

Revision of C. Wesmael's *Chelonus* species (Hymenoptera Braconidae Cheloninae)

by Jenő PAPP

Summary

In his monograph on Braconidae C. WESMAEL (1835-1838) reported twelve *Chelonus* species from Belgium. According to an up-to-date taxonomic and systematic conception this group is re-classified into two genera: *Chelonus* JURINE (5 species) and *Microchelonus* SZÉPLIGETI (6 species); the twelfth species (*Ch. eurytheca*) is identical with *M. gravenhorstii* (NEES). Three valid WESMAEL's species of *Chelonus* and two valid species of *Microchelonus* are re-described and related to their allies. With 127 original figures.

Introduction

In his monograph on Braconidae of Belgium the well-known naturalist Constatin WESMAEL (1835-1838) reported twelve species under *Chelonus* JURINE, 1801. From among them six were described by him as new to science, the other six species had been described by J.C. FABRICIUS, G.A. HERRICH-SCHAEFFER, L. JURINE and C.G. NEES VON ESENBECK. The descriptions and redescriptions of the twelve species were published in the Ist (1835) and IIIrd (1838) volumes of WESMAEL's braconid monograph. WESMAEL's original chelonine material is deposited in the Institut royal des Sciences naturelles de Belgique, Bruxelles.

Since the time of WESMAEL (DESSART, 1972) the interpretation of the *Chelonus* has undergone a taxonomic change. The creation of the *Microchelonus* SZÉPLIGETI, 1908 (= *Chelonella* SZÉPLIGETI, 1908; = *Neochelonella* HINCKS, 1943) brought about the transfer of several species to the latter genus. In the subsequent checklist the enumeration of the twelve species is presented in an alphabetic order completed with (1) the generic name (either *Chelonus* or *Microchelonus*, in brackets) currently assigned to the species in question (if it was described under *Cynips* or *Sigalphus* and not in the genus *Chelonus*, then the first name in brackets indicates the original generic name); (2) citation of the volume (I or III) and the page numbers of the Wesmaelian description and (3) the numbers of the specimens upon which the original descriptions are based and, divided with a hyphen (-), (4)

the numbers of those specimens which I myself could study belonging to the original Wesmaelian material:

1. *Chelonus annulipes* WESMAEL, 1835 (*Chelonus*) I: 221 and III: 161, 5 specimens (♀ ♂) - 1 ♀ + 2 ♂ ♂.
2. *Chelonus canescens* WESMAEL, 1835 (*Chelonus*) I: 224, 1 ♀ - 1 ♀.
3. *Chelonus eurytheca* WESMAEL, 1838 (*Microchelonus*) III: 158, 8 specimens (8 ♂ ♂ ?) - 1 ♂. Junior synonym of *M. gravenhorstii* (NEES).
4. *Chelonus fenestratus* (NEES, 1816) (*Sigalphus*) (*Microchelonus*) I: 223 and III: 162, 8 ♂ ♂ + 4 ♀ ♀ - 3 ♀ ♀. Rectified by me as *Microchelonus contractus* (NEES, 1816) (*Sigalphus*).
5. *Chelonus gravenhorstii* (NEES, 1816) (*Sigalphus*) (*Microchelonus*) III: 160, 7 specimens (7 ♀ ♀ ?) - 5 ♀ ♀ + 1 ♂.
6. *Chelonus inanitus* (LINNAEUS, 1767) (*Cynips*) (*Chelonus*) I: 217, 1 ♂ + 1 ♀ - 2 ♀ ♀ + 2 ♂ ♂.
7. *Chelonus lugubris* WESMAEL, 1835 (*Microchelonus*) I: 219, 1 "♀" = ♂. - 1 ♂.
8. *Chelonus microphthalmus* WESMAEL, 1838 (*Microchelonus*) III: 157, 1 "♀" = ♂ - 1 ♂.
9. *Chelonus oculator* (FABRICIUS, 1775) (*Ichneumon*) (*Chelonus*) I: 216 (also "Var. 1.") and III: 157, many species (♀ ♂) - 10 ♀ ♀ + 8 ♂ ♂.
10. *Chelonus parvicornis* HERRICH-SCHAEFFER, 1838 (*Microchelonus*) III: 16, 1 ♀ - 1 ♀.
11. *Chelonus submuticus* WESMAEL, 1835 (*Chelonus*) I: 218 (also "Var. 1."), 5 ♂ ♂ + 1 ♀ - 1 ♀ + 4 ♂ ♂.
12. *Chelonus sulcatus* JURINE, 1807 (*Microchelonus*) I: 220 and III: 158, 1 "♀" = ♂ - 1 ♂.

In the above list the species are arranged into two genera: *Chelonus* JURINE and *Microchelonus* SZÉPLIGETI. In the literature the latter name is applied either as a subgeneric taxon of *Chelonus* or as an independent generic taxon; I consider the taxon *Microchelonus* as representing a valid genus. My further opinion regarding this taxonomic problem is expounded under *Microchelonus*, p. 125.

Chelonus JURINE, 1801

From among the twelve *Chelonus* species reported by WESMAEL (l.c.) five are valid and remain in this genus; *Ch. annulipes*, *Ch. canescens*, *Ch. inanitus*, *Ch. oculator* and *Ch. submuticus*.

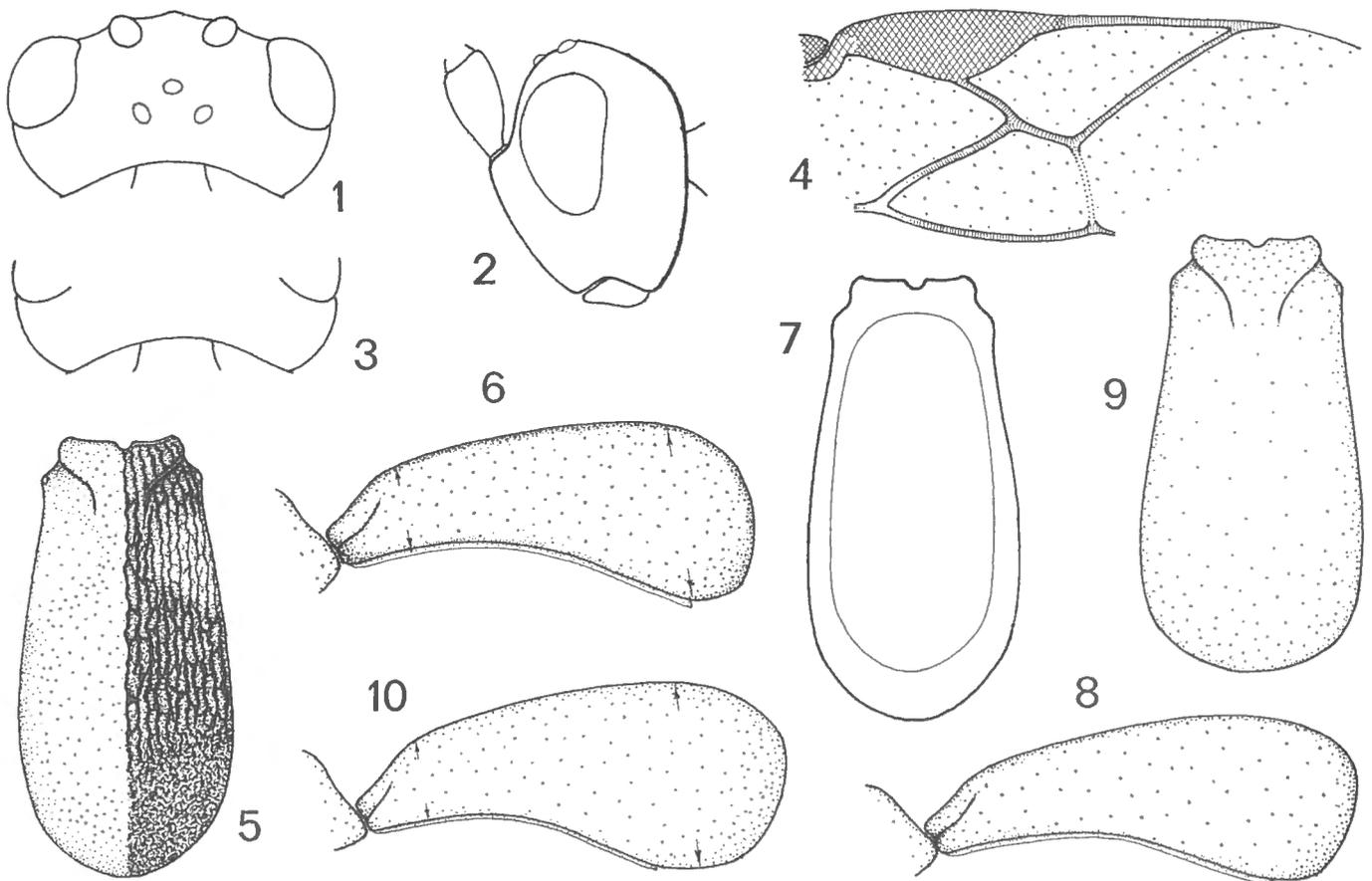
Chelonus annulipes WESMAEL (Figs 1-9)

Chelonus annulipes WESMAEL, 1835: Nouv. Mém. Acad. Brux. 9: 221 ♀ ♂ (syntype series 5 specimens, sex division?), type locality: "environs de Bruxelles" (Belgium), lectotype ♀ (and 2 ♂ paralectotypes) in Institut Royal des Sciences naturelles de Belgique, Bruxelles, examined and present designation. - SHENEFELT, 1973: 841 (literature up to 1971 and distribution). TOBIAS, 1986: 317 (in key).

Taxonomic remark. - *Chelonus annulipes* was described by WESMAEL (l.c.) on the basis of five specimens, the sexes were not specified. Out of the five specimens I have examined one female and two males, the single female was designated as the lectotype and the two males as the paralectotypes. The first male paralectotype represents the

nominate species, the second male paralectotype considered to be as a variety ("var. 1.") by WESMAEL belongs to another genus and species: *Ascogaster bicarinata* HERRICH-SCHAEFFER, 1838 (this taxonomic state is indicated on the fifth label of the paralectotype in question, by whom?).

Description of the lectotype ♀. - Body 5 mm long. Head in dorsal view (Fig. 1) transverse, twice as broad as long, eye almost one-third longer than temple, latter rather constricted, occiput excavated. Ocelli small, elliptic, POL: OD: OOL as 17: 7: 20, i.e. POL somewhat shorter than OOL. Eye in lateral view (Fig. 2) 1.8 times as high as wide, temple faintly broadening ventrally and as wide as eye. Malar space 1.4 times as long as basal width of mandible. Face 1.6 times as wide as high, inner margin of eyes parallel. Clypeus 1.76 times as wide as high, its lower margin medially truncate. Face rugose with striate elements, clypeus finely punctate, interspaces shiny, otherwise head rugo-striate, temple rather striate. -Antennae damaged, right antenna with three and left antenna with twelve antennomeres. First flagellomere 2.7 times as long as broad apically.



Figs 1-10. - Figs 1-9: *Chelonus annulipes* WESMAEL: 1: head of female in dorsal view; 2: head in lateral view; 3: temple of male in dorsal view; 4: distal part of right fore wing; 5: carapace of female in dorsal view; 6: carapace of female in lateral view; 7: carapace in ventral view; 8: carapace of male in lateral view; 9: carapace of male in dorsal view. Fig. 10: *Chelonus bimaculatus* SZÉPLIGETI: carapace of female in lateral view.

Mesosoma in lateral view stout, 1.3 times as long as high, rugose, mesonotum rugulose and subshiny, notaulix distinct by rougher sculpture, scutellum with rugulae, interspaces shiny. - Hind femur 3.4 times as long as broad medially. Pair of spurs of hind tibia unequal, inner spur just less than half as long as hind basitarsus. Hind basitarsus as long as hind tarsomeres 2-4 combined.

Fore wing one-fifth shorter than body. Pterostigma (Fig. 4) 3.1 times as long as wide, issuing radial vein distally from its middle; r1 as long as r2, r3 somewhat arched and ending far before tip of wing. Metacarp somewhat longer than pterostigma, radial cell along metacarp a bit shorter than pterostigma.

Carapace in dorsal view (Fig. 5) twice as long as broad behind, faintly broadening posteriorly. Pair of converging keels short and restricted to declivous part of carapace. Carapace longitudinally striate with anastomosis, interstriations transversely rugulose, posterior declivous part of carapace rugose (Fig. 5). Carapace in lateral view (Fig. 6) 2.5 times as long as high, twice higher behind than basally (see arrows in Fig. 6). Carapace apico-ventrally somewhat incurved (Fig. 7), i.e. ventral opening of carapace nearly as long as carapace itself.

Ground colour of body black. Scape, mandible and tegula dark rusty brown. Carapace with faint brownish tint, basally with a pair of yellow maculae. Legs yellow, coxae, trochanters, proximal half of middle femur and entire hind femur brownish black, tarsi brownish fumous. Wings brownish fumous, pterostigma opaque brown, veins proximo-distally yellowish to brownish.

Description of the paralectotype ♂ (1 ♂). - Similar to the lectotype. Body 4.9 mm long. Head in dorsal view 1.9 times as broad as long, temple rounded (Fig. 3). Antennae damaged, right antenna with fourteen and left antenna with four antennomeres. Carapace in dorsal view (Fig. 9) less rounded behind, in lateral view (Fig. 8) 2.6 times as long as high.

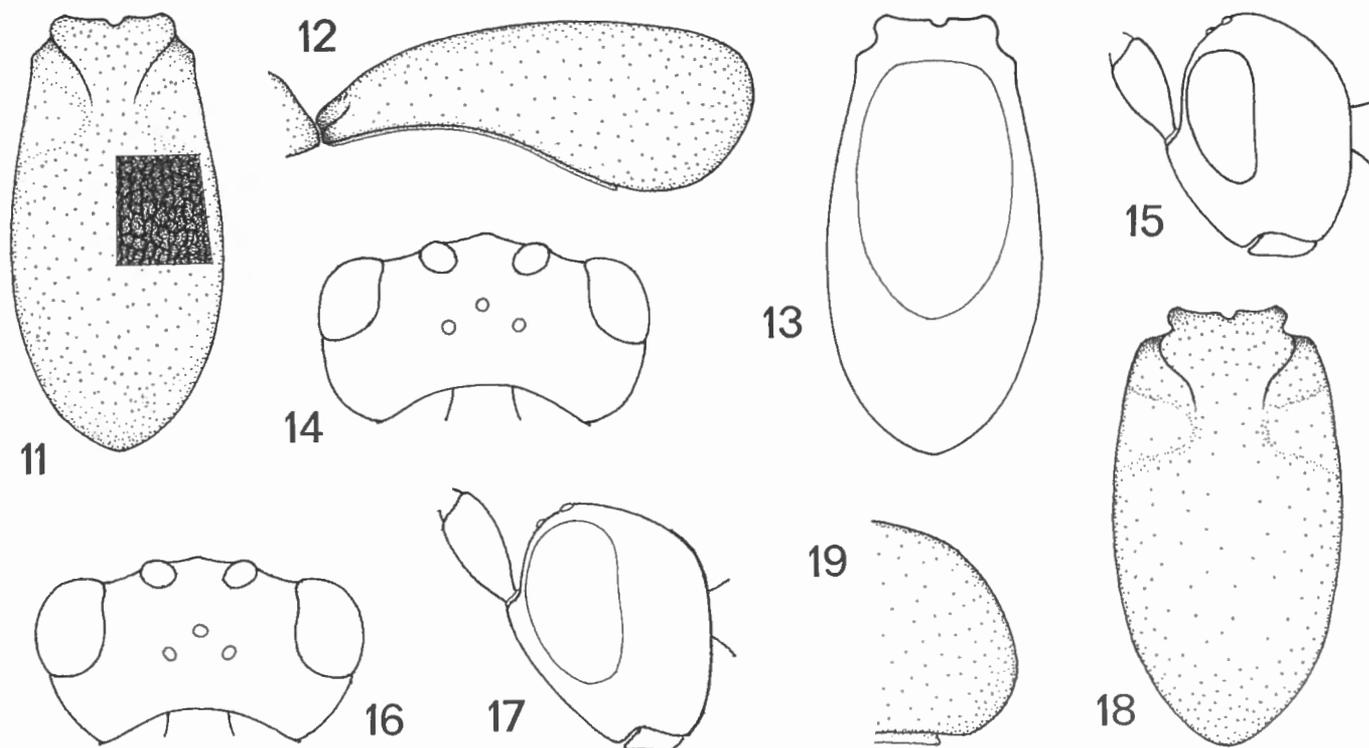
Description of non-typical females (3 ♀♀). - Similar to the lectotype. Body 4.8-5 mm long. Head in dorsal view twice as broad as long, temple either rounded or strongly rounded (Figs 1 and 3). Antenna about as long as body, with 27 (1 ♀), 28 (1 ♀) and 29 (1 ♀) antennomeres. First flagellomere 2.7-3 times and penultimate flagellomere 1.2-1.4 times (1.2: 2 ♀♀, 1.4: 1 ♀) as long as broad. Pterostigma 3-3.5 times (3: 2 ♀♀, 3.5: 1 ♀) as long as wide. Carapace in dorsal view 1.9-2 times (1.9: 1 ♀, 2: 2 ♀♀) as long as broad posteriorly; in lateral view. 2.5-2.6 times as long as high behind.

Distribution: Europe

Chelonus annulipes WESMAEL is related to *Ch. annulatus* (NEES, 1814), *Ch. asiaticus* TELENGA, 1941, *Ch. bidentulus* THOMSON, 1874 and *Ch. bimaculatus* SZÉPLIGETI,

1896; the five species are distinguished in the following key:

- 1 (10) Females
- 2 (3) Carapace in lateral view (Fig. 10) apico-ventrally distinctly incurved, i.e. in ventral view (Fig. 13) aperture of carapace about one-third to one-fourth shorter than carapace itself; carapace in dorsal view (Fig. 11) apically bluntly pointed and its posterior half laterally somewhat compressed. Antenna with 22 antennomeres. Temple in dorsal view (Fig. 14) moderately rounded, occiput less excavated; in lateral view (Fig. 15) ventrally broadening and broader than eye. Scutellum rugose. Carapace with a pair of yellow maculae basally. 5 mm - Croatia (Dalmatia), Hungary, Ukraine, European part of Russia, Mongolia *Ch. bimaculatus* SZÉPLIGETI, 1896
- 3 (2) Carapace in lateral view (Figs 9, 19, 21) apico-ventrally less incurved, i.e. in ventral view (Fig. 7) aperture of carapace almost as long as carapace itself. Antenna with more than 22 antennomeres.
- 4 (5) Hind third to fourth of carapace with weakening sculpture, carapace here frequently uneven to almost smooth and more or less shiny. Temple in dorsal view (Fig. 16) constricted, in lateral view (Fig. 17) at most as wide as eye. Antenna with (30-)33-34 antennomeres. Carapace in dorsal view (Fig. 18) bluntly pointed, in lateral view behind as in Fig. 19. Hind femur reddish yellow though frequently more or less blackish to black. Carapace with a pair of basal yellow maculae, ventral margin of carapace yellowish. 3.2-5 mm. - Palearctic Region *Ch. annulatus* (NEES, 1814)
- 5 (4) Hind part of carapace with less weakening sculpture, never uneven to almost smooth, sculpture usually somewhat less rough than anteriorly. Temple either less rounded or rounded to strongly rounded. Antenna with less than 30 antennomeres.
- 6 (7) Temple in dorsal view (Fig. 20) less rounded and either as long as or somewhat longer than eye, occiput deeply excavated. Carapace in lateral view high behind, more than twice as high posteriorly as basally (Fig. 21, see arrows). Antenna with 24-27(-30) antennomeres. Pair of basal yellow maculae of carapace usually present. 3-5 mm, usually 4-5 mm. - Palearctic Region *Ch. asiaticus* TELENGA, 1941
- 7 (6) Temple in dorsal view (Fig. 1) rounded to strongly rounded and shorter than eye, occiput less deeply excavated. Carapace in lateral view less high behind, at most twice as high posteriorly as basally (Fig. 6, see arrows). Carapace with a pair of yellow maculae basally.
- 8 (9) Acetabulum behind fore coxa lamelliform and medially semicircularly emargined (Fig. 24, postero-frontal view). Carapace in lateral view



Figs 11-19. – Figs 11-15: *Chelonus bimaculatus* SZÉPLIGETI: 11: carapace in dorsal view with indication of its sculpture; 12: carapace of male in lateral view; 13: carapace of female in ventral view; 14: head in dorsal view; 15: head in lateral view. Figs 16-19: *Chelonus annulatus* (NEES): 16: head in dorsal view; 17: head in lateral view; 18: carapace in dorsal view; 19: hind end of carapace in lateral view.

- more rounded apically (cf. Fig. 21). Temple in dorsal view slightly more rounded (cf. Fig. 16). 4.3-4.8 mm. - Sweden *Ch. bidentulus* THOMSON, 1874
- 9 (8) Acetabulum behind fore coxa absent. Carapace in lateral view less rounded apically (Fig. 6). Temple in dorsal view slightly less rounded (Fig. 1). 4.6-4.8 mm. - Europe *Ch. annulipes* WESMAEL, 1835
- 10 (1) Males
- 11 (12) Carapace in lateral view (Fig. 12) apico-ventrally distinctly incurved, i.e. in ventral view (Fig. 13) aperture of carapace about one-third to one-fourth shorter than carapace itself; carapace in dorsal view apically (Fig. 26) rounded and its posterior half not compressed laterally. Antenna with 28-32 antennomeres. Pair of yellow maculae of carapace restricted rather to its lateral base. 4.5-5 mm .. *Ch. bimaculatus* SZÉPLIGETI, 1896
- 12 (11) Carapace in lateral view (Fig. 8) apico-ventrally less incurved, i.e. in ventral view (cf. Fig. 7) aperture of carapace nearly as long as carapace itself.
- 13 (14) Carapace and temple similar to those of female. Antenna with 33-38 antennomeres. 3.5-5 mm. *Ch. annulatus* (NEES, 1814)
- 14 (13) Carapace and temple as in couplet 5 (4).
- 15 (16) Temple, occiput and carapace as in female; carapace variably incurved ventrally (Figs 22-23) but never so deeply as in *Ch. bimaculatus*. Antenna with 23-31, usually with 26-28 antennomeres. Carapace usually fully black or with faint to small yellow pair of spots basally. (3-4-5 mm) *Ch. asiaticus* TELENGA, 1941
- 16 (15) Temple and carapace as in couplet 7 (6).
- 17 (18) Acetabulum of fore coxa as in female. Carapace in lateral view relatively more incurved ventrally (cf. Fig. 22) and in dorsal view more rounded behind (Fig. 25) and 1.82-1.87 times as long as broad posteriorly. Temple as in female. 4.7-4.8 mm *Ch. bidentulus* THOMSON, 1874
- 18 (17) Acetabulum of fore coxa as in female. Carapace in lateral view relatively less incurved ventrally (Fig. 8) and in dorsal view less rounded behind (Fig. 9) and 1.9-2 times as long as broad posteriorly (Fig. 9). Temple as in female. 4.9-5 mm *Ch. annulipes* WESMAEL, 1835

***Chelonus canescens* WESMAEL (Figs 27-32, 120-121)**

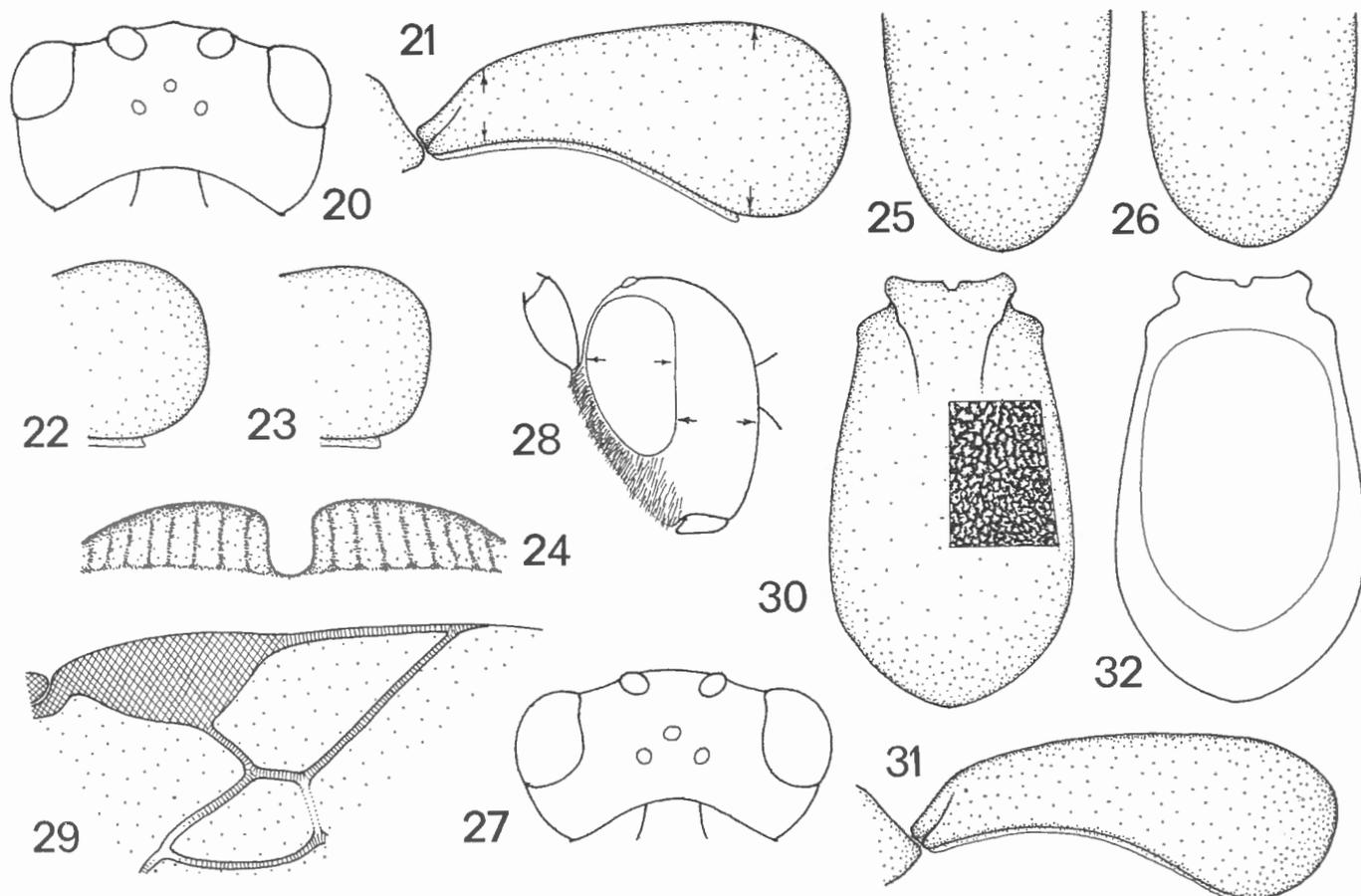
Chelonus canescens WESMAEL, 1835: Nouv. Mém. Acad. Brux. 9: 224 ♀ (syntype series 1 ♀), type locality: "environs de Bruxelles" (Belgium), holotype ♀ in Institut royal des Sciences naturelles de Belgique, Bruxelles, examined and present designation. - SHENEFELT, 1973: 846 (literature up to 1971 and distribution). TOBIAS, 1986: 311 (in key).

Taxonomic remarks. - The single female syntype was designated as holotype upon WESMAEL's reference to its collecting: "J'ai pris un seul individu de cette espèce,..."

Description of the holotype ♀. Body 4.5 mm long. Head in dorsal view (Fig. 27) transverse, 2.2 times as broad as long, eye clearly twice as long as temple, latter constricted, occiput deeply excavated. Ocelli small and round, forming a low triangle, hind imaginary tangent to fore ocellus before hind pair of ocelli, POL: OD: OOL as 17: 5: 18, i.e. POL just shorter than OOL. Eye in lateral view 1.8

times as high as wide, temple broadening ventrally and just less broad than eye (Fig. 28, see arrows). Malar space 1.5 times as long as basal width of mandible. Face twice as wide as high, inner margin of eyes parallel. Clypeus 1.75 times as wide below as high medially, its lower margin truncate. Face, clypeus and check rugulose and with greyish white pubescence (the species name "canescens" refers to it), vertex strio-rugose, temple strio-rugulose and subshiny. - Antenna three-fourths as long as body, with 18 antennomeres. First flagellomere 3 times and penultimate flagellomere 1.4 times as long as broad apically.

Mesosoma in lateral view 1.66 times as long as high, rugose, mesonotum and scutellum somewhat less rugose, subshiny, notaulix distinct by rougher sculpture. - Hind femur 3.3 times as long as broad medially. Pair of spurs of hind tibia unequal, inner spur half as long as hind



Figs 20-32. - Figs 20-23: *Chelonus asiaticus* TELENGA: 20: head in dorsal view; 21: carapace of female in lateral view; 22-23: hind end of male carapace in lateral view.

Figs 24-25: *Chelonus bidentulus* THOMSON: 24: acetabulum of first leg in postero-frontal view; 25: hind half of male carapace in dorsal view.

Fig. 26: *Chelonus bimaculatus* SZÉPLIGETI: hind half of male carapace in dorsal view.

Figs 27-32: *Chelonus canescens* WESMAEL: 27: head in dorsal view; 28: head in lateral view; 29: distal part of right fore wing; 30: carapace of female in dorsal view with indication of its sculpture; 31: carapace of female in lateral view; 32: carapace of female in ventral view.

basitarsus. Hind basitarsus somewhat longer than hind tarsomeres 2-4 combined.

Fore wing as long as three-fourths of body. Pterostigma (Fig. 29) 2.3 times as long as wide, issuing radial vein distally from its middle, r1 somewhat longer than r2, r3 straight and ending far before tip of wing. Metacarp as long as pterostigma, radial cell along metacarp somewhat shorter than pterostigma itself.

Carapace in dorsal view (Fig. 30) 1.7 times as long as broad behind, clearly broadening posteriorly. Pair of converging keels extending to basal fourth of carapace. Carapace rugose, posteriorly rugose to densely rugulose. Carapace in lateral view (Fig. 31) 2.6 times as long as high behind, twice higher posteriorly than anteriorly, apico-ventrally incurved, in ventral view opening of carapace shorter than carapace itself (Fig. 32) Ovipositor sheath concealed.

Ground colour of body black. Scape apically faintly rusty, palpi pale yellow. Mandible brown, medially yellow. Tegula straw yellow. Coxae and trochanters 1-2 dark brown to brown, coxa and trochanter 3 black to blackish; femora and tibiae 1-2 yellow, femur 3 blackish and apically reddish, tibia 3 blackish with yellow ring proximally, tarsi 1-3 yellow with brownish suffusion. Wings hyaline, pterostigma and veins opaque brownish.

Variations of female features. - Body 3.5-4.5 mm, usually 3.8-4.2 mm long. Head in dorsal view 2-2.3 times as broad as long. Penultimate flagellomere 1.4-1.5 times as long as broad. Pterostigma 2.1-2.3 times, usually 2.25-2.3 times, as long as wide. Carapace in dorsal view 1.65-1.7 times as long as broad behind. Wings hyaline to faintly brownish fumous.

Descriptions of the male features. - Similar to the female. Body 4-5 mm, usually 4.5-4.8 mm long. Head in dorsal view 2.1-2.3 times as broad as long. Antenna as long as three-fourths to four-fifths of body, with 26-27 antennomeres. First flagellomere three times and penultimate flagellomere 1.8-2 times as long as broad. Carapace in dorsal view (Fig. 120) 1.8-2 times, usually 1.9 times, as long as broad, less broadening posteriorly. Carapace in lateral view (Fig. 121) 2.6 times as long as high, dorsally somewhat less convex and apico-ventrally somewhat less incurved. Yellow colour more vivid and somewhat more extended on legs.

Distribution: Europe, not a frequent species.

Host: *Cnephasia pasiuana* HÜBNER, [1799] (Lep., Tortricidae), new and first host datum from Sweden: Skäne, Åhus, ex larva of tortricid host June 1953, leg. et educ. I. SVENSSON.

From among the western Palaearctic species of the genus *Chelonus* two species are very similar to *Ch. canescens*,

they are as follows: *Ch. kryzhanovskii* TOBIAS and *Ch. smirnovi* TELENGA considering their corporal size, constricted temple, pubescent face + clypeus and yellow tegula. The distinctive features of the three species are keyed subsequently:

- 1 (2) Scutellum rugose to rugulose, dull. Antenna with 18 (♀) and 26-28 (♂) antennomeres. Carapace in dorsal view 1.65-1.7 times as long as broad behind, clearly broadening posteriorly (Fig. 30). Temple in dorsal view relatively more constricted (Fig. 27). Pterostigma brownish to blackish. ♀ ♂ : 3.5-5 mm. - Europe *Ch. canescens* WESMAEL, 1835
- 2 (1) Scutellum smooth and shiny to polished. Antenna of female at least with 20 antennomeres. Carapace in dorsal view twice as long as broad medially, not broadening posteriorly (Fig. 33).
- 3 (4) Mesonotum rugulose to subrugulose, i.e. with weak sculpture and more or less shiny. Temple in lateral view anteriorly rugulose-subrugulose, posteriorly uneven to smooth and shiny. Antenna with 20-21 (♀) and 27-28 (♂) antennomeres. Temple in dorsal view relatively more constricted (cf. Fig. 27). Legs except brownish coxae 2-3 yellow or reddish yellow. Pterostigma brown. Scape and pedicel reddish yellow. ♀ ♂ : 3.5-4 mm. - Turkmenia, Spain¹) *Ch. kryzhanovskii* TOBIAS, 1966
- 4 (3) Mesonotum rugose to roughly rugose as usually, temple also evenly rugose. Antenna with 21-23 (♀) and 24-26 (♂) antennomeres. Temple in dorsal view less constricted (Fig. 34). Legs rather dark coloured, femora 2-3 dark brown to black(ish), femur 1 and tibiae with yellow pattern. Pterostigma yellow. Scape and pedicel black. ♀ ♂ : 4-4.5 mm. - European part of Mongolia, Russia *Ch. smirnovi* TELENGA, 1953

The following species: *Ch. abductor* PAPP, *Ch. agilis* PAPP, *Ch. ahngeri* TOBIAS, *Ch. angustiventris* TOBIAS, *Ch. annulatus* (NEES) and *Ch. chrysostigma* TOBIAS are also similar to *Ch. canescens* owing to their constricted temple and yellow tegula, however, besides further distinctive features, their face + clypeus are not pubescent but hairy as usually.

Chelonus inanitus (LINNAEUS)

Cynips inanita LINNAEUS, 1767: Syst. Nat. ed. 12 2: 919 sex? type locality: ? (Sweden?), syntype series: ? (in Royal Zoological Society, London?).

Chelonus inanitus (LINNAEUS, 1767): NEES, 1834 Hym. Ichn. affn. Mon. 1: 289. - WESMAEL, 1835: 217. - SHENEFELT, 1973: 852 (literature up to 1971 and distribution). - TOBIAS, 1986: 307 (in key).

¹ New distributional datum: 1 ♂ (in Museum Budapest) from Spain, Madrid, El Escorial, 16 June 1987, leg. J. et A. Podlussany.

In WESMAEL's collection there are four specimens (2 ♀ ♀ + 2 ♂ ♂) under the name *Ch. inanus* LINNAEUS; in his book WESMAEL (l.c.) reported only 1 ♀ + 1 ♂ specimens from the environment of Bruxelles. My re-identification of the four specimens in question confirm WESMAEL's identification and I labelled them accordingly.

Chelonus oculator (FABRICIUS)

Ichneumon oculator FABRICIUS, 1775: Syst. ent. p. 338 (no. 61) sex?, type locality: "Anglia", syntype series: ? (MORLEY, 1909: 131 was unable to find the type series in the Natural History Museum, London). - PANZER, 1779: 72. - ZIMSEN, 1964: 364. *Chelonus oculator* (FABRICIUS, 1775): ILLIGER, 1807: 191. - WESMAEL, 1835: 216 and 1838: 157. - SHENEFELT, 1973: 860 (literature up to 1967 and distribution). - VAN ACHTERBERG, 1982: 187-189 (neotype ♀ designation, redescription). - TOBIAS, 1986: 309-310 (in key).

WESMAEL (1835: 216) reported it as a common species in Belgium occurring in gramineous vegetation as well as on flowers of umbelliferous plants. From WESMAEL's Collection I have seen eighteen specimens (10 ♀ ♀ + 8 ♂ ♂) of which fourteen (10 ♀ ♀ + 4 ♂ ♂) represent *Ch. oculator* and the rest (4 ♂ ♂) or "Var. 1." represent the dark form (carapace without a pair of yellow basal maculae) of *Ch. cylindrus* (KLUG, 1816). The material was labelled by me accordingly.

The single male specimen reported by WESMAEL (1838: 57) as "Var. 2." of *Ch. oculator* was not seen by me. On the basis of the description it seems to belong either to *Ch. humilis* THOMSON, 1874 or to *Ch. carbonator* MARSHALL, 1885.

Chelonus submuticus WESMAEL (Figs 35-48)

Chelonus submuticus WESMAEL, 1835: Nouv. Mém. Acad. Bruxelles 9: 218 ♀ ♂ (syntype series: 1 ♀ + 5 ♂ ♂), type locality: "la plaine de Mon-Plaisir près de Bruxelles" (Belgium), lectotype ♀ (designated by VAN ACHTERBERG) (and 4 ♂ paralectotypes, present designation) in Institut royal des Sciences naturelles de Belgique, Bruxelles, examined. - SHENEFELT, 1973: 869 (literature up to 1971 and distribution). - VAN ACHTERBERG, 1982 Entom. Ber. 42: 189 (lectotype designation, taxonomic position and remarks). - TOBIAS, 1986: 307 (in key). *Chelonus luteipes* THOMSON, 1874: Opusc. ent. (Lund) 6: 569 ♀ ♂ (syntype series: 1 ♀ + 3 ♂ ♂), type locality: "södra Sverige", lectotype ♀ (and 3 ♂ paralectotypes) in Zoologiska Institutionen, Lund, examined and present designation; syn.n. - SHENEFELT, 1973: 856 (as valid species, literature up to 1958 and distribution).

Description of the lectotype ♀. - Body 5.5 mm long. Head in dorsal view (Fig. 35) transverse, twice as broad as long, eye as long as temple, latter slightly bulging, occiput excavated. Ocelli small and forming a rather low triangle. Distance between fore and a hind ocelli as long as longer diameter of fore ocellus, OOL slightly longer than POL.

Eye in lateral view just more than twice as high as wide, behind eye temple broad, 1.26 times as wide as eye (Fig. 36). Malar space just longer than basal width of mandible. Face twice as wide as high. Clypeus twice wider than high, ventrally produced and medially truncate (Fig. 37). Head rugose, clypeus finely punctate, interspaces larger than punctures, temple rugo-striate. - Antennae damaged, right antenna with fifteen antennomeres (i.e. flagellum with thirteen flagellomeres), left antenna only with scape and pedicel (i.e. flagellum missing). First flagellomere three times and thirteen flagellomere 1.5 times as long as broad.

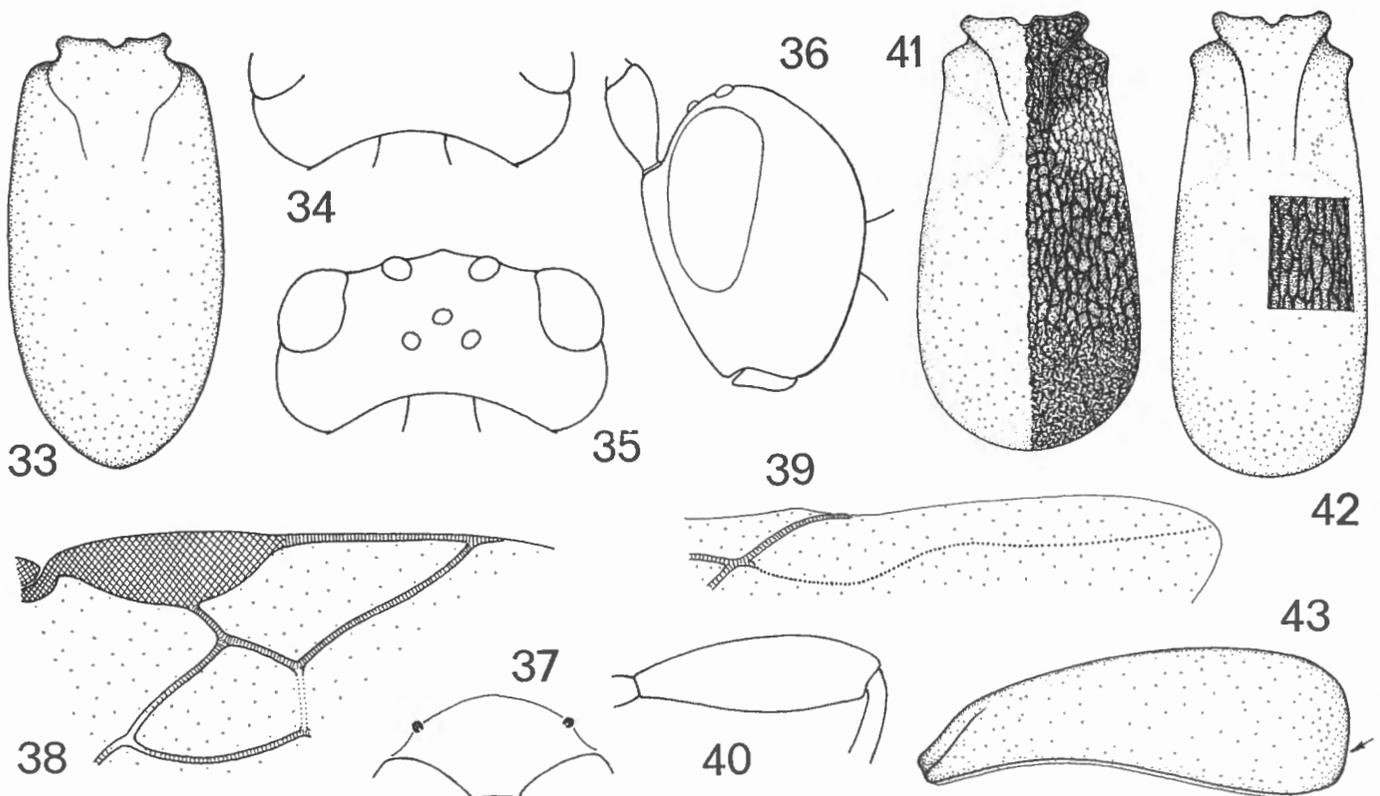
Mesosoma in lateral view one-third as long as high. Notaulix weakly distinct. Propodeum with a medio-transverse keel ending laterally in a rather small tubercule. Mesosoma rugose, scutellum (partly seen) rugo-rugulose. - Fore femur three times, middle femur 3.42 times and hind femur 3.4 times as long as broad, hind femur broadest at its distal half (Fig. 40). Hind pair of tibial spurs unequal in length, inner spur shorter than half basitarsus (Fig. 48). Hind basitarsus as long as tarsal segments 2-4 and basal fourth of fifth segment combined.

Fore wing about one-seventh shorter than body. Pterostigma (Fig. 38) three times as long as wide, issuing radial vein distally from its middle; r1 just less than half as long as width of pterostigma, r2 twice as long as r1, r3 faintly S-like and ending far before tip of wing. Radial cell along metacarp shorter than length of pterostigma. - Radial cell (or marginal cell) of hind wing narrow (Fig. 39).

Carapace as long as head and mesosoma combined, in dorsal view (Fig. 41) moderately broadening and slightly less than twice as long as broad posteriorly. Carapace in lateral view (Fig. 43) three times as long as high behind, its hind half nearly evenly high and its hind end characteristically declivous (fig. 43 see arrow). Carapace apically emarginate (Fig. 45), apico-ventrally somewhat incurved, i.e. ventral cavity of carapace nearly as long as carapace itself (Fig. 47). Ovipositor sheath short, about as long as half basitarsus. Carapace rugose, its posterior fourth subrugose (Fig. 41).

Ground colour of body black. Palpi brown. Antenna black. Tegula reddish yellow. Pronotum with a rusty tint. Carapace with a pair of basal straw yellow spots, lower margin of carapace opaque yellowish. Legs reddish yellow, coxae and trochanters blackish brown, trochanters with reddish suffusion. Tarsi weakly brownish fumous. Wings also weakly brownish fumous, pterostigma brown, veins yellowish to yellowish brownish.

Descriptions of two female specimens (without type status) in WESMAEL's Collection. - Similar to the lectotype ♀. Body 5.1 mm (1 ♀) and 5.5 mm (1 ♀) long. Antennae damaged - 1 ♀: left antenna with 21 antennomeres, right antenna with scape and pedicel; flagellum



Figs 33-43. - Figs 33-34: *Chelonus smirnovi* TELENGA: 33: carapace in dorsal view; 34: temple in dorsal view.
 Figs 35-43: *Chelonus submuticus* WESMAEL: 35: head in dorsal view; 36: head in lateral view; 37: clypeus; 38: distal part of right fore wing; 39: distal part of right hind wing; 40: hind femur; 41: carapace of female in dorsal view; 42: carapace of male in dorsal view with indication of its sculpture; 43: carapace of female in lateral view.

faintly tapering distally, first flagellomere 3.6 times and 19th flagellomere 1.75 times as long as broad; - 1 ♀: left antenna with 19 antennomeres, right antenna with 7 antennomeres, flagellum faintly tapering distally, first flagellomere 3.25 times and 17th flagellomere 1.66 times as long as broad. Carapace apically variably emarginate (Fig. 46). Pair of basal straw yellow maculae small (1 ♀) to very small (1 ♀).

Description of the male paralectotypes (4 ♂♂). - Similar to the lectotype ♀. Body 6 mm (2 ♂♂) and 5.5. long (2 ♂♂: "var. 1." by WESMAEL). Antenna about as long as body, with 28 (2 ♂♂) and 30 (1 ♂) flagellomeres (antenna of 1 ♂ damaged). Carapace in dorsal view twice (2 ♂♂), 2.1 times (1 ♂) and 2.2 times (1 ♂, Fig. 42) as long as broad posteriorly, hardly broadening behind. Carapace in lateral view (Fig. 44) 2.66-3.3 times as long as high behind, antero-posteriorly evenly becoming higher (2.66: 1 ♂, 2.7: 1 ♂, 2.85: 1 ♂, 3.3: 1 ♂). Pair of basal straw yellow maculae distinct (2 ♂♂), very small (1 ♂) to absent (1 ♂) (latter form was marked by WESMAEL as "var. 1.").

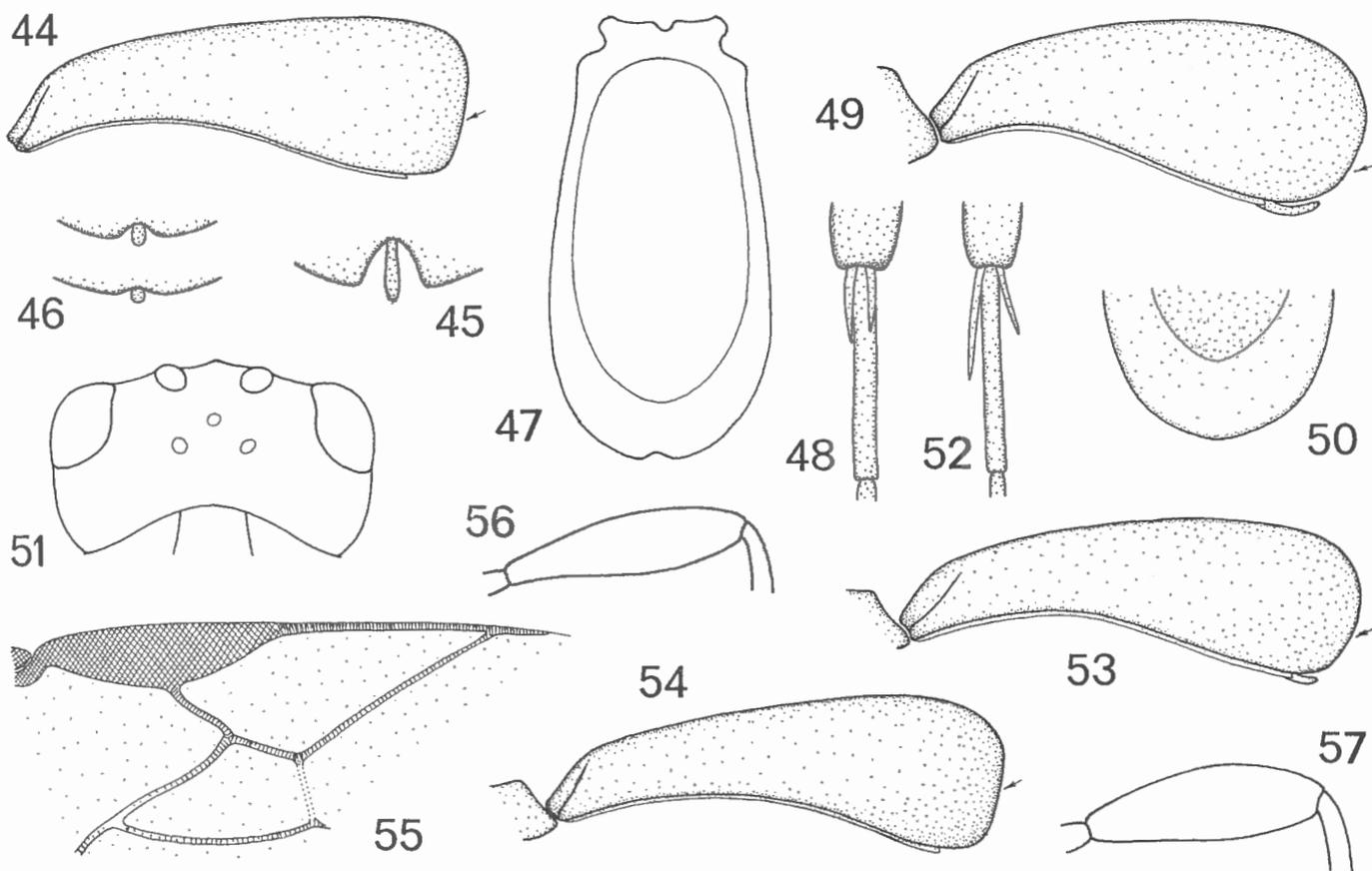
Taxonomic comments. - This species, *Chelonus submuticus* WESMAEL nec auct., has been misinterpreted by authors as was pointed out by VAN ACHTERBERG (1982: 189). *Ch. submuticus* sensu auct. is identical with *Ch. productus* HERRICH-SCHAEFFER, 1838, a frequent species in Europe while the true *Ch. submuticus* WESMAEL is a rather sporadic to rare species in Europe. I have seen and studied representatives of this species from Belgium (locus typicus), Sweden and Hungary. It is nearest to and forms a species-group with the following six species: *Ch. carbonator* MARSHALL²), *Ch. cylindrus* (KLUG), *Ch. elongatus* SZÉPLIGETI, *Ch. humilis* THOMSON, *Ch. obscuratus* HERRICH-SCHAEFFER and *Ch. zimini* TOBIAS all having a more or less elongate carapace. The distinction of the seven species is not easy and requires some practice to recognize them. The following comprehensive key promotes their better distinction:

² Supposedly *Ch. carbonator* belongs to this species-group, however, I do not possess and never saw an authenticated specimen of this species.

- 1 (2) Carapace in lateral view (Fig. 49) apically deeply rounded (\downarrow) i.e. carapace apico-ventrally deeply incurved (Fig. 50). Head in dorsal view slightly less transverse (in comparison to the next species), 1.82-1.96 as broad as long (Fig. 51). Carapace in dorsal view 1.8-1.9 times (\varnothing) and 1.8-2 times (σ) as long as broad posteriorly. Pair of spurs of hind tibia clearly unequal in length, inner spur longer than half basitarsus (Fig. 52). Temple less rounded (Fig. 51). Antenna with 23-24 (\varnothing) and 27-30 (σ) antennomeres, flagellum medially hardly flattened. Hind femur 3.3-3.5 times as long as broad at its middle. Femora reddish yellow, basally blackish to black. Tegula black. \varnothing σ : 5.3-5.6 mm. - Western Palaearctic Region
.... *Ch. obscuratus* HERRICH-SCHAEFFER, 1838
- 2 (1) Carapace in lateral view apically less rounded (Fig. 64 \downarrow) or truncate (Figs 43-44 \downarrow), i.e. apico-ventrally at most somewhat incurved (Fig. 47).

Head in dorsal view transverse, about twice as broad as long (Fig. 35). Carapace in dorsal view also about twice as long as broad posteriorly (Figs 41-42, 58-59, 62-63). Inner spur of hind tibia at most half as long as basitarsus.

- 3 (4) Temple in dorsal view slightly bulging (Fig. 35). Female flagellum filiform, i.e. medially not flattened, antenna with 25-27 (\varnothing) and 27-31 (σ) antennomeres. Carapace in lateral view (Fig. 43-44) beyond its middle nearly evenly high, its apical end truncate (\downarrow); in dorsal view (Fig. 41-42) 1.92 times as long as broad behind. Hind femur 3.3-3.75 times as long as broad distally from its middle (Fig. 40). Inner spur of hind tibia less than half as long as basitarsus. Hind femur and tegula reddish yellow, latter exceptionally darkening. \varnothing σ : 6-6.5 mm. - Belgium, Sweden, Hungary, Mongolia (= *Ch. luteipes* THOMSON, 1874)
..... *Ch. submuticus* WESMAEL, 1835

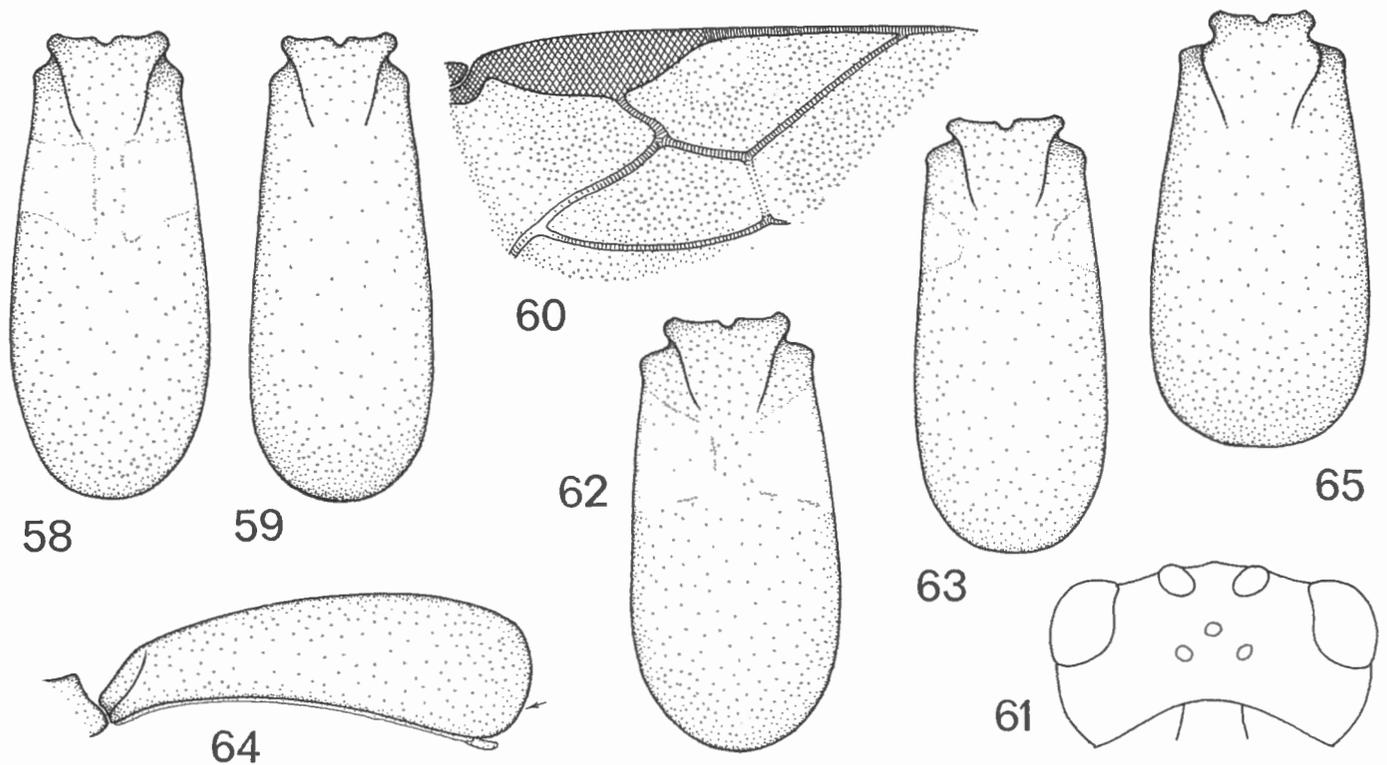


Figs 44-57. - Figs 44-48: *Chelonus submuticus* WESMAEL: 44: carapace of male in lateral view; 45: apical end of female carapace with emargination; 46: apical end of female carapace with variable emargination; 47: carapace of female in ventral view; 48: pair of spurs of hind tibia.

Figs 49-52: *Chelonus obscuratus* HERRICH-SCHAEFFER: 49: carapace of female in lateral view; 50: apical end of female carapace in ventral view; 51: head in dorsal view; 52: pair of spurs of hind tibia.

Figs 53-56: *Chelonus elongatus* SZÉPLIGETI: 53: carapace of female in lateral view; 54: carapace of male in lateral view; 55: distal part of right fore wing; 56: hind femur.

Fig. 57: *Chelonus cylindrus* (KLUG): hind femur.



Figs 58-65. – Figs 58-59: *Chelonus elongatus* SZÉPLIGETI: carapace in dorsal view: ♀ (58) and ♂ (59).

Fig. 60: *Chelonus zimini* TOBIAS: distal part of right fore wing.

Figs 61-64: *Chelonus cylindrus* (KLUG): 61: head in dorsal view; 62-63: carapace in dorsal view: ♀ (62) and ♂ (63); 64: carapace in lateral view.

Fig. 65: *Chelonus humilis* THOMSON: carapace of female in dorsal view.

- 4 (3) Temple in dorsal view rounded (Fig. 61). Female flagellum not filiform, i.e. medially more or less flattened. Carapace in lateral view (Figs 53-54, 64) gradually becoming higher. Hind femur broadest at its middle (Figs 56, 57). Tegula black.
- 5 (8) Carapace long, in dorsal view (Figs 58-59) 2.2-2.3 times (♀) and 2.3-2.45 times (♂) as long as broad posteriorly; in lateral view its hind end rounded (♀ Fig. 53 ↓) or truncate (♂ Fig. 54 ↓). Antenna with 29-32 (♀) and 34-36 (♂) antennomeres. Inner spur of hind tibia less than half as long as half basitarsus. Hind femur at least four times as long as broad (Fig. 56).
- 6 (7) Radial cell along metacarp usually as long as pterostigma, r1 as long as r2 (Fig. 55). A dark coloured species. Hind femur black(ish); carapace of female with a pair of basal yellow maculae, carapace of male entirely black. Wings usually hyaline. ♀ ♂: 6-7 mm. - Hungary, Romania, Serbia *Ch. elongatus* SZÉPLIGETI, 1898³
- 7 (6) Radial cell along metacarp usually somewhat shorter than pterostigma, r1 shorter than r2 (Fig. 60). A light coloured species. Hind femur reddish yellow; carapace of female also reddish yellow, its hind third black. Wings usually faintly brownish fumous. ♀ ♂: 6-7 mm. - Russia, Poland, Hungary, Germany. *Ch. zimini* TOBIAS, 1972³
- 8 (5) Carapace less long, in dorsal view 1.9-2.1 times (♀) (Fig. 62, 65) and 2.1-2.3 times (♂) (Figs 63, 66) as long as broad posteriorly. Inner spur of hind tibia half as long as basitarsus. Hind femur (2.7-)3-3.5 times as long as broad (Figs 70, 74).
- 9 (10) Carapace (♀) in dorsal view apically slightly more rounded (Fig. 62). Legs light coloured, hind femur reddish yellow or at most basally darkening to blackish. Carapace always with a pair of lemon yellow maculae basally. Antenna with 28-31 antennomeres (♀). Hind femur 3.2-3.5 times as long as broad (Fig. 57). ♀ ♂: 5.2-5.8 mm. - Germany, Hungary, Turkey. (?= *Ch. macrocerus* THOMSON, 1874) *Ch. cylindrus* (KLUG, 1816)
- 10 (9) Carapace in dorsal view apically slightly less rounded, twice (♀) to 2-2.2 times (♂) as long as broad posteriorly (Fig. 65, 66). Legs dark coloured, hind femur black (at most apically brownish to yellowish). Carapace always entirely black.

³ The two species, *Ch. elongatus* and *Ch. zimini*, are very similar to each other, perhaps *Ch. zimini* will prove to be in the future only a light coloured variety of *Ch. elongatus*.

- 11 (12) Carapace (♀ ♂) in lateral view (Figs 67, 68) truncate behind. Antenna with 24-27 antennomeres (♀ ♂), penultimate 3-4 flagellomeres cubic, sub-cubic (♀) to 1.2-1.3 times as long as broad (♂). Radial cell along metacarp one-fourth shorter than pterostigma (Fig. 69, see arrows) and r1 usually clearly shorter than r2. Hind femur 3-3.2 times as long as broad (Fig. 70). ♀ ♂ : 5.1-6 mm. - Sweden, Hungary
..... *Ch. humilis* THOMSON, 1874⁽⁴⁾
- 12 (11) Carapace (♀ ♂) in lateral view (Fig. 71, 72) more or less rounded behind. Antenna with (27)-29-33 (♀) and 29-34 (♂) antennomeres, penultimate 3-4 flagellomeres 1.2-1.4 times (♀) to 1.6-2 times (♂) as long as broad. Radial cell along metacarp about as long as pterostigma, at most slightly shorter (Fig. 73, see arrows) and r1 usually nearly as long as r2. Hind femur 3.3-3.4 times as long as broad. (Fig. 74). ♂ : 4.5-5 mm and ♀ : 4.8-5.2 mm. - Europe
..... *Ch. carbonator* MARSHALL, 1885⁽⁴⁾

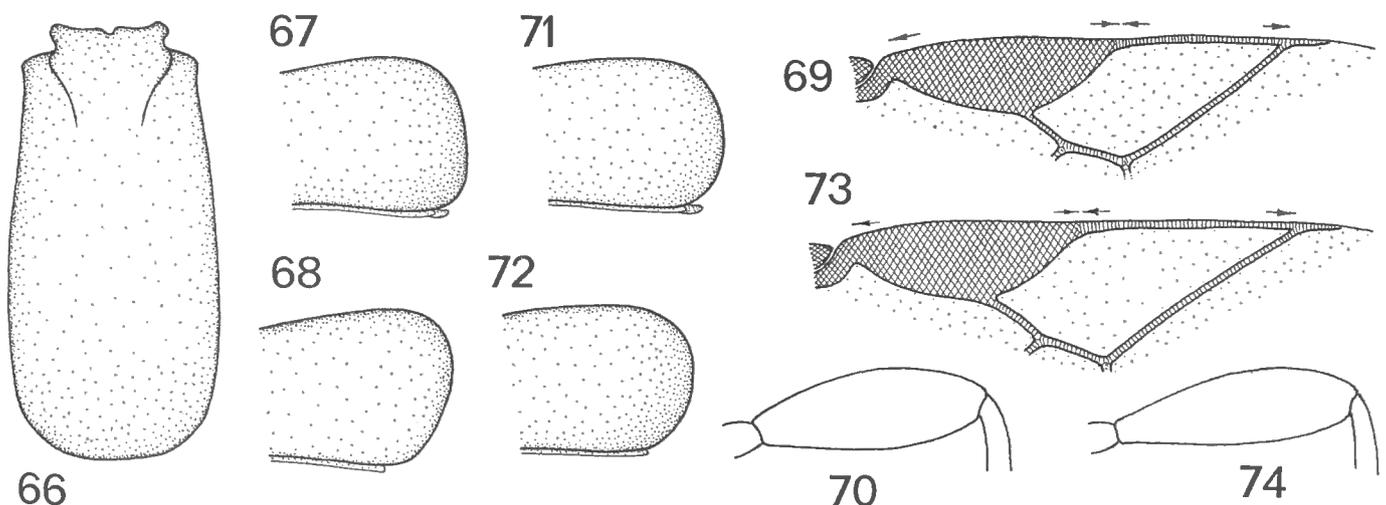
Microchelonus SZÉPLIGETI, 1908

From among the twelve *Chelonus* species reported by WESMAEL (1835, 1838) seven species were transferred into this genus. From among the seven species five species proved to be valid and, furthermore, two species have been rectified, i.e. their taxonomic position had to be changed: (1) *Chelonus* → *Microchelonus fenestratus* (NEES) represents *M. contractus* (NEES) and (2) *Chelonus* → *Microchelonus eurytheca* WESMAEL is a junior synonym of *M. gravenhorstii* (NEES).

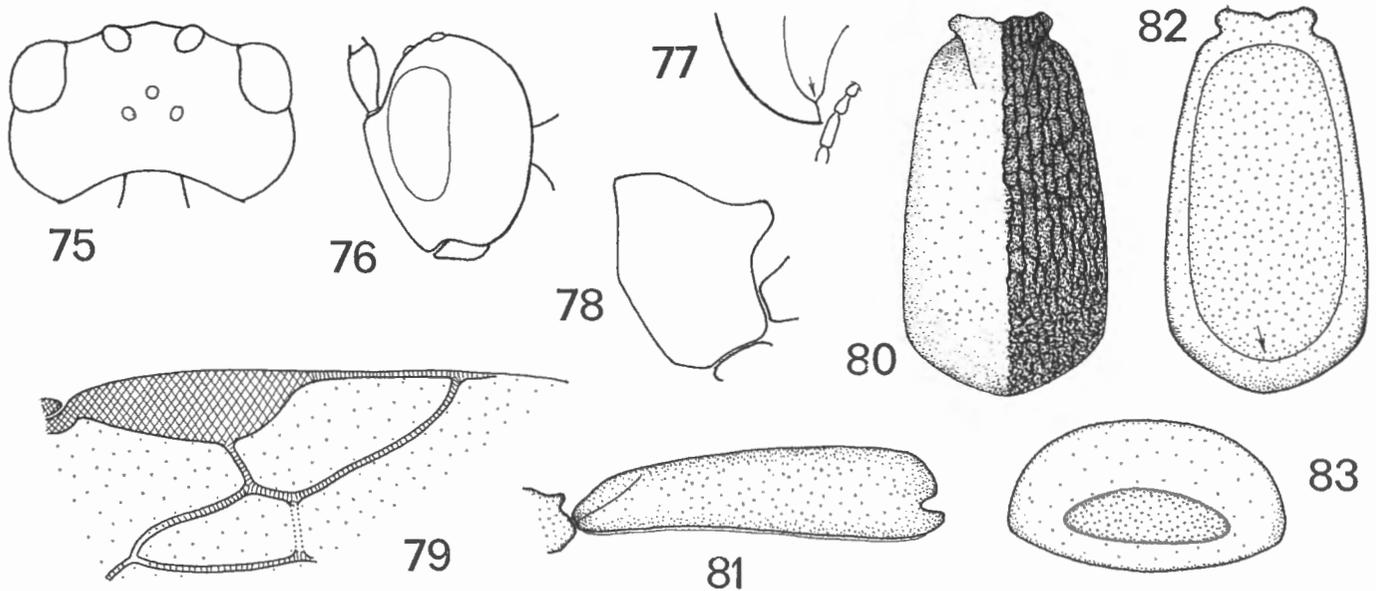
Traditionally the genera *Chelonus* JURINE, 1801 and *Microchelonus* SZÉPLIGETI, 1908 are distinguished by the number of the antennomeres of the females (*Chelonus*: with more than 16 antennomeres, *Microchelonus*: always with 16 antennomeres) and by the absence (*Chelonus*) or presence (*Microchelonus*) of the apical foramen of carapace of the males. This clear-cut distinction of the females are confused by the more or less increasing numbers of the antennomeres in several species (*M. gravenhorstii* NEES, *M. mucronatus* THOMSON, *M. nitens* REINHARD, *M. pedator* DAHLBOM, *M. pusillus* SZÉPLIGETI, *M. starki* TELENGA) on the one hand, and the males of these species always bear a foramen apically on their carapace, on the other. This "half-transitional" character is considered by several authors in such a way that the taxon *Chelonus* is treated as a valid genus while *Microchelonus* is either an obvious junior synonym of *Chelonus* or at most is a subgenus of *Chelonus*.

Recently, I have examined a long series of *Chelonus* as well as *Microchelonus* specimens (type specimens of several species, unnamed material) which provoked me to confirm the generic status of both taxa in question. The distinguishing generic features between them are disclosed and keyed as follows:

⁴ The two species, *Ch. humilis* and *Ch. carbonator*, are very similar to each other. In the future, probably, the two forms will be unified into one species being variable in several respects. - The main difference between *Ch. carbonator* / *Ch. humilis* and *Ch. cylindrus* is restricted to their colour, see also key. Perhaps the three forms compose a single species having light and dark coloured varieties.



Figs 66-74. - Figs 66-70: *Chelonus humilis* THOMSON: 66: carapace of male in dorsal view; 67-68: posterior end of carapace in lateral view: ♀ (67) and ♂ (68); 69: distal part of right fore wing; 70: hind femur. Figs 71-74: *Chelonus carbonator* MARSHALL: 71-72: posterior end of carapace in lateral view: ♀ (71) and ♂ (72); 73: distal part of right fore wing; 74: hind femur.



Figs 75-83. — *Microchelonus lugubris* (WESMAEL): 75: head in dorsal view; 76: head in lateral view; 77: temporal and hypostomal carinae, arrow indicates their unification; 78: propodeum in lateral view; 79: distal part of right fore wing; 80: carapace in dorsal view; 81: carapace in lateral view; 82: carapace in ventral view; 83: apical foramen of male carapace.

- 1 (2) Carapace in lateral view (Figs 6, 10, 21, 43) 2-2.3 times as long a high, about twice higher behind than basally, i.e. distinctly increasing in height posteriorly (see arrows in Fig. 21). Hind femur usually less thick, 3.2-3.5 times as long as broad medially. Antenna of female with more than 16 antennomeres; carapace of male never with a foramen apically *Chelonus* JURINE, 1801
- 2 (1) Carapace in lateral view (Fig. 123) 2.7-3.5 times as long as high, distinctly less than twice as high behind as basally, i.e. less increasing in height posteriorly (see arrows in Figs 99, 104, 123). Hind femur usually thick, about three times as long as broad medially. Antenna of female usually with 16 antennomeres except a few species, carapace of male always with a foramen apically (= *Chelonella* SZÉPLIGETI, 1908; = *Neochelonella* HINCKS, 1943) *Microchelonus* SZÉPLIGETI, 1908

Microchelonus contractus (NEES)

Sigalphus contractus NEES, 1816: Mag. Ges. Nat. Fr. Berl. 7 (1813): 274 ♀, type locality: "Berlini" (Germany), syntypes destroyed. - SHENEFELT, 1973: 381 (literature up to 1971). TOBIAS, 1986: 326 (♀) and 334 (♂) (in key).
Chelonus fenestratus (NEES, 1816) sensu WESMAEL, 1835: Nouv. Mém. Acad. Brux. 9: 223 ♂ ♀, locality: Bruxelles, 8 ♀ ♀ + 4 ♂ ♂ in Institut royal des Sciences naturelles de Belgique, Bruxelles, examined.

As indicated above a total of 8 ♀ + 4 ♂ specimens served for the redescription and report of this species from Belgium under the name "*Chelonus fenestratus*" by WESMAEL (l.c.) Out of these specimens I have seen only three females which proved to belong to two *Microchelonus* species, namely, *M. contractus* (NEES): 2 ♀ ♀ and *M. ?kiritshenkoi* (TOBIAS): 1 ♀. The three females were labelled by me accordingly.

Microchelonus gravenhorstii (NEES) comb.n. (Figs 125-127)

Sigalphus gravenhorstii NEES, 1816: Mag. Ges. naturf. Fr. Berl. 7 (1813): 272 ♀ ♂, type locality: "Habitat in Germania", syntypes destroyed.
Chelonus gravenhorstii (NEES); WESMAEL, 1838 Nouv. Mém. Acad. Brux. 11: 160 ♀, authentic specimens (5 ♀ ♀ + 1 ♂) in Institut royal des Sciences naturelles de Belgique, Bruxelles, examined. - SHENEFELT, 1973: 852 (literature up to 1958). TOBIAS, 1986: 311 (in key).
Chelonus (Chelonella) gravenhorstii (NEES): FAHRINGER, 1934 Opusc. brac. (Pal. R.) 2 (5-8): 414 and 425 (in keys for females and males), 448 (redescription).
Chelonus eurytheca WESMAEL, 1838: Nouv. Mém. Acad. Brux. 11: 158 "♀" = ♂ (syntype series 8 ♂ ♂), type locality: "environs de Bruxelles" (Belgium), lectotype ♂ in Institut royal des Sciences naturelles de Belgique, Bruxelles, examined and present designation. Synonymized by THOMSON, 1874: 573. - SHENEFELT, 1973: 894 (as synonym of *Microchelonus parvicornis* HERRICH-SCHAEFFER, 1838 after REINHARD, 1867: 359).

Taxonomic remarks. - 1. *Chelonus eurytheca* was described on the basis of eight male specimens (WESMAEL l.c.) of which I have seen one male (and only this specimen out of the eight exists and is still present in WESMAEL's Collection in Bruxelles). This specimen was designated by me as the lectotype. The lectotype is identical and conspecific with *Microchelonus gravenhorstii*. The first synonymizer was, however, C. G. THOMSON (1874: 573).

2. It seems reasonable to indicate that (a) head of the lectotype (of *Ch. eurytheca*) is missing; (b) the hind third of the carapace is unusually sculptured: its right side is normally rugose and dull, its left side, however, is almost smooth and shiny (a teratological form?); (c) the specimen represents a dark legged form: legs dark reddish, coxae brownish.

3. Since when NEES (1819: 310) transferred his species from the genus *Sigalphus* to *Chelonus* the species was considered by the authors as an authentic *Chelonus* species (SHENEFELT l.c.) except FAHRINGER (l.c.) who had placed it in the subgenus *Chelonella* (= *Microchelonus*) within the genus *Chelonus*. Indeed, *M. gravenhorstii* is a transitional species between the genera *Chelonus* and *Microchelonus*. Though the antenna of the female has 27-29 (and not 16) antennomeres, the carapace of both sexes in lateral view is less increasing in height posteriorly, i.e. less than twice as high behind as basally (Fig. 125, see arrows), hind femur (Fig. 126) of both sexes 3-3.1 times as long as broad medially and carapace of male apically with a small foramen (Fig. 127). This combination of the generic features led me to conclude that this species belongs to the genus *Microchelonus*.

Up to now I could establish the above combination of features in the following chelonine species:

Microchelonus gravenhorstii (NEES, 1816)
mucronatus (THOMSON, 1874)
nitens (REINHARD, 1867)
 = *alboannulatus* (SZÉPLIGETI, 1896)
 ? = *pellucens* (NEES, 1816) sen. name
pedator (DAHLBOM, 1833)
pusillus (SZÉPLIGETI, 1908)
starki (TELENGA, 1953)
tuberculiventris TOBIAS, 1986

Microchelonus latrunculus (MARSHALL) (Figs 87-89)

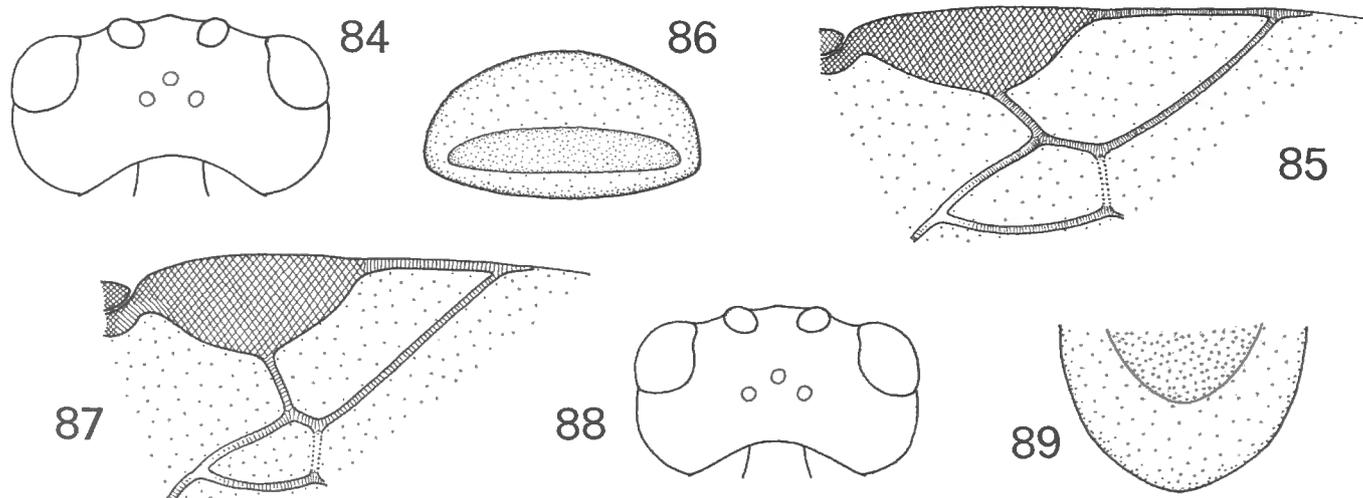
Chelonus latrunculus MARSHALL, 1885: Trans. R. ent. Soc. London p. 138 ♀♂ (syntype series?), type locality: "Northants... Cadder Wilderness near Glasgow... Maldon (England), syntypes in the Natural History Museum, London (lectotype designation needed), not examined.

Chelonus parvicornis HERRICH-SCHAEFFER, 1838: Faune Insect. German. No. 30 ♀ (syntype series?), type locality: ? Germany, syntype(s) lost, sen. syn.?

Chelonus parvicornis HERRICH-SCHAEFFER sensu WESMAEL, 1838: Nouv. Mém. Acad. Brux. 11: 162 ♀.

Microchelonus latrunculus (MARSHALL): SHENEFELT, 1973: 890 (comb.n., literature up to 1958 and distribution). TOBIAS, 1986: 325 (♀) and 333 (♂) (in key).

Microchelonus parvicornis (HERRICH-SCHAEFFER): SHENEFELT, 1973: 894 (literature up to 1971 and distribution). TOBIAS, 1986: 318 (♀) and 331 (♂) (in key).



Figs 84-89. - Figs 84-86: *Microchelonus flavipalpis* (SZÉPLIGETI): 84: head in dorsal view; 85: distal part of right fore wing; 86: apical foramen of male carapace.
 Figs 87-89: *Microchelonus latrunculus* (MARSHALL): 87: distal part of right fore wing; 88: head in dorsal view; 89: hind end of carapace in ventral view.

WESMAEL (l.c.) reported this species (under the name *Ch. parvicornis*) on the basis of a single female specimen from Bruxelles. I have seen this specimen (the name label is with WESMAEL's original handwritings) along with two male specimens which belong to WESMAEL's Collection (testified by the first label "Coll. WESMAEL") and, however, identified by T. A. MARSHALL in 1887 (second label). By re-identifying the female specimen it is a representative of *M. latrunculus* (MARSHALL) on the one hand, and the male specimens are *Microchelonus gravenhorstii* (NEES) with entirely black carapace, on the other. The specimens in question were labelled by me accordingly.

Taxonomic remarks. - The two names, *M. parvicornis* and *M. latrunculus*, seem to refer to the same species. On the basis of HERRICH-SCHAEFFER's key and short description the species *M. parvicornis* is unrecognizable and, furthermore, the syntype material of this taxon does not exist. The single female specimen of *M. parvicornis* sensu WESMAEL is conspecific with *M. latrunculus*; with the latter name I have authentic specimens (6 ♀ ♀ + 1 ♂) identified by T. A. MARSHALL (3 ♀ ♀) and T. HUDDLESTON (3 ♀ ♀ + 1 ♂) housed in the Museum of Budapest. Both forms either with the name *M. parvicornis* (1 ♀) or *M. latrunculus* (6 ♀ ♀ + 1 ♂) have a characteristic radial vein and radial cell, namely, r1 nearly perpendicular to the fore margin of pterostigma, r2 clearly shorter than r1, r3 straight, length of radial cell along metacarp about half as long as pterostigma (Fig. 87). In lacking authentic or syntype material of *M. parvicornis* I disregard the synonymization of the two names, but I indicate with a question mark their supposed synonymy.

Microchelonus lugubris (WESMAEL) (Figs 75-83)

Chelonus lugubris WESMAEL, 1835: Nouv. Mém. Acad. Brux. 9: 219 "♀" = ♂ (syntype series 1 ♂), type locality: Bruxelles (Belgium), holotype ♂ in Institut royal des Sciences naturelles de Belgique, Bruxelles, examined and present designation. - SHENEFELT, 1973: 891 (as *Microchelonus lugubris* comb.n., literature up to 1962 and distribution).

In WESMAEL's Collection there is, besides the holotype ♂, a female specimen with similar labels like that of the holotype, however, it does not represent a syntype considering WESMAEL's assertion (1835: 220): "J'ai pris un seul individu de cette espèce,..."

Description of the holotype ♂. - Body 3.8 mm long. Head in dorsal view (Fig. 75) transverse, 1.79 times as broad as long, temple faintly bulging, i.e. head a bit broader between temples than between eyes; eye and temple of equal length, temple rounded, occiput excavated. Ocelli round and small, distance between fore and a hind ocelli just longer than diameter of an ocellus, OOL almost twice as long as POL. Eye in lateral view (Fig. 76) 2.2 times as

high as wide, temple one-third wider than eye. Face 1.8 times as wide as high, inner margin of eyes parallel. Tentorial pits twice as far from each other as to lowest point of eye. Malar space as long as basal width of mandible. Hypostoma and temporal carina meeting near to base of mandible (Fig. 77 ↓). Head rugose, clypeus densely and finely punctate, its lower fourth along convex margin densely rugulose. - Antennae damaged, right antenna with 16 antennomeres, left antenna present by scape and pedicel, flagellum broken. First flagellomere clearly three times as long as broad (according to the original description antenna somewhat longer than body and with 24 antennomeres).

Mesosoma in lateral view 1.66 times as long as high, somewhat less broad between tegulae than breadth of head. Mesonotum rugose, notaulix distinct by slightly deeper rugosity. Entire mesosoma rugose, sternaulex distinct also by slightly deeper rugosity. Propodeum with a pair of lateral tubercles (Fig. 78). - Hind femur 3.6 times as long as broad. Hind tibia and tarsus of equal length, hind basitarsus as long as hind tarsal segments 2-4.

Fore wing somewhat shorter than body. Pterostigma (Fig. 79) three times as long as wide, issuing radial vein distally from its middle, r1 shorter than width of pterostigma, r2 a bit shorter than r1, r3 slightly arched and ending far before tip of wing; metacarp slightly shorter than pterostigma, radial cell along metacarpal vein one-fourth shorter than pterostigma (Fig. 79). N. rec. just postfurcal, d2 3.5 times as long as d1.

Carapace as long head and mesosoma combined; in dorsal view (Fig. 80) twice as long as broad behind, i.e. evenly and moderately broadening as far as before its hind end; in lateral view (Fig. 81) four times as long as high behind. Basal converging pair of keels short. Carapace antero-posteriorly longitudinally stria-rugose to rugose. Apical foramen transverse, three times as wide as high (Fig. 83), end of carapace in lateral view as in Fig. 81. In ventral view carapace apically incurved, i.e. ventral cavity of carapace somewhat shorter than carapace itself (Fig. 82 ↓).

Body black, legs yellow. Mandible, palpi, scape and tegula brownish. Coxae and trochanters 1-2 blackish, coxa and trochanter 3 black, tibiae apically and tarsi entirely dark fumous. Wings faintly fumous; pterostigma and veins light opaque brownish.

Distribution: Belgium.

The male of *M. lugubris* seems to stand nearest to *M. flavipalpis* (SZÉPLIGETI, 1896) (Hungary, Ukraine, Georgia, Russia: Far East Territory) considering their (1) posteriorly evenly broadening carapace and (2) (reddish-) yellow legs; the distinctive features between the two species are keyed as follows:

- 1 (2) Head in dorsal view somewhat less transverse, 1.79 times as broad as long, temple slightly bulging (Fig. 75). Pterostigma clearly three times as long as wide, radial cell short, along metacarp one-third shorter than length of pterostigma (Fig. 79). Apical foramen of male carapace three times as wide as high (Fig. 83). Palpi brownish
 *M. lugubris* (WESMAEL, 1835) ♂
- 2 (1) Head in dorsal view somewhat more transverse, twice as broad as long, temple not bulging (Fig. 84). Pterostigma about 2.5 times as long as wide, radial cell relatively long, along metacarp somewhat shorter than length of pterostigma (Fig. 85). Apical foramen of male carapace six times as wide as high (Fig. 86). Palpi (partly) yellow to reddish yellow
 *M. flavipalpis* (SZÉPLIGETI, 1896)

In a few respects (posteriorly broadening carapace, relatively small foramen of male carapace, short radial cell, yellow legs) *M. lugubris* resemble *M. latrunculus* (MARSHALL, 1885) (Europe), however, the two species are easy to distinguish by the following features keyed:

- 1 (2) Pterostigma issuing radial vein distally from its middle, r2 only a bit shorter than r1, r3 arched, radial cell along metacarp one-fourth shorter than pterostigma (Fig. 79). Temple in dorsal view slightly bulging (Fig. 75). Carapace apically less incurved, i.e. ventral cavity of carapace only somewhat shorter than carapace itself (Fig. 82↓). Legs yellow
 *M. lugubris* (WESMAEL, 1835) ♂
- 2 (1) Pterostigma issuing radial vein from its middle, r2 half as long as r1, r3 straight, radial cell along metacarp about half as long as pterostigma (Fig. 87). Temple in dorsal view not bulging (Fig. 88). Carapace apically more incurved, i.e. ventral cavity of carapace distinctly shorter than carapace itself (Fig. 89). Legs light brown to brown
 *M. latrunculus* (MARSHALL, 1885) ♂

Taxonomic remarks. - 1. The female of *M. lugubris* is unknown. The taxonomic position of this species will unambiguously be cleared up only when the female is discovered. On the basis of our present knowledge among the European *Microchelonus* species known by their females there is not a single species with similar features displayed by the male *M. lugubris*, consequently, we can not suppose a conspecificity with any *Microchelonus* species known either by the female or male only. Of course, there is a possibility that the female of *M. lugubris* is transitional to the genus *Chelonus* by its antenna with more than 16 antennomeres. If so, *M. lugubris* increases the number of the transitional forms between the genera *Chelonus* and *Microchelonus* (further details see in the introductory chapter of *Microchelonus*).

2. Though the male of *M. lugubris* was described more than one-and-a-half centuries ago we know this species on the basis of its male holotype only. It seems a very rare species which is very difficult to recognize considering its

description given by WESMAEL (l.c.). - The countries from which *M. lugubris* had been reported and which were listed by SHENEFELT (1973: 891) are accepted provisionally because the authors originally published the distributional data, supposedly, having never examined the type of *M. lugubris*, on the one hand, and their identification should be confirmed (if the respective material still exists) on the other.

3. Two caterpillar species, *Elachista poae* STANTON (Lep. Elachistidae) and *Erastria uncula* CLERCK (Lep. Noctuidae), were reported as hosts of *M. lugubris* (SHENEFELT, l.c.). These host-data should be checked in the future and, furthermore, the identification of the parasitoid, *M. lugubris*, needs confirmation.

Microchelonus microphthalmus (WESMAEL) (Figs 90-105)

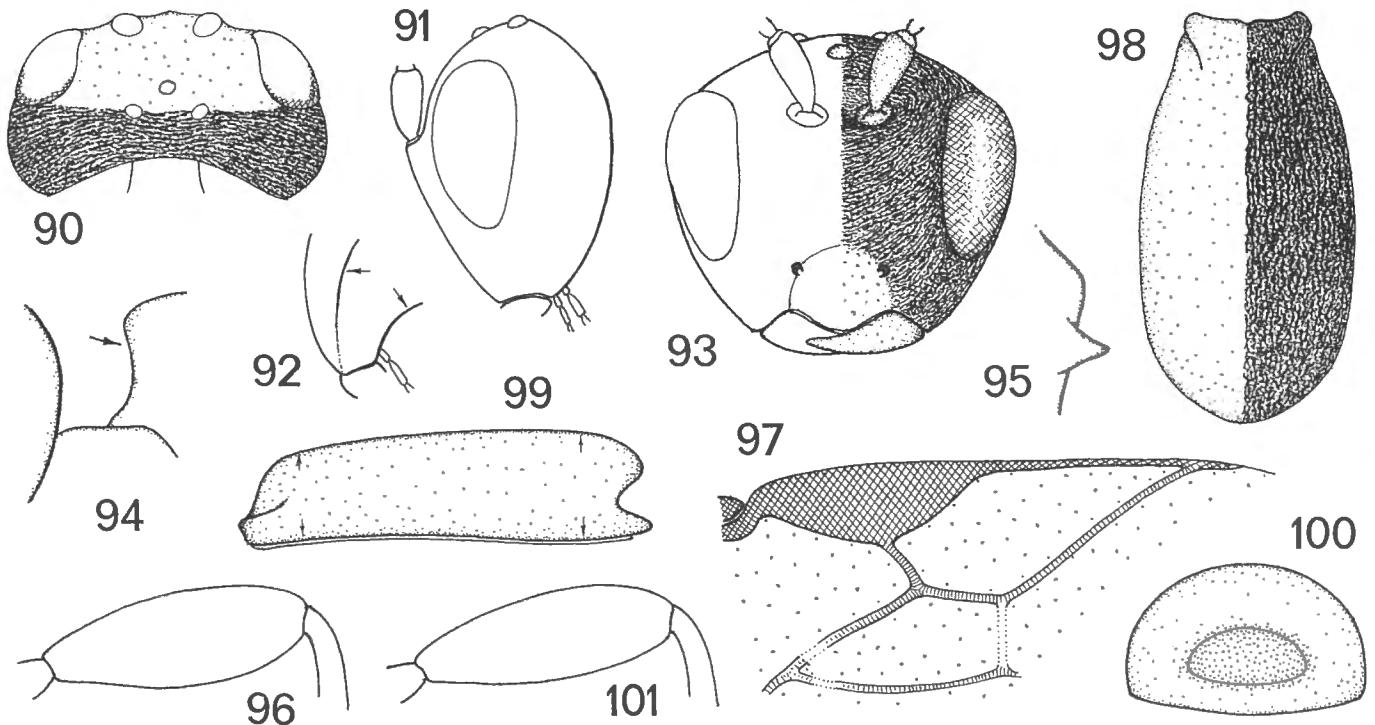
Chelonus microphthalmus (sic!) WESMAEL, 1838: Nouv. Mém. Acad. Bruxelles 11: 157 "♀" = ♂ (syntype series 1 ♂), type locality: "environs de Liège" (Belgium), holotype ♂ in Institut royal des Sciences naturelles de Belgique, Bruxelles, examined and present designation.

Microchelonus microphthalmus (WESMAEL): PAPP, 1967 Acta Zool. Hung. 13: 207 comb.n. - SHENEFELT, 1973: 892 (literature up to 1967 and distribution). TOBIAS, 1986: 333 (in key, misinterpreted).

Microchelonus dilatatus PAPP, 1971: Acta Zool. Hung. 17: 80 ♀, type locality: "Čojbalsan aimak: between Somon Chalchingol and Chamardavaa ul, 600 m" (Mongolia), holotype ♀ in Természettudományi Múzeum, Budapest, examined; syn.n.

The single male = female sensu WESMAEL) syntype was designated as the holotype because WESMAEL indicated in his original description (WESMAEL l.c.): "je ne possède qu'une femelle de cette espèce:..."

Description of the holotype ♂. - Body 3.8 mm long. Head in dorsal view transverse (Fig. 90), 1.87 times as broad as long, temple somewhat bulging i.e. head between temples broader than between eyes; temple rounded, occiput excavated, eye somewhat shorter than temple. Ocelli small, round, distance between fore and hind ocelli somewhat greater than diameter of an ocellus, OOL as long as POL. Eye in lateral view (Fig. 91) slightly more than twice as high as wide, temple somewhat wider than eye. Face clearly twice as wide as high, inner margin of eyes just diverging. Distance between tentorial pits equal to that between lowest point of eye and tentorial pit. Malar space as long as basal width of mandible. Lower margin of clypeus convex. Hypostomal and temporal carinae not meeting each other (Fig. 92; see arrows). Face horizontally and head above transversely strio-rugose (Fig. 93), temple rather longitudinally striate. Clypeus finely punctate, shiny. - Antennae broken, right antenna with eleven and left antenna with seven flagellomeres (according to the original description antenna with twenty antennomeres). First flagellomere slightly more than twice as long as broad.



Figs 90-101. — *Microchelonus microphthalmus* (WESMAEL): 90: head in dorsal view; 91: head in lateral view; 92: temporal and hypostomal carinae (see arrows); 93: head in frontal view; 94: anterior part of mesonotum in lateral view; 95: posterior part of propodeum with tubercle; 96: hind femur of male; 97: distal part of right fore wing; 98: carapace of male in dorsal view; 99: carapace of male in lateral view; 100: apical foramen of male carapace; 101: hind femur of female.

Mesosoma in lateral view 1.6 times as long as high, one-sixth less broad between tegulae than breadth of head. Mesonotum in lateral view (Fig. 94) projecting above pronotum and thus rather concave anteriorly (see arrow). Notaulix indistinct. Sternaulix distinct by somewhat rougher rugosity. Mesosoma rugose; mesonotum postero-medially rugose, otherwise subrugulose to uneven and shiny, scutellum anteriorly smooth and shiny with a few small punctures, posteriorly rugo-striate. Propodeum laterally with a pair of rather small tubercles (Fig. 95). - Hind femur thick, 2.7 times as long as broad (Fig. 96). Hind tibia and tarsus equal in length, hind basitarsus as long as tarsomeres 2-4 combined.

Fore wing one-fourth shorter than body. Pterostigma (Fig. 97) three times as long as wide, issuing radial vein just distally from its middle, r1 shorter than width of pterostigma, r3 faintly S-like arched and ending clearly before tip of wing; metacarp somewhat shorter than pterostigma (Fig. 97). N. rec. interstitial; d2 more than three times as long as d1.

Carapace as long as head and mesosoma combined, in dorsal view (Fig. 98) elongate oval, almost twice as long as broad medially; in lateral view (Fig. 99) 3.5 times as long as high behind and slightly higher behind than

basally. Basal converging pair of keels short. Carapace with rather longitudinal and posteriorly weakening rugosity (Fig. 98). Apical foramen of carapace transverse, 2.2 times as wide as high (Fig. 100), end of carapace in lateral view as in Fig. 99. Carapace in ventral view (Fig. 102) apically incurved, i.e. ventral cavity of carapace shorter than carapace itself.

Body black. Mandible and palpi dark brownish. Tegula and legs brown, coxae and trochanters 2-3 blackish. Wings subhyaline to fumous. Pterostigma and veins opaque brownish.

Features deviating from the holotype ♂ in the male specimens. - Body 2.9-4, usually 3.5-3.8, mm long. The features of the males of *M. microphthalmus* seem to be constant. The examined males originating from many localities in the Palearctic Region vary but very little. Deviating features are as follows: (1) Antenna usually with 19, rarely with 20, antennomeres; (2) Head usually 1.8-1.9 times, less usually 1.75-1.8 times as broad as long; (3) Mesonotum more or less entirely rugose with little subrugulose to uneven fields; (4) Posterior rugo-striation of scutellum restricted apically, i.e. scutellum nearly entirely smooth and shiny with a few hairpunctures; (5) r1 shorter than width of pterostigma as well as r2, less

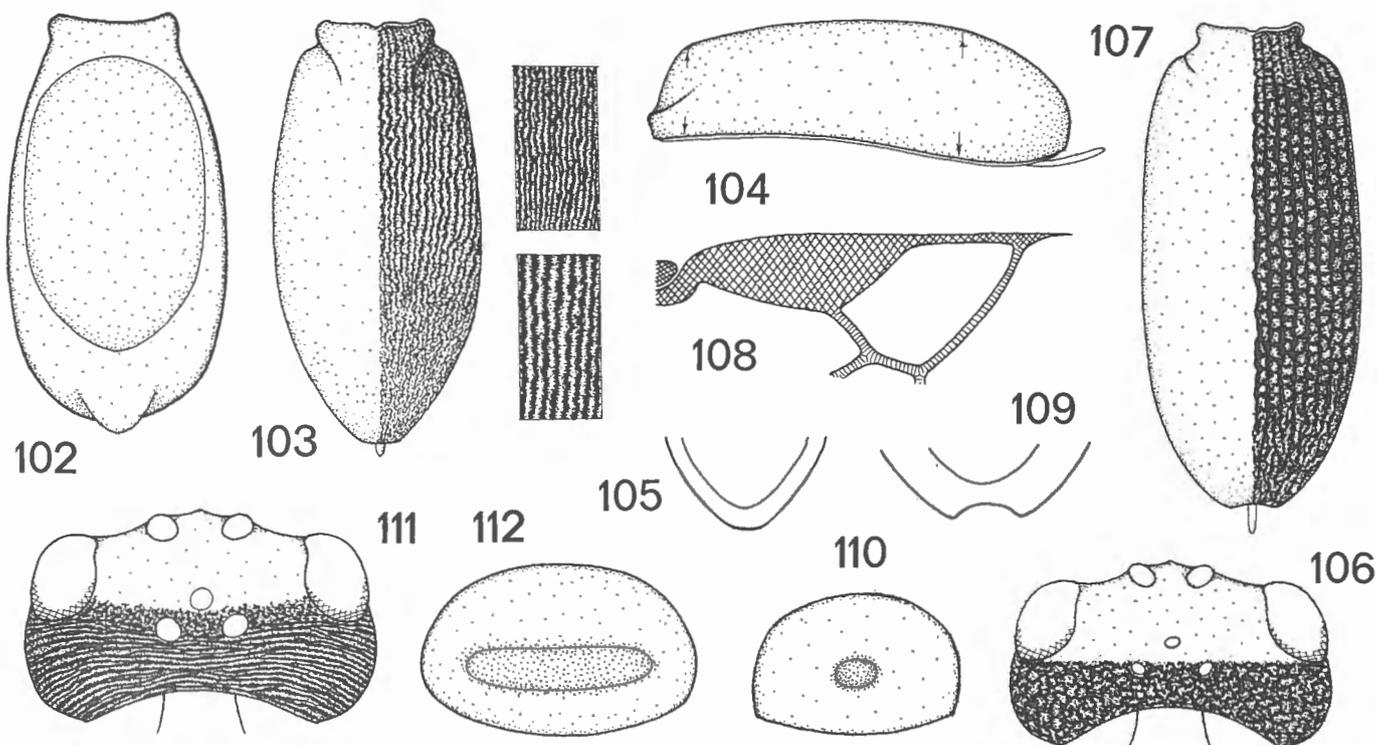
usually as long as width of pterostigma as well as r2; (6) Length to breadth of carapace in dorsal view varies from 1.85 to 2.2, usually 1.9 to 2.1 times as long as broad; length to height of carapace in lateral view varies from 2.8 to 3.5, usually 3.2 to 3.3 times as long as high; (7) Apical foramen of carapace 2.2-2.3 times as wide as high; (8) Rugosity of carapace less frequently weaker or stronger than in Fig. 103.

Description of the female. - Similar to the male. Body (3.1-3.7-4 mm long. Head more transverse, (1.8-)1.9-1.95 as broad as long. Antenna about as long as head, mesosoma and fore half of metasoma. Flagellum distally more or less flattened, flatness extends to flagellomeres in a variable numbers. Mesonotum usually rugose postero-medially and punctate to finely punctate laterally, interspaces shiny; less usually rugose surface is variable in size. Hind femur 2.7-3 times as long as broad (Fig. 101). Carapace in dorsal view (Fig. 103) about twice as long as broad at middle, behind usually bluntly pointed; in lateral view (Fig. 104) 2.8-3.1 times as long as high; in ventral view less incurved apically than that of male

(Fig. 105). Longitudinal rugosity of carapace variable in strength (Fig. 103). Ovipositor sheath as long as hind basitarsus. Colour of body similar to that of male.

Distribution: in Europe, except Scandinavia and the northern region of the European part of Russia, it is a widely distributed and frequent to common species. In the northern part of Europe it is less frequent to sporadic. Outside Europe reported from Kazakhstan, Mongolia and Korea too. Supposedly a frequent Palearctic species.

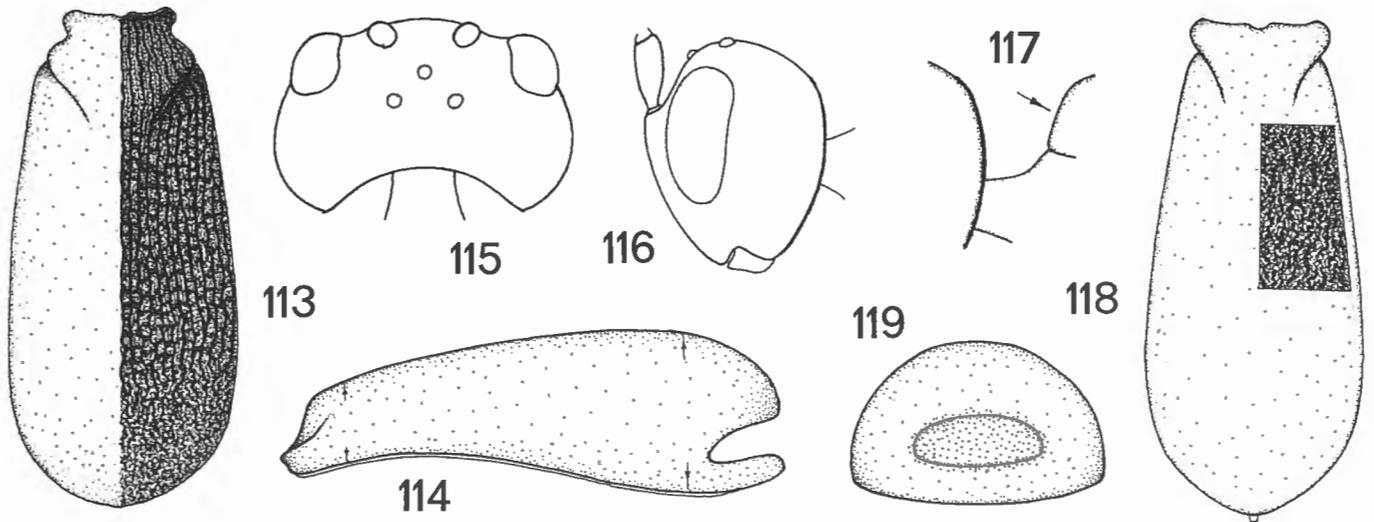
Taxonomic remarks. - 1. *Microchelonus microphthalmus* (WESMAEL) is primarily characterized by its swollen temple (Fig. 90), i.e. head in dorsal view between temples somewhat broader than between eyes; from among the European species of the genus *Microchelonus* besides *M. microphthalmus* this feature suits to three species, *M. azerbaijanicus* (ABDINBEKOVA, 1971), *M. pedator* (DAHLBOM, 1833) and *M. pilicornis* (THOMSON, 1874). The four species are distinguished with the help of the following key:



Figs 102-112. - Figs 102-105: *Microchelonus microphthalmus* (WESMAEL): 102: carapace of male in ventral view; 103: carapace of female in dorsal view with indication of variable longitudinal rugosity; 104: carapace of female in lateral view; 105: apical end of female carapace in ventral view.

Figs 106-110: *Microchelonus pilicornis* (THOMSON): 106: head in dorsal view; 107: carapace in dorsal view; 108: distal part of right fore wing; 109: apical end of female carapace in ventral view; 110: apical foramen of male carapace.

Figs 111-112: *Microchelonus azerbaijanicus* (ABDINBEKOVA): 111: head in dorsal view; 112: apical foramen of male carapace.



Figs 113-119. – Figs 113-114: *Microchelonus azerbaijdzhanicus* (ABDINBEKOVA): 113: carapace of male in dorsal view; 114: carapace of male in lateral view.
 Figs 115-119: *Microchelonus pedator* (DAHLBOM): 115: head in dorsal view; 116: head in lateral view; 117: anterior part of mesonotum in lateral view; 118: carapace in dorsal view with indication of its sculpture; 119: apical foramen of male carapace.

- 1 (2) Head, mesosoma and carapace roughly sculptured (Figs 106, 107). Length of radial cell along metacarp at most half as long as pterostigma (Fig. 108). Antenna unusually thin filiform, its first flagellomere distinctly four times as long as broad apically (♀ ♂). Female carapace apically somewhat excised (Fig. 109); apical foramen of male carapace nearly round, 1.5 times as wide as high (Fig. 110). Eye in dorsal view as long as temple (Fig. 106). ♀ ♂: 4 mm. - Sweden, Hungary, Moldavia. (= *sculptilis* TOBIAS, 1986) ... *M. pilicornis* (THOMSON, 1874)
- 2 (1) Head, mesosoma and carapace less roughly sculptured (Figs 90, 93, 98, 103, 111, 113). Length of radial cell along metacarp at least more than half as long as pterostigma (Figs 97, 122). Antenna less thin filiform, its first flagellomere at most three times as long as broad apically. Female carapace apically not excised (Fig. 105).
- 3 (4) Body large, 6-6.5 mm long (only male is known). Vertex and temple distinctly striated (Fig. 111). Carapace rugo-striated with transverse crenuliform elements (Fig. 113); carapace in lateral view distinctly, i.e. one-third higher posteriorly than anteriorly (Fig. 114). Apical foramen of carapace five times as wide as high (Fig. 112). - Armenia, Azerbaidzhan
 *M. azerbaijdzhanicus* (ABDINBEKOVA, 1971)
- 4 (3) Body less large, at most 4 mm long (♀ ♂). Vertex and temple strio-rugose to rugulose, i.e. not distinctly striated (Fig. 90). Carapace longitudinally rugose (Fig. 98, 103, 118); carapace in lateral view somewhat higher posteriorly than anteriorly (Figs 99, 104, 123-124, see arrows). Apical foramen of male carapace at most three times as wide as high (Fig. 100, 119).
- 5 (6) Mesonotum in lateral view anteriorly projecting above pronotum and thus concave anteriorly (Fig. 94 ↓). Head in dorsal view transverse, 1.8-1.9 times as broad as long, temple somewhat longer than eye (Fig. 90); in lateral view temple also somewhat wider than eye (Fig. 91). Carapace in dorsal view 1.9-2.1 times as long as broad medially, not broadening posteriorly, more rugose longitudinally (Fig. 98, 103). Female antenna with 16 antennomeres. Apical foramen of male carapace less elliptic, i.e. 2.2-2.3 times as wide as high (Fig. 100). ♀ ♂: 3.5-4 mm. - Europe, Palaeartic Asia
 *M. microphthalmus* (WESMAEL, 1838)
- 6 (5) Mesonotum in lateral view clearly declivous anteriorly (Fig. 117 ↓). Head in dorsal view less transverse, 1.6-1.7 times as broad as long, temple distinctly longer than eye (Fig. 115); in lateral view temple also distinctly, i.e. nearly twice as wide as eye (Fig. 116). Carapace in dorsal view 2.1-2.35 times as long as broad behind, clearly broadening posteriorly, less rugose longitudinally (Fig. 118). Female antenna with 21-23 antennomeres. Apical foramen of male carapace elliptic, 2.4-2.8 times as wide as high (Fig. 119). ♀ ♂: 3.3-4 mm. - Europe
 *M. pedator* (DAHLBOM, 1833)

2. *Microchelonus exilis* MARSHALL sensu TOBIAS, 1976 and 1986 is identical with *M. microphthalmus* (WESMAEL) and *M. excavatus* TOBIAS, 1972 (Insects of Mongolia 1: 608 ♀, type locality: Ul'ianovsk, Russia, holotype in Zoological Museum Sankt Petersburg, examined) is a junior synonym of *M. exilis* MARSHALL, 1885; **syn.n.**

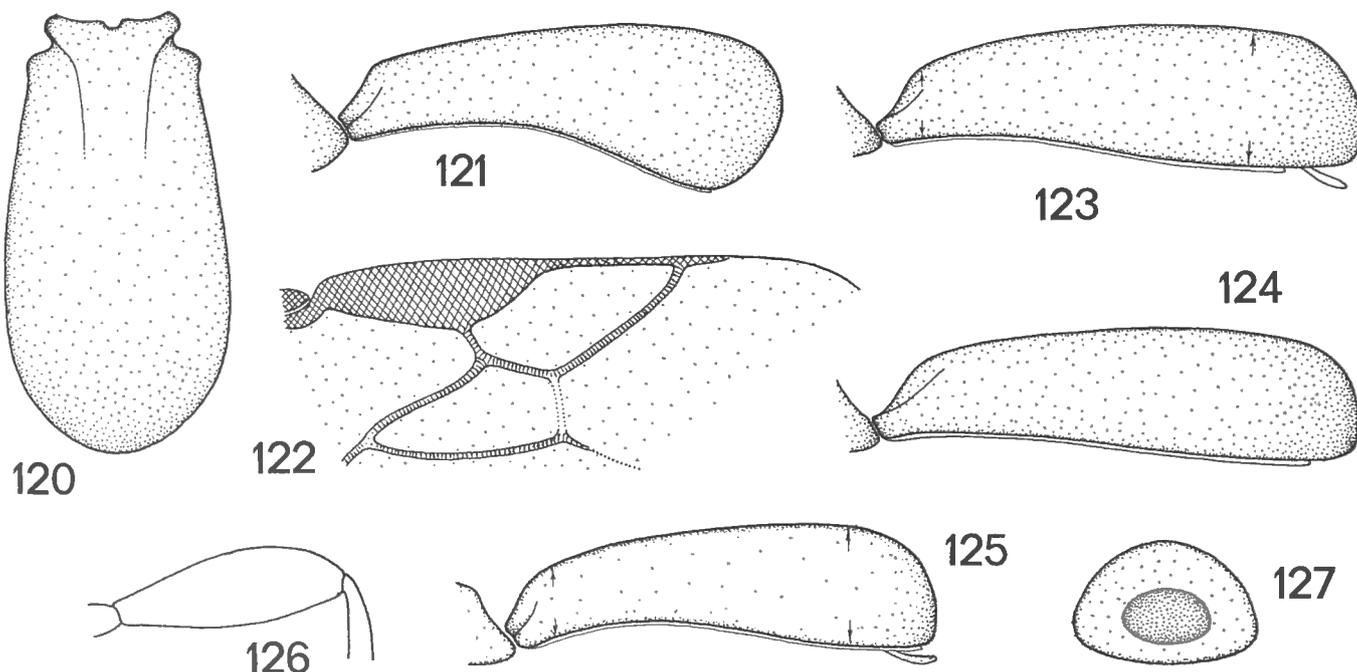
Microchelonus sulcatus (JURINE)

Chelonus sulcatus JURINE, 1807: Nouv. Méth. Class. Hym. Dipt. p. 291 ♀ (syntype series ?) Plate 12 fig 41, type locality? (Switzerland?), syntype lost (or latent?). - WESMAEL, 1835: 220 and 1838: 158.

Microchelonus sulcatus (JURINE): PAPP, 1967: 207 comb.n. - SHENEFELT, 1973: 904 (literature up to 1971 and distribution).

C. WESMAEL (1835: 220) reported this species from Belgium on the basis of a single female (?) specimen ("je n'ai qu'un seul individu de cette espèce;...") its sex status is indicated in the Latin diagnosis by him; in 1838 (p. 158) he said that the taxonomic position of this species is doubtful ("assez douteux").

I studied the specimen in question and established that it represents a male of a species belonging to the genus *Ascogaster*, its full name is *A. quadridentata* WESMAEL, 1835. I labelled this male specimen accordingly.



Figs 120-127. - Figs 120-121.: *Chelonus canescens* WESMAEL: 120: carapace of male in dorsal view; 121: carapace of male in lateral view.

Figs 122-124: *Microchelonus pedator* (DAHLBOM): 122: distal part of right fore wing; 123-124: carapace in lateral view: ♀ (123) and ♂ (124).

Figs 125-127: *Microchelonus gravenhorstii* (NEES): 125: carapace of female in lateral view; 126: hind femur; 127: apical foramen of male carapace in frontal view.

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