooth of tarsal claws is completely missing in *E. bellus* (Wollaston) – additionally included in this genus by Fürsch (1960a) as well as in further species related to *E. pubescens* Küster. On the contrary the presence of a large tooth on tarsal claws of *Brumus mongolicus* Fleischer has been completely overlooked by former students.

Reduction of pubescence on dorsal surface is usually rather advanced, so that the hairs reaching over the limits of corresponding punctures occur only on head in ma-

ny species of the 3 genera in question. Many species are referred to as glabrous, nevertheless rudimentary setae in fact occur within particular punctures, not exceeding their diameter. Recumbent pubescence of various length, but as a rule exceeding corresponding punctures, has been described especially in species classified in subgenera *Exochomus* s. str. and *E. (Parexochomus)* Bar., but it may occur in genera *Brumus* Muls and *Brumoides* Chpn., its length varying according to species. While the puncturation of front is rather constant, fine and rather dense, much more conspicuous differences between particular species exist in size of pronotal and especially of elytral punctures. Size of punctures as well as the degree of conservation of isodiametrical reticulation on spaces between them may be different even within groups of related species, but their variation within limits of one species is quite exceptional.

Under above conditions it is difficult to established not only the true synapomorphies, upon which monophyletic taxa could be based, but any generic characters constant in all species of given genera. To avoid – or at least to reduce – the danger of constituting polyphyletic taxa based upon mere analogies, it is necessary to find additional characters, which are not ambivalent, within particular species-groups. Following characters seem to be convenient for classification of genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn.:

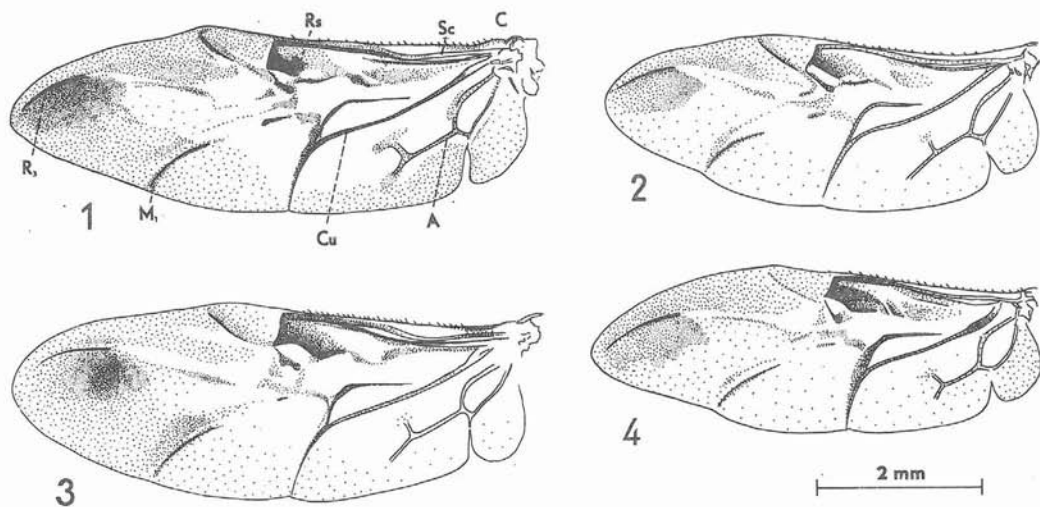
1) Lateral parts of pronotal base are in all known Chilocorini free, more or less strongly descending and at least partly (usually completely, including posterior angles) hidden under the often prominent basal edge of elytra. Lateral portions of basal edges of pronotum and elytra situated at different levels are undoubtedly characteristic of the whole tribe. However, in 6 species hitherto placed in *Exochomus* Redtb., basal margins of pronotum and elytra adhere to each other all along their length, as is the case in most other Coccinellidae. Lateral portions of pronotal base do not descend in them and remain at the same level as the base of elytra.

2) Apart from semicircular femoral line, more or less distinct lateral line is present in anterolateral portion of the first abdominal sternite. Femoral line of genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn. is (almost) complete (i. e. closed), so that 2 following types of contact of the 2 lines may easily be distinguished: a) Femoral line meets the inner end of lateral line at approximately the same point as the outer end of bordering line of metacoxal cavity. This type occurs not only in species of *Brumus* sensu Barovskij (1927) (except for *B. suturalis* (F.) and *B. tetradymus* (Fairmaire)), but also in those species of *Exochomus* Redtb., considered by Savoiskaya (1971, 1983a, b) members of nominotypical subgenus (except for *E. puniceipennis* Semenov). (One-point junction type). b) In species of *E. flavipes* group sensu Fürsch (1961) as well as in those *E. (Parexochomus)* sensu Savoiskaya (1971, 1983a, b) femoral lines reaches the lateral one much more laterally, at about its mid-length. The meeting point of the 2 lines is thus moderately to considerably remote from the outer end of the bordering line of posterior edge of metacoxal cavity. Such connection of both the lines exist also in palaeartic, oriental and afrotropical species of *Brumoides* Chpn. The meeting point may be situated closer to metacoxal cavity

in some species with non-covered lateral margins of pronotum (*Priscibrumus* gen. n.). (Two-point junction type).

3) Sector radii on hind wings either completely subdivided into 2 portions (figs. 1 – 2), or compact, with consistent pigmentation (figs. 3 – 4). Distribution of the 2 types is correlated with the types of configuration of femoro-lateral lines as defined above: divided sector radii corresponding to one-point junction type (see 2a), compact one to two-point junction type (see 2b).

4) In spite of overall similarity of male genitalia of genera *Exochomus* Redtb. and



Figs. 1 – 4, hind wings 1, *Brumus quadripustulatus* (L.); 2, *B. octosignatus* (Gebler); 3, *Exochomus nigromaculatus* (Goeze); 4, *Priscibrumus* sp. (uropygialis complex).

Brumus Muls., Savoiskaya (1968, 1971) distinguished 2 groups according to the length of median lobe/ length of paramere ratio. To the first group (median lobe of aedeagus nearly as long as, or slightly longer than paramere) belonged beside *E. quadripustulatus* (L.) also 2 species of *E. (Anexochochomus)* Bar. In such a group could be placed also species of *Brumus sensu* Barovskij (1927) (excluding *B. suturalis* (F.) and *B. tetradyms* (Fairm.)). Some exception, however, may exist – thus in *B. mongolicus* Fleischer, *B. gebleri* Weise and *E. mongol* Bar. median lobe is distinctly shorter than paramera. The second group proposed by Savoiskaya covers the species in which length of median lobus of aedeagus reached about two-thirds of the length of parameres. In this group belong not only species of *E. (Parexochomus)* sensu Savoiskaya (1968, 1971, 1983a, b), but also african species of *E. flavipes* group sensu Fürsch (1961). However, in such a group could be placed also palaeartic, oriental and per-

haps also afro-tropical species of *Brumoides* Chpn. Apart from the 2 above groups, the third one could be distinguished, in which the length of median lobe/ length of paramere ratio is intermediary, tegmen is flattened laterally and parameres – in contradistinction to the preceding group – are conspicuously constricted at the base.

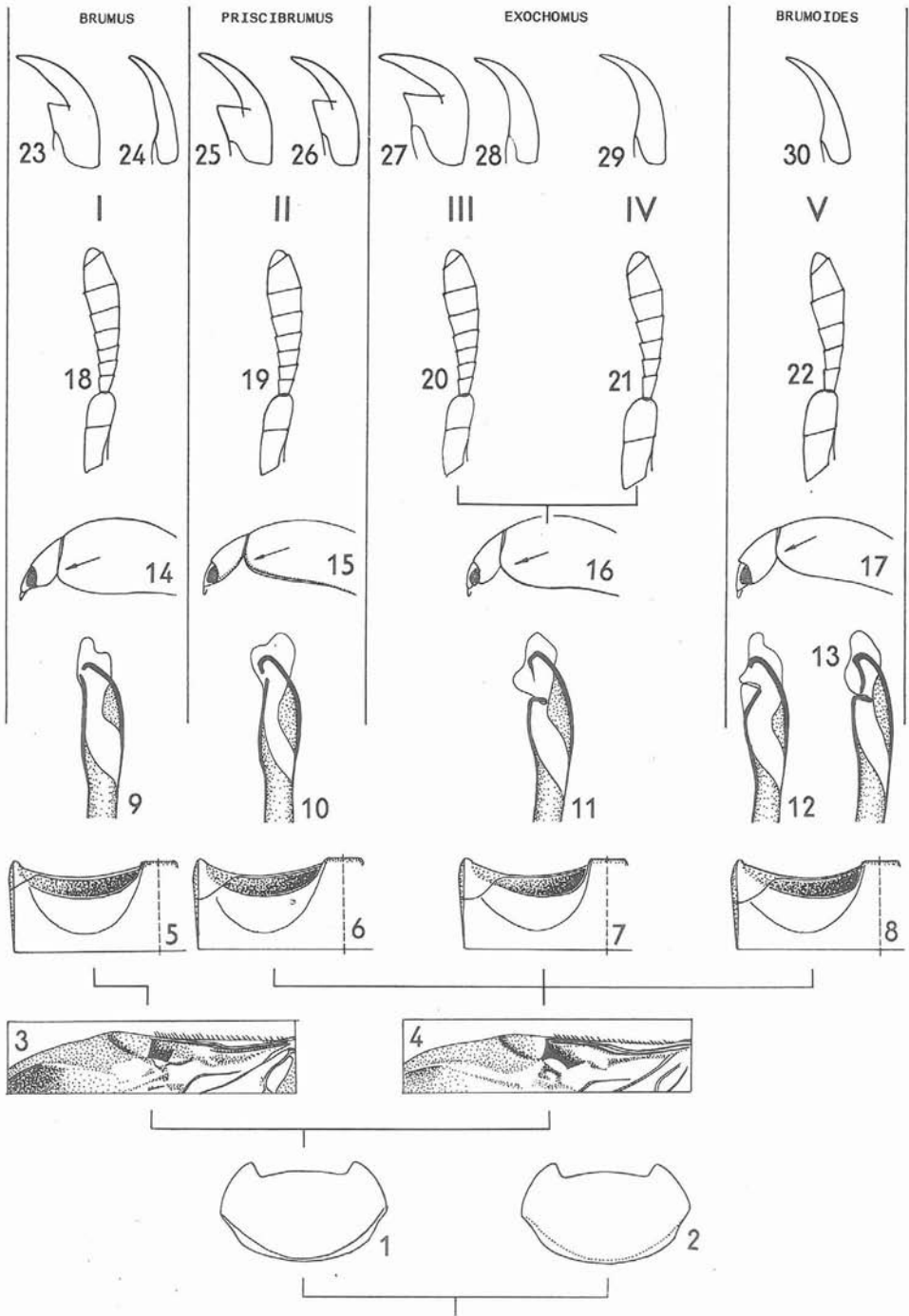
Much more significant than biometric indexes seems to be the form of the terminal portion of siphon^{xx}). In genera *Exochomus* Redtb., *Brumus* Muls., and *Brumoides* Chpn. siphon is terminated by simple, only feebly dilated and moderately curved terminal ampulla. The ampulla is asymmetrical as it is moderately sclerotized ventrally and membranous dorsally (referring to its position inside abdomen). Membranous structures of the ampulla are in outer (dorsal) wall armed with curved rib, bearing on dorsal side a sclerotized and usually spindle-shaped facet. The rib of outer wall containing many canaliculate pores becomes gradually desclerotized, dissolving in aggregation of radially arranged pores on the top of ampulla and is rather uniform in the above genera. On the other hand structures of the inner (ventral) seam, represented by thin rib, supplies good distinguishing characters and was also used by Savoiskaya (1968, 1971, 1983b) to separate subgenera *Exochomus* s. str. and *Parexochomus* Bar..

In genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn. can be distinguished following types of siphonal ampulla: a) Terminal ampulla simple, ventral seam more or less straight. Occurs in *Brumus* sensu Barovskij (1927) (excluding *B. suturalis* (F.) and perhaps also *B. tetradymus* (Fairm.)), *Exochomus* s. str. sensu Savoiskaya (1971, 1983a, b) and in one species ("anchorifer"), placed by Barovskij (1922) in *E. (Parexochomus)* Bar. Sclerotized facet is small in most species, but large, covering major part of the dorsal wall of ampulla, in species with non-covered lateral margins of pronotum (*Priscibrumus* gen. n.).

b) Siphonal ampulla is divided in 2 parts by rectangular invagination of the ventral seam. This type of ampulla occurs in *E. (Parexochomus)* sensu Savoiskaya (1971, 1983a, b) in African species of *E. flavipes* (Thunb.) species-group sensu Fürsch (1961) and in some species of *Brumoides* Chpn. Ventral seam in *B. suturalis* (F.) is but partly invaginated, representing initial stage of the process.

5) Colour pattern of dorsal surface has not been usually taken into account. Nevertheless, colour pattern and, especially of elytra of Coccinellidae (if present), represent, as a rule, within one genus a more or less continuous series within framework of one common basic scheme. Species not fitting in such a scheme usually appear to be actually members of a different genus. Since certain interspecific series of elytral colour patterns can be observed among the examined species, this character seems applicable also in genera under discussion: a) Bicoloured elytral pattern with yellowish-red and black (brown) pigments occurs in a continuous series ranging from

xx) Chapin (1965) stated that the apex of siphon was more important for identification of species than for that of genus. I cannot agree with this statement, since just these structures are very characteristic, allowing either quite clear generic classification of a species in question, or to judge from their similarity of relationships of both particular species and/or genera. Also in the tribus Chilacorini, in which structures of the distal end of siphon are rather simple and undoubtedly homologous, it is possible to utilize some structural peculiarities, very constant even in large genera.



the pale forms (yellowish-red with 4 – 5 black spots) to the dark ones (black with 1 – 2 yellowish-red spots). Intermediate forms have the black spots arranged according to the schemes: 1, 1, 1, 1, 0 or 1, 2, 1, 1, 0, which are characteristic of the whole group and are derived through fusion of spots in transverse or oblique directions (Tab. II., figs. 1 – 13). This is the scheme common to *Brumus* sensu Barovskij (1927) (excl. *B. suturalis* (F.) and *B. tetradymus* (Fairm.)), *Exochomus* s. str. sensu Savoiskaya (1968, 1971, 1983a, b) (excl. *E. puniceipennis* Sem.) and in one species ("anchorifer") placed by Barovskij (1922) in *E. (Parexochomus)* Bar. b) Different colour pattern exists in species of *E. flavipes* group sensu Fürsch (1961), *E. (Parexochomus)* sensu Savoiskaya (1968, 1971, 1983a, b), in pubescent species placed by Barovskij (1922) and Mader (1955) in subgenera *Exochomus* s. str. and *Parexochomus* Bar. and in *B. tetradymus* (Fairm.) as well as in palaeartic, oriental and afrotropical species of *Brumoides* Chpn. Most of these have unicoloured (brownish-yellow, ochraceous, purple or black) elytra, sometimes with metallic reflection, but intermediary forms have a pale lateral border of elytra or to various extend developed pattern consisting of longitudinal stripes. Among the above species can be distinguished 3 parallel series (Tab. II., figs. 14 – 18, 19 – 25, 26 – 30).

The above observations suggest that genera *Exochomus* Redtb., *Brumus* Muls. and *Brumoides* Chpn. as hitherto defined represent heterogenous, polyphyletic taxa and that the palaeartic species belonging to them can be, especially with respect to the characters discussed above, divided in 5 groups (Tab. I., i – v), 4 of which deserve generic status.

Group I. Corresponds to the genus *Brumus* sensu Barovskij (1927) with exception of *B. suturalis* (F.) and *B. tetradymus* (Fairm.), but including also all species, placed by Savoiskaya (1968, 1971, 1983a, b) in the subgenus *Exochomus* s. str. sensu Savoiskaya. Therefore to this group belong also the species considered by Fürsch (1960b) related to *E. quadripustulatus* (L.) as well as 1 species ("anchorifer") hitherto placed in *E. (Parexochomus)* Bar. Colour pattern of elytra are characteristic and represent continuous series from the pale form (yellowish-red elytra with 4 – 5 black

Tab. I. Pictorial key to genera *Brumus* Muls. (i), *Priscibrumus* gen. n. (ii), *Exochomus* Redtb. (iii – iv), *Brumoides* Chpn. (v); 1 – 2, pronotum (1, basal margin bordered, palaeartic species, 2, basal margin non-bordered, nearctic species, genus *Xanthocorus* Miyat.); 3 – 4, hind wings (3, sector radii divided, 4 sector radii compact); 5 – 8, first abdominal sternite (5, femoral line reaching the inner end of lateral line, 6 – 8, femoral line reaching or tending the midlength of lateral line); 9 – 13, terminal ampulla of siphon (9 – 10, ventral seam not invaginated, 11 – 13, ventral seam (partly) invaginated); 14 – 17, lateral part of the base of pronotum and humeral angle of left elytron, lateral view (14, 16 – 17, base of pronotum overlapped, 15, base of pronotum non-overlapped); 18 – 22, antenna (18 – 20, antenna ten-segmented, 21, a. nine-segmented, 22, a. eight-segmented); 23 – 30, tarsal claw (23, 25 – 27, tarsal claw dentate, 24, 28 – 30, tarsal claw without tooth).

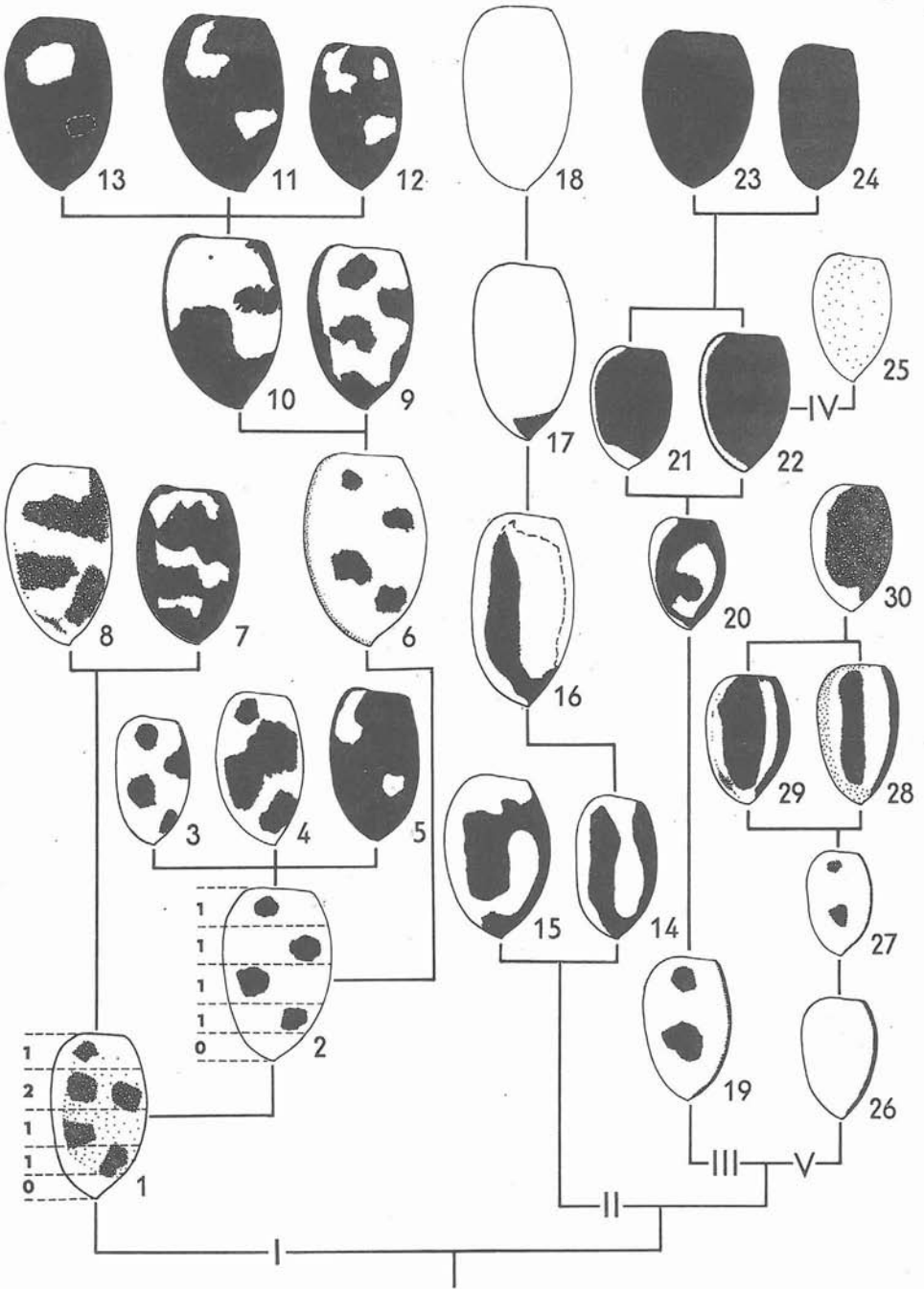
(brown) spots arranged according to scheme: 1, 1, 1, 1, 0 or 1, 2, 1, 1, 0 and connected in various extent either transversely or obliquely) to the dark ones (elytra black, each usually with 2 yellowish-red spots) (Tab. II. figs. 1 – 13). Antennae ten-segmented. Basal margin of pronotum bordered, lateral margins and often also part of posterior corners of pronotum overlapped by the lateral part of base of elytra at humeral angle. Sector radii of hind wings divided in 2 parts. Femoral line of the first abdominal sternite (almost) complete, reaching the inner end of lateral line. Median lobe of aedeagus larger than, or nearly as long as paramere, seldom shorter and reaching only two-thirds of the length of paramere. Terminal siphonal ampulla simple with small sclerotized facet, ventral seam more or less straight, not invaginated before its end. Lateral margins of elytra usually less arcuate in the first third than in the two following. Epipleuron almost horizontal but its anterior third invisible in lateral view, its outer edge only moderately descending lateroventrad; epipleural space (concavity) rather shallow. Punctures of pronotum and elytra in most species fine and dense. Surface alleged glabrous, but actually bearing rudimentary hairs not exceeding outline of particular punctures. Very short pubescence of pronotum was observed in only one species (*septemmaculatus* Weise). Legs more or less slender, distal ends of posterior femora usually not reaching outer margin of epipleura or exceptionally reaching over it (*mongolicus* Fleischer). Species that have been placed in *Exochomus* Redtb. display trend to gradual reduction of teeth on tarsal claws, correlated with gradual prolongation of the third tarsomere. This trend lead obviously to the final suppression of teeth of tarsal claws taking place in other species of *Brumus* Muls. (Tab. I. i.).

Group II. Among palaeartic species of *Exochomus* Redtb. exist 6 species that differ from the rest by an important character not yet observed among Chilororini: basal margin of pronotum bordered with lateral portions not descending, situated at the same level as the base of elytra, so that the bases of pronotum and elytra are adhered to each other all along their length as in most other Coccinellidae. Elytra ochraceous or purple, black trident pattern gradually reduced to completely missing (Tab. II., figs. 14–18). Antennae ten-segmented. Sector radii compact. Femoral line of the first abdominal sternite almost complete, directed either towards the midlength of lateral line or somewhat closer to metacoxal cavity. Tegmen somewhat compressed laterally, parameres strongly constricted in basal third. Median lobe of aedeagus usually somewhat shorter than parameres. Siphonal ampulla simple with large sclerotized facet, ventral seam almost straight, not invaginated before its end. Lateral margins of elytra usually regularly arcuate all along their length. Epipleuron horizontal, its anterior third usually visible in lateral view. Legs slender, distal end of posterior femora reaching to or over the outer margin of epipleura. Third tarsomere short, tarsal claws always strongly dentate. Punctures of elytra rather coarse and very dense, pubescence of pronotum and elytra usually exceeding the outline of punctures, often rather long (Tab. I., ii). To accomodate these species combining some characters of the groups I. and III. and characterized by peculiar configuration of pronotal end elytral bases, new genus *Priscibrumus* gen. n. is proposed (see below).

Group III. Includes species of *Exochomus flavipes*-group sensu Fürsch (1961), species placed in the subgenus *Parexochomus* by Savoiskaya (1968, 1971, 1983a, b), further *E. pubescens* Küster, *E. bellus* (Wollaston), *Brumus tetradymus*: auct. and a few undescribed species. Elytra usually black, sometimes with metallic lustre or with lateral margins bordered by a brownish-yellow zone, more or less extended on both ends. Dark pigmentation of elytra is more reduced in *E. bellus* (Woll.) and especially in *E. tetradymus* (Fairm.), colour patterns of which represent continuation of the same variation series (Tab. II., figs. 19 – 24). Antennae ten-segmented. Base of pronotum bordered, lateral portions of the base and often also posterior corners of pronotum overlapped by the lateral parts of elytral base at humeral angle. Sector radii compact. Femoral line (almost) complete, reaching to or directed towards the mid-length of lateral line. Median lobe of aedeagus short, usually reaching only two-thirds of the length of paramere. Siphonal ampulla with small sclerotized facet and ventral seam with rectangular invagination before its end, dividing ampulla in 2 parts. Lateral margins of elytra usually regularly arcuate, sometimes more strongly curved in the anterior third. Epipleura seldom horizontal and exceptionally visible in lateral view; their outer edge in species related to *E. pubescens* Küster moderately, in species of *E. flavipes*-group sensu Fürsch (1961) often rather strongly descending latero-ventrad. Legs in correlation with the descent of epipleura slender to somewhat stout, distal ends of posterior femora hidden in the epipleural space, seldom reaching over outer edge of epipleura. The third tarsomere usually short. Tooth of tarsal claws large or more or less reduced, seldom missing. Punctures of pronotum and elytra fine, rather dense to somewhat sparse. Many species allegedly glabrous, in fact with rudimentary hair not exceeding outline of particular punctures. Very short to rather long pubescence (length being a specific character) occur in species related to *E. pubescens* Küster. These species are in the present paper considered true members of *Exochomus* Redtb. (Tab. I., iii).

Group IV. Accommodates the only species hitherto undescribed. Important characters of this species correspond with these of *E. pubescens* Küster and also its colour pattern corresponds with that of *E. pubescens* Küster and related species. Tarsal claws simple as in *E. bellus* (Woll.). However, antennae, in contrary to *E. pubescens* Küster and its relatives, only nine-segmented. As the reduction of number of antennal segments apparently took place independently in this and the next group, the single species under discussion is also considered to be a member of the genus *Exochomus* Redtb.

Group V. Includes besides the Old World species of *Brumoides* Chpn. (e.g. listed by Miyatake (1970)) also several afrotropical species hitherto considered members of the genus *Brumus* Muls. Colour pattern is peculiar, each elytron brownish-yellow with black suture and a longitudinal stripe not reaching apex of elytra. The stripe can be either broadly connected with suture or quite absent (Tab. II., figs. 26 – 30). Antennae eight-segmented. Base of pronotum bordered, lateral portions including at least part of posterior angles of pronotum overlapped by the lateral part of base of elytra at humeral angle. Sector radii compact. Femoral line almost complete, reaching or direc-



ted towards the middlength of lateral line. Median lobe of aedeagus short, reaching usually two-thirds of the length of parameres. Siphonal ampulla with small sclerotized facet, ventral seam more or less invaginated before its end, more or less dividing the ampulla in 2 parts. Lateral margins of elytra somewhat more strongly arcuate in the first third than in the second. Epipleuron either almost horizontal or with narrow outer border strongly descending ventrolaterad, epipleural space (concavity) always shallow. Legs rather slender, distal ends of posterior femora almost reaching outer edge of epipleura, or slightly exceeding it. Third tarsomere short, or with its ventral margin reaches distal margin of the second one. Tarsal claws simple. Punctures of elytra not too fine and dense, pubescence of pronotum and elytra rudimentary, seldom short (Tab. I., v). Species of this group were originally separated from *Brumus* Muls. according to the eight-segmented antennae. However, important characters suggest that the Old World species mentioned above and representing genuine content of the genus *Brumoides* are most closely related to the genus *Exochomus* Redtb. Species of *Brumoides* Chpn. – combining apomorphies such as eight-segmented antenna and simple tarsal claws with plesiomorphies like little descending epipleura, presence of at least short pubescence of pronotum and elytra in some species and incomplete invagination of its ventral seam of siphonal ampulla – seem to be most closely related to species of *E. pubescens* species-group.

Key to palaeartic genera of Chilocorini

- 1 (12) Intermediate and posterior tibiae with 2 terminal spurs distinctly exceeding remaining apical setae. Femoral lines of the first abdominal sternite (almost) complete, their outer parts directed cranial. Spermatheca pear-shaped, cornu without terminal appendage.
- 2 (11) Elytral epipleura without grooves for reception of distal ends of femora. Femoral line semicircular.
- 3 (10) Basal margin of pronotum completely bordered.
- 4 (5) Bases of pronotum and elytra contiguous all along their length, lateral portions of pronotal base situated at the same level as basal part of humeral angle

Tab. II. Colour pattern of elytron (i) species of the genus *Brumus* Muls. 1, *B. jacobsoni* Barovskij (scheme: 1, 2, 1, 1, 0), 2, *B. octosignatus* (Gebler) (scheme: 1, 1, 1, 1, 0), 3, *B. mongolicus* Fleischer, 4, *B. discors* Barovskij, 5, *B. oblongus* (Weidenbach), 6, *B. gebleri* Weise stat. n., 7, *B. undulatus* (Weise) comb. n., 8, *B. septemmaculatus* (Weise) stat. n., comb. n., 9, *B. nigropictus* (Fairmaire) comb. n., 10 – 11, *B. quadripustulatus* (L.) comb. n., 12, *B. cedri* (Sahlberg) stat. n., comb. n., 13, *B. mongol* (Barovskij) comb. n.; (ii) species of the genus *Priscibrumus* gen. n., 14, *P. trijunctus* (Kapur) comb. n., 15, *P. himalayensis* (Kapur) comb. n., 16, *P. lituratus* (Gorham) comb. n., 17, *P. uropygialis* (Mulsant) comb. n., 18, *P. puniceipennis* (Semenov) comb. n.; (iii) species of the genus *Exochomus* Redtb., 19, *E. sp. 1*, 20, *E. bellus* (Wollaston), 21, *E. pubescens* Küster, 22, *E. sp. 2*, 23, *E. nigromaculatus* (Goeze), 24, *E. semenowi* Weise; (iv), 25, *E. sp. 3*, (v) species of the genus *Brumoides* Chpn. 26, *B. sp. 1*, 27, *B. sp. 2*, 28, *B. suturalis* (F.), 29, *B. lineatus* (Weise), 30, *B. sp. 3*.

- of elytra. *Priscibrumus* gen. n.
- 5 (4) Bases of pronotum and elytra not contiguous all along their length, lateral portions of pronotal base and often also posterior corners of pronotum situated more ventrad and overlapped by basal part of humeral angle of elytra.
- 6 (7) Femoral line reaching or directed towards the inner end of lateral line. Sector radii divided in 2 parts. Siphonal ampulla simple, ventral seam more or less straight, not invaginated before its end. *Brumus* Mulsant
- 7 (6) Femoral line reaching or directed towards the midlength of lateral line. Sector radii compact. Siphonal ampulla usually divided in 2 parts, ventral seam with angulate invagination before its end.
- 8 (9) Antennae ten-segmented, exceptionally nine-segmented.
. *Exochomus* Redtenbacher
- 9 (8) Antennae eight-segmented. *Brumoides* Chapin
- 10 (3) Basal margin of pronotum not bordered. *Xanthocorus* Miyatake stat. n.
- 11 (2) Elytral epipleuron with a deep groove for accomodation of distal end of posterior femur. Femoral line hook-shaped, running obliquely from the side of metacoxal proces towards the posterior margin of the first abdominal sternite, then abruptly turning forwards and vanishing in the area impressed for reception of posterior femur. Gen. propr.^{xxx}), nec *Arawana* Leng
- 12 (1) Terminal spurs of intermediate and posterior tibiae inconspicuous, at most as long as neighbouring apical setae. Femoral line incomplete, its outer portion directed laterad. Spermatheca ovate, cornu with terminal appendage.
- 13 (14) Antenna seven-segmented. Tarsal claws feebly curved, with strongly reduced teeth. *Simmondsius* Ahmad et Ghani
- 14 (13) Antennae eight-segmented. Tarsal claws in the middle strongly curved, with more or less large teeth.
- 15 (16) Apical segment of maxillary palpus robust, nearly 1.5 times longer than wide, sides parallel, its tip obliquely truncate. The fourth tarsomere not conspicuously flattened, tarsal claws obtusangulately curved, longer than wide. Eyes not large. *Chilocorus* Leach
- 16 (15) Apical segment of maxillary palpus slender, more than 2.5 times longer than wide, narrowed towards the blunt tip. The fourth tarsomere dilated before its distal end and laterally compressed, tarsal claws abruptly curved in nearly right angle, wider than long. Eyes conspicuously large.
. *Phaenochilus* Weise

xxx) Kamiya (1966) described *Exochomus isensis* Kamiya according to single female from Ise (pref. Mie), Honshu Is. Later, the same author (Sasaji, 1971) transferred this species to the genus *Arawana* Leng. In the material of Coccinellidae from Szechwan (China) in MNP I found a female undoubtedly congeneric with *E. isensis* Kamiya. Comparison of the form of pronotum, the first abdominal sternite, cuticular structures and other characters of the latter specimen with american representatives of the genus *Arawana* Leng. (*A. scapularis* Gorham, *A. cubensis* Dimmock) suggests that the 2 East Palaearctic species cannot be congeneric with american species of *Arawana* Leng and probably belong to a distinct undescribed genus. However, detailed treatment of this problem is beyond the scope of the present paper.

Genus **Brumus** Mulsant

Figs. 5 – 18)

Brumus Mulsant, 1850 : 465, 492, partim; Crotch, 1874 : 195, partim; Weise, 1879 : 90, 135, partim; 1885 : 5, 55, partim; 1892 : 2, 53, partim (Sicard's translation); Ganglbauer, 1899 : 980, 985; Jacobson, 1916 : 990, distribution; Barovskij, 1927 : 199, partim; Korschefsky, 1932 : 265, partim, catalogue; Mader, 1955 : 773, 802, partim; Chapin, 1965 : 234, 236; Savoiskaya, 1983a : 154, 175, larvae.

Type-species: *Coccinella 8-signata* Gebler, 1830 (subsequent designation of Crotch, 1874).

Exochomus (Exochomus); Barovskij, 1922 : 291, partim; Korschefsky, 1932 : 252, partim, catalogue; Mader, 1955 : 784, 790, partim; Chapin, 1965 : 248, partim; Savoiskaya, 1971 : 108; 1983a : 160, 161, larvae.

Type-species: *Exochomus quadripustulatus* (Linnae, 1758) (subsequent designation of Korschefsky, 1932).

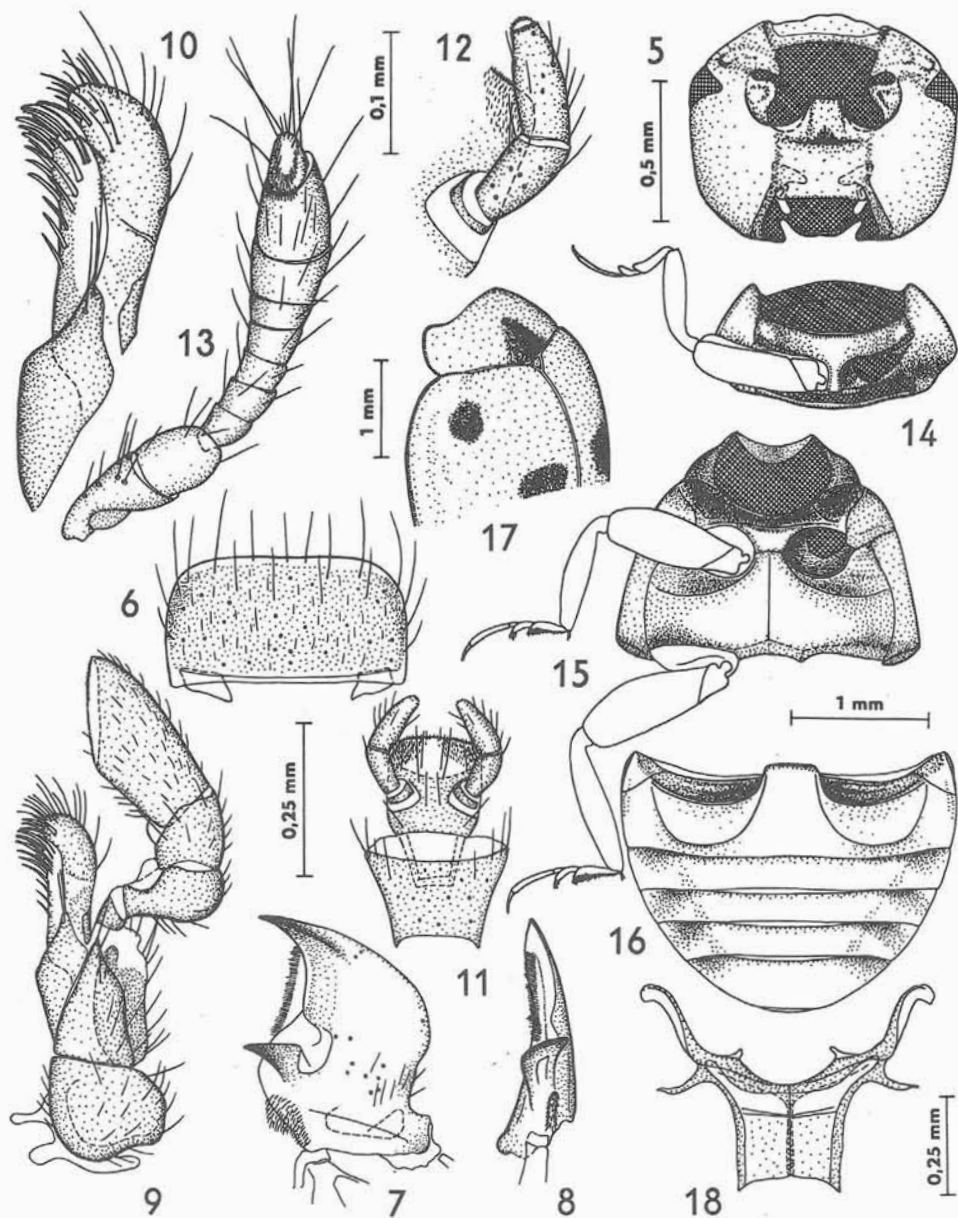
Exochomus (Anexochomus) Barovskij, 1922 : 292; Korschefsky, 1932 : 253, catalogue; Mader, 1955 : 784; Chapin, 1965 : 250.

Type-species: *Exochomus undulatus* Weise, 1878 (subsequent designation of Chapin, 1965).

Type-species: *Coccinella desertorum* Gebler, 1841 (by synonymy with *Coccinella 8-signata* Gebler, 1830, subsequent designation of Crotch, 1874).

Chilocorini of minute to usually medium size, body oval to widely oval, slightly to strongly convex. Upper integuments finely punctate, rudimentary setae, apart from those on head, rarely exceeding the diameter of punctures.

Head usually roundly quadrangular, more or less transverse, somewhat broader than one half of pronotal width. Anterior margin of head capsule broadly shallowly emarginate. Clypeus of medium size, strongly depressed to finely excavate in front of eyes. Sides of clypeus angulately arcuate in the proximal third. Front slightly convex, a little wider than half the width of head. Eyes small, not prominent, their inner orbits slightly arcuate to nearly straight, parallel to slightly covering anteriorly. Labrum large. Mandible stout with outer margin falciform, in proximal half subangulately emarginate, apex simple, feebly curved. Cardo of maxilla hardly transverse, lacinia and galea with a few sets of strong moderately curved setae on their inner side, apical segment of maxillary palpi oblong, slightly dilated towards the obliquely truncate apex. Apical segment of labial palpi nearly as wide as the second one. Antenna ten-segmented, slender. Scapus a little longer than pedicellus, slightly bent, not conspicuously dilated distad: pedicellus barrel-shaped, somewhat assymetrical. Flagellum clavate (almost) twice as long as combined length of scapus and pedicellus. Antennal club five-segmented, compact, widest at the distal end of segment viiii., apical segment conical, obliquely truncate at its base. Pronotum approximately twi-



Figs. 5 - 18, morphology of the genus *Brumus* Muls. (*B. octosignatus* (Gebler)); 5, head capsule; 6, labrum; 7 - 8, mandible; 9, maxilla; 10, galea and lacinia; 11, labium; 12, labial palp; 13, antenna; 14, prothorax; 15, meso- and metathorax; 16, abdomen; 17, lateral part of the base of pronotum and humeral angle of elytron; 18, metendosternite.

ce as wide as long, strongly convex. Anterior margin of pronotum rather deeply emarginate, base of pronotum distinctly narrower than base of elytra including humeral angles, somewhat angulate in the middle and all along its length distinctly bordered. Lateral part of the base strongly descending ventrolaterally, together with parts of posterior corner of pronotum overlapped by basal part of the humeral angle of elytra. Scutellum small, triangular, usually flat. Elytra elongate to roundly oval, slightly to strongly convex, their lateral margins in anterior third distinctly more slightly arcuate than in two posterior ones, all more or less reflexed, usually beaded. Radial sector of hind wings divided in 2 parts. Propleura sloping down ventromesad. with outer margin horizontal or feebly descending ventrolaterad. Epipleura of elytra moderately wide, not grooved for reception of distal ends of posterior femora, either horizontal or with their outer parts at most not too strongly descending ventrolaterad. Prosternum strongly convex in the middle, basisternal lobes moderately wide, without strong oblique impression in the middle. Prosternal process rather narrow, convex, without carinae. Mesosternal process somewhat wider at its base than in the middle long. Axillary line of metasternum flatly regularly arcuate, with outer end tending anteriorly. Base of metendosternite narrow, about as long as wide, anterior margin of metendosternite arcuately emarginate between inner tendons. Abdomen with 5 visible sternites in female and 6 in male (approximate ratio of the length of particular sternites in female: 7 : 3 : 2 : 2.5 : 3.5). Femoral line of the sternite i. complete, strongly arcuate, its outer end tending to or reaching the inner end of lateral line. Median part of the posterior margin of abdominal sternite v. in female slightly arcuate or truncate, in male more or less emarginate. Legs moderate to somewhat slender, distal ends of posterior femora usually hidden inside the epipleural space, rarely when epipleura horizontal slightly reaching over the outer margin of epipleuron. Outer margin of anterior tibia without tooth or conspicuous broadening in distal part. Intermediate and posterior tibiae with 2 terminal spurs. tarsi cryptotetramerous. Distal end of tarsal segment iii. can reach over distal margin of segment ii. Tarsal claws simple, slender and considerably straightened to robust and strongly curved with a large triangular tooth.

Male genitalia: Tegmen more or less slender. Median lobe of aedeagus elongate, usually about as long as paramere, pointed at the apex; in ventral view more or less asymmetrical apically. Paramera ventrally bent, constricted at the base. Trabes rod-shaped, somewhat dilated distad. Siphon very long, slender, semicircularly arcuate in its proximal half. Siphonal capsula well developed. Terminal ampulla of siphon simple, feebly dilated, dorsal rib with large sclerotized facet, ventral seam straight, not invaginated before its distal end.

Female genitalia: Hemisternite of the ovipositor elongate, approximately 4 times longer than wide, slightly narrowing towards the widely arcuate, asymmetrical apex. Stylus small, bearing usually 3 long setae. Spermatheca pear-shaped with body robust, nodulus short, situated partly inside, cornu, stout, strongly curved, without terminal appendage. Infundibulum well developed, inverted y-shaped.

Coloration: Colour pattern of elytra forming characteristic series (Tab. II., figs. 1–13).

Distribution: In the palaeartic region were found 14 species, 1 species not revised. The Nearctic species were not studied. Species of the Oriental and Afrotropical regions are considered to be members of other genera.

Discussion: The concept of the genus *Brumus* Muls. based on the "obliquely narrowed clypeus" and „almost horizontal epipleura“ (Mulsant, 1850) and especially on "simple tarsal claws" (Weise, 1879) or "tarsi distinctly tetramerous" (Jacobson, 1916) as well as on combination of these somewhat inconstant characters appears untenable. The hitherto used diagnostic characters are adaptive ones and subject of a general evolutionary trend leading from the ancestral type with less concealed movable parts of body to diminishing of epipleural space, prolongation of tarsi and gradual reduction to complete loss of teeth on tarsal claws. Therefore, I propose to accommodate in the genus *Brumus* Muls. not only most of the species included in it by Barovskij (1927) but also some species formerly placed in *Exochomus*: firstly the species with more or less reduced teeth of tarsal claws, hitherto placed in the subgenus *Anexochomus* Bar. (Type-species *E. undulatus* Weise subsequently designated by Chapin, 1965) and secondly the species with strongly dentate tarsal claws related to *E. quadripustulatus* (L.), including the latter one. The latter species was subsequently designated as type-species of the genus *Exochomus* Redtb. by Korschevsky (1932), but the designation – neglecting two previous ones – is invalid (Miyatake, 1970). Savoiskaya (1971) transferred species of *E. (Anexochomus)* Bar. in *Exochomus* s. str., which she treated according to the type-species designation by Korschevsky (1932).

Following species are considered here members of the genus *Brumus* Muls. (all but *Brumus bifasciatus* Barovskij were examined by author): *Brumus jacobsoni* Barovskij; *Brumus octosignatus* (Gebler); *Brumus discors* Barovskij; *Brumus oblongus* (Weidenbach); *Brumus mongolicus* Fleischer; *Brumus kiritshenkoi* (Barovskij) comb. n.; *Brumus gebleri* Weise stat. n.; *Brumus undulatus* (Weise) comb. n.; *Brumus septemmaculatus* (Weise) stat. n., comb. n.; *Brumus mongol* (Barovskij) comb. n. *Brumus quadriguttatus* (Fleischer) stat. n., comb. n. *Brumus nigropictus* (Fairmaire) comb. n.; *Brumus cedri* (Sahlberg) stat. n., comb. n.; *Brumus quadripustulatus* (Linnae) comb. n.

Key to Palaeartic species of the genus *Brumus* Muls.

- 1 (8) Tarsal claw without tooth.
- 2 (7) Distal margin of tarsal segment iii. reaching to or over the distal margin of segment ii. Claw very long, slender, slightly curved, gradually dilated towards the base. Pronotum and elytra pale, pronotum with 1 – 3, elytra with 4 – 5 dark spots. Front in males pale.
- 3 (4) Elytron with 5 separate or connected spots (pattern: 1, 2, 1, 1, 0), colour pattern feebly to rather strongly concealed by the brown pigmentation. Inner spot of the second series never connected with spot of the third series. Lateral

- margin of pronotum in anterior half more strongly arcuate than in posterior one, distinctly reflexed. Humeral bulge rather strongly developed. Median lobe of aedeagus distinctly shorter than paramera. . . . *B. jacobsoni* Barovskij
- 4 (3) Elytron with 4 separate or connected spots (pattern: 1, 1, 1, 1, 0), colour pattern distinct. Spot of the second and third series can be connected. Lateral margins of pronotum all along their length regularly arcuate, not reflexed. Humeral bulge slightly developed. Median lobe of aedeagus at least as long as paramera.
- 5 (6) Body oval, at most by one third longer than wide, strongly convex. Elytra in the anterior half about as strongly convex as in posterior one. Outer portions of elytral epipleura moderately descending ventrolaterad. Distal ends of posterior femora not reaching outer margin of epipleura. Median lobe of aedeagus about as long as paramere. *B. octosignatus* (Gebler)
- 6 (5) Body elongate oval, at least by one third longer than wide, slightly convex. Elytra in the anterior half less convex than in posterior one. Elytral epipleura horizontal. Distal end of posterior femora reaching over the outer margin of epipleura. Median lobe of aedeagus by one fifth longer than paramere. *B. discors* Barovskij
- 7 (2) Distal margin of tarsal segment iii. reaching at most the midlength of the free part of segment ii. Tarsal claw not long, rather strongly curved, abruptly dilated at the base. Pronotum and elytra black, each with 2 yellowish-red spots. Front in males black. *B. oblongus* (Weidenbach)
- 8 (1) Tarsal claw at least with a small tooth.
- 9 (10) Lateral margins of elytra not visible simultaneously from above at about their midlength. Tooth of tarsal claw situated in the proximal third of the claw. Elytral epipleura horizontal. Distal ends of posterior femora exceeding outer margin of epipleura. *B. mongolicus* Fleischer
- 10 (9) Lateral margins of elytra more or less reflexed, completely visible from above. Tooth of tarsal claw situated at least in the midlength or more distad. Outer margins of epipleura descending ventrolaterad. Distal ends of posterior femora not reaching outer margins of epipleura.
- 11 (20) Pronotum subtrapezoidally oval with broad sides, lateral margins moderately converging anteriorly, (their prolongations meeting in a sharp angle), posterior corners vaguely defined, broadly to very broadly arcuate, sides often fluidly passing into base, lateral parts of the base of pronotum simple, not obliquely truncate beside posterior corners.
- 12 (19) Pronotum without depression at anterior corners. General coloration of elytra pale. Tarsal claw with a small tooth.
- 13 (16) Elytron with spot of the first series, outer spot of the second series missing (pattern: 1, 1, 1, 1, 0 or 1, 1, 1, 1, 1). Spots in anterior half of elytra separated.
- 14 (15) Median lobe of aedeagus longer than paramere. (Pronotum rather slightly convex, its anterior margin shallowly emarginate, the emargination nearly

- straight in the middle. Posterior tibia about 5 times longer than wide. . . .
 *B. kiritshenkoi* (Barovskij) **comb. n.**
- 15 (14) Median lobe of aedeagus shorter than paramere. (Pronotum strongly convex, its anterior margin deeply emarginate, the emargination strongly convex in the middle. Posterior tibia about 4.5 times longer than wide).
 *B. gebleri* Weise **stat. n.**
- 16 (13) Elytron without spot of the first series, outer spot of the second series present (pattern: 0, 2, 1, 1, 0 or 0, 2, 1, 1, 1). Spots of anterior half of elytra forming transverse band.
- 17 (18) Body moderately convex, disc of elytra not conspicuously flattened. Setae on pronotum rudimentary, not exceeding the diameter of punctures. Elytra rather shiny. Anterior margin of the transverse dark band of elytra serrate. Anterior tibia at most 5 times longer than wide. Median lobe of aedeagus in lateral view in proximal half parallelsided, then longly pointed,
 *B. undulatus* (Weise) **comb. n.**
- 18 (17) Body slightly convex, disc of elytra conspicuously flattened. Setae of pronotum, at least at sides, longer than the diameter of punctures. Elytra rather dull. Anterior margin of the transverse band of elytra sinuate. Posterior tibia at least 5 times longer than wide. Median lobe of aedeagus in lateral view in two proximal thirds parallel, then shortly pointed.
 *B. septemmaculatus* (Weise) **stat. n., comb. n.**
- 19 (12) Pronotum with conspicuous roundly triangular impression at anterior corners. General coloration of elytra dark, each elytron with 1 – 2 yellowish-red spots. Tarsal claw with a large tooth. *B. mongol* (Barovskij) **comb. n.**
- 20 (11) Pronotum triangularly rounded with narrow sides, lateral margins strongly converging anteriorly (their prolongations meeting in a more or less right angle), posterior corners well defined, narrowly arcuate. Lateral parts of the base of pronotum obliquely truncate beside posterior corners.
- 21 (26) Lateral margins of pronotum (measured in a line between the tips of anterior and posterior corners) not quite strongly converging anteriorly, their prolongations enclosing a sharp or right angle.
- 22 (23) Elytral epipleura black, each elytron with 2 yellowish-red spots, anterior spot transversely rectangular. *B. quadriguttatus* (Fleischer) **stat. n., comb. n.**
- 23 (22) Elytral epipleura partly pale, each elytron either dark with 2 – 3 pale spots, one of them lunular or pale with dark pattern.
- 24 (25) Body roundly oval. Disc of elytra rather strongly convex, elytra yellowish-red with anchor-shaped pattern at the apex. Tarsal claw slender with a small tooth. *B. nigropictus* (Fairmaire) **comb. n.**
- 25 (24) Body oval. Disc of elytra slightly convex, elytra black (yellowish-brown) each with 2 – 3 yellow to yellowish-orange spots, one of them lunular. Tarsal claw moderately stout with a well developed tooth.
 *B. cedri* (Sahlberg) **stat. n., comb. n.**

26 (21) Lateral margins of pronotum (measured in a line connecting the tips of anterior and posterior corners) very strongly converging anteriorly, their prolongations enclosing an obtuse angle. *B. quadripustulatus* (Linnae) **comb. n.**

***Brumus jacobsoni* Barovskij**
(Figs. 19 – 42)

Brumus jacobsoni Dobrzhansky, 1927 : 51, nomen nudum.

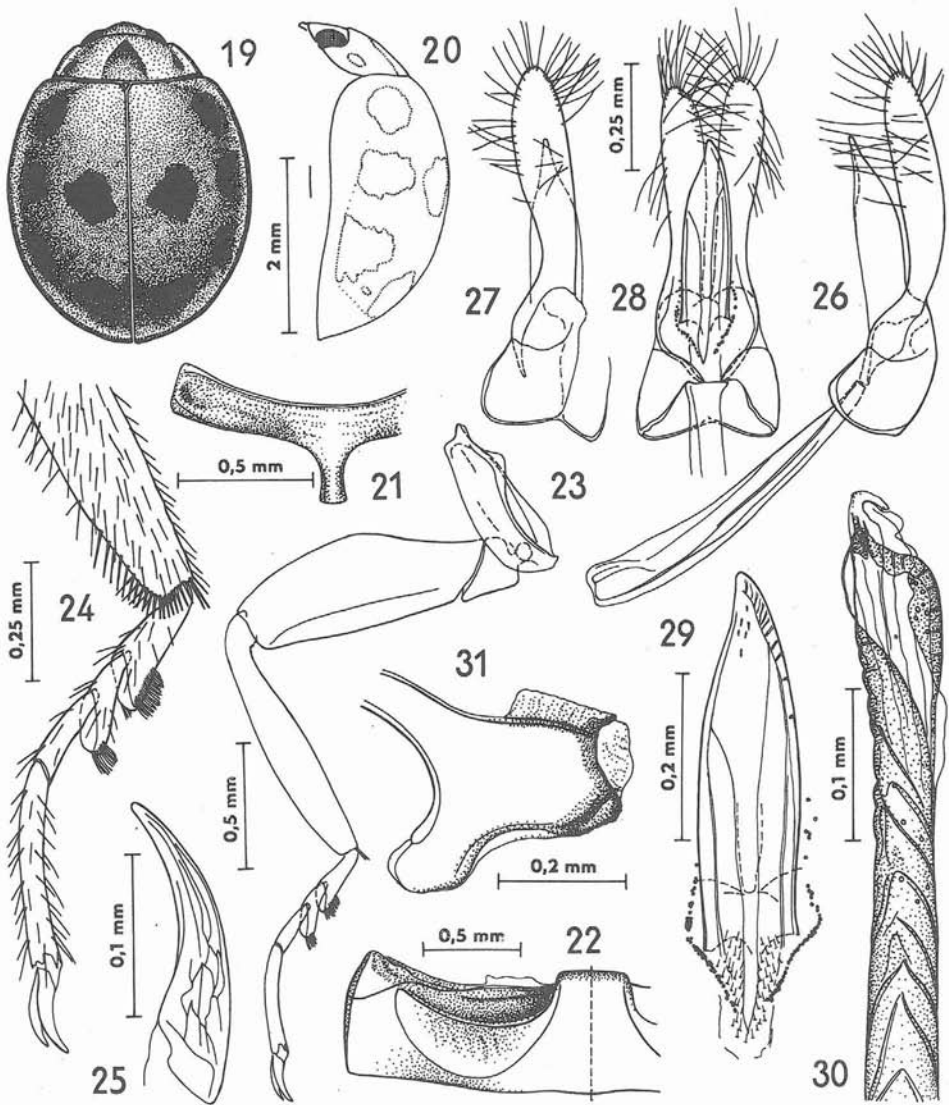
Brumus Jacobsoni Barovskij, 1927 : 194, 200; Korscherfsky, 1932 : 255, catalogue; Mader, 1955 : 803, 805.

Brumus jacobsoni; Savoiskaya, 1955 : 183, larva; 1983a : 175, 176, larva; Bielawski, 1975 : 255 1984 : 314, 379.

Body roundly oval, somewhat ovate, in males 1.23 – 1.28, in females 1.27 (1.26 – 1.29) times longer than wide, rather strongly convex. Upper integuments dull, feebly punctate. Rudimental pubescence hardly visible.

Head and mouth parts brownish-yellow to brown, basal parts of the head capsule nearly black. Cardio, apices of mandibles, distal segments of maxillar and labial palpi infuscate. Antennae brownish-yellow, 2 apical segments slightly darkened. Pronotum and elytra brownish-yellow with vaguely limited, rather large, brownish to black spots. Pronotum with 3 spots as figured (Fig. 33). Scutellum brown to black. Each elytron with 5 spots (pattern: 1, 2, 1, 1, 0): spot i. rounded, covering humeral bulge, is the smallest one; remaining spots larger, approximately of equal size; spot ii. rounded to quadrangular, its major part situated before the midlength of elytra closer to suture; spot iii. transversely oval, situated entirely before the midlength of elytra closer to lateral margin; spot iv. transversely quadrangular, situated entirely behind the midlength of elytra closer to lateral margin; spot v. longitudinally oval situated in the apical fifth of elytra closer to suture. The usually paler lateral border from humeral area along spots iii. and iv. narrow, from the spot iv. abruptly dilated towards suture. Underside brownish-black to black. Prosternum and lateral portions of abdominal sternite iii. – v. brown. Elytral epipleura, outer parts of propleura as well as median portions of abdominal sternite iv. – v. brownish-yellow. Coxae black, remaining parts of legs brownish-yellow. Distal half and inner edge of each femur, apart from distal end, as well as distal end of the tarsal segment iv. and the base of tarsal claws to various extent infuscate.

Head roundly subpentagonal, feebly transverse, 0.59 (0.58 – 0.60) times wider than pronotum. Anterior margin of head capsule rather broadly and very shallowly emarginate. Clypeus rather strongly depressed in front of eyes, not excavate, the depressed area small. Sides of clypeus in proximal two-fifths finely arcuate, usually without distinct sinuosity, more distad straight to slightly emarginate, hardly bordered. Anterolateral corners of clypeus not widely roundly obtuse, separated from anterior margin of eye by almost three-sevenths of the eye length. Front moderately convex, at least 0.52 (0.51 – 0.54) times wider than head. Eyes rather large, oval.



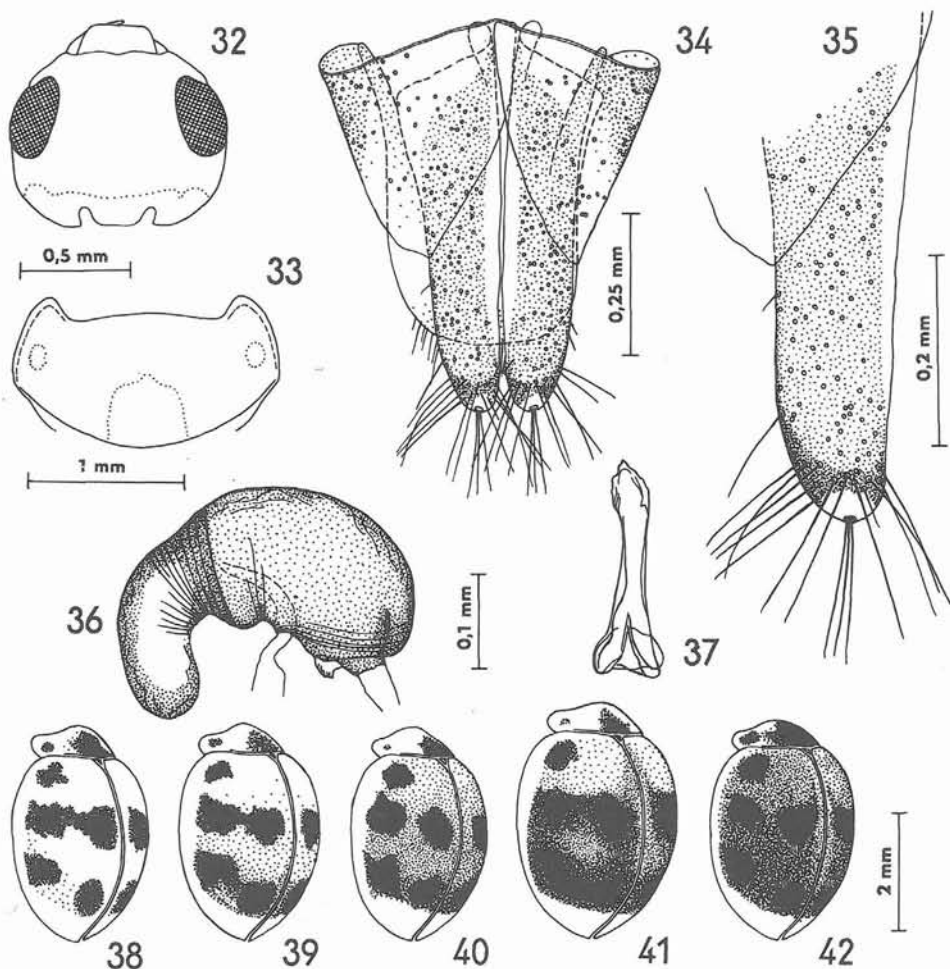
Figs. 19 – 31, *Brumus jacobsoni* Barovskij; 19, form of body, dorsal view (Uzbekistan, Kyzil Kir near Buchara); 20, idem, lateral view; 21, prosternum; 22, abdominal sternite i.; 23, posterior leg; 24, tarsus; 25, tarsal claw; 26 – 28, tegmen, 26, lateral view, 27, dorsolateral view; 28, ventral view; 29, median lobe of aedeagus, ventral view; 30, terminal ampulla of siphon; 31, siphonal capsula.

Inner orbits finely arcuate all along their length, moderately converging anteriorly. Long portion of temples behind eyes straight to finely arcuate, parallel or feebly converging posteriorly, then broadly and roundly obtusangulate. Surface with a fine (granular) reticulation, rather finely and densely punctate, covered with short pubescence. Punctures in the middle of front as large as eye facets, becoming distinctly larger laterally and posteriorly, separated usually by almost 1 diameter. Setae on vertex at most as long as 2, along orbits as 1 diameter of an eye facet.

Pronotum roundly subtrapezoidal 1.98 (1.91 – 2.00) times wider than long, strongly convex. Anterior margin with a not much broad and deep subtrapezoidal emargination, emarginated part rather strongly arcuate in the middle. Anterior corners moderately prominent, their inner margin, except for the basal part, straight, outer margin rather strongly, regularly arcuate, meeting the inner one at the almost rectangular, narrowly rounded tip. Posterior corners not well defined, broadly obtuse, situated at about three anterior sevenths of the pronotal length. Distance between anterior and posterior corners reaching two-thirds of the length of pronotum. Small area at anterior corners flattened, feebly depressed. Lateral margins rather strongly arcuate in the anterior third somewhat angulate, not very strongly converging anteriorly, narrowly reflexed and very narrowly bordered. Base rather strongly arcuate, very finely angulate in the middle, lateral parts becoming gradually straightened outwards, hardly emarginate, not depressed besides posterior angles. Surface finely, somewhat obsoletely reticulate, finely and rather densely punctate. Punctures almost as large as eye facets, separated usually by 1 diameter, becoming shallower to indistinct along lateral margins. Scutellum small, equilaterally triangular, in base as wide as $1/11 - 1/12$ of the pronotal width, sides usually shallowly concave. Surface with traces of reticulation and a few (2 – 9) unequal punctures.

Elytra roundly oval, in males 1.07 – 1.08, in females 1.08 (1.06 – 1.10) times longer than wide, strongly convex, from lateral view, in males 2.20 – 2.24, in females 2.18 (2.09) – 2.32) times longer than high, more strongly convex in the median third than in the two remaining ones. Base of elytra feebly concave, humeral angle very broadly roundly obtuse, hardly projecting anteriorly, its inner margin finely depressed. humeral bulge rather strongly developed, feebly projecting posteriorly. Outline of lateral parts of elytra, seen from the apex, rather straight, partly almost vertical, under humeral bulge only feebly depressed, with a distinct longitudinal furrow. Lateral margins almost regularly, sometimes in the anterior third somewhat more flatly arcuate, narrowly reflexed all along their length and not much narrowly beaded. Apex of elytra in both sexes semicircular, hardly pointed. Surface rather distinctly reticulate, finely and rather sparsely punctate. Punctures smaller than eye facets, separated usually by 3 diameters, along lateral margins becoming as large as, or larger than eye facets and then separated by hardly 1 diameter. Rudimental pubescence hardly visible.

Ventral surface moderately shiny, with greyish-white pubescence. Setae as long as 3, at sides as 4, and on legs as 4 – 5 diameters of an eye facet. Propleuron in the mid-



Figs. 32 - 42, *Brumus jacobsoni* Barovskij; 32, head; 33, pronotum; 34, ovipositor; 35, apex of hemisternite; 36, spermatheca; 37, infundibulum; 38 - 42, variation (Uzbekistan, vicinity of Bucharra).

dle almost flat, moderately sloping down ventromesad, its narrow outer border horizontal. Surface obsolete reticulate, indistinctly punctate. Epipleuron at most 1.63 (1.48 - 1.71) times wider than the base of mesosternum, in the anterior half horizontal, broadly and very shallowly longitudinally canaliculate. Surface rugose, without reticulation, sparsely, irregularly punctate. Prosternum as figured (Fig. 21). Basisternal lobes narrow, flattened, their inner halves slightly constricted. Surface with a few indistinct transverse wrinkles, not much coarsely but densely punctate. Punctures shallow, 1.5 - 2 times larger than eye facets, often separated by 0.25 - 0.5

of diameter, becoming less distinct or completely disappearing towards the lateral margins of basisternal lobes. Mesosternal process at the base 1.14 (0.97 – 1.19) times wider than long in the middle, moderately convex. Anterior margin shallowly bisinuate, strongly carinate. Surface rather coarsely rugose, punctures, in particular wrinkles little distinct, as large as to 1.5 times larger than eye facets, separated usually by more than 1 diameter. Mesosternum 3.75 (3.39 – 4.31) times longer than mesosternal process, feebly convex, not flattened in the middle, median longitudinal sulcus mostly impressed. Precoxal bulges hardly distinct. Surface, apart from the often smooth median portion, finely and densely transversely wrinkled, finely punctate. Punctures along the median sulcus distinctly smaller than eye facets, separated by 4 – 6 diameters, becoming gradually larger and shallower laterally, at most twice as large as eye facets and then separated by almost 0.5 of their diameter. Abdominal sternites, apart from the median parts, obsoletely reticulate and irregularly punctate. Punctures usually as large as eye facets, separated by 1 – 4 diameters, density and size of punctures gradually increasing from the sternite i. to the sternite v. Punctures of each sternite becoming gradually larger laterally, at sides almost twice as large as in the middle, often oval or catenulate. Femoral line complete, semicircular, reaching to four fifths of the length of sternite i. Space delimited by the femoral line (axillary space) with very obsolete reticulation, inconspicuously longitudinally wrinkled. Punctures in wrinkles shallow, nearly 1.5 times larger than eye facets. Legs long, slender, distal ends of posterior femora reaching to the outer third of the width of epipleuron. Posterior tibia 5.92 (5.82 – 5.99) times longer than wide, inner margin at the distal end often somewhat more strongly arcuate than the outer one. Tarsus unusually long, together with claw as long as tibia. Segment iii. reaching by more than one half over distal edge of the segment ii. Tarsal claw feebly curved and gradually thickened proximad, not dentate.

Male and female genitalia as figured (Figs. 26 – 31, 34 – 37.).

Length: males 3.33 – 3.52 mm, females 3.49 – 3.97 mm, totally measured: 3 males, 6 females.

Variation: Lateral spots of pronotum can be connected with the median one. Spots of the second series as well as those of third and fourth series can be transversely connected on each elytron. Colour pattern feebly to rather strongly concealed by the brown pigmentation.

Type material: Syntypes, prov. Heptapotomia, Orta-Kuduk, 5. 7. 1907, Jacobson lgt., 2 ex., Mongolia, Gobi c., Chara-Chote, 1. – 5. 6. 1926, Kozlov lgt., 1 ex (all ZIN).

Material examined: Uzbekistan, Kyzil Kir, 26. – 28. 4. 1978, Strejček, Bílý lgt., 9 ex., (MNP); 60 km SE Buchara, 28. 4. 1975, Okáli lgt., 6 ex., (SNM).

Distribution: Uzbekistan, SW Kazakhstan, Mongolia.

Bionomy: Little known. According to Savoiskaya (1955, 1983a, b) living on the "Zaisan Saxaul" and associated with galls caused by psyllids. Feeding on "psyllids, aphids (*Xerophilaphis saxaulica* Nov.) and thrips associated with the development of galls on saxaul". It has one generation annually and during July migrates towards

the unknown hibernating sites. Bielawski (1984) supposed it lived on *Tamarix*.

Discussion: The name *Brumus jacobsoni* was mentioned for the first time as nomen nudum by Dobrzhansky (1927), valid description was published by Barovskij (1927a) without designation of type-specimens. The diagnostic character „pronotum with 5 spots“ mentioned in original description as well as by later authors, is wrong. In fact, pronotum bears only 3 spots, the additional 2 “spots“ are caused by translucent eyes, not by disintegration of median spot as believed Bielawski (1984). Shape of body and some details including genitalia were figured by Bielawski (1975, 1984). Larva was described and some details illustrated by Savoiskaya (1955, 1983a).

***Brumus octosignatus* (Gebler)**

(Figs. 43 – 71)

Coccinella 8-signata Gebler, 1830 : 225.

Coccinella deserta Motschulsky, 1840 : 175.

Coccinella desertorum Gebler, 1841 : 376.

Brumus desertorum; Mulsant, 1850 : 493.

Brumus 8-signata; Crotch, 1874 : 38.

Brumus octosignatus; Crotch, 1874 : 195; Weise, 1879 : 135; 1885 : 55; 1892 : 53 (Sicard's translation); Jacobson, 1916 : 991, distribution; Barovskij, 1927 : 196, 199; Korschefsky, 1932 : 266, catalogue; Mader, 1955 : 803, 805; Bielawski, 1961b : 229; 1975 : 255; 1984 : 315, 381; Savoiskaya, 1983a : 175, larva.

Brumus octosignatus var. *lasioides* Weise, 1879 : 135; 1885 : 55; 1892 : 54 (Sicard's translation).

Brumus 8-signatus var. *conjunctus* Fleischer, 1900 : 118.

Body spindle oval to nearly oval, in males 1.28 (1.20 – 1.35), in females 1.29 (1.20 – 1.33) times longer than wide, strongly convex. Upper integuments not very shiny, feebly and rather obsoletely punctate, rudimentally pubescent.

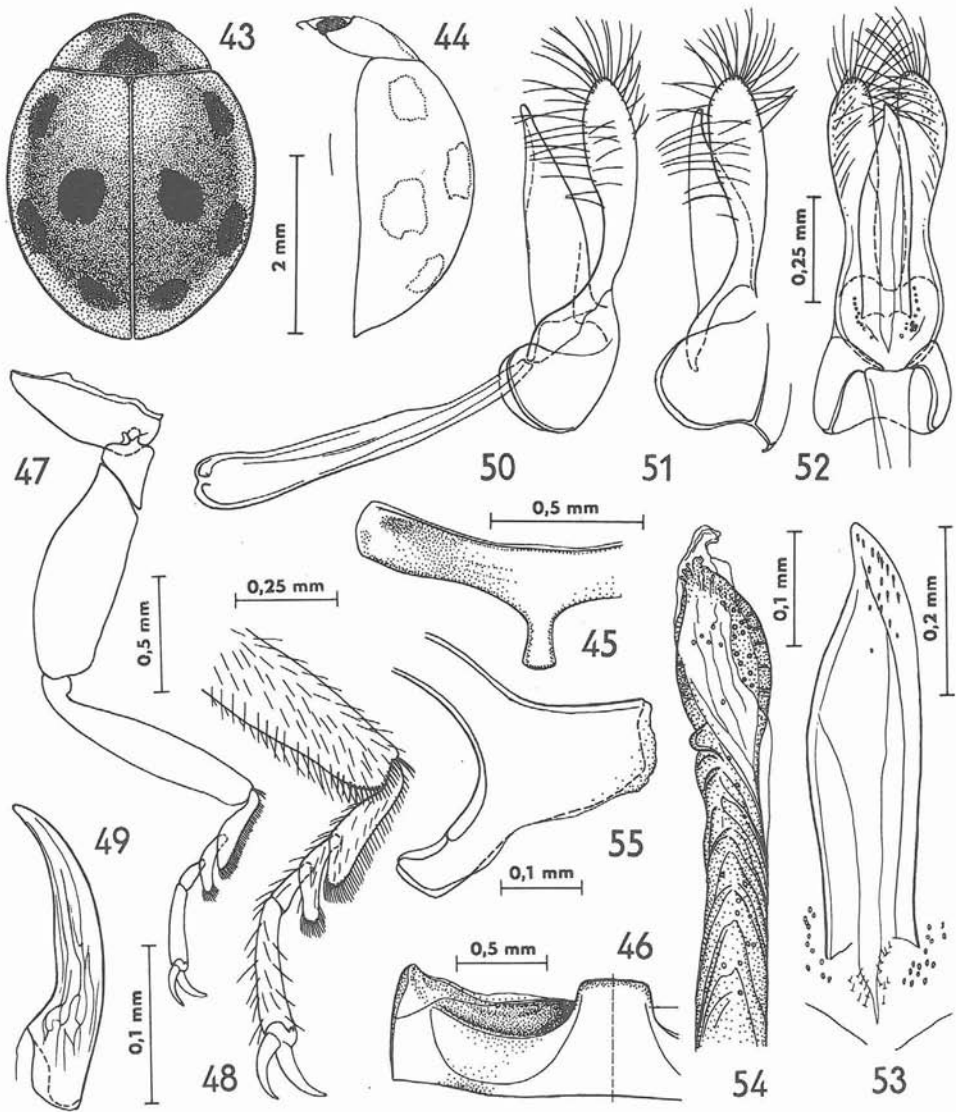
Head, mouth parts and antennae reddish-orange, basal parts of head behind the eyes frequently black. Apices of mandible, terminal segments of maxillar and labial palpi and antennae infuscate to black. Pronotum reddish-orange with triangular or usually pentagonal black spot before the scutellum. Apex of the spot not reaching the anterior margin of pronotum. Scutellum black. Elytra reddish-orange feebly darkly bordered, each with 4 black spots (pattern: 1, 1, 1, 1, 0) (Figs. 43 – 44). Underside reddish-orange, most of prosternum, meso- and metasternum including pleural parts, as well as inner parts of abdominal sternite i. - ii. and base of the iii. one black. Mesoepisternum, inner parts of abdominal sternite iii. - iv. brown. Meso- and metaepimeron frequently with rusty to redish-orange spot. Legs reddish orange, basal portion of coxae brown to black, distal end of the tarsal segment iv. infuscate.

Head roundly quadrangular, indistinctly transverse, 0.57 (0.53 – 0.62) times wider than pronotum. Anterior margin of head capsule not broadly, rather shallowly emar-

ginate, the emargination arcuate to brace-shaped. Clypeus rather strongly and widely depressed in front of eye, sometimes feebly excavate. Sides of clypeus in two proximal fifths obtusangulately rounded, more distad straight or feebly emarginate, very feebly bordered. Anterolateral corners of clypeus not widely obtusangulately rounded, separated from anterior margin of eye by two-fifths of the eye length. Front slightly convex, at least 0.53 (0.50 – 0.56) times wider than head. Eyes relatively large, bean-shaped. Inner orbits nearly all along their length flatly arcuate, slightly to moderately converging anteriorly. Long portion of temples behind eyes finely arcuate, slightly converging posteriorly then widely arcuate. Surface finely and somewhat granularly reticulate, finely and rather densely punctate, covered by a short pubescence. Punctures not deep somewhat smaller or as large as eye facets, separated by 1.5 – 2 diameters. Setae on front rudimental, on anterior margin of head as long as 2 diameters of an eye facet.

Pronotum roundly pentagonal 1.93 (1.97 – 2.04) times wider than long, rather strongly convex. Anterior margin not broadly and deeply subtrapezoidally emarginate, emarginated part rather strongly arcuate in the middle. Anterior corners rather strongly prominent, their inner margin, except for the basal parts, straight. Outer margin regularly, at base somewhat angulately, rounded, meeting the inner one at the moderately sharp, rather narrowly rounded, asymmetrical tip. Posterior corners well defined, not very widely obtusangulately rounded, situated at anterior third of the pronotal length. Distance between anterior and posterior corners reaching three-fifths of the pronotal length, lateral parts of the surface of pronotum slightly depressed towards the anterior corners. Lateral margins rather slightly, in the anterior third somewhat angulately, or strongly arcuate, moderately converging anteriorly, nearly unreflexed, finely bordered. Base widely arcuate, not angulate in the middle, lateral parts gradually straightened outward, beside posterior angles not emarginate, (nearly) not depressed. Surface with microsculpture as on the head, the punctures usually somewhat smaller than eye facets. Rudimental pubescence indistinct. Scutellum equilaterally triangular, in base as wide as 1/10 – 1/13 of the pronotal width. Surface obsoletely reticulate with great number (8 – 14) of minute shallow punctures.

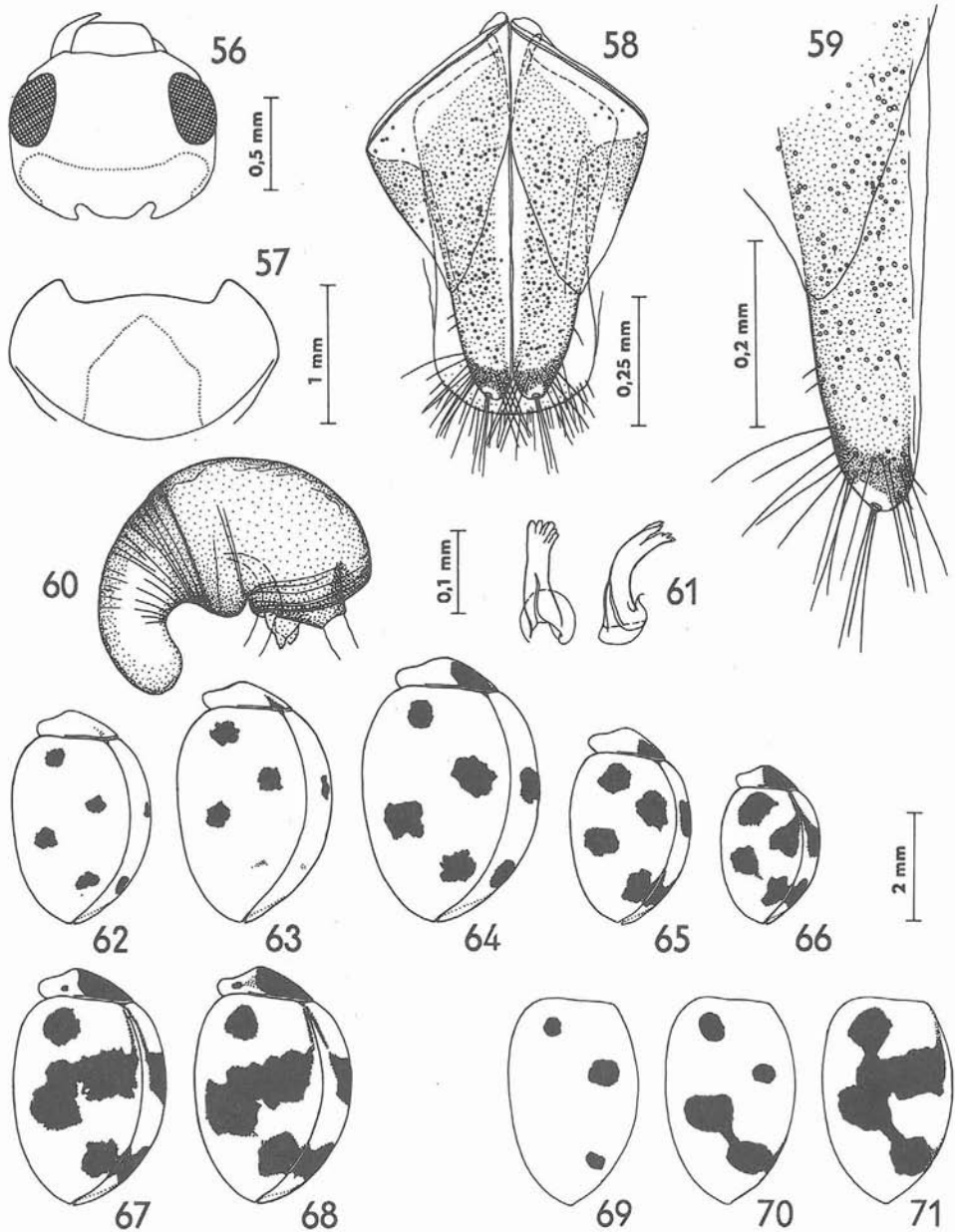
Elytra oval frequently somewhat spindle-shaped, in males 1.04 (1.01 – 1.09), in females 1.07 (1.01 – 1.14) times longer than wide strongly convex, from lateral view, in males 2.03 (1.78 – 2.26), in females 2.06 (1.83 – 2.20) times longer than high, in anterior half distinctly more strongly arcuate than in posterior one, apex feebly caudate. Base of elytra straight, humeral angle rather broadly roundly obtuse hardly projecting anteriorly its inner margin finely depressed. Humeral bulge very slightly developed nearly absent. Outline of the disc, seen from the apex, regularly and somewhat flatly arcuate not gable-shaped, lateral parts of the elytra gradually straighten outwards, in the anterior half under humeral bulge hardly depressed, without distinct furrow. Lateral margins nearly regularly or in anterior third somewhat less arcuate, very narrowly reflexed, rather strongly beaded. Apex of elytra semielliptical



Figs. 43 – 55, *Brumus octosignatus* (Gebler); 43, form of body, dorsal view (Tajikistan, Ramit); 44, idem, lateral view; 45, prosternum; 46, abdominal stenite i.; 47, posterior leg; 48, tarsus; 49, tarsal claw; 50 – 52, tegmen, 50, lateral view, 51, dorsolateral view, 52, ventral view; 53, median lobe of aedeagus, ventral view; 54, terminal ampulla of siphon; 55, siphonal capsule.

at most slightly pointed. Surface obsoletely reticulate, finely rather densely punctate, rudimentally pubescent. Punctures smaller or at most as large as eye facets, separated by 1.5 diameter.

Ventral surface moderately shiny, with rather short or medium greyish-white pubescence. Setae as long as 3, at sides as 4 diameters of an eye facet. Propleura in the middle slightly transversely convex, moderately sloping down ventromesad, not much strongly depressed both at anterior corner and at the base, its rather wide outer margin horizontal. Surface obsoletely reticulate, finely rather densely punctate, punctures very shallow, as large as eye facets, separated by a little more than 1 diameter. Epipleuron at most 1.54 (1.33 – 1.76) times wider than base of mesosternum, the inner part of the anterior half horizontal, two outer fifths of the width of epipleuron moderately descending ventrolaterad. Surface without reticulation, feebly rugose, irregularly rather densely punctate. Punctures along the outer margin nearly as large as eye facets, usually separated by more than 1 diameter, becoming gradually larger indistinct or catenulate towards the inner margin. Prosternum as figured (Fig. 45). Basisternal lobes not wide flattened, at their inner half slightly constricted, each only very slightly depressed along posterior margin and obliquely so towards the anterior corner. Surface without distinct reticulation, obsoletely transversely wrinkled, rather finely densely punctate. Punctures as large as or at most 1.5 times larger than eye facets, frequently separated by hardly 1 diameter, becoming shallower irregular and sparser towards the lateral margins of basisternal lobes. Mesosternal process at the base 1.44 (1.24 – 1.81) times wider than long in the middle, moderately convex. Anterior margin bisinuate, moderately to strongly carinate, rather deeply arcuately emarginate in the middle. Surface shortly irregularly wrinkled, the punctures frequent in particular wrinkles, as large as those in the middle of prosternum. Matasternum 4.35 (3.85 – 5.32) times longer than mesosternal process, not very strongly convex, hardly flattened in the middle, median longitudinal sulcus usually strongly impressed. Precoxal bulges well developed, not wide. Surface without distinct reticulation, finely rather densely transversely wrinkled, finely punctate. Punctures along the median sulcus at most as large as eye facets, separated by 2 – 5 diameters, becoming gradually larger and denser, at most as large as 2 eye facets, separated by 0.5 – 1 diameter. Abdominal sternites at most with traces of reticulation, not very coarsely, rather densely punctate. Punctures in the middle of each sternite at most as large as 1.5 diameter of an eye facet, separated by 0.5 – 1 diameter, becoming gradually shallower, denser, or connected with each other towards the lateral margin of each sternite. Femoral line usually complete, somewhat angulately semi-circular, reaching to four-fifths of the length of sternite i. Axillary space with a traces of reticulation and fine longitudinal wrinkles, irregularly punctate. Punctures as large as or nearly 2 times larger than eye facets, separated by 0.25 – 3 diameters. Legs long, slender, distal ends of posterior femora reaching at least to outer quarter of the width of epipleuron. Posterior tibia 4.90 (4.22 – 5.46) times longer than wide, both outer and the inner margin slightly or outer one rather more strongly arcuate.



Figs. 56 - 71, *Brumus octosignatus* (Gebler); 56, head; 57, pronotum; 58, ovipositor; 59, apex of hemisternite; 60, spermatheca; 61, infundibulum; 62 - 71, variation (62, Tajikistan, Margelan, 63, 65 - 66, Ramit, 64, Iran, Maku, 67 - 68, Kavkaz (*B. octosignatus* var. *cojuctus* Fleischer), 69 - 71, other elytral colour patterns).

Tarsus long and slender to very slender, together with claw nearly as long as tibia. Tarsal segment iii. by its distal margin slightly extending over distal edge of the segment ii. Tarsal claw long slender, slightly curved, triangular base abruptly dilated not dentate.

Male and female genitalia as figured (Figs. 50 – 55, 58 – 61).

Length: males 2.89 – 4.27 mm, females 2.71 – 4.50 mm; totally measured: 56 males, 63 females.

Variation: Extent of variability large, particular deviations of colour pattern within populations not frequent. Median spot on pronotum either gradually disappearing or, on the contrary, prolonged up to the anterior margin of pronotum. Apart from median spot, small lateral spots may occur in front of posterior corners of pronotum, which are either isolated or almost confluent with the median spot. Spots of elytra becoming gradually smaller, those of the third and fourth series sometimes absent. On the contrary, spots becoming gradually larger, to a various extent mutually connected.

Type specimens: Gebler's type material from the vicinity of the lake "Nor Saissan" and "Draissang" (Mongolia) should be deposited in the ZIN (Sankt Peterburg).

Material examined: Sicilia, Bodemeyer lgt., 1 ex.; Palermo, 1 ex.; Turkey, Ankara, 1895, 1930, Escherich, Staněk lgt., 4 ex.; Mogan gölü, 9. 7. 1947, Exp. N. Mus., 17 ex.; Balá, 21. 7. 1947, Exp. N. Mus., 1 ex.; Erciyas, 3200 m, 25. 7. 1947, Exp. N. Mus., 1 ex.; Bürücek Toros, 29. – 31. 7. 1947, Exp. N. Mus., 1 ex.; Gülşehir, 15. 6. 1970, Exp. N. Mus., loc. no. 5, 1 ex.; Gürün, 16. 6. 1970, 1600 m, Exp. N. Mus., loc. no. 10, 1 ex.; Tahir, 2400 m, Exp. N. Mus., loc. no. 21, 1 ex. (all MNP); Çiftehane, 1. 7. 1980, 1 ex. (EUI); Iraq, „Euphrat“, coll. Helfer, 3 ex.; Iran, Makoo, 19. v 20. 6. 1970, Exp. N. Mus., loc. no. 24, 11 ex.; Mahan, 29. 4. 1973, 30. – 31. 5. 1977, Exp. N. Mus., loc. no. 183, 351, 2 ex.; Nagshe Rostam, 20. – 21. 6. 1973, Exp. N. Mus., loc. no. 250, 1 ex.; 16 km SSE Khoy, 6. 7. 1973, Exp. N. Mus., loc. no. 267, 15 ex. 30 km SW Kerman, 30. 5. 1977, Exp. N. Mus., loc. no. 350, 5 ex.; 25 km N Birjand, 4. v 7., 6. 1977, Exp. N. Mus., Loc. no. 360, 1 ex.; Kuh-e Binalud, 15 km NE Nishabur, 13. – 15. 6. 1977, Exp. N. Mus., loc. no. 365, 9 ex.; 20 km E Sabzevar, 15. 6. 1977, Exp. N. Mus., loc. no. 367, 5 ex. 25 km SE Shahpur, 27. – 28. 7. 1977, Exp. N. Mus., loc. no. 406, 2 ex. (all MNP); Gharaghaj, 16. 11. 1965, Safavi lgt., 1 ex. (PPDI); Rossia, 2 ex.; Sarepta 1 ex.; Astrachan, 3 ex.; "Kirgiz. stepe", Plustschefsky lgt., 4 ex.; "Caucas." coll. Fleischer, 9 ex.; Armenia, „Erivan“, 5. 1910, 1 ex.; Jerevan, upper Razdan, 1100 m, 7. – 13. 6. 1988, Strejček lgt., 4 ex.; Gocht near Gechart, 12. 6. 1988, Strejček lgt., 1 ex.; Bjurakan, 31. 5. 1989, Strejček lgt., 1 ex.; Sevan, 16. 5. 1978, Rakovič lgt., 1 ex.; Middle Asia, "Turkestan", coll. Dohrn, 3 ex. Turkmenia, Gr. Balchan, Dschebell, 1898, Hauser lgt., 3 ex.; Uzbekistan, Aman-Kutan, 1200 m, 21. 4. 1972, Horák lgt., 1 ex.; Karatepe near Samarkand, 29. 4. 1977, Rakovič lgt., 1 ex.; Zeravshan vall. riv. near Samarkand, 5. 1990, Strejček lgt., 2 ex.; Kirghisia, Alai Ata, coll. Fleischer, 1 ex. Issyk Kul lake, 6. 1968, Pokorný lgt., 1 ex.; Tadzhikistan, Margelan, coll. Fleischer, 2 ex.; Ramit, Hissar Mts., 25. 4. 1981, Jelínek lgt., 120 ex.; Kazakhstan, Talas thal,

Semirjetschensk, Kricheldorff lgt., 1 ex.; Akir tobe, Djambul, 6. 5. 1981, Jelínek lgt., 1 ex. (all MNP); Kapchagaj, 8. 6. 1984, Bíža lgt., 2 ex. (coll Brokeš); Coreá, Soeul, coll. Růžička et Volák, 4 ex. (MNP).

Distribution: Corsica, Sicily, Turkey, Iraq, Iran, Afghanistan, Rossia (south part), Middle Asia, Coreá, Mongolia.

Bionomy: Species inhabiting steppes and semideserts, often at feet of mountains. It occurs on plants of botanical genera *Alhagi*, *Artemisia*, *Calligonum*, *Ephedra*, *Tamarix*, but also *Medicago*. It feeds on aphids (*Aphis craccivora* Koch, *Macrosiphum jaceae* L., *Xerobion eriosomatinum* Nevski, *Xerophilaphis zawadovskii* Nev., *X. atraphaxidis* Nev., *Ephedraphis ephedrae* Nev.), but it is known also as predator of the larvae of *Phytonomus variabilis* Herbst. It is mono- or bivoltine. According to Savoiskaya (1983a), females oviposit in the beginning of May at the basis of leaves, at most 3 eggs together, Larvae live about 1 month. According to Yakhontov (1962) the adults of the new generation migrate during summer to hibernating sites at elevations between 400 – 2500 m (Uzbekistan), where they hibernate in aggregations at the base of shrubs and grasses. Savoiskaya (1968) observed no such migrations in Kazakhstan.

Discussion: According to variable extent of the dark pattern of pronotum and elytra, the species had been described several times as *Coccinella* L. before 1850. It was transferred to *Brumus* Muls. by Mulsant (1850) under the name – *desertorum* Gebler. Nominal species *Coccinella deserta* Motschulsky and *C. desertorum* Gebler werw established as junior homonymus of *B. octosignatus* Gebler by Crotch (1874). Further specimens with deviating colour pattern were designated as variations by Fleischer (1900), later they were considered as mere aberrations by Barovskij (1927) and Mader (1955). The form of body as well as some further details including genitalia of both sexes were figured by Bielawski (1961b, 1975, 1984), who also redescribed the species in the last paper. Its distributional data were summarized by Jacobson (1916), larva was described and figured by Savoiskaya (1962, 1983a).

***Brumus discors* Barovskij**

(Figs. 72 – 86)

Brumus discors Barovskij, 1927 : 195, 200; Korschefsky, 1932 : 265, catalogue; Mader, 1955 : 804, 807.

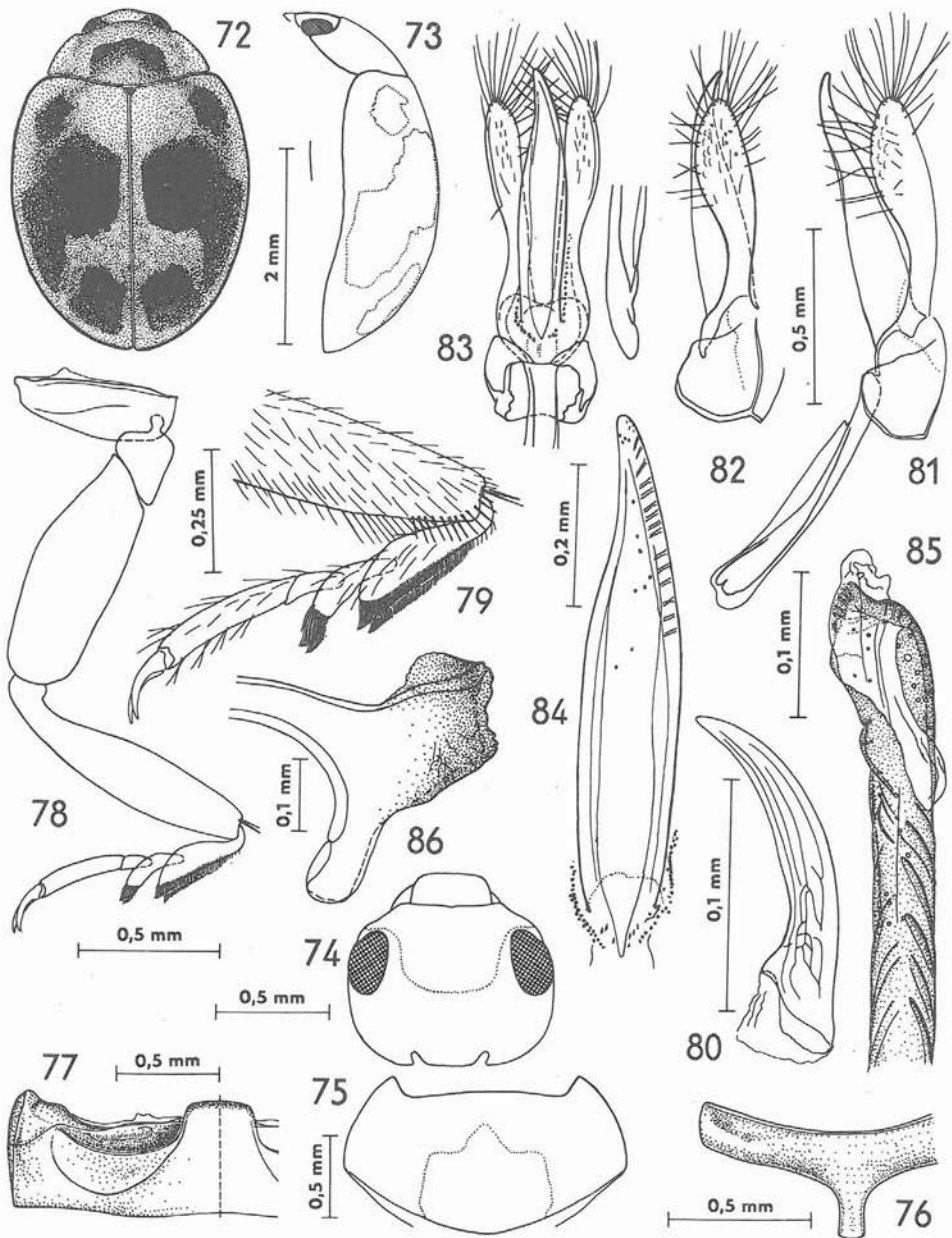
Body elongate oval, im male 1.40 times longer than wide, slightly convex. Upper integuments dull, feebly punctate, rudimentally pubescent.

Head black, clypeus, anterior part of front, mouth parts and antennae yellowish-orange, cardo, stipes, apical segment of maxillar palpi, apices of mandibles and 2 last segments of antennae brown or darkened. Pronotum yellowish-orange with rather well limited black spot in the middle. The spot is transversely rectangular nearly as wide as half of the pronotal width its short pointed apex reaching to the anterior third of pronotal length. Scutellum black. Elytra yeallowish-orange, each with 4 large

black spots: spot i. shortly oval smallest of all longitudinally covering humeral bulge; spot ii. pear-shaped to angularly oval its inner side straight, largest of all, covering more than second quarter of the elytra closer to suture; spot iii. elongate oval to triangular, longitudinally situated in third and partly in second quarter of the elytral length closer to lateral margin; spot iv. quadrangular, somewhat obliquely situated in anterior portion of the hind third of the elytral length closer to suture. Underside black, pro- and epipleura yellowish-orange, anterior corners of the basisternal lobes of prosternum brown. All legs equally coloured: coxae and femora black, trochanters and apices of femora brown, tibiae and tarsi including claws yellowish-orange, distal end of the tarsal segment iv. and base of tarsal claws infuscate.

Head including labrum pentagonally rounded moderately transverse 0.58 times wider than pronotum. Anterior margin of head capsule rather narrowly and shallowly emarginate, the emargination flatly arcuate. Clypeus rather strongly depressed in front of eyes, depressed area small. Sides of clypeus irregularly s-shaped, in proximal third roundly obtusangulate, more distad strongly emarginate indistinctly bordered. Anterolateral corners of clypeus widely rounded, feebly prominent anteriorly, separated from anterior margin of eye by nearly half of the eye length. Front slightly transversely convex, at least 0.57 times wider than head. Eyes very small, elongately oval. Inner orbits, except for the ends, moderately arcuate, moderately converging anteriorly. Long portion of temples behind eyes feebly arcuate, slightly converging posteriorly, then gradually more strongly rounded and narrowing to the occipital aperture. Surface granularly reticulate, finely and rather densely punctate, covered with short pubescence. Punctures in the middle of front somewhat smaller, along orbits and on anterior margin of front as large as eye facets, separated usually by 1 diameter. Setae in the middle of front rudimental, along orbits as long as 2 diameters of an eye facet.

Pronotum subtrapezoidal 1.98 times wider than long, moderately convex. Anterior margin with broad rather shallow subtrapezoidal emargination, emarginated part slightly convex in the middle. Anterior corners rather slightly prominent, their inner margins, except for the basal parts, straight. Outer margin slightly regularly arcuate, meeting the inner one at the somewhat sharp, narrowly rounded, slightly asymmetrical tip. Posterior corners slightly obtusangulate rather narrowly rounded, situated at about half of the pronotal length. Distance between anterior and posterior corner is three-quarters of the length of pronotum. Lateral parts of the surface of pronotum nearly as strongly convex as disc, towards the anterior corners gradually slightly depressed. Lateral margins very slightly, near anterior corners hardly more strongly, arcuate, moderately converging anteriorly, not reflexed, narrowly bordered. Base widely and nearly regularly rounded in the middle, lateral parts straightened outwardly and posterior corners not emarginate and depressed. Surface with reticulation as on head, finely and rather densely punctate, rudimentally pubescent. Punctures on disc (nearly) as large as eye facets, separated by 1 or at most by 2 diameters. Scutellum equilaterally triangular, moderately convex, base as wide as 1/12 of the pronotal width.



Figs. 72 – 86, *Brumus discors* Barovskij; 72, form of body, dorsal view, (Kirgizia, Barskaun); 73, idem, lateral view; 74, head; 75, pronotum; 76, prosternum; 77, abdominal sternite i; 78, posterior leg; 79, tarsus; 80, tarsal claw; 81 – 83, tegmen; 81, lateral view, 82, dorsolateral view, 83, ventral view; 84, median lobe of aedeagus, ventral view; 85, terminal ampulla of siphon 86, siphonal capsule.

Surface with traces of reticulation and large number (12) of minute punctures.

Elytra elongate oval, in male 1.11 times longer than their combined width, slightly convex, from lateral view 2.64 times longer than high, in anterior two thirds only flatly, in the posterior third moderately arcuate, apex hardly caudate. Base of elytra feebly concave, continually running towards the obtuse widely rounded humeral angle. Humeral bulge nearly missing. Outline of the disc seen from the apex very slightly gable-shaped, lateral parts more strongly rounded than the disc, then gradually straightened outwards. Lateral margins more slightly arcuate in anterior than in posterior half, slightly reflexed, irregularly and not very strongly beaded, the border in the midlength of elytra thicker, gradually narrowing towards the apex. Apex of elytra nearly semicircular. Surface with slightly obsolete reticulation, rudimentally pubescent. Punctures not very shallow, usually a little larger than eye facets, separated by about 1.5 diameters. Setae as long as diameter of an eye facet.

Ventral surface not very shiny, rather densely, greyish-white pubescent. Setae as long as 2 – 3, on legs a little more than 3 diameters of an eye facet. Propleura finely convex in the middle, slightly sloping down ventromesad, slightly depressed both at anterior corner and at the base, its narrow outer border ventrolaterally projecting. Surface somewhat obsoletely reticulate, not finely densely punctate. Punctures shallow, distinctly larger than eye facets, separated by scarcely 1.5 diameters. Epipleuron at most 1.52 times wider than base of mesosternum, in the anterior half horizontal, only very slightly longitudinally excavate in the middle. Surface with traces of reticulation, shallowly to indistinctly punctate. Prosternum as figured (Fig. 76). Basisternal lobes rather narrow, flattened, very slightly constricted in the middle, posterior margins and anterior corners only slightly depressed. Prosternal process rather narrow, somewhat carinate in the middle, parallelsided, apex subtruncate. Surface without reticulation, rather finely transversely wrinkled, not very distinctly punctate. Punctures, in particular wrinkles, rather shallow, as large as or 1.5 times larger than eye facets, frequently separated by barely 0.5 diameters, gradually missing towards the lateral margins. Mesosternal process at the base 0.98 times wider than in the middle long, moderately convex. Anterior margin bisinuate, very shallowly emarginate, rather slightly carinulate. Surface rather finely transversely wrinkled, indistinctly punctate, the punctures as in the middle of prosternum. Metasternum 3.35 times longer than mesosternal process, slightly convex, flattened in the middle, median longitudinal sulcus strongly impressed. Precoxal bulge barely developed. Surface, apart from the medial portion, with traces of reticulation, finely and rather densely transversely wrinkled, not very coarsely densely punctate. Punctures along the median sulcus as large as eye facets, separated by 1 – 3 diameters, becoming gradually larger shallower and denser laterally, at most twice as large as eye facets and then separated by about 0.25 of their diameter. Abdominal sternites nearly granularly reticulate, not very finely but rather densely regularly punctate. Punctures in the median portion of the sternites 1.5 times larger than eye facets, usually separated by 1 diameter, towards the lateral margins of each sternite,

gradually shallower and somewhat larger, denser or frequently catenulate. Femoral line complete, almost regularly arcuate, reaching the posterior two-thirds of the length of sternite i. Axillary space granularly reticulate, finely longitudinally wrinkled, shallowly punctate. The size and density of punctures as in the middle of sternite i. Legs long, rather slender, distal ends of posterior femora shortly exceeding beyond the outer margin of epipleura. Tibiae longly spindle-shaped, flattened. Posterior tibia 4.71 times longer than wide, both outer and inner margin approximately equally arcuate. Tarsus slender, together with claw distinctly shorter than tibia. Tarsal segment iii. reaching nearly by one-third over distal edge of the segment ii. Tarsal claw very long slender, only slightly curved, its base strongly broadened, not dentate.

Male genitalia: Median lobe of aedeagus slender, in ventral view, boat-shaped, about 5 times longer than at midlength wide, in proximal two-thirds slightly arcuate, narrowing towards the long, rather strongly asymmetrical, bluntly pointed apex; in lateral view, elongate triangular, at the base strongly constricted, narrowing towards the dorsally bent apex. It is by one-fifths longer than paramere. Paramera, in dorso-lateral view, asymmetrically spatulate, rather slightly curved and narrowed in the proximal third. Trabes short, slightly curved, as long as median lobe of aedeagus. Siphonal capsula not wide, both its branches subequal in length, outer one quadrangular and strongly carinate. Terminal ampulla of siphon short moderately broad, dorsal rib strongly curved with a small longly oval sclerotised facet before the apex.

Length: According to the literary data 3 – 3.6 mm; measured male 3.36 mm.

Variations: Spots of the second and third series on elytra can be isolated or obliquely connected each other.

Type material: Syntypes, Pamir, 30. 8. 1890, Grombszewski lgt., 2 ex.; Turkestan, coll Semenov-Tian-Shanski, 2 ex. (all ZIN).

Material examined: Kirghisia, Barskaun, Terskij Alatau Mts., 20. 7. 1981, Pokorný lgt., 1 ex. (MNP).

Distribution: Tajikistan, Kirghisia (? E part of Uzbekistan).

Bionomy: Unknown, probably submontane species, perhaps living on Juniper.

Discussion: The species is known only from the original description or its later translation. Lectotype was not designated until now. Material examined corresponds well with the original description, however, the spots of second and third series are joined.

***Brumus oblongus* (Weidenbach)**

(Figs. 87 – 105)

Exochomus oblongus Weidenbach, 1859 : 60.

Exochomus quadripustulatus var. *oblongus*; Kraatz, 1873a : 193.

Exochomus quadripustulatus; Weise, 1879 : 45, partim; 1885 : 52, partim; 1892 : 50, partim (Sicard's translation).

Brumus oblongus; Seidlitz, 1887 : 353; Sicard, 1892 : 50; Bedel, 1892 : 53;

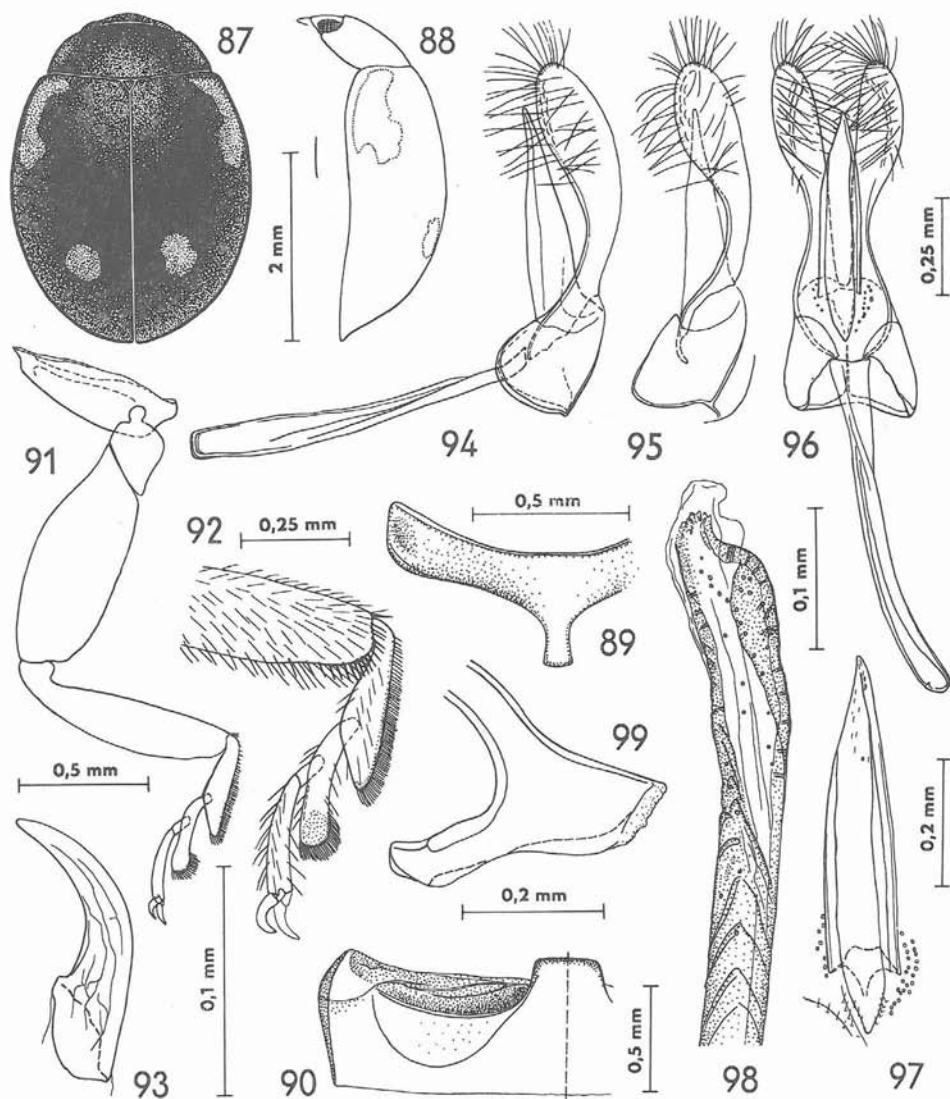
Ganglbauer, 1899 : 985; Reitter, 1911 : 135; Kuhnt, 1913 : 582; Schaufuss, 1916 : 561; Barovskij, 1927a : 199, 200; Mader, 1931 : 134; Korschefsky, 1932 : 266, catalogue; Mader, 1955 : 802, 804; Bielawski, 1959a : 59; Horion, 1961 : 364, distribution; Klausnitzer, 1970a : 52, larva.

Body oval to nearly ovate, in males 1.33 (1.28 – 1.37), in females 1.37 (1.31 – 1.43) times longer than wide, rather slightly convex. Upper integuments moderately shiny, rather coarsely punctate and rudimentally pubescent.

Head black with a small brown to orange transparent spot in front of eyes, mouth parts black, apex and inner edge of mandible, inner parts of maxilla, prementum including labial palpi brown to yellowish-brown. Antennae yellowish-brown, 2 apical segments infusate. Pronotum, scutellum, elytra and underside black. Tips of anterior corners of the pronotum in some specimens, as well as 2 spots on each elytron, orange: anterior spot lunular, situated under humeral bulge, from humeral and lateral margins separated only by a narrow stripe; posterior spot small, shortly longitudinal to rounded, situated behind the midlength of elytra closer to suture. Inner part of the anterior half of epipleuron with orange spot. From outer margin the spot is separated by a posteriorly broadening stripe. Abdominal sternite ii. – v. usually with small sublateral brown spots, sternite v. in male entirely brown. Trochanter or their basal parts, femora or their distal parts, tarsi including claws dark-brown to brown.

Head roundly quadrangular moderately transverse 0.58 (0.55 – 0.59) times wider than pronotum. Anterior margin of head capsule not widely but rather deeply emarginate. Clypeus rather strongly and widely depressed in front of eyes. Sides of clypeus finely arcuate, in proximal third slightly angulate, very finely bordered. Anterolateral corners of clypeus obtusangulately rounded, separated from anterior margin of eye by half of the eye length. Front finely convex laterad, in the middle flat or with feeble impression near the vertex at least 0.56 (0.53 – 0.59) times wider than head. Eyes relatively small shortly oval. Orbits in anterior two-thirds slightly, in posterior one more strongly arcuate, nearly parallel. Long portions of temples behind eyes straight, very slightly converging posteriorly, then angulately rounded. Surface finely granularly reticulate, rather densely and finely punctate, except for the medial portion of front covered with a short pubescence. Punctures shallow smaller or usually as large as eye facets, separated by 1, but rarely almost 3 diameters. Setae at most as long as 2 diameters of an eye facets.

Pronotum roundly subtrapezoidal 2.03 (1.92 – 2.11) times wider than long, rather strongly convex. Anterior margin not broadly, rather shallowly emarginate, emargination subtrapezoidal, moderately convex in the middle. Anterior corners strongly prominent, their inner margin, apart from the base, straight and diverging anteriorly, outer margin moderately arcuate, meeting the inner one at the asymmetrical not very narrowly arcuate, moderately pointed tip. Posterior corners somewhat inconspicuous, broadly obtusangulately arcuate, situated at about three anterior sevenths of the pronotal length. Distance between anterior and posterior corners reaching rather more than two-thirds of the length of pronotum. Lateral parts of the surface more

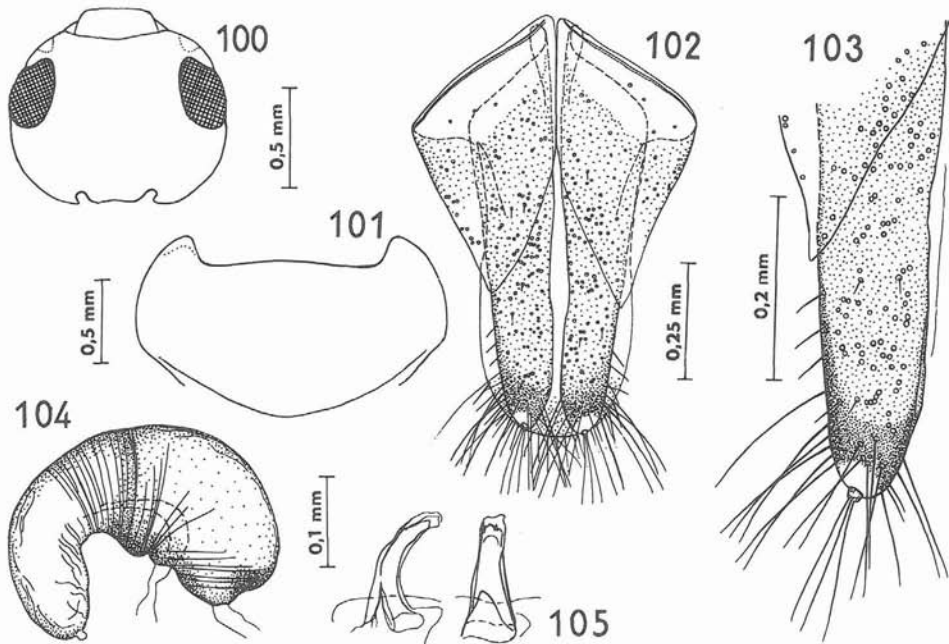


Figs. 87 – 99, *Brumus oblongus* (Weidenbach); 87, form of body, dorsal view (Austria, vicinity of Innsbruck); 88, idem, lateral view; 89, prosternum; 90, abdominal sternite i.; 91, posterior leg; 92 tarsus; 93, tarsal claw; 94 – 96, tegmen, 94, lateral view, 95, dorsolateral view, 96, ventral view; 97, median lobe of aedeagus, ventral view; 98, terminal ampulla of siphon; 99, siphonal capsule.

strongly convex than the disc of pronotum, distinctly depressed towards the anterior corner. Lateral margins distinctly more slightly arcuate than outer margin of the anterior corner, not very strongly converging anteriorly, not reflexed, only narrowly bordered. Base simple rather flatly arcuate and subangulate in the middle. Microsculpture as on the head, punctures, apart from those at the lateral sides, rather deeper, lateral margins without distinct short pubescence. Scutellum equilaterally triangular in base as wide as $1/13 - 1/15$ of the pronotal width. Surface obsolete reticulate with a few (3 - 6) minute punctures.

Elytra oval to ovate, in males 1.07 (1.02 - 1.11), in females 1.10 (1.06 - 1.14) times longer than wide, slightly convex, from lateral view in males 2.30 (2.18 - 2.39), in females 2.35 (2.21 - 2.50) times longer than high, apart from a short postscutellar portion, in anterior two thirds flatly, in posterior one strongly convex, apex shortly caudate. Base of elytra slightly arcuate, convex, humeral angle distinctly obtusangulate, not very widely arcuate, only slightly projecting anteriorly, its inner margin hardly depressed. Humeral bulge well developed and projecting posteriorly. Outline of the lateral parts of elytra, seen from the apex, rather straight, partly almost vertical, in anterior half under humeral bulge with slightly marked longitudinal furrow. Lateral margins in anterior half more slightly arcuate than in posterior one, narrowly but strongly reflexed, not very strongly beaded. Apex of elytra semicircular in males, or distinctly pointed in females. Surface with somewhat obsolete reticulation, rather coarsely and densely punctate. Punctures on disc 1.5, along the lateral margins 2 times larger than eye facets, separated most frequently by nearly 1 diameter.

Ventral surface moderately shiny, shortly but not densely greyish-white pubescent. Setae usually as long as 3 diameters of an eye facet. Propleura in the middle flat, slightly sloping down ventromesad, moderately depressed both at anterior angle and at the base, its narrow outer border horizontal. Surface with well preserved reticulation, shallowly to indistinctly punctate, punctures at least 1.5 times larger than eye facets, sometimes catenulate. Epipleuron at most 1.57 (1.44 - 1.89) times wider than the base of mesosternum, in anterior half horizontal, outer third of the width of epipleuron slightly sloping ventrolaterad. Surface slightly rugose, without reticulation, rather coarsely punctate, punctures as large as diameter of 2 eye facet together, frequently touching each other. Prosternum as figured (Fig. 89). Basisternal lobes narrow flattened, their inner halves distinctly constricted, their posterior margins and anterior corners rather strongly depressed. Surface without reticulation, with a few shallow transverse and oblique wrinkles, puncturation in the wrinkles not very distinct. Punctures in the middle of prosternum somewhat larger than eye facets, separated by scarcely 1 diameter. Mesosternal process at the base 1.42 (1.15 - 1.64) times wider than long, slightly to moderately convex. Anterior margin bisinuate, strongly carinulate, median portion rather deeply emarginate. Surface without reticulation, in proximal half shortly irregularly wrinkled with punctures as on the middle of prosternum. Metasternum 4.69 (4.43 - 5.19) times longer than mesosternal process, moderately convex, slightly flattened in the middle, median longitudinal sul-



Figs. 100 – 105, *Brumus oblongus* (Weidenbach); 100, head; 101, pronotum; 102, ovipositor; 103, apex of hemisternite; 104, spermatheca; 105, infundibulum.

cus strongly impressed. Precoxal bulge slightly developed. Surface, apart from the smooth median part, granularly reticulate, finely and densely transversely wrinkled, finely punctate. Punctures along the medial sulcus hardly as large as eye facets, separated by 3 – 4 diameters becoming gradually at least 2 times larger, shallower to indistinct, separated by about 0.5 diameter at the lateral margins. Abdominal sternites with well preserved reticulation, not very finely punctate, punctures on themedian parts of particular sternites by a little larger than the eye facets, in sternite i. separated by 2 – 3, in sternite v., however, by hardly 0.5 diameter, towards the lateral margins of each sternite gradually shallower to indistinct. Femoral line complete, asymmetrically arcuate with inner portion straightened or slightly emarginate, reaching about posterior two-thirds of the length of sternite i. Axillary space granularly reticulate very shallowly to indistinctly punctured. Punctures about 1.5 times larger than eye facets, separated usually by 1 diameter. Legs somewhat stout, distal ends of posterior femora reaching to the outer quarter of the width of epipleuron. Posterior tibia 4.29 (3.96 – 4.77) times longer than wide its outer margin distinctly more strongly arcuate than inner one. Tarsus short, particular segments somewhat stout, tarsal segment iii. hardly as long as half of the free part of segment ii. Tarsal claw

rather strongly curved, base abruptly dilated, not dentate.

Male genitalia as figured (Figs. 94 – 99).

Female genitalia: Ovipositor slender, at least by one-thirds longer than wide, widest in the proximal third. Hemisternites finger-shaped, slightly dilated in the proximal quarter, apex narrowly rounded not pointed. Stylus hardly as long as wide with 3 long setae. Tergite ix. narrowly u-shaped with apex regularly rounded. Spermatheca strongly arcuate, cornu rather long. Infundibulum small strongly curved.

Length: males 3.10 – 3.59 mm; females 3.35 – 3.95 mm; totally measured: 24 males, 30 females.

Variation: Tips of anterior pronotal corners brown to orange, the colour pattern of elytra constant.

Type material and type locality: Type locality is "environments of Augsburg" (Bavaria). Judging from the known distribution and bionomy, Horion (1961) supposed, that the type material could have originated from the locality "Haspeler Moor" between Munisch and Augsburg. I was unable to find out anything about the destiny of the Weidenbach collection.

Material examined: Germany, Bavaria, "Germania", 1 ex.; Augsburg, coll. Hlisnikovski, 1 ex.; Alpenvorland, Königsdorfer Filz, Fürsch lgt., 1 ex. (all MNP); Allmannshäuser Filz, 6. – 7. 1932, 6. 1939, Pfaundler lgt., 3 ex.; Beuerberg, 6. 1922, Pfaundler lgt., 1 ex.; Allgäu, 13. 8. 1964, Liebmann lgt., 1 ex. (all SM); Raidl, Müller lgt., 3 ex. (SM, MNP); Austria, Niederösterreich, Lunz, 1 ex.; Steiermark, "Styria", coll. Reitter, 3 ex.; Feige lgt., 1 ex.; Pürgg, Feige lgt., 3 ex.; Selztal, Moosbrugger lgt., 2 ex.; Kärnten, Ferlach, 1894, Otto lgt., 1 ex.; Tirol, Reutte, Knabl lgt., 10 ex.; Gramais, Lechtal, Knabl lgt., 3 ex.; Innsbruck, Reiss lgt., 2 ex.; Innsbruck (Arzlerweise), 7. 9. 1927, Reiss lgt., 1 ex.; Innsbruck (Arzlerweise), Wörndle lgt., 3 ex.; Innsbruck, Rumeralpen, 9. 1916, Wörndle lgt., 1 ex. (all MNP); Arzl, 9. 1916, Pfaundler lgt., 1 ex. (SM); Yugoslavia, Bosna i Hercegovina, Volujak, 1902, Leonhardt lgt., 1 ex. (MNP); Czechoslovakia, Bohemia, Nová Huť near Třeboň, 7. 1932, Roubal lgt., 1 ex. (MNP).

Distribution: Widely distributed in eastern Alps.

Bionomy: The species seems to be associated with the species of pine growing on peat bogs, specially *Pinus mugo* Turra and *P. uncinata* Müller et Milb. It was collected also on Juniper in the vicinity of pines. Feeding probably on aphids, it developed on late summer (immature specimens collected in September).

Discussion: Characteristic species, originally described in the genus *Exochomus* Redtb. Location of type specimens unknown. Opinions on its validity and taxonomic position had developed till the end of the 19th century. Form of body illustrated by Kuhnt (1913), genitalia and the male antenna by Bielawski (1959), larva described by Klausnitzer (1970), distributional data summarized by Horion (1961), who considered the records from the Balkan peninsula as wrong and gave no records from Czechoslovakia.

***Brumus mongolicus* Fleischer**

(Figs. 106 – 120)

Brumus mongolicus Fleischer, 1900 : 118; Barovskij, 1927 : 198, 199; Korschefsky, 1932 : 266, catalogue; Mader, 1955 : 803, 807; Bielawski, 1968b: 24; 1984 : 315, 382; Savoiskaya et Klausnitzer, 1973 : 53, larva; Savoiskaya, 1983a : 175, 177, larva.

Body somewhat widely ovate, in male 1.32 times longer than wide, moderately convex. Upper surface dull, feebly, rather closely punctate, rudimentally pubescent.

Head black, clypeus and anterior half of front brownish-yellow. Mouth parts and antennae brownish-yellow, margins of mandible, cardo, stipes, apices of terminal segments of the maxillar and labial palpi and slightly also 2 apical segments of antennae darkened. Pronotum brownish-yellow with black spot before the scutellum. The spot, at base transversely rectangular by a little wider than front, with a triangular appendix in the middle, reaching nearly anterior fifth of the pronotal length. Scutellum black. Elytra brownish-yellow to reddish-orange, each with 4 moderate black spots (pattern: 1, 1, 1, 1, 0): spot i. rearly round, covering humeral bulge; spot ii. rather quadrangular than oval, situated before the midlength of the elytra, by its narrow sutural process reaching to the scutellum, outer margin subtruncate, reaching nearly half of the elytral width; spot iii. elongately oval, largest of all, situated behind the midlength closer to lateral margin of elytra; spot iv. in the shape of short stripe, somewhat narrowing posteriorly, situated in the apical fifth of elytra very close to suture. Underside black, pro- and epipleura brownish-yellow with narrow brown border. Meso- and metaepimera brown, prosternum, apart from prosternal process, small lateral parts of abdominal sternite ii. – iii. as well as distal ones brownish-yellow. Legs brownish-yellow, intermediate and posterior coxae black. Great portion of the intermediate and posterior femora as well as distal ends of the tarsal segment iv. and the base of tarsal claw brown.

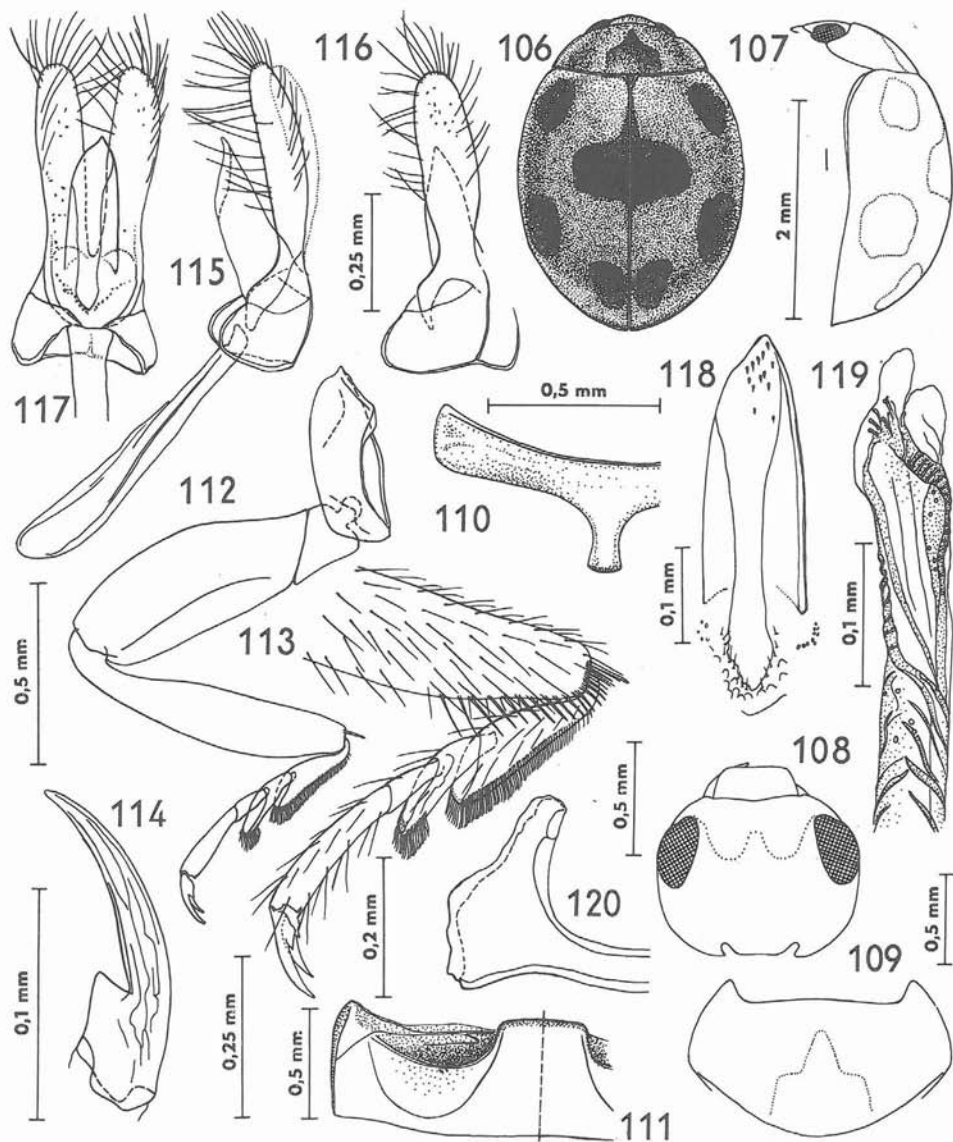
Head including labrum roundly pentagonal slightly transverse 0.50 times wider than pronotum. Anterior margin of head capsule not broadly shallowly emarginate, the emargination arcuate. Clypeus not very strongly depressed in front of eye. Sides of clypeus finely arcuate, near eyes indistinctly angulate, finely bordered. Anterolateral corners of clypeus not widely obtusangulately rounded, separated from anterior margin of eye by about one-third of the eye length. Front rather convex at least 0.56 times wider than head. Eyes small oval, inner orbits, apart from both anterior and posterior portions, slightly arcuate and slightly converging anteriorly. Long portions of temples behind eyes straight, rather strongly converging posteriorly, then subangulately widely rounded. Surface finely subgranularly reticulate, finely and sparsely punctate. Punctures as large as 0.5 of eye facet, separated usually by 3 – 5 diameters. Setae along orbits as long as 1 – 3 diameters of an eye facet.

Pronotum roundly subtrapezoidal 1.96 times wider than long, moderately convex.

Anterior margin broadly, not deeply, emarginate, the emargination subtrapezoidal, slightly convex anteriorly in the middle. Anterior corners slightly prominent, their inner margin, apart from the base, straight. Outer margin feebly arcuate, meeting the inner one at the narrow, slightly asymmetrical, roundly pointed apex. Posterior corners obtusangulate narrowly rounded, situated at about midlength of pronotum. Distance between anterior and posterior corners reaching five-sevenths of the pronotal length. Lateral parts of the surface of pronotum hardly more strongly convex than the disc, hardly flattened and slightly regularly arcuate, moderately converging anteriorly, unreflexed, feebly bordered. Base strongly, not angularly, arcuate in the middle, sides becoming gradually straightened outwards, posterior angles shallowly emarginate, not depressed. Surface with reticulation as on the head, rudimentally pubescent. Punctures on disc nearly as large as eye facets, separated by 2 – 3 diameters, becoming gradually larger shallower or indistinct at lateral margins. Scutellum equilaterally triangular, in base as wide as 1/13 of the pronotal width. Surface smooth with a few (6) unequal punctures, bare.

Elytra broadly oval, in male 1.02 times longer than wide, moderately convex, from lateral view, distinctly more strongly convex in the posterior half than in anterior one, apex shortly caudate. Base of elytra nearly straight to feebly concave, humeral angle roundly obtuse, not projecting anteriorly, its inner margin moderately depressed. Humeral bulge slightly developed hardly projecting posteriorly. Outline of the disc of elytra, seen from the apex flatly arcuate somewhat gable-shaped, sides strongly convex, becoming gradually straightened lateroventrad with lateral margin partly obliquely cut. Lateral margins, apart from the humeral part, distinctly more slightly arcuate in the anterior half than in posterior one, narrowly beaded. Apex nearly semicircular. Surface with the reticulation a little coarser than that on pronotum, not too finely and scarcely punctate, rudimentally pubescent. Punctures as large as or little larger than eye facets, separated at least by 1 diameter, becoming shallower at the lateral margins.

Ventral surface moderately shiny, with short greyish-white pubescence. Setae as long as 2, on legs 3 diameters of an eye facet. Propleura in the middle flat, moderately sloping down ventromesad, slightly depressed both at anterior angle and at the base, its rather broad outer margin horizontal. Surface obsoletely reticulate, indistinctly rather coarsely punctate. Epipleuron at most 1.01 times wider than the base of mesosternum, in the anterior half feebly sloping down dorsolaterad with indistinct longitudinal furrow. Surface with microsculpture as on propleura. Prosternum as figured (Fig. 110). Basisternal lobes not very broad their inner halves slightly but somewhat widely constricted, each one at posterior margin and at anterior corner moderately depressed. Surface very obsoletely reticulate, finely transversely wrinkled, shallowly indistinctly punctate. Punctures about 1.5 times larger than eye facets, separated by hardly 1 diameter, becoming larger or missing, towards the lateral margins of the basisternal lobes. Mesosternal process at the base 1.32 times wider than long, slightly convex. Anterior margin bisinuate, strongly carinulate, rather deeply e-



Figs. 106 – 120, *Brumus mongolicus* Fleischer; 106, form of body, dorsal view (Mongolia, Somon Bajanzogt); 107, idem, lateral view; 108, head; 109, pronotum; 110, prosternum; 111, abdominal sternite i.; 112 posterior leg; 113, tarsus; 114, tarsal claw; 115 – 117, tegmen, 115, lateral view, 116, dorsolateral view, 117, ventral view; 118, median lobe of aedeagus, ventral view; 119, terminal ampulla of siphon; 120 siphonal capsule.

marginate in the middle. Surface with traces of reticulation, coarsely and densely punctate. Punctures shallow, 1.5 – 2 times larger than eye facets, separated by hardly 1 diameter. Metasternum 3.37 times longer than mesosternal process, slightly convex, widely flattened in the middle, median longitudinal sulcus incomplete, slightly impressed. Precoxal bulge transverse, slightly developed. Surface obsolete, at lateral margins granularly reticulate, rather coarsely transversely wrinkled, coarsely punctate. Punctures along the median sulcus 1.5-(2) times larger than eye facets, separated by 1 – 2 diameters, becoming gradually denser and shallower, separated by (hardly) 0.25 of their diameter at lateral margins. Abdominal sternites granularly reticulate, coarsely densely punctate. Punctures usually nearly 2 times larger than eye facets, in the middle of sternite i. separated by 0.5 – 2 diameters, becoming gradually shallower and denser posteriorly, from sternite i. to sternite v. and towards the lateral margins of each sternite. separated by hardly 0.25 of their diameter. Femoral line complete, nearly semicircular (Fig. 111). Axillary space nearly without wrinkles, very shallowly punctured. Legs moderately long, rather slender, distal ends of posterior femora reaching a little beyond the outer margin of epipleura. Posterior tibia 5.06 times longer than wide, outer margin slightly arcuate, long distal part of inner one straight. Tarsus slender, segment iii. its distal end reaching distal edge of the segment ii. Tarsal claw slender, slightly arcuately curved with conspicuous but not large triangular tooth at the base.

Male genitalia: Median lobe of aedeagus short, robust, in ventral view about 2.5 times longer than at the base wide, lateral margins feebly arcuate, gradually tapering towards the obliquely truncate, asymmetrically pointed apex; in lateral view longly triangular its dorsal margin slightly constricted and sinuate in proximal third then straight, ventral margin abruptly tapering towards the pointed apex. It is as long as two-thirds of the length of paramere. Paramera, in dorsolateral view finger-shaped. Trabes slightly broadening distad, about as long as basal piece of aedeagus and paramera together. Siphonal capsule not broad its outer branch triangular. Terminal ampulla of siphon elongate with dorsal rib obtusangulate, sclerotised facet longly spindle-shaped.

Length: According to the literary data 2.5 – 3.5 mm; measured male 2.79 mm.

Variation: Not known.

Type material: Holotype, "Nordl. Mongolei, Changaj", coll. Reitter, additionally labelled "Monotypus, *Brumus mongolicus* Fleischer, 1900" (TMB).

Material examined: Mongolia, Central aimak, 13 km W Somon Bayanzogt, 1450 m, 17. 6. 1966, Exp. Dr. Z. Kaszab, 1966, no. 527 (IZP).

Distribution: Mongolia, Transbaikalia (E. Siberia, Tuva), SE Kazakhstan (Zailiyskij Alatau Mts.).

Bionomy: This species was collected by Savoiskaya in the alpine zone of Zailiyskij Alatau Mts. (3200 – 3300 m) on *Potentilla*. Bielawski (1984) supposed it lives on trees and perennial plants (Mongolia). According to Savoiskaya (1983a) both imago and larva feeding on aphids and eggs of dipterous family Mycetophilidae. It is monovolti-

ne, females oviposit in the middle of June at the base of leaves, at most 3 eggs together. Adults do not migrate, they hibernate at the base of shrubs and grasses.

Discussion: Little known species, originally placed in the genus *Brumus* Muls. Type specimen deposited in Budapest (TMB) must be regarded as Holotype. Tooth at base of tarsal claw was overlooked by authors until now. Fleischer's comparing (1900) with *B. octosignatus* (Gebler) – "gewölbter" cannot be confirmed. Larva was described by Savoiskaya (1983a). One new specimen from Mongolia compared with the Holotype by Bielawski (1984), who also figured the form of body and genitalia of both sexes.

***Brumus kiritshenkoi* (Barovskij) comb. n.**

(Figs. 121-137)

Exochomus (*Anexochomus*) *kiritshenkoi* Barovskij, 1922 : 289; Korschevsky, 1932 : 255, catalogue, partim; Mader, 1955 : 789, 801, partim.

Exochomus kiritshenkoi; Savojskaya, 1968 : 163; Bielawski, 1984 : 314, 378.

Exochomus (*Exochomus*) *kiritshenkoi*; Savoiskaya et Klausnitzer, 1973 : 52, larva; Savoiskaya, 1983a : 161, 166, larva.

Body roundly oval 1.25 – 1.27 times longer than wide, moderately convex. Upper integuments rather shiny, finely densely punctate, rudimentally pubescent.

Head black, clypeus in females or nearly entire front in males yellowish-red. Small lateral portion of clypeus brown to black with rather large yellowish transparent spot in front of eyes. Mouth parts and antennae yellowish-brown, apices of mandible, distal half of the terminal segments of maxillar and labial palpi, 2 last segments of antennae, in females labrum, cardo and mentum infuscate to black. Pronotum black, narrow anterior and lateral margin, or larger portion of male anterior corners yellowish-red. Scutellum black. Elytra yellowish-red, lateral margins with very narrow black stripe, each elytron with 4 small black spots (pattern: 1, 1, 1, 1, 0) (Figs. 121 – 122). Underside black, outer parts of propleura and abdominal sternite i. – iii., as well as epipleura and abdominal sternite iv. – v. yellowish-red. Legs mostly yellowish-red, coxae black, trochanters usually brown, distal third of each femur, apart from the distal end, gradually darkened to black, distal end of the tarsal segment iv. and the base of tarsal claws infuscate.

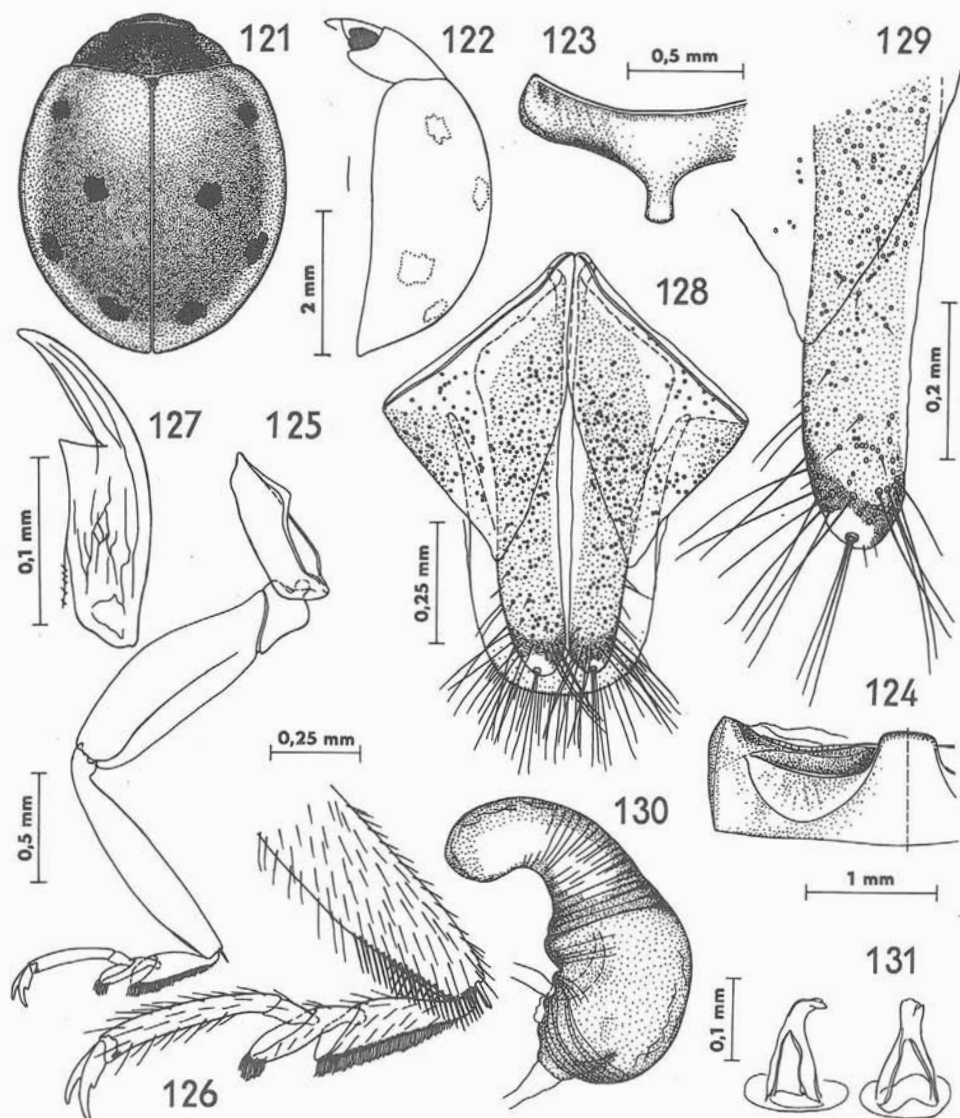
Head roundly quadrangular strongly transverse 0.55 – 0.57 times wider than pronotum. Anterior margin of head capsule rather broadly, not deeply emarginate, the emargination arcuate to finely brace-shaped. Clypeus moderately depressed in front of eyes, not excavate, the depressed area rather small. Sides of clypeus in proximal third rather angulate, more distad straight to slightly emarginate, indistinctly bordered. Anterolateral corners of clypeus rather widely, roundly obtusangulate, slightly projecting anteriorly, separated from anterior margin of eye by three-eighths of the eye length. Front slightly transversely convex, at least 0.52 – 0.54 times wider than head. Eyes relatively large, bean shaped, inner orbits finely arcuate, very slightly

converging anteriorly. Long portion of temples behind eyes straight parallel, then somewhat angulately rounded. Surface with hardly granular fine reticulation, finely densely punctate, covered with short pubescence. Punctures at most as large as eye facets, separated usually by nearly 2 diameters. Setae in the middle of front rudimental, along orbits as long as diameter of 2 – 3 eye facets together.

Pronotum transversely oval 2.07 – 2.08 times wider than long, rather slightly convex. Anterior margin of pronotum not much widely and deeply emarginate, the emargination subtrapezoidal, its median part slightly convex anteriorly. Anterior corners moderately prominent, their inner margin flatly irregularly s-shaped. Outer margin widely arcuate, meeting the inner one at the asymmetrical, nearly rectangular, rather broadly arcuate tip. Posterior corners not well defined, widely arcuate, fluently passing into the base, their widest part situated at about anterior two fifths of the pronotal length. Distance between anterior and posterior corners reaching more than five-sevenths of the pronotal length. Lateral parts of the surface of pronotum not very strongly convex, broadly and flatly depressed towards the anterior corners and without distinct impression. Lateral margins rather strongly and regularly arcuate, strongly convergent anteriorly, widely reflexed, finely bordered. Base widely, in the middle somewhat angulately rounded, lateral parts becoming straight, beside posterior corners not depressed. Surface with microsculpture as on the head with rudimental pubescence at the lateral parts. Scutellum equilaterally triangular, flat, in base as wide as 1/15 of the pronotal width. Surface smooth or obsoletely reticulate with large number (12) of minute punctures.

Elytra shortly oval, nearly round, in male 1.03, in female 1.01 times longer than wide, not very strongly convex, from lateral view in male 2.05, in female 2.04 times longer than high, elytral disc a little more slightly convex than other parts, apex shortly caudate. Base of elytra feebly convex, nearly straight, humeral angle obtusangulately rounded, feebly prominent its inner margin hardly depressed. Humeral bulge slightly developed, hardly projecting posteriorly. Outline of the disc of elytra, seen from the apex, regularly arcuate, gradually flattened at sides, mostly obliquely descending towards the narrowly reflexed lateral margins, in the anterior half under humeral bulge very slightly depressed with poorly marked longitudinal furrow. Lateral margins nearly regularly and rather strongly arcuate, narrowly beaded. Apex semicircular or slightly pointed. Surface obsoletely reticulate, finely and rather densely punctate, rudimentally pubescent. Punctures as large as eye facets, separated by 2 – 3 diameters, at lateral margins somewhat larger, denser.

Ventral surface shiny, with not very long greyish-white pubescence. Setae usually as long as 3 – 4 diameters of an eye facet. Propleura feebly longitudinally excavate, moderately sloping down ventromesad, strongly depressed both at anterior angle and at the base, wide outer margin horizontal. Surface with slightly obsolete reticulation, finely and rather densely punctate, punctures shallow to indistinct. Epipleuron at most 2.01 times wider than the base of mesosternum, anterior portion of inner half horizontal, other parts rather strongly ventrolaterally descending. Surface smooth or



Figs. 121 - 131, *Brumus kiritshenkoi* (Barovskij) comb. n.; 121, form of body, dorsal view (Kirgizia, Chanta Abaden); 122, idem, lateral view; 123, prosternum; 124, abdominal sternite i.; 125, posterior leg; 126, tarsus; 127 tarsal claw; 128, ovipositor; 129, apex of hemisternite; 130, spermatheca; 131, infundibulum.

obsoletely reticulate, sometimes irregularly rugose, finely shallowly punctate. Punctures about as large as eye facets, separated by 3 – 4 diameters or often indistinct. Prosternum as figured (Fig. 123). Basisternal lobes rather wide, flattened, their inner halves slightly constricted, posterior margins and anterior corners slightly depressed. Prosternal process relatively wide parallelsided, with apex subtruncate. Surface without distinct reticulation, with fine transverse and oblique wrinkles, rather coarsely and densely punctate. Punctures nearly 2 times larger than eye facets, frequently separated by scarcely 0.5 diameter, becoming shallower towards the lateral margins of basisternal lobes. Mesosternal process at the base 1.19 – 1.30 times wider than long, slightly convex. The anterior margin bisinuate, not very strongly carinate, shallowly emarginate in the middle. Surface without distinct reticulation, irregularly distributed punctures are 1.5 – 2 times larger than eye facets. Metasternum 2.64 times longer than mesosternal process, slightly convex, moderately flattened in the middle, median longitudinal sulcus not too strongly impressed. Precoxal bulge slightly developed, transverse. Surface finely and densely transversely wrinkled, rather finely punctate. Punctures along the median sulcus hardly as large as eye facets, separated by 4 – 7 diameters, becoming gradually larger and shallower towards lateral margins, 1.5 – 2 times larger than eye facets, separated by scarcely 0.5 of their diameter. Abdominal sternites at least obsoletely reticulate, rather coarsely and densely punctate. Punctures in median part of sternite i. nearly 2 times larger than eye facets, separated by 1 – 2 diameters, becoming gradually denser and shallower towards the distal segments and at its lateral margins, rarely catenulate. Femoral line complete nearly regularly semicircular, reaching nearly three-quarters of the length of sternite i. Axillary space obsoletely reticulate, feebly and somewhat radially wrinkled, shallowly to obsoletely punctate. Punctures about 2 times larger than eye facets. Legs slender, rather long. Distal ends of posterior femora reaching the outer third of the width of epipleuron. Posterior tibia 5.02 times longer than wide, its inner margin, apart from the distal portion, somewhat less arcuate than outer one. Tarsus long and slender. Tarsal segment iii. reaching at its distal margin to the distal quarter of free part of the segment ii. Tarsal claw slender, slightly curved with not very large, sharply angulate tooth, situated at distal third of the length of claw.

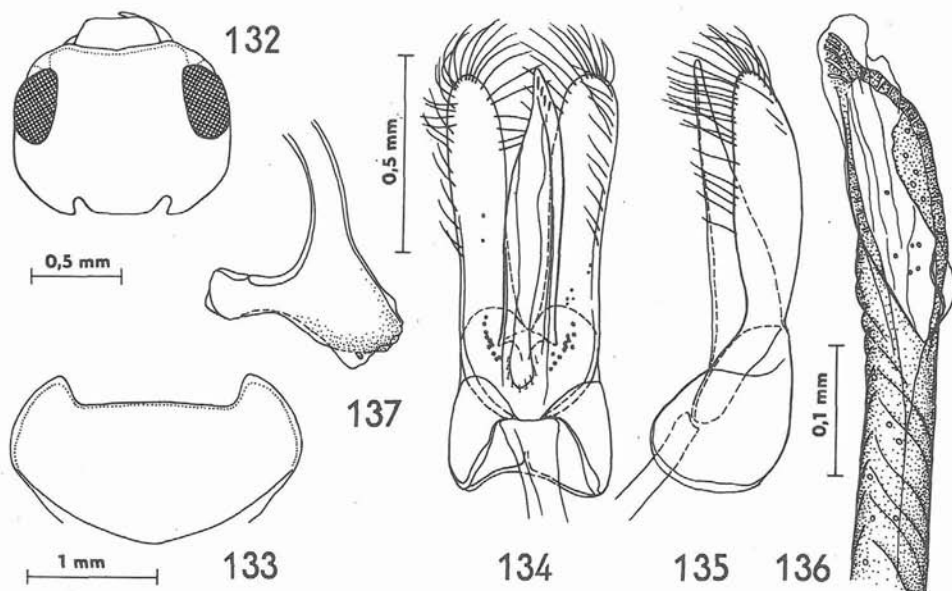
Male genitalia as figured (Figs. 134 – 137).

Female genitalia: Ovipositor broad, about by one-fifth longer than at proximal two-fifths wide. Hemisternite slender at least 4 times longer than wide, its outer margin moderately emarginate mediad, apex slightly asymmetrical, widely rounded. stylus button-shaped with 3 – 4 long setae. Tergite ix. widely u-shaped, apex roundly subtruncate. Spermatheca relatively slender, cornu at least as long as the body, moderately curved. Infundibulum short.

Length: According to the literature 5.2 – 5.5 mm; measured female 4:59 mm. It was also partly measured by 2 type specimens.

Variation: Extent of variability of the colour patten not known.

Type material: From the Barovskij's syntype specimens I designated Lectotype: ♂,



Figs. 132 – 137, *Brumus kiritshenkoi* (Barovskij) comb. n.; 132, head; 133, pronotum; 134 – 135, tegmen (lectotype: ♂, Talas Kanka), 134, ventral view, 135, lateral view; 136, terminal ampulla of siph; 137, siphonal capsula.

Talas Kanka (valley of the river Talas), 29. 4. 1905, Fischer lgt., labelled "*Exochomus kiritshenkoi* Bar." without other data (coming from Jablokov-Khnzorian); Paralectotype: ♀, Alexandrovskij Chr., Kutemaldy, 3. 8. 1910, Kiritshenko lgt.

Other type material: Paralectotype: data as in Lectotype, 29. 6. 1905, Fischer lgt., 1 ex.; prov. Maracandica (Samarkand), angustiore Jori in montibus Zeravshanensibus, 2. 5. 1896, Fedtshenko lgt., 1 ex.; Persia sept., Shahrud, Christoph lgt., 8 ex. (all ZIN). Specimens from Iran are not conspecific with the Lectotype and belong to the next species.

Material examined: Kirghisia, Chanta Abaden (near Fergana), 9. 5. 1977, Strejček lgt., 1 ex. (MNP).

Distribution: Middle Asia, Tajikistan, Kirghisia, Kazakhstan; Mongolia.

Bionomy: According to Savoiskaya (1968, 1983a, b) lives in the mountains at the border of deserts on plants of botanical genera *Ephedra*, *Eurotia*, *Salvia* and *Haloxyton*, feeding on aphids on these plants. It is monovoltine, development of the new generation take place from the end of May to the end of June. Hibernating sites unknown.

Discussion: Originally placed in the subgenus *Anexochomus* Bar., which was considered identical with *Exochomus* s. str. by Savoiskaya (1971). Savoiskaya (1968) and Bielawski (1984) redescribed the species and figured its genitalia. Moreover,

Bielawski (1984) figured also the form of body, but the pale pronotum disagrees with the description. Savoiskaya (1968, 1983a) described the larva and figured some details. Type series examined contains 2 species, lectotype was selected in order to preserve the current concept of the species, which is, however, transferred to the genus *Brumus* Muls.

***Brumus gebleri* Weise stat. n.**

(Figs. 138 – 162)

Brumus octosignatus var. *Gebleri* Weise, 1885 : 55; 1892 : 54 (Sicard's translation).

Exochomus (Anexochomus) kiritshenkoi Barovskij, 1922 : 289, partim.

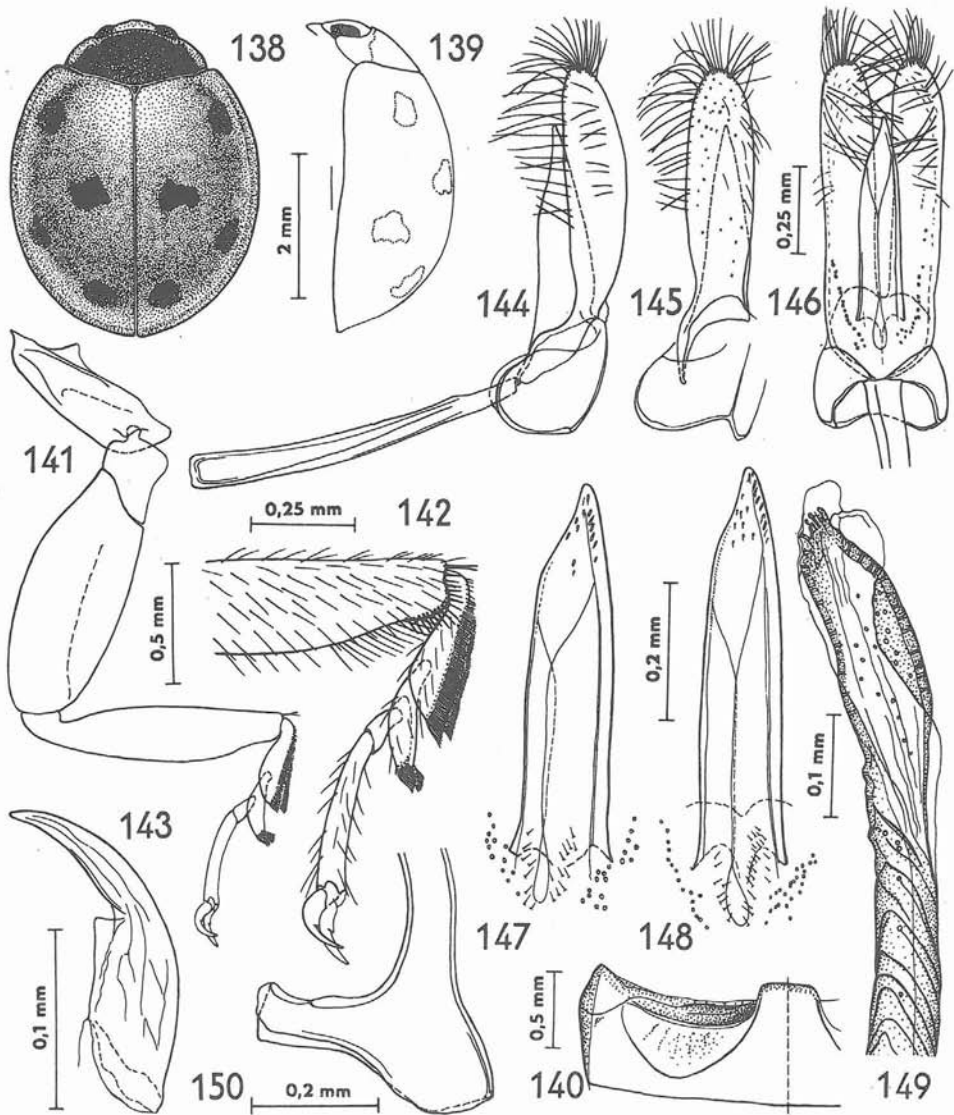
Brumus octosignatus Barovskij, 1927a : 197, partim (ab. *Gebleri*); Korschefsky, 1932 : 65, partim (ab. *gebleri*), catalogue; Mader, 1955 : 806, partim (ab. *Gebleri*).

Exochomus (Anexochomus) Kiritshenkoi; Mader, 1955 : 801, partim

Body roundly oval, in males 1.26 (1.23 – 1.28), in females 1.23 (1.19 – 1.27) times longer than wide, moderately convex. Upper integuments rather shiny, finely densely punctate, rudimentally pubescent.

Head black with large yellowish transparent spot in front of eyes. Median part of clypeus in females or nearly entire front (in males) yellowish-red. Mouth parts and antennae yellowish-brown. Cardo, apices of mandible, terminal segments of maxillar and labial palpi, as well as 2 last segments of antennae infuscate or black. Pronotum black, rather wide anterior and lateral margin, as well as large spot on anterior corners in males, yellowish-red. Scutellum yellowish-red or black. Elytra yellowish-red, narrow lateral margin black, each elytron with 4 small to medium sized black spots (pattern: 1, 1, 1, 1, 0): spot i. round to transversely oval, covering humeral bulge; spot ii. transversely oval, situated all before the midlength of elytra closer to suture; spot iii. transversely oval usually largest of all, situated mainly behind the midlength of elytra closer to lateral margin; spot iv. round, situated in the apical fifth of elytra closer to suture. Underside black, outer parts of propleura and abdominal sternite i. – iii., as well as epipleura and abdominal sternite iv. – v. yellowish-red. Major part of meso- and metaepimera yellowish to brownish-red. Legs except coxae yellowish-red, distal third and inner edge of each femur in various degree darkened to black. Distal end of the tarsal segment iv. and the base of claw infuscate.

Head roundly quadrangular strongly transverse 0.56 (0.53 – 0.58) times wider than pronotum. Anterior margin of head capsule rather broadly but not deeply emarginate, the emargination arcuate or somewhat angulate. Clypeus strongly depressed to slightly excavate in front of eyes, the depressed area transverse. Sides of clypeus in proximal third rather angulate, distal part straight to feebly emarginate, finely bordered. Anterolateral corners of clypeus not widely, obtusangulately rounded, separated from anterior margin of eye by nearly three-sevenths of the eye length. Front rather strongly longitudinally convex, at least 0.53 (0.51 – 0.56) times wider than head. Eyes relatively large, oval. Inner orbits finely arcuate, parallel to



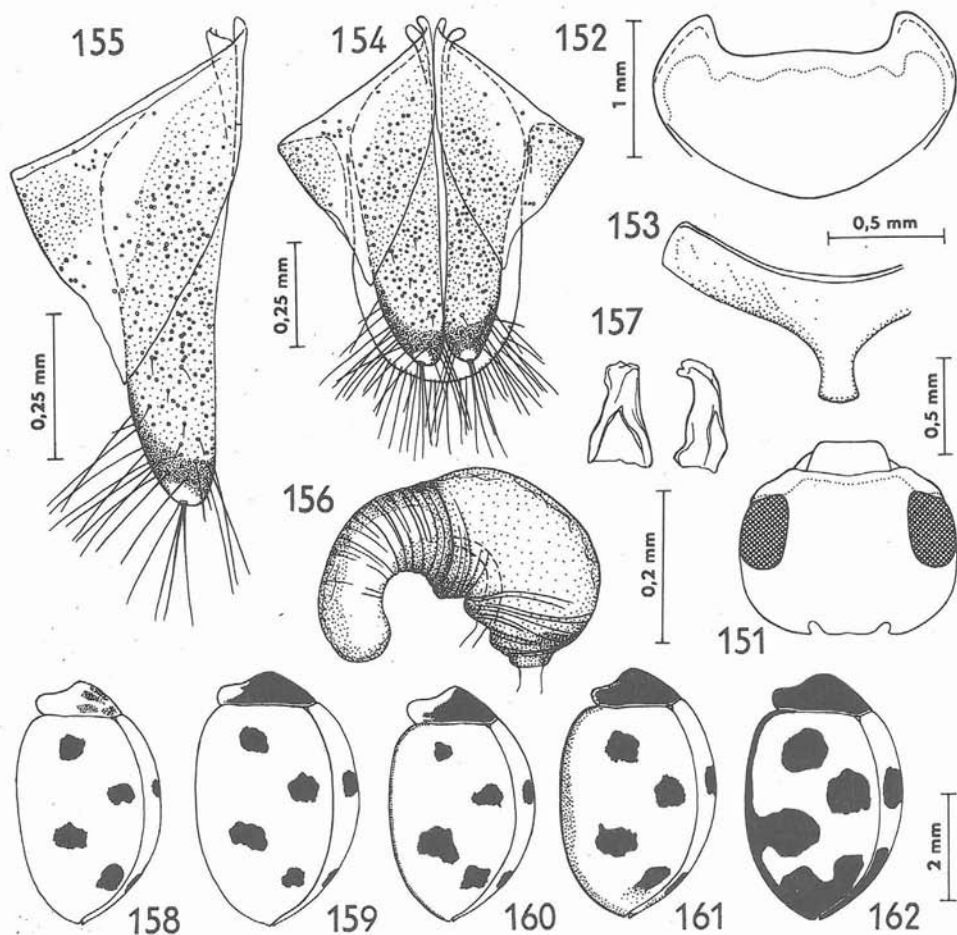
Figs. 138 – 150, *Brumus gebleri* Weise stat. n.; 138, form of body, dorsal view (Iran, Ferdows-e-Esfandaqeh); 139, idem, lateral view; 140, abdominal sternite i.; 141, posterior leg; 142, tarsus; 143, tarsal claw; 144 – 146, tegmen, 144, lateral view, 145, dorsolateral view, 146, ventral view; 147 – 148, median lobe of aedeagus, ventral view (147, *E. kiritshenkoi* Barovskij, paratype: ♂, Iran, Shahrud (Gorgan); 149, terminal ampulla of siphon; 150, siphonal capsule.

slightly converging anteriorly. Long portion of temples behind eyes straight, parallel or slightly diverging posteriorly, then angulately rounded. Surface finely granularly reticulate, finely rather densely punctate, along orbits covered with short pubescence. Punctures about as large as eye facets, or in the middle of front smaller, usually separated by 1 diameter. Setae at most as long as diameter of 2 eye facets together.

Pronotum transversely oval 2.01 (1.96 – 2.05) times wider than long, rather strongly convex. Anterior margin of pronotum not too widely or deeply emarginate, the emargination subrectangular, its median part rather strongly convex anteriorly. Anterior corners strongly prominent, their inner margins irregularly flatly s-shaped. Outer margin widely rounded, meeting the inner one at the rectangular not very widely arcuate tip. Posterior corners badly defined, widely arcuate, fluently passing into the base, their widest part situated at about anterior three-eighths of the pronotal length. Distance between anterior and posterior corners reaching nearly two-thirds of the length of pronotum. Lateral parts of the surface of pronotum rather more strongly convex than the discs. Area at the anterior corners gradually flattened, slightly depressed. Lateral margins in the middle slightly, towards the posterior and namely anterior corners more strongly arcuate, rather strongly converging anteriorly, widely reflexed and finely bordered. Base strongly arcuate and finely angulate in the middle, lateral parts of base becoming gradually straightened outwards, not emarginate and depressed. Surface with microsculpture as on head, rudimentally pubescent. Scutellum eguilaterally triangular, slightly convex, base as wide as $1/12$ – $1/14$ of the pronotal width. Surface without reticulation, with numerous (9 – 13) minute punctures.

Elytra shortly oval, nearly rounded, in males 1.04 (1.02 – 1.08), in females 1.02 (1.01 – 1.06) times longer than their combined width, not very strongly convex, from lateral view, in males 2.18 (2.05 – 2.25), in females 2.14 (2.05 – 2.24) times longer than high, discal part somewhat slightly convex, apex shortly caudate. Base of elytra feebly convex, nearly straight. Humeral angle not too broadly obtusangulately rounded, slightly projecting anteriorly, its inner margin moderately depressed. Humeral bulge rather slightly developed, hardly projecting posteriorly. Outline of the disc of elytra somewhat more flatly convex than at sides, the sides gradually straightened towards the lateral margins, under humeral bulge feebly depressed with inconspicuous longitudinal furrow. Lateral margins rather strongly, but in anterior half distinctly more slightly arcuate, narrowly reflexed, strongly bordered and somewhat beaded. Apex of elytra semicircular, feebly pointed. Surface obsoletely reticulate, finely rather densely punctate, rudimentally pubescent. Punctures about as large as eye facets, separated by 2 – 3 diameters, becoming somewhat larger and denser along the lateral margins.

Ventral surface rather shiny with not very long greyish-white pubescence. Setae as long as 3, in the middle of metasternum as 2 and on legs as 4 diameters of an eye facet. Propleura in the middle slightly longitudinally excavate, moderately sloping down ventromesad, rather strongly depressed both at anterior corner and at the ba-



Figs. 151 – 162, *Brumus gebleri* Weise stat. n.; 151, head; 152, pronotum; 153, prosternum; 154, ovipositor; 155, hemisternite; 156, spermatheca; 157, infundibulum; 158 – 162, variation (158, 160, Iran, Mian Jangal, 159, *E. kiritshenkoi* Barovskij, paratype: ♂, Iran, Shahrud (Gorgan), 161, Iran, Ferdows-e Esfandagah, 162, Turkey, Ürgüp).

se, its wide outer margin horizontal. Surface with somewhat obsolete reticulation, finely, rather densely punctate. Punctures very shallow to obsolete, about 1.5 times larger than eye facets, separated by their diameter. Epipleuron at most 1.89 (1.71 – 2.06) times wider than the base of mesosternum, its inner part in anterior half horizontal, outer half of the width of epipleuron gradually and not very strongly sloping down ventrolaterad. Surface nearly smooth, rather finely, not densely punctate. Punctures as large as to 1.5 times larger than eye facets, separated by 2 – 4 diameters, becoming denser along the inner margin. Prosternum as figured (Fig. 153).

Basisternal lobes not too widely flattened, their inner halves more or less constricted, their posterior margins and the area near anterior corners moderately depressed. Surface of prosternum without reticulation, transversely at the sides obliquely wrinkled, not very coarsely, somewhat sparsely punctate. Punctures 1.5 – 2 times larger than eye facets separated by 0.5 – 1 diameter, becoming shallower to missing at the lateral margin and along the posterior margin of basisternal lobes. Mesosternal process at the base 1.30 (1.06 – 1.54) times wider than long in the middle, moderately convex. The anterior margin bisinuate with strongly carinate sides moderately, not widely, emarginate in the middle. Surface frequently without reticulation and wrinkles, coarsely and densely punctate. Punctures at most 2 times larger than eye facets, separated usually by scarcely 1 diameter, frequently obsolete or missing. Metasternum 3.91 (3.47 – 4.22) times longer than mesosternal process, moderately convex, scarcely flattened in the middle, with slightly irregularly impressed median sulcus. Precoxal bulge slightly developed, transverse. Surface with traces of reticulation, obsoletely or indistinctly transversely wrinkled, finely and sparsely punctate. Punctures along the median sulcus (hardly) as large as eye facets, separated by 1 – 4 diameters becoming gradually 2 times larger and denser laterally, separated by about 0.5 of their diameter. Abdominal sternites without distinct reticulation, not very coarsely, rather sparsely punctate at the middle of sternite i. Punctures as large as or hardly 2 times larger than eye facets, separated by 2 – 4 diameters, becoming denser along the posterior margins of each sternite and from sternite i. to the sternite v., separated by 0.5 – 1 diameter. Punctures at the lateral parts of abdominal sternites very shallow or missing. Femoral line irregularly semicircular, reaching three-quarters of the length of sternite i., inner part of the line somewhat straightened. Axillary space not reticulate, finely radially wrinkled, not very coarsely sparsely punctate. Punctures equal to those of the median part of sternite i., separated by less than 2 diameters. Legs rather long, moderately slender, distal ends of posterior femora reaching the outer two-fifths of the width of epipleuron. Posterior tibia 4.55 (4.23 – 4.89) times longer than wide, inner margin, apart from the proximal third, more slightly arcuate than the outer one. Tarsus rather long and slender, together with claw distinctly shorter than tibia, segment iii. reaching distal sixth of the free part of the segment ii. Tarsal claw slender, slightly curved, with small, rather sharply angulate tooth, situated at distal two-fifths of the length of claw.

Male genitalia: Median lobe of aedeagus not long but slender, in ventral view 4.5 – 5 times longer than wide, in the proximal three quarters nearly parallelsided, more distad rather strongly tapering towards the sharply pointed, moderately asymmetrical apex; dorsal margin, in lateral view at the base moderately constricted, then in almost straight line narrowing towards the pointed apex. It is as long as four-fifths of the length of paramere. Paramere in dorsolateral view finger-shaped, at the base slightly constricted. Trabes slightly curved and dilated distad, distinctly shorter than basal piece of aedeagus and paramere together. Siphonal capsule narrow, outer branch robust, not carinate. Terminal ampulla of siphon rather long, slightly dilated,

its dorsal rib moderately arcuate with elongate sclerotized facet.

Female genitalia: Ovipositor by about one fifth longer than wide, widest at the proximal third. Hemisternite longly triangular, hardly 4 times longer than wide, outer margin slightly emarginate in the middle, apex asymmetrically rounded. Stylus buton-shaped with 3 setae. Tergite ix. widely u-shaped, at the apex arcuate. Spermatheca with body robust, cornu relatively slender. Infundibulum short.

Length: males 4.06 – 4.96 mm, females 4.04 – 4.80 mm; measured: 7 males, 9 females.

Variation: Dark pigmentation of pronotum disintegrated, in immature specimens with 5 obsolete limited spots on the disc. Black border of lateral margins of elytra gradually widened, sometimes connected with the spots of the third and/or the fourth series, which results in a anchor-shaped pattern of the apex of elytra.

Type material and type locality: According to original description Weise (1885) had at his disposal at least 2 type specimens from the locality Shahrud near Gorgan collected by Christoph and Faust. Type series, probably deposited in Berlin (ZHM) was not examined. It must be taken into account that material of the same origin was involved by Barovskij (1922) in the type series of his *Exochomus kiritshenkoi* Bar.

Material examined: Turkey, Ürgüp, 15. 8. 1979, 1 ex. (EUI); Iran, Schahrud, SE Astrabad (= Gorgan), Christoph lgt., 1 ex., labelled: Paralectotype, ♂, *Exochomus kiritshenkoi* Bar. = *Brumus gebleri* Weise, I. Kovář det. (ZIN); Mohammadabad, 1600 m, 3. – 5.5. 1973, Exp. N. Mus., loc. no. 187, 5 ex.; 15 km NW Mian Jangal, 5. 6. 1973, Exp. N. Mus., loc. no. 224, 7 ex.; Ferdows-e Esfandaqeh, 21. 5. 1977, Exp. N. Mus., loc. no. 340, 3 ex.; Shahdad, 570 m, 31.5. – 1. 6. 1977, Exp. N. Mus., loc. no. 355, 1 ex. (all MNP).

Distribution: Turkey, patr. n. Iran; ? Afghanistan.

Bionomy: Collected on elms (*Ulmus*) and *Amygdalus*. Probably a coccidophagous species, immature specimens collected in E Iran already at the beginning of May.

Discussion: Hitherto unrecognized species originally described as a variety of *Brumus octosignatus* (Gebler) and partly confused with *Exochomus kiritshenkoi* Bar. The present concept of the species is based on allopatric distribution of *B. gebleri* Weise and *B. kiritshenkoi* (Bar.) as well as on the identical origin of the type series of *B. gebleri* Weise and a part of paralectotype of *E. kiritshenkoi* Bar. *B. gebleri* Weise is very similar to the preceding species, from which it distinctly differs by the male genitalia. New species for Turkey.

***Brumus undulatus* (Weise) comb. n.**

(Figs. 163 – 187)

Exochomus undulatus Weise, 1878 : 93; 1879 : 134; 1881 : 166; 1885 : 53; 1892 : 51 (Sicard's translation).

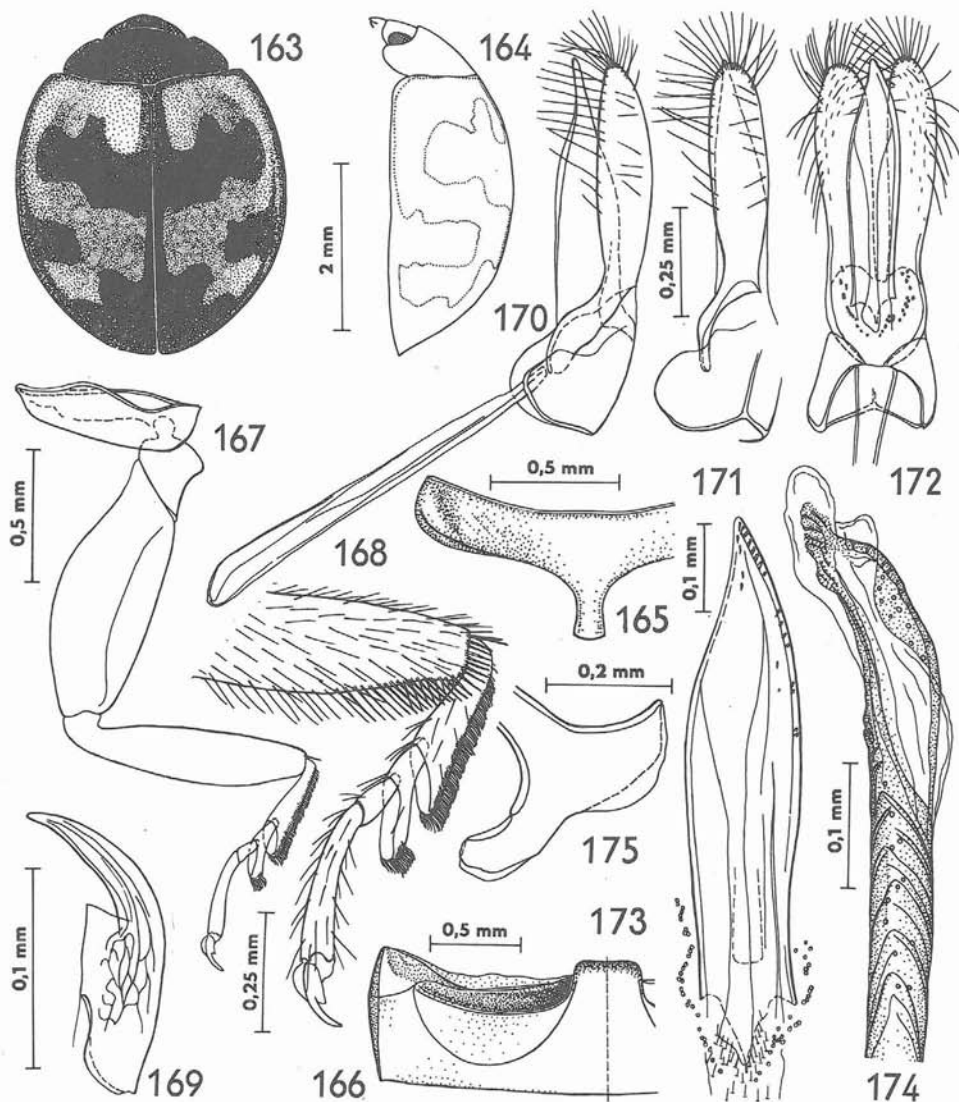
Exochomus (*Anexochomus*) *undulatus*; Barovskij, 1922 : 292, 302, partim; Korschefsky, 1932 : 261, catalogue; Mader, 1955: 786, 787, 800, partim.

Body roundly oval in males 1.23 (1.19 – 1.26), in females 1.24 (1.20 – 1.28) times longer than wide, very slightly convex. Upper integuments rather shiny, finely rather densely punctate, rudimentally pubescent.

Head brown to black, clypeus and usually also front brownish-orange, clypeus in front of eyes transparent. Mouth parts and antennae brownish-orange, labrum, maxillar and labial palpi, apices of mandible brown to black, 2 terminal segments of antennae infusate. Pronotum brown to black, anterior and lateral margins with narrow orange border and small orange spots at male anterior corners. Scutellum brownish-orange to black, elytra brownish-orange, each with crooked transverse band in anterior half and (2) – 3 brown to black spots in the posterior one (pattern: 0, 2, 1, 1, 1). Anterior band moderately wide, rather oblique, situated immediately before the midlength of elytra, consists of 2 parts: inner part u-shaped, its inner branch reaching the scutellum, outer part spot-shaped, reaching lateral one eighth of the width of elytra anterior margin of the band serrate. Lateral spot transversely rectangular, situated mostly behind the midlength of elytra, its outer margin more or less dilated, forming the lateral border of elytra, inner margin reaching about half of the elytral width. Subapical spot longitudinally rectangular, situated at six to seven apical eights of elytra along the suture, frequently connected with the next one. Apical spot transversely rectangular, situated in the apical fifth of elytra along the lateral margin. Underside brownish-orange, propleura, sublateral portion of epipleura, thoracal sterna, abdominal sternite i. as well as inner parts of abdominal sternite ii. – iv. brown to black. Legs yellowish-brown, coxae nearly black, becoming gradually darken from inner margin of femora and from outer margin of tibiae, apart from the distal end of femora, to nearly black. Distal end of the tarsal segment iv. brown to black.

Head roundly quadrangular, moderately transverse 0.57 (0.55 – 0.59) times wider than pronotum, slightly narrowing anteriorly. Anterior margin of head capsule broadly and rather deeply emarginate, the emargination arcuate to moderately brace-shaped, about as broad as the minimum distance between eyes. Clypeus strongly depressed in front of eyes, sometimes feebly excavate, depressed area rather large. Side of clypeus in proximal third strongly arcuate, more distad starightened to feebly emarginate, very finely bordered. Anterolateral corners of clypeus obtuse, rather widely arcuate, slightly projecting anteriorly, separated from anterior margin of eye by about two-fifths of the eye length. Front moderately convex at least 0.50 (0.48 – 0.53) times wider than head. Eyes oval, not large. Inner orbits all along their length slightly arcuate to nearly straight, slightly converging anteriorly. Long portion of temples behind eyes straight to slightly arcuate, parallel to slightly diverging posteriorly, then angulately rounded, Surface finely granularly reticulate, finely and not very densely punctate, covered by a short to rudimental pubescence. Punctures as large as eye facets, separated usually by 1.5 diameter. Setae, apart from the median portion of front as long as 2 – 3 diameters of an eye facet.

Pronotum rather trapezoidally rounded 1.95 (1.89 – 2.02) times wider than long,

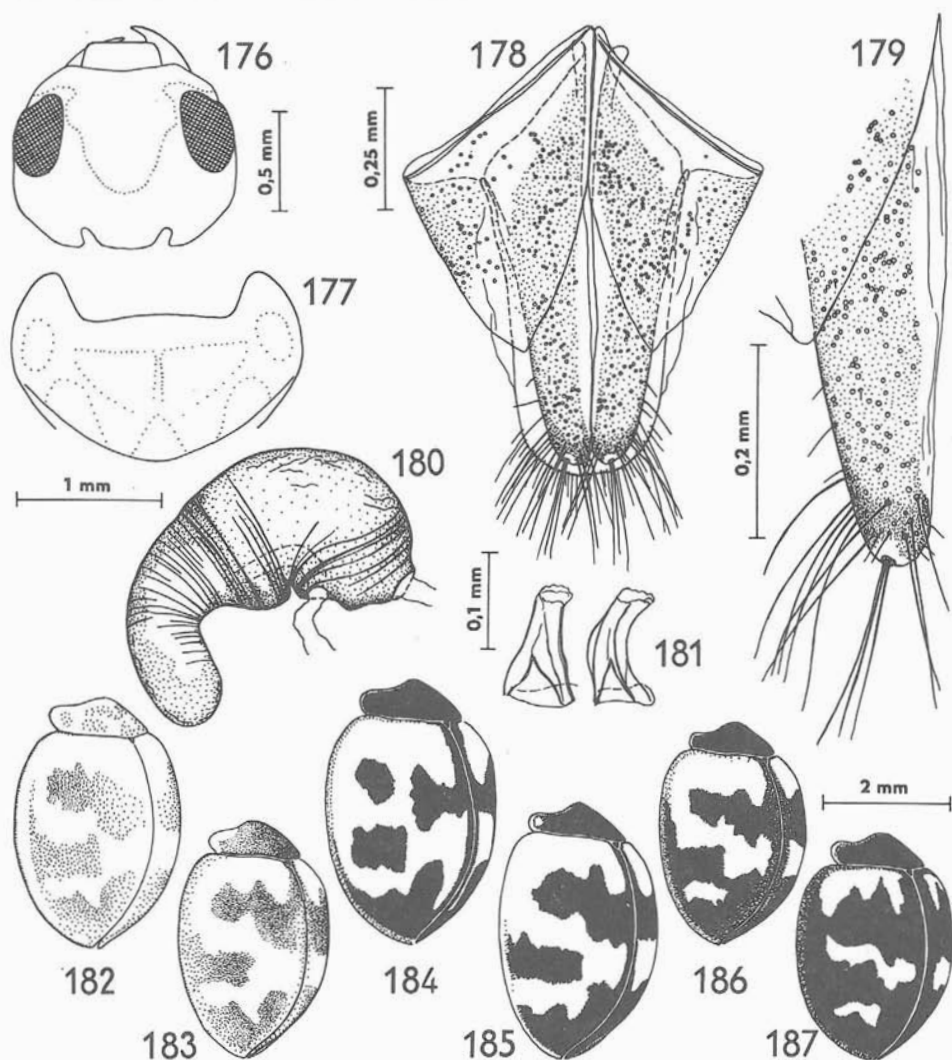


Figs. 163 – 175, *Brumus undulatus* (Weise) comb. n.; 163, form of body, dorsal view (Iran, Shul); 164, idem, lateral view; 165, prosternum; 166, abdominal sternite i; 167, posterior leg; 168, tarsus; 169, tarsal claw; 170 – 172, tegmen, 170, lateral view, 171, dorsolateral view, 172, ventral view; 173, median lobe of aedeagus; 174, terminal ampulla of siphon; 175, siphonal capsule.

rather strongly convex. Anterior margin of pronotum not widely or deeply subtrapezoidally emarginate, the emargination in the middle strongly convex anteriorly. Anterior corners strongly prominent, their inner margin irregularly s-shaped. Outer margin strongly and regularly arcuate, meeting the inner one at the nearly rectangular, not very widely arcuate, asymmetrical tip. Posterior corners not well defined, very widely arcuate, fluently passing into the base, their widest part situated at the anterior third of pronotal length. Distance between anterior and posterior corners reaching more than three-fifths of the pronotal length. Surface of lateral parts of pronotum rather more strongly convex than the disc, gradually but slightly depressed towards the anterior corners of pronotum. Lateral margins towards the posterior corner gradually less strongly arcuate, moderately converging anteriorly, not widely reflexed, finely bordered. Base widely arcuate, somewhat angulate in the middle, lateral parts of base straight, not depressed. Surface with microsculpture nearly as on the head. Punctures as large as or a little larger than eye facets, separated by more than 1 diameter. Scutellum equilaterally triangular, moderately convex, at base as wide as $1/13 - 1/14$ of the pronotal width. Surface with traces of reticulation and some (8 – 11) rather large punctures.

Elytra rounded, in males 0.99 (0.95 – 1.03), in females 1.02 (0.98 – 1.04) times longer than wide, moderately convex, from lateral view in males 2.15 (2.02 – 2.26), in females 2.16 (2.05 – 2.30) times longer than high, distinctly flattened at the disc, in a straight line descending towards shortly caudate apex. Base of elytra slightly arcuate, convex, humeral angle not wide, obtusangulately rounded, not very prominent anteriorly, its inner margin moderately depressed. Humeral bulge moderately developed hardly projecting posteriorly. Outline of the disc of elytra, seen from the apex, regularly arcuate, towards lateral margins of elytra gradually straightened in anterior half under humeral bulge only slightly depressed with 1 or 2 indistinct longitudinal furrows. Lateral margins rather strongly, in anterior half distinctly more slightly arcuate, strongly reflexed, widely beaded. Apex semicircular, in females hardly pointed. Surface somewhat obsoletely reticulate, rather finely densely punctate, rudimentally pubescent. Punctures 1.5 times larger than eye facets, separated by one diameter, at the lateral margins nearly 2 times larger than eye facets, separated usually by 0.5 diameter.

Ventral surface rather shiny, with short greyish-white pubescence. Setae as long as 3, along median sulcus of metasternum 2, at the sides of body and on legs nearly 4 diameters of an eye facet. Propleura finely longitudinally excavated in the middle, moderately sloping down ventromesad, moderately depressed both at the anterior angle and at the base, its outer third horizontal. Surface granularly reticulate, shallowly punctate. Epipleuron at most 1.69 (1.46 – 2.07) times wider than the base of mesosternum, the inner part of the anterior half horizontal, outer four-sevenths of the width of epipleuron slightly sloping down lateroventrad. Surface with traces of reticulation, indistinctly punctate, punctures equal to those on propleuron. Prosternum as figured (Fig. 165). Basisternal lobes moderately thick, hardly con-



Figs. 176 - 187, *Brumus undulatus* (Weise) comb. n.; 176, head; 177, pronotum; 178, ovipositor; 179, apex of hemisternite; 180, spermatheca; 181, infundibulum; 182 - 187, variation (182, 187, Iran, vicinity of Shul, 183, Dagestan, Derbent, 184, 186, Tajikistan, Tachtaul, 185, Iran, vicinity of Dasht).

stricted in the middle, posterior margins and near anterior corners rather strongly depressed. Surface of prosternum without reticulation, transverse and oblique wrinkles obsolete to indistinct, shallowly punctate. Punctures about 1.5 times larger than eye facets, separated by hardly 1 diameter, occasionally missing. Mesosternal process at the base 1.48 (1.17 - 1.81) times wider than long in the middle, strongly convex.

The anterior margin flatly bisinuate, rather strongly carinulate, not widely, more or less shallowly emarginate in the middle. Surface with microsculpture very obsolete. Metasternum 3.78 (3.51 – 4.17) times longer than mesosternal process, strongly convex, with triangular, more or less flattened, area in the middle. Median sulcus not very strongly impressed. Precoxal bulge large, but slightly developed. Surface with traces of reticulation, obsoletely transversely wrinkled, rather finely punctate. Punctures along the median sulcus as large as, or a little larger than, eye facets, separated by about 3 diameters, becoming 2 times larger, denser at lateral margins, separated by barely 0.5 of their diameter. Abdominal sternites obsoletely reticulate. Punctures 1.5 – 2 times larger than eye facets, in the middle of abdominal sternite i. separated by 1.5 – 2 diameters, from sternite i, to sternite v. and at the sides of each sternite becoming gradually denser, shallower to obsolete. Femoral line complete, strongly, in the middle somewhat angulately rounded, reaching the posterior third of the length of sternite i. Axillary space obsoletely reticulate, finely longitudinally wrinkled, with very shallow to indistinct punctures. Legs not long, rather slender, distal ends of posterior femora reaching to the outer third of the width of epipleura. Tibiae distinctly spindle-shaped, posterior tibia 4.52 (4.25 – 4.71) times longer than wide, its outer margin more strongly arcuate than the distal half of inner one. Tarsus long and slender, tarsal segment iii. at its distal margin reaching four-fifths of the free part of segment ii. Tarsal claw slender, moderately curved with not very large triangular tooth, situated at distal third of the length of claw.

Male genitalia as figured (Figs. 170 – 175).

Female genitalia: Ovipositor at least by one-quarter longer than wide, widest in its proximal third. Hemisternite longly triangular, at least 4 times longer than wide with outer margin feebly emarginate in the middle, gradually narrowing towards the not broadly rounded apex. Stylus button-shaped with 3 setae. Spermatheca with body robust, cornu almost as long as the body of spermatheca, obtusangulately curved. Infundibulum short, triangular.

Length: males 3.12 – 4.17 mm, females 3.64 – 4.40 mm; totally measured: 17 males, 16 females.

Variation: Dark pigmentation of pronotum disintegrated in immature specimens into 7 obsoletely limited spots, each pattern of elytra to various degree brown. The process of melanisation seems to last a long time. The transverse band in the anterior half of elytra more or less disintegrated into spots, or gradually connected with the spot of the third series and with an anchor-shaped pattern of the fourth and fifth series both along lateral margin of elytra and suture.

Type material: Described by Weise (1879) according to one specimen from the locality "Arachli" in the valley of the river Khrami, S Tbilisi, Leder lgt. According to Dr. Hieke (in litt.) this specimen could not be found in the coll. Weise (ZMH). The examined male specimen, mentioned by Weise (1881) cannot be regarded as a type.

Material examined: Dagestan, Derbent, Faust lgt., coll. Weise, 1 ex. (ZMH); Azerbajdzhan, Gobustán, Bejugdazh, 6. 1982, Král lgt., 3 ex., 22. 5. 1985, Borovec

lgt., 8 ex., 22 – 24. 6. 1987, Růžička, Hlasová lgt., 3 ex.; Tadjikistan, Tachtaul near Dushanbe, 29. 4. 1977, Bílý lgt., 1 ex.; idem, 19. 4. 1980, Hladil lgt., 1 ex.; Iran, Mian Jangal, 30. 5. – 5. 6. 1973, Exp. N. Mus., loc. no. 223, 5 ex.; 15 km NW Mian Jangal, 5. 6. 1973, Exp. Nat. Mus., loc. no. 224, 1 ex.; 29 km E Yasuj, 2300 m, 16. – 17. 6. 1973, Exp. N. Mus., loc. no. 245, 1 ex.; 7 km NW Shul, 2100 m, 17. 6. 1973, Exp. N. Mus., loc. no. 247, 21 ex.; 6 km SSE Shul, 2190 m, 17. – 18. 6. 1973, Exp. N. Mus., loc. no. 248, 1 ex.; 3 km N Dasht, Golestan forest, 960 m, 18. – 19. 6. 1977, Exp. N. Mus., loc. no. 375, 2 ex. (all MNP).

Distribution: Gruzia, Dagestan, Azerbajdzhan, Tajikistan Iran Israel.

Bionomy: Unknown, collected on trees and shrubs, e. g. oaks (*Quercus*) and pines (*Pinus*).

Discussion: In his original description Weise (1878) figured somewhat prolonged form of body. The identity of the species can be established without any doubt according to its characteristic colour pattern with a serrate anterior border of the transverse elytral band. This little known species of the subgenus *Anexochomus* Bar. is not conspecific with the following one. In present paper transferred to the genus *Brumus* Muls.

***Brumus septemmaculatus* (Weise) stat. n., comb. n.**

(Figs. 188 – 211)

Exochomus undulatus var. *7-maculatus*, Weise, 1885 : 53; Weise, 1892 : 51 (Sicard's translation).

Exochomus (Anexochomus) undulatus; Barovskij, 1922 : 303 (ab. *7-maculatus*); Korschevsky, 1932 : 261 (ab. *septemmaculatus*); Mader, 1955 : 787, 800 (ab. *7-maculatus*).

Exochomus undulatus; Savoiskaya, 1968 : 160, larva.

Exochomus (Exochomus) undulatus; Savoiskaya, 1971 : 108; 1983a : 161, 163, larva.

Body broadly oval in males 1.25 (1.23 – 1.28), in females 1.25 (1.20 – 1.28) times longer than wide, slightly con. Upper integuments dull, finely densely punctate with rudimental to short pubescence.

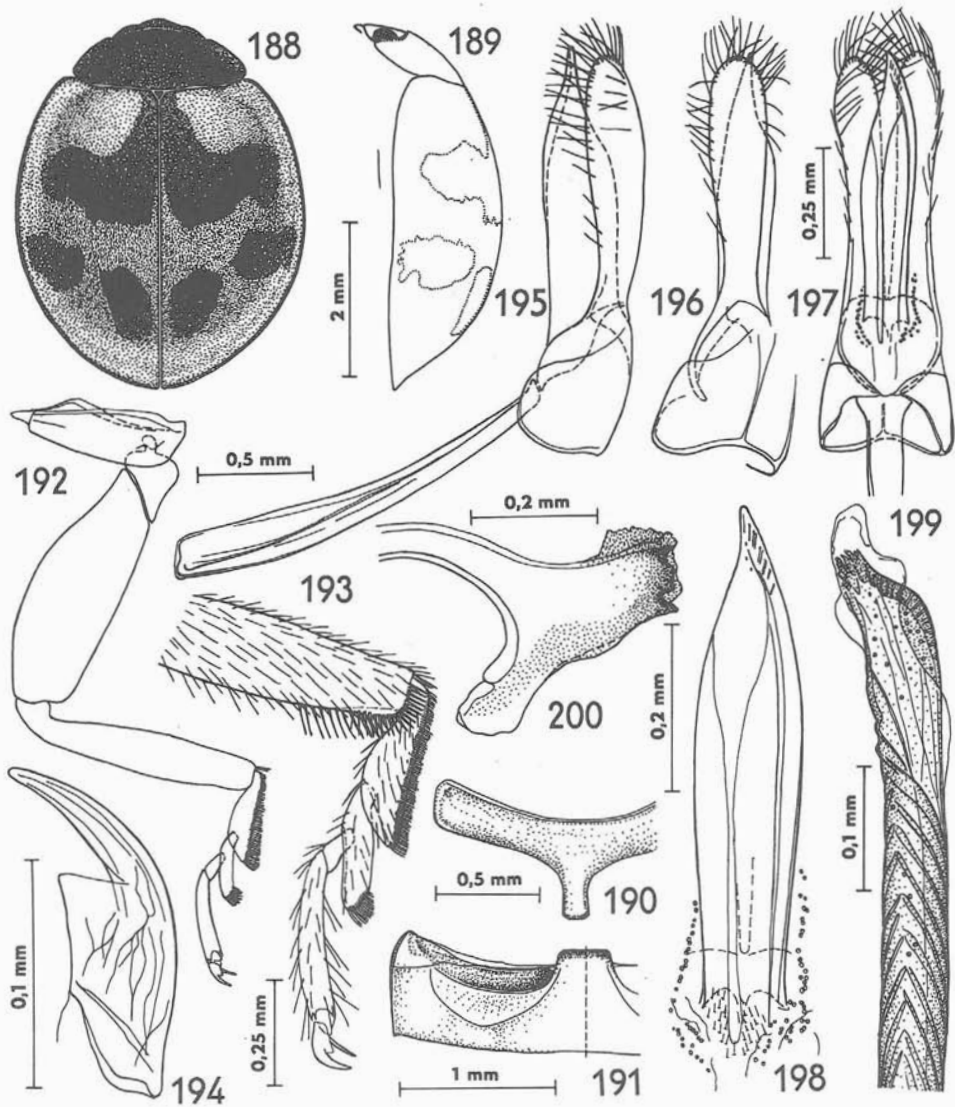
Head brown to black, clypeus brownish-yellow, widely transparent in front of eyes. Anterior portion of front sometimes with triangular, vaguely limited brownish to brownish-yellow spot. Mouth parts, and sometimes also submentum, yellowish-brown, apices of mandible and apical segments of maxillar palpi black. Antennae yellowish-brown, 2 terminal segments somewhat darker. Pronotum dark brown to black, anterior and lateral margins with not very wide orange to reddish border. Scutellum reddish-brown to black. Elytra reddish, each with a transverse band in the anterior half and with 2 – 3 dark brown to black spots in posterior half of elytra as figured (Figs. 188 – 189). Underside brown to black, narrow lateral margin of propleura, epipleura, outer portions of abdominal sternite ii. – iv. and sternite v. brownish-yellow. Legs brownish-yellow, coxae brown to black, femora and tibiae, apart

from the distal ends, gradually, first along the outer margin, then along the inner one (femora) or, on the contrary (tibiae) darkly bordered to completely black. Distal end of tarsal segment iv. brown to black.

Head roundly quadrangular feebly transverse 0.56 (0.53 – 0.58) times wider than pronotum. Anterior margin of head capsule not very widely, rather deeply, emarginate, the emargination irregularly arcuate to somewhat brace-shaped, indistinctly narrower than minimum distance between eyes. Clypeus strongly depressed to excavate in front of eyes, depressed area small. Sides of clypeus in the proximal third more or less obtusangulately arcuate, more distad straight to feebly emarginate, feebly bordered. Anterolateral corners of clypeus obtusangulately arcuate, slightly projecting anteriorly, separated from anterior margin of eye by about half of the eye length. Front feebly convex, at least 0.54 (0.51 – 0.56) times wider than head. Eyes small, shortly oval. Inner orbits finely arcuate, nearly parallel. Long portion of temples behind eyes nearly straight, parallel or slightly converging posteriorly, then nearly regularly arcuate, strongly narrowing towards the occipital aperture. Surface finely granularly reticulate, rather finely, not very densely punctate, covered by not very long pubescence. Punctures shallow, a little larger than eye facets, separated by 1.5 – 2 diameters. Setae at most as long as 3 diameters of an eye facet.

Pronotum subtrapezoidally rounded, 2.14 (2.04 – 2.22) times wider than long, slightly convex. Anterior margin of pronotum not broadly, rather deeply emarginate, emarginate part rather rectangular, in the middle somewhat convex anteriorly. Anterior corners strongly prominent, their inner margin s-shaped. Outer margin rather strongly arcuate, meeting the inner one at the somewhat sharp, asymmetrical, widely arcuate tip. Posterior corners badly defined, very broadly arcuate, passing fluently into the base, at their widest part situated in the anterior third of the length of pronotum. Distance between anterior and posterior corners reaching more than four-fifths of the pronotal length. Surface of the lateral parts of pronotum broadly flattened, slightly depressed at the anterior corners. Lateral margins strongly, all along their length regularly, or at the midlength somewhat more slightly, arcuate, rather strongly converging anteriorly, flatly reflexed, finely bordered. Base distinctly more strongly arcuate in the middle, lateral parts gradually straightened, beside posterior corners hardly emarginate, not depressed. Surface somewhat obsoletely reticulate, with punctures as on the head, somewhat denser. Setae distinct, in lateral parts of pronotum (almost) as long as 2 diameters of an eye facet. Sctellum equilaterally triangular with sides often convex, at base as wide as 1/15 – 1/17 of the pronotal width. Surface with traces of reticulation and a few (5 – 7) minute punctures and rudiments of setae.

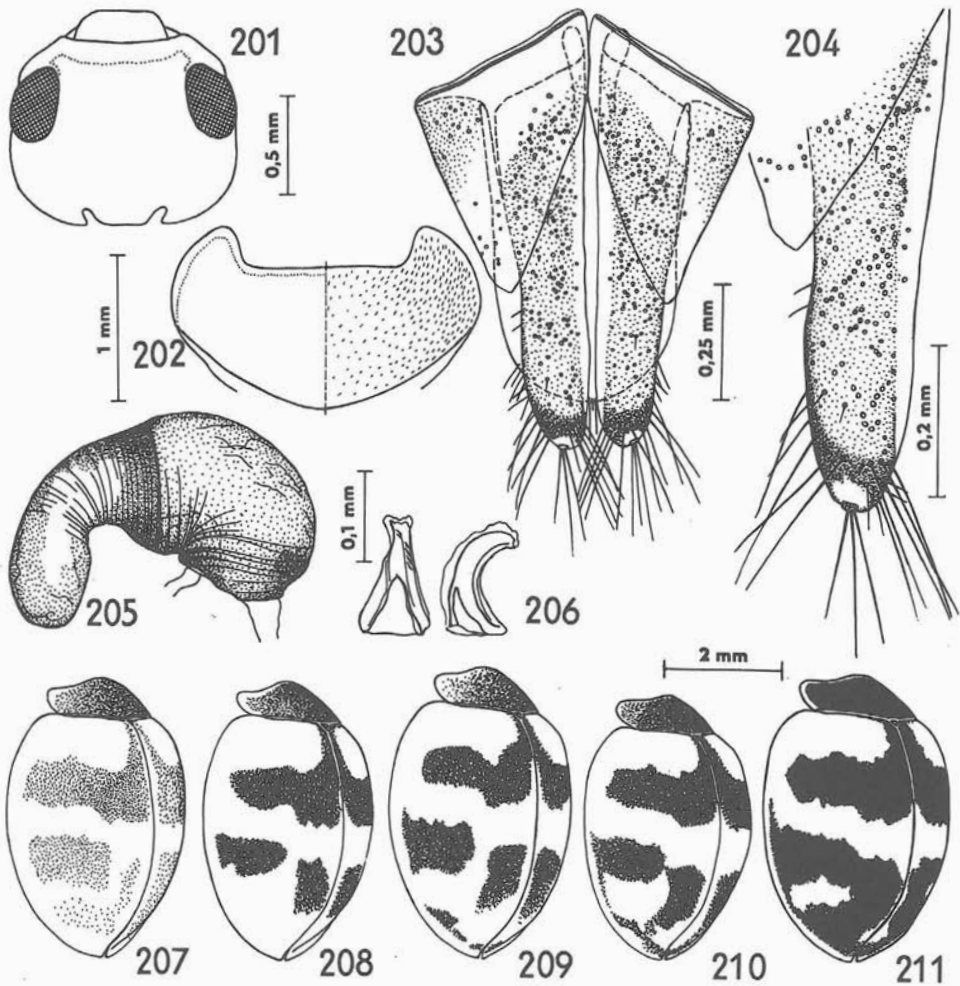
Elytra round, in males 1.00 (0.99 – 1.03), in females 1.02 (0.99 – 1.05) times longer than wide, slightly convex, from lateral view in males 2.41 (2.32 – 2.53), in females 2.44 (2.30 – 2.56) times longer than high, apart from a short postscutellar portion, in anterior two-thirds flatly, in posterior third rather strongly, arcuate, apex rather longly caudate. Base of elytra finely convex, humeral angle not broad, somewhat



Figs. 188 – 200, *Brumus septemmaculatus* (Weise) stat. n., comb. n.; 188, form of body, dorsal view (lectotype: ♂, Uzbekistan, Tashkent); 189, idem, lateral view; 190, prosternum; 191, abdominal sternite i.; 192, posterior leg; 193, tarsus; 194, tarsal claw; 195 – 197, tegmen, 195, lateral view; 196, dorsolateral view, 197, ventral view; 198, median lobe of aedeagus, ventral view; 199, terminal ampulla of siphon; 200, siphonal capsule.

obtusangulately arcuate, moderately projecting anteriorly, its inner margin strongly depressed. Humeral bulge moderately developed, not projecting posteriorly. Outline of the disc of elytra seen from the apex widely arcuate, sides gradually straightened, rather obliquely sloping down ventrad, in anterior half, under humeral bulge slightly depressed with shallow longitudinal, usually sinuate furrow. Lateral margins almost regularly, or in the anterior third, somewhat more slightly arcuate, rather widely reflexed, strongly beaded. Apex semicircular to moderately pointed. Surface finely to obsolete reticulate, not very coarsely and densely punctate, rudimentally or at most very shortly pubescent. Punctures 1.5 – 2 times larger than eye facets, along lateral margins, as a rule larger, separated by 1 – 2 diameters, or often catenulate.

Ventral surface moderately shiny, with not very long greyish-white pubescence. Scutellum as long as 4, or on epipleura and legs as long as 5 diameters of an eye facet. Propleura flat to slightly excavate in the middle, rather strongly sloping down ventromesad, slightly depressed both at anterior angle and at the base, outer half horizontal. Surface granularly reticulate, rather finely and densely punctate. Punctures not deep, about 1.5 times larger than eye facets separated by a little more than their diameter. Epipleuron at most 2.25 (1.93 – 2.63) times wider than the base of mesosternum, inner portion of the anterior half horizontal, outer third of the width of epipleuron slightly sloping down ventrolaterad. Surface finely rugose, finely but irregularly punctate. Punctures as large as, or at most 1.5 – 2 times larger, than eye facets, separated by 2 – 4, but at the inner margin often barely 1 diameter. Prosternum as figured (Fig. 190). Surface of prosternum without reticulation, shallowly to indistinctly, transversely wrinkled, rather coarsely densely punctate. Punctures shallow, 1.5 – 2 times larger than eye facets, separated by at most 1 diameter, being indistinct or missing on the posterior halves of basisternal lobes. Mesosternal process at the base 1.14 (1.00 – 1.38) times wider than long in the middle moderately to strongly convex. The anterior margin flatly bisinuate, not to much carinulate, shallowly concave in the middle. Surface without reticulation, irregularly, densely punctate. Size of the punctures as on the middle of prosternum. Metasternum 3.62 (3.29 – 3.87) times longer than mesosternal process, moderately convex with broad median area flat, median longitudinal sulcus moderately impressed. Precoxal bulge transverse, slightly developed. Surface on the sides with traces of reticulation, finely transversely wrinkled, finely and not very densely punctate. Punctures along the median sulcus about 1.5 times larger than eye facets, separated by 1.5 diameter, becoming gradually somewhat larger and shallower laterad, separated at most by 1 diameter. Abdominal sternites rather obsolete reticulate, not very finely punctate. Punctures 1.5 – 2 times larger than eye facets, in the middle of sternite i. separated by 0.5 – 3 diameters, from sternite i. to the sternite v. and on sides of each sternite becoming gradually denser and shallower, separated by 0.25 of their diameter. Femoral line complete (Fig. 191). Axillary space somewhat obsolete reticulate, densely punctate. Punctures shallow, 1.5 – 2 times larger than eye facets, usually separated by less than 1 diameter. Legs long, slender, distal ends of posterior femora reaching the ou-



Figs. 201 – 211, *Brumus septemmaculatus* (Weise) stat. n., comb. n.; 201, head; 202, pronotum; 203, ovipositor; 204, apex of hemisternite; 205, spermatheca; 206, infundibulum; 207 – 211, variation (207 – 209, 211, Uzbekistan, Tashkent, 210, Kazakhstan, Kujuk per.).

ter quarter of the width of epipleuron. Tibiae rod-shaped slightly flattened, posterior tibia 5.75 (518 – 6.37) times longer than wide, margins slightly and equally arcuate. Tarsus slender, not long, segment iii. reaching at least three-quarters of the length of free part of segment ii. Tarsal claw long, moderately stout rather strongly bent with large triangular tooth in proximal two-thirds of the length of claw.

Male genitalia as figured (Figs. 195 – 200).

Female genitalia: Ovipositor by about one-quarter longer than at proximal quar-

ter wide. Hemisternite slender, 4.5 times longer than wide, its proximal part slightly dilated, apex narrowly arcuate. Stylus button-shaped with 3 setae. Tergite ix. elongately u-shaped. Spermatheca with body robust, cornu long strongly curved and constricted in the middle. Infundibulum triangular, strongly bent.

Length: males 3.92 – 4.67 mm, females 3.67 – 4.75 mm; totally measured: 6 males, 9 females.

Variation: Dark pigmentation of immature specimens to variable degree brown, the process of melanisation probably lasting a long time. Spots of third to fifth series to variable extent connected.

Type material: From the 2 examined Syntypes from the coll. Weise I designated as Lectotype: the male from Tashkent, bearing the original label "*Exochomus undulatus* var. *7-maculatus* Weise", Paralectotype: female, with the same data as lectotype. Type series was collected by Faust and is deposited in Berlin (ZMH).

Material examined: "Turkestan", coll. Reitter, Leder, 18 ex., (MNP, SNM, SM, ZMH) "Samarkand" coll. Růžička et Volák, 1 ex.; idem, 15. 2. 1899, 2 ex. (all MNP); Uzbekistan, Tashkent, 19. 10. 1909, Lopatin lgt., 2 ex. (IZP); Aktash (Tashkent), 24. 4. 1972, Horák lgt., 3 ex.; idem, 7. 5. 1978, Víša lgt., 3 ex.; idem, 22. 4. 1980, Hladil lgt., 3 ex.; idem, 1500 m, 22. – 25. 4. 1980, Kubáň lgt., 1 ex.; Kara Tepe, 600 m, 26. 4. 1974, Rataj lgt., 1 ex.; Agalik, Zeravshanskij Chr. Mts., 1300 m, 29. 5. 1990, Strejček lgt., 3 ex.; Kazakhstan, Alma Ata, Medeo, 11. 5. 1978, Bílý lgt., 1 ex.; Kujuk per., Kara-Tau Mts., 5. 5. 1981, Hladil lgt., 1 ex. (all MNP).

Distribution: Uzbekistan, Kazakhstan.

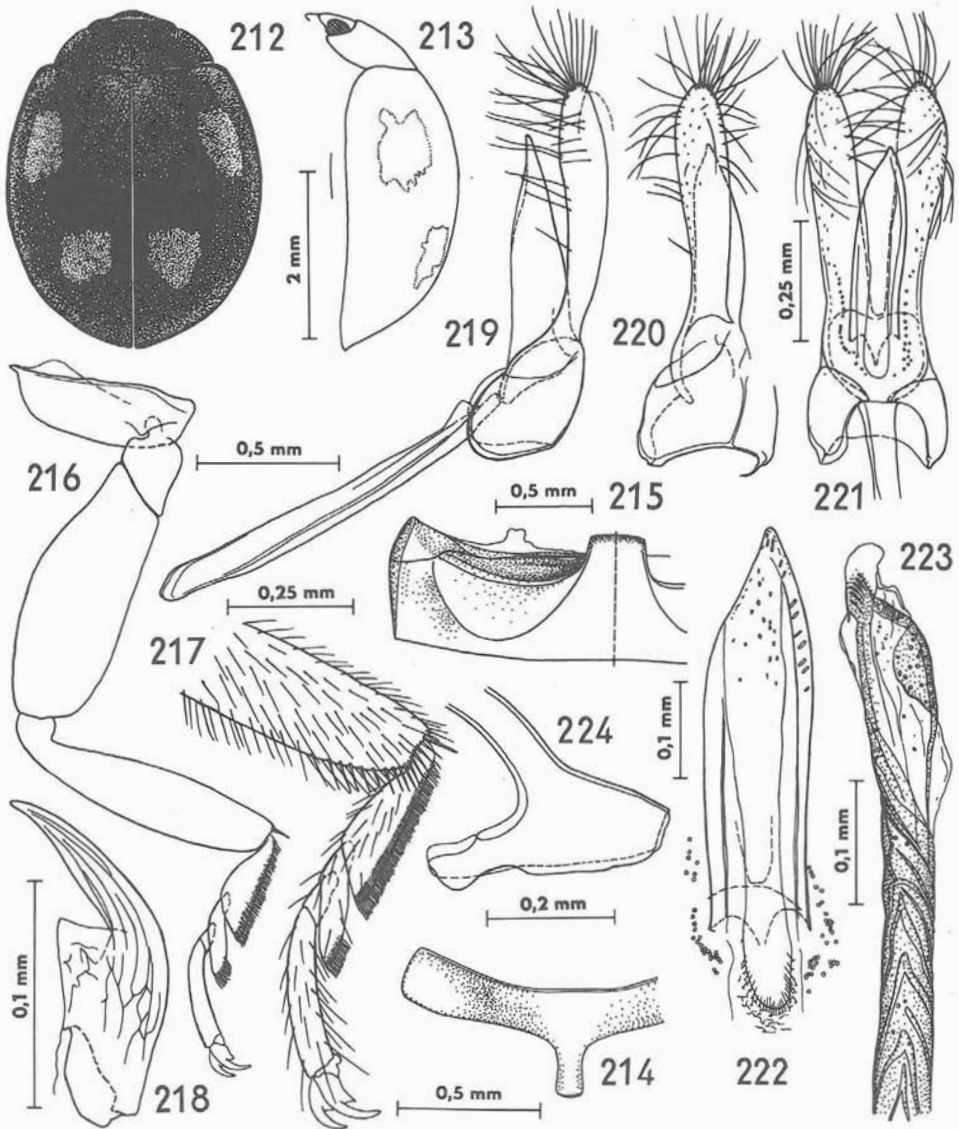
Bionomy: Scarce data on bionomy are given by Savoiskaya (1968, 1983a, b). According to her, females oviposit approximately at mid-May, development of the new generation lasts more than one month (SE Kazakhstan), It feeds on coccids (*Parthenolecanium corni* Bouché, *Rhodococcus turanicus* Archangelskaya), larvae completed the development also at the mixed diet of coccids and aphids. The species was introduced in the Alma-Ata district of Kazakhstan as a promising predator.

Discussion: Originally described as *Exochomus undulatus* var. *7-maculatus* by Weise. The description based merely on the colour pattern of elytra is complementary to that of the typical *E. undulatus* Weise. Barovskij (1922) placed *E. undulatus* Weise in the subgenus *Anexochomus*, the variation *7-maculatus* regarded merely as aberration. This concept was followed by Korschefsky (1932) and Mader (1955). Savoiskaya (1968) redescribed this species under the name *E. undulatus*; Weise, described its larva and figured some details of genitalia and larva. Later Savoiskaya (1971) placed it in the subgenus *Exochomus* s. str. This hitherto wrongly interpreted species is, according to the examination of the type specimens, regarded as a valid species, different from *B. undulatus* (Weise) and transferred to the genus *Brumus* Muls.

***Brumus mongol* (Barovskij) comb. n.**

(Figs. 212 – 237)

Exochomus (*Anexochomus*) *mongol* Barovskij, 1922 : 291; Korschefsky, 1932 : 256, ca-



Figs. 212 – 224, *Brumus mongol* (Barovskij) comb. n.; 212, form of body, dorsal view (Mongolia, Ongon elis); 213, idem, lateral view; 214, prosternum; 215, abdominal sternite i.; 216, posterior leg; 217, tarsus; 218, tarsal claw; 219 – 221, tegmen, 219, lateral view, 220, dorsolateral view, 221, ventral view; 222, median lobe of aedeagus, ventral view; 223, terminal ampulla of siphon; 224, siphonal capsule.

talogue; Wu, 1937 : 564, catalogue; Mader, 1955 : 785, 801; Chapin, 1965 : 250; Miyatake, 1970 : 315.

Exochomus freyi Fürsch, 1960b : 298; nec Mader, 1958 : 180.

Exochomus georgi Fürsch, 1963b : 52. **Syn. n.**

Exochomus mongol; Liu, 1965 : 79; Bielawski, 1965 : 156; 1968a : 200; 1975 : 255; 1984 : 314, 373; Kuznetsov, 1975 : 157, distribution.

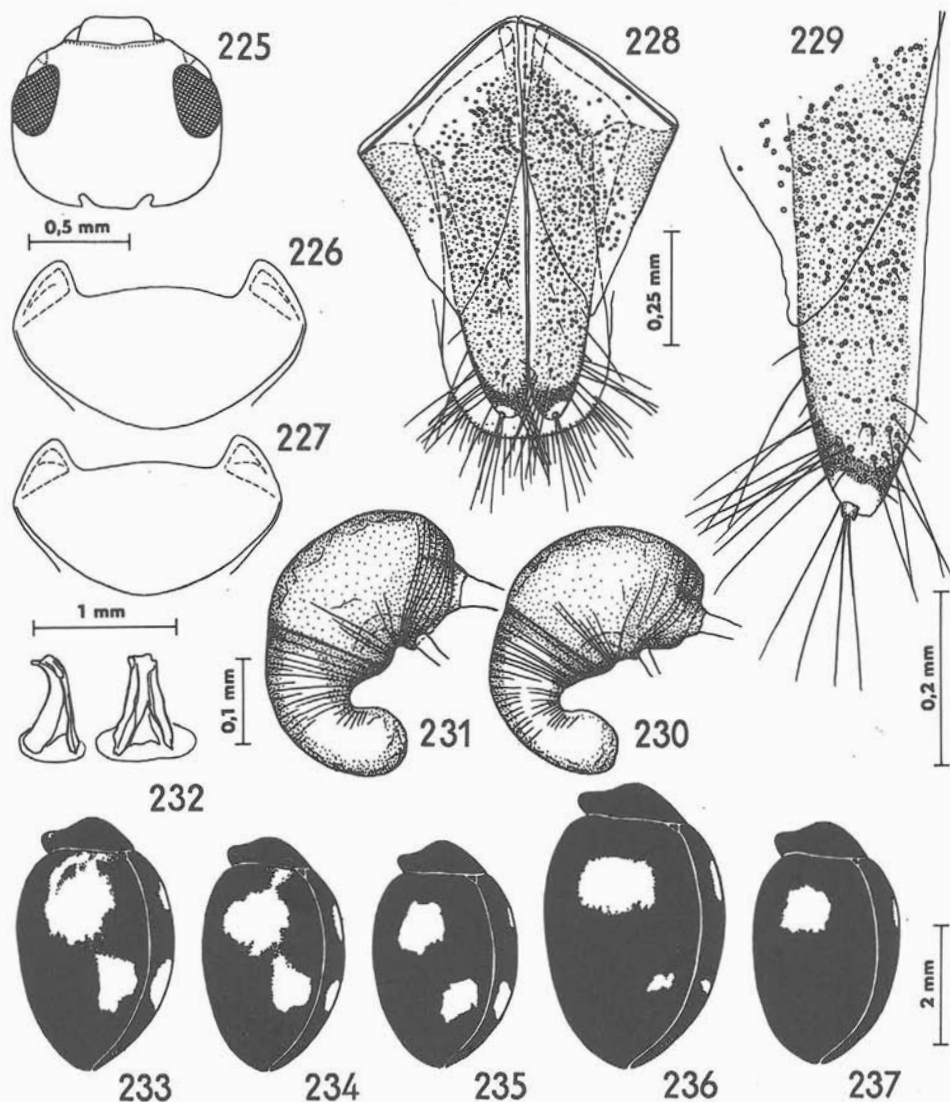
Exochomus (Exochomus) mongol; Savoiskaya, 1971 : 108; 1983a : 161, 167, larva.

Body oval to roundly oval, in males 1.24 (1.16 – 1.29), in females 1.28 (1.23 – 1.31) times longer than wide, not very strongly convex. Upper integuments rather shiny, finely to somewhat coarsely punctate, rudimentally pubescent.

Head and mouth parts black, clypeus with a small brownish transparent spot in front of eye. Gula, base of prementum, sometimes also basal segments of labial palpi brown. Antennae yellowish-brown, 2 terminal segments infusate. Pronotum, scutellum and elytra black. Each elytron with 2 yellowish-red spots (Figs. 212 – 213). Underside and legs black, inner portion of the anterior half of epipleura, meso- and metaepimera, small lateral portions of abdominal sternite (i.) ii. – v. frequently brown to yellowish-brown. Tarsal claws, apart from the base brown.

Head rectangularly rounded, distinctly transverse, 0.57 (0.55 – 0.6) times wider than pronotum. Anterior margin of head capsule not broadly and deeply emarginate, the emargination regularly concave to moderately brace-shaped, a little narrower than minimum distance between eyes. Clypeus slightly depressed and distinctly excavate in front of eyes. Sides of clypeus in proximal third more or less angulately arcuate, more distad nearly straight, sometimes slightly emarginate, feebly bordered, anterolateral corners wide, obtusangulately arcuate, distinctly projecting anteriorly, separated from anterior margin of eye by about three-sevenths of the eye length. Front strongly convex, at least 0.53 (0.50 – 0.55) times wider than head. Eyes small, shortly oval. Inner orbits slightly arcuate, very slightly converging anteriorly. Long portion of temples behind the eyes feebly arcuate, parallel or slightly converging posteriorly, then strongly, not angulately, rounded, narrowing towards the occipital aperture. Surface granularly reticulate, finely and densely punctate, shortly pubescent. Punctures as large as, or a little larger than eye facets, separated by about 1 diameter. Setae along the inner orbits of eyes as long as 2.5 diameters of an eye facet.

Pronotum pentagonally oval 2.06 (1.98 – 2.18) times wider than long, rather strongly convex. Anterior margin not widely, rather deeply, emarginate, the emargination subtrapezoidal, arcuately convex anteriorly in the middle. Anterior corners strongly prominent, their inner margin s-shaped. Outer margin strongly arcuate, at the base distinctly obtusangulate, meeting the inner one at the rectangular, widely arcuate tip. Posterior corners not well defined, widely obtusangulately arcuate, situated a little behind anterior third of the pronotal length. Distance between anterior and posterior corners reaching about two-thirds of the pronotal length. Lateral parts of the surface of pronotum more strongly convex than the disc, with conspicuous, roundly triangular impression at the anterior corners. Lateral margins apart from



Figs. 225 - 237, *Brumus mongol* (Barovskij) comb. n.; 225, head; 226 - 227, pronotum (226, Mongolia, 227, Korea); 228, ovipositor; 229, apex of hemisternite; 230 - 231, spermatheca (230, Mongolia, 231, Korea); 232, infundibulum; 233 - 237, variation (233 - 235, Mongolia, Ogon elis, 236 - 237, Korea Kle-San).

the area near anterior and posterior corners slightly arcuate, all widely reflexed, finely bordered. Base widely arcuate, somewhat angulate in the middle, sides of base hardly straightened, but near posterior corners strongly arcuate or shortly truncate, hardly depressed in this area. Surface with well preserved reticulation, finely, rather

densely, punctate, rudimentally pubescent. Punctures hardly smaller than eye facets, separated by 1.5 – 2 diameters on the disc, becoming somewhat denser and mixed with a larger ones along the lateral margins. Longest setae, at most as long as 1.5 diameter of an eye facet, situated at the lateral margins. Scutellum as a rule equilaterally triangular, flat, at base as wide as 1/13 – 1/18 of the pronotal width. Surface without reticulation with a few (7 – 10) minute punctures.

Elytra roundly oval, in males 1.04 (1.01 – 1.09), in females 1.05 (1.02 – 1.08) times longer than wide, not very strongly convex, from lateral view, in males 2.24 (2.12 – 2.32), in females 2.18 (2.09 – 2.24) times longer than high, apart from a short posts-cutellar portion, somewhat more slightly convex in the anterior half than in posterior one, apex shortly caudate, Base of elytra very feebly concave, nearly straight, humeral angle, rather widely, somewhat obtusangulately arcuate, moderately projecting anteriorly, its inner margin not strongly depressed. Humeral bulge well developed, distinctly projecting posteriorly. Disc of elytra seen from the apex (nearly) as strongly convex as at its sides, lateral parts of the outline gradually straightened, obliquely descending towards lateral margins, in anterior half, under humeral bulge somewhat depressed, nearly vertical, with a broad, longitudinal furrow. Lateral margins distinctly more flatly arcuate in the anterior half than in posterior one, all along their length strongly reflexed, widely beaded. Apex semicircular, or hardly pointed (females). Surface rather obsoletely reticulate, coarsely and densely punctate. Punctures with their shallow border nearly 2 times larger than eye facets, separated by a little more than their diameter, becoming feebly larger and denser along the lateral margins. Setae at most as large as diameter of the punctures.

Ventral surface not very shiny, with rather long, greyish-white pubescence. Setae as long as 4, in the middle of metasternum, 2 – 3 and on legs nearly 5 diameters of an eye facet. Propleura slightly longitudinally excavated in the middle, moderately sloping down ventromesad, moderately depressed both at the anterior corner and at the base, its not very wide lateral margin horizontal. Surface granularly reticulate, indistinctly punctate. Punctures very shallow, 1.5 – 2 times larger than eye facets, separated by less than 1 diameter. Epipleuron at most 2.09 (1.86 – 2.36) times wider than the base of mesosternum, inner portion of the anterior half horizontal, nearly outer three-fifths of the width of epipleuron slightly sloping down ventrolaterad. Surface without traces of reticulation, densely punctate, punctures 1.5 – 2 times larger than eye facets, separated at most by 1.5 diameter, along the inner margin denser but rarely catenulate. Prosternum moderately but widely convex in the middle, anterior margin rather densely subangulately emarginate, inner third of the emargination slightly convex anteriorly. Basisternal lobes narrow, their inner halves constricted, along the posterior margins and in the oblique area tending to the anterior corners strongly depressed. Prosternal process rather narrow subcarinate in the middle, parallelsided, apex roundly truncate. Surface of prosternum at most obsoletely reticulate, not very densely, transversely and at the sides obliquely wrinkled, somewhat indistinctly punctate. Punctures about 1.5 times larger than eye facets se-

parated in the middle of prosternum by 0.5 diameter, becoming gradually sparser towards the lateral margins of basisternal lobes. Mesosternal process at the base 1.02 (0.93 – 1.15) times wider than long, slightly convex. Anterior margin flatly and regularly bisinuate, strongly carinulate. Surface with microsculpture as on the middle of prosternum. Metasternum 3.63 (3.29 – 4.30) times longer than mesosternal process, moderately convex, median area somewhat flattened and with slightly or incompletely impressed median sulcus. Precoxal bulge slightly developed. Surface smooth in the middle, not very densely transversely wrinkled, finely and rather densely punctate. Punctures along the median sulcus as large as eye facets, separated usually by 3 diameters, becoming gradually larger and denser laterad, at the sides about 1.5 – 2 times larger than eye facets, then frequently separated by less than 1 diameter. Abdominal sternites more or less obsolete reticulate, coarsely not very densely punctate. Punctures deep, in the middle of sternites nearly 2 times larger than eye facets, separated by 1 – 2 diameters, from sternite i. to sternite v. becoming gradually smaller, barely 1.5 larger than eye facets and then separated by less than 0.5 diameter. Femoral line complete, irregularly rounded, reaching three-quarters of the length of sternite i., its inner part distinctly more slightly arcuate. Axillary space granularly reticulate with obsolete, radial wrinkles, shallowly and densely, often indistinctly punctate. Legs not very long and stout, distal ends of posterior femora reaching outer one-third of the width of epipleuron. Posterior tibia 4.51 (4.09 – 4.85) times longer than wide, outer margin nearly as strongly arcuate as inner one. Tarsus relatively short, tarsal segment iii. by its distal margin only slightly exceeding half the length of the free part of segment ii. Tarsal claw rather stout, moderately bent with not too large, triangular tooth, situated at the proximal three-fifths of the length of claw.

Male genitalia as figured (Figs. 219 – 224).

Female genitalia: Ovipositor hardly by one-third longer than wide, widest in the proximal third. Hemisternite elongate triangular, about 3.5 times longer than wide, all along the outer margin feebly emarginate, apex bluntly pointed. Stylus nearly as long as wide, bearing at least 2 long setae. Spermatheca with body robust, cornu strongly rectangularly curved. Infundibulum very small, triangular and curved at the tip.

Length: males 3.28 – 4.25 mm, females 3.90 – 4.62 mm; totally measured: 9 males, 8 females.

Variation: Each elytron with 1 (anterior) or 2 pale spots. Spots gradually extending with the trend to confluence, the anterior spot with 1 – 2 oblique projections towards the base of elytra.

Type material: I have seen Holotype: ♂, Mongolia, Teraldzhi, river Kerulen at the lake Dalaj-nor, 12. 6. 1899, Soldatov lgt., labelled: "*Exochomus mongol* m., Typ, Barovsky det.", is deposited in Sankt Peterburg (ZIN).

Material examined: Mongolia, Töv aimak, 12 km W Somon Lun, 1300 m, 3. 7. 1964, Exp. Dr. Z. Kaszab, 1964, no. 258, 2 ex. (IZP); Chentey aimak, 7 km NE Somon Mörön,

1200 m, 28. – 29. 7. 1965, Exp. Dr. Z. Kaszab, 1965, no. 319, 1 ex. (TMB); Suchebaator aimak, Suche Bator, 6. 8. 1963, Burakowski et Szelegiewicz lgt., 1 ex. (IZP); Ongon elis, 10 km S Somon Chongon, 900 m, 3. – 4. 8. 1965, Exp. Dr. Z. Kaszab, 1965, no. 356, 4 ex. (IZP, TMB); Corea, "Keizan", labelled: "Paratypus, *Exochomus freyi* H. Fürsch det." (SM); "Kei-San", 11 ex.; Pu-San, 1 ex. (all MNP). Material from Corea is of the same origin, unfortunately, the correct spelling of the first locality could not be stated.

Distribution: Mongolia, Corea, China; Tansbaikalia, Far East (Primor'ie, Priamurie).

Bionomy: Kuznetsov (1975) regarded this species as a xerophilous element in the fauna of the Maritime Provinces of the Far East. According to Savoiskaya (1983a) feeds on coccids, female oviposit under the scale of the host. Duration of the development of the new generation is 1.5 – 2 months.

Discussion: This species was described according to single specimen with 2 spots on each elytron and originally placed in the subgenus *Anexochomus* Bar. Savoiskaya (1971) transferred it to the subgenus *Exochomus* s. str. Bielawski (1984) figured the form of body and some details including genitalia. Savoiskaya (1983a) figured its larva. Fürsch (1960b) described *E. freyi* according to the series of the specimens with 1 spot on each elytron, mostly from Corea. Because of homonymy with *E. freyi* Mader, 1958, Fürsch (1963b) proposed new name *E. georgi* Fürsch, 1963 for *E. freyi* Fürsch, 1960 (nec Mader, 1958). Bielawski (1984) pointed at the possibility that *E. georgi* Fürsch may be synonym of *E. mongol* Bar. This hypothesis was confirmed by examination of both species. *E. georgi* Fürsch is thus junior synonym of *E. mongol* Bar., which is now transferred in the genus *Brumus* Muls.

***Brumus quadriguttatus* (Fleischer) stat. n., comb. n.**

(Figs. 238 – 258)

Exochomus 4-pustulatus var. *4-guttatus* Fleischer, 1900 : 118.

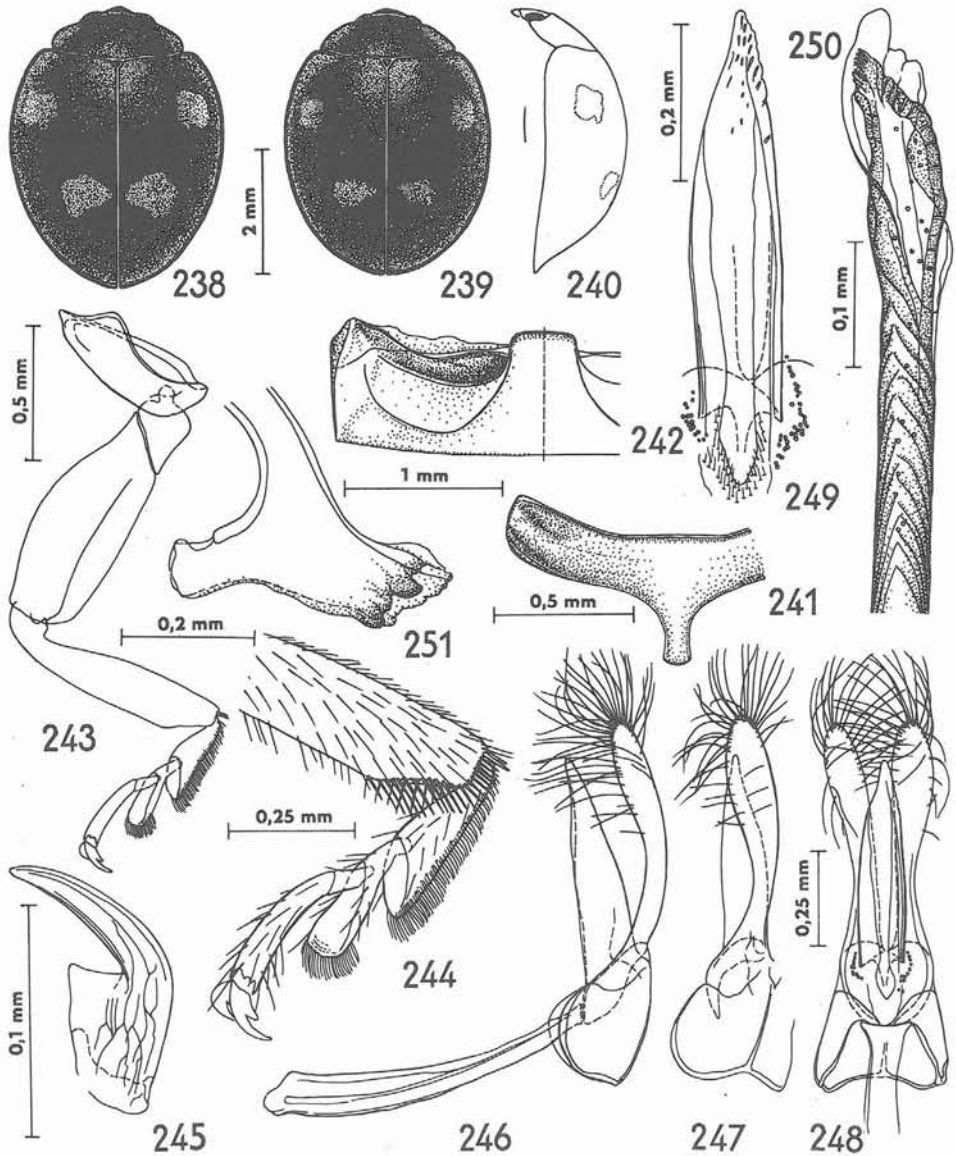
Exochomus quadripustulatus cordiformis Roubal, 1926 : 245; Korschefsky, 1932 : 260, catalogue; Mader, 1955 : 785, 794. **Syn. n.**

Exochomus illaesticollis Roubal, 1927 : 135; Korschefsky, 1932 : 255, catalogue; Mader, 1955 : 785, 795; Fürsch, 1960b : 300. **Syn. n.**

Exochomus quatuorpustulatus Korschefsky, 1932 : 258, (ab. *ibericus*), lapsus, catalogue.

Body (roundly) oval or obovate, in males 1.28 – 1.30, in females 1.33 – 1.35 times longer than wide, moderately convex. Upper integuments rather shiny, rather finely, somewhat densely punctate, rudimentally pubescent.

Head and mouth parts black. Clypeus with brown anteromedial border and large, transparent spot in front of eyes. Labrum, inner portion of mandible and labium including palpi brownish to brown. Antennae yellowish-brown, 2 terminal segments hardly infusate. Pronotum, scutellum and elytra black. Anterior and lateral margins



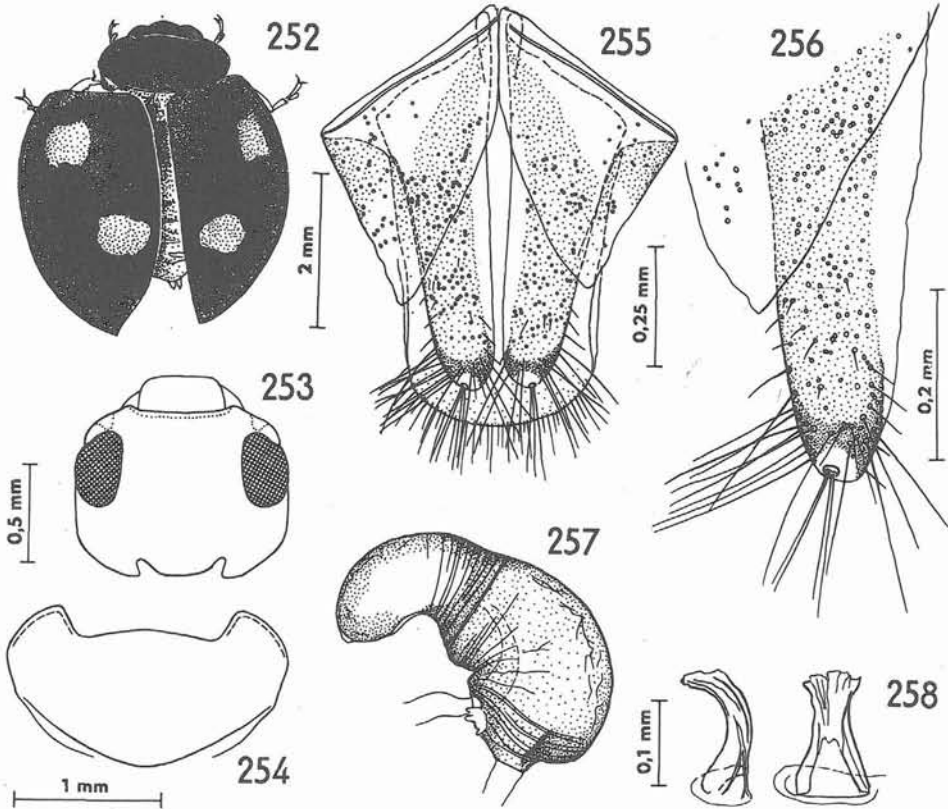
Figs. 238 – 251, *Brumus quadriguttatus* (Fleischer) stat. n., comb. n.; 238, form of body, dorsal view (*E. quadripustulatus* ssp. *cordiformis* Fleischer, syntype: ♀, (Teberda); 239 idem (idem: ♂, Teberda); 240, idem, lateral view; 241, prosternum; 242, abdominal sternite i.; 243, posterior leg; 244, tarsus; 245, tarsal claw; 246 – 248, tegmen (Abchazia, Gagra), 246, lateral view, 247, dorso-lateral view, 248, ventral view; 249, median lobe of aedeagus, ventral view; 250, terminal ampulla of siphon; 251, siphonal capsule.

of pronotum with narrow brownish-yellow border. Each elytron with 2 very large yellowish-red spots: anterior spot, usually transversely rectangular, situated behind the humeral bulge; posterior spot transversely cuneiform, somewhat obliquely situated behind the midlength of elytra closer to suture. Underside black, lateral portions of abdominal sternite ii. – iv., as well as distal ones brownish-yellow. Legs black, trochanters, distal ends of femora and most of the inner part of tibiae brown. Tarsi and tarsal claws yellowish-brown.

Head roundly quadrangular, slightly transverse, 0.56 (0.54 – 0.59) times wider than pronotum. Anterior margin of head capsule shallowly arcuately emarginate. Clypeus strongly depressed in front of eyes, often feebly excavate. Sides of clypeus in proximal third angulately arcuate, more distad straightened or finely emarginate, feebly bordered. Anterolateral corners of clypeus obtusangulate, widely arcuate, separated from anterior margin of eye by about three-seventh of the eye length. Front slightly convex, 0.53 (0.50 – 0.56) times wider than head. Eyes not very large and shortly oval. Inner orbits, all along their length, finely arcuate, nearly parallel. Long portion of temples behind eyes straight, parallel, then angulately and rather widely arcuate, strongly narrowing towards occipital aperture. Surface finely, almost granularly reticulate, finely and rather sparsely punctate, at most with short pubescence. Punctures shallow, hardly as large as eye facets, separated usually by 1.5 diameter. Setae along the inner orbits of eyes as long as 2 – 3 diameters of an eye facet, becoming shorter in the middle of front.

Pronotum rather transversely oval than roundly triangular 2.06 (1.96 – 2.15) times wider than long, not too strongly, convex. Anterior margin of pronotum not broadly and deeply emarginate, emarginated part subtrapezoidal, in the middle rather strongly convex anteriorly. Anterior corners strongly prominent, their inner margin flatly s-shaped. Outer margin regularly arcuate, meeting the inner one at the rectangular, somewhat widely arcuate asymmetrical tip. Posterior corners obtuse, rather widely arcuate, situated in anterior two-sevenths of the pronotal length. distance between anterior and posterior corners reaching about four-sevenths of the length of pronotum. lateral parts of the surface of pronotum as strongly convex as disc of pronotum, area at anterior corners moderately depressed. Lateral margins rather regularly slightly to moderately arcuate, strongly converging anteriorly, forming ! the right angle, including anterior corners narrowly reflexed, finely bordered. Base widely arcuate and distinctly angulate in the middle, lateral parts gradually straightened, their outer quarter next to the posterior corners obliquely truncate and strongly depressed. Surface with microsculpture as on the head, punctures somewhat deeper and sparser on disc, separated by 1.5 – 2 diameters, along the lateral margins missing. Pubescence rudimental. Scutellum nearly equilaterally triangular, in base as wide as 1/13 – 1/15 of the pronotal width. Surface obsoletely reticulate with a few (5 – 9) minute punctures.

Elytra oval to elongately cordiform, in males 1.02 – 1.04, in females 1.06 – 1.10 times longer than wide, not much convex, from lateral view in males 2.18 – 2.32, in fe-



Figs. 252 – 258, *Brumus quadriguttatus* (Fleischer) stat. n., comb. n.; 252, form of body, dorsal view (holotype: ♀, Araxesthal, present state); 253, head; 254, pronotum; 255, ovipositor (Circasien); 256, apex of hemisternite; 257, spermatheca; 258, infundibulum.

males 2.33 – 2.43 times longer than high, apart from a short postscutellar portion, rather regularly or in anterior half somewhat more slightly arcuate than in the posterior one, apex conspicuously caudate. Base of elytra straight to feebly convex, humeral angle moderately obtuse not widely arcuate, rather strongly projecting anteriorly its inner margin strongly depressed. Humeral bulge well developed, slightly projecting posteriorly. Outline of the disc of elytra seen from apex moderately, at the sides somewhat more strongly, convex or indistinctly gable-topped. Long portion of sides straight, rather obliquely descending towards the lateral margin, under humeral bulge nearly vertical with well developed, longitudinal furrow. Lateral margins slightly and nearly regularly arcuate (in males) or in anterior half more slightly arcuate than in the posterior one (in females), strongly reflexed and widely beaded.

Apex nearly semicircular (in males) or semielliptically pointed (in females). Surface obsoletely reticulate, not very finely densely punctate, rudimentally pubescent. Punctures about 1.5 times larger than eye facets, separated by their diameter, becoming somewhat larger, irregularly distributed or transversely catenulate along the lateral margins.

Underside rather shiny with short greyish-white pubescence. Setae as long as 3, on legs at most 4 diameters of an eye facet. Inner half of propleura flat, moderately sloping down ventromesad, strongly depressed, both at anterior angle and at the base, outer half of propleura horizontal. Surface obsoletely reticulate, shallowly punctate. Punctures about 1.5 times larger than eye facets, separated by 1 diameter, becoming smaller along the lateral margin. Epipleuron at most 1.85 (1.58 – 2.00) times wider than the base of mesosternum, inner portion of the anterior half horizontal, almost outer three-fifths, of the width of epipleuron slightly to moderately sloping down ventrolaterad. Surface with traces of reticulation, finely and densely punctate. Punctures usually 1.5 times larger than eye facets, separated by 1.5 diameter, becoming denser or sometimes catenulate along the inner margin. Prosternum as figured (Fig. 241). Basisternal lobes not very narrow, their inner halves moderately constricted, along the posterior margins and oblique area at the anterior corners rather strongly depressed. Prosternal process not wide, somewhat carinulate, slightly dilated towards the roundly truncate apex. Surface with traces of reticulation, densely transversely wrinkled, coarsely and densely punctate. Punctures shallow, 1.5 – 2 times larger than eye facets separated by 0.25 – 0.5 of their diameter, being often very obsolete along the posterior margin of basisternal lobes. Mesosternal process at the base 1.13 (1.10 – 1.18) times wider than long in the middle, strongly convex, its anterior margin shallowly bisinuate to nearly straight, strongly carinulate. Surface without reticulation and wrinkles, puncturation as on the prosternum. Metasternum 3.45 (3.13 – 3.73) times longer than mesosternal process, strongly convex, scarcely flattened in the middle, median longitudinal sulcus moderately impressed. Precoxal bulge strongly developed, wide. Surface, apart from the lateral portions, without reticulation, densely, transversely wrinkled, not very coarsely and irregularly punctate. Punctures along the median sulcus minute or at most 1.5 times larger than eye facets, in wrinkles separated by 0.5 – 3 diameters, becoming gradually larger and shallower laterad, at the lateral margins separated by a little more than 0.5 diameter. Abdominal sternites obsoletely reticulate, rather coarsely, not very densely punctate. Punctures in the middle of sternites 1.5 – 2 times larger than eye facets, separated by 0.5 – 2 diameters, becoming radually denser but smaller from sternite i. to the sternite v. and shallower to indistinct laterally. Femoral line more or less complete, irregularly arcuate, extending to two-thirds of the length of sternite i. Axillary space obsoletely reticulate with marked longitudinal wrinkles, coarsely punctate. Punctures very shallow, 2 times larger than eye facets, separated at most by 0.5 of their diameter. Legs rather short, moderately stout, distal ends of posterior femora reaching to barely outer two-fifths of the width of epipleuron. Posterior tibia 4.37

(4.21 – 4.65) times longer than wide, lateral margins moderately arcuate. Tarsus rather stout, tarsal segment iii. at its distal margin reaching to about half of the free part of segment ii. Tarsal claw stout, strongly subangulately curved with large triangular tooth at the midlength.

Male genitalia: Median lobe of aedeagus long, slender, in ventral view nearly 4.5 times longer than wide, at the distal third asymmetrically tapering, apex pointed; in lateral view longly triangular, at base moderately constricted, dorsal margin slightly arcuate. It is somewhat shorter than paramere. Paramere narrowly spatulate, in the proximal half gradually narrowing and not very strongly curved. Trabes moderately bent and dilated distad, as long as basal piece and median lobe of aedeagus together. Siphonal capsule moderately wide, its outer branch somewhat elongate bearing a small carina. Terminal ampulla of siphon slightly dilated, dorsal rib subangulate with not very large, spindle-shaped sclerotized facet.

Female genitalia: Ovipositor nearly by one-fifths longer than wide, at proximal third widest. Hemisternite longly triangular, nearly 3.5 times longer than wide, outer margin flatly s-shaped. Apex of hemisternite widely arcuate, asymmetrical. Stylus button-shaped with 3 setae. Spermatheca robust, cornu short, rather strongly curved. Infundibulum nearly triangular, strongly curved.

Length: males 3.46 – 3.96 mm, females 3.62 – 4.43 mm, totally measured: 4 males, 5 (6) females.

Variation: Colour form not found, immature example brown.

Type material: Holotype: ♀, Caucasus, Araxesthal, coll. Leder, Reitter, labelled: "*Exochomus 4-pust. v. 4-guttatus* n. v. n." and "Holotypus, 1900. *Exochomus 4-pustulatus v. 4-guttatus*, Fleischer", in Budapest (TMB).

Material examined: ♂, ♀♀, Caucasus b., Teberda, 6. 1912, Roubal lgt., labelled: "*Exochomus* ssp. *cordiformis* m. type, Roubal det."; ♀♀, Caucasus occ., Krasnaja Poljana, 7. 1910, Roubal lgt., labelled: "*Exochomus illaesticollis* m. type, Roubal det." (all SNM); Caucasus b., Tebera, 1913, Roubal lgt., 1 ex. (MNP); "Circassien", det., Rodt, 2 ex. (MNP, MMB); Gruzia, Gagra, 16. 6. 1974, Viša lgt., 2 ex.; Armenia, Cachkadzor, 8. – 11. 6. 1988, Strejček lgt., 4 ex. (all MNP); Turkey, Marjemena, Schimitschek lgt., 2 ex (SM).

Distribution: Caucasus, Gruzia, Armenia; Turkey, NE Anatolia.

Bionomy: Schimitschek (1944) noted that large numbers of adults of this species hibernate under bark of spruce *Picea orientalis* Link. in locality Marjemena (Turkey). Strejček collected it in oak forest.

Discussion: Originally described as variation of *E. quadripustulatus* (L.). Description based on the colour pattern of elytra is valid. Roubal (1926, 1927) described this species first as the subspecies *E. quadripustulatus cordiformis* Roub. and for the second time, according to an immature female as *E. illaesticollis* Roub. Fürsch (1960b) regarded *illaesticollis* Roubal as the valid name of this species. It may be easily recognized by the shape of pronotum and dark elytral epipleura. It is transferred now to *Brumus* Muls.

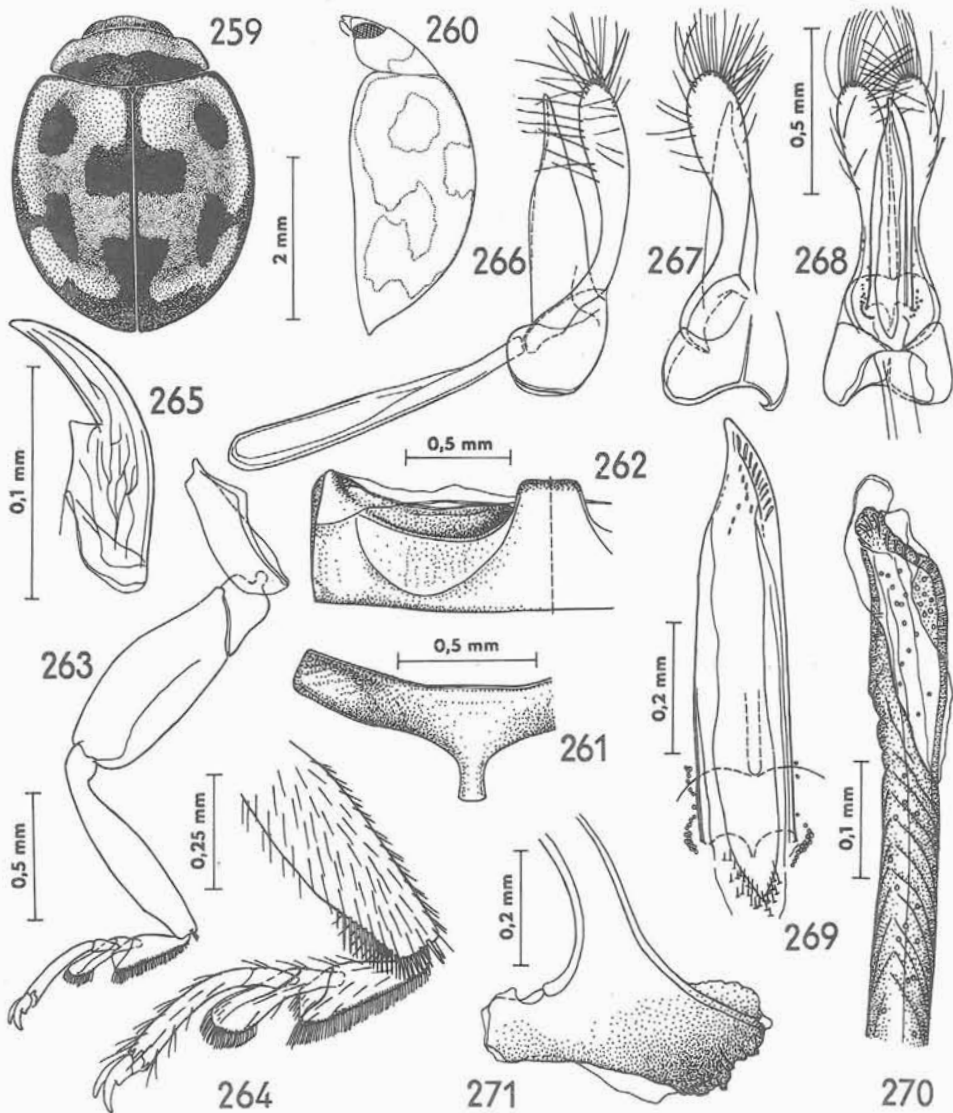
Brumus nigropictus (Fairmaire) comb. n.

(Figs. 259 – 281)

Exochomus quadri-pustulatus; Crotch, 1874 : 192, partim.*Chilocorus nigropictus* Fairmaire, 1876 : 94.*Chilocorus picturatus* Fairmaire, 1876 : 94.*Exochomus nigropictus*; Fairmaire, 1880 : 31; 1884 : 70; Weise, 1885 : 53 1892 : 52 (Sicard's translation).*Exochomus picturatus*; Fairmaire, 1880 : 32.*Exochomus nigropictus* var. *picturatus*; Fairmaire, 1884 : 70.*Exochomus quadripustulatus* var. *anchorifer* Bedel. 1885 : 90.*Exochomus anchorifer*; Bedel in Weise, 1892 : 52 (Sicard's translation); Kocher, 1956 : 107, distribution.*Exochomus (Parexochomus) anchorifer*; Barovskij, 1922 : 292, 293, 300; Korschefsky, 1932 : 253; Mader, 1955 : 787, 799.*Exochomus quadripustulatus* var. *floralis* auct. nec. Motschulsky, 1837 : 423, partim.

Body roundly oval, in males 1.22 – 1.25, in females 1.28 (1.24 – 1.34) times longer than wide, not too strongly convex. Upper integuments rather shiny, not very finely, densely punctate, rudimentally pubescent.

Head black, clypeus brownish-yellow with large, transparent spot in front of eyes. Great part of front brownish-yellow to orange. Mouth parts brownish-yellow to brown, base of mandible, distal portion of apical segments of maxillar palpi black. Antennae brownish-yellow, 2 apical segments infusate. Pronotum in females black, narrow anterior and lateral margins brownish-yellow, frequently with round spot on anterior corners, or in females brownish-yellow with wide black spot on the base. Anterior margin of the spot narrowly emarginate in the middle, the emargination in the shape of the letter "v" or "u", sides bisinuate, hardly reaching half of the pronotal length. Scutellum black. Elytra brownish-orange to orange, each, except for the inner part of base, with narrow black border and with 5 black spots. spot i. round, rather large, covering humeral bulge; spot ii. quadrangular, nearly as large as spot i., situated before the midlength of elytra closer to suture, is widely connected with sutural, black border; spot iii. longitudinally oval to triangular, usually as large as spot ii. its greater part situated behind the midlength of elytra rather closer to lateral margin, often connected by broadened lateral black border; spot iv. wedge-shaped, forming the part of broadened sutural black border, situated in the posterior third of elytra; spot v. corresponding with obliquely quadrangular, broadened part of apical black border. Underside black, small portion of anterior corner of female propleura, or great part of male propleura, inner anterior part of epipleura, ventral parts of male mesoepimera, lateral portions of abdominal sternite ii. – iii., as well as distal abdominal sternite yellowish-brown. Legs yellowish-brown, coxae brown to black, inner margin of femora, apart from distal end, as well as proximal part of the outer margin of tibiae infusate to black. End of tarsal segment iv. brown.

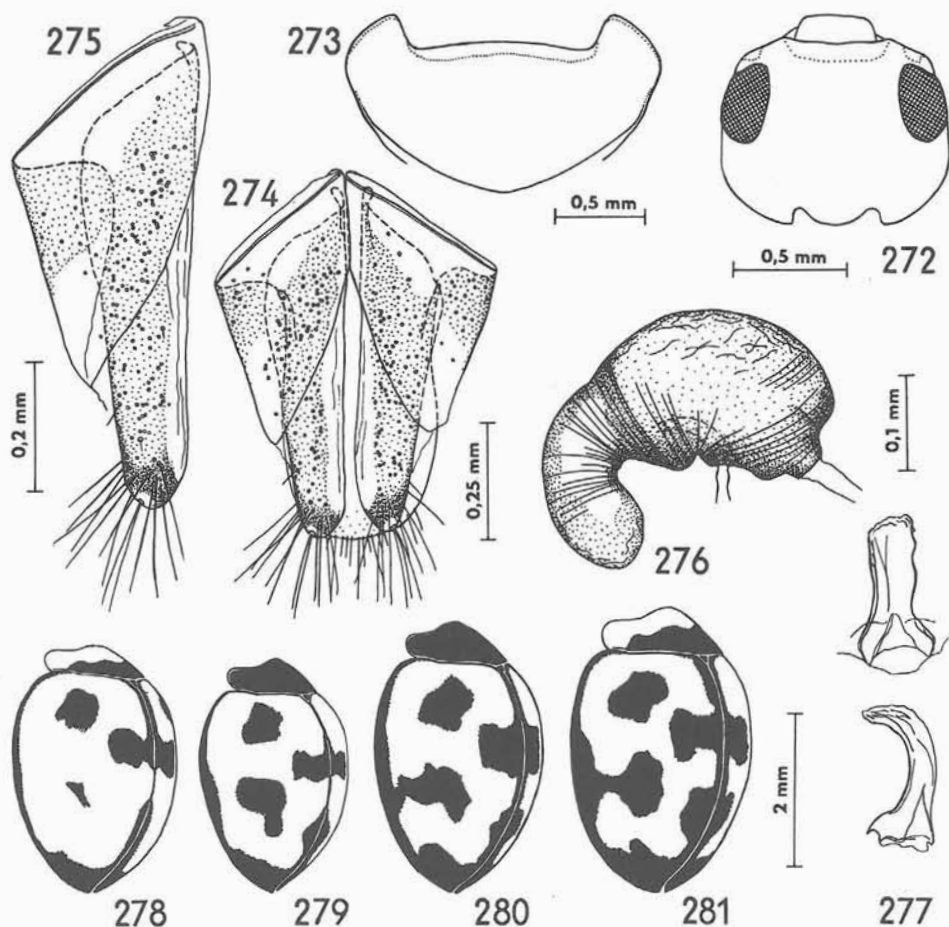


Figs. 259 - 271, *Brumus nigropictus* (Fairmaire) comb n.; 259, form of body, dorsal view (Algeria, Yacouren); 260, idem, lateral view; 261, prosternum; 262, abdominal sternite i.; 263, posterior leg; 264, tarsus; 265, tarsal claw; 266 - 268, tegmen, 266, lateral view, 267, dorsolateral view, 268, ventral view; 269, median lobe of aedeagus, ventral view; 270, terminal ampulla of siphon; 271, siphonal capsule.

Head roundly quadrangular, rather transverse, 0.58 (0.55 – 0.61) times wider than pronotum. Anterior margin of head capsule not widely, shallowly emarginate, the emargination arcuate to somewhat brace-shaped, distinctly narrower than minimum distance between eyes. Clypeus strongly depressed to finely excavate in front of eyes, depressed area broad. Sides of clypeus in proximal third angulately arcuate, more distally straightened to feebly emarginate, finely bordered. Anterolateral corners of clypeus obtuse, widely arcuate, very slightly projecting anteriorly, separated from anterior margin of eye by about three-sevenths of the eye length. Front moderately convex, at least 0.52 (0.49 – 0.55) times wider than head. Eyes small, oval. Inner orbits slightly arcuate at their middle part, very slightly converging anteriorly. Long portion of temples behind eyes straight to feebly arcuate, slightly diverging posteriorly, then angulately arcuate. Surface finely end granularly reticulate, finely and densely punctate, covered by a short pubescence. Punctures shallow, barely as large as eye facets, separated by 1 – 2 diameters. Setae along the orbits at most as long as 2 diameters of an eye facet, becoming rudimental or nearly missing in the middle of front.

Pronotum triangularly oval 2.12 (2.05 – 2.18) times wider than long, rather strongly convex. Anterior margin not broadly, rather deeply emarginate, the emargination subrectangular, in the middle moderately convex anteriorly. Anterior corners strongly prominent, their inner margin flatly s-shaped. Outer margin strongly and nearly regularly arcuate, meeting the inner one at the somewhat sharp, widely arcuate asymmetrical tip. Posterior corners obtuse, rather widely arcuate, situated in the anterior seventh of the length of pronotum. Distance between anterior and posterior corners reaching a little more than half of pronotal length. Lateral parts of the surface of pronotum more strongly convex than the disc of pronotum, at anterior corners only slightly depressed. Lateral margins moderately to somewhat strongly and almost regularly arcuate, strongly converging anteriorly, forming right angle to somewhat sharp angle, all along their length narrowly reflexed, finely bordered. Base distinctly more strongly arcuate in the middle, lateral parts hardly straightened but their outer third next to the posterior corners obliquely truncate, finely emarginate and slightly depressed. Surface with microsculpture as on the head, punctures somewhat deeper. Setae not longer than diameter of the punctures. Scutellum equilaterally triangular at base as wide as $1/12$ – $1/14$ of the pronotal width. Surface almost without reticulation with a few (6 – 12) punctures equal in size to those on pronotum.

Elytra shortly oval, nearly round, in males 0.99 – 1.01, in females 1.04 (1.01 – 1.08) times longer than wide, not much strongly convex, from lateral view in males 2.00 – 2.16, in females 2.05 (1.96 – 2.13) times longer than high, in anterior two-thirds rather strongly, in posterior third somewhat flatly arcuate, apex not longly caudate. Base of elytra finely convex, humeral angle not broad, almost rectangularly arcuate, rather strongly projecting anteriorly, its inner margin strongly depressed. Humeral bulge moderately developed, hardly projecting posteriorly. Outline of the disc of elytra, seen from the apex, strongly convex, indistinctly pointed, the sides gradually straightened, rather vertically descending towards lateral margins, in anterior third un-



Figs. 272 – 281, *Brumus nigropictus* (Fairmaire) comb. n.; 272, head; 273, pronotum; 274, ovipositor; 275, hemisternite; 276, spermatheca; 277, infundibulum; 278 – 281, variation (278, *Chilocorus picturatus* Fairmaire, holotype: ♂, Algeria (38), 279, *Exochomus anchorafer*, ♀, Algeria, Blidah, Allard det., 280, Tunisia, Ain Draham, 281, Algeria, Yacouren).

der humeral bulge slightly depressed with shallow longitudinal furrow. Lateral margins in the anterior third distinctly more slightly arcuate than in two posterior ones, not very broadly reflexed, strongly beaded. Apex semicircular or feebly pointed (females). Surface obsolete reticulate, finely, densely punctate and rudimentally pubescent. Punctures usually 1.5 – 2 times larger than eye facets, separated by barely 1 diameter, the coarser punctures along lateral margins becoming denser, frequently separated by 0.5 diameter.

Ventral surface rather shiny with somewhat long, greyish-white pubescence. Setae as long as 3 – 4, on legs and in lateral parts of abdominal sternites at most 5 diameters of an eye facet, but rudimentary in the middle of metasternum and abdominal sternite i. propleura strongly longitudinally excavate, moderately sloping down ventromesad, strongly depressed both at anterior angle and at the base, wide lateral margin projecting ventrolaterad. Surface granularly or somewhat obsoletely reticulate, not very finely, densely punctate. Punctures very shallow, about 1.5 times larger than eye facets, separated at most by their diameter. Epipleuron at most 2.03 (1.85 – 2.30) times wider than the base of mesosternum, its inner portion of the anterior half horizontal, outer half of the width of epipleuron rather strongly sloping down ventrolaterad. Surface almost smooth, finely and sparsely punctate. Punctures as large as, or at most 1.5 larger than eye facets, separated by 2 diameters, becoming larger and denser, along the inner margin, 2 – 2.5 times larger than eye facets, not rarely catenulate. Prosternum as figured (Fig. 261). Prosternal process rather narrow, somewhat carinate in the middle, slightly dilated towards roundly truncate apex. Surface of prosternum without reticulation, transversely, in the middle of basissternal lobes also obliquely wrinkled, finely and densely punctate. Punctures as large as or 1.5 times larger than eye facets, usually separated by slightly less than their diameter, becoming gradually shallower and irregularly distributed towards the lateral margins or missing along the posterior ones. Mesosternal process at the base 1.17 (1.07 – 1.34) times wider than long, rather strongly convex. Anterior margin flatly bisinuate, rather strongly carinate, broadly and shallowly emarginate in the middle. Surface without reticulation and distinct wrinkles, punctures somewhat sparser than those on the middle of prosternum. Metasternum 3.70 (3.32 – 4.03) times longer than mesosternal process, moderately convex not very broad median area flattened, median longitudinal sulcus moderately impressed. Precoxal bulge slightly developed, hardly transverse. Surface, apart from the lateral parts, without traces of reticulation, densely, transversely wrinkled, finely punctate. Punctures along the median line as large as eye facets, usually separated by 2 diameters, becoming shallower, 2 times larger laterad, along the lateral margins then separated by 0.25 of their diameter. Abdominal sternites with traces of reticulation, in the middle of sternite i. rather finely, not densely, punctate. Punctures at most 1.5 times larger than eye facets, separated by 2 – 3 diameters, becoming gradually shallower, somewhat larger and much denser towards the sternite v., at most 2 times larger than eye facets, separated by 0.25 of their diameter. Femoral line complete, strongly arcuate with the sides somewhat straightened, reaching three-quarters of the length of sternite i. Axillary space granularly to somewhat obsoletely reticulate, with fine longitudinal wrinkles, coarsely and very obsoletely punctured. Legs rather short, moderately thick. Distal ends of posterior femora reaching barely outer two-fifths of the width of epipleuron, Tibiae spindle-shaped flattened, posterior tibia 4.37 (4.14 – 4.89) times longer than wide, its outer margin rather strongly arcuate. Tarsus stout, tarsal segment iii. by its distal margin reaching about half of the free part of segment ii. Tarsal claw rather

slender, moderately or sometimes somewhat angulately curved with a small feebly e-marginate tooth, situated in distal three-fifths of the length of claw.

Male genitalia as figured (Figs. 266 – 271).

Female genitalia: Ovipositor by one-third longer than in the proximal third wide. Hemisternite elongately triangular with outer margins almost straight at the apex widely arcuate, hardly pointed. Stylus button-shaped with 2 – 3 setae. Tergite ix. u-shaped, somewhat truncate at apex. Spermatheca robust, cornu rather short, strongly curved. Infundibulum elongate, strongly curved distad.

Length: males 3.25 – 4.12 mm, females 3.08 – 4.33 mm; totally measured: 3 male, 8 females.

Variations: Extent of variability of colour pattern not known. Spots of the third and fourth series of elytra can be very small or gradually enlarged. Completely unicolourous, brownish-yellow specimens not known.

Type material: Holotype, ♀, on which is based the name – *nigropictus* Fairmaire – originating from Algeria. I examined Holotype specimen, ♂, on which is based the name – *picturatus* Fairmaire – labelled: "*Exochomus picturatus* Fairm." and "38", both deposited in Paris (PMN).

Material examined: Algeria, ♀, Alger(ia), coming from locality "Blidah", labelled: "*Exochomus anchorafer* All., 1870" and "Type" (PMN); Algeria, 3 ex.; La Calle, 1 ex.; Yacouren, 21. – 23. 6. 1971, A. Hoffer et Horák lgt., 3 ex (all MNP); Tunisia, Ain Draham, 7. 6. 1982, Picka lgt., 3 ex. (MNP).

Distribution: N Africa, Morocco, Algeria, Tunisia.

Bionomy: Both adults and larvae of this species were found by Peyerimhoff (1926) in July attacking various coccids: *Phenacoccus peyerimhoffi* Vayssire on *Juniperus thurifera* L.; *Stozia striata* Marchal on *Ephedra nebrodensis* Tin.; *Gueriniella serratulae* (F.) on *Erica arborea* L.; and *Chionaspis ceratoniae* March. on *Ceratonia siliqua* L. Smirnoff (1956) found this species in a colony of *Parlatoria blanchardi* (Targioni-Tozzetti) on palm-trees.

Discussion: This species was first described by Allard (1870) as *Exochomus Anchorafer*. However, the Allard paper, containing descriptions of 8 species of various families, is not valid in the sense of Articles 8 – 9 ICZN, because: (i.) this paper is in manuscript, which has not been published in any periodical, even though the author published other papers both before 1870 and later. Some species contained in that paper are generally accepted as having been validly described after 1870. (ii.) even though the manuscript seems to have been duplicated by means of lithography (perhaps by Allard himself), the number of such copies could not be established and the paper is by no means available. This paper itself is not known and was not listed by Derkson at Scheiding (1963). One copy of Allard's (1870) paper, originating from the library of Julien Achard, is deposited in the library of the department of entomology, National Museum, Praha.

Crotch (1874) quoted the unavailable name *E. ericae* Chevrolat in litt. (chev. MSS). The first valid description of the species under discussion was published by

Fairmaire (1876), who described the female as *Chilocorus nigropictus* Fairm. and male as *Ch. picturatus* Fairm. respectively. Later Fairmaire (1880) transferred both the above species to *Exochomus* Redtb. and finally considered (Fairmaire, 1884) *E. picturatus* (Fairm.) to be only a variety of *E. nigropictus* (Fairm.). Bedel (1885) drew attention to the paper by Allard (1870) (see above), considering the later Fairmaire names synonyms of *E. quadripustulatus* var. *anchorifer* (sic !). Also in his remark concerning *E. nigropictus* (Fairm.) in Weise (1892) (translation by Sicard) Bedel gives *E. anchorifer* as the valid name of this species. The description by Allard (1870) being invalid, the name *anchorifer* became available with Bedel, 1885 as its author and is a junior synonym of *E. nigropictus* (Fairmaire, 1876). Barovskij (1922) placed it in the subgenus *Parexochomus* Bar. Some details of genitalia were figured by Smirnof (1957), its distribution in Morocco was summarized by Kocher (1956). This species hitherto known as *E. anchorifer*, is here transferred to the genus *Brumus* Muls. It can easily be distinguished by the characteristic colour-pattern of elytra, shape of pronotum and tarsal claws.

***Brumus cedri* (Sahlberg) stat. n., comb. n.**

(Figs. 282 – 306)

Exochomus 4-pustulatus var. *Cedri* Sahlberg 1913b : 262.

Exochomus (Exochomus) quadripustulatus; Barovskij, 1922 : 293, partim (ab. *cedri*); Mader, 1955 : 790, partim (ab. *cedri*).

Exochomus Mülleri Mader, 1931 : 134; Korschefsky, 1932 : 256, catalogue; Schatzmayr, 1939 : 227. **Syn. n.**

Exochomus (Exochomus) quatuorpustulatus Korschefsky, 1932 : 256, lapsus, partim (ab. *cedri*), catalogue.

Exochomus (Exochomus) Mülleri; Mader, 1955 : 785, 795. **Syn. n.**

Exochomus 4-pustulatus; Günther, 1958 : 31, partim (ab. *distinctus, floralis*).

Body oval, slightly ovate, in males 1.28 (1.23 – 1.32), in females 1.29 (1.24 – 1.36) times longer than wide, slightly convex. Upper integuments moderately shiny, finely to somewhat coarsely punctate, rudimentally pubescent.

Head black, clypeus brownish-yellow with not very transparent spot in front of eye. Anterior half of front in males brownish-yellow to yellow. Mouth parts and antennae brownish-yellow, mandibles, distal parts of the apical segments of maxillary and labial palpi, sometimes also labrum (in females) brown to nearly black. Last 2 segments of antennae infusate. Pronotum black anterior and lateral margins with narrow yellowish transparent border, sometimes with small, triangular yellow spot at anterior corners (in females) or with larger one, reaching posterior corners of pronotum (in males) then they are mutually connected by a wide transverse band of the anterior margin of pronotum. Scutellum and elytra black, each elytron with 2 – 3 yellowish-orange to red spots: spot i. angularly lunular, rather slender, situated on the outer and posterior side of humeral bulge, frequently dilated towards the lateral mar-

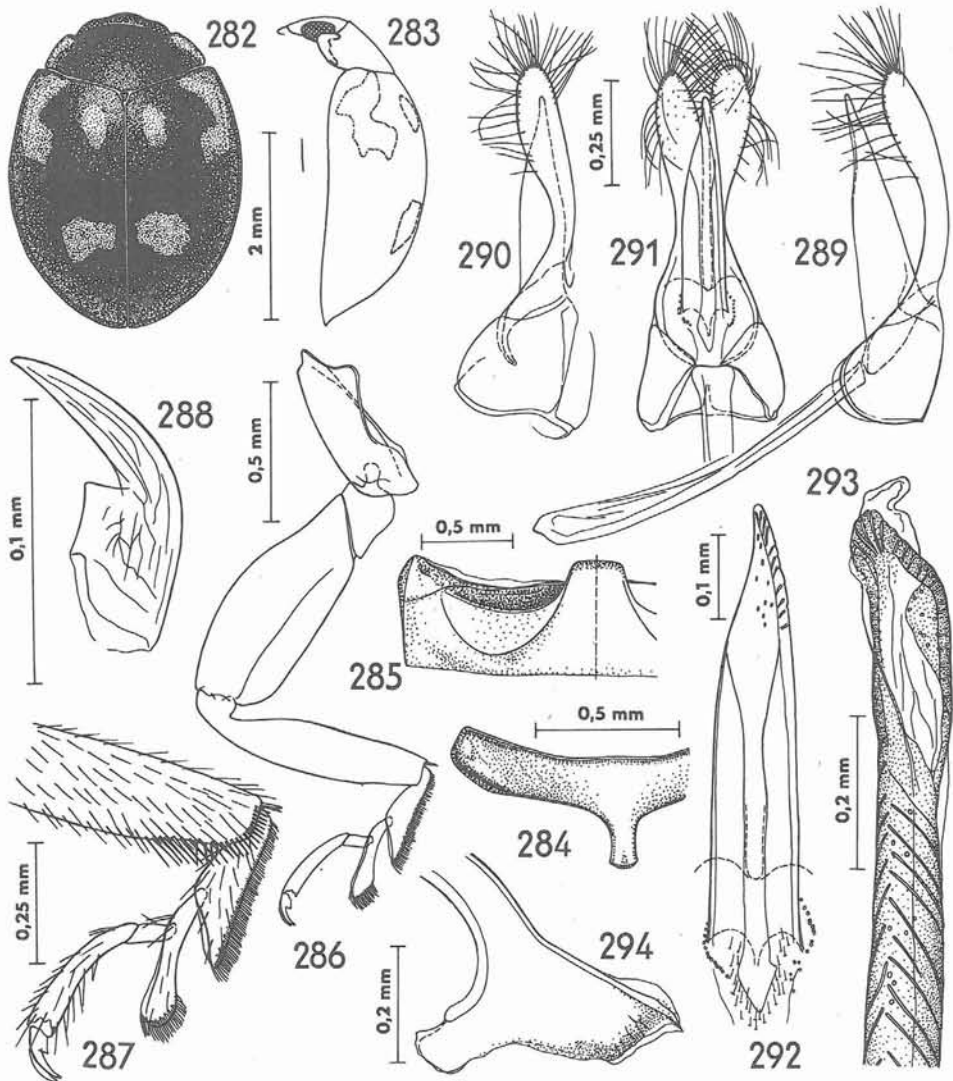
gin of elytron; spot ii. small, longitudinally oval, situated between humeral bulge and suture, often minute or missing; spot iii. transversely oval to pentagonal, somewhat obliquely situated at three-quarters of the length of elytra. Underside black, propleura or its anterior corners, inner portion of the anterior half of epipleura, wide lateral parts of abdominal sternite (i.) ii. - iii., as well as all of distal ones, yellow to yellowish-orange. Meso- and metaepimera brown. Legs brownish-yellow, trochanters, tarsi and inner parts of tibiae in various degree infusate to black. Distal end of tarsal segment iv. and the base of claw infusate.

Head roundly quadrangular, distinctly transverse 0.57 (0.56 - 0.59) time wider than pronotum. Anterior margin of head capsule rather broadly and deeply emarginate, the emargination regularly concave (nearly) as wide as minimum distance between eyes. Clypeus rather strongly depressed and feebly excavate in front of eyes, depressed area rather large. Sides of clypeus in proximal third angulately arcuate, more distally straightened, not emarginate, feebly bordered. Anterolateral corners of clypeus obtuse, widely arcuate, separated from anterior margin of eye by about one third of the eye length. Front very slightly rather transversely convex, at least 0.52 (0.49 - 0.57) times wider than head. Eyes small, shortly oval, inner orbits finely arcuate, at most very slightly converging anteriorly. Long portions of temples behind eyes feebly arcuate, parallel or indistinctly diverging posteriorly, then subangulate, rather widely arcuate, narrowing towards the occipital aperture. Surface finely granularly reticulate, finely and densely punctate, shortly pubescent. Punctures shallow, by a little larger than eye facets, separated by about 1 diameter. Setae in the middle of front rudimental, along orbits as long as 2 diameters of an eye facet.

Pronotum transversely oval, distinctly triangular, 2.15 (2.02 - 2.26) times wider than long, rather strongly convex. Anterior margin of pronotum not widely and deeply emarginate, the emargination subtrapezoidal, its anterior margin strongly convex in the middle. Anterior corners not very strongly prominent, their inner margin s-shaped, diverging anteriorly. Outer margin gradually more strongly arcuate distad, meeting the inner one at the rectangular, rather widely arcuate, feebly asymmetrical tip. Posterior corners well defined, not widely obtusangulately arcuate, situated approximately at the anterior third of pronotal length. Distance between anterior and posterior corners reaching about three-fifths of the pronotal length. Lateral parts of the surface of pronotum more strongly convex than the disc of pronotum, along the inner margin of anterior corners and the lateral margins of pronotum strongly depressed. Lateral margins moderately, towards both anterior and posterior corners gradually, more strongly arcuate, ! rectangularly converging anteriorly, widely reflexed, finely bordered. Base strongly arcuate, in the middle distinctly angulate, lateral parts next to the posterior corners longly, obliquely truncate, moreover, somewhat emarginate, strongly depressed in this area. Surface with microsculpture as on the head, rudimentally pubescent, punctures somewhat deeper. Scutellum equilaterally triangular, moderately convex, at base as wide as $1/13 - 1/17$ of the pronotal width. Surface with traces of reticulation and a few (8 - 10) minute, shallow punctures.

Elytra oval, in males 1.00 (0.97 – 1.04), in females 1.03 (0.98 – 1.11) times longer than wide, only slightly convex, from lateral view, in males 2.21 (2.10 – 2.32), in females 2.20 (2.07 – 2.36) times longer than high, very slightly convex on the disc, in the s-shaped line sloping down towards the moderately caudate apex. Base of elytra feebly arcuate, convex, humeral angle rather strongly prominent, rectangular, not very widely arcuate, its inner margin strongly depressed. Humeral bulge moderately developed, scarcely projecting posteriorly. Outline of the disc of elytra seen from the apex, rather more slightly arcuate than at its sides, the sides gradually straightened rather obliquely sloping down towards the lateral margin, in anterior half under humeral bulge, only slightly depressed with well developed longitudinal furrow which reaches apex. Lateral margins distinctly more flatly arcuate in the anterior half than in the posterior one, all along their length widely reflexed and beaded. Apex of elytra semicircular, or feebly pointed (females). Surface obsoletely reticulate, coarsely densely punctate, rudimentally pubescent. Punctures shallow, about as large as 2 eye facets, separated by barely 0.5 of their diameter, becoming a little larger on lateral margins, or rarely catenulate.

Ventral surface rather shiny, not very long greyish-white pubescent. Setae as long as 3, in the middle of prosternum 1 – 2, on legs 3 – 4 diameters of an eye facet. Propleura strongly longitudinally excavate, mostly horizontal, both at anterior angle and at the base strongly depressed, its broad outer margin moderately sloping down ventrolaterad. Surface granularly reticulate, rather finely, densely punctate. Punctures very shallow, nearly 1.5 times larger than eye facets, separated by nearly 1 diameter. Epipleuron at most 2.06 (1.78 – 2.42) times wider than base of mesosternum, inner portion of the anterior half horizontal, outer half of the width of epipleuron slightly sloping down ventrolaterad. Surface with traces of reticulation, finely rugose, coarsely densely punctate. Punctures very shallow, (at least) 2 times larger than eye facets, separated by 0.25 – 0.5 of their diameter. Prosternum as figured (Fig. 284). Basiternal lobi narrow, flat, moderately constricted in its inner half, along the posterior margins and at the anterior corners only feebly depressed. Surface of prosternum, apart from the lateral parts, without obsolete reticulation, shallowly, transversely or at the sides obliquely wrinkled, indistinctly rather coarsely punctate. Punctures including the very shallow margins at least 1.5 times larger than eye facets, separated by hardly 0.25 of their diameter. Mesosternal process in base 1.12 (0.95 – 1.37) times wider than long, slightly to moderately convex. Anterior margin flatly bisinuate, narrowly carinate, narrow median part slightly emarginate. Surface at most with traces of reticulation, irregularly wrinkled. Punctures about 1.5 times larger than eye facets, separated by more than 0.5 diameter. Metasternum 3.44 (3.17 – 3.69) times longer than mesosternal process, rather strongly convex, small triangular part hardly flattened in the middle, median longitudinal sulcus irregularly impressed. Precoxal bulge robust, transverse. Surface, apart from the smooth medial part, obsoletely reticulate, densely transversely wrinkled, finely punctate. Punctures along the median sulcus as large as eye facets, separated by 1 – 3 diameters, beco-



Figs. 282 – 294, *Brumus cedri* (Sahlberg) stat. n., comb. n.; 282, form of body, dorsal view (lectotype: Lebanon, Mont Baruk); 283, idem, lateral view; 284, prosternum; 285, abdominal sternite i.; 286, posterior leg; 287, tarsus; 288, tarsal claw; 289 – 291, tegmen (Turkey, Karapinar), 289, lateral view, 290, dorsolateral view, 291, ventral view; 292, median lobe of aedeagus, ventral view; 293, terminal ampulla of siphon; 294, siphonal capsule.

ming gradually shallower, 2 times larger laterally and then separated by 0.25 – 0.5 of their diameter. Abdominal sternites more or less obsoletely reticulate, apart from the middle part of sternite ii. – iii., rather coarsely punctate. Punctures about 1.5 – 2 times larger than eye facets, in the middle of sternite i. separated by 2 – 4 diameters, becoming gradually denser, shallower to indistinct towards the sternite v. and at lateral parts of each sternite, then separated by 0.25 – 0.5 of their diameter. Femoral line complete, strongly and regularly arcuate or somewhat angulate in the middle, reaching three-quarters of the length of sternite i. Axillary space nearly granularly reticulate, shallowly punctate, punctures almost 1.5 times larger than eye facets, separated by 1 – 2 diameters, rarely placed in shallow wrinkles. Legs rather short, not very stout, distal ends of posterior femora reaching at most outer one third of the width of epipleuron. Posterior tibia 4.34 (3.92 – 4.74) times longer than wide its inner margin nearly straight distally, outer margin slightly regularly arcuate. Tarsus short, not very stout, tarsal segment iii. by its distal end slightly exceeding half the length of the free part of segment ii. Tarsal claw not very stout, moderately curved with not very large triangular tooth, situated at a little over the midlength of the claw.

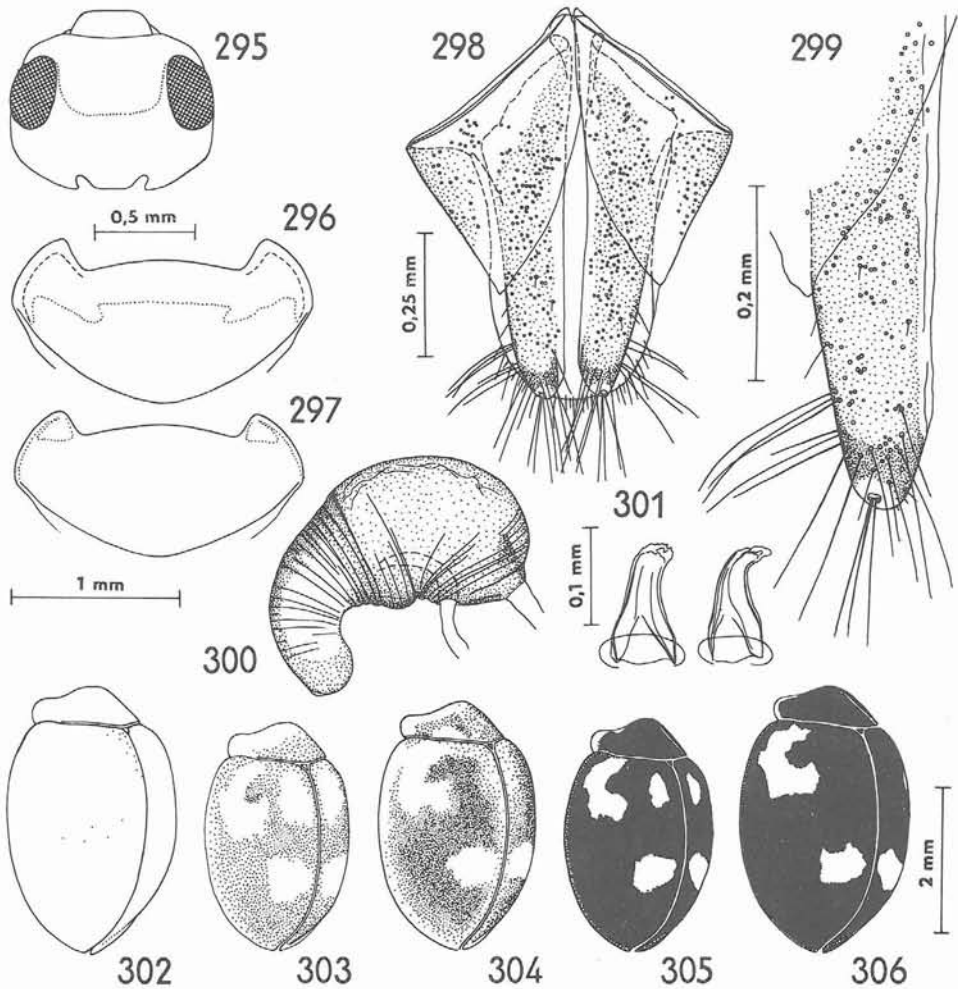
Male genitalia: Medial lobe of aedeagus rather long, slender, in ventral view 5 times longer than wide at base, in three proximal fifths parallelsided, then narrowing towards the pointed asymmetrical apex; in lateral view sharply pointed. It is nearly as long as paramere. Paramere thin, in dorsolateral view asymmetrically spatulate, in proximal two fifth narrowing and strongly curved. Trabes slightly curved and dilated distally, as long as basal piece of aedeagus and paramere together. Siphonal capsule not broad, its inner branch rather short, outer one robust bearing a small comb. Terminal ampulla of siphon short hardly dilated with dorsal rib subangulate, small sclerotized facet spindle-shaped.

Female genitalia: Ovipositor by one fifth longer than wide, at its proximal two fifths widest. Hemisternite elongately triangular, 4 times longer than wide, outer margin slightly maraginate in the middle, apex rather widely arcuate, somewhat pointed. Stylus button-shaped with 3 setae. Tergite ix. somewhat broadly u-shaped with apex rounded. Spermatheca robust, cornu nearly as long as the body of spermatheca, strongly curved. Infundibulum somewhat triangular, strongly curved distad.

Length: males 2.75 – 3.68 mm, females 3.01 – 3.87 mm; totally measured: 8 males, 15 females.

Variation: Process of the melanisation of adults seems to last a long time. Majority of specimens (collected in July – August) with colour pattern in various degree brown. Light spot between humeral bulge and the suture becoming gradually smaller or disappear in dark specimens.

Type material: From Sahlberg's syntype material I designated: Lectotype, ♀, Lebanon, Baruk Mts., U. Sahlberg lgt., labelled: „*Exochomus 4-pustulatus* v. *cedri* J. Sahlb., Spec. typ. No. 1911,“; Paratype, ♂, with the same data, labelled: “Spec. typ. No. 1910,“. Type material is deposited in Helsingfors (HZM).



Figs. 295 – 306, *Brumus cedri* (Sahlberg) stat. n., comb. n.; 295, head; 296 – 297, pronotum (296, Turkey, Lyciae Taurus, 297, lectotype: ♀, Lebanon, Mont Baruk); 298, ovipositor; 299, apex of hemisternite; 300, spermatheca; 301, infundibulum; 302 – 306, variation (302, Turkey, Ilgaz, 303, paralectotype: ♂, Lebanon, Mont Baruk, 304, Turkey, Karapinar, 305, lectotype: ♀, Lebanon, Mont Baruk, 306, Turkey, Eskipazar).

Material examined: Turkey, "Lyciae Taurus", labelled: "*Exochomus Mülleri* Mad.", 1 ex.; Gülek, 1 ex.; Bursa, Staněk lgt., 1 ex.; Bürücek Toros, 29. – 31. 7. 1947, Exp. N. Mus., 6 ex.; Karapinar Toros, 1. 8. 1947, Exp. N. Mus., 5 ex. (all MNP); Mihaliçcik, 9. 7. 1979, 1 ex. (EUI); Eskipazar, 13. 7. 1979, 1 ex. (MNP); Ilgaz, 4. 8. 1979, 3 ex., (MNP, EUI); Kargi, 4. 8. 1979, 1 ex.; Çekerek, 7. 8. 1979, 1 ex., (all EUI); Taşkoprü,

5. 6. 1980, 3 ex. (MNP, EUI); Tosya, 8. 6. 1980, 1 ex.; Bulgaria, Melnik, 5. 1984, Pokorný lgt., 1 ex.; Yugoslavia, Bosna, Brčka, 1 ex.; Albania, Liogora, 10. 5. 1958, Smetana lgt., 1 ex.; Czechoslovakia, Bolešov – Piechov, Laco lgt., 1 ex.; Trenčín, Čepelák lgt., 1 ex.; Slovakia, Turňa n. Bodvou, 20. 5. 1974, Macek lgt., 1 ex.; Šahy, 22. 4. 1986, Číla lgt., 6 ex.; Višňové near Čachtice, 11. 8. 1991, Kovář lgt., 6 ex. (all MNP).

Distribution: Lebanon, Turkey, Greece, Bulgaria, Yugoslavia, Albania, Czechoslovakia.

Bionomy: The species was collected on trees of botanical genera: Cedrus, Pinus, Juniperus, Quercus and Tamarix.

Discussion: The species was originally described by Sahlberg (1913) as variety of *Exochomus quadripustulatus* (L.) with the note: "nonne ab. *Ex. 4-pustulato* distincta species?". Barovskij (1922) regarded it as aberration of *E. quadripustulatus* (L.), which he placed in the subgenus *Exochomus* s. str. Further specimens from Turkey were described by Mader (1931) as *E. muelleri* Mad. and placed (Mader, 1955) also in *Exochomus* s. str. Examination of the type-material of *E. quadripustulatus* var. *cedri* Sahlb. and of 1 specimen, apparently originating from the same series as the types of *E. muelleri* Mad. revealed that *E. cedri* Sahlberg, 1913 is a distinct species and *E. muelleri* Mader, 1931 is a junior synonym of the former name. The species is here transferred to *Brumus* Muls. New species for territory of Bulgaria, Albania, Yugoslavia and Czechoslovakia.

***Brumus quadripustulatus* (Linnae) comb. n.**

(Figs. 307 – 361)

Coccinella 4-pustulata Linnaeus, 1758 : 367.

Coccinella lunulata Gmelin, 1790 : 1662.

Coccinella 4-verrucata Fabricius, 1792 : 288 1801 : 381; Schönherr, 1808 : 198.

Coccinella cassidiodes Donovan, 1798 : 74.

Chilocorus 4-verrucatus; Stephens, 1831 : 375.

Coccinella distincta Brullé, 1832 : 273, nec Thunberg, 1781 : 17.

Chilocorus Quadriverrucatus; Dejean, 1837 : 436, catalogue; 1837 : 460, catalogue.

Coccinella Iberica Motschulsky, 1837 : 422.

Coccinella floralis Motschulsky, 1837 : 423, nec Fabricius, 1801 : 377.

Chilocorus Ibericus; Motschulsky, 1840 : 190.

Chilocorus floralis; Motschulsky, 1840 : 190.

Exochomus Quadripustulatus; Redtenbacher, 1843 : 15.

Exochomus quadri-pustulatus; Mulsant, 1846 : 172; Costa, 1849 : 61; Crotch, 1874 : 192, partim.

Chilocorus quadripustulatus; Gebler, 1848 : 62; sep. p. 387.

Exochomus (Exochomus) quadripustulatus; Mulsant, 1850 : 485, 1035.

Exochomus (Exochomus) distinctus; Mulsant, 1850 : 485.

Orcus ibericus; Mulsant, 1850 : 1034.

Exochomus (Exochomus) ibericus; Mulsant, 1850 : 1045.

Exochomus quadripustulatus; Seidlitz, 1872 : 193; 1888 : 274; Kraatz, 1873 : 191, 194, partim; Weise, 1879 : 132, partim; 1885 : 52, partim; 1892 : 50, partim (Sicard's translation); Everts, 1898 : 581; Ganglbauer, 1899 : 983, 984; Reitter, 1911 : 135; Kuhnt, 1913 : 582; Jacobson, 1916 : 991, distribution; Schaufuss, 1916 : 560; Bielawski, 1959a : 58; 1984 : 314, 375; Horion, 1961 : 361, distribution.

Exochomus 4-pustulatus var. *6-pustulatus* Kraatz, 1873 : 192.

Exochomus quadripustulatus var. *distinctus*; Kraatz, 1873 : 194; Weise, 1879 : 133; 1885 : 53; 1892 : 50 (Sicard's translation); Ganglbauer, 1899 : 985; Schaufuss, 1916 : 561.

Exochomus floralis; Kraatz, 1873 : 194.

Exochomus quadri-pustulatus var. *distincta*; Crotch, 1874 : 193.

Exochomus quadri-pustulatus f. *floralis*; Crotch, 1874 : 193.

Exochomus quadri-pustulatus var. *ibericus*; Crotch, 1874 : 193.

Exochomus quadripustulatus var. *bilunulatus* Weise, 1879 : 133; 1885 : 52; 1892 : 50 (Sicard's translation); Ganglbauer, 1899 : 985.

Exochomus quadripustulatus var. *ibericus*; Weise, 1897 : 133; 1885 : 52; 1892 : 51 (Sicard's translation); Ganglbauer, 1899 : 985.

Exochomus quadripustulatus var. *6-pustulatus*; Weise, 1879 : 133; 1885 : 52.

Exochomus quadripustulatus var. *Koltzei* Weise, 1879 : 134; 1885 : 53; 1892 : 51 (Sicard's translation); Ganglbauer, 1899 : 985; Schaufuss, 1916 : 561.

Exochomus quadripustulatus var. *floralis*; Weise, 1879 : 134; 1885 : 53; 1892 : 51 (Sicard's translation); Ganglbauer, 1899 : 985.

Exochomus quadripustulatus var. *Reitteri* Schneider, 1881 : 16.

Exochomus quadripustulatus var. *sexpustulatus*; Weise, 1892 : 51 (Sicard's translation); Ganglbauer, 1899 : 985.

Exochomus quadripustulatus var. *Ibericus*; Schaufuss, 1916 : 561.

Exochomus (Exochomus) quadrimaculatus Barovskij, 1922 : 292, lapsus.

Exochomus (Exochomus) quadripustulatus; Barovskij, 1922 : 293; Mader, 1955 : 784, 790; Savoiskaya, 1971 : 108; 1983a : 161, larva.

Exochomus (Exochomus) quadripustulatus distinctus; Barovskij, 1922 : 294.

Exochomus (Exochomus) quadripustulatus ibericus; Barovskij, 1922 : 295.

Exochomus (Exochomus) quadripustulatus sexpustulatus; Barovskij, 1922 : 295.

Exochomus (Exochomus) quadripustulatus koltzei; Barovskij, 1922 : 295.

Exochomus (Exochomus) quadripustulatus floralis; Barovskij, 1922 : 295.

Exochomus (Exochomus) quatuorpustulatus Korschevsky, 1932 : 256, 644, catalogue, lapsus.

Exochomus 4-pustulatus; Binaghi, 1941 : 20, 26, larva; Savoiskaya, 1968 : 158, 169, 170, larva.

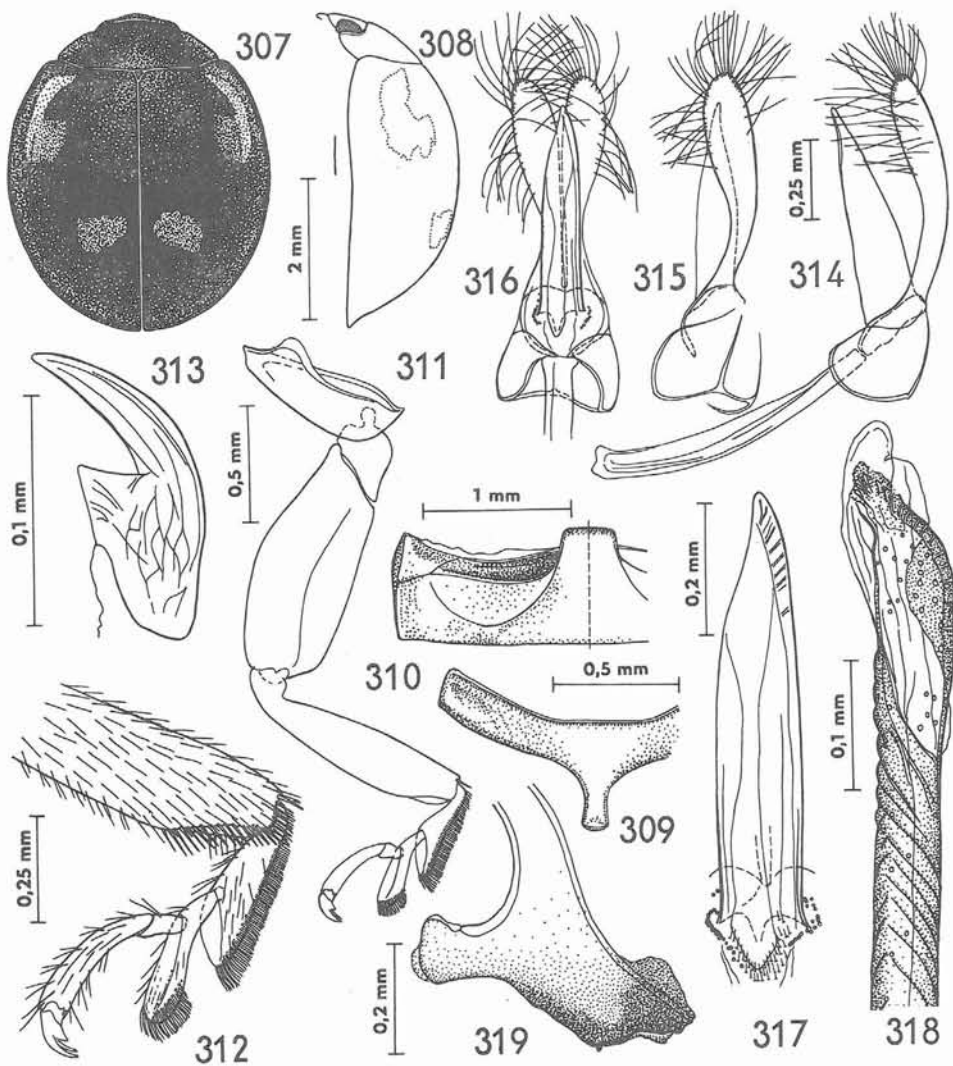
Exochomus flavipes; Günther, 1960 : 82 (ab. *rufus*). Misident.

Body roundly oval, in males 1.22 (1.17 – 1.27), in females 1.24 (1.19 – 1.29) times longer than wide, not very strongly convex. Upper integuments rather shiny, finely punctate, rudimentally pubescent.

Head black, anterior margin of clypeus brownish to orange with subtriangular transparent spot in front of eyes. Mouth parts black, labrum, inner edge of mandibles, base of prementum and labial palpi frequently brown. Antennae yellowish-brown, 2 terminal segments infusate. Pronotum black, anterior and lateral margins with narrow, brownish to orange border, rarely (in males) with a small yellowish-red spot on anterior corners. Scutellum and elytra black, each elytron with 2 yellowish-red spots (Figs. 307 – 308). Underside black, inner portion of the anterior half of epipleuron, outer parts of abdominal sternite (i.) ii. – iii. (iv.), as well as distal ones yellowish-red. Anterior corners of propleuron sometimes (in males) brown to orange. Legs black, trochanters, distal ends of femora and tibiae usually brown. Outer margin of femora and inner part of tibiae in various degrees, becoming gradually, from anterior to posterior legs brownish to yellowish-brown. Tarsal claws mostly yellowish-brown.

Head roundly quadrangular, rather strongly transverse, 0.55 (0.52 – 0.58) times wider than pronotum. Anterior margin of head capsule not very broadly, rather shallowly emarginate, the emargination arcuately concave, a little narrower than minimum distance between eyes. Clypeus strongly depressed in front of eyes, finely transversely excavate. Sides of clypeus in proximal third strongly angulately arcuate, more distad straightened and usually not emarginate, feebly bordered. Anterolateral corners moderately projecting anteriorly, widely obtusangulately arcuate, separated from anterior margin of eye by about two-fifths of the eye length. Front slightly longitudinally convex, at least 0.53 (0.47 – 0.58) times wider than head. Eyes rather small, oval. Inner orbits slightly arcuate, nearly parallel. Long portion of temples behind eyes straight, parallel to slightly diverging posteriorly, then angulately arcuate, strongly narrowing towards occipital aperture. Surface finely, granularly reticulate, finely densely punctate, shortly pubescent. Punctures shallow, about as large as eye facets, separated by about 1 diameter. Setae as long as 2 – 2.5 diameters of an eye facet, but rudimentary in the middle of front.

Pronotum roundly triangular 2.14 (2.03 – 2.26) times wider than long, rather strongly convex. Anterior margin not very widely, rather deeply emarginate, the emargination rather rectangular, arcuately convex in the middle. Anterior corners strongly prominent, their inner margin, flatly s-shaped. Outer margin slightly to moderately arcuate, meeting the inner one at the subrectangular, not too widely arcuate asymmetrical tip. Posterior corners obtuse, not very widely arcuate, situated at anterior one seventh of the pronotal length. Distance between anterior and posterior corners reaching a little more than half of the pronotal length. Surface of lateral parts of pronotum somewhat more strongly convex than the disc of pronotum, only slightly depressed towards the anterior corners. Lateral margins slightly to moderately arcuate, very strongly converging anteriorly, forming ! obtuse angle, not widely refle-

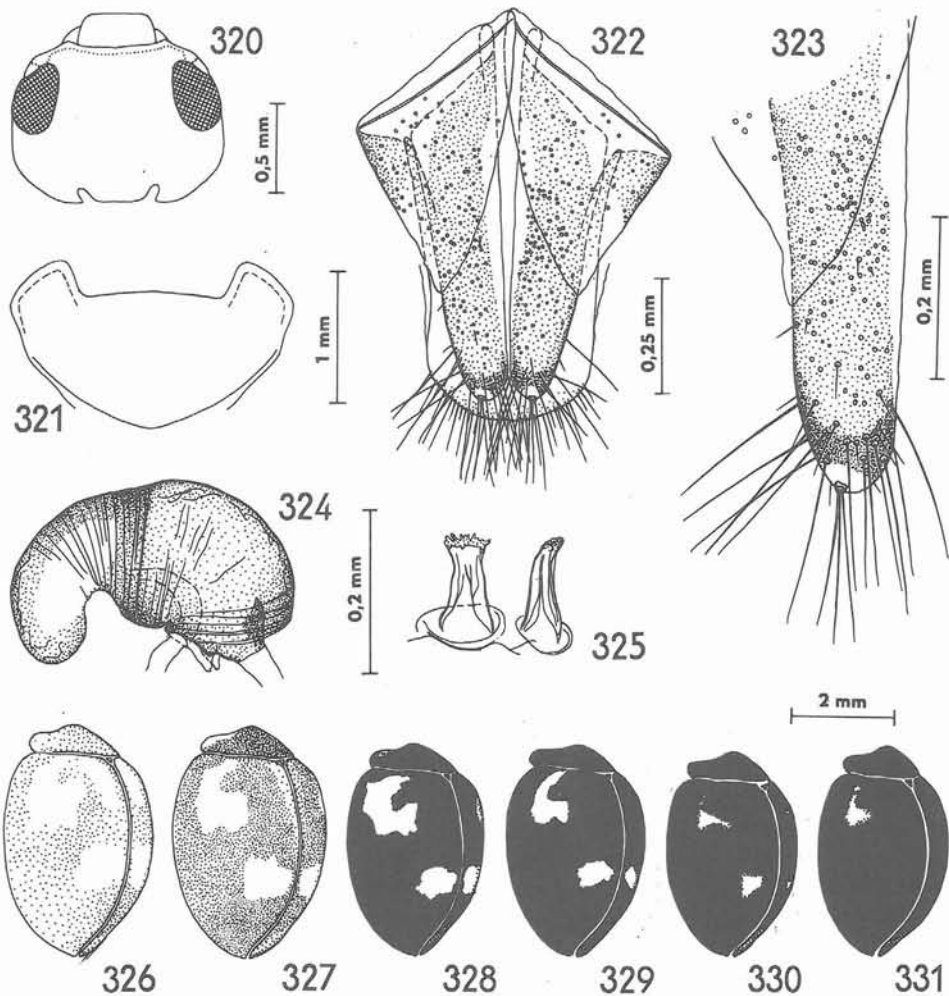


Figs. 307 – 319, *Brumus quadripustulatus* (L.) comb. n.; 307, form of body, dorsal view (Czechoslovakia, Praha Krč); 308, idem, lateral view; 309, prosternum; 310, abdominal sternite i.; 311, posterior leg; 312, tarsus; 313, tarsal claw; 314 – 316, tegmen, 314, lateral view, 315, dorso-lateral view, 316, ventral view; 317, median lobe of aedeagus, ventral view; 318, terminal ampulla of siphon; 319, siphonal capsule.

xed, finely bordered. Base more strongly or angulately arcuate in the middle, sides of the base gradually straightened, its outer thirds, next to the posterior corners, obliquely truncate, moreover, emarginate and strongly depressed in this area. Surface with microsculpture as on the head, punctures deeper, sometimes sparser, setae not longer than the diameter of punctures. Scutellum equilaterally triangular, slightly convex at base as wide as $1/11 - 1/15$ of the pronotal width. Surface obsoletely reticulate with small number (7 - 12) of minute, shallow punctures.

Elytra shortly oval to round, in males 0.99 (0.95 - 1.03), in females 1.01 (0.97 - 1.06) times longer than wide, not very strongly convex, from lateral view in males 2.17 (2.00 - 2.36), in females 2.13 (1.99 - 2.29) times longer than high, in a short, postscutellar portion and in the posterior third strongly convex, nearly in a straight line sloping down to the shortly caudate apex. Base of elytra slightly convex, nearly straight, humeral angle strongly projecting anteriorly, somewhat obtusangulately arcuate, its inner margin strongly depressed. Humeral bulge slightly to rather strongly developed, at most slightly projecting posteriorly. Outline of the disc, seen from the apex, strongly convex to indistinctly gable-shaped, sides of elytra gradually straightened, oblique to subvertical, in the anterior third under humeral bulge slightly to strongly depressed, with sometimes rather deep, longitudinal furrow. Lateral margins in anterior third distinctly less arcuate than in other parts, in various degrees reflexed, beaded. Apex semicircular, in females more or less pointed. Surface more or less obsoletely reticulate, rather finely and densely punctate. Punctures not deep, usually somewhat larger than eye facets, separated by about 1 diameter, becoming at most 2 times larger separated by 0.25 - 0.5 of their diameter at lateral margins. Setae not longer than diameter of punctures.

Ventral surface rather shiny, with somewhat long, greyish-white pubescence. Setae as long as 3 - 4, on legs to 5 diameters of an eye facet, metasternum with small median area rudimentally pubescent. Propleura rather deeply, longitudinally excavate in the middle, slightly sloping down ventromesad, strongly depressed both at anterior angle and at the base, wide outer margin gradually projecting ventrolaterad. Surface granularly reticulate, obsoletely punctate, punctures about 1.5 times larger than eye facets, separated by usually less than their diameter. Epipleuron at most 2.47 (2.08 - 2.90) times wider than the base of mesosternum, inner portion of anterior half horizontal, outer half of the width of epipleuron not very strongly sloping ventrolaterad. Surface with traces of reticulation, rather finely punctate. Punctures as large as or at most 1.5 larger than eye facets, separated by about 1 diameter. Prosternum as figured (Fig. 309). Surface with traces or reticulation, obliquely and sometimes transversely wrinkled, not very coarsely punctate. Punctures at most 1.5 times larger than eye facets, often separated by more than 1 diameter, becoming indistinct or disappear at posterior and lateral margins of basisternal lobes. Mesosternal process at the base 1.12 (1.05 - 1.33) times wider than long, rather strongly convex. Anterior margin strongly carinulate, narrowly and deeply emarginate in the middle. Surface with microsculpture as on middle part of prosternum,



Figs. 320 - 331, *Brumus quadripustulatus* (L.) comb. n.; 320, head (Czechoslovakia, Malé Kyšice); 321, pronotum; 322, ovipositor; 323, apex of hemisternite; 324, spermatheca; 325, infundibulum; 326 - 331, variation (326, Czechoslovakia, Závist, 327, 329, Malé Kyšice, 328, Kazín, 330, Příbram, 331, Friedland).

punctures often sparser. Metasternum 3.69 (3.34 - 4.07) times longer than mesosternal process, moderately to strongly convex, posterior triangular area more or less flattened in the middle. Median longitudinal sulcus complete and strongly impressed. Precoxal bulge well developed, transverse. Surface with traces of reticulation on lateral sides, obsolete transversely wrinkled, rather finely punctate. Punctures along the median sulcus minute, barely 0.5 times as large as eye facets, separated by 5 - 6 diameters, on lateral sides becoming shallower at most 1.5 times larger than eye fa-

cets, separated by about 0.5 diameter. Abdominal sternites more or less obsoletely reticulate, not very coarsely punctate. Punctures in the middle of sternite i. as large as or 1.5 times larger than eye facets, separated by 1 – 4 diameters, from sternite i. to the sternite v. punctures gradually denser, separated only by 0.5 – 1.5 diameter and as well as on the sides of each sternite shallower. Femoral line complete, usually regularly rounded reaching two-thirds of the length of sternite i. Axillary space granularly reticulate, indistinctly longitudinally wrinkled and coarsely punctate. Punctures very shallow to indistinct, at most 2 times as large as eye facets, separated at least by 0.5 diameter. Legs rather short, somewhat stout, distal ends of posterior femora reaching about half of the width of epipleuron. Tibiae spindle-shaped, flattened, posterior tibia 4.27 (3.93 – 4.70) times longer than wide, outer margin strongly arcuate, inner one nearly straight distally. Tarsus short, rather stout, tarsal segment iii. by its distal end reaching about half of the length of the free part of segment ii. Tarsal claw rather strongly subangulately curved with a large triangular tooth situated in the midlength of claw.

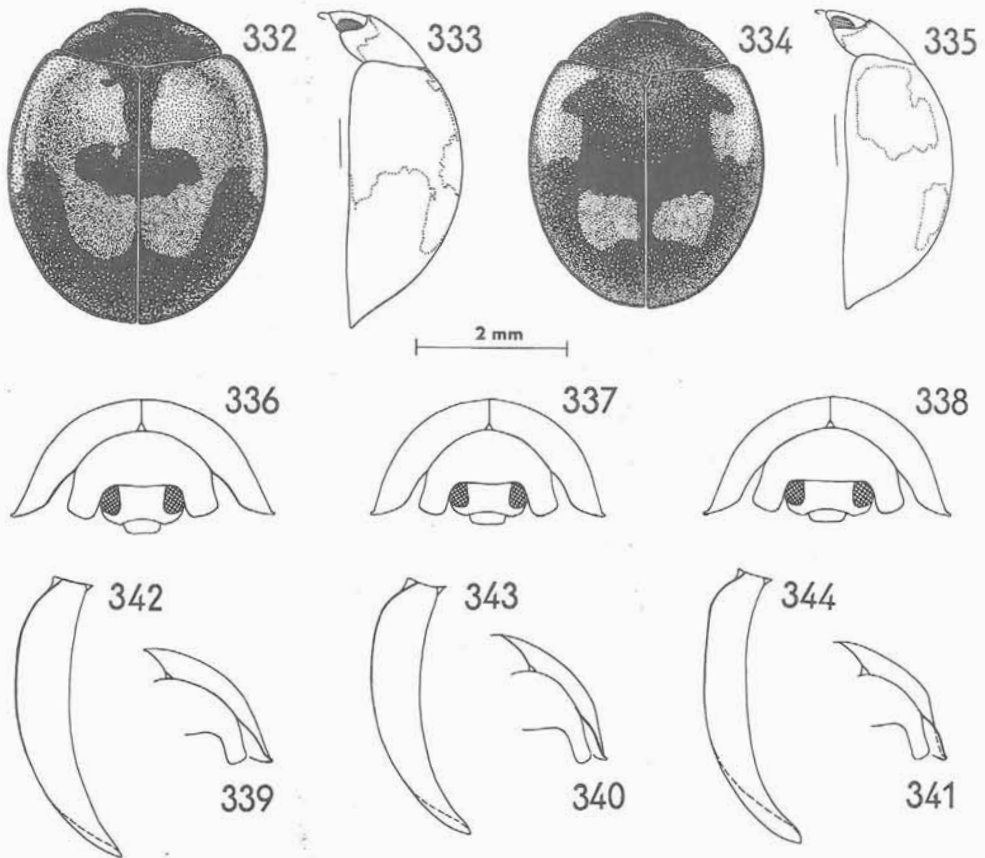
Male and female genitalia as figured (Figs. 314 – 319, 322 – 325).

Length: males 3.04 – 4.71 mm, females 3.00 – 4.95 mm; totally measured: 45 males, 41 females.

Variation (Figs. 326 – 361): Melanisation of adults seems to last a rather long time. Unicolorous yellowish-brown specimens or those with a more or less distinct brown pattern are in south Europe and Iran common from May, in central Europe between July and September (October). Pronotum dark, anterior corners often – especially in males – with a small to rather large yellowish-red spot. Larger yellowish-red spots at sides of pronotum often mutually connected by a narrow yellowish-red strip along anterior margin of pronotum. Elytral spots in fully pigmented specimens may be diminished, rarely one (or both) absent. Apart from the 2 standard spots on each elytron, the third one may exceptionally occur either between humeral bulge and suture, or at the outer margin of the anterior lunular spot. The anterior lunular spot becoming gradually wider distad, in very pale specimens either connected with the small spot between humeral bulge and suture, or enlarged to such a degree, that there remains only a narrow black sutural strip in the anterior half of elytra. The posterior cuneiform spot may be gradually enlarged either to reach suture, or to be connected by narrow projection with the anterior spot.

The extent of colour variation is usually rather narrow within one population. With respect to the shape of elytra, and to their microsculpture, the following principal forms may be distinguished:

- 1) Elytra in dorsal view more or less hat-shaped, with sides sloping rather obliquely down towards the lateral margins, under humeral bulge strongly compressed, lateral borders rather broadly and more or less strongly reflexed. Humeral bulge strongly developed, at most feebly prominent posteriorly. Pronotum black, seldom with small spots on anterior corners in males. Each elytron with 2 yellowish-red spots; anterior lunular one very rarely expanded towards lateral margin of elytra.



Figs. 332 - 344, *Brumus quadripustulatus* (L.) comb. n.; 332 - 341, variation of the body form, 332, 334, dorsal view, 333, 335, lateral view, 336 - 338, anterior view; 342 - 344, left elytron, dorsolateral view; 339 - 341, pronotum and elytron, anterolateral view (332, 333, 336, 339, 342, Iran, Tehran, 334, 335, 337, 340, 343, Greece, Kalavryta, 338, 341, 344, Czechoslovakia, Praha, Vokovice).

This form is widely distributed from the northern part of west Europe, north and central Europe to Siberia and Mongolia.

2) Elytra nearly hat-shaped in dorsal view, sides sloping down more sharply, almost vertical, moderately compressed under humeral bulge. Lateral border moderately reflexed. humeral bulge moderately developed. Pronotum in males often with small to rather large spots on anterior corners. Each elytron with 2 yellowish-red spots; anterior one usually expanded outwards to reach lateral margins. This form is frequent in populations of south Europe along the coast of the Mediterranean, especially in Greece and Turkey.

3) Elytra not hat-shaped in dorsal view, sides sloping down obliquely, under hu-

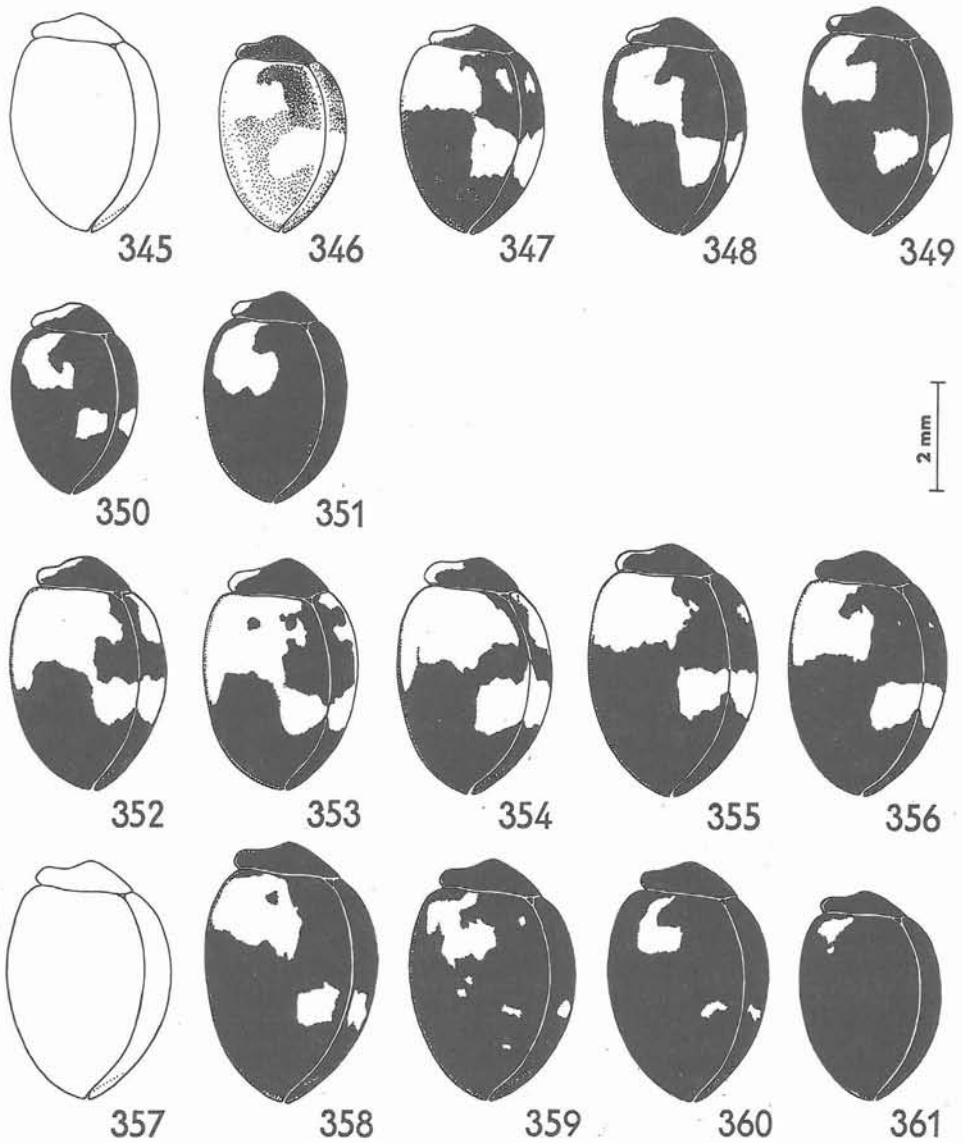
meral bulge only feebly compressed. Lateral borders usually feebly reflexed. Humeral bulge feebly developed. Spots on anterior corners of pronotum in males usually large and mutually connected by a narrow strip along anterior margin of pronotum. Each elytra with 2 – 3 yellowish-red spots; anterior one strongly dilated both laterad and mesad, this often involves also the small spot situated between humeral bulge and suture, posterior one large, often connected with the anterior one. Surface of elytra shining as in the two preceding forms, but puncturation is somewhat shallower. Occurs in populations south of Caucasus and in northern Iran.

4) Shape of elytra as in the preceding form, but pronotum and elytra much darker. Anterior elytral spot lunular, seldom expanded. Surface of pronotum and elytra dull with a well developed granular reticulation and little distinct shallow punctation. Occuring in southern Iran.

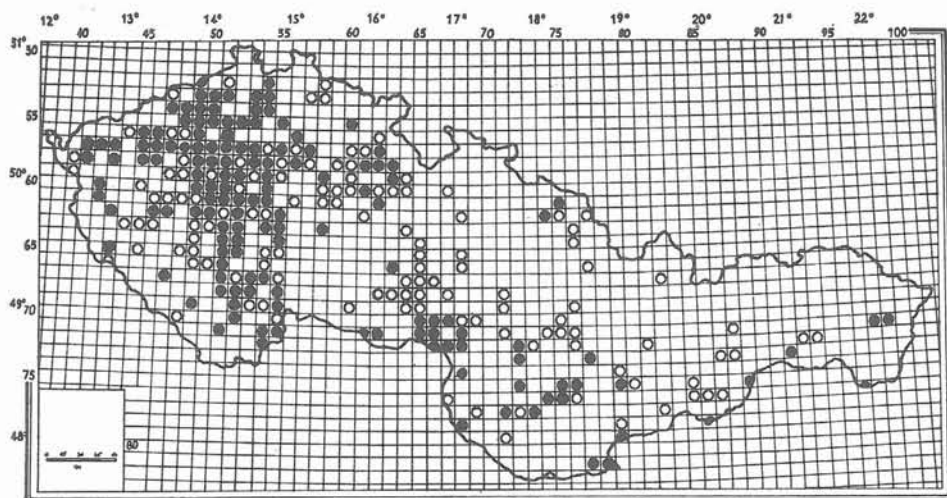
Particular forms in the mentioned territories are interconnected by gradual transitions, so that the colour and especially morphological variation of the species has in southern part of its distribution apparently clinal character. Consequently the above forms cannot be classified as subspecies.

Type material: The brief original description is complemented with the remark: "habitat in Europe, Urticis, Rubis". Dr. R. D. Pope kindly verified the identity of the type material deposited in collections of the Linnean Society of London.

Material examined (abbreviated data): Spain; Grazalema, Valencia, S. Lorenzo de Morunys, Madrid, Montserrat, totally 8 ex.; France: "Galia", Nantes, Brezolles, Dreux, Sceaux, Fontainebleau, Belle-Croix, Allier, Camp de Mailly, Les Dourbes, Narbonne, Montpellier, Toulon, Le Lavandou, Agay-Var, Cavalaire, „Elsass“, totally 82 ex.; Germany: Reinbeck, Hamburg, Escheburg, Haacke, Geesthacht, Altengamme, Bergedorf, Gross Borstel, Timmendorf, Hildensheim, Braunscheig, Schwanheimer Wald, Schwanheim, Frankfurt/M. Enkheim, Baden, Stuttgart, Duisburg, Starnberger Seegebiet, Schloss Berg, Regensburg, Chemnitz, Thüringer Wald, Eisleben, totally 63 ex.; Danemark, 1 ex.; Poland: Kościerzyna, Piaski Kielce, totally 2 ex.; Czechoslovakia: For distribution at the species see grid map (map 1); Austria: Wien and vicinity, Krems, „Styria“, St. Nikolai, Salzburg, totally 6 ex.; Italy: San Remo, Genova, Lago di Garda, Riva, Vallarsa riv., (all MNP), Trieste (SNM), Roma, Lasio, Ostia, Is. d'Elba, Sicillia Is., Catania, totally 14 ex.; Hungaria: Budapest, Újpest, Szokolya, Balatonalmadi, totally 4 ex.; Romania: Biharea, Bucuresti, Comana Vlasca, Lacu Sarat, Macin Greci, Berzovia, totally 23 ex.; Yugoslavia: Ptuj, Krka riv., Laze, Istria, Pula, Skrad, Fužine, Krk Is., Malinska, Pelješac Is., Trogir, Ugljan Is., Kali, Metković, Mlini, Mljet Is., Gruž, Sladenovići near Slano, Dubrovnik (all MNP), Makarska, Split (all SNM), Sarajevo, Stanbulčić, Klekovaca Mts., Mostar, Moskoploje, Čuprija, Šar planina, Ljuboten, Krivošije Mts., Hercegnovi, Budva, Ulcinj, Sutomore, Titov Veles, Dojran, totally 58 ex.; Bulgaria: Pirin, Kresna, Kresnensko defilé, Ljulin planina, Sandanski, Liljanovo, Melnik, Asenovgrad, Stara Zagora, Stranža planina, Velko Tarnovo, Primorsko, Bačково, Tetevenski Balkan, Vežen, Sliven vicinity of Galjanov Šinačevo, Kazanlak, Sozopol (all MNP), Jesavir ne-



Figs. 345 - 361, *Brumus quadripustulatus* (L.) comb. n.; 345 - 361, variation (345, Greece, Amarusi, 346, Rhodos Isl., 347, Turkey, Pozanti, 348, France, Le Lavandou, 349, Turkey, Oluközü, 350, Spain, Grazalema, 351, Greece, Taygetos Mts., 352 - 356, Iran, Teheran, 357 - 361, Iran, Zagros Mts.).



Map 1.: grid map showing the distribution of *E. quadripustulatus* (L.) in former Czechoslovakia (○, findings before 1961, ●, findings past 1960).

ar Iskar, Oreschak near Trojan, Todorovo Plevensko (all AMS), totally 42 ex.; Albania: Vlorë, 4 ex.; Greece: Olympus Mts., Litochoro, Vermion Mts., Prionia, Tymfrestos Mts., Thessaloniki, Lamia, Parnassos Mts., Leonis, Eptalotos (all MNP), Attika (MNP, SNM), Amaris, Parnis Mts., Oion, Peloponnésos, Kalavryta, Taygetos Mts., Goynari, Agios Vasilios, Corfu Is., Lagime, Kefállénia, Agrostolion (all MNP), Euboea Is., (MNP, SNM), Creta Is., Omalos, Lefka Ora, Rhodos Is., totally 68 ex.; Turkey: Edirne, Istanbul, Kadiköy, Erenköy (all MNP), İnciralti, Bornova, Karsiyaka, Bolu, Düzce, Amasra (all EU), Ankara, Baraj, Taurus Mts., Gülek, Cilic. Taurus Mts., Pozanti (all MNP), Ermenek, Balatçik, Çorum, Taşköprü, Ilgaz, Çekerek (all EU), Oluközü, 18 km W Akdagmadeni (MNP), Ürgüp, Göreme, Hacibektas, Pinarbaşı, Incesu (all EU), totally 122 ex.; Iran: Ghazvin, Varamin Kashan, Ilam (all PPDI), Tehran – Evin, garden, Alborz, Dashté – Arjan, 28 km N Masíri, Kushk, N Masíri, 48 km N Masíri, Zagros Mts., Sisakht, 8 km NW Malawi, all Exp. N. Mus., loc. no. 124, 230, 236, 237, 238, 240, 260, 276, 277, 283 (all MNP), totally 186 ex.; Ukraine: Mukačevo, Užgorod, Lvov, Kovel vicinity of Čeremošno, Odessa; Russia: Kaliningrad, “Metgethen“, “Kleinheide“, Ilmen Lake, Sobolotie, Belgorod, Majkop, Kuban, Adler, Solochauf, Trockoje near Samara, Siberia, Transbaikalia, Berezovka, Altai (all MNP); Armenia: Kirovabad (SNM); Jerevan, riv. Razdan vall., Gocht near Gechart; Kazakhstan: Alma Ata, Medeo, totally 45 ex.; Canada: New Brunswick, Fredericton, 1 ex. (all MNP).

Distribution: Europe from Portugal, Spain, Sicily, Greece and Crete to Great

Britain, southern and middle part of Scandinavia, most part of Russia, Turkey, Syria to Israel, Iraq, western and northern Iran, south part of Siberia, Transbaikalia, south-east Kazakhstan, Mongolia, Introduced to North America.

Bionomy: *Brumus quadripustulatus* (L.) occurs almost exclusively on trees and shrubs. It was found on representatives of botanical genera: *Pinus*, *Larix*, *Picea*, *Abies*, *Cupressus*, *Juniperus*, *Quercus*, *Fagus*, *Ulmus*, *Fraxinus*, *Acer*, *Populus*, *Salix*, *Betula*, *Prunus*, *Crateagus*, *Malus*, *Pyrus*, *Olea*, *Citrus*, *Ficus*, *Camellia*, *Robinia*, *Hedera*, *Cornus*, *Rhamnus* and *Lonicera*. The above hosts determine also the rather wide range of accepted prey, consisting of aphids and especially coccids. Among the accepted species of aphids mentioned Fulmek (1957): *Pineus strobi* (Hartig), *Gilletteella cooley* (Gillette), *Eriosoma lanigerum* (Hausmann), *Cinara pini* (L.), *Hyalopterus pruni* (Geoffroy), *Dysaphis devecta* (Walker) and *Brachycaudus amygdalinus* (Schouteden). Radwan et Laevei (1983) observed, that females of *B. quadripustulatus* (L.) oviposit on *Dysaphis plantaginea* (Passerini) and *Acyrosiphon pisum* (Harris). Apart from those species, larvae, developed also on *D. devecta* (Walk.), *Aphis pomi* DeGeer and *A. fabae* Scopoli. On the contrary, *Megoura viciae* Buckton was toxic for the larvae and *Eriosoma lanigerum* (Hausmann) was only an alternative prey. Coccids as a prey of *B. quadripustulatus* (L.) are reported much more often. Binaghi (1941) summarized previous observations and listed species of the following families: Asterolecaniidae – *Pollinia pollini* (Costa), Coccidae – *Chloropulvinaria floccifera* (Westwood), *Eulecanium coryli* (L.), *Filippia oleae* (Costa), *Parthenolecanium corni* (Bouché), *Physokermes abietis* (Geoffroy), *Saissetia oleae* (Bernard), *Sphaerolecanium prunastri* (Fonscolombe), *Ceroplastes rusci* (L.), Diaspididae – *Aspidiotus nerii* Bouché, *Chrysomphalus dictyospermi* (Mogan), *Aonidiella aurantii* (Maskel), *Pseudaulacapsis pentagona* (Targioni-Tozzetti), *Diaspis echinocacti* (Bouché), *Epidiaspis betulae* (Baerensprung), Pseudococcidae – *Planococcus citri* (Risso). Savoiskaya (1968, 1983 a, b) considered *Rhodococcus turanicus* (Arch.) and *P. corni* (Bouché) as its main prey in Central Asia and Kazakhstan, while *Eulecanium rugulosum* (Arch.) is preyed upon to a lesser extent. I collected adult beetles in the early spring, often on *Fraxinus*, in colonies of *Chionaspis salicis* (L.), larvae in same places also on beech (*Fagus sylvatica*) with colonies of *Cryptococcus fagisuga* (Lindinger).

Bielawski (1959a, 1961a) and Klausnitzer (1966, 1967, 1968) showed that *B. quadripustulatus* (L.) occurred in central Europe predominantly on pines and was characteristic especially on young trees. Its density – as summarized by Hodek (1973) – decreases with the age of pines. In the southern part of its range, *B. quadripustulatus* occurs more often on broad-leaved trees and shrubs. So Argyriou et Katsoyannos (1977) found that *B. quadripustulatus* (L.) was the second among the most abundant predators of *Saissetia oleae* (Bern.) on the olive-trees in Greece. I collected the species in northern Iran mostly on poplars (*Populus* sp.), in southwestern Iran (Zagros Mts.) together with larvae on *Quercus brantii*.

Adults appear after hibernation in March to April, larvae in the south not before May, in central Europe in July to August. The species is monovoltine. Beetles hiber-

nate in crevices of the bark of trees, but also in the litter at the base of older trees.

Discussion: A brief and rather generalized description of the species was published by Linnae (1758) in the genus *Coccinella*, with the note: "Habitat in Europe Urticis, Rubis". Those hosts, however, are by no means characteristic for *B. quadripustulatus* (L.). Under the name *C. quadripustulata* L. in the concept of many later authors occurred undoubtedly also the dark form of the common European species *Adalia bipunctata* (L.). Further names for the species under discussion were proposed by Gmelin (1790), Fabricius (1792) and Donovan (1798). Three distinct colour forms were moreover described as species of *Coccinella* by Brullé (1832) and Motschulsky (1837), but the names *C. distincta* Brullé and *C. floralis* Motsch. are primary homonyms. In the first half of the 19th century the species was often placed in the genus *Chilocorus* Leach. Redtenbacher (1943) included *C. quadripustulata* L. in his genus *Exochomus* Redtb. Mulsant (1846) summarized the former literary data and synonyms of *E. quadripustulatus* (L.) and completed its description. Later Mulsant (1850) placed *E. quadripustulatus* (L.) together with *E. distinctus* (Brullé) and *Orcus* (*Exochomus*) *ibericus* (Motsch.) in the nominotypical subgenus. As for *E. quadripustulatus* (L.) (including also *C. floralis* Motsch.) he remarked that: "Dans la collection de Linné, cette espèce est confondue avec les variétés noires à quatre taches rouges de l'*Adalia bipunctata*". This remark remained neglected by later authors. Crotch (1874) synonymized with *E. quadripustulatus* (L.) not only the colour forms, described as distinct species: *E. distinctus* (Brullé), *E. ibericus* (Motsch.) and *E. floralis* (Motsch.), but included in the range of its variation also the later described *E. nigropictus* (Fairm.) Kraatz (1873), Weise (1879) and Schneider (1881) described further individual forms of the species, considered by them – as well as by some later authors – as varieties. Barovskij (1922) reviewed the colour variation of the species and separated 5 conspicuous forms, to which he gave the status of subspecies, neglecting their geographical distribution. Other minor deviations – some of them named by himself – considered as aberrations. Kraatz (1873) and Weise (1879, 1885, 1892) with *E. quadripustulatus* (L.) also wrongly synonymized *Brumus oblongus* (Weidenb.). *E. quadripustulatus* (L.) sensu Barovskij (1922) – who placed it in nominotypical subgenus – contained *B. quadriguttatus* (Fl.) and *B. cedri* (Sahlb.). Barovskij (1922) was followed by Korschefsky (1932) and Mader (1955), who distinguished no subspecies in this variable species. *E. flavipes* ab. *rufus* published by Günther (1960) is based on teneral specimen of *E. quadripustulatus* (L.). Routine designation of type-specimens of *Coccinella iberica* Motsch. and *C. floralis* Motsch. was made by Jablókoff-Khnzorian (1972).

E. quadripustulatus (L.) was redescribed and figured many times in the past, recent treatment of the material from Mongolia was published by Bielawski (1984). Female genitalia were partly described by Dobrzhansky (1924, 1926), those of both sexes were figured by Bielawski (1984). This species, showing clinal variation in the southern part of its range, is here transferred to *Brumus* Muls.

Species incertae sedis
***Brumus bifasciatus* Barovskij**

Brumus bifasciatus Barovskij, 1927 : 196, 200; Korschefsky, 1932 : 265, catalogue; Mader, 1955 : 803, 807; Savoiskaya, 1983b : 117.

Original description: "Oblongovalis, minus quam *Br. mongolicus* Fleisch, convexus, minutissime punctatus et inter punctula tenuissime alutaceus, nitidus, sed minus quam *Br. discors* Bar., niger, elytris rufis binigrofasciatis.

Capite nigro, ore, palpis antennis, labro margineque antico clypei rufis exceptis, irregulariter sparse punctato et inter puncta tenuissime alutaceo, raripilo. Pronoto lateribus medio rotundatis, angulis posticis obtusangularibus, minutissime punctato et alutaceo (cerebrius quam in *Br. discordis*, opaco, nigro, angulis anticis rufis exceptis margine antico albidociliato: Scutello triangulari, nitido nigro. Elytris punctatis et inter puncta tenuissime alutaceis item crebrius quam in *Br. discordi*, nitidis, rufis, binigrofasciatis: fascia prima ex maculis 3 + 1 + 2 et ad scutellum suturamque posita, secunda ex maculis 4 + 4 trans suturam confluentibus. Subtus niger, ore margineque apicalibus segmentorum ventralium penultimi et duorum praecedentium rufis exceptis, crebre punctatus alutaceusque. Metasterno in medio impresso, nitido, paulo transversim ruguloso, lateribus densissime tenuissimeque punctatis. Pedibus rufis, femoribus nigris exceptis.

Long. 3,5 mm, lat. 2,8 mm.

Patria: Tjan-Schan dzhungaricum, plana montana Juldus minor 8 - 9.000; specimen unicum 1/2 V 1877 a N. Prželavski leg. (coll. Mus. Zool. Acad. Scient.)"

Discussion: This species is known only from the original description. It was recently included in the key to the species of *Brumus* Muls. of Central Asia by Savoiskaya (1984b). Even though the original description seems to be rather detailed, the species is in fact characterized only by the dark pigmentation of pronotum and ornamentation of 2 transverse black bands on elytra. Further characters given in the description are fairly common within the genus *Brumus* Muls. Measurements (length to width ratio = 1.25) are somewhat contradictory to the statement "oblongo-ovalis". I was not able to examine the single holotype, deposited in Sankt Peterburg (ZIN) and the species was not included in the present key to the species of *Brumus* Muls.

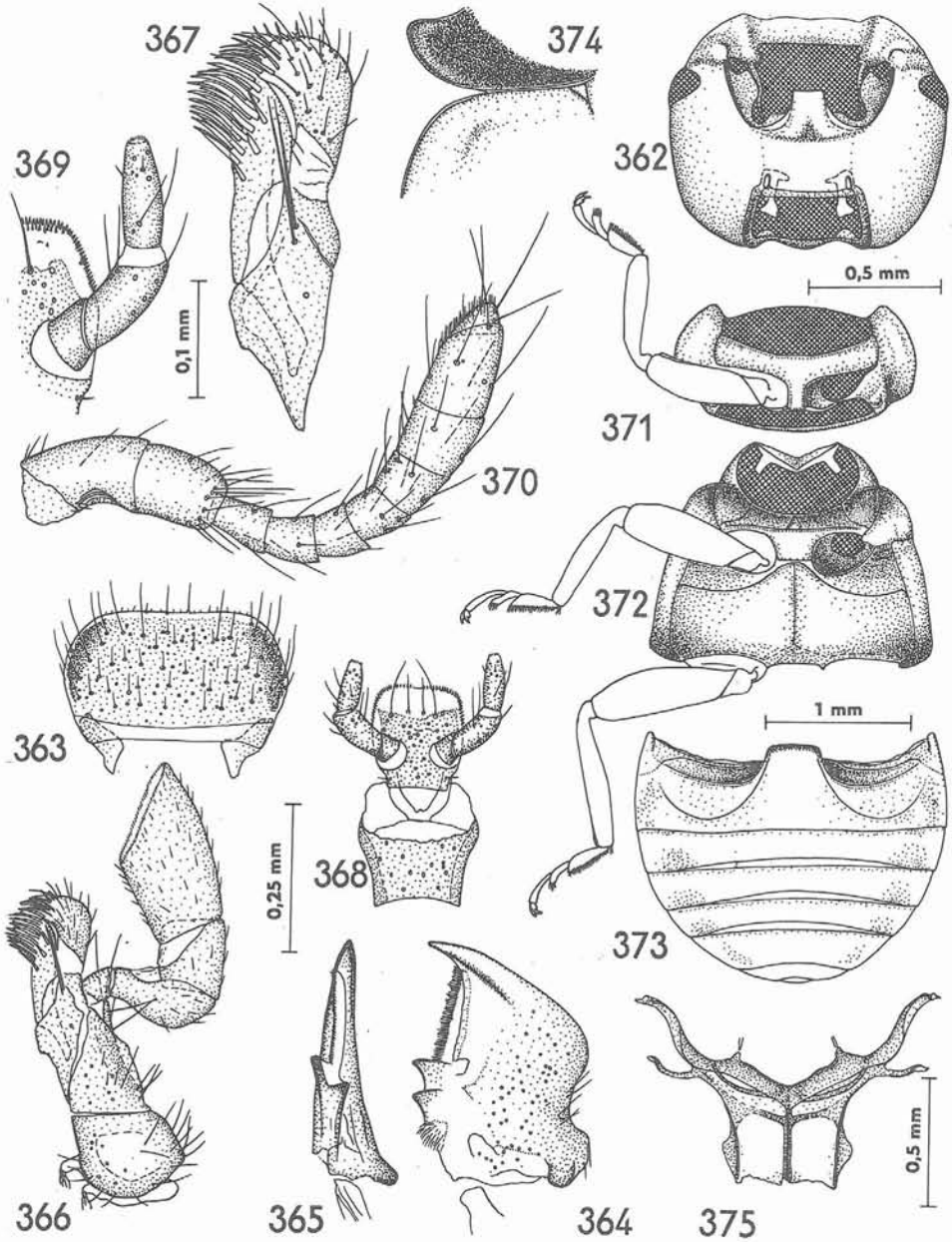
Genus *Priscibrumus* gen. n.
(Figs. 362 - 375)

Type-species: *Exochomus puniceipennis* Semenov, 1900 (by present designation).

Chilocorini of usually medium size, body oval to elliptical, slightly (exceptionally strongly) convex. Upper integuments rather coarsely punctate, covered with long recumbent pubescence.

Head including labrum roundly pentagonal, slightly to moderately transverse, di-

stinctly broader than one half of the pronotal width. Anterior margin of head capsule not broadly and usually shallowly emarginate. Clypeus large, not very strongly depressed in front of eyes, flat. Lateral margin of clypeus arcuate, feebly bordered. Front somewhat hollow, slightly to moderately convex, at least as wide as one half of the head width. Eyes rather small, at least slightly prominent, their inner orbits slightly arcuate and slightly converging anteriorly. Labrum large, transversely rectangular to oval. Mandible stout with outer margin angulately arcuate in the middle, strongly emarginate in proximal half, apex simple, slightly curved. Cardo of maxilla nearly round, lacinia and galea with a few sets of strong, moderately bent to s-shaped setae on their inner side, apical segment of maxillary palpi oblong, nearly 2.5 times longer than wide at its base, slightly to moderately dilated towards the obliquely truncate apex. Apical segment of labial palpi nearly as wide as the second one. Antenna ten-segmented, rather long, Scapus a little longer than pedicellus, slightly bent, not dilated distad; pedicellus rather cylindrical. Flagellum clavate, twice as long as the combined length of scapus and pedicellus. Antennal club five-segmented, compact, widest at the distal end of segment viii. Apical segment small, acuminate, with base obliquely truncate. Pronotum twice as wide as long, usually roundly pentagonal, moderately to not very strongly convex. Anterior margin of pronotum shallowly emarginate, lateral margins wide, base of pronotum much narrower than the base of elytra including humeral angles, rather widely arcuate in the middle with bordering line all along their width. Sides of the base of pronotum only slightly descending, along with the posterior corners situated at the same level as the base of elytra. Scutellum small, triangular. Elytra oval to elongate oval, slightly to moderately (exceptionally strongly) convex, their lateral margins nearly regularly or at the midlength somewhat more slightly arcuate, edges often horizontal, bordered but not very strongly beaded. Sector radii of hind wings not divided into 2 portions. Propleura horizontal or slightly sloping down ventromesad, its outer margin arcuate dorsal. Elytral epipleura more or less horizontal, slightly excavate in the middle, its inner margin in the anterior third often visible from side. Prosternum rather strongly convex in the middle, basisternal lobes moderately broad without conspicuous impression in the middle. Prosternal process moderately wide, more or less convex. Mesosternal process at base somewhat wider than length in the middle. Axillary line of metasternum flatly arcuate with outer end tending posteriorly. Base of metendosternite nearly as long as wide, anterior margin of metendosternite moderately emarginate between inner tendons, the emargination widely v-shaped. Abdomen with 5 visible sternites in female and 6 in male (approximate ratio of the length of particular sternites in female 5 : 2 : 2 : 3 : 3). Femoral line of the sternite i. nearly complete, strongly arcuate, by its outer end tending to or eventually reaching midlength of the ventral portion of lateal line. Median part of the posterior margin of sternite v. in females distinctly more strongly arcuate than at sides, in males more or less emarginate. Legs long, slender, distal ends of posterior femora reaching to or a little beyond the outer margin of epipleura. Outer margin of the anterior tibia simple, not bro-



Figs. 362 – 375, Morphology of the genus *Priscibrumus* gen. n., (*P. sp.*, India, Chakrala); 362, head capsule; 363, labrum; 364, 365, mandible; 366, maxilla; 367, galea and lacinia; 368, labrum; 369, labial palp; 370, antenna; 371, prothorax; 372, meso- and metathorax; 373, abdomen; 374, lateral part of the base of pronotum and humeral angle of elytron; 375, metendosternite.

adened before the distal end. Intermediate and posterior tibiae with 2 terminal spurs. Tarsi cryptotetramerous, tarsal segment iii. short, its distal end not reaching the distal end of segment ii. Tarsal claw more or less stout, in the middle arcuate with a large triangular tooth.

Male genitalia: Tegmen rather slender, feebly flattened laterally. Median lobe of aedeagus nearly as long as paramera, apex pointed, in ventral view slightly asymmetrical. Paramera bent ventrally, strongly constricted in its proximal third. Trabes rod-shaped, somewhat dilated distad. Siphon very long, slender, semicircularly arcuate in its proximal half. Siphonal capsule well developed. Terminal ampulla of siphon simple, slightly dilated, dorsal rib with a large sclerotized facet, ventral rib (nearly) straight, not bending inwards before its distal end.

Female genitalia: Hemisternite of the ovipositor elongate, 4 – 5 times longer than wide, very slightly narrowing towards the widely arcuate, barely symmetrical apex. Stylus small, button-shaped, bearing usually 3 long setae. Spermatheca pear-shaped with body robust, nodulus short, situated partly inwards, cornu rather stout, moderately to strongly curved, without terminal appendix. Infundibulum well developed, inverted y-shaped, slightly to strongly curved distad.

Coloration: Head and pronotum black in both sexes. Elytra purple to ochraceous with characteristic tridentate black pattern, to various degree reduced (Tab. II, figs. 14 – 18).

Distribution: All species of this genus occur in Pamir Mts. and especially in the western part of Himalaya Mts.

Discussion: I propose new genus *Priscibrumus* for the consistent group of 6 palaeartic species of Chilocorini. Species of this group, placed in the genus *Exochomus* Redtb. so far, combine some characters of genera *Exochomus* Redtb. and *Brumus* Muls., but they differ conspicuously from both of them – as well as from other genera of Chilocorini – by the connection of bases of pronotum and elytra. Following species are included in the genus *Priscibrumus* gen. n.; *Priscibrumus puniceipennis* (Semenov) **comb. n.**; *Priscibrumus trijunctus* (Kapur) **comb. n.**; *Priscibrumus uropygialis* (Mulsant) **comb. n.**; *Priscibrumus trubetzkoi* (Barovskij) **comb. n.**; *Priscibrumus* sp.; *Priscibrumus lituratus* (Gorham) **comb. n.**

While *P. puniceipennis* (Sem.), *P. trijunctus* (Kapur) and *P. himalayensis* (Kapur) may easily be distinguished by their morphology and especially the colour-pattern, remaining species of *Priscibrumus* represent a complex of very similar species. As I could not examine type-material of *Exochomus uropygialis* Muls. and *E. lituratus* Gorham and had only limited material at my disposal, the taxonomic solution of this complex including the key to particular species would be only tentative.

Smith (1965) examined chromosomes of "*E. uropygialis* Muls.," and "*E. lituratus* Gorh." from environments of Rawalpindi (Pakistan) and Dalhousie (India). He distinguished in his samples 5 distinct chromosomal units, which he designated (perhaps according to the existing diagnostic characters, i.e. presence or absence of dark sublateral band on elytra) as "lit 1", "lit 2", "uro 1", "uro 2", and "uro 3". He supposed,

that – according to different number and shape of chromosomes – in the group “lit” certainly and in the group “uro” probably occurred altogether 5 different (? sibling) species, some of which may differ not only in their cytology, but also in other characters, perhaps only in minor physiological properties manifested by somewhat different ecological needs. Unfortunately, his material, extremely valuable for taxonomic solution of the mentioned complex, has been completely destroyed by pests (T. J. Ennis in litt.).

Name derivation: Generic name *Priscibrumus* (gender: masculine) is derived from Latin *priscus* – former, ancient and the generic name *Brumus*.

Summary

In this paper is revised the current concept of the genera *Exochomus* Redtb. and *Brumus* Muls., with respect to the genus *Brumoides* Chpn. Opinions on classification of the above genera in the frame of the tribe Chilocorini are discussed. Distinguishing characters hitherto used in classification of genera under discussion appear to be adaptive features being subject of parallel evolution. New delimitation of genera *Brumus* Muls., *Exochomus* Redtb. and *Brumoides* Chpn. based upon newly introduced characters, neglected by former authors is proposed and the new genus *Priscibrumus* is described to accommodate the group of species with lateral portions of pronotal base not overlapped by the base of elytra. Nearctic species with non-bordered pronotal base are excluded from the above genera and *Xanthocorus* Miyatake, 1970 is considered to be a distinct genus. Genera *Exochomus* Redtb. and *Brumoides* Chpn. are supposed to be closely related. Key to identification of palaeartic genera of the tribe Chilocorini is given and all important characters are figured. Genera *Brumus* Muls. and *Priscibrumus* gen. n. are re-defined and newly delimited. Species of the genus *Brumus* Muls. are redescribed, their morphological characters figured and their synonymy, individual and/or geographic variation, geographical distribution and often also basic data on their bionomy are given. Analogous treatment of the genus *Exochomus* Redtb. will be the matter of the next paper.

The following available names, originally described as varieties are considered to be valid names of species (new status): *gebleri* Weise, *septemmaculatus* Weise, *quadriguttatus* Fleischer and *cedri* Sahlberg. The following new combinations are proposed: *Brumus kiritshenkoi* (Bar.) **comb. n.**, *B. undulatus* (Weise) **comb. n.**, *B. septemmaculatus* (Weise) **comb. n.**, *B. mongol* (Bar.) **comb. n.**, *B. quadriguttatus* (Fleischer) **comb. n.**, *B. nigropictus* (Fairmaire) **comb. n.**, *B. cedri* (Sahlberg) **comb. n.**, *B. quadripustulatus* (L.) **comb. n.**, *Priscibrumus puniceipennis* (Semenov) **comb. n.**, *P. trijunctus* (Kapur) **comb. n.**, *P. himalayensis* (Kapur) **comb. n.**,

P. uropygialis (Muls.) **comb. n.**, *P. trubetzkoi* (Bar.) **comb. n.**, *P. lituratus* (Gorham) **comb. n.** (all from *Exochomus* Redtb.). Lectotypes of the following species are designated: *E. kiritshenkoi* Bar., *E. undulatus* var. *septemmaculatus* Weise, *E. quadripustulatus* var. *cedri* Sahlberg. The following new synonymies are established: *E. kiritshenkoi* Bar., partim (Iran) = *B. gebleri* Weise; *E. georgi* Fürsch = *B. mongol*

(Bar.); *E. quadripustulatus* ssp. *cordiformis* Roubal = *E. illaesticollis* Roubal = *B. quadriguttatus* (Fleischer); *E. muelleri* Mader = *B. cedri* (Sahlberg). *Brumus gebleri* Weise stat. n. is given as new for the fauna of Turkey and *B. cedri* (Sahlb.) is new for the fauna of Bulgaria, Albania, Yugoslavia and Czechoslovakia.

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