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The Alysiinae (Hym. Braconidae) parasites of the Agromyzidae (Diptera)

VI. The parasites of *Cerodontha* RONDANI s. l.[1]

With textfigures 186–209

Contents

Introduction

Five parts of this paper have already appeared in this journal (GRIFFITHS, 1964, 1966a, 1966b, 1967 and 1968). The present sixth part deals with the parasites of *Cerodontha* RONDANI sensu lato, a monophyletic group whose larvae are associated exclusively with monocotyledonous host-plants. This genus has for some time been the subject of detailed study by Dr. J. T. NOWAKOWSKI of the Polish Academy of Sciences, and a preliminary summary of his conclusions has recently been published (NOWAKOWSKI, 1967). The nomenclature for host species used in this paper has been revised to accord largely with that proposed by NOWAKOWSKI. Until recently some of the subgenera now included in *Cerodontha* s.l. were considered as subgenera of "*Phytobia*", but NOWAKOWSKI (1962) clearly demonstrated that this concept was heterogeneous. The generic name *Phytobia* is now used in a restricted sense to include only those species whose larvae mine

[1] Part I in Beitr. Ent., **14**, 823–914; 1964. – Part II in Beitr. Ent., **16**, 551–605; 1966. – Part III in Beitr. Ent., **16**, 775–951; 1966. – Part IV in Beitr. Ent., **17**, 653–696; 1967. – Part V in Beitr. Ent., **18**, 5–62; 1968.

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in the cambium of trees (= *Dendromyza* HENDEL). This is now the only genus of Agromyzidae with known Alysiinae parasites which I have not yet treated in this series of papers. Whether suitable material will be available in the near future to enable me to remedy this omission is not yet clear.

I have been able to provide in this part revised keys to the outstanding groups of the large and difficult genus *Chorebus* HALIDAY, as previously promised.

Acknowledgements to the various persons who have helped me with material for this paper have already been given in previous parts. I also wish to express my special thanks to Dr. J. T. NOWAKOWSKI for his assistance in clarifying the identity and nomenclature of the host species.

The abbreviations used in this paper were explained in the introduction to Part II (GRIFFITHS, 1966a), except for the following addition: USNM — United States National Museum, Washington, D. C., U.S.A.

Notes on the bases of the measurements and ratios in the tables of biometric data have been given in Part I (GRIFFITHS, 1964, page 904).

Previous Records

As in previous parts of this paper I have prepared a table below explaining the discrepancies between my list of host records and the list given by FULMEK (1962): this table completes my reassessment of all records of Alysiinae parasites of Agromyzidae given in that work. The comments in the table exclude changes in the generic nomenclature which affect nearly all the names (both of hosts and parasites). A few old records which are in conflict with confirmed records must be rejected as not being based on any good authority, although I have not seen the material on which they were based.

Table 24
Earlier Records of Alysiinae parasites of *Cerodontha* s.l. (after FULMEK, 1962) with comments thereon

Host	Parasite	Comments
Cerodontha sp.	*Rhizarcha lestes* NIXON	host was *Scaptomyza graminum* FALLÉN (Drosophilidae): see footnote 8 in Part III (GRIFFITHS, 1966b, page 893).
Phytobia incisa MEIGEN	*Chorebus uliginosa* HALIDAY	not accepted (parasite of *Hydrellia*, Ephydridae)
	Dacnusa sp.	record too imprecise to be of value
	Rhizarcha stramineipes THOMSON	not accepted (*Dacnusa stramineipes* (HALIDAY) has a long ovipositor and can hardly be a parasite of a leaf-miner).
Phytobia iraeos GOUREAU	*Dacnusa raissa* NIXON	accepted: the prior name *Chorebus flavipes* (GOUREAU) is used for the parasite in this paper.
	Rhizarcha maculipes THOMSON	host was *C.* (*Dizygomyza*) *iridis* HENDEL
Phytobia morosa MEIGEN	*Alysia truncator* NEES	not accepted (*Alysia* spp. are parasites of Calliphoridae)
Phytobia pygmaea MEIGEN	*Dacnusa asramenes* NIXON	accepted
	Rhizarcha stramineipes THOMSON	not accepted (*Dacnusa stramineipes* (HALIDAY) has a long ovipositor and can hardly be a parasite of a leaf-miner).
Phytobia sönderupi HERING	*Dacnusa morella* NIXON	accepted (but spelling should be *merella*): the host name is considered synonymous with *C.* (*Dizygomyza*) *caricicola* HERING in this paper.
	Rhizarcha stramineipes HALIDAY	not accepted

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Dapsilarthra Förster

Dapsilarthra sylvia (Haliday)

In addition to the records of this species from other host genera given in Parts II, III and V, I have seen the following specimens bred from *Cerodontha* hosts.

Cerodontha (*Butomomyza*) *angulata* Loew — 1 ♀ from larva 30. ix. 64 on *Carex silvatica*, Clapham, Yorks., England, em. 16. iv. 65 (GCDG).

Cerodontha (*Butomomyza*) *caricivora* Groschke — 1 ♀ from larva 26. ix. 65 on *Carex silvatica*, Kiczera, Bieszczady, Poland, em. xii. 65, leg. Nowakowski (PAN). 1 ♀ from larva 8. x. 65 on *Carex silvatica*, Hulskie, Otryt, Poland, em. 16. iii. 66, leg. Nowakowski (PAN).

Cerodontha (*Poemyza*) *pygmaea* Meigen — 1 ♀ from puparium 15. vii. 64 on *Melica nutans*, Żukowo, distr. Kartuzy, Poland, em. 15. viii. 64, leg. Nowakowski (PAN).

Dapsilarthra balteata (Thomson)

In addition to the records of this species from other host genera given in Parts II, III and V, I have seen the following material bred from *Cerodontha* subgenus *Poemyza*.

Cerodontha (*Poemyza*) *pygmaea* Meigen — 1 ex. from puparium 27. viii. 60 on *Arrhenatherum elatius*, Woodwalton Fen, Hunts., England, em. 9. ix. 60 (BM): 1 ♀ from puparium 12. ix. 60 on *Dactylis glomerata*, same locality, em. 26. iii. 61 (GCDG). 1 ♀ from puparium 14. viii. 35 on *Festuca gigantea*, Warsow, near Neukalen, Mecklenburg, Germany, em. 10. iii. 36, leg. Buhr (GCDG). 1 ♂ from puparium 21. vi. 64 on *Dactylis glomerata*, Warszawa-Pyry, Kabackie Forest, Poland, em. 2. ix. 64, leg. Nowakowski (PAN): 2 ♀♀ from puparia 17. vi. 64 on *Deschampsia caespitosa*, same locality, em. 16. vii and 30. viii. 64, leg. Nowakowski (PAN). 1 ♀ from puparium 11. vi. 64 on *Dactylis glomerata*, Warszawa-Młociny, em. 18. vii. 64, leg. Nowakowski (PAN). 2 ♂♂ from larvae and puparia 9. vii. 66 on *Deschampsia caespitosa*, Wierzba, near Popielno, Piska Forest, Poland, em. 28. vii. 66, leg. Nowakowski (PAN).

Cerodontha (*Poemyza*) *incisa* Meigen — 3 ex. from puparia 21. vi. 61 on *Phalaris arundinacea*, Woodwalton Fen, Hunts., England, em. 21. vii. 61 and 21. ix. 61 (2 ex.) (GCDG and BM). 1 ex. from puparium 31. viii. 54 on *Phalaris arundinacea*, Broxbourne, Essex, England, em. 30. x. 54 (BM). 1 ♂ from puparium 31. vii. 66 on *Agropyron repens*, Otwock Wielki, near Warszawa, Poland, em. 25. ix. 66, leg. Nowakowski (PAN). 1 ♂ from puparium 16. vi. 66 on *Calamagrostis canescens*, Sieraków reservation, Kampinoska Forest, Poland, em. 25. vii. 66, leg. Nowakowski (PAN).

The records for Woodwalton Fen have been previously published (Griffiths, 1963). Königsmann (1959) has already recorded *pygmaea* as a host.

Dapsilarthra fuscula sp. nov.

This species is very similar to *D. rufiventris* (Nees), and may be compared with the description of that species in Königsmann (1959) as follows.

Colour much darker. Palpi ochreous yellow. Labrum red-brown or almost black. Clypeus black. Antennae entirely dark. Legs ochreous yellow or yellow-brown, with the middle and hind coxae strongly infuscated, becoming virtually black towards their base. Gaster entirely dark.

29 and 31 antennal segments (2 ♀♀). Mesoscutum with some fairly dense pubescence on its anterior face, although its dorsal surface is almost bare and strongly shining (as in *rufiventris*): notaulices with only their lateral extensions

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distinct, not extending longitudinally on the dorsal surface of the mesoscutum. Ovipositor (♀) rather long, as in *rufiventris*, slightly projecting beyond the apical tergite in the retracted position.

Wing as in *rufiventris* (fig. 55), with vein *2r* very short.

Body length: 2.2 mm. Wing length: 2.7—3.0 mm. Wing spread: 5.7 to 6.5 mm.

Holotype ♀ from puparium 12. x. 66 of *Cerodontha* (*Poemyza*) *tatrica* NOWAKOWSKI on *Festuca carpatica*, Kraków ravine, Tatry, Poland, em. xii. 66, leg. NOWAKOWSKI (PAN). Paratype ♀ from puparium 6. x. 65 of *Cerodontha* (*Dizygomyza*) *caricicola* HERING on *Carex silvatica*, Górna Solnika reservation, Bieszczady, Poland, em. 11. iii. 66, leg. NOWAKOWSKI (GCDG).

Although very similar to the well-known *D. rufiventris* (NEES), I think that these insects must be regarded as a distinct species on account of their very different coloration. They are also larger than any specimen of *rufiventris* which I have seen, although too much reliance should not be placed on this character as the size variation found in series of *Dapsilarthra* species is often very considerable.

In all published keys to *Dapsilarthra* (including that in Part II of this paper, page 555) this new species will run to the same couplet as *rufiventris* by virtue of its wing venation. I consider that it should be regarded as the sister-species of *rufiventris*, being clearly synapomorph with that species in respect of the short vein *2r* and the long ovipositor.

Dacnusini

Laotris NIXON

Laotris striatula (HALIDAY)

Alysia (*Dacnusa*) *striatula* HALIDAY, 1839
Dacnusa striatula (HALIDAY), MARSHALL, 1891, 1895 and 1897, NIXON, 1937
Laotris striatula (HALIDAY), NIXON, 1943 and 1954, GRIFFITHS, 1964

Colour. Palpi ochreous or brownish. Labrum yellow-brown or brown. Clypeus black, like the face. Centre of mandibles red-brown. Antennae entirely dark. Legs varying from deep yellow to testaceous or red-brown, with the tarsi, the apex of the hind tibiae and occasionally the hind coxae somewhat infuscated. Gaster dark, at most with tergites 3 and 4 red-brown.

Morphology. Antennal segments: ♂, 26—28; ♀, (24)—25—28. Palpi of moderate length (see the table of biometric data). Mandible (fig. 37) not expanded, with four teeth of which tooth 3 is long and pointed, but tooth 2 relatively small and inconspicuous (contrast *Chorebus*, in which tooth 2 is always the longest tooth). Face punctate, densely covered with fine pubescence which is directed mostly inwards over its centre but downwards along the eye-margins.

Thorax elongate, about 1.5 times as long as high. Pronotum with a large medial pit: its sides are largely bare, with only a little fine pubescence below the oblique suture; this suture is distinctly costate, but the surface above it is virtually smooth and strongly shining. Mesoscutum with its anterior face rough-

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ened, with fine, rather long pubescence covering almost its entire surface (but tending to become sparse on the posterior half of the lateral lobes): notaulices well developed as rugose furrows at least anteriorly, sometimes almost reaching the posterior fovea: usually a smooth groove along the centre-line of the mesoscutum continues forward from the posterior fovea. Mesepisternum with a broad, conspicuously rugose-costate precoxal suture, which extends virtually to its hind margin: epicnemial suture less conspicuous, only weakly costate. Entire surface of metapleuron, propodeum and petiole strongly sculptured: the base of the hind coxa is also distinctly sculptured. Metapleural pubescence sparse and fine (compare fig. 16), with little differentiation in the direction of the hairs. Propodeum with only very fine, inconspicuous pubescence. Petiole usually slightly widened towards its apex, with only sparse inconspicuous pubescence. Surface of tergite 3 almost entirely longitudinally striate, with some fine pubescence at least at its sides. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Wing (fig. 186) with cell $2R_1$ rather elongate; vein R_s sinuate; $1m-cu$ rejected from cell R_s; cell *2Cu* closed by Cu_{1b} at its lower distal corner.

Breeding records

Host — *Cerodontha* (*Dizygomyza*) *luctuosa* MEIGEN (= *effusi* KARL)

25 ex. from puparia on *Juncus effusus*, Stuttgart (Wildpark and Feuerbach Tal), Germany, em. 10—20. xii. 53, leg. GROSCHKE (STGT and GCDG). 3 ex. from larvae and puparia 10 to 15. vii. 64 on *Juncus effusus*, Sieraków reservation, Kampinoska Forest, Poland, em. 22. vii—7. viii. 64, leg. NOWAKOWSKI (PAN). 2 ♂♂, 2 ♀♀ from puparia 6. xi. 66 on *Juncus effusus*, Palmiry, Kampinoska Forest, em. 6—10. ii. 67, leg. NOWAKOWSKI (PAN). 5 ex. from larvae and puparia 30. vii. 64 on *Juncus effusus*, Mirachowo, distr. Kartuzy, Poland, em. 17. viii—17. ix. 64, leg. NOWAKOWSKI (PAN). 1 ex. from larva 25. vii. 64 on *Juncus effusus*, Żukowo, distr. Kartuzy, em. 10. viii. 64, leg. NOWAKOWSKI (PAN). 1 ex. from larva 23. vii. 64 on *Juncus effusus*, Górki Wschodnie, near Gdansk, Poland, em. 17. viii. 64, leg. NOWAKOWSKI (PAN).

Hitherto this has been the only known species of *Laotris*.

Laotris rupestris sp. nov.

Similar to *L. striatula* (HALIDAY), with which it may be compared as follows.

Colour darker. Palpi and labrum dark brown. Legs brown with all coxae virtually black. Gaster entirely dark.

Morphology. 28 antennal segments (♀). Mandibles similar to those of *striatula*, but virtually 3-toothed, with the additional tooth (tooth 2 in *striatula*) represented only by a dilation at the base of the long central tooth.

Sides of pronotum almost completely bare. Metapleuron with most of its surface almost smooth and strongly shining, but there is some coarse rugose sculpture adjacent to the hind coxa. Propodeum and petiole strongly sculptured throughout, as in *striatula*. Tergite 3 with distinct longitudinal striation only on about its basal half, with fine pubescence sparsely distributed over most of its surface.

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Host — *Cerodontha* (*Dizygomyza*) sp.

Holotype ♀ from puparium 12. x. 66 on *Carex sempervirens*, Kraków Ravine, Tatry, Poland, em. 27. i. 67, leg. NOWAKOWSKI (PAN).

I am convinced that this specimen represents a second species of *Laotris*, as the smooth appearance of its metapleuron is unlike that of any specimen of *striatula* which I have seen. In other respects the two species are very similar.

Exotela FÖRSTER

Exotela flavicoxa (THOMSON)

Dacnusa (*Dacnusa*) *flavicoxa* THOMSON, 1895
Dacnusa melanocera THOMSON sensu NIXON, 1937 (? *Dacnusa* (*Dacnusa*) *melanocera* THOMSON, 1895)
Antrusa melanocera (THOMSON) sensu NIXON, 1943 and 1954
Exotela flavicoxa (THOMSON), GRIFFITHS, 1964 and 1966a

I have already given a description of this species in Part II, where I recorded it from several hosts belonging to the *Agromyza nigripes* group and *Cerodontha* (*Dizygomyza*) *incisa* MEIGEN. The complete records known to me for *Cerodontha* hosts are as follows.

Host 5 — *Cerodontha* (*Poemyza*) *incisa* MEIGEN

1 ♀ from larva 21. vi. 61 on *Phalaris arundinacea*, Woodwalton Fen, Hunts., England, em. 10. vii. 61 (GCDG). 2 ♂♂ from larvae 5. ix. 60 on *Phalaris arundinacea*, Ash Vale, Surrey, England, em. 13 and 17. iii. 61 (GCDG). 2 ♀♀ from puparia 14. viii. 35 on *Phalaris arundinacea*, Warsow/Neukalen, Mecklenburg, Germany, em. 27. viii and 1. x. 35, leg. BUHR (GCDG). 1 ♂ from *Calamagrostis epigejos*, Rostock-Mönkweden, Mecklenburg, em. 11. viii. 36, leg. BUHR (GCDG). 3 ♀♀ from puparia 28. vi. 56 on *Calamagrostis epigejos*, Sieraków, Kampinoska Forest, Poland, em. 22—23. iv. 57, leg. NOWAKOWSKI (PAN): 1 ♀ from puparium 26. vii. 56, same plant and locality, em. 29. iv. 57, leg. NOWAKOWSKI (PAN): 2 ♂♂ from larvae 16. vi. 66 on *Calamagrostis arundinacea*, same locality, em. 5. vii. 66, leg. NOWAKOWSKI (PAN): 1 ♂ from puparium 16. vi. 66 on *Calamagrostis canescens*, same locality, em. 17. ii. 67, leg. NOWAKOWSKI (PAN). ♂♀ from puparia 31. vii. 66 on *Agropyron repens*, Otwock Wielki, near Warszawa, Poland, em. 12 and 18. viii. 66, leg. NOWAKOWSKI (PAN). 1 ♂ from larva 13. vii. 66 on *Agropyron repens*, Wierzba, near Popielno, Piska Forest, Poland, em. 28. vii. 66, leg. NOWAKOWSKI (PAN). 1 ex. from puparium 26. vi. 66 on *Agropyron repens*, Mierzeja Wiślana, Kąty Rybackie, Poland, em. 10. vii. 66, leg. NOWAKOWSKI (PAN). 1 ♂ from larva 24. vi. 66 on *Poa trivialis*, Mierzeja Wiślana, Krynica Morska, em. 15. ii. 67, leg. NOWAKOWSKI (PAN).

Host 6 — *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

1 ♀ from puparium 16. vii. 61 on *Deschampsia caespitosa*, Chippenham Fen, Cambs., England, em. 17. vii. 61, leg. SPENCER (GCDG). 1 ♀ from puparium 14. viii. 35 on *Festuca gigantea*, Warsow, near Neukalen, Mecklenburg, Germany, em. 24. viii. 35, leg. BUHR (GCDG). 4 ♀♀ from puparia 3. viii. 65 on *Deschampsia caespitosa*, Stadtwald, Mühlhausen, Thuringia, Germany, em. 14, 18. viii. 65 and 7—8. iii. 66, leg. BUHR no. 2558 (GCDG). 1 ♀ from puparium on *Dactylis glomerata*, Berlin-Dahlem, Germany, em. 30. ix. 65, leg. HERING no. 7475 (GCDG). 14 ex. from puparia 17 and 26. vi. 64 on *Dactylis glomerata*, Warszawa-Pyry, Kabackie Forest, Poland, em. 30. vi—19. viii. 64, leg. NOWAKOWSKI (PAN): 1 ex. from larva 21. vi. 64 on *Deschampsia caespitosa*, same locality, em. 14. vii. 64, leg. NOWAKOWSKI (PAN). 4 ex. from puparia 30. vi. 66 on *Dactylis glomerata*, Warszawa-Bielany, em. 5—22. vii. 66, leg. NOWAKOWSKI (PAN). 4 ex. from puparia 15. vii. 66 on *Calamagrostis arundi-*

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nacea, Strzałowo reservation, Piska Forest, Poland, em. 25. vii (3 ex.) and 29. viii. 66, leg. NOWAKOWSKI (PAN): 1 ♀ from puparium on *Dactylis glomerata*, same date and locality, em. 22. vii. 66, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 9. vii. 66 on *Deschampsia caespitosa*, Wierzba, near Popielno, Piska Forest, em. 22. vii. 66, leg. NOWAKOWSKI (PAN). 13 ex. from puparia 3. vii. 56 on *Dactylis glomerata*, Warszawa-Młociny, Poland, em. 6. vii—10. viii. 56, leg. NOWAKOWSKI (PAN): 5 ex. from larvae and puparia 11. vi. 64, same plant and locality, em. 23. vi—20. viii. 64, leg. NOWAKOWSKI (PAN). 2 ♀♀ from larvae 18. vi. 66 on *Deschampsia caespitosa*, Sieraków reservation, Kampinoska Forest, Poland, em. 5. vii and 16. ix. 66, leg. NOWAKOWSKI (PAN).

Host 7 — *Cerodontha* (*Poemyza*) *phragmitidis* NOWAKOWSKI (= *atra* auctt.)

1 ♀ from larva 13. vii. 66 on *Phragmites communis*, Wierzba, near Popielno, Piska Forest, Poland, em. 31. viii. 66, leg. NOWAKOWSKI (PAN).

Host 8 — *Cerodontha* (*Poemyza*) *phalaridis* NOWAKOWSKI

1 ♂ from larva 18. vi. 66 on *Phalaris arundinacea*, Sieraków reservation, Kampinoska Forest, Poland, em. 10. vii. 66, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 25. vi. 66 on *Phalaris arundinacea*, Mierzeja Wiślana, Krynica Morska, Poland, em. 30. viii. 66, leg. NOWAKOWSKI (PAN).

Host 9 — *Cerodontha* (*Crastemyza*) *flavocingulata* STROBL

1 ♀ from larva 29. vi. 65 on *Poa trivialis*, Warszawa-Pyry, Kabackie Forest, Poland, em. vii. 65, leg. NOWAKOWSKI (PAN). 1 ex. from larva 3. vii. 56 on *Dactylis glomerata*, Warszawa-Młociny, em. 9. v. 57, leg. NOWAKOWSKI (PAN).

The study of the considerable material bred from *C.* (*P.*) *pygmaea* MEIGEN listed above has convinced me that there is no justification for regarding it as representing a distinct species, as was done in my key to *Exotela* in Part II (GRIFFITHS, 1966a). The average number of antennal segments in material bred from this host (29 in the male, and 27—28 in the female) is lower than that of material bred from *C.* (*P.*) *incisa* MEIGEN and the several *Agromyza* hosts recorded in Part II, but, since the host is smaller, this difference may be due merely to the correlation of the number of antennal segments with size.

It thus seems likely that *Exotela melanocera* (THOMSON) (= *Antrusa persimilis* NIXON) is a synonym of *flavicoxa*, although there remains a further point to be clarified. The lowest number of antennal segments in the material before me bred from *C.* (*P.*) *pygmaea* MEIGEN is 25 (♀). However NIXON (1954) states that the peak number of segments in his material of "*Antrusa persimilis*" was 24 (♀), and the lectotype of *melanocera* also has only 24 segments (see Appendix V in Part I). Until bred material is available which fully corresponds with these very small specimens, I am not proposing to establish a formal synonymy.

The range of antennal segments in the bred material which I have non accepted as *flavicoxa* (from all hosts) may be expressed as follows: ♂, (27)—29—34; ♀, (25)—26—32.

Dacnusa HALIDAY

There are no *Dacnusa* species known as specific parasites of *Cerodontha* hosts, but a few specimens have been obtained of two species known also from other host genera.

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Dacnusa adducta (HALIDAY)

In addition to the records of this species from *Liriomyza* hosts given in Part V, I have received the following material bred from a *Cerodontha* species.

Host 2 — *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

1 ♀ from puparium 17. vi. 64 on *Dactylis glomerata*, Warszawa-Pyry, Kabackie Forest, Poland, em. 6. ix. 64, leg. NOWAKOWSKI (PAN). 1 ♂ from larva 11. vi. 64 on *Dactylis glomerata*, Warszawa-Młociny, em. 5. v. 65, leg. NOWAKOWSKI (PAN).

On the limited information available it is not clear whether this is an oligophagous species or a species with a disjunct host distribution.

Dacnusa maculipes THOMSON

In addition to the records of this species bred from other genera of Agromyzidae given in Parts II, III and V, I have seen the following material bred from *Cerodontha* hosts.

Host 55 — *Cerodontha* (*Poemyza*) *calamagrostidis* NOWAKOWSKI

1 ♀ from larva 21. vi. 61 on *Calamagrostis epigejos*, Woodwalton Fen, Hunts., England, em. 23. ix. 61 (GCDG) (host previously recorded as "*Phytobia* (*Poemyza*) *muscina* MEIGEN" in GRIFFITHS, 1963).

Host 56 — *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

1 ♂ from puparium 5. vii. 66 on *Lolium perenne*, Hauswalde, Kreis Kamenz, Saxony, Germany, em. 10. ix. 66, leg. BUHR no. 2960 (GCDG).

Host 57 — *Cerodontha* (*Dizygomyza*) *iridis* HENDEL

2 ex. from puparia 1. ix. 53 on *Iris* sp., Hampstead, London, leg. SPENCER (BM) (host previously recorded as "*Phytobia* (*Dizygomyza*) *iraeos* ROBINEAU-DESVOIDY" in GRIFFITHS, 1956).

This species occurs much more commonly on *Phytomyza*, *Trilobomyza* and *Liriomyza* hosts.

The *Chorebus talaris* group

I include in this concept, here proposed for the first time, the three species treated below and one species of unknown life-history, *C. rhanis* (NIXON). These insects appear synapomorph in respect of their well-defined rugose metapleural swelling which is evenly covered with long, fairly dense pubescence (fig. 20), the presence of sculpturation at least on the base of the hind coxae, and their densely pubescent mesoscutum and petiole. Only one of the four species, the well known *C. talaris* (HALIDAY), seems to be widely distributed. The two new species described below are part of the high altitude fauna of the Tatry mountains, and *rhanis* is so far known only from Scotland.

Chorebus talaris (HALIDAY)

Alysia (*Dacnusa*) *talaris* HALIDAY, 1839 (in part)
Dacnusa talaris (HALIDAY), MARSHALL, 1891 (in part), 1895 (in part) and 1897 (in part), NIXON, 1937
Etriptes talaris (HALIDAY), NIXON, 1943 and 1954
Chorebus talaris (HALIDAY), GRIFFITHS, 1964

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Colour. Palpi deep yellow or yellow-brown. Labrum brown or black. Clypeus black. Centre of mandibles yellow-brown. Antennae entirely dark. Legs ochreous yellow or yellow-brown, with the tarsi (especially the hind tarsi), the hind coxae and the apex of the hind tibiae somewhat infuscated. Gaster entirely dark.

Morphology. Antennal segments: ♂, 30—33; ♀, 30—32. Palpi very long (see the table of biometric data). Mandible (fig. 201) not expanded, with tooth 2 relatively long and pointed but tooth 3 appearing only as a projection from its side. Face shining, weakly punctate, with fine pubescence directed inwards over its centre but downwards along the eye-margins.

Thorax 1.4—1.5 times as long as high. Sides of pronotum smooth, bare and shining centrally, but with some fine pubescence below the oblique suture. Mesoscutum slightly roughened anteriorly, with almost its entire surface densely pubescent: notaulices weak, with only their lateral extensions distinct or only shortly extending longitudinally on the dorsal surface of the mesoscutum. Precoxal suture narrow, only weakly rugose (occasionally virtually smooth). Metapleuron with a conspicuous rugose swelling which is evenly covered with long, fairly dense pubescence (fig. 20): the hind coxa is also rugose at its base. Propodeal pubescence fairly dense, but fine and inconspicuous, not obscuring the very strongly rugose surface beneath. Petiole slightly widened towards its apex, densely covered with fine inconspicuous pubescence. Tergite 3 with conspicuous rugose sculpture, similar to that of the petiole, at its base and with fine hairs distributed over most of its surface. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Wing (fig. 187) with cell $2R_1$ rather elongate; vein R_s strongly sinuate; *1m-cu* well rejected from cell R_s; Cu_{1b} weak.

Breeding records

Host 1 — *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

1 ♀ from puparium 30. viii. 66 on *Brachypodium silvaticum*, Poulavallan, Clare, Ireland, em. 1. ix. 66 (GCDG). 1 ♀ from puparium 9. xi. 24 on *Brachypodium* sp., Cothill, Berks., England, em. 22. v. 25, leg. HAMM (HD). 2 ♀♀ from puparia on *Festuca gigantea*, Mühlhausen, Thuringia, Germany, em. vii. 64, leg. BUHR, HERING no. 2140 (GCDG): 1 ♂ from puparium 19. ix. 66, same plant and locality, em. 27. x. 66, leg. BUHR no. 3197 (GCDG): 2 ♀♀ from puparia 5. viii. 65 on *Dactylis aschersoniana*, same locality, em. 14—15. viii. 65, leg. BUHR no. 2576 (GCDG): 2 ♀♀ from puparia 29. vii. 66, same plant and locality, em. 9. viii. 66, leg. BUHR no. 3073 (GCDG). 1 ♀ from puparium 9. vii. 66 on *Agropyron repens*, Rammenau, Saxony, Germany, em. 2. viii. 66, leg. BUHR no. 3003 (GCDG). 2 ♀♀ from *Dactylis glomerata*, Hedlandet, Södermanland, Sweden, em. 19. vii. 43, leg. LUNDQVIST (LUND). 2 ex. from puparia 24. viii. 65 on *Festuca silvatica*, Szeroki Wierch, Bieszczady, Poland, em. 8. x. 65 and 8. iv. 66, leg. NOWAKOWSKI (PAN). 1 ♂, 2 ♀♀ from puparia 13 and 28. viii. 65 on *Dactylis glomerata*, Cisna, Bieszczady, em. 20. viii. 65 (1 ♀) and 18. iii. 66, leg. NOWAKOWSKI (PAN). 1 ex. from puparium 25. vii. 64 on *Festuca silvatica*, Kartuzy, near Ciche lake, Poland, em. 8. v. 65, leg. NOWAKOWSKI (PAN). 2 ex. from puparia 30. vii. 64 on *Molinia coerulea*, Mirachowo, distr. Kartuzy, em. 3. v. 65, leg. NOWAKOWSKI (PAN). 1 ♀ from puparium 15. vii. 66 on *Calamagrostis arundinacea*, Strzałowo reservation, Piska Forest, Poland, em. 25. vii. 66, leg. NOWAKOWSKI (PAN).

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Host 2 — *Cerodontha* (*Poemyza*) *incisa* MEIGEN

♂♀ from puparia 15. vii. 66 on *Calamagrostis arundinacea*, Suchy Groń, Babia Góra, Poland, em. viii. 66 and 17. iii. 67, leg. NOWAKOWSKI (PAN): 10 ex. from puparia 15. viii. 66 on *Festuca gigantea*, same locality, em. 30. viii—9. ix. 66, leg. NOWAKOWSKI (PAN). 4 ex. from puparia 14—15. viii. 65 on *Calamagrostis arundinacea*, Łopiennik, Bieszczady, Poland, em. 31. viii—3. ix. 65, leg. NOWAKOWSKI (PAN): 3 ex. from puparia 13—14. viii. 65 on *Agropyron repens*, same locality, em. 3—6. ix. 65, leg. NOWAKOWSKI (PAN). 1 ex. from puparium 17. viii. 65 on *Calamagrostis arundinacea*, Falowa, Bieszczady, em. viii. 65, leg. NOWAKOWSKI (PAN). 1 ♂ from puparium 18. viii. 65 on *Agropyron repens*, Cisna, Bieszczady, em. 14. iii. 66, leg. NOWAKOWSKI (PAN). 1 ♀ from puparium 24. viii. 65 on *Festuca silvatica*, Szeroki Wierch, Bieszczady, em. 2. ix. 65, leg. NOWAKOWSKI (PAN). 2 ex. from puparia 21. ix. 64 on *Calamagrostis canescens*, Wilkowska Valley, Łysogóry, Poland, em. 10—12. v. 65, leg. NOWAKOWSKI (PAN).

Host 3 — *Cerodontha* (*Poemyza*) *tatrica* NOWAKOWSKI

1 ♂ from larva 15. viii. 66 on *Calamagrostis arundinacea*, Suchy Groń, Babia Góra, Poland, em. 2. iii. 67, leg. NOWAKOWSKI (PAN). 1 ♂ from puparium 9. ix. 60 on *Calamagrostis arundinacea*, Spadowiec Valley, Tatry, Poland, em. 1. vi. 61, leg. NOWAKOWSKI (PAN).

This species differs from the other species of the *talaris* group by the presence of sculpturation at the base of tergite 3, the longer cell $2R_1$ and the rather elongate mandibles.

***Chorebus subasper* sp. nov.**

Colour. Palpi and labrum yellow. Clypeus dark. Centre of mandibles red-brown. Antennae brownish at their base as far as about the second flagellar segment. Legs uniformly deep yellow, with the hind coxae slightly darker (more or less brown). Gaster entirely dark.

Morphology. 29 antennal segments (♀). Palpi very long (see the table of biometric data). Mandible not expanded, with tooth 2 relatively large (but not so long and pointed as in *talaris*) and tooth 3 appearing as a projection from its side. Face fairly strongly punctate, only weakly shining, with pubescence directed inwards over its centre but downwards along the eye-margins.

Thorax about 1.5 times as long as high. Sides of pronotum with their entire surface sculptured, largely bare and shining, but with some fine inconspicuous pubescence below the oblique suture. Mesoscutum entirely covered with dense pubescence, with rather coarse, punctate sculpture extending over almost its entire surface (particularly conspicuous on its anterior face and central lobe): notaulices weak, distinct anteriorly only. Rugose precoxal suture well developed. Metapleuron as in *C. talaris* (HALIDAY) (compare fig. 20), with a conspicuous rugose swelling which is evenly covered with long, fairly dense pubescence. The hind coxa is also largely covered with rugose sculpture. Propodeal pubescence fairly dense, but fine and inconspicuous, not obscuring the very strongly rugose surface beneath. Petiole slightly widened towards its apex, densely covered with fine inconspicuous pubescence. Tergite 3 almost bare, without any rugosity at its base. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

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Wing (compare fig. 188) with cell $2R_1$ shorter than in *talaris*; vein R_s distinctly sinuate; *1m-cu* rejected from cell R_s; Cu_{1b} weak.

Host — *Cerodontha* (*Poemyza*) *alpina* NOWAKOWSKI

Holotype ♀ from puparium 24. ix. 66 on *Trisetum alpestre*, Kraków ravine, Tatry, Poland, em. 6. iii. 67, leg. NOWAKOWSKI (PAN).

Although lacking sculpturation of tergite 3, this species and *C. asperrimus* sp. nov. (described below) have the thorax more extensively sculptured than in *talaris*. They also clearly differ from that species in having a shorter cell $2R_1$.

***Chorebus asperrimus* sp. nov.**

Similar to *C. subasper* sp. nov., with which it may be compared as follows.

Colour much darker. Palpi dark brown. Labrum and clypeus virtually black. Centre of mandibles red-black. Antennae entirely dark. Legs brown, with the coxae and hind femora virtually black. Gaster entirely dark.

Morphology. Antennal segments: ♂, 35; ♀, 30. Face more strongly sculptured, coarsely and conspicuously rugose. The centre-line of the frons (from the front ocellus) is impressed, and in the holotype (the larger specimen) is indicated by a rugose furrow.

The sculpture on the hind coxa is very coarse and conspicuous, and the middle coxa, middle femur and hind femur are also largely covered with punctate sculpture.

Host — *Cerodontha* (*Poemyza*) *tatrica* NOWAKOWSKI

Holotype ♂ from puparium 14. x. 66 on *Calamagrostis arundinacea*, Kraków ravine, Tatry, Poland, em. 14. iv. 67, leg. NOWAKOWSKI (PAN): paratype ♀ from puparium 24. ix. 66, same plant and locality, em. 24. x. 66, leg. NOWAKOWSKI (GCDG).

The holotype of *C. rhanis* (NIXON), described from Scotland, is a similar dark-legged insect, but I do not think that it can be conspecific with the above Tatry material because its face is only weakly punctate (as in *talaris*), and the sides of the pronotum virtually smooth.

The *Chorebus ovalis/lateralis* complex

I have provisionally adopted the term "*ovalis/lateralis* complex" (see Part I, page 850) for those species of *Chorebus* which have a well-defined rosette of metapleural pubescence (as also in the *C. senilis* group, *C. affinis* group and related species), but with vein Cu_{1b} weak or absent. Species of this complex occur as parasites of most leaf-mining Agromyzidae, and many species have already been treated in Parts II, III and V of this paper. Twelve further species are now recorded as parasites of *Cerodontha* sensu lato, including both the known parasites of subgenus *Cerodontha* sensu stricto and a majority of the known parasites of subgenus *Poemyza*. However only two species of this complex are known to be associated with hosts of the subgenus *Dizygomyza*, in contrast with the *affinis* group and its relatives in which this host distribution is reversed (many species being known as parasites of subgenera *Dizygomyza* and *Butomomyza*, but only

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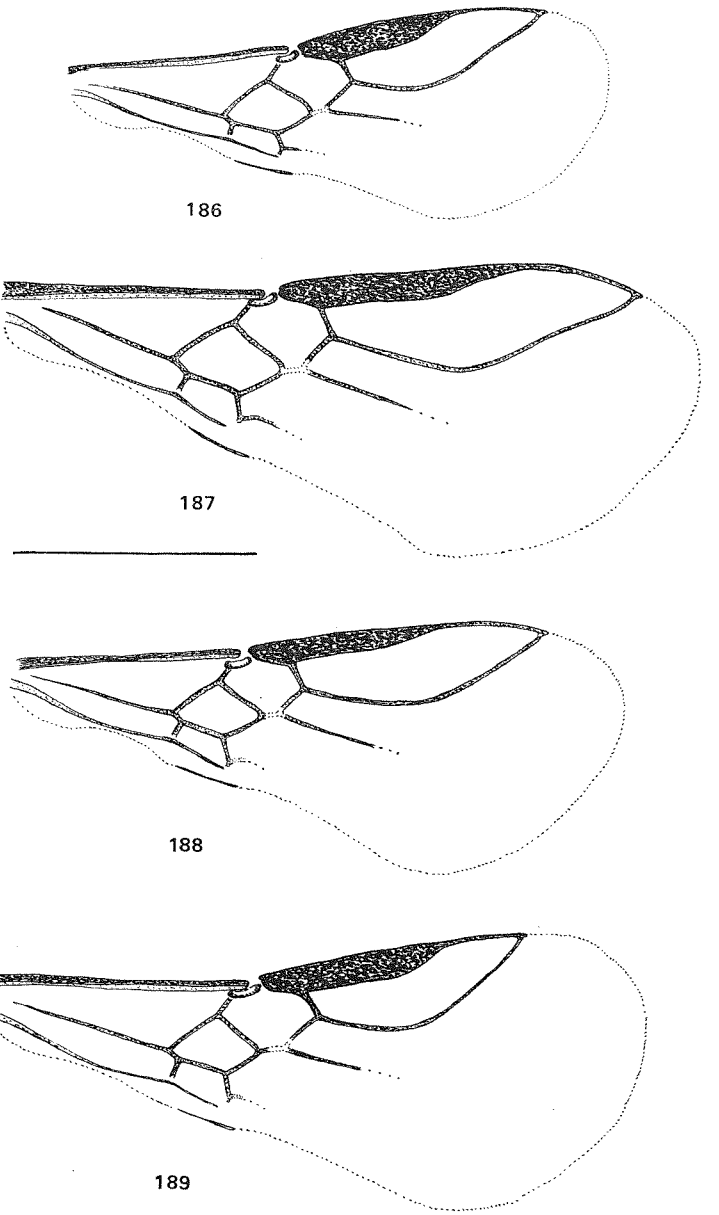

Figs. 186—189. Wings of: 186, *Laotris striatula* (HALIDAY) ♀; 187, *Chorebus talaris* (HALIDAY) ♀; 188, *Chorebus asperrimus* sp. nov. ♀; 189, *Chorebus vitripennis* sp. nov. ♀. (Scale 1 mm.)

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two recorded from *Poemyza* hosts). This strongly suggests a former vicariance between the two groups, which may be of considerable evolutionary interest when it is possible to make a firmer assessment of the phylogenetic relationship between them.

It has not been possible to establish in any detail the relationships between the species of the *ovalis/lateralis* complex, because there has evidently been much convergent evolution of many of the characters important for diagnostic purposes, such as the mesoscutal and petiolar pubescence and the number of antennal segments. One species, described below as *C. difficilis* sp. nov., seems referable to the *alecto* group which contains many species of *Phytomyza*- and *Liriomyza*-parasites (see Parts III and V). Many of the other species also have similar petiolar pubescence to the *alecto* group, but combined (except in *asramenes* and *agraules*) with a much more sparsely pubescent mesoscutum. A firm interpretation of the degree of relationship between most of these species does not seem possible on present information.

It should be noted that rather more overlapping of host ranges occurs in the species of the *ovalis/lateralis* complex associated with *Cerodontha* subgenus *Poemyza* than has been found in the species associated with other genera of Agromyzidae treated in previous parts of this paper. In several bred series two or three closely related species were found to be present. Special care should therefore be taken when studying series bred from these hosts to ensure that they are homogeneous.

In the descriptions which follow the following characters may be assumed whenever nothing to the contrary is stated.

Mesepisternum with a well-defined rugose-costate precoxal suture. Metapleural pubescence dense, forming a rosette around a raised swelling. Wing venation rather uniform in most species (compare figs. 87 and 88), with the pterostigma longer than the metacarp, *1m-cu* clearly rejected from cell R_s, and vein Cu_{1b} weak or absent, so that cell *2Cu* is more or less open at its lower distal corner. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Chorebus flavipes (GOUREAU)

Dacnusa flavipes GOUREAU, 1851
Dacnusa raissa NIXON, 1937 and 1945
Chorebus flavipes (GOUREAU), GRIFFITHS, 1966b

Colour. Palpi and labrum yellow. Clypeus dark. Centre of mandibles yellow-brown. Antennae usually yellow or yellow-brown at their base as far as about the second or third flagellar segment (but with only the scape and pedicel obscurely yellow-brown in the Scottish specimen). Legs yellow except that tarsal segments 5 are contrastingly black. Gaster entirely dark or at most with tergites 3 and 4 brownish.

Morphology. Antennal segments: ♂, (28)—30—32; ♀, 29—32. Palpi long (see the table of biometric data). Mandible not or hardly expanded, clearly 4-toothed but with tooth 3 relatively small. Face weakly punctate.

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Thorax about 1.4 times as long as high. Sides of pronotum bare and smooth centrally, with a little fine pubescence mainly along and below the oblique suture. Mesoscutum with only its anterior face roughened and pubescent, but its dorsal surface smooth, shining and bare apart from a few hairs along the course of the notaulices: notaulices usually distinct anteriorly only (but occasionally extending as weak impressions almost to the posterior fovea). Precoxal suture rather broad. Metapleural swelling strongly rugose-punctate. Metapleural and propodeal pubescence very dense and whitish. Petiole widened towards its apex, with short fine inconspicuous pubescence distributed over most of its surface (except the central part of about its apical half), usually becoming denser towards the apical corners although no tufts are formed (the pubescence is often so inconspicuous that the petiole might at first sight be considered bare). Tergite 3 without basal hairs: the base of tergite 3 is rugose (as in *C. talaris* (HALIDAY)) in the two Stuttgart specimens, but this feature is not shown by the other material. Wing with vein R_s only weakly sinuate.

Breeding records

Host — *Cerodontha* (*Dizygomyza*) *iraeos* ROBINEAU-DESVOIDY

1 ♂ from puparium 28. viii. 65 on *Iris pseudacorus*, Armadale, Skye, Scotland, em. 15. x. 65, leg. SPENCER (GCDG). 5 ♀♀ from puparia 16. vii. 66 on *Iris pseudacorus*, Woodwalton Fen, Hunts., England, em. 26. vii —1. viii. 66 (GCDG). 6 ex. from puparia 25. x and 8. xi. 24 on *Iris pseudacorus*, Oxford, England, em. 14—20. v. 25, leg. HAMM (HD and BM). 2 ♂♂, Stuttgart-Wildpark, Germany, em. 10 and 25. ii. 54, leg. GROSCHKE (STGT). 1 ex. from puparium on *Iris pseudacorus*, Berlin-Grünewald, 1954, leg. HERING no. 6048 (BM). 4 ♂♂ from puparia on *Iris* sp., Copenhagen district, Sealand, Denmark, leg. SCHLICK (KB). 1 ♀ from larva 7. x. 55 on *Iris pseudacorus*, Kazuń, Kampinoska Forest, Poland, em. 16. v. 56, leg. NOWAKOWSKI (PAN). 10 ex. from puparia 27 and 31. vii. 55 on *Iris pseudacorus*, Granica, Kampinoska Forest, em. 31. vii—6. viii. 55, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 19. ix. 54 on *Iris pseudacorus*, Sieraków reservation, Kampinoska Forest, em. 9. v. 55, leg. NOWAKOWSKI (PAN): 1 ex. from puparium 27. ix. 55, same plant and locality, em. 19. v. 56, leg. NOWAKOWSKI (PAN). 1 ex. from puparium 15. ix. 60 on *Iris pseudacorus*, Mątowski Forest reservation, Piekło near Sztum, Poland, em. 20. iv. 61, leg. NOWAKOWSKI (PAN). GOUREAU's (1851) original material was bred from this same host in France.

The synonymy of NIXON's *Dacnusa raissa* was proposed in Appendix VIII in Part III (GRIFFITHS, 1966b).

This species may be recognised by its bare mesoscutum, pale coloration and the inconspicuously pubescent petiole.

Chorebus crenulatus (THOMSON)

Dacnusa (*Dacnusa*) *crenulata* THOMSON, 1895
Dacnusa elegantula NIXON, 1937 and 1945
Chorebus crenulatus (THOMSON), GRIFFITHS, 1964

Colour. Palpi and labrum deep yellow or yellow-brown. Clypeus dark. Centre of mandibles yellow-brown. Antennae more or less entirely dark, at most becoming reddish brown towards their base. Legs largely reddish yellow or yellow-brown, with the hind coxae usually somewhat infuscated. Gaster more or less entirely dark.

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Morphology. Head large and subcubical (1.5—1.6 times as wide as long). Antennal segments: ♂, 30—34; ♀, 26—30. Palpi long (see the table of biometric data). Mandible not expanded, with tooth 2 long and pointed but tooth 3 appearing only as a projection from its side (compare *asramenes*, fig. 202). Face only weakly punctate.

Thorax elongate, about 1.5 times as long as high. Sides of pronotum with fine pubescence mainly along and below the oblique suture. Mesoscutum with its anterior face pubescent and slightly roughened, but its dorsal surface largely smooth and shining, with pubescence only along the course of the notaulices and sparsely on its central lobe (but occasionally this too is almost bare): notaulices well defined, reaching the posterior fovea: often the centre-line of the mesoscutum is impressed to form a longitudinal groove. Metapleural swelling strongly rugose-punctate. Metapleural and propodeal pubescence very dense and whitish. Petiole only slightly widened towards its apex, with dense pubescence covering its entire surface and forming distinct apical tufts (compare fig. 144). Tergite 3 without basal hairs.

Wing with vein R_s weakly sinuate.

Breeding records

Host — *Cerodontha (Cerodontha) denticornis* PANZER

1 ♂ from larva 25. vi. 64 on *Festuca pratensis*, Warszawa-Ochota, Poland, em. 13. vii. 64, leg. NOWAKOWSKI (PAN).

The synonymy of this species was established in Part I (GRIFFITHS, 1964).

This species and *C. diremtus* (NEES) are characterised by the combination of a large subcubical head and a very narrow, elongate thorax. Both these species are parasites of *Cerodontha* sensu stricto, whose long narrow puparia may be found in the leaf-sheaths of various Gramineae. Possibly other species with similar proportions will be discovered, when further material bred from this host-group is obtained. Another characteristic feature of *crenulatus* is the pubescence of the petiole, which is similar to that of *C. asramenes* (NIXON).

Chorebus diremtus (NEES), **comb. nov.**

Alysia diremta NEES, 1834
Alysia (Dacnusa) diremta NEES, HALIDAY, 1839 (in part)
Dacnusa diremta (NEES), MARSHALL, 1891 (in part), 1895 and 1897 (in part), NIXON, 1937, 1943 and 1946

Colour. Palpi yellow. Labrum and clypeus red-brown. Centre of mandibles yellow-brown. Basal antennal segments contrastingly yellow as far as about the second flagellar segment. Legs uniformly yellow or reddish yellow, with at most tarsal segments 5 slightly infuscated. Gaster beyond petiole largely reddish yellow, but becoming darker towards its apex.

Morphology. Head large and subcubical (less than 1.5 times as wide as long). Antennal segments: ♂, 30—33; ♀, (25)—26—28—(29). Palpi long (see the table

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of biometric data). Mandible not expanded, with tooth 2 long and pointed, much better developed than the other three teeth. Face weakly punctate.

Thorax elongate, about 1.5 times as long as high. Sides of pronotum largely smooth and bare, but with some fine inconspicuous pubescence along and below the oblique suture. Mesoscutum with only its "shoulders" roughened, largely smooth, bare and shining with pubescence almost confined to the shoulders apart from a few fine hairs along the course of the notaulices: notaulices weakly indicated anteriorly only. Precoxal suture long, extending towards the hind margin of the mesepisternum. Metapleural swelling strongly rugose-punctate. Metapleural and propodeal pubescence very dense and whitish. Petiole parallel-sided or only slightly widened towards its apex, bare centrally but with a few hairs along its sides and thin accumulations of pubescence at its apical corners. Tergite 3 with few or no basal hairs.

Wing with vein R_s weakly sinuate.

Breeding records

Host — *Cerodontha (Cerodontha) fulvipes* MEIGEN

1 ♀ from larva 6. vii. 64 on *Poa trivialis*, Warszawa-Bielany, Poland, em. 27. vii .64, leg. NOWAKOWSKI (PAN).

This species is readily recognisable by its very bright coloration, the proportions of the head and thorax, and the largely bare mesoscutum and petiole. My interpretation follows that of NIXON (NEES' types being all destroyed).

***Chorebus rubicundus* sp. nov.**

Colour. Palpi and labrum yellow. Clypeus black or reddish. Centre of mandibles orange-yellow. Antennae yellow or yellow-brown at their base as far as the second or third flagellar segment, this colour merging gradually into the dark colour of the more distal flagellar segments. Legs uniformly clear yellow, with only tarsal segments 5 weakly infuscated. Gaster beyond petiole entirely deep orange-yellow.

Morphology. 28 antennal segments (2♀♀). Palpi very long (see the table of biometric data). Mandibles strongly 4-toothed, only slightly expanded. Face weakly punctate.

Thorax about 1.4 times as long as high. Sides of pronotum almost bare centrally, but with some fine pubescence along and below the oblique suture. Mesoscutum somewhat roughened anteriorly, especially on its central lobe, with dense pubescence covering almost its entire surface: notaulices weak, with their longitudinal extensions virtually absent or indicated anteriorly only. Precoxal suture narrow, only weakly rugose. Metapleural swelling finely rugose-punctate. Metapleural and propodeal pubescence dense and whitish. Petiole slightly widened towards its apex, almost bare except for a few fine hairs at its apical corners (not forming distinct tufts). Tergite 3 almost bare.

Wing with vein R_s weakly sinuate.

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Host — *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

Holotype ♀ from puparium on *Dactylis glomerata*, Mühlhausen, Thuringia, Germany, em. 25. ii. 62, leg. BUHR, HERING no. 1836 (GCDG). Paratype ♀ from puparium 3. vii. 56 on *Dactylis glomerata*, Warszawa-Młociny, Poland, em. 11. vii. 56, leg. NOWAKOWSKI (PAN).

This species may be recognised by its brightly coloured gaster, and the combination of an extensively pubescent mesoscutum with a virtually bare petiole. The fact that only two specimens have been found in the considerable material of parasites bred from *C.* (*P.*) *pygmaea* MEIGEN available to me suggests that possibly this is not the principal host.

Chorebus enephes (NIXON), **comb. nov.**

Dacnusa enephes NIXON, 1945

Colour. Palpi and labrum yellow. Clypeus dark. Centre of mandibles yellow-brown. Antennae yellow-brown at their base, as far as the second or third flagellar segment. Legs largely yellow, with only tarsal segments 5 strongly infuscated (sometimes the apices of the hind femora and tibiae are also slightly infuscated). Gaster beyond petiole with most of its dorsal surface conspicuously reddish yellow, becoming darker only ventrally and towards its apex.

Morphology. Antennal segments: ♂, (32)—34—37—(38); ♀, 32—36. Palpi long (see the table of biometric data). Mandibles clearly 4-toothed, not or only slightly expanded (compare fig. 59). Face weakly punctate.

Thorax 1.2—1.3 times as long as high. Sides of pronotum almost bare centrally, but with dense fine pubescence along and below the oblique suture. Mesoscutum with only its anterior face roughened and pubescent, its dorsal surface being virtually bare, with only a few hairs along the course of the notaulices, and of strongly shining appearance with a faint indication of scaly-reticulate ground sculpture (but this is not so well developed as in *C. ganesa* (NIXON)): notaulices distinct anteriorly only. Metapleural swelling finely rugose-punctate. Metapleural and propodeal pubescence very dense and whitish. Petiole slightly widened towards its apex, bare and shining centrally, but with some fine pubescence near its base and along its sides, and conspicuous white apical tufts. Tergite 3 without basal hairs.

Wing with vein R_s only weakly sinuate.

Breeding records

Host — *Cerodontha* (*Poemyza*) *deschampsiae* SPENCER

1 ♀ from larva 24. ix. 65 on *Deschampsia caespitosa*, Kiczerka near Tarnica, Bieszczady, Poland, em. 30. iii. 66, leg. NOWAKOWSKI (PAN). 1 ♂ from larva 22. vii. 66 on *Deschampsia caespitosa*, Stadtwald, Mühlhausen, Thuringia, Germany, em. 21. iv. 67, leg. BUHR no. 3055 (GCDG).

This species is readily recognisable by its brightly coloured gaster, bare mesoscutum and the contrasting apical tufts on the petiole.

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Chorebus ganesa (NIXON), **comb. nov.**

Dacnusa ganesa NIXON, 1945

Very similar to *C. enephes* (NIXON), with which it may be compared as follows.

Colour. Gaster uniformly dark, or at most with tergites 3 and 4 reddish brown.

Morphology. Antennal segments: ♂, 34—36; ♀, 33—35. Mesoscutum entirely covered with fine scaly-reticulate ground sculpture: notaulices better developed, usually reaching the posterior fovea as well-defined linear grooves.

Breeding records

Host — *Cerodontha* (*Poemyza*) *deschampsiae* SPENCER

1 ♂ from larva 8. vii. 66 on *Calamagrostis canescens*, Röderbrunn, Oberlausitz, Saxony, Germany, em. 13—18. iv. 67, leg. BUHR no. 3012 b (GCDG).

I think that NIXON (1945) was probably right in separating this species and *enephes*, but it is desirable that additional material be obtained from the host to confirm that the differences given are constant.

Chorebus ninella (NIXON)

Dacnusa ninella NIXON, 1945 (in part)

Colour. Palpi and labrum yellow. Clypeus dark. Centre of mandibles yellow-brown. Antennae contrastingly yellow, yellow-brown or reddish at their base as far as about the second flagellar segment. Legs largely yellow, with only tarsal segments 5 distinctly infuscated (hind coxae either yellow or weakly infuscated, more or less brown): however in the Woodwalton female the legs are slightly darker, largely ochreous yellow with the hind coxae strongly infuscated. Gaster more or less entirely dark, at most with tergite 3 red-brown.

Morphology. Antennal segments: ♂, (30)—31—34; ♀, 29—33. Palpi very long (see the table of biometric data). Mandible not expanded, clearly 4-toothed but with tooth 3 relatively small (compare fig. 59). Face weakly punctate or virtually smooth.

Thorax about 1.3 times as long as high. Sides of pronotum almost smooth and largely bare above the oblique suture, but with rather dense, fine pubescence along and below the suture. Mesoscutum with its anterior face and the anterior part of its central lobe roughened but its lateral lobes smooth and shining, with its anterior face and central lobe densely pubescent but its lateral lobes largely bare (usually with pubescence only about the "shoulders"): notaulices distinct at least anteriorly, in most specimens reaching the posterior fovea as well-defined linear grooves. Metapleural swelling strongly rugose- punctate. Metapleural and propodeal pubescence very dense and whitish. Petiole widened towards its apex, with dense pubescence covering its entire surface and forming well-developed whitish apical tufts (compare *C. asramenes* (NIXON)). Tergite 3 with few or no basal hairs.

Wing with vein R_s weakly sinuate.

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Breeding records

Host — *Cerodontha* (*Poemyza*) *calamagrostidis* NOWAKOWSKI

4 ♂♂, 5 ♀♀ from larvae 8. vii. 66 on *Calamagrostis canescens*, Röderbrunn, Oberlausitz, Saxony, Germany, em. 13—26. iv. 67, leg. BUHR no. 3010b and 3011b (GCDG). 1 ♀ from larva 21. vi. 61 on *Calamagrostis epigejos*, Woodwalton Fen, Hunts., England, em. 23. iv. 62 (GCDG).

Important features for recognising this species are the range of antennal segments, the pale basal flagellar segments and the nature of the pubescence of the mesoscutum and petiole.

NIXON's (1945) Swedish holotype is a female with 33 antennal segments which agrees fully with the German bred series listed above. The Woodwalton specimen is slightly more darkly coloured, but I have no doubt that it is conspecific. Like the host, this species has only a single generation a year.

NIXON (1945) also referred to this species, with some qualification, some specimens which I now refer to *C. poemyzae* sp. nov. See the remarks below under the description of that species.

In Part I (GRIFFITHS, 1966a) I referred to *ninella* a specimen bred from *Agromyza hendeli* GRIFFITHS. It seems unlikely that this specimen represented the true *ninella*, and it is desirable that further material should be obtained from this host in order that its identity may be clarified.

***Chorebus poemyzae* sp. nov.**

Dacnusa ninella sensu NIXON, 1945 (in part)

Colour. Palpi and labrum yellow. Clypeus dark. Centre of mandibles yellow-brown. Antennae contrastingly yellow or yellow-brown at their base as far as about the second flagellar segment. Legs almost completely yellow, with only tarsal segments 5 distinctly infuscated. Gaster beyond petiole with tergites 3 and 4 usually red-brown, the following tergites dark.

Morphology. Antennal segments: ♂, (34)—35—38; ♀, (33)—34—37. Palpi long (see the table of biometric data). Mandible not expanded, clearly 4-toothed but with tooth 3 relatively small (compare fig. 59). Face weakly punctate.

Thorax 1.3—1.4 times as long as high. Sides of pronotum almost smooth, bare or only sparsely pubescent above the oblique suture, but with rather dense, fine pubescence along and below the suture. Mesoscutum with only its anterior face and sometimes also the anterior part of its central lobe roughened, with its anterior face and the anterior part of the central lobe covered with fine pubescence, but most of its dorsal surface smooth, bare and strongly shining: notaulices distinct as rugose furrows anteriorly, occasionally extending to the posterior fovea: a longitudinal groove often continues from the posterior fovea along the centre-line of the mesoscutum, but the development of this feature is variable. Metapleural swelling strongly rugose-punctate. Metapleural and propodeal pubescence very dense and whitish. Petiole widened towards its apex, with dense pubescence covering most of its surface and forming conspicuous white

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apical tufts: the centre-line tends to be more sparsely pubescent than the sides, and in some specimens becomes almost bare on its apical half. Tergite 3 without basal hairs.

Wing with vein R_s only weakly sinuate.

Breeding records

Host 1 — *Cerodontha (Poemyza) incisa* MEIGEN

62 paratypes, Denmark (25 ex., Donse, Sealand; 18 ex., Randers, Jutland; 6 ex., Damhusmose, Sealand; 6 ex., Utterslevmose, Sealand; 4 ex., Taastrup, Sealand; 3 ex., Køge, Sealand), leg. SCHLICK (KB). 3 ♀♀ paratypes from puparia 18 and 25. x. 24, probably on *Phalaris arundinacea*, Oxford, England, em. 6—25. v. 25, leg. HAMM (BM). 1 ♀ paratype from puparium 8. vii. 66 on *Calamagrostis canescens*, Röderbrunn, Oberlausitz, Saxony, Germany, em. 19. iv. 67, leg. BUHR no. 2980b (GCDG). 1 ♀ paratype from puparium 28. vi. 56 on *Calamagrostis arundinacea*, Sierakόw, Kampinoska Forest, Poland, em. 12. vii. 56, leg. NOWAKOWSKI (PAN): 1 ♂, 2 ♀♀ paratypes from puparia 25 and 28. vi. 56 on *Calamagrostis epigejos*, same locality, em. 5—13. vii. 56, leg. NOWAKOWSKI (PAN): 2 ♂♂ paratypes from puparia 31. x. 66 on *Calamagrostis canescens*, same locality, em. 6. ii. 67, leg. NOWAKOWSKI (PAN). 1 ♀ holotype; 1 ♂, 1 ♀ paratypes from larvae 13. vii. 66 on *Agropyron repens*, Wierzba, near Popielno, Piska Forest, Poland, em. 26—30. vii. 66, leg. NOWAKOWSKI (PAN). 1 ♂ paratype from puparium 14. viii. 65 on *Agropyron repens*, Łopiennik, Bieszczady, Poland, em. xii. 65, leg. NOWAKOWSKI (PAN). 3 paratypes from puparia 13 and 18. viii. 65 on *Agropyron repens*, Cisna, Bieszczady, em. 2. ix. 65 (2 ex.) and 18. iii. 66, leg. NOWAKOWSKI (PAN and GCDG). 1 ♂ paratype from larva 29. vi. 65 on *Alopecurus pratensis*, Warszawa-Pyry, Kabackie Forest, Poland, em. 14. iii. 66, leg. NOWAKOWSKI (PAN).

Host 2 — *Cerodontha (Poemyza) pygmaea* MEIGEN

7 paratypes from larvae and puparia 17 and 26. vi. 64 on *Dactylis glomerata*, Warszawa-Pyry, Kabackie Forest, Poland, em. 20. vi—11. vii. 64 (6 ex.) and 20. v. 65 (1 ♀), leg. NOWAKOWSKI (PAN and GCDG). 1 ♀ paratype from puparium 13. viii. 65 on *Dactylis glomerata*, Cisna, Bieszczady, Poland, em. 18. iii. 66, leg. NOWAKOWSKI (PAN).

Host 3 — *Cerodontha (Poemyza) deschampsiae* SPENCER

1 ♂ paratype from puparium 8. vii. 66 on *Calamagrostis canescens*, Röderbrunn, Oberlausitz, Saxony, Germany, em. 13—18. iv. 67, leg. BUHR no. 3012b (GCDG).

This species is very similar to *C. ninella* (NIXON), and was not separated from that species by NIXON (1945). The main difference between these two species lies in the range of antennal segments, although there is a small degree of overlap which may sometimes lead to difficulty in identifying isolated specimens. The mesoscutal pubescence of *poemyzae* is finer and usually less extensive than in *ninella*, only extending onto the anterior part of the central lobe. There is considerable variation in the emergence dates of *poemyzae*, and it is clear that the species normally has more than one generation a year, in contrast with the true *ninella* which has only a single generation.

The three paratypes from Oxford were referred to *ninella* by NIXON (1945), where the host is recorded as "*Agromyza nigripes* MEIGEN on reeds". I expressed some doubts about this record in Part I (GRIFFITHS, 1966a, page 575). The specimens concerned have since come to light, and it is clear that the source of the difficulty lies in inaccurate host data, not in NIXON's interpretation of the Braconids. Two of these specimens are mounted with *Poemyza* puparia and only one

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with that of an *Agromyza* species. Evidently Hamm collected a mixed sample of *Agromyza albipennis* MEIGEN and *Cerodontha* (*Poemyza*) *incisa* MEIGEN, doubtless from *Phalaris arundinacea*, on which both species occur commonly in England. These produced two species of Dacnusini — *Chorebus lugubris* (NIXON) (see Part I) and *C. poemyzae* sp. nov. Clearly we must assume that the latter was bred from the *Poemyza*, in conformity with the other host data.

***Chorebus vitripennis* sp. nov.**

Colour. Palpi yellow-brown. Labrum and clypeus black. Centre of mandibles red-brown. Antennae entirely dark. Legs varying from yellow-brown to dark brown, with all coxae black. Gaster entirely dark.

Morphology. Antennal segments: ♂, 28—31; ♀, (26), 28—30 (29 in the holotype). Palpi long (see the table of biometric data). Mandible similar to that of *asramenes*, with tooth 2 relatively long and pointed but tooth 3 appearing only as a projection from its side. Face strongly punctate.

Thorax somewhat elongate, 1.3—1.5 times as long as high. Sides of pronotum largely sculptured, evenly covered with fine pubescence. Mesoscutum conspicuously roughened anteriorly, densely pubescent on about its anterior third, but thereafter becoming bare, smooth and shining except for some hairs along the course of the notaulices and near the posterior fovea: notaulices distinct to about the middle of the mesoscutum (sometimes continuing as weak impressions almost to the posterior fovea). Precoxal suture strongly developed, continuing almost to the hind margin of the mesepisternum. Metapleural swelling finely rugose-punctate. Metapleural and propodeal pubescence extremely dense and whitish. Petiole widened towards its apex, entirely covered with dense fine pubescence which forms conspicuous matted white apical tufts. Tergite 3 without basal hairs.

Wing (fig. 189) with vein R_s evenly curved or only weakly sinuate; the wing membrane has a strongly iridescent appearance (hence the specific name).

Breeding records

Host — *Cerodontha* (*Poemyza*) *superciliosa* ZETTERSTEDT

Holotype ♀ from puparium 19. ix. 62 on *Ammophila arenaria* on coastal dunes at Llangennydd, Gower, Wales, em. 17. v. 63 (GCDG). 1 ♂ paratype from puparium 3. viii. 66 on *Ammophila arenaria*, Mierzeja Wiślana, Przebrino, Poland, em. 14. viii. 66, leg. NOWAKOWSKI (PAN).

Other records

Mr. A. W. STELFOX has obtained the following Irish and Scottish material, all from the coast, swept from marram grass (*Ammophila arenaria*).

8 paratypes, Murlough Ho., Co. Down, Ireland, 8. vi—3. vii. 57 (USNM and GCDG). 3 paratypes, Buckroney, Co. Wicklow, Ireland, 5. vi. 49 (2 ex.) and 21. vii. 50 (USNM): 4 paratypes, Killoughter, Co. Wicklow, 11. vi. 50 and 21. vi. 51 (3 ex.) (USNM). 8 paratypes, The Island, Co. Dublin, Ireland, 10. vi—22. vii. 43 (USNM): 1 paratype, Portrane, Co. Dublin, 23. viii. 35 (USNM). 1 ♂ paratype, Bettyhill, Sutherland, Scotland, 2. vii. 54 (USNM). 1 ♂ paratype, Löderup, Skåne, Sweden, 24. vii. 38, leg. D.M.S. and J. F. PERKINS (BM).

The Swedish paratype was provisionally ascribed to *C. merion* (NIXON) by NIXON (1945). It was also taken on coastal dunes with *Ammophila*.

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The holotype of this species is the specimen referred to in Part I (Beitr. Ent., 14, page 864) as having emerged from the rear end of the host puparium, contrary to the normal practice of the Dacnusini. Since the second bred specimen has also emerged in this manner, it is possible that this manner of emergence is normal in this species.

I am pleased to give this attractive species the name by which Mr. STELFOX has long known it in his collection. Its dark coloration and partly bare mesoscutum will readily distinguish it from other species associated with *Cerodontha* hosts. It is in many respects similar to *C. merion* (NIXON) and *C. crocale* (NIXON), with which I have compared it below in the key to the *ovalis/lateralis* complex.

Chorebus asramenes (NIXON), **comb. nov.**

Dacnusa ovalis MARSHALL sensu NIXON, 1937 (in part)
Dacnusa asramenes NIXON, 1945

Colour. Palpi and labrum yellow. Clypeus red-brown. Centre of mandibles yellow-brown or red-brown. Antennae yellow or yellow-brown at their base at least as far as the second flagellar segment. Legs entirely deep yellow, or with the hind coxae somewhat infuscated (more or less brown). Gaster beyond petiole entirely dark or with tergite 3 brownish.

Morphology. Antennal segments: ♂, (31), 33—38; ♀, 32—35 (bred specimens only). Palpi very long (see the table of biometric data). Mandible (fig. 202) not expanded, with tooth 2 long and pointed but tooth 3 appearing only as a projection from its side. Face weakly punctate.

Thorax elongate, about 1.4 times as long as high. Sides of pronotum evenly covered with fine pubescence. Mesoscutum conspicuously roughened anteriorly, especially on its central lobe, with dense pubescence covering most of its surface (except about the posterior half of the lateral lobes): notaulices weak, but usually extending to about the middle of the mesoscutum (sometimes difficult to distinguish from the surrounding sculpturation). Metapleural swelling strongly rugose-punctate. Metapleural and propodeal pubescence extremely dense and whitish. Petiole slightly widened towards its apex, with dense pubescence covering almost its entire surface and forming well-developed whitish apical tufts (compare fig. 144 and NIXON, 1945, fig. 165). Tergite 3 with few or no basal hairs. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Wing with vein R_s sinuate.

Breeding records

Host — *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

1 ♀ from puparium 14. viii. 55 on *Brachypodium* sp., Betchworth, Surrey, England, em. 24. viii. 55 (GCDG). 1 ♂ from puparium 20. vi. 54 on Gramineae sp., Boxhill, Surrey, em. vii. 54, leg. SPENCER (GCDG). 1 ♂ from puparium 14. x. 62 on *Molinia coerulea*, Oxshott, Surrey, em. 18. iv. 63 (GCDG). 1 ex. from puparium 6. viii. 54 on *Deschampsia caespitosa*, Brookman's Park, Herts., England, em. 17. viii. 54 (BM). 2 ex. from puparia 14. viii. 54 on *Deschampsia caespitosa*, Eynsford, Kent, England, em. 16 and 21. viii. 54 (BM). 1 ♀ from

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puparium 27. vi. 66 on *Deschampsia caespitosa*, Röderbrunn, Oberlausitz, Saxony, Germany, em. 14. vii. 66, leg. BUHR no. 2902 (GCDG). 1 ♂ from puparium 3. x. 64 on *Festuca gigantea*, Stadtwald, Mühlhausen, Thuringia, Germany, em. 16. iii. 65, leg. BUHR no. 2328 (GCDG): 1 ♂ 1 ♀ from puparia 19. viii. 66 on *Brachypodium silvaticum*, same locality, em. 23—30. viii. 66 and 18. iv. 67, leg. BUHR no. 3114 (GCDG): 2 ♂♂ 4 ♀♀ from puparia 22. vii. 66 on *Deschampsia caespitosa*, same locality, em. 30. vii—7. viii. 66, leg. BUHR no. 3057 (GCDG). 1 ♂ from puparium 8. viii. 36 on *Molinia coerulea*, Graal, Mecklenburg, Germany, em. 12. viii. 36, leg. BUHR (GCDG). 4 ♀♀ from puparia 15. vii. 66 on *Melica nutans*, *Calamagrostis arundinacea* and *Brachypodium silvaticum* (2 ex.), Strzałowo reservation, Piska Forest, Poland, em. 25—30. vii. 66, leg. NOWAKOWSKI (PAN). 12 ex. from larvae 9 and 13. vii. 66 on *Deschampsia caespitosa*, Wierzba, near Popielno, Piska Forest, em. 22. vii—1. viii. 66, leg. NOWAKOWSKI (PAN). 1 ♀ from puparium 15. vii. 64 on *Deschampsia caespitosa*, Sierakόw reservation, Kampinoska Forest, Poland, em. 21. vii. 64, leg. NOWAKOWSKI (PAN). 2 ex. from puparia 17 and 26. vi. 64 on *Deschampsia caespitosa*, Warszawa-Pyry, Kabackie Forest, Poland, em. 30. vi. and 9. vii. 64, leg. NOWAKOWSKI (PAN). 1 ♀ from puparium 3. x. 65 on *Deschampsia caespitosa*, Obnoga, near Bukowe Berdo, Bieszczady, Poland, em. 21. iii. 66, leg. NOWAKOWSKI (PAN).

Two of the above records were previously published (GRIFFITHS, 1956).

This species and its sister-species *agraules* may be distinguished from other species of *Chorebus* with similar pubescence of the petiole by their elongate thorax, extensive mesoscutal pubescence, pale basal antennal segments and the form of the mandibles.

Chorebus agraules (NIXON), **comb. nov.**

Dacnusa agraules NIXON, 1945

Very similar to *asramenes*, with which it may be compared as follows.

Colour. Hind coxae brownish.

Morphology. 32—35 antennal segments (♀). Ovipositor (♀) much longer, projecting beyond the apical tergite in the retracted position by over half the length of the petiole.

Breeding records

Host — *Cerodontha* (*Poemyza*) *muscina* MEIGEN

1 ♀ from puparium on *Festuca ovina*, Jena, Thuringia, Germany, em. vii. 64, leg. BUHR, HERING no. 2084 (GCDG).

Apart from the much longer ovipositor I can see no significant difference between this species and *asramenes*. I consider that these are sister-species (synapomorph in respect of the elongate thorax and the form of the mandibles).

Chorebus difficilis **sp. nov.**

Colour. Palpi and labrum yellow or ochreous yellow. Clypeus dark. Centre of mandibles yellow-brown. Antennae more or less entirely dark, at most becoming obscurely brown towards their base. Legs largely ochreous yellow or yellow-brown, with the hind coxae infuscated (more or less dark brown). Gaster more or less entirely dark.

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Morphology. Antennal segments: ♂, 29—32; ♀, (27)—28—31. Palpi long (see the table of biometric data). Mandible hardly expanded, with tooth 3 relatively small (tooth 2 is usually not so long and pointed as in *asramenes* and *vitripennis*). Face weakly punctate.

Thorax about 1.3 times as long as high. Sides of pronotum bare and smooth centrally, with fine pubescence mainly along and below the oblique suture, becoming strongly shining (virtually bare or at most with very fine inconspicuous pubescence) above the suture. Mesoscutum extensively roughened (especially anteriorly), with dense pubescence covering almost its entire surface: notaulices usually reaching about the middle of the mesoscutum, but somewhat difficult to distinguish from the surrounding sculpturation. Metapleural swelling strongly rugose-punctate. Metapleural and propodeal pubescence very dense and whitish. Petiole slightly widened towards its apex, evenly covered with dense pubescence which tends to become denser towards the apical corners (forming distinct apical tufts, although these are sometimes weak). Tergite 3 with a little pubescence at its base (adjacent to the petiole).

Wing with vein R_s sinuate (compare *alecto*, fig. 88).

Host 1 — *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

Holotype ♀; 1 ♂ paratype from puparia 14. x. 62 on *Dactylis glomerata*, Oxshott, Surrey, England, em. 12 and 15. iv. 63 (GCDG). 1 ♀ paratype, Stuttgart (Feuerbach Tal), Germany, em. 29. iii. 54, leg. GROSCHKE (STGT). 1 ♂, 1 ♀ paratypes, Stuttgart-Kräherwald, em. 21. vii. 54, leg. GROSCHKE (STGT). 1 ♀ paratype from puparium 5. viii. 65 on *Dactylis aschersoniana*, Stadtwald, Mühlhausen, Thuringia, Germany, em. 20. iii. 66, leg. BUHR no. 2576 (GCDG): 1 ♀ paratype from puparium 29. vii. 66, same plant and locality, em. 14. iv. 67, leg. BUHR no. 3073b (GCDG): 1 ♂ paratype from puparium 29. vii. 66 on *Brachypodium silvaticum*, same locality, em. 11—14. viii. 66, leg. BUHR no. 3074 (GCDG). 9 paratypes from larvae 26. vi. 64 on *Dactylis glomerata*, Warszawa-Pyry, Kabackie Forest, Poland, em. 31. vii. 64, 17. viii. 64 and 5—12. v. 65, leg. NOWAKOWSKI (PAN). 1 ♀ paratype from larvae 6. vii. 64 on *Dactylis glomerata*, Warszawa-Bielany, em. 15. v. 65, leg. NOWAKOWSKI (PAN): 1 ♂ paratype from puparium 30. vi. 66, same plant and locality, em. 22. vii. 66, leg. NOWAKOWSKI (PAN). 2 ♂♂ paratypes from larvae 3. vii. 56 on *Dactylis glomerata*, Warszawa-Młociny, em. 28. vii and 10. viii. 56, leg. NOWAKOWSKI (PAN): 1 paratype from larva 11. vi. 64, same plant and locality, em. 17. viii. 64, leg. NOWAKOWSKI (PAN). 1 ♂ paratype from larva 25. vii. 65 on *Dactylis glomerata*, Żukowo, distr. Kartuzy, Poland, em. 8. v. 65, leg. NOWAKOWSKI (PAN). 1 ♂ paratype from puparium 28. viii. 65 on *Dactylis glomerata*, Cisna, Bieszczady, Poland, em. 18. iii. 66, leg. NOWAKOWSKI (PAN).

Host 2 — *Cerodontha* (*Poemyza*) *incisa* MEIGEN

1 ♂ paratype from puparium 14. viii. 65 on *Briza media*, Łopiennik, Bieszczady, Poland, em. xii. 65, leg. NOWAKOWSKI (PAN). 1 ♂ paratype from puparium 8. x. 65 on *Phleum pratense*, Hulskie, Otryt, Poland, em. xii. 65, leg. NOWAKOWSKI (PAN).

Host 3 — *Cerodontha* (*Poemyza*) *calamagrostidis* NOWAKOWSKI

1 ♂ paratype from larva 8. vii. 66 on *Calamagrostis canescens*, Röderbrunn, Oberlausitz, Saxony, Germany, em. 13—26. iv. 67, leg. BUHR no. 3010b (GCDG).

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Host 4 — *Cerodontha* (*Poemyza*) *deschampsiae* SPENCER

2 ♂♂, 4 ♀♀ paratypes from larvae 8. vii. 66 on *Calamagrostis canescens*, Röderbrunn, Oberlausitz, Saxony, Germany, em. 1. viii. 66 (1 ♀) and 10—18. iv. 67, leg. BUHR nos. 3011 and 3012b (GCDG).

Host 5 — *Cerodontha* (*Dizygomyza*) *chaixiana* GROSCHKE

4 paratypes from puparia on *Poa chaixii*, Stuttgart (Kräherwald and Wildpark), Germany, em. 8 and 20. iv. 54, leg. GROSCHKE (STGT).

This species is difficult to distinguish from certain species associated with *Phytomyza* hosts, particularly *C. armida* (NIXON) and *C. luzulae* GRIFFITHS (see couplets 91—93 in the key to the *ovalis/lateralis* complex below). It may be separated from other species of *Cerodontha*-parasites with apical tufts of pubescence on the petiole by its relatively dark coloration, the length of the thorax (fairly elongate, but not as much so as in *asramenes* and *agraules*) and the extensive mesoscutal pubescence. The pubescence of the petiole seems identical with that of *C. alecto* (MORLEY) and *C. armida* (NIXON) (compare fig. 144), the apical tufts not being so well developed as for instance in *asramenes* and *ninella*.

Plesiomorph species of *Chorebus* related to the *affinis* and *senilis* groups

There are six species of *Chorebus* associated with *Cerodontha* hosts[2] which retain a well-developed vein Cu_{1b}, a plesiomorph feature found also in the *affinis* and *senilis* groups, but lack the hind coxal tuft of pubescence characteristic of these groups. The species concerned are given below in key 2 in the section headed "Keys to *Chorebus* HALIDAY". Three of these species were included in NIXON's (1944) concept of the *merella*-group, but the fourth species which he included in that group, *C. alua* (NIXON), is clearly referable to the *affinis* group as defined in this paper. There seems no firm evidence for considering these six species to represent a monophyletic group on the basis of the characters of the adult which have so far been considered. Apart from the characteristic rosette of metapleural pubescence which occurs in several groups of *Chorebus*, the only clearly apomorph feature found in all these six species is the very elongate petiole. It is difficult to interpret resemblances in the shape of the petiole among *Chorebus* species, as similar conditions seem to have arisen frequently through convergence.

I consider these plesiomorph species as probably more closely related to the *affinis* and *senilis* groups than to the *ovalis/lateralis* complex, because there is a distinct tendency in most of them for the eyes to be more strongly convergent below in the female, as has been noted in many species of the *affinis* group. As far as I am aware there is no such tendency towards sexual dimorphism in any species of the *ovalis/lateralis* complex.[3]

[2] Subject to confirmation in the case of *orissa*, whose life-history is not yet known.

[3] In two of these species the antennal pubescence is also strongly sexually dimorphic, a feature which occurs in several species of the *affinis* group and one of the *senilis* group (i.e. *C. bathyzonus* (MARSHALL)). While clearly all the species in which this antennal dimorphism is well developed cannot be regarded as monophyletic, it is possible that the convergent development of this character in certain species may indicate some similarity in the genetic make-up of the groups concerned.

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One of the species treated below, *C. transversus* (NIXON), is remarkable in retaining 3-toothed mandibles comparable with those of other genera of Dacnusini, such as *Exotela* and *Dacnusa* (see fig. 203). This condition should not be confused with the long and pointed 3-toothed mandibles found in certain species of the *affinis* group, which have clearly been derived secondarily from 4-toothed mandibles similar to those of other species of this group (compare figs. 204—207). If the 3-toothed mandibles of *transversus* are genuinely plesiomorph, the characters of this species are of considerable interest for the interpretation of the evolution of the species included in *Chorebus*, because in this case the rosette of metapleural pubescence has been evolved before 4-toothed mandibles. Since there are a number of *Chorebus* spp. (included in key 4 in the section below headed "Keys to *Chorebus* HALIDAY") in which the contrary combination occurs (relatively plesiomorph metapleural pubescence, but strongly 4-toothed mandibles), it must be concluded that some convergence has occurred in the evolution of one or both of the apomorph conditions. Some revision of the relationships between groups of *Chorebus* spp. suggested in Part I (GRIFFITHS, 1964, page 894) is undoubtedly necessary, but it seems premature to attempt to revise the analysis at the moment, as information on variation in the larval morphology is expected shortly as a result of research by Dr. M. ČAPEK.

In the descriptions which follow the following characters may be assumed, wherever nothing to the contrary is stated.

Clypeus dark, like the face. Face weakly punctate or almost smooth, covered with dense fine pubescence which is directed inwards or upwards over its centre, but downwards along the eye-margins. Back of head largely bare, with only some fine pubescence near the base of the mandibles. Sides of pronotum largely bare and shining except for some fine inconspicuous pubescence below the oblique suture. Pubescence at the base of the hind coxa not forming a distinct matted tuft. Metapleural pubescence very dense (compare figs. 22 and 23 in Part I), forming a rosette around the strongly rugose swelling: propodeum strongly rugose, covered with similar dense pubescence. Petiole elongate. Tergite 3 without basal pubescence. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Wing (figs. 190—192) with vein Cu_{1b} well developed, forming a distinct angle with the transverse section of Cu_1.

Chorebus transversus (NIXON), comb. nov.

Dacnusa transversa NIXON, 1954

Colour. Palpi and labrum yellow. Centre of mandibles yellow-brown. Antennae with their basal segments yellow-brown (about as far as the second flagellar segment), this colour merging gradually into the darker colour of the more distal flagellar segments. Legs uniformly deep yellow, with only tarsal segments 5 distinctly infuscated. Gaster entirely dark.

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Morphology. Head very strongly transverse. Antennal segments: ♂, (33) — 34—36; ♀, (28)—30—36: flagellum with its more apical segments about 2½ times as long as wide: basal flagellar segments evenly covered with rather long pubescence in both sexes. Palpi very long (see the table of biometric data). Mandible (fig. 203) 3-toothed (without any trace of an additional tooth on the side of tooth 2). Eyes somewhat convergent below in the female (minimum distance between them less than half the head width), but hardly so in the male.

Thorax short, 1.1—1.3 times as long as high. The lower half of the sides of the pronotum is distinctly sculptured and covered with dense pubescence, although this is fine and not very conspicuous. Mesoscutum with its anterior face and central lobe slightly roughened, with dense pubescence covering its anterior face and central lobe and often extending onto the anterior half of the lateral lobes, although sometimes these are almost completely bare: notaulices usually well developed, extending as rugose furrows at least to the middle of the mesoscutum. Precoxal suture broad and conspicuously rugose-costate anteriorly, but becoming weak posteriorly (either fading out or reaching the hind margin of the mesepisternum only as a narrow smooth impression). Petiole very elongate, virtually parallel-sided in the male, but usually somewhat widened towards its apex in the female, almost bare.

Wing (fig. 190) with cell $2R_1$ long and vein R_s strongly sinuate (as in many species of the *lateralis* group): *1m-cu* only narrowly rejected from cell R_s, sometimes almost interstitial.

Breeding records

Host — *Cerodontha* (*Butomomyza*) *angulata* LOEW (= *semiposticata* HENDEL)

1 ♂ from larva 20. xi. 55 on *Carex pendula*, Scratch Wood, London, em. 25. v. 56, leg. SPENCER (GCDG). 1 ♀ from larva 27. ix. 61 on *Carex* sp., Bookham, Surrey, England, em. 22. v. 62 (GCDG). 1 ♀ from larva 12. viii. 62 on *Carex* sp., Hadley Wood, Herts., England, em. 4. ix. 62 (GCDG). 2 ♂♂, 1 ♀ from larvae 30. ix. 64 on *Carex silvatica*, Clapham, Yorks., England, em. 9—16. v. 65 (GCDG). 1 ♂ from larva on *Carex* sp., Stuttgart-Wildpark, Germany, em. 20. iii. 54, leg. GROSCHKE (STGT). 1 ♂, 3 ♀♀ from larvae on *Carex* sp., Stuttgart-Kräherwald, em. 3. ix. 54, leg. GROSCHKE (STGT). 18 ex. from larvae 26. vi. 54 on *Carex hirta*, Warszawa-Pyry, Kabackie Forest, Poland, em. 21. vii—22. viii. 64, leg. NOWAKOWSKI (PAN and GCDG): 2 ♀♀ from larvae 5. xi. 65, same plant and locality, em. 25. iii. 66, leg. NOWAKOWSKI (PAN). 3 ex. from larvae 20. vi. 64 on *Carex hirta*, Warszawa-Powsin, Kabackie Forest, em. 18—21. vii. 64, leg. NOWAKOWSKI (PAN). 8 ex. from larvae 6. vii. 64 on *Carex hirta*, Warszawa-Bielany, em. 29. vii—20. viii. 64, leg. NOWAKOWSKI (PAN). 5 ♀♀ from larvae 1. vii. 61 on *Carex hirta*, Międzylesie, near Warszawa, em. 3. viii. 61, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 18. x. 64 on *Carex hirta*, Łazy, distr. Piaseczno, Poland, em. 27. v. 65, leg. NOWAKOWSKI (PAN). 13 ex. from larvae 18. vi. 66 on *Carex hirta*, Sieraków reservation, Kampinoska Forest, Poland, em. 14—19. vii. 66, leg. NOWAKOWSKI (PAN). 10 ex. from larvae 11. vii. 66 on *Carex hirta*, Iznota, Piska Forest, Poland, em. 3—11. viii. 66, leg. NOWAKOWSKI (PAN). 7 ♀♀ from larvae 15. vii. 66 on *Carex hirta*, Strzałowo reservation, Piska Forest, em. 5—19. viii. 66, leg. NOWAKOWSKI (PAN). 4 ♀♀ from larvae 5. vii. 66 on *Carex* sp., Wierzba, near Popielno, Piska Forest, em. 27—29. vii. 66, leg. NOWAKOWSKI (PAN). 1 ex. from larva 20. viii. 65 on *Carex hirta*, Smerek, Bieszczady, Poland, em. 15. ix. 65, leg. NOWAKOWSKI (PAN). 2 ex. from larvae 28. vii. 64 on *Carex pseudocyperus*, Mierzeja Wiślana, Krynica Morska, Poland, em. 25. viii and 8. ix. 64, leg. NOWAKOWSKI (PAN): 1 ♀ from larva 24. vi. 66, same plant and locality, em. 30. viii. 66, leg. NOWAKOWSKI (PAN):

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4 ♀♀ from larvae 24. vi. 66 on *Carex vulpina*, same locality, em. 23. vii—1. viii. 66, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 30. vii. 64 on *Carex acutiformis*, Mirachowo, distr. Kartuzy, Poland, em. 9. ix. 64, leg. NOWAKOWSKI (PAN).

I have already commented above on the apparently plesiomorph 3-toothed mandibles of this species. This character will readily serve to separate it from *C. humeralis* sp. nov., which occurs on the same host. The wing venation of these species also differs, since in *transversus* cell $2R_1$ is longer and vein R_s more strongly sinuate.

Chorebus humeralis sp. nov.

Colour. Palpi golden yellow. Labrum yellow or yellow-brown. Centre of mandibles brown. Antennae largely black, but becoming brown or reddish at their base (as far as about the second flagellar segment). Legs largely golden yellow, with the tarsi somewhat infuscated towards their apex (especially segments 5). Gaster entirely dark.

Morphology. Head strongly transverse. Antennal segments: ♂, (32)—33—36; ♀, (30)—32—35: flagellum short, with its more apical segments only about twice as long as wide: basal flagellar segments densely covered with rather short pubescence in both sexes. Palpi of moderate length (see the table of biometric data). Mandible not expanded, 4-toothed with tooth 3 well developed as a projection from the side of tooth 2. Eyes only slightly convergent below in the female. Face strongly shining, only sparsely pubescent and almost smooth centrally.

Thorax short, 1.2—1.3 times as long as high. Mesoscutum with its anterior face roughened but its dorsal surface almost smooth (with only faint scaly-reticulate ground sculpture), with fine pubescence covering its anterior face and often extending sparsely onto the central lobe (although sometimes this is virtually bare, like the lateral lobes): notaulices complete, reaching the posterior fovea as deep rugose furrows, their lateral extensions (i.e. at the "shoulders") margined by a strongly raised crest: usually a distinct groove also runs along the centre-line of the mesoscutum. Precoxal suture strongly rugose-costate almost throughout, broad anteriorly, extending almost to the hind margin of the mesepisternum. Petiole usually slightly widened towards its apex, almost bare (with only a few fine isolated hairs on its dorsal surface).

Wing (fig. 191) with cell $2R_1$ rather narrow and elongate; vein R_s only slightly curved; *1m-cu* rejected from cell R_s (but sometimes only narrowly so).

Breeding records

Host — *Cerodontha* (*Butomomyza*) *angulata* LOEW (= *semiposticata* HENDEL)

28 ♂♂ 45 ♀♀ paratypes, Rudehegn, 1 ♀ paratype, Køge, and 1 ♂ paratype, Damhusmose; Sealand, Denmark, leg. SCHLICK (KB and GCDG).

Other material

1 ♂ holotype, Newtownbabe, Co. Louth, Ireland, 30. vi. 62, leg. STELFOX (USNM). 1 ♂, 1 ♀ paratypes, Killoughter, Co. Wicklow, Ireland, 15. viii. 51, leg. STELFOX (USNM): 1 ♂ paratype, same locality, 11. vi. 53, leg. STELFOX (USNM). 2 ♀♀ paratypes, The Murrough, Co.

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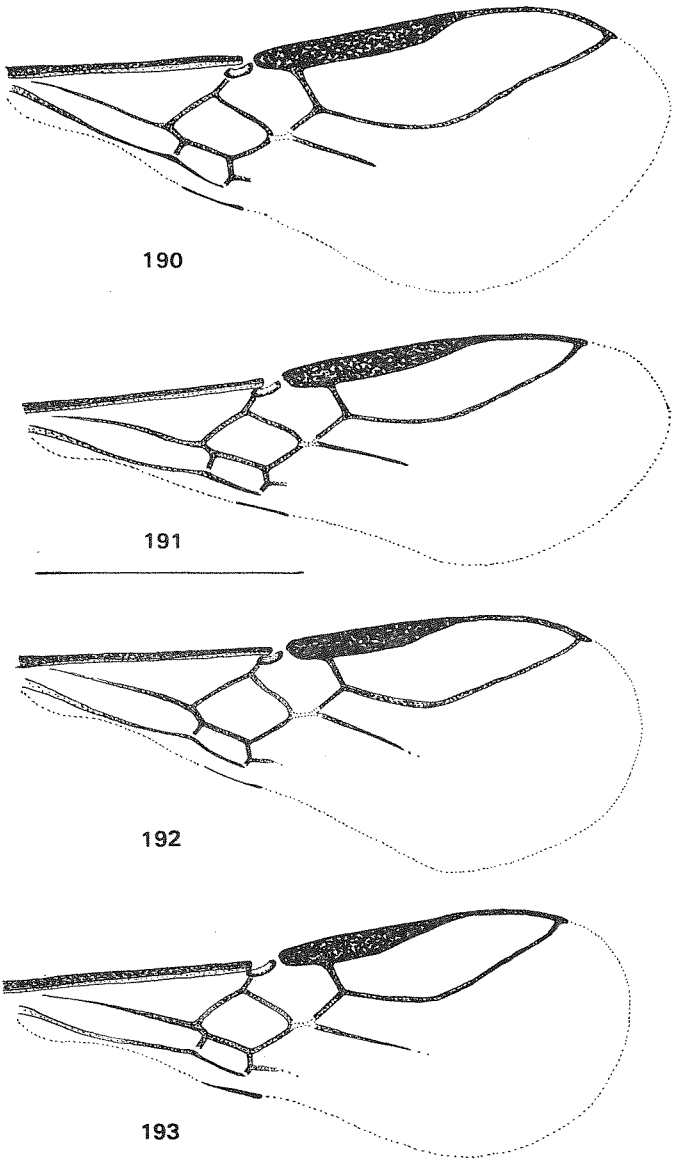

Figs. 190–193. Wings of *Chorebus* spp.: 190, *C. transversus* (NIXON) ♀; 191, *C. humeralis* sp. nov. ♀; 192, *C. merella* (NIXON) ♀; 193, *C. cytherea* (NIXON) ♀. (Scale 1 mm.)

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Wicklow, 28. viii. 54, leg. STELFOX (USNM). 1 ♀ paratype, Glenasmole, Co. Dublin, Ireland, 2. vii. 42, leg. STELFOX (USNM).

This species is separable from *merella* and *nobilis* by its shorter thorax and tarsi. It has a superficial resemblance to *C. glabriculus* (THOMSON), included in the *ovalis/lateralis* complex, because of its coloration and the well developed notaulices and precoxal suture. However it has longer, entirely yellow palpi and a closed cell *2Cu*: in *glabriculus* this cell is clearly open at its lower distal corner. A second species, *C. transversus* (NIXON), attacks the same host as *humeralis*, but is readily separable, as already mentioned above, by the form of its mandibles.

I am pleased to give this species the name by which Mr. A. W. STELFOX has long known it in his collection.

Chorebus merella (NIXON), **comb. nov.**

Dacnusa merella NIXON, 1937 and 1944

Colour. Palpi and labrum clear yellow. Centre of mandibles yellow-brown. Antennae with their basal segments conspicuously yellowish (or rarely only brown) at least as far as the third flagellar segment, this colour merging gradually into the darker colour of the more distal flagellar segments. Legs almost entirely clear yellow, usually with only tarsal segments 5 somewhat infuscated. Gaster beyond petiole more or less entirely dark, or at most with tergites 3 and 4 yellow-brown or reddish.

Morphology. Antennal segments: ♂, (36)—37—42—(43); ♀, (33)—35—40: flagellum extremely long, with nearly all its segments at least 2½—3 times as long as wide: basal flagellar segments evenly covered with rather long, dense pubescence in both sexes. Palpi very long (see the table of biometric data). Mandible 4-toothed (fig. 25), with tooth 2 rather long and ponted and tooth 3 visible as a projection from its side. Eyes usually distinctly convergent below in the female, but hardly so in the male.

Thorax elongate, 1.3—1.4 times as long as high. Mesoscutum with its anterior face and about the anterior half of its central lobe roughened, with dense pubescence covering its anterior face and at least the anterior half of the central lobe but the lateral lobes almost bare: notaulices usually distinct as slightly sculptured furrows at least to the middle of the mesoscutum, sometimes reaching the posterior fovea, their rugose lateral extensions often margined by a slightly raised crest. Precoxal suture broad and conspicuously rugose-costate anteriorly, continuing as a narrow groove to the hind margin of the mesepisternum. Petiole virtually parallel-sided, with its dorsal surface almost bare (at most with a little pubescence near its base and a row of hairs along each side).

Wing (fig. 192) with vein R_s slightly sinuate and *1m-cu* rejected from cell R_s (though sometimes only narrowly so).

Breeding records

Host 1 — *Cerodontha* (*Dizygomyza*) *caricicola* HERING (= *soenderupi* HERING)

1 ex. from puparium 14. viii. 54 on *Carex* sp., Eynsford, Kent, England, em. 16. viii. 54 (BM). 2 ♂♂, 4 ♀♀ from puparia 14. ii. 54 on *Carex pendula*, Scratch Wood, London, em. 7. iv—v. 54, leg. SPENCER (GCDG): 3 ex. from puparia 25. vii. 54, same plant and locality,

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em. 4—11. viii. 54 (BM): 3 ex. from puparia 22. viii. 54 on *Carex pendula* and *Carex* sp., same locality, em. 23—27. viii. 54 (BM). 1 ♂, 2 ♀♀ from puparia mid–vii. 53 on *Carex* sp., Schongau, Oberbayern, Germany, em. 20—26. vii. 53, leg. GROSCHKE (STGT). 1 ♀ from puparium on *Carex* sp., Stuttgart-Kräherwald, Germany, em. 25. ii. 54, leg. GROSCHKE (STGT). 5 ex. from puparia 15. viii. 66 on *Carex silvatica*, Suchy Groń, Babia Góra, Poland, em. 20. viii—2. ix. 66, leg. NOWAKOWSKI (PAN). 6 ex. from puparia 17. viii. 66 on *Carex silvatica*, Mata Babia Góra, near Marków pond, em. 24. viii—14. ix. 66, leg. NOWAKOWSKI (PAN). 7 ex. from larvae and puparia 15. ix. 66 on *Carex silvatica*, Kazalnica, near Sarnia Skała, Tatry, Poland, em. 24. x. 66 (1 ♂) and 5. ii—11. iii. 67, leg. NOWAKOWSKI (PAN). ♂♀ from puparia 15. x. 66 on *Carex hirta* and *C. silvatica*, Staników Żleb, near Hruby Regiel, Tatry, em. 6 and 11. ii. 67, leg. NOWAKOWSKI (PAN). 1 ♀ from puparium 21. viii. 57 on *Carex silvatica*, Spadowiec Valley, Tatry, em. 7. ix. 57, leg. NOWAKOWSKI (PAN). 1 ♂ from puparium 9. vii. 66 on *Carex* sp., Wierzba, near Popielno, Piska Forest, Poland, em. 18. vii. 66, leg. NOWAKOWSKI (PAN). 1 ♀ from puparium 8. x. 65 on *Carex silvatica*, Otryt-Hulskie, Poland, em. 14. iii. 66, leg. NOWAKOWSKI (PAN). 1 ex. from puparium 13. viii. 65 on *Carex silvatica*, Cisna, Bieszczady, Poland, em. 20. viii. 65, leg. NOWAKOWSKI (PAN). 1 ♀ from puparium 17. viii. 65 on *Carex pilosa*, Falowa, Bieszczady, em. 31. viii. 65, leg. NOWAKOWSKI (PAN).

Host 2 — *Cerodontha* (*Dizygomyza*) *luzulae* GROSCHKE

1 ♂, 2 ♀♀ from puparia on *Luzula silvatica*, Stuttgart-Kaltental, Germany, em. 1—23. vi. 55, leg. GROSCHKE (STGT). 2 ♂♂, 3 ♀♀ from larvae 6. x. 65 on *Luzula silvatica*, Górna Solinka reservation, Bieszczady, Poland, em. 18—23. iii. 66, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 3. x. 65 on *Luzula silvatica*, Obnoga, near Bukowe Berdo, Bieszczady, em. 4. xi. 65, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 22. ix. 66 on *Luzula silvatica*, near Smreczyński pond, Tatry, Poland, em. 17. iv. 67, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 22. ix. 66 on *Luzula silvatica*, Kraków ravine, Tatry, em. 2. iii. 67, leg. NOWAKOWSKI (PAN).

Host 3 — *Cerodontha* (*Dizygomyza*) *chaixiana* GROSCHKE

1 ♀ from puparium on *Poa chaixii*, Kräherwald, Stuttgart, Germany, em. 25. ii. 54, leg. GROSCHKE (STGT). 1 ♂ from puparium 19. viii. 65 on *Poa chaixii*, Łopiennik, Bieszczady, Poland, em. 26. viii. 65, leg. NOWAKOWSKI (PAN).

Host 4 — *Cerodontha* (*Butomomyza*) *staryi* HERING

5 ♂♂, 5 ♀♀ from larvae and puparia 5. xii. 53 on *Carex* sp. cf. *remota*, Stuttgart (Feuerbach Tal), Germany, em. 8. i—29. iii. 54, leg. GROSCHKE (STGT) (all except one labelled by GROSCHKE as bred from "*Phytobia stilettata*", a name which he did not publish).

Host 5 — *Cerodontha* (*Butomomyza*) *scirpi* KARL (= *scutellaris* auctt.)

1 ♂ from puparium 7. viii. 55 on *Scirpus silvaticus*, Godalming, Surrey, England, em. iv. 56, leg. SPENCER (GCDG). 1 ♀ from larva 27. vi. 66 on *Scirpus silvaticus*, Röderbrunn, Saxony, Germany, em. 21. vii. 66, leg. BUHR no. 2898 (GCDG). 3 ♂♂, 6 ♀♀, Stuttgart-Wildpark, Germany, em. 15. ii—20. iv. 54, leg. GROSCHKE (STGT). 2 ex. from larvae 25. vii. 64 on *Scirpus silvaticus*, Żukowo, distr. Kartuzy, Poland, em. 17. viii. 64 and 15. v. 65, leg. NOWAKOWSKI (PAN).

Host 6 — *Cerodontha* (*Butomomyza*) *caricivora* GROSCHKE

1 ♂ from puparium on *Carex silvatica*, Schöngeising an der Amper, Oberbayern, Germany, em. 2. vi. 53, leg. GROSCHKE (STGT). 1 ex. from larva 19. viii. 65 on *Carex silvatica*, Rożki, Bieszczady, Poland, em. 12. x. 65, leg. NOWAKOWSKI (PAN). 2 ex. from larvae 8. x. 65 on *Carex silvatica*, Hulskie, Otryt, Poland, em. 14. iii. 66, leg. NOWAKOWSKI (PAN).

A few of the above records for *C.* (*D.*) *caricicola* HERING have been previously published in GRIFFITHS (1956).

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The differences between *merella* and other similar species are given in key 2 in the section below headed "Keys to *Chorebus* HALIDAY". It is important to note that in *merella* the central lobe of the mesoscutum is densely pubescent and roughened anteriorly.

***Chorebus nobilis* sp. nov.**

Similar to *C. merella* (NIXON), with which it may be compared as follows.

Colour. Centre of mandibles brown or red-brown. Antennae usually yellow-brown or brown at their base as far as about the first flagellar segment, but sometimes more or less entirely dark.

Morphology. Antennal segments: ♂, 39—45; ♀, 38—43: flagellum not so long proportionately, with its more apical segments only 2—2½ times as long as wide: basal flagellar segments in both sexes evenly covered with short dense pubescence. Mandible slightly broader. Eyes hardly convergent below in either sex.

Mesoscutum with only its anterior face roughened (the central lobe being virtually smooth like the lateral lobes), with dense pubescence covering its anterior face and usually extending sparsely onto the central lobe, but sometimes this too is bare like the lateral lobes (in which case there remain on the dorsal surface of the mesoscutum only a few hairs along the course of the notaulices and near the posterior fovea): notaulices always complete, reaching the posterior fovea as deep conspicuous furrows which are usually rugose throughout (at most becoming smooth posteriorly only), their rugose lateral extensions (i.e. at the "shoulders") margined by a strongly raised crest. Precoxal suture sculptured throughout its length, very broad and irregularly rugose-costate anteriorly, becoming narrower towards the hind margin of the mesepisternum: the central part of the mesepisternum (above the precoxal suture) is covered with fine scaly-reticulate ground sculpture, not completely smooth as in *merella* and *pelion*: the mesosternum (below the precoxal suture) also appears faintly sculptured. Propodeal pubescence slightly shorter and less dense.

Size usually larger (wing length up to 3 mm.).

Breeding records

Host — *Cerodontha* (*Butomomyza*) *eucaricis* NOWAKOWSKI

Holotype ♀; 6 ♂♂, 6 ♀♀ paratypes from puparia on *Carex* sp., Darmstadt-Kranichstein, Hessen, Germany, em. 15. xi. 52 (8 ex., including the holotype) and 14. ii—25. iii. 53 (5 ex.), leg. GROSCHKE (STGT and GCDG). 1 ♂, 1 ♀ paratypes from larvae 3. vii. 56 on *Carex* sp., Warszawa-Młociny, Poland, em. 2 and 10. viii. 56, leg. NOWAKOWSKI (PAN). 1 ♀ paratype from puparium 31. vii. 55 on *Carex* sp., Granica, Kampinoska Forest, Poland, em. 9. viii. 55, leg. NOWAKOWSKI (PAN). 1 paratype (? sex) from larva 10. vii. 64 on *Carex vesicaria*, Sieraków, Kampinoska Forest, em. 3. viii. 64, leg. NOWAKOWSKI (PAN). 1 paratype (? sex) from puparium 7. vii. 64 on *Carex hirta*, Warszawa-Pyry, Kabackie Forest, Poland, em. 21. vii. 64, leg. NOWAKOWSKI (PAN).

Other material

1 ♂ paratype, Cashegal, Co. Sligo, Ireland, 27. vi. 36, leg. STELFOX (USNM).

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The host of GROSCHKE's series was originally identified as *C.* (*B.*) *caricivora* GROSCHKE, but is probably referable to the subsequently described *C.* (*B.*) *eucaricis* NOWAKOWSKI.

There is some overlap between this species and *merella* in size and the number of antennal segments. The most reliable diagnostic criteria are the presence in *nobilis* of complete notaulices and scaly-reticulate ground sculpture on the central part of the mesepisternum: also the central lobe of the mesoscutum is not roughened as in *merella*.

Chorebus pelion (NIXON), **comb. nov.**

Dacnusa pelion NIXON, 1944

Similar to *C. merella* (NIXON), with which it may be compared as follows.

Colour. Antennae usually only yellow-brown or red-brown at their base about as far as the first flagellar segment, rarely so brightly coloured as in *merella*: in some specimens the flagellum is entirely dark.

Morphology. Antennal segments: ♂, 31—35; ♀, 30—35: flagellar pubescence sexually dimorphic, in the female the entire flagellum is evenly covered with rather long, dense pubescence (as in *merella*), but in the male the segments of about the basal half of the flagellum are strongly shining and almost bare, bearing only a few isolated short hairs (mainly near their apex). Mandible slightly less elongate than normally in *merella*.

Mesoscutum with only its anterior face partly roughened (the central lobe being completely smooth like the lateral lobes), with its pubescence confined to its anterior face except for a few fine hairs along the course of the notaulices and near the posterior fovea: notaulices with their longitudinal extensions completely smooth (although usually well-defined anteriorly and reaching the posterior fovea as distinct impressions), their lateral extensions (i.e. at the "shoulders") either smooth or rugose, margined by a strongly raised crest. Precoxal suture narrow, becoming only slightly broader anteriorly, but well-defined, regularly rugose-costate throughout its length (almost as far as the hind margin of the mesepisternum): both the mesepisternum and mesosternum (i.e. both above and below the precoxal suture) are completely smooth. Petiole slightly broader (see the table of biometric data).

Breeding records

Host 1 — *Cerodontha* (*Butomomyza*) *eucaricis* NOWAKOWSKI

5 ♂♂, 24 ♀♀ from puparia on *Carex* sp., Darmstadt-Kranichstein, Hessen, Germany, em. 25. i—10. v. 53, leg. GROSCHKE (STGT and GCDG) (host originally identified as *C.* (*B.*) *caricivora* GROSCHKE, but more probably referable to *eucaricis*). 4 ♂♂, 2 ♀♀ from larvae 24. vii. 56 on *Carex hirta*, Cybulice, Kampinoska Forest, Poland, em. 19. viii. 56 (1 ♀) and 21. iv—23. v. 57, leg. NOWAKOWSKI (PAN and GCDG). 5 ex. from larvae 12. vii. 64 on *Carex pseudocyperus*, Dziekanów Leśny, Kampinoska Forest, em. 3—15. viii. 64, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 10. vii. 64 on *Carex pseudocyperus*, Sieraków, Kampinoska Forest, em. 3. viii. 64, leg. NOWAKOWSKI (PAN). 1 ♂, 2 ♀♀ from larvae 6. vii. 64 on *Carex hirta*, Warszawa-Bielany, Poland, em. 31. vii—7. viii. 64, leg. NOWAKOWSKI (PAN). 1 ♂, 2 ♀♀ from puparia 7. vii. 64 on *Carex hirta*, Warszawa-Pyry, Kabackie Forest, em. 23. vii—12.

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viii. 64, leg. NOWAKOWSKI (PAN): 1 ♂ 1 ♀ from puparia 5. xi. 65, same plant and locality, em. 21. iii. 66, leg. NOWAKOWSKI (PAN). 7 ♀♀ from larvae 30. vii. 64 on *Carex hirta*, Mirachowo, distr. Kartuzy, Poland, em. 29—31. viii. 64 (3 ex.) and 19. v—vi. 65, leg. NOWAKOWSKI (PAN). 2 ♀♀ from larvae 25. vii. 64 on *Carex hirta*, Żukowo, distr. Kartuzy, em. 20. v and 5. vi. 65, leg. NOWAKOWSKI (PAN). 4 ♀♀ from larvae 7. ix. 65 on *Carex hirta*, Nowy Most, near river Krutynia, Piska Forest, Poland, em. 4. xii. 65 (1 ex.) and 28—30. iii. 66, leg. NOWAKOWSKI (PAN). 1 ♂ from larva 6. xi. 65 on *Carex hirta*, Pranie near Nidzkie lake, Piska Forest, em. 21. iii. 66, leg. NOWAKOWSKI (PAN). 1 ♂ from puparium 9. vii. 66 on *Carex hirta*, Wierzba, near Popielno, Piska Forest, em. 11. viii. 66, leg. NOWAKOWSKI (PAN): 1 ♂ from larva 13. vii. 66 on *Carex* sp., same locality, em. 1. viii. 66, leg. NOWAKOWSKI (PAN). 2 ♀♀ from larvae 11. vii. 66 on *Carex hirta*, Iznota, Piska Forest, em. 11—14. viii. 66, leg. NOWAKOWSKI (PAN). 3 ♀♀ from larvae 15. vii. 66 on *Carex hirta*, Strzałowo reservation, Piska Forest, em. 14, 24. viii. 66 and 21. iv. 67, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 23. vii. 64 on *Carex hirta*, Górki Wschodnie, near Gdansk, Poland, em. 29. viii. 64, leg. NOWAKOWSKI (PAN). 1 ♂ 1 ♀ from puparia 28. vii. 64 on *Carex pseudocyperus*, Mierzeja Wiślana, Krynica Morska, Poland, em. 15 and 25. v. 65, leg. NOWAKOWSKI (PAN): 2 ♂♂ from larvae 4. viii. 66 on *Carex vulpina*, same locality, em. 14. iv. 67, leg. NOWAKOWSKI (PAN): 1 ♂ from puparium 28. vii. 64 on *Carex pseudocyperus*, same locality, em. 3. viii. 64, leg. NOWAKOWSKI (PAN).

Host 2 — *Cerodontha* (*Butomomyza*) *vigneae* NOWAKOWSKI

1 ♂ from puparium 4. viii. 66 on *Carex vulpina*, Mierzeja Wiślana, Krynica Morska, Poland, em. 12. viii. 66, leg. NOWAKOWSKI (PAN).

Host 3 — *Cerodontha* (*Dizygomyza*) *morosa* MEIGEN

1 ♂ from larva 24. vi. 66 on *Carex vulpina*, Mierzeja Wiślana, Krynica Morska, Poland, em. 22. vii. 66, leg. NOWAKOWSKI (PAN).

Host 4 — *Cerodontha* (*Dizygomyza*) sp. probably *caricicola* HERING

1 ♀ from puparium 7. vii. 64 on *Carex hirta*, Warszawa-Pyry, Kabackie Forest, Poland, em. 23. vii. 64, leg. NOWAKOWSKI (PAN). 1 ♀ from puparium 12. vii. 64 on *Carex pseudocyperus*, Dziekanów Leśny, Kampinoska Forest, Poland, em. 27. vii. 64, leg. NOWAKOWSKI (PAN). 1 ♀ from puparium 27. vii. 55 on *Carex pseudocyperus*, Granica, Kampinoska Forest, em. 4. viii. 55, leg. NOWAKOWSKI (PAN). 1 ♂ from puparium 15. vii. 64 on *Carex pseudocyperus*, Sierakόw reservation, Kampinoska Forest, em. 20. v. 65, leg. NOWAKOWSKI (PAN). 2 ♂♂, 2 ♀♀ from puparia 9 and 13. vii. 66 on *Carex* sp., Wierzba, near Popielno, Piska Forest, Poland, em. 14—22. vii. 66, leg. NOWAKOWSKI (PAN). 1 ♂, 1 ♀ from larvae 24. vi. 66 on *Carex hudsonii*, Mierzeja Wiślana, Krynica Morska, Poland, em. 18. vii. 64, leg. NOWAKOWSKI (PAN).

This species is readily distinguishable from *merella* by its bare mesoscutum and sexually dimorphic antennal pubescence. NIXON's (1944) original description suggests that it also differs from *merella* in the length of vein *2r* ("abscissa 1 of the radius"). But from examination of the additional material now available I am not of the opinion that any clear distinction can be made in this respect.

NIXON (1944) has described as *Dacnusa orissa* a single male which closely resembles *pelion*, but is believed to represent a distinct species on account of differences in the sculpturation of its mesosternum and petiole. The differences are given in key 2 in the section below headed "Keys to *Chorebus* HALIDAY".

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The *Chorebus affinis* group

The species which I include in this concept are considered to represent a monophyletic group through their possession of the following three apomorph characters: (i) hind coxa with a conspicuous matted tuft or crest of pubescence on its posterior margin; (ii) precoxal suture represented by a smooth linear groove which extends almost to the hind margin of the mesepisternum; and (iii) mandible with tooth 2 long and pointed, but tooth 3 (the additional tooth) small or absent. The loss of the additional mandibular tooth in some species is clearly secondary, being correlated with the increasing length of tooth 2 (as can be seen from figs. 204—207).

Some of the species which I include in this group have been placed in separate genera (*Chorebus* HALIDAY in a restricted sense, *Gyrocampa* FÖRSTER and *Paragyrocampa* TOBIAS) by some previous authors. My reasons for rejecting these concepts were given in Part I (GRIFFITHS, 1964, page 849). It is not in practice possible to draw a clear-cut distinction between species in which vein R_s is evenly curved and those in which it is slightly sinuate, as was done in NIXON's (1943) generic key, and I have not therefore made much use of this character in the key to species given below in the section headed "Keys to *Chorebus* HALIDAY".

Some of the species included in *Chorebus* in the former restricted sense appear to represent a smaller monophyletic group within the *affinis* group, characterised by their narrow pterostigma, 3-segmented labial palpi[4] and densely pubescent mesoscutum. I propose to refer to these as the *Chorebus uliginosus* group. The six species concerned are included in couplets 20—23 of the key below (in the section headed "Keys to *Chorebus* HALIDAY"). Most of these species are associated with the Ephydrid leaf-mining genus *Hydrellia*, and since the Dacnusini are not known as parasites of other genera of Ephydridae, I concluded (Part I, page 871) that this host association had arisen through transference from an Agromyzid host. The discovery of the life-history of *C. gracilipes* (THOMSON), which is clearly referable to the same group as the *Hydrellia*-parasites, indicates that this transference was probably from an *Icteromyza* host to *Hydrellia*.

One of the new species described in this paper, *C. metallicus* sp. nov., is remarkable for the reduction of the rosette of metapleural pubescence, which is so fine as to be barely visible in some angles of light. However the species seems typical of the *affinis* group in most other respects, and I think it must be concluded that the reduction of its metapleural pubescence is secondary. (The plesiomorph condition of the metapleuron in the Dacnusini is as shown in fig. 16, with long sparse hairs, not dense fine pubescence of the type found in *metallicus*.)

There are a number of species with bare mesoscuta (included in couplets 2—10 of the key below), whose life-histories have not yet been discovered. I think it

[4] *C. miodes* (NIXON) also has 3-segmented labial palpi, but this is probably due to convergence as this species is very different from those now under consideration in other respects.

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probable that some or all of these are parasites of further species of *Cerodontha* (particularly subgenus *Icteromyza*). There is no information that the *affinis* group contains any parasites of non-Agromyzid hosts apart from the *Hydrellia*-parasites mentioned above included in the subordinate *uliginosus* group.

In Part I (GRIFFITHS, 1964, page 850) I suggested a connection betwen *C. cytherea* (NIXON) and the "*merella*-group". These remarks are perhaps somewhat misleading as they stand. *C. cytherea* (NIXON) shows certain features which are plesiomorph for the *affinis* group, namely the clearly 4-toothed mandibles and distinctly sinuate vein R_s, and in these respects resembles *C. merella* (NIXON) and certain similar species. Such resemblance in relatively plesiomorph characters cannot be considered to indicate monophyly. However the presence of such plesiomorph characters in some species of the *affinis* group associated with hosts of the subgenus *Dizygomyza* indicates that the association of the ancestral species of the group was probably with host species belonging to, or ancestral to, this host group.

It is possible that the *affinis* group is the sister-group of the *senilis* group s.l., treated in Part IV (GRIFFITHS, 1967). Both groups include species of elongate form with conspicuous hind coxal tufts of matted pubescence. But in the groundplan of the *senilis*-group the rugose precoxal suture is retained, and the mandibles are not long and pointed. Within the *senilis* group there is one subordinate group, the *bathyzonus* group, whose species might easily be confused with some species of the *affinis* group, since they possess (through convergence) a similar smooth precoxal suture. To avoid confusion careful attention should be paid to the form of the mandibles (see further the preliminary key in the section below headed "Keys to *Chorebus* HALIDAY"). As stated in Part IV, the presence of very dense opaque pubescence on the sides of the pronotum is an apomorph character present in the groundplan (and all species) of the *senilis* group s.l. This character is absent from the groundplan of the *affinis* group but has been evolved by convergence in several species of this group (such as *iridis*, *fordi* and *stilifer*). Such species could easily be confused with species of the *bathyzonus* group.

Species included in *Chorebus* (in a restricted sense) and *Gyrocampa* by recent authors, but not included in my present concept of the *affinis* group, are *Chorebus striolus* STELFOX and *C. scabrifossus* STELFOX, now referred to the *rousseaui* group, *Gyrocampa thomsoni* ROMAN (synonymised with *Chaenusa conjungens* (NEES) in Appendix IX in Part III), and *G. pospelovi* KURDJUMOV. I have not been able to examine the holotype of the latter species, and the description (KURDJUMOV, 1912) is not sufficient to establish its generic position. If the insect was in fact bred from the Chloropid *Oscinella frit* (L.), as stated, probably it represents a *Coelinius* species, as no other genus of Dacnusini is known to contain parasites of Chloropidae.

THOMSON's (1895) *Dacnusa* (*Dacnusa*) *obliqua* was doubtless a species of the *affinis* group, but it is impossible to give a firm interpretation of the name as the type has been destroyed: the four remaining specimens attributed to *obliqua* in the THOMSON collection are not from the type locality, and do not all belong to

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the same species. In the circumstances I propose to discard the name as a nomen dubium.

In the descriptions which follow the following characters may be assumed, wherever nothing to the contrary is stated.

Clypeus dark, like the face. Face weakly punctate or almost smooth, covered with dense fine pubescence which is directed inwards or upwards over its centre, but downwards along the eye-margins. Precoxal suture represented by a well-defined smooth linear groove which extends virtually to the hind margin of the mesepisternum. Pubescence of hind coxa very dense, forming a conspicuous matted crest or basal tuft on its posterior margin. Metapleural pubescence very dense (compare figs. 22 and 23 in Part I), forming a rosette around the strongly rugose swelling: propodeum strongly rugose, covered with similar dense pubescence. Tergite 3 without basal pubescence. Wing (figs. 193—200) with vein Cu_{1b} well developed, forming a distinct angle with the transverse section of Cu_1.

Chorebus cytherea (NIXON), **comb. nov.**

Dacnusa cytherea NIXON, 1937 and 1944
Dacnusa tesmia NIXON, 1944, **syn. nov.**
Dacnusa calliope NIXON, 1944, **syn. nov.**

Colour. Palpi and labrum yellow or ochreous yellow. Centre of mandibles yellow-brown. Antennae usually with their basal segments yellow-brown about as far as the third flagellar segment, but occasionally more or less entirely dark. Legs sometimes uniformly deep yellow with only tarsal segments 5 slightly infuscated, sometimes with more extensive brown coloration especially on the hind coxae and hind femora. Gaster beyond petiole more or less uniformly dark brown.

Morphology. Antennal segments: ♂, (29)—31—36, (39); ♀, 27—34—(35): flagellum long, with its more apical segments about 2½ times as long as wide: basal flagellar segments evenly covered with rather long pubescence in both sexes. Palpi long (see the table of biometric data). Mandible (fig. 204) narrowed towards its apex, 4-toothed, with tooth 2 relatively long and pointed and tooth 3 visible as a small projection from its side. Eyes slightly convergent below in the female, but not in the male. Back of head largely bare, with only some fine pubescence near the base of the mandibles.

Thorax elongate, 1.5—1.6 times as long as high. Sides of pronotum largely bare and shining, with only some fine pubescence along and below the oblique suture. Mesoscutum usually with its entire surface roughened (especially anteriorly) and densely covered with long whitish pubescence (but in some small specimens the lateral lobes tend to become smooth and bare posteriorly): notaulices with only their lateral extensions distinct (margined by a slightly raised crest). Pubescence of metapleuron and propodeum extremely dense. Petiole covered with similar, extremely dense whitish pubescence, which tends to be parted along its centre-line and radiates outwards around its apical half

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(fig. 208). Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Wing (fig. 193) with vein R_s slightly sinuate and *Im-cu* rejected from cell R_s.

Breeding records

Host 1 — *Cerodontha* (*Dizygomyza*) *spinata* GROSCHKE

4 ♂♂, 5 ♀♀ from puparia on *Carex silvatica*, Schongau, Oberbayern, Germany, em. 1—20. viii. 53, leg. GROSCHKE (STGT and GCDG). 2 ♀♀ from larvae 13. v. 66 on *Carex* sp., Stadtwald, Mühlhausen, Thuringia, Germany, em. 2 and 12. viii. 66, leg. BUHR no. 2727 (GCDG).

Host 2 — *Cerodontha* (*Dizygomyza*) *luctuosa* MEIGEN (= *effusi* KARL)

1 ♂, 4 ♀♀ from puparia on *Juncus effusus*, Stuttgart (Feuerbach Tal), Germany, em. 10—16. xii. 53, leg. GROSCHKE (STGT). 1 ♂ from puparium on *Juncus effusus*, Stuttgart-Wildpark, em. 20. iv. 54, leg. GROSCHKE (STGT). 3 ex. from larvae and puparia 23. vii. 64 on *Juncus effusus*, Górki Wschodnie, near Gdansk, Poland, em. 20. vii—7. viii. 64, leg. NOWAKOWSKI (PAN and GCDG). 1 ♀ from larva 25. vii. 64 on *Juncus effusus*, Żukowo, distr. Kartuzy, Poland, em. 10. viii. 64, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 30. vii. 64 on *Juncus effusus*, Mirachowo, distr. Kartuzy, em. 7. ix. 64, leg. NOWAKOWSKI (PAN). 1 ♂ from puparium 1. xi. 66 on *Juncus effusus*, Palmiry, Kampinoska Forest, Poland, em. 10. ii. 67, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 7. xi. 57 on *Juncus effusus*, Sieraków reservation, Kampinoska Forest, em. 6. iii. 58, leg. NOWAKOWSKI (PAN): 1 ♂ 1 ♀ from puparia 15. vii. 64 on *Juncus effusus*, same locality, em. 20—23. vii. 64, leg. NOWAKOWSKI (PAN).

Host 3 — *Cerodontha* (*Dizygomyza*) *hirtae* NOWAKOWSKI (= *luctuosa* auctt.)

2 ♂♂ from larvae 14. vii. 66 on *Carex hirta*, Iznota, Piska Forest, Poland, em. 8—11. viii. 66, leg. NOWAKOWSKI (PAN). 6 ex. from larvae 18. x. 64 on *Carex hirta*, Łazy, distr. Piaseczno, Poland, em. 14—22. xii. 64, leg. NOWAKOWSKI (PAN and GCDG). 1 ♀ from puparium 7. vii. 64 on *Carex hirta*, Warszawa-Pyry, em. vii. 64, leg. NOWAKOWSKI (PAN): 2 ♀♀ from puparia 5. xi. 65, same plant and locality, em. 25. iii. 66, leg. NOWAKOWSKI (PAN). 1 ♂ from larva 20. vi. 64 on *Carex hirta*, Warszawa-Powsin, em. 21. vii. 64, leg. NOWAKOWSKI (PAN). 2 ex. from larvae 6. vii. 64 on *Carex hirta*, Warszawa-Bielany, em. 27. vii and 10. viii. 64, leg. NOWAKOWSKI (PAN). 1 ♀ from larva 3. xi. 55 on *Carex hirta*, Cybulice, Kampinoska Forest, Poland, em. 23. v. 56, leg. NOWAKOWSKI (PAN). 1 ex. from larva 25. vii. 64 on *Carex hirta*, Żukowo, distr. Kartuzy, Poland, em. 17. v. 65, leg. NOWAKOWSKI (PAN).

Host 4 — *Cerodontha* (*Dizygomyza*) *chaixiana* GROSCHKE

3 ♂♂, 6 ♀♀ from puparia on *Poa chaixii*, Stuttgart (Kräherwald and Wildpark), Germany, em. 4. iii—20. iv. 54, leg. GROSCHKE (STGT and GCDG). 1 ♂ 3 ♀♀ from puparia vi. 54 on *Poa chaixii*, Vaihingen, Stuttgart, em. 21—28. vii. 54, leg. GROSCHKE (STGT).

Host 5 — *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

1 ex. from puparium 30. vii. 64 on *Deschampsia caespitosa*, Mirachowo, distr. Kartuzy, Poland, em. 15. viii. 64, leg. NOWAKOWSKI (PAN).

The single record of this species from *C.* (*Poemyza*) *pygmaea* MEIGEN is probably to be considered an example of xenophagy.

NIXON (1944) attempted to define three species of his "*cytherea*-subgroup", but commented on a number of specimens which did not satisfactorily fit his definitions. I have not been able to make any division of the bred material before me on the basis of the characters which he suggested, namely colour, the shape of the head and the number of antennal segments. The series bred from *C.* (*Dizygomyza*) *chaixiana* GROSCHKE, a very small host, are very small speci-

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mens with a low number of antennal segments (♂, 30—35; ♀, 27—32), as in NIXON's proposed species *calliope*; but some of these insects have relatively large heads (not very strongly transverse), and thus erode the suggested difference between NIXON's *calliope* and his other two species. The larger specimens of this series seem fully comparable with specimens bred from *C.* (*D.*) *luctuosa* MEIGEN and *C.* (*D.*) *hirtae* NOWAKOWSKI, and it seems probable that the statistical difference in the number of antennal segments is due merely to correlation with the small size of the host. The small differences suggested between *cytherea* sensu stricto and *tesmia* seem to me to be within the range of variation of the material bred from *C.* (*D.*) *luctuosa* MEIGEN and *C.* (*D.*) *hirtae* NOWAKOWSKI, and I cannot therefore accept the separation of these species. The short series bred from *C.* (*D.*) *spinata* GROSCHKE pose a further problem of size correlation. This host is substantially larger than the other hosts and the parasites bred from it have a larger average size and higher range of antennal segments (♂, 36, 39; ♀, 32, 33 (2 ex.), 34 (2 ex.), 35). But there seems to be no clear-cut difference between these insects and the other material, and the statistical differences may again be due merely to correlation with the size of the host.

On balance I do not think that there is sufficient evidence for dividing the wide concept of *cytherea* here proposed into a number of species, although it should be recognised that the range of variation in size and number of antennal segments is abnormally wide. Final clarification of this problem may not be possible without breeding experiments.

The unique petiole of *cytherea* (fig. 208) will enable the species to be readily identified. In no other known species does the pubescence on the apical half of the petiole radiate outwards in this way.

Chorebus stilifer sp. nov.

Colour. Palpi and labrum yellow. Centre of mandibles yellow-brown. Antennae with their basal segments yellowish (clearly so usually about as far as the second flagellar segment), this colour merging gradually into the darker colour of the more distal flagellar segments. Legs uniformly yellow. Gaster beyond petiole largely bright yellow or orange, in strong contrast with the shining black petiole.

Morphology. Antennal segments: ♂, 32 (2 ex.); ♀, 31—32: flagellum long and slender, with all its segments over three times as long as wide: flagellar pubescence somewhat sexually dimorphic, in the female the entire flagellum is densely covered with rather long pubescence, but in the male the segments of about the basal third of the flagellum are somewhat shining and bear only rather short, sparse pubescence. Palpi very long (see the table of biometric data). Mandible weakly 4-toothed, with tooth 2 relatively long and pointed but tooth 3 weak, visible as a small projection from the side of tooth 2 (sometimes almost absent). Eyes strongly convergent below in the female (minimum distance between them about one-third of the head width), less markedly so in the male. Face smooth

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and shining, only sparsely pubescent. Back of head with rather dense pubescence near the base of the mandibles, but otherwise virtually bare.

Thorax elongate, about 1.5 times as long as high. Sides of pronotum with their entire surface strongly sculptured (more or less punctate) and completely covered with very dense, adpressed pubescence. Mesoscutum with most of its surface roughened (especially its anterior face and central lobe), entirely covered with dense, rather long pubescence: notaulices with only their lateral extensions distinct (margined by a slightly raised crest). Subalar callus also covered with dense pubescence. Petiole extraordinarily long and narrow, virtually bare. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Wing with vein R_s very slightly sinuate and *1m-cu* rejected from cell R_s (compare *cytherea*, fig. 193).

Host — *Cerodontha* (*Butomomyza*) *staryi* HERING

Holotype ♀; 2 ♂♂, 6 ♀♀ paratypes from larvae and puparia 5. xii. 53 on *Carex* sp. cf. *remota*, Stuttgart (Feuerbach Tal), Germany, em. 9—15. ii. 54, leg. GROSCHKE (STGT and GCDG).

The above material was labelled by GROSCHKE as bred from "*Phytobia stilettata*". But in the event he did not publish this name, but described the host as "*Phytobia* (*Pöemyza*) *staryi* HERING var. *normalis* nov." (GROSCHKE, 1954).

This species may be easily distinguished from other species of the *affinis* group by the form of its petiole and the brightly coloured gaster. In these respects it has a strong superficial resemblance to *C. bathyzonus* (MARSHALL), included in the *senilis* group s.l. (see Part IV). But the form of the mandibles and the pubescence of the head are clearly different.

Chorebus iridis sp. nov.

Colour. Palpi and labrum yellow or ochreous yellow. Centre of mandibles red-brown. Antennae largely black, but usually becoming brown or reddish towards their base (as far as about the second flagellar segment). Legs more or less uniformly ochreous yellow, testaceous or yellow-brown, with only tarsal segments 5 distinctly infuscated. Gaster entirely black.

Morphology. Antennal segments: ♂, 31 (2 ex.); ♀, 31 (3 ex.), 32: flagellum with its more apical segments 2—2½ times as long as wide: basal flagellar segments rather densely covered in both sexes with pubescence of moderate length (see the table of biometric data). Mandible (fig. 205) 4-toothed, with tooth 2 relatively long and pointed and tooth 3 developed as a distinct projection from its side. Eyes rather strongly convergent below in the female (minimum distance between them about two-fifths of the head width), but hardly so in the male. Back of head largely bare, but with some fine inconspicuous pubescence near the base of the mandibles.

Thorax elongate, about 1.4 times as long as high. Sides of pronotum with much of their area finely sculptured (more or less punctate) and covered with very dense adpressed whitish pubescence, but with a broad band of smooth bare

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shining surface along their dorsal margin. Mesoscutum with its anterior face and the anterior part of its central lobe somewhat roughened, with dense pubescence covering its anterior face and extending onto about the anterior third or half of its dorsal surface (both central and lateral lobes), but the posterior half of its dorsal surface is almost bare: notaulices with only their lateral extensions well developed (margined by a slightly raised crest), their longitudinal extensions being usually almost absent, at most represented by weak impressions. Petiole slightly widened towards its apex, with sparse hairs along its sides (but absent from its centre-line) and weak accumulations of fine pubescence at its apical corners. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Wing with vein R_s slightly sinuate and *1m-cu* well rejected from cell R_s (compare *cytherea*, fig. 193).

Host — *Cerodontha* (*Dizygomyza*) *iridis* HENDEL

Holotype ♀; 2 ♂♂, 3 ♀♀ paratypes from puparia 21. iv. 66 on *Iris foetidissima*, near Sorrento, Campania, Italy, em. 29. iv—4. v. 66, leg. SPENCER (GCDG).

This species is a relatively plesiomorph member of the *affinis* group in respect of its 4-toothed mandibles and distinctly sinuate vein R_s. One of its most distinctive features is the presence of dense whitish pubescence on the sides of the pronotum, in which respect it resembles *C. fordi* (NIXON). The differences between these species are given in the key in the section below headed "Keys to *Chorebus* HALIDAY".

Chorebus fordi (NIXON), **comb. nov.**

Gyrocampa fordi NIXON, 1954

Colour. Palpi and labrum yellow or yellow-brown. Centre of mandibles brown. Antennae more or less entirely dark (at most with the scape, pedicel and annellus brownish). Legs largely deep yellow, with only the more apical tarsal segments and sometimes the hind coxae somewhat infuscated. Gaster beyond petiole dark brown.

Morphology. Antennal segments: ♂, 30; ♀, 30—32: flagellum with its more apical segments 2½—3 times as long as wide: all antennal segments densely pubescent in both sexes. Palpi long (see the table of biometric data). Mandible very small, with tooth 2 long and pointed but the additional tooth (tooth 3) represented only by a small projection from its side. Eyes only slightly convergent below. Back of head largely bare, but with some fairly dense pubescence near the base of the mandibles.

Thorax rather elongate, about 1.3 times as long as high. Sides of pronotum with most of their surface covered with conspicuous, densely matted, whitish pubescence (similar to that of the metapleuron), but with a band of bare shining surface along their dorsal margin (this bare area is sculptured, not smooth as in *iridis*). Mesoscutum with its anterior face roughened and densely pubescent, but its dorsal surface largely smooth, bare and shining, with only some sparse

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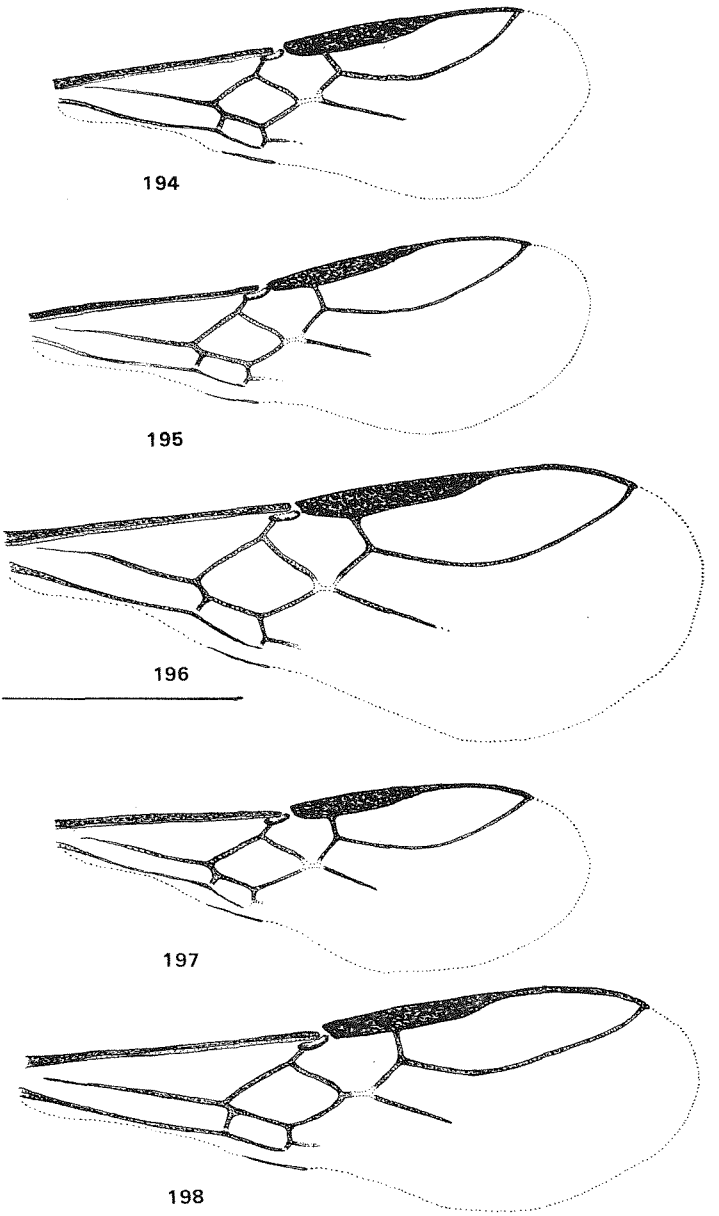

Figs. 194—198. Wings of *Chorebus* spp.: 194, *C. fordi* (NIXON) ♀; 195, *C. siniffa* (NIXON) ♀; 196, *C. vernalis* sp. nov. ♂; 197, *C. metallicus* sp. nov. ♀; 198, *C. nigriscaposus* (NIXON) ♀. (Scale 1 mm.)

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pubescence on the anterior part of the central lobe and a few hairs along the course of the notaulices: notaulices with only their lateral extensions well developed (margined by a slightly raised crest), their longitudinal extensions visible only as weak impressions. Mesepisternum with a tuft of dense whitish pubescence (similar to that of the metapleuron) above the middle coxa. Pubescence of metapleuron and propodeum very dense and whitish. Petiole virtually parallel-sided, largely bare and shining, but with small patches of fairly dense pubescence near its base, a few fine hairs along its sides and weak accumulations of fine pubescence at the apical corners. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Wing (fig. 194) with vein R_s almost evenly curved, hardly sinuate; *1m-cu* well rejected from cell R_s.

Breeding records

Host — *Cerodontha* (*Poemyza*) *lateralis* MACQUART

2 ♀♀ from puparia 17. vi. 64 on *Agropyron repens*, Warszawa-Pyry, Kabackie Forest, Poland, em. 24. vi. 64, leg. NOWAKOWSKI (PAN and GCDG).

The most characteristic features of this species are the dense whitish pubescence on the sides of the pronotum (as is found also in *C. iridis* sp. nov.), the very small mandibles and the about evenly curved vein R_s.

Chorebus siniffa (NIXON), **comb. nov.**

Dacnusa siniffa NIXON, 1937

Gyrocampa siniffa (NIXON), NIXON, 1949

Colour. Palpi and labrum yellow or ochreous yellow. Centre of mandibles red-brown. Antennae largely black, at most becoming brownish at their base as far as about the first flagellar segment. Legs largely golden yellow, but with the tarsi becoming infuscated towards their apex and sometimes also the hind coxae partly infuscated. Gaster entirely dark.

Morphology. Antennal segments: ♂, 28—30; ♀, 26—29: flagellum with its more apical segments 2½—3 times as long as wide: the basal flagellar segments have a strongly shining appearance in the male, but are evenly covered with pubescence which is almost as dense as in the female. Maxillary palpi long (see the table of biometric data). Mandible with tooth 2 very long and pointed, but the additional tooth (tooth 3) visible only as a small projection from its side. Eyes only slightly convergent below (hardly more so in the female than in the male). Back of head almost completely bare (with only some fine inconspicuous pubescence near the base of the mandibles). Facial pubescence very fine, hardly obscuring the shining, almost smooth surface beneath.

Thorax elongate, about 1.6 times as long as high. Sides of pronotum largely bare and shining, with only some fine inconspicuous pubescence along and below the oblique suture. Mesoscutum largely smooth, bare and shining, with some fine pubescence on its anterior face (especially at the "shoulders"), but otherwise only a few hairs along the course of the notaulices: notaulices with their

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lateral extensions (i.e. at the "shoulders") distinct, margined by a slightly raised crest, but hardly extending longitudinally on the dorsal surface of the mesoscutum (at most visible as smooth lines). Petiole not or only slightly widened towards its apex, almost completely bare. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position.

Wing (fig. 195) with cell $2R_1$ rather elongate; vein R_s almost evenly curved, hardly sinuate; *1m-cu* rejected from cell R_s.

Breeding records

Host — *Cerodontha* (*Dizygomyza*) *morosa* MEIGEN

1 ♂ 2 ♀♀ from larvae 24. vii. 66 on *Carex vulpina*, Mierzeja Wiślana, Krynica Morska, Poland, em. 3—18. vii. 66, leg. NOWAKOWSKI (PAN and GCDG).

There are several species with bare mesoscuta similar to *siniffa* whose life-histories have not yet been established. The differences are given in the key in the section below headed "Keys to *Chorebus* HALIDAY".

***Chorebus vernalis* sp. nov.**

Colour. Palpi and labrum yellow. Centre of mandibles yellow-brown. Antennae with their basal segments contrastingly yellowish as far as the second flagellar segment. Legs uniformly golden yellow, with only the tarsi becoming infuscated towards their apex. Gaster more or less entirely dark.

Morphology. 32 antennal segments (♂): flagellum with all its segments entirely covered with dense pubescence, the more apical segments being 2½—3 times as long as wide. Palpi long (see the table of biometric data). Mandible with tooth 2 very long and pointed, but the additional tooth (tooth 3) visible only as a weak projection from its side. Back of head largely bare, but with some fairly dense whitish pubescence near the base of the mandibles.

Thorax elongate, about 1.5 times as long as high. Sides of pronotum with a broadly bare and shining area along their dorsal margin, but with dense pubescence covering much of their surface; however this is fine and somewhat upstanding, lacking the opaque whitish appearance of *fordi* and *iridis*. Mesoscutum with only its anterior face roughened, with dense pubescence covering its anterior face and extending onto the anterior half of the central lobe, but most of its dorsal surface is bare and shining: notaulices with their lateral extensions (i.e. at the "shoulders") rugose and margined by a raised crest, but only extending longitudinally as smooth lines on the dorsal surface of the mesoscutum. Petiole more or less parallel-sided, strongly rugose, with dense, rather long pubescence covering much of its surface, but becoming broadly bare along its centre-line on its apical half.

Wing (fig. 196) with vein R_s evenly curved, not at all sinuate; *1m-cu* only narrowly rejected from cell R_s.

(♀ unknown).

Host — *Cerodontha* (*Dizygomyza*) *caricicola* HERING

Holotype ♂ from puparium 18. ii. 62 on *Carex* sp., Linton, Cambs., England, em. 13. iv. 62 (GCDG).

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This insect clearly represents a distinct species characterised by the combination of dense pubescence on the sides of the pronotum, a partly bare mesoscutum (with pubescence extending only onto the anterior half of the central lobe), an extensively pubescent petiole and an evenly curved vein R_s.

***Chorebus metallicus* sp. nov.**

Colour. Palpi golden yellow or yellow-brown. Labrum brown. Centre of mandibles yellow-brown or testaceous. Antennae with the flagellum entirely dark, but the scape, pedicel and annellus testaceous or yellow-brown. Legs (including coxae) uniformly golden yellow, with only the tarsi becoming infuscated towards their apex. Gaster entirely dark.

Morphology. Antennal segments: ♂, 23—24; ♀, 21—22: flagellum with its more apical segments relatively long, 2½—3 times as long as wide: all antennal segments entirely covered with dense pubescence in both sexes. Maxillary palpi long (see the table of biometric data). Mandible 3-toothed, with tooth 2 extremely long and pointed (the additional tooth, tooth 3 in 4-toothed species, being absent). Eyes slightly more convergent below in the female than in the male. Back of head almost completely bare (without any dense pubescence near the base of the mandibles). Facial pubescence very fine, hardly obscuring the shining, almost smooth surface beneath.

Thorax elongate, 1.4—1.5 times as long as high. Sides of pronotum completely bare and shining. Mesoscutum largely smooth, bare and shining, with only a few fine hairs on the "shoulders" and along the course of the notaulices: notaulices with their lateral extensions (i.e. at the "shoulders") distinct, margined by a raised crest, but only extending longitudinally as smooth lines on the dorsal surface of the mesoscutum. Pubescence of hind coxa forming a whitish matted tuft on its posterior margin, but this is much less conspicuous than in other species of the *affinis* group. Metapleuron with a well-defined swelling on its lower half (as in other species of the *affinis* group), but the surrounding rosette of pubescence, though dense, is extremely fine and inconspicuous, only distinct in certain angles of light. Propodeum deeply rugose, strongly shining, with only fine inconspicuous pubescence towards its sides. Petiole virtually bare, slightly widened towards its apex. Gaster (♀) somewhat pointed apically, with the ovipositor fairly long, often slightly projecting beyond the apical tergite in the retracted position.

Wing (fig. 197) with vein R_s evenly curved, not at all sinuate; *1m-cu* rejected from cell R_s; vein Cu_{1b} represented only by a shadow, so that cell *2Cu* is open at its lower distal corner.

Host — *Cerodontha* (*Icteromyza*) *geniculata* FALLÉN

Holotype ♀; 7 ♂♂, 5 ♀♀ paratypes from larvae and puparia 15—17. viii. 66 on *Eriophorum latifolium*, Mata Babia Góra, Marków pond, Poland, em. 31. i—11. ii. 67, leg. NOWAKOWSKI (PAN and GCDG).

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This species is readily separable from other members of the *affinis* group by the remarkable reduction of its metapleural and propodeal pubescence, on which some comment has already been made above.

Chorebus nigriscaposus (NIXON), **comb. nov.**

Gyrocampa nigriscaposa NIXON, 1949
Gyrocampa propodealis NIXON, 1949, **syn. nov.**

Colour. Palpi and labrum varying from deep yellow to brown. Centre of mandibles ochreous or yellow-brown. Antennae entirely dark except for the yellow-brown annellus. Legs often largely yellow, with only the tarsi and hind coxae somewhat infuscated; but in many of the Polish specimens the tibiae and hind femora are also brownish or testaceous, with only femora 1 and 2 remaining yellow. Gaster more or less entirely dark.

Morphology. Antennal segments: ♂, (23)—24—27; ♀, 22—24: flagellum with its more apical segments 2—2½ times as long as wide: all antennal segments entirely covered with dense pubescence in both sexes. Palpi rather short (see the table of biometric data). Mandible (fig. 206) almost 3-toothed, with tooth 2 very long and pointed, but the additional tooth (tooth 3 in 4-toothed species) either absent or represented only by a weak notch on the side of tooth 2. Eyes slightly convergent below in the female, but hardly so in the male. Back of head largely bare, but with some rather dense pubescence near the base of the mandibles.

Thorax elongate, about 1.4—1.5 times as long as high. Sides of pronotum largely bare and shining, with distinct pubescence only at their ventral corner. Mesoscutum with its anterior face roughened, with fine pubescence covering its anterior face and central lobe, but the lateral lobes are largely bare: notaulices with their lateral extensions (i.e. at the "shoulders") distinct, margined by a raised crest, but hardly extending longitudinally on the dorsal surface of the mesoscutum. Mesepisternum with dense whitish pubescence similar to that of the metapleuron above the middle coxa. Pubescence of metapleuron and propodeum extremely dense, forming three distinct rosettes on either side — around the swelling on the lower half of the metapleuron (which is very prominent and sharply delimited), around the spiracle on the propodeum and around a very prominent tubercle behind the spiracle (as also in *lanigerus*). Petiole widened towards its apex, with its dorsal surface almost bare. Gaster (♀) somewhat pointed apically, with the ovipositor fairly long, usually slightly projecting beyond the apical tergite in the retracted position.

Wing (fig. 198) with cell $2R_1$ rather elongate; vein R_s more or less evenly curved, hardly sinuate; *1m-cu* rejected from cell R_s.

Breeding records

Host 1 — *Cerodontha* (*Icteromyza*) *geniculata* FALLÉN

20 ♂♂ 21 ♀♀ from larvae and puparia 15—17. viii. 66 on *Eriophorum latifolium*, Mata Babia Góra, Markόw pond, Poland, em. 22. viii—12. ix. 66 and 2—8. ii. 67, leg. NOWAKOWSKI (PAN and GCDG).

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Host 2 — *Cerodontha* (*Icteromyza*) *calosoma* HENDEL
1 ♂, Randers and 1 ♀, Aarhus, Jutland, Denmark, leg. SCHLICK (KB).

The two specimens bred from *C.* (*I.*) *calosoma* HENDEL emerged from the posterior end of the host puparium, as did the specimens of *C. lanigerus* (STELFOX) bred from the same host: however the series bred from *C.* (*I.*) *geniculata* FALLÉN emerged from the anterior end of the puparia, as is normally the case in the Dacnusini and other Alysiinae.

The type material of *nigriscaposus* and *propodealis* was taken at the same locality. I have not been able to examine the holotype of *propodealis*, which is now in Washington: but the small differences in wing venation and propodeal pubescence given in NIXON's (1949) original descriptions do not seem to me sufficient to demonstrate that two species are involved, and I am therefore proposing to regard both names as referring to the same species. One typographical error in the description of *propodealis* should be noted: Mr. STELFOX informs me that the female holotype has 23 antennal segments, not 28 as printed.

The prominent tubercle behind the spiracle on the propodeum in *nigriscaposus* is a feature found also in *lanigerus* and the *uliginosus* group. But *nigriscaposus* is the only species showing this feature in which the lateral lobes of the mesoscutum are bare.

Chorebus lanigerus (STELFOX), **comb. nov**

Gyrocampa lanigera STELFOX, 1957

Colour. Palpi yellow or ochreous yellow. Centre of mandibles yellow-brown. Antennae more or less entirely dark. Legs deep yellow or testaceous, with all tarsi and usually the hind coxae somewhat infuscated. Gaster more or less entirely dark (at most with tergite 3 reddish).

Morphology. Antennal segments: ♂, (25), 28—30; ♀, 25 (holotype): flagellum with its more apical segments 2—2½ times as long as wide: all antennal segments entirely covered with very dense pubescence in both sexes. Maxillary palpi of moderate length (see the table of biometric data): labial palpi 4-segmented. Mandible (compare fig. 206) almost 3-toothed, with tooth 2 very long and pointed, but the additional tooth (tooth 3 in 4-toothed species) represented only by a weak notch on the side of tooth 2. Vertex, temples and back of head largely covered with short, rather dense, evenly distributed pubescence (similar to that of many species of the *senilis* group s.l. except that it shows no tendency to form tufts near the base of the mandibles).

Thorax elongate, about 1.4 times as long as high. Sides of pronotum with dense whitish pubescence covering much of their surface (especially along and below the oblique suture), although there is an almost bare area towards their posterodorsal corner. Mesoscutum roughened anteriorly, entirely covered with dense pubescence: notaulices with only their lateral extensions distinct, not extending longitudinally on the dorsal surface of the mesoscutum. Mesepisternum with dense whitish pubescence, similar to that of the metapleuron, above

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the middle coxa. Pubescence of metapleuron and propodeum extremely dense: the posterior angles of the propodeum (behind the spiracles) bear very prominent tubercles, around which the pubescence tends to radiate, forming a rosette: there are thus three rosettes of radiating pubescence which can be seen on either side of the metapleura/propodeum (as also in *nigriscaposus*) — the rosette on the lower half of the metapleuron (where the swelling is unusually prominent and sharply delimited), the rosette around the spiracle on the propodeum, and the rosette around the tubercle behind this. Petiole widened towards its apex, almost entirely covered with extremely dense pubescence which tends to form whitish tufts at the apical corners. Ovipositor (♀) short according to STELFOX's (1957) description (I have not seen a female).

Wing (fig. 199) with cell $2R_1$ narrow and elongate; pterostigma narrow and elongate, merging gradually into the metacarp; vein R_s more or less evenly curved, hardly sinuate; *1m-cu* rejected from cell R_s.

Breeding records

Host — *Cerodontha* (*Icteromyza*) *calosoma* HENDEL

3 ♂♂, Randers, Jutland, Denmark, leg. SCHLICK (KB).

The life-history of the host, identified from a fly in the SCHLICK collection associated with an identical puparium, is still unknown (see the remarks on the SCHLICK collection in the introduction to Part III, GRIFFITHS, 1966b). One unusual biological feature of this species should be noted. All the bred specimens have emerged from the posterior end of the host puparium by making a complete vertical split through the eighth abdominal segment.

This species is well characterised by the presence of dense pubescence on the back of its head, the pronotum, the entire surface of the mesoscutum and the petiole.

Chorebus gracilipes (THOMSON), **comb. nov.**

Dacnusa (*Dacnusa*) *gracilipes* THOMSON, 1895 (in part)

Colour. Palpi yellow-brown or brown. Labrum dark brown. Centre of mandibles yellow-brown or red-brown. Antennae entirely dark except for the yellow-brown annellus. Legs largely unicolorous deep yellow or yellow-brown, with the tarsi somewhat infuscated towards their apex. Gaster entirely dark.

Morphology. Antennal segments: ♂, 25 (lectotype); ♀, 22—24: flagellum entirely covered with dense pubescence in both sexes, with its more apical segments about 2½ times as long as wide. Maxillary palpi of moderate length (see the table of biometric data): labial palpi short, appearing only 3-segmented (the apical two segments being virtually fused). Mandible (fig. 207) 3-toothed, with tooth 2 extremely long and pointed (the additional tooth, tooth 3 in 4-toothed species, being absent). Eyes only slightly convergent below. Back of head largely bare, but with some dense pubescence near the base of the mandibles.

Thorax elongate, about 1.4 times as long as high. Sides of pronotum largely bare and shining (in strong contrast with the mesoscutum), but with some dense,

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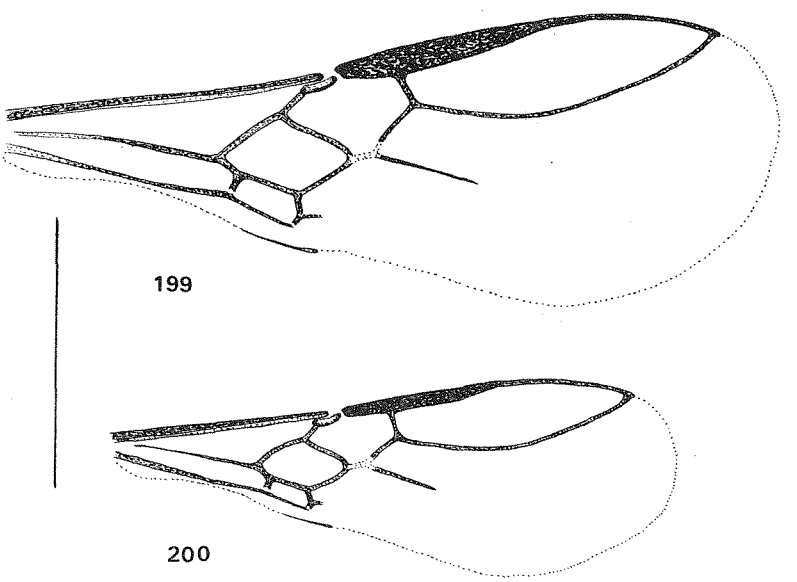
fine pubescence below the oblique suture. Mesoscutum with most of its surface slightly roughened, entirely covered with short, very dense pubescence: notaulices with their lateral extensions (i.e. at the "shoulders") distinct, margined by a slightly raised crest, but hardly extending longitudinally on the dorsal surface of the mesoscutum. Mesepisternum with dense whitish pubescence, similar to that of the metapleuron, above the middle coxa. Pubescence of metapleuron and propodeum extremely dense: the tubercle behind the spiracles on the propodeum, although not so prominent as in *nigriscaposus* and *lanigerus*, bears a conspicuous fringe of matted pubescence. Petiole strongly widened towards its apex, longitudinally striate, with its dorsal surface shining and almost bare. In the female the gaster becomes strongly pointed towards its apex, so that the ovipositor, although long and stout (fig. 209), only slightly projects beyond the apical tergite in the retracted position.

Wing (fig. 200) with vein R_s evenly curved, not at all sinuate; *1m-cu* rejected from cell R_s.

Breeding records

Host — *Cerodontha* (*Icteromyza*) *geniculata* FALLÉN

2 ♀♀ from puparia 17. viii. 66 on *Eriophorum latifolium*, Mata Babia Góra, Markόw pond, Poland, em. 30. viii and 9. ix. 66, leg. NOWAKOWSKI (PAN and GCDG).



Figs. 199—200. Wings of *Chorebus* spp.: 199, *C. lanigerus* (STELFOX) ♂; 200, *C. gracilipes* (THOMSON) ♀. (Scale 1 mm.)

This species is very similar to the well-known *C. uliginosus* (HALIDAY), a parasite of *Hydrellia* (Ephydridae), but has a longer, stouter ovipositor and less extensive pubescence on the back of the head.

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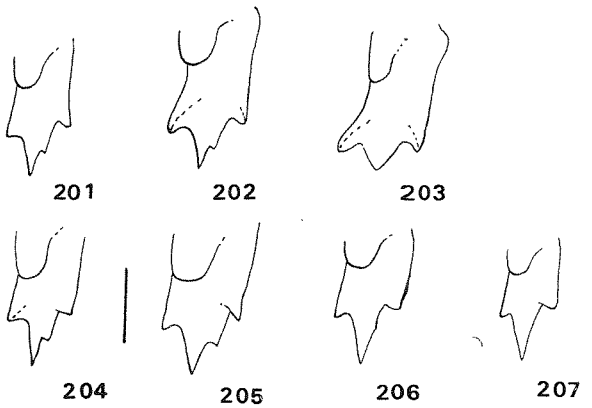
The two syntypes of THOMSON's *Dacnusa* (*Dacnusa*) *gracilipes* (from Örtofta, near Lund, Sweden) represent different species. Only the male, which is hereby designated lectotype, belongs to the species described above. The second syntype (a female) belongs to a species not otherwise known to me.



Figs. 201—207. Mandibles of *Chorebus* spp.: 201, *C. talaris* (HALIDAY); 202, *C. asramenes* (NIXON); 203, *C. transversus* (NIXON); 204, *C. cytherea* (NIXON); 205, *C. iridis* sp. nov.; 206, *C. nigriscaposus* (NIXON); 207, *C. gracilipes* (THOMSON). (Scale 0.1 mm.)

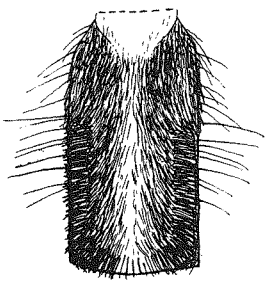


Fig. 208. Petiole of *Chorebus cytherea* (NIXON). (Scale 0.1 mm. Scale line see fig. 209.)

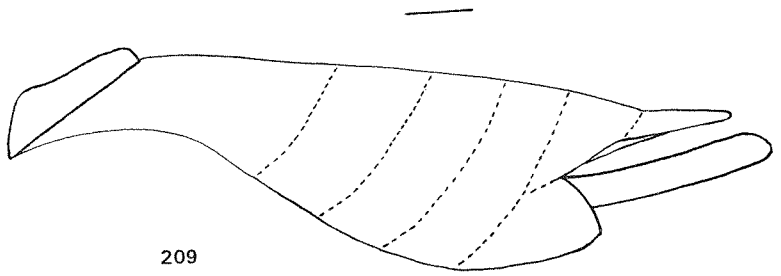


Fig. 209. Gaster in lateral view of *Chorebus gracilipes* (THOMSON) ♀. (Scale 0.1 mm.)

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Keys to *Chorebus* HALIDAY

A fundamental revision of the existing keys (in NIXON, 1943—54) to many groups of *Chorebus* spp. has been necessary, both as a result of my revision of the group concepts and to accomodate the large number of new species described in this and previous parts of this paper. Hitherto I have only given a fully revised key for the *senilis* group s.l. and the *cybele* group (in Part IV, GRIFFITHS, 1967). I must take full responsibility for what follows, although a few of the couplets still follow those in NIXON's keys.

1. Preliminary Key

1 Metapleuron with dense pubescence forming a distinct rosette around the swelling on its lower half (see figs. 22 and 23 in Part I): the centre of the swelling is usually bare or with only a few outstanding hairs 2

— Metapleural pubescence not of this type, at most with a weak tendency to differentiation in the direction of the hairs (see figs. 17—21 in Part I). All species have clearly 4-toothed mandibles and a rugose precoxal suture. Vein Cu_{1b} weak or absent in most species . . . . . various plesiomorph species (see key 4 below)

Note. In *C. metallicus* sp. nov. the metapleural rosette is extremely fine and inconspicuous, but the species may be recognised as belonging to the *affinis* group by its smooth precoxal suture and the very elongate, 3-toothed mandibles.

2 Species of elongate form (thorax at least 1.3 times as long as high), with a conspicuous crest or basal tuft of matted pubescence on the posterior margin of the hind coxa. Vein Cu_{1b} well developed in all except a few species, forming a distinct angle with the transverse section of Cu_1 (see fig. 154). (All species in which the precoxal suture is represented by a smooth linear groove, extending virtually for the entire length of the mesepisternum, are included under this alternative.) 3

— Hind coxa usually without a distinct tuft of matted pubescence. (Rugose precoxal suture present in all species except *C. ampliator* (NEES)) 5

Note. A few species in the *ovalis/lateralis* complex included under this second alternative have weak tufts of pubescence on the hind coxa. Most of these have a short thorax, but three species of elongate form included in couplets 43—44 of the key to the *ovalis/lateralis* complex below may possibly be confused with species of the *senilis* group. They may be recognised as belonging to the *ovalis/lateralis* complex by careful attention to the form of cell *2Cu*, which is open at its lower distal corner through the virtual loss of vein Cu_{1b}.

3 Tergite 3 (the tergite immediately following the petiole) longitudinally striate and separated from the following tergite by a well-defined groove. Precoxal suture very broad, strongly rugose-costate. Mandibles virtually 3-toothed, dominated by the long pointed central tooth. Labial palpi 3-segmented . . . . . *C. rousseaui* group[5]

— Tergite 3 virtually smooth, without any distinct groove separating it from the following tergite 4

4 Rugose precoxal suture present in most species (except the *bathyzonus* group). Sides of pronotum with very dense, opaque pubescence at least along and below the oblique suture . . . . . *C. senilis* group sensu lato (see the key in Part IV)

Note. This concept includes the *bathyzonus* group, whose species have a smooth precoxal suture similar to that of the *affinis* group. However in the *bathyzonus* group the mandibles are strongly 4-toothed, not long and pointed as in the *affinis* group.

[5] The available names for species of this group are *Dacnusa rousseaui* SCHULZ (1907), *Dacnusa obscuripes* RUSCHKA (1913), *Chorebus striolus* STELFOX (1957) and *Chorebus scabrifossus* STELFOX (1957). BURGHELE (1960) has suggested that the first three of these names refer to a single species. The life-history of these curious insects is still unknown. They are probably closely related to the *affinis* and *senilis* groups (with which they appear synapomorph in respect of the tuft of matted pubescence on the hind coxa), but further investigation is needed.

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– Precoxal suture represented by a well-defined smooth linear groove, which extends virtually for the entire length of the mesepisternum. Mandibles with tooth 2 long and pointed, the additional tooth (tooth 3 in 4-toothed species) being either weak or absent (see figs. 204–207). Pubescence of pronotum variable. (Species in which the sides of the pronotum are densely pubescent may be separated from the *bathyzonus* group by the form of their mandibles.) . . . . . *C. affinis* group (see key 3 below)

5 Wing with vein Cu_{1b} well developed, forming a distinct angle with the transverse section of Cu_1 (compare fig. 154). Petiole elongate, at least 1.9 times as long as wide, almost bare . . . . . plesiomorph species related to the *affinis* and *senilis* groups (see key 2 below)

– Wing with vein Cu_{1b} usually very weak or absent. (A more or less distinct vein Cu_{1b} is present in a few large species, but their petiole is not of the above type) . . . . . *C. ovalis/lateralis* complex (see keys 5 and 6 below)

2. Plesiomorph species related to the *affinis* and *senilis* groups

1 Mandibles (fig. 203) 3-toothed (similar to those of most species of *Exotela* and *Dacnusa*). Wing (fig. 190) with vein R_s strongly sinuate. Mesoscutum extensively pubescent, at most with the lateral lobes bare . . . . . *C. transversus* (NIXON)

Host: *Cerodontha* (*Butomomyza*) *angulata* LOEW

– Mandibles clearly 4-toothed (see fig. 25). Wing as figs. 191 and 192, with vein R_s only weakly sinuate 2

2 Thorax fairly short, 1.2–1.3 times as long as high: hind tarsi short, about 0.8 times the length of the hind tibiae. Notaulices complete, reaching the posterior fovea as deep rugose furrows: precoxal suture very broad anteriorly. 30–36 antennal segments . . . . . ***C. humeralis* sp. nov.**

Host: *Cerodontha* (*Butomomyza*) *angulata* LOEW

– Species of more elongate form (thorax 1.3–1.5 times as long as high), with longer hind tarsi (0.9–1.0 times as long as the hind tibiae) 3

3 Notaulices complete, reaching the posterior fovea as deep conspicuous furrows which are usually rugose throughout. Central part of mesepisternum (above the broad precoxal suture) covered with fine scaly-reticulate ground sculpture. Antennae with 38–45 segments: all flagellar segments entirely covered with short dense pubescence in both sexes . . . . . ***C. nobilis* sp. nov**

Host: *Cerodontha* (*Butomomyza*) *eucaricis* NOWAKOWSKI

– Notaulices usually not so well developed. Central part of mesepisternum completely smooth 4

4 Central part of mesoscutum densely pubescent, roughened anteriorly. All flagellar segments covered with dense pubescence in both sexes . . . . . *C. merella* (NIXON)

Hosts: *Cerodontha* (*Butomomyza*) *caricivora* GROSCHKE, *C.* (*B.*) *scirpi* KARL, *C.* (*B.*) *staryi* HERING, *C.* (*Dizygomyza*) *caricicola* HERING, *C.* (*D.*) *luzulae* GROSCHKE and *C.* (*D.*) *chaixiana* GROSCHKE

– Central lobe of mesoscutum smooth and bare. Basal flagellar segments strongly shining and almost bare in the male, bearing only a few short hairs (mainly near their apex) 5

5 Mesosternum ventral to the precoxal suture smooth and strongly shining. Petiole with rather coarse, rugose sculpture . . . . . *C. pelion* (NIXON)

Hosts: *Cerodontha* (*Butomomyza*) *eucaricis* NOWAKOWSKI, *C.* (*B.*) *vigneae* NOWAKOWSKI, *C.* (*Dizygomyza*) *morosa* MEIGEN and *C.* (*D.*) sp. probably *caricicola* HERING

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— Mesosternum ventral to the precoxal suture dull and finely rugose. Petiole with fine reticulate sculpture . . . . . *C. orissa* (NIXON), **comb. nov.**

3. The *Chorebus affinis* group

I have not seen material of the species described by BURGHELE (1959a and 1959b), DOCAVO ALBERTI[6] (1962 and 1965) and TOBIAS (1962), which are included in this key on the basis of their descriptions. The host records for *Hydrellia* (Ephydridae) are mainly based on BURGHELE's work. She records the host as *Hydrellia griseola* FALLÉN in every case, but I think that the identity of the host species requires further investigation, as her mass collecting method can hardly have allowed a separation of different species of *Hydrellia*. It would not be surprising if some of the parasites concerned proved to be host vicariants.

1 Mesoscutum with its dorsal surface completely bare except for a few hairs along the course of the notaulices. Sides of pronotum strongly shining and almost bare. Back of head largely bare 2
— Not as above. Mesoscutal pubescence more extensive, extending at least onto the anterior part of the central lobe 11
2 Metapleuron with a bare, shining appearance, the rosette of pubescence around the swelling on its lower half being extremely fine and inconspicuous. Vein Cu_{1b} represented only by a shadow, so that cell *2Cu* is open at its lower distal corner (fig. 197). 21—24 antennal segments . . . . . ***C. metallicus* sp. nov.**
Host: *Cerodontha* (*Icteromyza*) *geniculata* FALLÉN
— Metapleural pubescence forming a conspicuous rosette. Cell *2Cu* closed by vein Cu_{1b} at its lower distal corner 3
3 Petiole with dense pubescence along its sides (but bare along its centre-line). Basal flagellar segments almost bare in the male. 28—34 antennal segments. Ovipositor (♀) stout, projecting beyond the apical tergite in the retracted position (see NIXON, 1949, fig. 297) . . . . . *C. esbeltus* (NIXON), **comb. nov.**
— Petiole virtually bare 4
4 Pronotum entirely bright testaceous. 26—27 antennal segments. Ovipositor (♀) stout, projecting beyond the apical tergite in the retracted position . . . . . *C. ruficollis* (STELFOX), **comb. nov.**
— Pronotum black, like the rest of the thorax 5
5 Labial palpi 3-segmented. Basal flagellar segments pubescent in both sexes: in the female the flagellum is conspicuously thickened between roughly the third and tenth segments . . . . . *C. miodes* (NIXON), **comb. nov.**
— Labial palpi 4-segmented. Flagellum not unusually thickened 6
6 Eyes (♀) very strongly convergent below, only very narrowly separated above the clypeus (see TOBIAS, 1962, fig. 38). Petiole elongate, about $2^1/_2$ times as long as wide. 29 antennal segments (♀). (♂ unknown) . . . . *C. ophthalmicus* (TOBIAS), **comb. nov.**
— Eyes not so strongly convergent below, well separated above the clypeus 7
7 31—35 antennal segments (♀). Ovipositor (♀) very stout, strongly projecting beyond the apical tergite in the retracted position, its sheaths being obviously longer than hind tarsal segment 1 (see NIXON, 1949, fig. 296). Tergite 3 with an area of striation centrally at its base (adjacent to the petiole). (♂ unknown) . . . . . *C. foveolus* (HALIDAY), **comb. nov.**
— Fewer antennal segments. Ovipositor (♀) more slender, only slightly projecting beyond the apical tergite in the retracted position except in *risilis* 8

[6] After completion of this paper a further work by Dr. DOCAVO has appeared (DOCAVO ALBERTI, 1967). This includes a very detailed description of *Chorebus costai* DOCAVO, which will supplement the brief original description (DOCAVO ALBERTI, 1962).

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8 Surface of vertex, mesoscutum, mesepisternum and gastral tergites covered with fine punctate ground-sculpture. Petiole fairly long, about 1.8 times as long as wide. 25 antennal segments (both sexes): basal flagellar segments almost bare in the male. Ovipositor (♀) short, not projecting beyond the apical tergite in the retracted position . . . . . *C. asini* (DOCAVO), **comb. nov.**

— Surface of vertex, mesoscutum, mesepisternum and gastral tergites virtually smooth 9

9 Petiole 2—$2^1/_2$ times as long as wide, parallel-sided or only slightly widened towards its apex. Antennal segments: ♂, 28—30; ♀, 26—29: basal flagellar segments densely pubescent in both sexes. Ovipositor (♀) short, not projecting beyond the apical tergite in the retracted position . . . . . *C. siniffa* (NIXON)

Host: *Cerodontha* (*Dizygomyza*) *morosa* MEIGEN

— Petiole shorter, more widened towards its apex. 20—26 antennal segments 10

10 Ovipositor (♀) only slightly projecting beyond the apical tergite in the retracted position (see NIXON, 1949, fig. 295), its sheaths hardly as long as the basal segment of the hind tarsus. Basal flagellar segments almost bare in the male . . . . . *C. affinis* (NEES), **comb. nov.**

— Ovipositor (♀) more strongly projecting, its sheaths fully as long as the basal segment of the hind tarsus. (♂ unknown) . . . . . *C. risilis* (NIXON), **comb. nov.**

11 Petiole elongate, well over $1^1/_2$ times as long as wide 12

— Petiole very short, less than $1^1/_2$ times as long as apically wide 17

12 Petiole extraordinarily long and narrow, over 3 times as long as wide, virtually bare. Gaster beyond petiole bright yellow or orange. Sides of pronotum entirely punctate and covered with dense pubescence. Mesoscutum entirely pubescent. 31—32 antennal segments: pubescence of basal flagellar segments sparse in the male . . . . . ***C. stilifer* sp. nov.**

Host: *Cerodontha* (*Butomomyza*) *staryi* HERING

— Not as above. Petiole not so extremely narrow 13

13 Petiole as fig. 208, entirely covered with extremely dense pubescence which radiates outwards around its apical half. Sides of pronotum largely bare, in strong contrast with the densely pubescent mesoscutum. Basal flagellar segments densely pubescent in both sexes. 27—39 antennal segments . . . . . *C. cytherea* (NIXON)

Hosts: *Cerodontha* (*Dizygomyza*) *spinata* GROSCHKE, *C.* (*D.*) *luctuosa* MEIGEN, *C.* (*D.*) *hirtae* NOWAKOWSKI, *C.* (*D.*) *chaixiana* GROSCHKE and *C.* (*Poemyza*) *pygmaea* MEIGEN (xenophagy)

— Pubescence of petiole less extensive, not radiating outwards in this way. 30—32 antennal segments 14

14 Basal flagellar segments virtually bare in the male. Mesoscutum entirely covered with dense pubescence. Sides of pronotum virtually bare . . . . . *C. alua* (NIXON), **comb. nov.**

— All flagellar segments densely pubescent in both sexes. Mesoscutum with less extensive pubescence, absent from its posterior half (*iridis*) or from the lateral lobes (*vernalis* and *fordi*). Sides of pronotum densely pubescent, at least on their lower half. 15

15 Pubescence on sides of pronotum dense, but somewhat upstanding, lacking the opaque whitish appearance of *fordi* and *iridis*. Petiole with dense, rather long pubescence covering much of its surface, bare only along its centre-line. ***C. vernalis* sp. nov.**

Host: *Cerodontha* (*Dizygomyza*) *caricicola* HERING

— Sides of pronotum with densely matted, opaque whitish pubescence (similar to that of the metapleuron) covering most of their surface. Petiole more sparsely pubescent. 16

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16 Sides of pronotum with the bare area along their dorsal margin virtually smooth. Mesoscutum with dense pubescence extending onto the anterior half or third of its dorsal surface (including both central and lateral lobes). Mandibles clearly 4-toothed (fig. 205). Wing with vein R_s slightly sinuate (compare fig. 193). ***C. iridis* sp. nov.**

Host: *Cerodontha* (*Dizygomyza*) *iridis* HENDEL

— Sides of pronotum with the bare area along their dorsal margin sculptured. Mesoscutal pubescence extending onto the anterior part of the central lobe, but the lateral lobes are virtually bare. Mandibles very small, with tooth 2 long and pointed but the additional tooth (tooth 3) represented only by a small projection from its side. Wing (fig. 194) with vein R_s almost evenly curved. . . . . *C. fordi* (NIXON)

Host: *Cerodontha* (*Poemyza*) *lateralis* MACQUART

17 Lateral lobes of mesoscutum bare. Sides of pronotum largely bare and shining, with distinct pubescence only at their ventral corner. Petiole virtually bare. Antennal segments: ♂, (23)—24—27; ♀, 22—24. Labial palpi 4-segmented. Wing as fig. 198. . . . . *C. nigriscaposus* (NIXON)

Hosts: *Cerodontha* (*Icteromyza*) *geniculata* FALLÉN and *C.* (*I.*) *calosoma* HENDEL

— Mesoscutum entirely covered with pubescence 18

18 Petiole densely pubescent 19

— Petiole almost bare. Labial palpi 3-segmented . . . *uliginosus* group (in part) . . 21

19 Labial palpi 4-segmented. Wing as fig. 199, with cell *2Cu* closed below. Antennal segments: ♂, 28—30; ♀, 25. . . . . *C. lanigerus* (STELFOX)

Host: *Cerodontha* (*Icteromyza*) *calosoma* HENDEL

— Labial palpi 3-segmented. Cell *2Cu* open below (see BURGHELE, 1959b, fig. 16) or bounded only by a semitranslucent vein (*1a*). 20—24 antennal segments . . . . . *uliginosus* group (in part) . . . 20

20[7] Frons with an oval projection below the front ocellus. Petiole (see STELFOX, 1957, fig. 1) without a delimited apical area . . . . . *C. hirtigenus* STELFOX

— Frons without such a projection. Petiole apically with a medial area of longitudinal striation, delimited by a depression around its edges (see BURGHELE, 1959b, fig. 6) . . . . . *C. nixoni* BURGHELE

Host: *Hydrellia* sp. (Ephydridae)

21 Mesoscutum and mesepisternum densely covered with large punctures. Ovipositor (♀) not extending beyond the apical tergite in the retracted position . . . . . *C. densepunctatus* BURGHELE

Host: *Hydrellia* sp.

— Mesoscutum and mesepisternum not as above, at most the former finely roughened. 22

22 Ovipositor (♀) (fig. 209) long and stout: female gaster strongly pointed towards its apex. Back of head largely bare, but with some dense pubescence near the base of the mandibles: temples and vertex with only a few scattered hairs . . . . . *C. gracilipes* (THOMSON)

Host: *Cerodontha* (*Icteromyza*) *geniculata* FALLÉN

— Ovipositor (♀) shorter: female gaster not so strongly pointed apically. Back of head largely covered with short dense pubescence 23

[7] *Gyrocampa stagnalis* HEYMONS (1908) is probably a prior name for one of the two species in this couplet, as stated by BURGHELE (1960).

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23[8] Legs with the tibiae, tarsi and hind coxae strongly infuscated. Mesoscutum with a distinct posterior fovea along its centre-line . . . . . *C. uliginosus* (HALIDAY) (= *Gyrocampa thienemanni* RUSCHKA)

Hosts: *Hydrellia* spp.

— Legs largely clear testaceous with only segment 5 of the hind tarsi distinctly infuscated: coxae only slightly darkened. Posterior fovea absent . . . *C. costai* DOCAVO

4. Various plesiomorph species of *Chorebus*

This key includes the species included in the key in Part I (GRIFFITHS, 1964, page 878), which may now be regarded as superseded. All species have been seen by me except *C. geminus* (TOBIAS) and *C. singularis* (TOBIAS). However Mr. TOBIAS has confirmed in correspondance that he thinks these correctly included in the key.

1 Metapleuron (fig. 19) only feebly sculptured on its lower half, with two or three long hairs. 20—21 antennal segments. Maxillary palpi brown, very short. Coxae, hind femora and hind tibiae darkened . . . . . *C. freya* (NIXON)

— Metapleuron more pubescent (compare figs. 19, 20 and 21) 2

2 Mandibles large with at least tooth 1 much expanded 3

— Mandibles with tooth 1 not or only slightly expanded (no more than in fig. 24) . 6

3 Legs (including coxae) yellow, with only the tarsi and the apex of the hind tibiae infuscated. 39 antennal segments (♀). Propodeum and petiole only sparsely pubescent: petiole 2½ times as long as apically wide. Notaulices well defined to the middle of the mesoscutum. . . . . *C. geminus* (TOBIAS), **comb. nov.**

— Legs darker, with at least the coxae and hind femora infuscated 4

4 Antennae with 39—46 segments. Mandibles with tooth 3 small, appearing only as a projection on the lower side of tooth 2. Notaulices well-defined to the middle of the mesoscutum. Metapleural swelling clothed with long hairs, but propodeum and petiole only sparsely pubescent. Large species (length about 3 mm.). *C. phaedra* (NIXON)

— Antennae with 20—23 segments (♀). Tooth 3 of mandibles well developed. Notaulices not extending longitudinally on the dorsal surface of the mesoscutum. Metapleuron, propodeum and petiole densely pubescent. . . . . *C. thusa* (NIXON)

Host: *Phytomyza rufipes* MEIGEN

— 28—34 antennal segments 5

5 Eyes very small, much less than twice as high as the length of the first segment of the flagellum; segment 3 of the hind tarsus very distinctly longer than 5. Antennae very short, with 28—29 segments (♀); maxillary palpi short. *C. myles* (NIXON), **comb. nov.**

— Eyes larger, about twice as high as the length of the first segment of the flagellum; segment 3 of the hind tarsus not noticeably longer than 5. Antennae longer, with 31—34 segments (both sexes); maxillary palpi long. . . . *C. anita* (NIXON), **comb. nov.**

6 Base of tergite 3 with rugose sculpture similar to that of the petiole. Mandible narrow with tooth 2 sharply pointed. Precoxal suture narrow, feebly rugose. Metapleuron (fig. 20) with a well-defined rugose swelling clothed with long, fairly dense pubescence: hind coxa rugose at its base. Legs ochreous yellow or yellow-brown, with the hind coxae somewhat infuscated. 30—33 antennal segments *C. talaris* (HALIDAY)

Hosts: *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN, *C.* (*P.*) *incisa* MEIGEN and *C.* (*P.*) *tatrica* NOWAKOWSKI

[8] Due to my imminent departure from England to Canada I have not had time to examine the lectotype of *Alysia* (*Dacnusa*) *uliginosa* HALIDAY (1839), and the interpretation here offered therefore requires checking. Since HALIDAY stated that the head of his species was finely pubescent ("subtiliter pubescens"), I am assuming that he had before him a species known to me as a *Hydrellia*-parasite. Probably this is the same as the species bred from *Hydrellia* which BURGHELE (1959a) has accepted as *uliginosus*.

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— Tergite 3 without sculpture 7

7 Mandibles either with tooth 4 reduced, smaller than tooth 3 (fig. 165), or with both teeth 3 and 4 reduced (fig. 166). Metapleural pubescence as fig. 21. Propodeal pubescence dense, usually rather short. Petiole more or less parallel-sided. Elongate species with the thorax 1.4—1.7 times as long as high. Hind tarsus about as long as the hind tibia . . . . . *Chorebus cybele* group (see the key in Part IV)

— Mandibles with tooth 4 normally developed, never smaller than tooth 3. Hind tarsus shorter than the hind tibia 8

8 Hind coxa conspicuously rugose, at least at its base: metapleuron as in *talaris* (compare fig. 20), with a well-defined rugose swelling clothed with long, fairly dense pubescence. Petiole entirely covered with fine pubescence. 29—35 antennal segments . . . . . *talaris* group (part) 9

— Hind coxa without any conspicuous sculpturation 11

9 Legs deep yellow, with the hind coxae more or less brown. Palpi and labrum yellow. Face fairly strongly punctate. Sides of pronotum with their entire surface sculptured . . . . . ***C. subasper* sp. nov.**

Host: *Cerodontha (Poemyza) alpina* NOWAKOWSKI

— Legs largely dark. Palpi and labrum infuscated 10

10 Face shining, only weakly punctate. Sides of pronotum virtually smooth above the oblique suture . . . . . *C. rhanis* (NIXON)

— Face coarsely and conspicuously rugose. Sides of pronotum with their entire surface sculptured . . . . . ***C. asperrimus* sp. nov**

Host: *Cerodontha (Poemyza) tatrica* NOWAKOWSKI

11 Legs with at least the tibiae and femora bright golden- or orange-yellow (but with the coxae contrastingly dark in *nydia* and *coxator*). Palpi yellow. 12

— Legs largely dark 14

12 Coxae yellow. Mesoscutum densely clothed with short hairs (fig. 30) over almost its entire surface. Metapleural pubescence rather dense . . . . *C. spenceri* GRIFFITHS

Host: *Agromyza phragmitidis* HENDEL

— Coxae dark. Metapleural pubescence sparser (fig. 17) 13

13 At least the four apical tarsal segments darkened . . . . . *C. nydia* (NIXON)

Hosts: *Agromyza nigripes* MEIGEN and *A. albipennis* MEIGEN

— Tarsal segments 1—4 yellow, but segment 5 contrastingly black. *C. coxator* (THOMSON)

Hosts: *Agromyza phragmitidis* HENDEL and *A. hendeli* GRIFFITHS

14 31—33 antennal segments; palpi long and yellowish *C. singularis* (TOBIAS), **comb. nov.**

— Antennae short, with 21—24 segments; maxillary palpi short (see table 23), always infuscated 15

15 Antennal segments: ♀, 23—24 (♂ unknown). Mesoscutal pubescence covering the entire central lobe and sometimes extending onto the lateral lobes. Metapleuron slightly rugose on its lower half but without a distinct raised swelling (its pubescence similar to that shown in fig. 21 but slightly denser) . . . . *C. asphodeli* GRIFFITHS

Host: *Liriomyza asphodeli* SPENCER

— Antennal segments: ♂, 21—22 (♀ unknown). Mesoscutal pubescence less extensive, the central lobe being pubescent anteriorly only or almost bare. Metapleuron with a distinct rugose swelling on its lower half, its pubescence as in *asphodeli* . . . . . *C. subfuscus* GRIFFITHS

Host: *Liriomyza buhri* DE MEIJERE

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5. The *Chorebus ovalis/lateralis* complex

(Key 6 below is a supplementary key to females of this group in which the ovipositor distinctly projects beyond the apical tergite in the retracted position.)

All species included in this key have been seen by me with the exception of *C. oltenicus* (BURGHELE) and *C. interjectus* (TOBIAS). However the authors of these species have confirmed in correspondance that they think them correctly included in the key.

1 Precoxal suture represented by a short smooth impression of absent. Small species (less than 2 mm.), with unusually short antennae, the flagellar segments being very short (mostly not more than 1½ times as long as wide), and few in number (♂, 19; ♀, 15—17). Legs entirely dark. Wing (fig. 179) with an unusually broad pterostigma. . . . . *C. ampliator* (NEES)

Host: *Liriomyza lutea* MEIGEN

— Rugose precoxal suture present 2

2 Mesoscutum with pubescence on its anterior face, but its dorsal surface virtually bare except for a few hairs along the course (or former course) of the notaulices, i.e. both its central and lateral lobes are virtually bare 3

— Pubescence of mesoscutum more extensive, extending on its dorsal surface at least over the anterior part of the central lobe 15

3 Small species, 1.6—2 mm., with a subcubical head (less than 1.5 times as wide as long) and elongate thorax. Mandible not expanded, with tooth 2 long and pointed (NIXON, 1943. fig. 37). Petiole bare centrally but with a thin accumulation of pubescence at its apical corners (NIXON, 1946, fig. 215). Basal antennal segments contrastingly yellow: legs yellow. . . . . *C. diremtus* (NEES)

Host: *Cerodontha (Cerodontha) fulvipes* MEIGEN

Note. Some specimens of *crenulatus* (see couplet 72) may be taken to this couplet. This species has a subcubical head (1.5—1.6 times as wide as long), but clearly differs from *diremtus* by its darker coloration and in having its petiole entirely pubescent with distinct apical tufts.

— Head more transverse (over 1.5 times as wide as long) 4

4 Petiole parallel-sided, 2½ times as long as wide, with evenly distributed pubescence covering its entire surface. 36 antennal segments (♀). Legs largely yellow, but with the base of the hind coxae infuscated. Ovipositor (♀) projecting beyond the apical tergite in the retracted position . . . . . *C. oltenicus* (BURGHELE), **comb. nov.**

— Petiole not more than twice as long as wide. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position 5

5 Petiole bare or sparsely pubescent, without distinct whitish tufts of pubescence at its apical corners, although in some species (*lugubris, hilaris, solstitialis,* and *flavipes*) the pubescence usually becomes slightly denser here 6

— Petiole with distinct whitish tufts of pubescence at its apical corners 11

6 18—24 antennal segments 7

— At least 26 antennal segments 8

7 Basal antennal segments contrastingly yellow at least as far as the third flagellar segment (often about as far as the sixth flagellar segment). Legs usually entirely yellow (rarely with the coxae brown) . . . . . *C. albipes* (HALIDAY)

Hosts: *Phytagromyza populi* KALTENBACH, *P. tremulae* HERING and *P. tridentata* LOEW

— Antennae entirely dark. Legs dark brown with all coxae black . . . *C. lar* (MORLEY) (= *Dacnusa innana* NIXON)

Hosts: *Agromyza johannae* DE MEIJERE and *A. genistae* HENDEL

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8 Mandibles large, with teeth 1 and 2 much expanded (fig. 57). 26—29 antennal segments. Notaulices with only their lateral extensions distinct, not extending longitudinally on the dorsal surface of the mesoscutum. Legs entirely dark. . . . . *C. solstitialis* (STELFOX)

Host: *Agromyza megalopsis* HERING

— Mandibles smaller, not thus expanded (compare fig. 59). Notaulices extending longitudinally at least on the anterior part of the mesoscutum 9

9 Maxillary palpi very short, with their apical segment contrastingly darkened. Notaulices deep, extending more or less to the posterior fovea. Legs bright yellowish red with at most the two apical segments of the tarsi blackened. Antennal segments: ♂, 33; ♀, 29—32. Petiole almost bare. . . . . *C. glabriculus* (THOMSON) (= *Dacnusa cortipalpis* NIXON) (see also couplet 34)

— Maxillary palpi long, more or less uniformly coloured 10

10 Legs yellow. Antennal segments: ♂, (28)—30—32; ♀, 29—32: basal two or three flagellar segments usually yellow or yellow-brown. Petiole with pubescence distributed over most of its surface (except for the central part of about its apical half), although this is very fine and inconspicuous. . . . . *C. flavipes* (GOUREAU) (= *Dacnusa raissa* NIXON)

Host: *Cerodontha (Dizygomyza) iraeos* ROBINEAU-DESVOIDY

— Legs largely yellow-brown, with the coxae and tarsi infuscated. Antennal segments: ♂, 33—36; ♀, 30—35: flagellum dark throughout. Petiole with its centre largely bare, but with pubescence along its sides and at its apical corners (fig. 70) . . . . . *C. lugubris* (NIXON)

Host: *Agromyza albipennis* MEIGEN

— Legs golden yellow except the tarsi which are largely infuscated. Antennae and petiole as in *lugubris* . . . . . *C. hilaris* GRIFFITHS

Host: *Agromyza nigripes* MEIGEN

— Legs varying from deep yellow to light brown or testaceous, either unicolorous or with the hind coxae somewhat darker (more or less brown). Antennal segments: ♂, (27)—28—31; ♀, 26—28—(29): flagellum usually dark throughout, but sometimes becoming obscurely yellow towards its base. Petiole similar to that of *lugubris* and *hilaris*, but slightly more pubescent, with some scattered hairs near its base, as well as along its sides and towards its apex . . . . . *C. fallaciosae* GRIFFITHS

Hosts: *Phytomyza fallaciosa* BRISCHKE and *P. rydeni* HERING

11 Extremely small species (about 1.4 mm.) with 21—23 antennal segments. Petiole entirely covered with dense pubescence. Notaulices completely absent or with only their lateral extensions distinct. Legs deep yellow. . . *C. melanophytobiae* GRIFFITHS (see also couplets 88 and 94)

Host: *Melanophytobia chamaebalani* HERING

— At least 26 antennal segments. Notaulices usually well developed 12

12 Mandible almost 3-toothed, with tooth 3 developed as no more than a feeble angulation on the side of tooth 2. Antennae with 30—33 (♂) and 29—31 (♀) segments, yellow-brown at their base as far as the first or second flagellar segment. Petiole with fairly dense, but fine and inconspicuous pubescence distributed over most of its surface but tending to be absent from the centre-line apically. Legs deep yellow (occasionally with the hind coxae brown). . . . . *C. xanthaspidae* GRIFFITHS

Host: *Metopomyza xanthaspida* HENDEL

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— Mandible with tooth 3 distinct, although relatively small in *dirona* (fig. 183). Petiole bare centrally (see NIXON, 1945, fig. 198) 13

13 Antennal segments: ♂, 28—30; ♀, 26—29: basal flagellar segments not contrastingly pale. Legs deep yellow or yellow-brown, usually with the hind coxae somewhat infuscated . . . . . *C. dirona* (NIXON)

Host: *Liriomyza graminicola* DE MEIJERE

— At least 32 antennal segments: basal two or three flagellar segments contrastingly yellow or yellow-brown. Legs (including hind coxae) yellow 14

14 Gaster beyond petiole bright yellowish red, becoming darker only ventrally and towards its apex. Mesoscutum with traces of scaly-reticulate ground sculpture, but this is much less well defined than in *ganesa* . . . . . *C. enephes* (NIXON)

Host: *Cerodontha (Poemyza) deschampsirae* SPENCER

— Gaster uniformly dark, or at most with tergites 3 and 4 reddish brown. Mesoscutum entirely covered with fine scaly-reticulate ground sculpture. . . . . *C. ganesa* (NIXON)

Host: *Cerodontha (Poemyza) deschampsiae* SPENCER

15 Head quadrate, hardly wider than long (NIXON, 1943, fig. 56). Large species, 3.8 to 4.2 mm., with very numerous antennal segments (♂, 49—52; ♀, 42—45). Petiole with distinct apical tufts of pubescence, but otherwise only sparse scattered hairs . . . . . *C. abnormiceps* (NIXON), **comb. nov.** (= *Dacnusa quadriceps* NIXON nec ASHMEAD)

— Head transverse, much wider than long, except in *crenulatus* (see couplet 72) . . 16

16 Mandibles large, much widened towards their apex, with at least tooth 1 much expanded (compare fig. 57). Petiole with evenly distributed pubescence (rather sparse except in *atis*) or bare centrally (*iphias*) . . . . . *atis* group 17

— Mandibles smaller, not or only slightly widened towards their apex 21

Note. Some species of the *lateralis* group (e.g. *eros*, fig. 60) in which the mandibles are slightly expanded are included under this second alternative.

17 Legs largely dark 18

— Legs largely yellow or orange-testaceous, at most with the base of the hind coxae and the apical tarsal segments infuscated 20

18 41 antennal segments (♂). Large species, about 2.8 mm., with the swelling of the temples very exaggerated (head width about 1 mm.) and the mandibles about 0.3 mm. wide. Maxillary palpi very short, the two apical segments clearly shorter than the scape + pedicel (see table 8 of biometric data). . . . . *C. atis* (NIXON)

— At most 36 antennal segments 19

19 34—36 antennal segments (♂). Mesoscutum pubescent except for the posterior half of the lateral lobes. Petiole almost parallel-sided, about twice as long as wide (fig. 71) . . . . . *C. groschkei* GRIFFITHS

Host: *Agromyza prespana* SPENCER

— 29 antennal segments (♂). Mesoscutum almost entirely pubescent. Petiole somewhat widened towards its apex, only about 1.7 times as long as wide (TOBIAS, 1962, fig. 58) . . . . . *C. interjectus* (TOBIAS), **comb. nov.**

— 28 antennal segments (♀). Lateral lobes of mesoscutum bare. Petiole more or less parallel-sided, twice as long as wide . . . . . *C. baeticus* GRIFFITHS

Host: *Agromyza baetica* GRIFFITHS

Note. *C. solstitialis* (STELFOX), which differs from the species included in this couplet in having an almost bare mesoscutum, has been included in couplet 8.

20 Petiole almost parallel-sided, twice as long as wide, bare centrally but with some pubescence near its base, along its sides and towards its apical corners (NIXON, 1943, fig. 54). 29 antennal segments (♀). . . . . *C. iphias* (NIXON)

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— Petiole widened towards its apex, about 1½ times as long as wide, with evenly distributed pubescence. Antennal segments: ♂, 29; ♀, 25—26 . . . . . *C. rufimarginatus* (STELFOX), **comb. nov.**

21 Petiole elongate, at least twice as long as wide, almost or completely parallel-sided, virtually bare (at most with a little fine pubescence at its base and a few isolated hairs along its sides and near its apex) 22

— Petiole more pubescent or, if virtually bare, not elongate and parallel-sided 24

Note. *C. perkinsi* (NIXON) and *C. knautiae* GRIFFITHS could possibly be misplaced at this couplet (see fig. 67).

22 42 antennal segments (♀). Petiole extremely narrow, about 3 times as long as wide. Legs largely yellow: basal flagellar segments yellow. . . . . *C. resa* (NIXON)
Host: *Agromyza* sp. (*ambigua* group)

— At most 34 antennal segments 23

23 Mesoscutum with pubescence distributed over all its surface except about the posterior half of the lateral lobes. Base of hind coxa with a distinct matted tuft of whitish pubescence. Antennal segments: ♂, 34; ♀, 30—33. Legs yellow. Petiole about twice as long as wide . . . . . *C. abaris* (NIXON)
Hosts: *Phytomyza lycopi* NOWAKOWSKI, *P. symphyti* HENDEL and *P. tetrasticha* HENDEL

— Dorsal surface of mesoscutum with only sparse pubescence, along the course of the notaulices and in about two rows along its central line: lateral lobes almost completely bare. Base of hind coxa with a small tuft of pubescence. 32 antennal segments (♀). Legs yellow-brown with the coxae and tarsi brown. Petiole about twice as long as wide . . . . . *C. albimarginis* GRIFFITHS
Host: *Phytomyza albimargo* HERING

— Mesoscutum with pubescence distributed over all its surface except the posterior half of the lateral lobes. Pubescence on hind coxae not forming distinct basal tufts. 29 antennal segments (♀). Legs dark brown with the coxae black. Petiole about twice as long as wide . . . . . *C. gnaphalii* GRIFFITHS
Host: *Phytomyza gnaphalii* HERING

— Mesoscutum with pubescence covering its central lobe, but the lateral lobes largely bare. Pubescence of hind coxae not forming distinct basal tufts. Legs ochreous yellow, unicolorous or with the hind coxae more or less brown. Antennal segments: ♂, 28—30; ♀, (24)—25—29. Petiole very narrow, 2.7—3.0 times as long as wide . . . . . *C. venustus* (TOBIAS)
Hosts: *Liriomyza soror* HENDEL, *L. sonchi* HENDEL and *L.* sp. on *Hieracium pilosella*

24 Elongate species (thorax 1.3—1.6 times as long as high), with an extraordinarily long upcurved ovipositor (♀), projecting beyond the apical tergite by about half the gastral length in the retracted position, its sheaths about equal in length to the hind tibia. Mandibles (fig. 134) with tooth 4 reduced, obviously smaller than the large tooth 3. Petiole strongly widened towards its apex, only 1.1—1.4 times as long as wide, with most of its surface covered with short, adpressed, fairly dense pubescence. Antennal segments: ♂, 30—34; ♀, 27—31 . . . . . *C. crassipes* (STELFOX)
Host: *Phytomyza diversicornis* HENDEL

— Ovipositor (♀) shorter except in *bensoni* (couplet 36) which is a short-bodied species (thorax about 1.1 times as long as high). Mandibles usually with tooth 4 well developed (except in *tenellae*) 25

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25 Antennal segments: ♂, 21—22; ♀, 18—19. Petiole partly bare or with evenly distributed pubescence: no apical tufts. Small species (less than 2 mm.) with very short mesoscutal pubescence and the notaulices completely absent. Antennae entirely dark. Legs varying from yellow-brown to dark brown. Wing (fig. 85) with the metacarp very short. (North Africa and the Canaries) 26

— Antennal segments rarely so few: if so, the other characters are not as above 27

26 Petiole raised centrally, rather coarsely rugose, not strongly shining, with short hairs rather densely distributed over almost its entire surface . . *C. sativi* (NIXON)

Host: *Phytomyza atricornis* MEIGEN

— Petiole almost flat, strongly shining, its shallow sculpture having a distinct longitudinal element, bare centrally but with a few hairs near its sides and apical corners (fig. 143) . . . . . *C. canariensis* GRIFFITHS

Host: *Phytomyza atricornis* MEIGEN

27 Hind coxa with a distinct matted tuft of whitish pubescence at its base. Thorax short, 1.1—1.2 times as long as high. 24—32 antennal segments. Legs yellow or ochreous. Petiole either parallel-sided, about twice as long as wide, and densely pubescent (*nana*); or, if widened towards its apex, densely pubescent on its basal half only (*thecla*) 28

— Pubescence of hind coxa usually not forming a distinct matted tuft. Species in which a weak tuft is present are of much more elongate form (*ergias*, *oritias* and *fallax*), or with a different form of petiole (e.g. *tamiris* and *calthae*) 29

28 Petiole (fig. 145) widened towards its apex, densely pubescent on its basal half but more sparsely pubescent towards its apex. Antennal segments: ♂, 28—31; ♀, (24) — 25—27: flagellum entirely dark or only obscurely paler towards its base . . . . . *C. thecla* (NIXON)

Hosts: *Phytomyza lithospermi* NOWAKOWSKI and *Liriomyza* sp. on *Hieracium pilosella*

— Petiole parallel-sided, about twice as long as wide, with dense whitish pubescence distributed over its entire surface and tending to form apical tufts. Antennal segments: ♂, (28)—29—32; ♀, 27—32: basal segments usually yellow-brown (clearly so as far as about the first flagellar segment). . . . . *C. nana* (NIXON)

Hosts: several *Phytomyza* spp. on Labiatae and Boraginaceae

Note. *C. abaris* (NIXON), which appears closely related to the above two species and has a similar tuft of pubescence on the hind coxa, has been included in couplet 23 on account of its elongate, virtually bare petiole.

29 38—45 antennal segments. Petiole strongly widened towards its apex, only 1.2 to 1.6 times as long as apically wide, largely bare (fig. 63) . . *lateralis* group (part). 30

— Fewer antennal segments, or the petiole not of this type 31

30 Gaster beyond petiole reddish yellow. Legs bright yellow-red throughout . . . . *C. cinctus* (HALIDAY)

Host: *Agromyza lucida* HENDEL

— Gaster dark brown. Legs largely yellow, but with the hind tibiae infuscated on about their apical third . . . . . *C. pione* (NIXON)

Host: *Agromyza phragmitidis* HENDEL

31 Petiole wholly or partly bare (at most with fine pubescence at its base, along its sides and towards its apex), usually strongly widened towards its apex (not more than 1.5 times as long as wide in most species, at most 1.8 times as long as wide in *rubicundus*): never with distinct whitish apical tufts. Not more than 35 antennal segments 32

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— Petiole with more extensive pubescence, usually covering its entire surface: if the pubescence tends to be absent from the centre-line or apical half, then the petiole is relatively elongate (more than 1.5 times as long as apically wide) or bears distinct whitish apical tufts 42

32 Mandibles with tooth 3 weak or overlapping tooth 2 (figs. 58 and 182). Petiole almost completely bare, at most with one or two pairs of isolated hairs on its dorsal surface (fig. 62). 27—34 antennal segments. Notaulices well developed. Legs yellow, at most with the tarsi partly infuscated 33

— Mandibles as fig. 135, with tooth 2 long and pointed, but tooth 3 weak. (Petiole only slightly widened towards its apex) . . . . . *C. dagda* (NIXON) (see couplet 46)

– Mandibles with tooth 3 well developed. Petiole not completely bare, at least with a little fine pubescence near its base and along its sides 34

33 Mandible with tooth 3 overlapping tooth 2 (fig. 58). Propodeum with a pair of conspicuous, densely matted oblique bands of white pubescence. . . . . *C. rotundiventris* (THOMSON)

Host: *Agromyza distorta* GRIFFITHS

— Mandible with tooth 3 visible as a small projection from the side of tooth 2 (fig. 182). Oblique bands of propodeal pubescence inconspicuous, not white and matted . . . . . *C. schlicki* GRIFFITHS

Host: *Liriomyza virgo* ZETTERSTEDT

34 Maxillary palpi very short, with their apical segment contrastingly blackened. Notaulices deep, extending more or less to the posterior fovea. Legs bright yellowish red with at most the two apical segments of the tarsi blackened. Antennal segments: ♂, 33; ♀, 29—32. (Dorsal surface of mesoscutum largely bare, at most with fine inconspicuous pubescence on the central lobe) . . . . . *C. glabriculus* (THOMSON) (= *Dacnusa cortipalpis* NIXON) (see also couplet 9)

— Maxillary palpi more or less uniformly coloured, the apical segment not contrastingly blackened 35

35 Petiole rather elongate (1.8 times as long as wide), only slightly widened towards its apex, almost bare apart from a few fine hairs at its apical corners. Gaster beyond petiole entirely deep orange-yellow. Legs yellow. Mesoscutum with dense pubescence covering almost its entire surface. 28 antennal segments (♀) . . . . . ***C. rubicundus* sp. nov.**

Host: *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

— Petiole usually not more than 1.5 times as long as wide, strongly widened towards its apex 36

36 Ovipositor (♀) extremely long, projecting beyond the apical tergite in the retracted position by almost half the gastral length, its sheaths almost as long as the hind tibia. Antennal segments: ♂, 33—35; ♀, 30—33. Petiole broadly bare along its centre-line. Legs yellow . . . . . *C. bensoni* (NIXON)

Host: *Phytomyza soenderupi* HERING

— Ovipositor (♀) not or only shortly projecting beyond the apical tergite in the retracted position. Fewer antennal segments (considering each sex separately) except in *tamiris*, which has a more densely pubescent petiole 37

37 23 antennal segments (♀). Legs yellow. Basal antennal segments dull yellow as far as the second flagellar segment. Very small species (1.3 mm.) . . *C. endymion* GRIFFITHS

Host: *Paraphytomyza xylostei* ROBINEAU-DESVOIDY

Note. This species differs from *C. albipes* (HALIDAY) (couplet 7) in having longer palpi, a shorter petiole, and a more densely pubescent mesoscutum. Occasional specimens of the latter species which have a little pubescence on the central lobe of the mesoscutum might be taken to this couplet.

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— Larger species with the basal antennal segments not contrastingly pale 38

38 Mandibles with tooth 4 small, close to their base (fig. 137). Antennal segments: ♂, 28—31; ♀, (25)—26—28. Legs golden yellow or yellow-brown . . *C. tenellae* GRIFFITHS

Host: *Phytomyza tenella* MEIGEN

— Mandibles with tooth 4 normally developed 39

39 Antennal segments: ♂, 28—32—(33); ♀, 27—31—(32). (Pubescence of petiole somewhat sparse and inconspicuous, but distributed over most of its surface, absent only from the centre-line) . . . . . *C. tamiris* (NIXON) (see couplet 61)

— Fewer antennal segments (at most 27 in the male and 26 in the female) 40

40 Gastral tergites 3 and 4 contrastingly yellow-brown. Legs 1 and 2 ochreous yellow or yellow-brown; hind legs somewhat darker, more or less red-brown: coxae not contrastingly infuscated. Petiole finely pubescent on about its basal half, but almost bare on its apical half. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position . . . . . *C. amauromyzae* GRIFFITHS

Hosts: *Amauromyza carlinae* HERING and *A. morionella* ZETTERSTEDT

— Gaster beyond petiole uniformly dark. At least the hind coxae distinctly infuscated, dark brown or black 41

41 Petiole very strongly widened towards its apex (1.2—1.3 times as long as apically wide), bare centrally but with some short fine inconspicuous pubescence near its base, along its sides and at its apical corners. In the female the gaster is pointed apically, with the tergites clearly projecting beyond the apical sternites in lateral view: ovipositor rather long, slightly projecting beyond the apical tergite in the retracted position . . . . . *C. veratri* GRIFFITHS

Host: *Liriomyza veratri* GROSCHKE

— Petiole usually less strongly widened towards its apex, its pubescence sparse but usually distributed over most of its surface. Female gaster more or less rounded apically: ovipositor short, not projecting beyond the apical tergite in the retracted position . . . . . *C. angelicae* (NIXON) (see also couplet 61)

Host: *Phytomyza angelicae* KALTENBACH

42 Elongate species (thorax 1.4—1.5 times as long as high) with long, largely yellow legs: hind tarsi as long as or longer than the hind tibiae, with segment 3 clearly longer than segment 5. Petiole about twice as long as wide, almost parallel-sided, entirely covered with dense pubescence which becomes denser towards the apical corners (forming weak tufts). 30—35 antennal segments 43

— Not as above. If the thorax is elongate, the hind tarsi are clearly shorter than the hind tibiae (e.g. *asramenes* and *agraules*), or the form of the petiole different 45

43 Mandible with tooth 2 very long and curved outwards (fig. 136). Ovipositor (♀) distinctly projecting beyond the apical tergite in the retracted position. . *C. fallax* (NIXON)

Host: *Phytomyza cardui* HERING

— Mandibles with tooth 2 not so markedly long (fig. 131) 44

44 Ovipositor (♀) not or hardly projecting beyond the somewhat projecting apical gastral tergites in the retracted position . . . . . *C. ergias* (NIXON)

Host: *Phytomyza araciocecis* HERING

— Ovipositor (♀) longer, probably projecting beyond the apical tergite in the retracted position . . . . . *C. oritias* (NIXON), **comb. nov.**

Note. In the only two specimens of *oritias* the ovipositor is not fully retracted. Apart from the longer ovipositor I see no clear difference between *oritias* and *ergias*.

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45 Mandibles (fig. 135) with tooth 2 long and pointed, but tooth 3 very weak. 24—27 antennal segments. Thorax somewhat elongate, 1.3—1.4 times as long as high. Palpi short 46

— Mandibles not as above: if tooth 2 is somewhat long and pointed, tooth 3 is better developed (e.g. *buhri*, fig. 130) or the antennal segments more numerous (e.g. *asramenes* and *agraules*) 47

46 Lateral lobes of mesoscutum almost bare. Petiole (fig. 141) with only sparse pubescence . . . . . *C. dagda* (NIXON)

Host: *Phytomyza gentianae* HENDEL

— Mesoscutal pubescence extending onto the anterior half of the lateral lobes. Petiole (fig. 142) with dense pubescence covering its entire surface and tending to form apical tufts . . . . . *C. gentianellus* GRIFFITHS

Hosts: *Phytomyza gentianella* HENDEL and *P. vernalis* GROSCHKE

47 Centre of mesepisternum (above the precoxal suture) evenly covered with long hairs, similar to those below the precoxal suture. 34 antennal segments (♀). Pubescence of petiole largely fine and inconspicuous, but forming distinct apical tufts. Legs dull reddish with the hind coxae dark brown . . . *C. abrota* (NIXON), **comb. nov.**

— Centre of mesepisternum usually completely bare, at most with a few fine hairs forming a diagonal band 48

48 Petiole elongate, at least 1.8 times as long as wide, parallel-sided or only slightly widened towards its apex, covered with evenly distributed, usually dense pubescence (rather sparse only in *perkinsi* and *knautiae*), which does not form apical tufts (figs. 65—69). Usually 31 or more antennal segments (but occasionally only 29 or 30 in *bres*). Maxillary palpi long. Thorax short, 1.0—1.3 times as long as high . . . . . *lateralis* group (part) 49

Note. Some specimens of *mitra* (see couplets 59 and 86) might possibly be confused with *bres*; but *mitra* has shorter infuscated palpi, darker legs, and the long pubescence of the petiole usually becoming somewhat denser towards the apical corners. Other species with an elongate, evenly pubescent petiole (without apical tufts) and up to 29 or 30 antennal segments taken under the second alternative of this couplet are *aphantus* and *avesta*: these have inter alia paler legs and a more strongly rugose metapleural swelling than in *bres*.

— Not as above. If the petiole is similar to that of species of the *lateralis*-group (elongate and parallel-sided), the number of antennal segments does not exceed 30 . . . 58

49 Pubescence of petiole sparse (fig. 67). Gaster beyond petiole predominantly pale (yellow-brown or orange-yellow) with at most suffusions of darker colouring along its sides. 34—39 antennal segments 50

— Pubescence of petiole denser (figs. 65, 66, 68 and 69) 51

50 Legs yellow except for the tarsi and occasionally the extreme apex of the hind tibiae. Mesoscutal pubescence sparse (along the course of the notaulices and in about 4—5 rows over the central lobe) . . . . . *C. perkinsi* (NIXON)

Hosts: *Agromyza albitarsis* MEIGEN and *A. lygophaga* HERING

— Hind legs with brown coxae, the apical half of the femora dark brown and the entire tibiae and tarsi almost black. Mesoscutum with denser pubescense, extending also onto the anterior half of its lateral lobes . . . . . *C. knautiae* GRIFFITHS

Host: *Agromyza woerzi* GROSCHKE

51 Legs largely yellow, at most with the tarsi, the apex of the hind tibiae and the base of the hind coxae infuscated 52

— Legs darker, with their dominant colour yellow-brown or red-brown or with more extensive infuscation of the hind legs: hind coxae completely dark 55

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52 Mesoscutum bare over much of its surface, with pubescence over its anterior face, along the course of the notaulices and sparsely on the anterior part of its central lobe. 31—36 antennal segments. Hind tibia entirely yellow (not infuscated apically) . . . . . *C. credne* (NIXON)

Hosts: *Agromyza spiraeae* KALTENBACH, *A. alnibetulae* HENDEL and *A. rubi* BRISCHKE

— Central lobe of the mesoscutum densely pubescent 53

53 Mesoscutum almost entirely pubescent. Metapleural swelling weakly rugose-punctate (but more strongly so than in *lateralis* and *deione*). Antennal segments: ♂, 34—38; ♀, (32)—33—36. . . . . *C. trilobomyzae* GRIFFITHS

Hosts: *Trilobomyza labiatarum* HENDEL, *T. flavifrons* MEIGEN and *T. verbasci* BOUCHÉ

— Mesoscutal pubescence extending onto the anterior part of the lateral lobes. Metapleural swelling coarsely rugose, hardly shining (as in *eros*). 34—39 antennal segments . . . . . *C. uma* (NIXON), **comb. nov.**

— Lateral lobes of mesoscutum almost bare. Metapleural swelling of strongly shining appearance, only feebly rugose. Usually at least 36 antennal segments 54

54 Basal flagellar segments yellow tipped with black. Hind coxae entirely pale yellow . . . . . *C. lateralis* (HALIDAY)

Hosts: *Agromyza anthracina* MEIGEN, *A. ferruginosa* WULP and *A. urticae* NOWAKOWSKI

— Flagellum entirely dark. Hind coxae dark yellow, usually infuscated at their base . . . . . *C. deione* (NIXON)

Hosts: *Agromyza* spp. on Boraginaceae

55 45—48 antennal segments. Gaster beyond petiole red or orange. Hind femora and tibiae extensively infuscated . . . . . *C. thisbe* (NIXON)

Host: *Agromyza nigrociliata* HENDEL

— At most 43 antennal segments. Gaster usually entirely dark (at most with tergite 3 reddish). 56

56 Metapleural swelling coarsely rugose, hardly shining. 36—43 antennal segments. . . . . *C. eros* (NIXON)

Host: *Agromyza nigrociliata* HENDEL

— Metapleural swelling shining, only shallowly rugose 57

57 Antennal segments: ♂, (29)—31—36; ♀, 30—34. Notaulices vestigial or absent. . . . . *C. bres* (NIXON)

Host: *Agromyza spiraeae* KALTENBACH

— Antennal segments: ♂, 39—42; ♀, (35)—37—43. Notaulices usually well defined to the middle of the mesoscutum . . . . . *C. polygoni* GRIFFITHS

Hosts: *Agromyza nigrescens* HENDEL and *A. polygoni* HERING

58 Petiole with pubescence evenly distributed over its entire surface, or becoming sparser on its apical half; not becoming obviously denser at its apical corners . . 59

— Petiole with dense pubescence covering usually its entire surface and becoming denser towards its apical corners, often forming conspicuous whitish tufts: if its centreline is bare (as sometimes in *ninella*, *daimenes* and *testaceipes*), these apical tufts are well developed 69

59 Very dark species: legs brown or dark brown with all coxae black (hind legs often extensively blackened). Palpi rather short (see table 15), brown or virtually black. Antennal segments: ♂, (29)—30—33; ♀, (26)—27—32. (Pubescence of petiole long and dense, usually becoming distinctly denser towards the apical corners) . . . . . *C. mitra* (NIXON)

(see couplet 86)

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— Basal antennal segments contrastingly yellow or yellow-brown as far as about the second flagellar segment. Legs entirely yellow. Palpi long (see table 23). Antennal segments: ♂, 29—30; ♀, (25)—27—29. (Pubescence of petiole dense, usually tending to form weak apical tufts, but occasionally these are absent). . *C. avesta* (NIXON) (see couplet 89)

— Not as above 60

60[9] Thorax very short, only about 1.1 times as long as high. Pubescence of petiole sparse and inconspicuous 61
— Thorax more elongate, at least 1.2 times as long as high (usually about 1.3). 62

61 Legs largely deep yellow-brown or testaceous with the coxae and apical tarsal segments (and sometimes also the hind femora) infuscated. Antennal segments: ♂, 25—27; ♀, (23)—25—26. . . . . *C. angelicae* (NIXON) (see also couplet 41)

Host: *Phytomyza angelicae* KALTENBACH

— Legs deep yellow or ochreous with only tarsal segments 5 distinctly infuscated (at most with the hind coxae brown). Antennal segments: ♂, 28—32—(33); ♀, 27—31 — (32) . . . . . *C. tamiris* (NIXON) (see also couplet 39)

Host: *Phytomyza calthophila* HERING

62 Wing length about equal to the body length. Head relatively large (head width 1.5 times the width of the mesoscutum). Mandibles with tooth 2 rather long and pointed (fig. 130). Antennal segments: ♂, 26—27; ♀, 22—23. Palpi fairly short (see table 15). Legs largely ochreous or brown. (Pubescence of petiole usually showing a slight tendency to become denser at the apical corners). . . . . *C. buhri* GRIFFITHS (see also couplet 76)

Host: *Phytomyza griffithsi* SPENCER

— Wing length usually clearly longer than the body length (except sometimes in *scabiosae*). Mandibles with tooth 2 not unusually long and pointed 63

63 Hind tarsi about as long as the hind tibiae. Antennal segments: ♂, 22—24; ♀, 21—23. Petiole rather densely pubescent near its base but more sparsely so towards its apex (sometimes bare centrally on its apical half). Palpi short (see table 15 of biometric data). Small species, 1.4—1.6 mm. . . . . *C. scabiosae* GRIFFITHS

Host: *Phytomyza scabiosae* HERING

— Hind tarsi clearly shorter than the hind tibiae, except sometimes in *punctus* (a larger species with more numerous antennal segments) 64

64[10] Maxillary palpi short (the length of the two apical segments together being only about one third of the height of the head — see table 15). Antennae entirely dark. Legs largely ochreous brown with the coxae somewhat darker. 24 antennal segments (♂) . . . . . *C. thalictri* GRIFFITHS

Host: *Phytomyza aquilegiae* HARDY

— Maxillary palpi obviously longer (*aphantus, sylvestris, xylostellus*), or antennal segments more numerous (*aphantus, prosper, punctus*) 65

[9] The measurement of thorax length used throughout this paper is the longitudinal distance from the anterior edge of the mesoscutum to the posterior edge of the propodeum.

[10] The measurement of head height used throughout this paper is the perpendicular distance from the lower margin of the clypeus to the apex of the vertex (measured in lateral view).

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65 Very small species (about 1.7 mm.) with relatively long antennae: ♂, 30—34 segments; ♀, 27—30 segments. Maxillary palpi short. Legs (including coxae) yellow. Petiole rather strongly widened towards its apex, usually about 1½ times as long as apically wide. In the female the gaster is somewhat pointed apically, with the tergites clearly projecting beyond the apical sternites in lateral view: ovipositor rather long, but hardly projecting beyond the apical tergite in the retracted position. . . . . *C. prosper* (NIXON), **comb. nov.**

— Not as above. Petiole parallel-sided or only slightly widened towards its apex . . . 66

66 Maxillary palpi relatively short (the length of the two apical segments together being only about one-third of the height of the head — see table 15). Thorax 1.3—1.6 times as long as high (often very elongate). 25—28 antennal segments (without any marked sexual dimorphism). Mesoscutum with most of its surface slightly roughened . . . . . *C. punctus* (GOUREAU)

Hosts: *Phytomyza dorsata* HENDEL, *P. scolopendrii* ROBINEAU-DESVOIDY and *P. sedicola* HERING

— Maxillary palpi long (the length of the two apical segments together being almost half the height of the head — see table 15). Thorax 1.2—1.3 times as long as high. Number of antennal segments strongly sexually dimorphic 67

67 Antennal segments: ♂, (22)—23—25—(26); ♀, 19—21: basal flagellar segments contrastingly yellow or orange-yellow (at least as far as the third flagellar segment, often as far as the fifth). . . . . *C. xylostellus* GRIFFITHS

Host: *Phytomyza periclymeni* DE MEIJERE

— Antennal segments more numerous in the female (and often so in the male): basal flagellar segments dark or at most deep yellow or yellow-brown no further than the third flagellar segment (never so strongly contrasting in colour as in *xylostellus*) . . 68

68 Antennal segments: ♂, (23)—24—27; ♀, 22—25 . . . . . *C. sylvestris* GRIFFITHS

Hosts: *Phytomyza alpigenae* HENDEL, *P. lonicerella* HENDEL and *P. xylostei* KALTENBACH

— Antennal segments: ♂, 26—29; ♀, 23—27 . . . . . *C. aphantus* (MARSHALL)

Hosts: *Phytomyza nigra* MEIGEN, *P. milii* KALTENBACH and *Liriomyza flaveola* FALLÉN (xenophagy)

Note. It may not be possible to separate all caught specimens of these species on present information. More material of *aphantus* is needed for biometric analysis, in order to clarify whether a reliable diagnosis of individual specimens can be made on the basis of the correlation between size and the number of antennal segments, as I suspect is possible at least with the males.

69 Dark species (legs varying from yellow-brown or red-brown to dark brown with all coxae black), usually with 28 or more antennal segments. Dorsal surface of mesoscutum extensively bare, with pubescence largely confined to its anterior third except for a few hairs along the course of the notaulices. Thorax elongate (1.3—1.5 times as long as high). Hind tarsi as long as or almost as long as the hind tibiae 70

— Not as above. If dark-legged, at least the central lobe of the mesoscutum is usually densely pubescent throughout 72

Note. Occasionally in *anasella* (see couplet 75) the mesoscutal pubescence is sparse, but this species will readily be distinguished from those under the first alternative by its low number of antennal segments.

70 Petiole short, not more than 1½ times as long as apically wide, with conspicuous white apical tufts. Ovipositor (♀) not projecting beyond the apical tergite in the retracted position. Wing somewhat iridescent, with vein R_s evenly curved (fig. 189) or only weakly sinuate. Antennal segments: ♂, 28—31; ♀, (26)—28—30 . . . . . ***C. vitripennis* sp. nov.**

Host: *Cerodontha* (*Poemyza*) *superciliosa* ZETTERSTEDT

— Petiole more elongate, 1½—2 times as long as apically wide, with its pubescence becoming denser towards the apical corners but hardly forming differentiated tufts. Wing with vein R_s always distinctly sinuate 71

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71 Ovipositor (♀) clearly projecting beyond the apical tergite in the retracted position (NIXON, 1945, fig. 197), slightly upcurved. 28—31 antennal segments (♀). Wings somewhat iridescent (compare *vitripennis*). . . . . *C. crocale* (NIXON), **comb. nov.**

— Ovipositor (♀) not projecting beyond the apical tergite in the retracted position. 33 antennal segments (both sexes). Wings not unusually iridescent . . *C. merion* (NIXON)

Host: *Phytomyza taraxacocecis* HERING

72 Small species (about 2 mm.) with large subcubical head (1.5—1.6 times as long as wide) and elongate thorax. Dorsal surface of mesoscutum with pubescence only along the course of the notaulices and sparsely on its central lobe (occasionally this too is almost bare): notaulices well defined, reaching the posterior fovea. Mandibles small, with tooth 2 long and pointed. Antennal segments: ♂, 30—34; ♀, 26 — 30. Legs largely reddish yellow or yellow-brown. . . . . *C. crenulatus* (THOMSON) (= *Dacnusa elegantula* NIXON) (see also couplet 3)

Host: *Cerodontha* (*Cerodontha*) *denticornis* PANZER

— Not as above. Head usually more transverse 73

73 Elongate species (thorax about 1.4 times as long as high) with at least 31 antennal segments. Legs largely deep yellow, at most with the hind coxae brown. Mesoscutum with dense pubescence covering its entire surface except the posterior half of the lateral lobes. Hind tarsus slightly shorter than the hind tibia. Mandibles (fig. 202) with tooth 2 rather long and pointed. 74

— Elongate species (thorax about 1.4 times as long as high) with not more than 29 antennal segments. Legs dark, their dominant colour varying from yellow-brown to almost black: hind coxae always virtually black. Hind tarsus not or only slightly shorter than the hind tibia 75

— Not as above. Thorax shorter in most species. Hind tarsus clearly shorter than the hind tibia in all species except *kama* and *buhri* 76

74 Ovipositor (♀) not projecting beyond the apical tergite in the retracted position . . . . . *C. asramenes* (NIXON)

Host: *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN

— Ovipositor (♀) strongly projecting beyond the apical tergite in the retracted position (by over half the length of the petiole) . . . . . *C. agraules* (NIXON)

Host: *Cerodontha* (*Poemyza*) *muscina* MEIGEN

75 Ovipositor (♀) stout, clearly projecting beyond the apical tergite in the retracted position. Antennal segments: ♂, 23—29; ♀, 20—28. Hind tarsus as long as or longer than the hind tibia. Legs yellow-brown or red-brown with at least the hind coxae virtually black (and sometimes the hind legs more extensively infuscated) . . . . . *C. tanis* (NIXON)

Hosts: *Phytomyza* spp. on Dipsacaceae (except *P. scabiosae* HERING)

— Ovipositor (♀) not or hardly projecting beyond the apical tergite in the retracted position. 19—23 antennal segments. Hind tarsus not longer than hind tibia, usually slightly shorter. Legs uniformly blackish brown. *C. anasella* (STELFOX), **comb. nov.**

Host: *Phytomyza plantaginis* ROBINEAU-DESVOIDY[11]

76 Wing length about equal to body length. Head relatively large (head width 1.5 times the width of the mesoscutum): thorax rather elongate, about 1.3 times as long as high. Mandibles with tooth 2 rather long and pointed (fig. 130). Legs largely ochreous or brown. Antennal segments: ♂, 26—27; ♀, 22—23 . . *C. buhri* GRIFFITHS (see also couplet 62)

Host: *Phytomyza griffithsi* SPENCER

[11] New host record: details will be given in a later paper.

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— Wing length usually clearly longer than the body length (except sometimes in *poemyzae* and *melanophytobiae*). Mandibles with tooth 2 not unusually long and pointed (figs. 132 and 133) 77

77 Ovipositor (♀) and sheaths shortly projecting beyond the apical tergite in the retracted position: when extruded the ovipositor itself can be seen to be strongly downcurved (NIXON, 1945, fig. 193). Hind tarsus not or only slightly shorter than the hind tibia. Antennal segments: ♂, 28—32; ♀, 27—31. Legs dull yellow or yellow-brown with the hind coxae somewhat infuscated, at least at their base. Central lobe of mesoscutum roughened; notaulices well developed . . . . . *C. kama* (NIXON)

Host: *Phytomyza ranunculi* SCHRANK

— Ovipositor (♀) not or hardly projecting beyond the apical tergite in the retracted position. Hind tarsus shorter than the hind tibia 78

78 At least 30 (♂) or 29 (♀) antennal segments. Legs yellow, at most with the hind coxae darkened. Central lobe of mesoscutum pubescent, but the lateral lobes largely or completely bare. Sides of pronotum with only fine inconspicuous pubescence along and below the oblique suture 79

— Not as above. Antennal segments fewer; or, if 29 or more, the lateral lobes of the mesoscutum are densely pubescent or the sides of the pronotum bear very dense, conspicuous pubescence along and below the oblique suture 81

79 Palpi somewhat short (NIXON, 1945, fig. 185). In the female the gaster appears somewhat pointed towards its apex in dorsal view; apical sternite pointed (NIXON, 1945, fig. 177). Antennae with 32—35 (♂) and 30—34 (♀) segments, the basal segments being more or less dark or at most pale ventrally. *C. ovalis* (MARSHALL), **comb. nov.**

— Palpi long (the length of the two apical segments together being about half the height of the head). Female gaster more or less rounded apically: apical sternite not pointed.[12] Basal antennal segments contrastingly yellow, yellow-brown or reddish at least as far as the first flagellar segment 80

80 40 antennal segments (♂). (♀ unknown) . . . . . *C. apollyon* (MORLEY), **comb. nov.**

— Antennal segments: ♂, (34)—35—38; ♀, (33)—34—37. Mesoscutal pubescence very fine, usually only covering the anterior face and the anterior part of the central lobe . . . . . ***C. poemyzae* sp. nov.**

Hosts: *Cerodontha* (*Poemyza*) *incisa* MEIGEN, *C.* (*P.*) *pygmaea* MEIGEN and *C.* (*P.*) *deschampsiae* SPENCER

— Antennal segments: ♂, (30)—31—34; ♀, 29—33. Mesoscutal pubescence usually slightly coarser and more extensive, covering the entire central lobe and extending laterally about the "shoulders" (although the lateral lobes are still largely bare) . . . . . *C. ninella* (NIXON)

Host: *Cerodontha* (*Poemyza*) *calamagrostidis* NOWAKOWSKI

Note. The identity of the insect bred from *Agromyza hendeli* GRIFFITHS recorded as *ninella* in Part I (GRIFFITHS, 1966a) requires clarification.

81 Eyes strongly convergent below, the minimum distance between them being only about two-fifths of the width of the head (NIXON, 1945, fig. 168). Antennae with 21—26 segments, unusually short (with most of the flagellar segments less than twice as long as wide). Palpi short (see table 23). Legs largely ochreous yellow or brown . . . . . *C. varuna* (NIXON)

Hosts: *Metopomyza flavonotata* HALIDAY

— Eyes not so convergent below, the minimum distance between them usually not less than half the width of the head 82

[12] This character is subject to confirmation in the case of *apollyon*, whose female is unknown.

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82 Wing (fig. 89) with the pterostigma and cell $2R_1$ very elongate. Thorax short, only about 1.1 times as long as high: hind tarsus short (only about 0.8 times the length of the hind tibia). Petiole strongly widened towards its apex, only 1.3—1.5 times as long as apically wide. Mandibles (fig. 133) with tooth 2 somewhat blunt, not projecting much beyond tooth 3. Antennal segments: ♂, 28—30; ♀, 24—27. Legs dull yellow or light brown with the coxae and tarsi somewhat darker (brown or dark brown). . . . . *C. calthae* GRIFFITHS

Host: *Phytomyza calthivora* HENDEL

— Wing with cell $2R_1$ less elongate (as fig. 88 or shorter) 83

83 Sides of pronotum with only fine inconspicuous pubescence, which hardly obscures the shining surface beneath 84

— Sides of pronotum with denser, more conspicuous pubescence at least along and below the oblique suture. Petiole strongly widened towards its apex, 1.3—1.6 times as long as wide 94

84 Very dark species with all coxae blackened and at least the hind femora strongly infuscated (dark brown or black): palpi brown or virtually black 85

— Paler species, at most with yellow-brown legs and the hind coxae infuscated: palpi yellow or yellow-brown 87

85 26 antennal segments (♀). Petiole strongly widened towards its apex, about 1.4 times as long as wide, with conspicuous white apical tufts . . . *C. pimpinellae* GRIFFITHS

Host: *Phytomyza melana* HENDEL

— Antennal segments usually more numerous. Petiole more elongate, 1.8—2.0 times as long as wide, its pubescence becoming denser towards the apical corners but not forming such well defined tufts 86

86 Pubescence of petiole long, hardly adpressed. Antennal segments: ♂, (29)—30—33; ♀, (26)—27—32 . . . . . *C. mitra* (NIXON) (see also couplet 59)

Host: *Phytomyza campanulae* HENDEL

— Pubescence of petiole shorter, more adpressed (as in *alecto* and *armida*). 32 antennal segments (♀) . . . . . *C. catta* (NIXON), **comb. nov.**

87 Small species (1.4—1.7 mm.) with yellow legs (at most the hind coxae brown basally) and the petiole strongly widened towards its apex (less than 1½ times as long as apically wide). 19—23 antennal segments 88

— Petiole more elongate, usually over 1½ times as long as apically wide. Antennal segments more numerous except in *pseudomisellus* 89

88 Mesoscutum with its entire surface punctate and densely pubescent. Antennae entirely dark . . . . . *C. amasis* (NIXON)

Host: *Phytomyza crassiseta* ZETTERSTEDT

— Mesoscutum with its dorsal surface smooth and largely bare, at most with a little pubescence anteriorly. Antennae usually with the scape, pedicel and about the first flagellar segment yellow-brown . . . . . *C. melanophytobiae* GRIFFITHS (see also couplets 11 and 94)

Host: *Melanophytobia chamaebalani* HERING

89 Basal antennal segments contrastingly yellow or yellow-brown as far as about the second flagellar segment. Legs entirely yellow. Antennal segments: ♂, 29—30; ♀, (25)—27—29 . . . . . *C. avesta* (NIXON) (see also couplet 59)

Hosts: *Liriomyza morio* BRISCHKE and *L. eupatoriana* SPENCER

— Antennae entirely dark, or at most obscurely brownish at their base 90

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90 Antennal segments: ♂, (19), 23; ♀, 21—22. Thorax about 1.3 times as long as high. Mesoscutal pubescence not extending onto the lateral lobes. Very small species (1.2—1.4 mm.) . . . . . *C. pseudomisellus* GRIFFITHS

Host: *Liriomyza congesta* BECKER

— Antennal segments more numerous. Size usually larger 91

91[13] Thorax very short, only 1.1—1.2 times as long as high. Mesoscutum usually almost entirely pubescent 92

— Thorax more elongate, about 1.3 times as long as high. Mesoscutum almost entirely pubescent. At least 29 (♂) or 27 (♀) antennal segments 93

— Thorax 1.2—1.3 times as long as high. Mesoscutal pubescence usually absent from the posterior half of the lateral lobes. Antennal segments: ♂, 26; ♀, 25—26. Maxillary palpi rather short (see table 15) . . . . . *C. oreoselini* GRIFFITHS

Host: *Phytomyza pauliloewi* HENDEL

92 Antennal segments: ♂, (27)—28—31; ♀, (26)—27—31 . . . . . *C. armida* (NIXON)

Hosts: several *Phytomyza* spp. on Umbelliferae and Compositae

— Antennal segments: ♂, (25)—26—28; ♀, (23)—24—26—(27) . . . *C. alecto* (MORLEY) (= *Dacnusa turissa* NIXON)

Hosts: several *Phytomyza* spp. on Compositae and *P. crassiseta* ZETTERSTEDT

93 Antennal segments: ♂, 29—32; ♀, (27)—28—31 (not markedly sexually dimorphic). . . . . ***C. difficilis* sp. nov.**

Hosts: *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN, *C.* (*P.*) *incisa* MEIGEN, *C.* (*P.*) *calamagrostidis* NOWAKOWSKI, *C.* (*P.*) *deschampsiae* SPENCER and *C.* (*Dizygomyza*) *chaixiana* GROSCHKE

— Antennal segments: ♂, 33; ♀, 29—30 (strongly sexually dimorphic) . . . . . *C. luzulae* GRIFFITHS

Host: *Phytomyza luzulae* HERING

94 Mesoscutum largely bare, at most with a little pubescence anteriorly. Legs (including coxae) yellow. 21—23 antennal segments. Extremely small species (about 1.4 mm.) . . . . . *C. melanophytobiae* GRIFFITHS (see also couplets 11 and 88)

Host: *Melanophytobia chamaebalani* HERING

— At least the central lobe of the mesoscutum densely pubescent. If not more than 23 antennal segments, the legs are darker 95

95 18—24 antennal segments. Legs yellow-brown or brown with the hind coxae infuscated. Wing length less than 2 mm. 96

— 24—31 antennal segments: if 24 (*daimenes*), the legs (including coxae) are yellow. 97

96 Antennal segments: ♂, (21)—22—24; ♀, 21—22. Pubescence on sides of pronotum conspicuously dense and matted . . . . . *C. misellus* (MARSHALL)

Hosts: *Liriomyza congesta* BECKER, *L. centaureae* HERING, *L. cyparissiae* GROSCHKE and *Phytomyza atricornis* MEIGEN (xenophagy)

— Antennal segments: ♂, 20—22; ♀, 18—20. Pubescence on sides of pronotum not so dense as in *misellus*, similar to that of *daimenes*. . . . . *C. artemisiellus* GRIFFITHS

Hosts: *Liriomyza artemisicola* DE MEIJERE and *L. dracunculi* HERING

97 Legs (including coxae) uniformly deep yellow. 24—29 antennal segments 98

— Legs varying from ochreous yellow to brown, with at least the hind coxae infuscated. 99

98 Entire surface of mesoscutum pubescent . . . . . *C. incertus* (GOUREAU)

Host: *Liriomyza pascuum* MEIGEN

[13] While populations of the species in couplets 91—93 are clearly separable, the differences found may not be sufficient to enable all isolated specimens to be identified with confidence.

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— Lateral lobes of mesoscutum largely bare . . . . . *C. daimenes* (NIXON)

Hosts: *Liriomyza ameona* MEIGEN, *L. bryoniae* KALTENBACH, *L. millefolii* HERING, *L. pascuum* MEIGEN, *L. pumila* MEIGEN, *L. sonchi* HENDEL and *L. strigata* MEIGEN

Note. The distinction of the above two species is subject to some doubt.

99 Entire surface of mesoscutum pubescent. 30—31 antennal segments . . . . . *C. cambricus* GRIFFITHS

Host: *Liriomyza pusilla* MEIGEN

— Lateral lobes of mesoscutum largely bare. 26—29 antennal segments . . . . . *C. testaceipes* GRIFFITHS

Hosts: *Liriomyza puella* MEIGEN, *L. pusilla* MEIGEN and *L. scorzonerae* RYDÉN

In most species of the *Chorebus ovalis/lateralis* complex the ovipositor (♀) does not project beyond the apical tergite in the retracted position. But there are a few species in which a more elongate ovipositor has been evolved. These are not all grouped together in the above key, which is intended to apply to both sexes, because many are very dissimilar in other respects. It is evident that an elongate ovipositor has been evolved independently on a number of occasions (i.e. that resemblance in this respect often represents convergence, not synapomorphy). But in order to allow quicker identification of females which show this feature, the following supplementary key has been produced. Couplets 7—10 are partly based on couplets 4—7 of NIXON's (1945) key to his *ovalis*-group.

6. Females of the *Chorebus ovalis/lateralis* complex in which the ovipositor distinctly projects beyond the apical tergite in the retracted position

1 Ovipositor extremely long, projecting beyond the apical tergite in the retracted position by about half the gastral length 2

— Ovipositor shorter 3

2 Thorax elongate, 1.3—1.6 times as long as high. Mandibles (fig. 134) with tooth 4 reduced, obviously smaller than the large tooth 3. Petiole with most of its surface covered with short, adpressed, fairly dense pubescence. 27—31 antennal segments. . . . . *C. crassipes* (STELFOX)

Host: *Phytomyza diversicornis* HENDEL

— Thorax short, about 1.1 times as long as high. Mandibles with tooth 4 well developed, not smaller than tooth 3. Petiole broadly bare along its centre-line, with only fine inconspicuous pubescence along its sides. 30—33 antennal segments . . . . . *C. bensoni* (NIXON)

Host: *Phytomyza soenderupi* HERING

3 Dorsal surface of mesoscutum virtually bare except for a few hairs along the course of the notaulices. Petiole parallel-sided, 2½ times as long as wide, with evenly distributed pubescence covering its entire surface. 36 antennal segments. Legs largely yellow, but with the base of the hind coxae infuscated . . . *C. oltenicus* (BURGHELE)

— Pubescence of mesoscutum more extensive, extending on its dorsal surface at least over the anterior part of the central lobe 4

4 Petiole bare centrally, with only inconspicuous pubescence near its base, along its sides and at its apical corners. Ovipositor only slightly projecting beyond the apical tergite in the retracted position 5

— Petiole almost or completely covered with dense pubescence which becomes denser towards its apical corners, often forming distinct tufts 6

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5 Mandibles with tooth 4 small, close to their base (fig. 137). (25)—26—28 antennal segments. Legs golden yellow or yellow-brown (coxae not infuscated). . . . . *C. tenellae* GRIFFITHS

Host: *Phytomyza tenella* MEIGEN

— Mandibles with tooth 4 well developed, not so close to their base (fig. 181). 23—24 antennal segments. Legs largely yellow-brown with the coxae infuscated. . . . . *C. veratri* GRIFFITHS

Host: *Liriomyza veratri* GROSCHKE

6 Thorax rather short, only 1.2—1.3 times as long as high. Ovipositor only slightly projecting beyond the apical tergite in the retracted position. Mesoscutum almost entirely pubescent, with its central lobe roughened. Legs dull yellow or yellow-brown with the hind coxae somewhat infuscated. 27—31 antennal segments. . . . . *C. kama* (NIXON)

Host: *Phytomyza ranunculi* SCHRANK

— Thorax over 1.3 times as long as high. 7

7 Legs largely yellow, although often with the hind coxae somewhat infuscated. Palpi clear yellow. 31—35 antennal segments 8

— Legs darker, largely yellow-brown or red-brown with the hind coxae usually black. Palpi somewhat infuscated. Not more than 31 antennal segments 10

8 Petiole somewhat widened towards its apex with conspicuous pale tufts at its apical corners; sides of pronotum above the oblique suture evenly covered with fine pubescence. Hind tarsus slightly shorter than the hind tibia. . . . . *C. agraules* (NIXON)

Host: *Cerodontha* (*Poemyza*) *muscina* MEIGEN

— Petiole almost parallel-sided, with its pubescence becoming denser towards the apical corners, but not forming conspicuous pale tufts: sides of pronotum partly bare. Hind tarsi as long as or longer than the hind tibiae 9

9 Mandible with tooth 2 very long and curved outwards (fig. 136) . . *C. fallax* (NIXON)

Host: *Phytomyza cardui* HERING

— Mandible with tooth 2 not so markedly long . . . . . *C. oritias* (NIXON)

10 Mesoscutum with long sparse pubescence, restricted mainly to the course of the notaulices, with only a few scattered hairs on the central part of the central lobe (lateral lobes bare): notaulices distinct to about the middle of the mesoscutum . . . . . *C. crocale* (NIXON)

— Mesoscutum with shorter dense pubescence covering most of its surface (including the anterior half of the lateral lobes): longitudinal extensions of the notaulices weak or absent . . . . . *C. tanis* (NIXON)

Hosts: *Phytomyza* spp. on Dipsacaceae (except *P. scabiosae* HERING)

Keys to the Dacnusini Parasites of particular Host-Groups

Three keys are given below; to the parasites of the subgenera *Butomomyza* and *Dizygomyza*, to the parasites of subgenus *Poemyza*, and to the parasites of subgenus *Icteromyza*. I have not treated subgenera *Butomomyza* and *Dizygomyza* separately, because two of the commonest parasite species occur on hosts of both subgenera. No keys are offered for subgenera *Crastemyza* and *Cerodontha* s.s., since only one and two species of parasites are yet known from these host-groups (as shown in Table 26).

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1. *Cerodontha* subgenera *Butomomyza* and *Dizygomyza* (on Cyperaceae, Juncaceae, *Iris* and Gramineae)

1 Metapleural pubescence directed mainly downwards towards the hind coxa, not forming a rosette 2

— Metapleural pubescence forming a rosette of radiating hairs (compare figs. 22 and 23) 4

2 Pubescence of metapleuron, propodeum and petiole very long and dense, concealing the surface beneath. Tergite 3 smooth. Wing as fig. 123: pterostigma elongate, widened towards its apex, with vein *2r* branching from its extreme base. Mandible 3-toothed, not unusually long and pointed. . . . . *Dacnusa maculipes* THOMSON
Oligophagous species

— Metapleuron, propodeum and petiole only sparsely pubescent. Tergite 3 (i.e. the tergite following the petiole) with conspicuous longitudinal striation. Wing as fig. 186 (vein *2r* arising further from the base of the pterostigma). Mandible (fig. 37) with its central tooth long and pointed, and usually a small additional tooth before this (so that the central tooth becomes tooth 3) 3

3 Metapleuron strongly sculptured . . . . . *Laotris striatula* (HALIDAY)
Host: *C.* (*Dizygomyza*) *luctuosa* MEIGEN

— Metapleuron with most of its surfaceal most smooth . . ***Laotris rupestris* sp. nov.**
Host: *C.* (*Dizygomyza*) sp. on *Carex sempervirens*

4 Precoxal suture represented by a smooth linear groove, which extends virtually for the entire length of the mesepisternum. Hind coxa with a conspicuous crest or basal tuft of matted pubescence on its posterior margin 5

— Precoxal suture rugose-costate, usually rather broad. Pubescence at the base of the hind coxa not forming a distinct matted tuft 9

5 Petiole extraordinarily long and narrow, over three times as long as wide, virtually bare. Gaster beyond petiole bright yellow or orange. Sides of pronotum entirely punctate and covered with dense pubescence. Mesoscutum entirely pubescent . . . . . ***Chorebus stilifer* sp. nov.**
Host: *C.* (*Butomomyza*) *staryi* HERING

— Not as above. Petiole not so extremely narrow 6

6 Petiole as fig. 208, entirely covered with extremely dense pubescence which radiates outwards around its apical half. Sides of pronotum largely bare, in strong contrast with the densely pubescent mesoscutum . . . . . *Chorebus cytherea* (NIXON)
Hosts: *C.* (*Dizygomyza*) *spinata* GROSCHKE, *C.* (*D.*) *luctuosa* MEIGEN, *C.* (*D.*) *hirtae* NOWAKOWSKI, *C.* (*D.*) *chaixiana* GROSCHKE and *C.* (*Poemyza*) *pygmaea* MEIGEN (once)

— Pubescence of petiole less extensive, not radiating outwards in this way 7

7 Sides of pronotum largely bare, with only some fine inconspicuous pubescence along and below the oblique suture. Mesoscutum with its dorsal surface completely bare except for a few hairs along the course of the notaulices. Petiole virtually bare. . . . . *Chorebus siniffa* (NIXON)
Host: *C.* (*Dizygomyza*) *morosa* MEIGEN

— Sides of pronotum densely pubescent at least on their lower half. Mesoscutum with more extensive pubescence, extending at least onto the anterior half of its central lobe 8

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8 Petiole with dense, rather long pubescence covering much of its surface, bare only along its centre-line. Pubescence on sides of pronotum dense, but somewhat upstanding, lacking the opaque whitish appearance of *iridis*. Wing (fig. 196) with vein R_s evenly curved. . . . . ***Chorebus vernalis* sp. nov.**

Host: *C.* (*Dizygomyza*) *caricicola* HERING

— Petiole more sparsely pubescent. Sides of pronotum with densely matted, opaque whitish pubescence (similar to that of the metapleuron) covering much of their surface. Wing with vein R_s slightly sinuate (compare fig. 193). ***Chorebus iridis* sp. nov.**

Host: *C.* (*Dizygomyza*) *iridis* HENDEL

9 Wing with vein Cu_{1b} very weak or absent, so that cell *2Cu* is open at its lower distal corner (compare figs. 87 and 88). Petiole pubescent (though only finely so in *Chorebus flavipes* (GOUREAU)), $1\frac{1}{2}-2$ times as long as wide 10

— Wing with vein Cu_{1b} well developed, forming a distinct angle with the transverse section of Cu_1 (compare fig. 154). Petiole elongate, at least 1.9 times as long as wide, almost bare 11

10 Mesoscutum with its dorsal surface bare apart from a few hairs along the course of the notaulices. Petiole with only fine inconspicuous pubescence, which does not form distinct apical tufts. Legs yellow. . . . . *Chorebus flavipes* (GOUREAU)

Host: *C.* (*Dizygomyza*) *iraeos* ROBINEAU-DESVOIDY

— Mesoscutum with dense pubescence covering almost its entire surface. Petiole covered with dense pubescence which forms distinct apical tufts. Legs ochreous yellow or yellow-brown with the hind coxae infuscated . . ***Chorebus difficilis* sp. nov.**

Hosts: *C.* (*Dizygomyza*) *chaixiana* GROSCHKE and several *C.* (*Poemyza*) spp.

11 Mandibles (fig. 203) 3-toothed (similar to those of most species of *Exotela* and *Dacnusa*). Wing (fig. 190) with vein R_s strongly sinuate. Mesoscutum extensively pubescent, at most with the lateral lobes bare. . . . *Chorebus transversus* (NIXON)

Host: *C.* (*Butomomyza*) *angulata* LOEW

— Mandibles clearly 4-toothed (see fig. 25). Wing as figs. 191 and 192, with vein R_s only weakly sinuate 12

12 Thorax fairly short, 1.2—1.3 times as long as high: hind tarsi short, about 0.8 times the length of the hind tibiae. Notaulices complete, reaching the posterior fovea as deep rugose furrows: precoxal suture very broad anteriorly. 30—36 antennal segments . . . . . ***Chorebus humeralis* sp. nov.**

Host: *C.* (*Butomomyza*) *angulata* LOEW

— Species of more elongate form (thorax 1.3—1.5 times as long as high), with longer hind tarsi (0.9—1.0 times as long as the hind tibiae) 13

13 Notaulices complete, reaching the posterior fovea as deep conspicuous furrows which are usually rugose throughout. Central part of mesepisternum (above the broad precoxal suture) covered with fine scaly-reticulate ground sculpture. Antennae with 38—45 segments: all flagellar segments entirely covered with short dense pubescence in both sexes . . . . . ***Chorebus nobilis* sp. nov.**

Host: *C.* (*Butomomyza*) *eucaricis* NOWAKOWSKI

— Notaulices usually not so well developed. Central part of mesepisternum completely smooth 14

14 Central lobe of mesoscutum densely pubescent, roughened anteriorly. All flagellar segments covered with dense pubescence in both sexes . . . *Chorebus merella* (NIXON)

Hosts: *C.* (*Butomomyza*) *caricivora* GROSCHKE, *C.* (*B.*) *scirpi* KARL, *C.* (*B.*) *staryi* HERING, *C.* (*Dizygomyza*) *caricicola* HERING, *C.* (*D.*) *luzulae* GROSCHKE and *C.* (*D.*) *chaixiana* GROSCHKE

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— Central lobe of mesoscutum smooth and bare. Basal flagellar segments strongly shining and almost bare in the male, bearing only a few short hairs (mainly near their apex). (Mesosternum ventral to the precoxal suture smooth and strongly shining — contrast *Chorebus orissa* (NIXON)) . . . . . *Chorebus pelion* (NIXON)

Hosts: *C.* (*Butomomyza*) *eucaricis* NOWAKOWSKI, *C.* (*B.*) *vigneae* NOWAKOWSKI, *C.* (*Dizygomyza*) *morosa* MEIGEN and *C.* (*D.*) sp. probably *caricicola* HERING

2. *Cerodontha* subgenus *Poemyza* (on Gramineae)

1 Mandibles 3-toothed (compare fig. 61), not unusually long and pointed. Metapleuron without any well-defined raised swelling on its lower half, its pubescence directed mainly downwards towards the hind coxa 2

— Mandibles clearly 4-toothed, or, if virtually 3-toothed, the central tooth is very long and pointed. Metapleuron with a raised swelling on its lower half, which in many species is surrounded by a rosette of radiating pubescence 4

2 Wing (fig. 174) with vein *2r* eliminated; the distal section of R_s is bent at its base and fused with (♂) or contiguous with (♀) the pterostigma . . *Dacnusa adducta* (HALIDAY)

Hosts: *C.* (*P.*) *pygmaea* MEIGEN and *Liriomyza flaveola* FALLÉN

— Wing with vein *2r* well developed 3

3 Wing as fig. 123: pterostigma conspicuously widened towards its apex, with vein *2r* branching from its extreme base. Pubescence of metapleuron, propodeum and petiole very long and dense, concealing the surface beneath. Legs largely brown. 19—25 antennal segments . . . . . *Dacnusa maculipes* THOMSON

Oligophagous species

— Wing as fig. 42 (pterostigma not widened towards its apex, with vein *2r* arising further from its base). Metapleuron, propodeum and petiole only sparsely pubescent (fig. 16). Legs largely yellow. 25—34 antennal segments . . . . . *Exotela flavicoxa* (THOMSON)

Hosts: *C.* (*P.*) *incisa* MEIGEN, *C.* (*P.*) *pygmaea* MEIGEN, *C.* (*P.*) *phragmitidis* NOWAKOWSKI, *C.* (*P.*) *phalaridis* NOWAKOWSKI, *C.* (*Crastemyza*) *flavocingulata* STROBL and *Agromyza* spp. (*nigripes* group)

4 Precoxal suture represented by a smooth linear groove, which extends virtually for the entire length of the mesepisternum. Hind coxa with a conspicuous crest or basal tuft of matted pubescence on its posterior margin. Pubescence of metapleuron forming a rosette around the swelling on its lower half (see fig. 23) 5

— Precoxal suture distinctly rugose-costate (except occasionally in *Chorebus talaris* (HALIDAY)). Pubescence at the base of the hind coxa not forming a distinct matted tuft 6

5 Petiole as fig. 208, entirely covered with extremely dense pubescence which radiates outwards around its apical half. Sides of pronotum largely bare, in strong contrast with the densely pubescent mesoscutum . . . . . *Chorebus cytherea* (NIXON)

Once bred from *C.* (*P.*) *pygmaea* MEIGEN (usually associated with *C.* (*Dizygomyza*) spp.)

— Petiole partly bare, with only small patches of pubescence near its base, a few fine hairs along its sides and weak accumulations of fine pubescence at the apical corners. Sides of pronotum with densely matted, opaque whitish pubescence covering most of their surface. Mesoscutum with its dorsal surface largely bare, with pubescence only extending onto the anterior part of the central lobe . . . *Chorebus fordi* (NIXON)

Host: *C.* (*P.*) *lateralis* MACQUART

6 Metapleural swelling evenly covered with long, fairly dense pubescence (fig. 20), which does not form a distinct rosette. Hind coxae conspicuously rugose at least at their base. Petiole evenly covered with fine pubescence (not forming apical tufts). Mesoscutum densely pubescent 7

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— Metapleuron with dense pubescence forming a distinct rosette around the swelling on its lower half (see fig. 22): the centre of the swelling is almost bare or with only a few outstanding hairs 9

7 Base of tergite 3 with rugose sculpture similar to that of the petiole. Mandibles (fig. 201) narrow with tooth 2 sharply pointed. Wing (fig. 187) with cell $2R_1$ rather elongate . . . . . *Chorebus talaris* (HALIDAY)

Hosts: *C.* (*P.*) *pygmaea* MEIGEN, *C.* (*P.*) *incisa* MEIGEN and *C.* (*P.*) *tatrica* NOWAKOWSKI

— Tergite 3 without any rugosity at its base. Mandibles with tooth 2 relatively large, but not so long and pointed as in *Chorebus talaris* (HALIDAY). Wing (fig. 188) with cell $2R_1$ shorter 8

8 Legs deep yellow with the hind coxae more or less brown: palpi and labrum yellow. Face fairly strongly punctate, but not deeply sculptured as in *Chorebus asperrimus* sp. nov. . . . . ***Chorebus subasper* sp. nov.**

Host: *C.* (*P.*) *alpina* NOWAKOWSKI

— Legs brown with the coxae and hind femora virtually black: palpi and labrum dark. Face more strongly sculptured, coarsely and conspicuously rugose . . . . . ***Chorebus asperrimus* sp. nov.**

Host: *C.* (*P.*) *tatrica* NOWAKOWSKI

9 Petiole almost bare except for a few fine hairs at its apical corners (not forming distinct tufts). Gaster beyond petiole deep orange-yellow. Mesoscutum almost entirely covered with dense pubescence . . . . . ***Chorebus rubicundus* sp. nov.**

Host: *C.* (*P.*) *pygmaea* MEIGEN

— Petiole wholly or partly covered with dense pubescence which becomes denser towards its apical corners, often forming conspicuous whitish tufts: if the central part of the petiole is bare (as in *Chorebus ganesa* (NIXON) and *C. enephes* (NIXON)), these apical tufts are well-developed and conspicuous 10

10 Mesoscutum with its dorsal surface virtually bare apart from a few hairs along the course of the notaulices. Petiole bare centrally, with conspicuously contrasting white apical tufts. Legs largely yellow: basal antennal segments contrastingly yellow or yellow-brown as far as the second or third flagellar segment. 32—38 antennal segments 11

— Mesoscutal pubescence more extensive, extending on its dorsal surface at least over the anterior part of the central lobe 12

11 Gaster beyond petiole bright yellowish red, becoming darker only ventrally and towards its apex. Mesoscutum with traces of scaly-reticulate ground sculpture, but this is much less well defined than in *Chorebus ganesa* (NIXON) . . . . . *Chorebus enephes* (NIXON)

Host: *C.* (*P.*) *deschampsiae* SPENCER

— Gaster uniformly dark, or at most with tergites 3 and 4 reddish brown. Mesoscutum entirely covered with fine scaly-reticulate ground sculpture. *Chorebus ganesa* (NIXON)

Host: *C.* (*P.*) *deschampsiae* SPENCER

12 Legs varying from yellow-brown to dark brown, with all coxae black. Mesoscutum pubescent only on about its anterior third, thereafter becoming virtually bare. Wing strongly iridescent, with vein R_s evenly curved or only weakly sinuate (fig. 189) . . . . . ***Chorebus vitripennis* sp. nov.**

Host: *C.* (*P.*) *superciliosa* ZETTERSTEDT

— Not as above. Legs largely yellow or, if fairly dark (*Chorebus difficilis* sp. nov.), the mesoscutum is almost entirely pubescent 13

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13 Mesoscutum with its central lobe pubescent and sometimes slightly roughened anteriorly, but the lateral lobes largely smooth and bare. Basal antennal segments contrastingly yellow, yellow-brown or reddish as far as about the second flagellar segment. Petiole with well developed whitish apical tufts of pubescence 14

— Mesoscutum more extensively roughened, with pubescence covering most of its surface (at most absent from the posterior half of the lateral lobes) 15

14 Antennal segments: ♂, (34)—35—38; ♀, (33)—34—37. Mesoscutal pubescence very fine, usually only covering the anterior face and the anterior part of the central lobe . . . . . ***Chorebus poemyzae* sp. nov.**

Hosts: *C. (P.) incisa* MEIGEN, *C. (P.) pygmaea* MEIGEN and *C. (P.) deschampsiae* SPENCER

— Antennal segments: ♂, (30)—31—34; ♀, 29—33. Mesoscutal pubescence usually slightly coarser and more extensive, covering the entire central lobe and extending laterally about the "shoulders" (although the lateral lobes are still largely bare). . . . . *Chorebus ninella* (NIXON)

Host: *C. (P.) calamagrostidis* NOWAKOWSKI

15 Thorax about 1.3 times as long as high. Pubescence of petiole becoming denser towards the apical corners, usually forming distinct apical tufts, but these are not so well developed as in *Chorebus asramenes* (NIXON) and *C. agraules* (NIXON). Mandibles with tooth 2 usually not so long and pointed as in *asramenes* and *agraules*. 27—32 antennal segments. Legs largely ochreous yellow or yellow-brown, with the hind coxae infuscated (more or less dark brown): antennae entirely dark. . . . . ***Chorebus difficilis* sp. nov.**

Hosts: *C. (P.) pygmaea* MEIGEN, *C. (P.) incisa* MEIGEN, *C. (P.) calamagrostidis* NOWAKOWSKI, *C. (P.) deschampsiae* SPENCER and *C. (Dizygomyza) chaixiana* GROSCHKE

— Thorax more elongate, about 1.4 times as long as high. Petiole with well-developed whitish apical tufts of pubescence. Mandibles (fig. 202) with tooth 2 long and pointed. 31—38 antennal segments. Legs entirely yellow, or at most with the hind coxae brownish: basal antennal segments yellow or yellow-brown at least as far as the second flagellar segment 16

16 Ovipositor (♀) not projecting beyond the apical tergite in the retracted position. . . . . *Chorebus asramenes* (NIXON)

Host: *C. (P.) pygmaea* MEIGEN

— Ovipositor (♀) strongly projecting beyond the apical tergite in the retracted position (by over half the length of the petiole) . . . . . *Chorebus agraules* (NIXON)

Host: *C. (P.) muscina* MEIGEN

3. *Cerodontha* subgenus *Icteromyza*

1 Mesoscutum with its dorsal surface completely bare except for a few hairs along the course of the notaulices. Metapleuron with a bare shining appearance, the rosette of pubescence around the swelling on its lower half being extremely fine and inconspicuous. Petiole bare. 21—24 antennal segments . ***Chorebus metallicus* sp. nov.**

Host: *C. (I.) geniculata* FALLÉN

— Mesoscutum with at least its central lobe densely pubescent. Metapleural pubescence extremely dense, forming a conspicuous rosette around the raised swelling 2

2 Petiole entirely covered with dense pubescence. Vertex, temples and back of head largely covered with short, rather dense pubescence. Sides of pronotum with dense whitish pubescence covering much of their surface. Antennal segments: ♂, 28—30; ♀, 25 . . . . . *Chorebus lanigerus* (STELFOX)

Host: *C. (I.) calosoma* HENDEL

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— Petiole virtually bare. Back of head and sides of pronotum largely bare. Antennal segments fewer 3

3 Lateral lobes of mesoscutum bare. Labial palpi 4-segmented. Wing as fig. 198 . . . . . *Chorebus nigriscaposus* (NIXON)

Hosts: *C. (I.) geniculata* FALLÉN and *C. (I.) calosoma* HENDEL

— Entire surface of mesoscutum pubescent. Labial palpi 3-segmented. Wing (fig. 200) with very narrow pterostigma . . . . . *Chorebus gracilipes* (THOMSON)

Host: *C. (I.) geniculata* FALLÉN

Host Association

The known host ranges of the species of Alysiinae treated in this part are given in Table 25. The definitions of the terms used in the classification were explained in Part I (GRIFFITHS, 1964, page 874): the classification relates to normal host selection and is not affected by cases of xenophagy.

The predominance of very restricted host ranges (monophagy of the first or second degree) in the *Chorebus* species associated with *Cerodontha* hosts is in accordance with the conclusions reached in previous parts of this paper. The two species of *Laotris* are also as far as known host specific. Only the *Exotela*, *Dacnusa* and two of the *Dapsilarthra* species are known to attack other genera of Agromyzidae.

Table 26 opposite lists the known host associations of Dacnusini with *Cerodontha* hosts in Europe.

Table 25

Classification of host ranges of Alysiinae parasites of *Cerodontha* s.l.

Tribe Dacnusini

Laotris striatula (HALIDAY)	Monophagy, 1st degree
rupestris sp. nov.	Monophagy, 1st degree
Exotela flavicoxa (THOMSON)	Disjunctive Monophagy (revised from Table 4)
Dacnusa adducta (HALIDAY)	Disjunctive Monophagy or Oligophagy, 1st degree
maculipes THOMSON	Oligophagy, 1st degree
Chorebus talaris (HALIDAY)	Monophagy, 2nd degree
subasper sp. nov.	Monophagy, 1st degree
asperrimus sp. nov.	Monophagy, 1st degree
flavipes (GOUREAU)	Monophagy, 1st degree
crenulatus (THOMSON)	Monophagy, 1st degree
diremtus (NEES)	Monophagy, 1st degree
rubicundus sp. nov.	Monophagy, 1st degree
enephes (NIXON)	Monophagy, 1st degree
ganesa (NIXON)	Monophagy, 1st degree
ninella (NIXON)	Monophagy, 1st degree
poemyzae sp. nov.	Monophagy, 2nd degree
vitripennis sp. nov.	Monophagy, 1st degree
asramenes (NIXON)	Monophagy, 1st degree
agraules (NIXON)	Monophagy, 1st degree
difficilis sp. nov.	Disjunctive Monophagy
transversus (NIXON)	Monophagy, 1st degree
humeralis sp. nov.	Monophagy, 1st degree
merella (NIXON)	Monophagy, 2nd degree
nobilis sp. nov.	Monophagy, 1st degree
pelion (NIXON)	Monophagy, 2nd degree
cytherea (NIXON)	Monophagy, 2nd degree
stilifer sp. nov.	Monophagy, 1st degree
iridis sp. nov.	Monophagy, 1st degree
fordi (NIXON)	Monophagy, 1st degree
siniffa (NIXON)	Monophagy, 1st degree
vernalis sp. nov.	Monophagy, 1st degree
metallicus sp. nov.	Monophagy, 1st degree
nigriscaposus (NIXON)	Monophagy, 2nd degree
lanigerus (STELFOX)	Monophagy, 1st degree
gracilipes (THOMSON)	Monophagy, 1st degree
Other Alysiinae	
Dapsilarthra sylvia (HALIDAY)	Oligophagy, 1st degree
balteata (THOMSON)	Oligophagy, 1st degree
fuscula sp. nov.	? Monophagy

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Table 26
List of Records of Dacnusini Parasites of *Cerodontha* s.l.

Hosts	*Laotris*	*Exotela*	*Dacnusa*	*Chorebus talaris* group and *C. ovalis/lateralis* complex	*Chorebus affinis* group and related species
I. Subgenus *Butomomyza*					
angulata					*humeralis, transversus*
scirpi					*merella*
staryi					*merella, stilifer*
caricivora					*merella*
eucaricis					*nobilis, pelion*
vigneae					*pelion*
II. Subgenus *Dizygomyza*					
luctuosa	*striatula*				*cytherea*
hirtae					*cytherea*
spinata					*cytherea*
morosa					*pelion, siniffa*
luzulae					*merella*
caricicola[14]					*merella, pelion, vernalis*
sp.	*rupestris*				
chaixiana				*difficilis*	*merella, cytherea*
iraeos				*flavipes*	
iridis			*maculipes*		*iridis*
III. Subgenus *Crastemyza*					
flavocingulata		*flavicoxa*			
IV. Subgenus *Poemyza*					
deschampsiae				*enephes, ganesa, poemyzae, difficilis*	
calamagrostidis			*maculipes*	*ninella, difficilis*	
muscina				*agraules*	
incisa		*flavicoxa*		*talaris, poemyzae, difficilis*	
pygmaea		*flavicoxa*	*adducta, maculipes*	*talaris, rubicundus, poemyzae, asramenes, difficilis*	*cytherea* (once)
tatrica				*talaris, asperrimus*	
alpina				*subasper*	
superciliosa				*vitripennis*	
phragmitidis		*flavicoxa*			
phalaridis		*flavicoxa*			
lateralis					*fordi*
V. Subgenus *Icteromyza*					
geniculata					*metallicus, nigriscaposus, gracilipes*
calosoma					*nigriscaposus, lanigerus*
VI. Subgenus *Cerodontha*					
denticornis				*crenulatus*	
fulvipes				*diremtus*	

[14] Host identification requiring confirmation in the case of the records referring to *pelion*.

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Summary

1. This paper, the sixth of a series, deals with the Alysiinae parasites in Europe of *Cerodontha* RONDANI in the wide sense first proposed by NOWAKOWSKI (1962). The parasites belong to four genera of Dacnusini (*Laotris*, *Exotela*, *Dacnusa* and *Chorebus*) and the non-Dacnusine genus *Dapsilarthra*.

2. Revised keys are given to the European representatives of several groups of *Chorebus* species, including the *affinis* group (a concept here proposed for the first time) and the very difficult *ovalis/lateralis* complex. Keys are also given to the parasites of certain host-groups, to facilitate the identification of bred material.

3. Of the Dacnusini parasites treated in this paper, all the *Laotris* and *Chorebus* species exhibit a high degree of host specificity, but the single *Exotela* and two *Dacnusa* species are also known to attack other genera of Agromyzidae. A complete host/parasite list has again been prepared, including revision of previous records for Europe.

4. Fourteen new species are described, one in *Dapsilarthra*, one in *Laotris* and twelve in *Chorebus*.

Zusammenfassung

1. Der sechste Teil der vorliegenden Serie beschäftigt sich mit den europäischen Alysiinae-Parasiten der Gattung *Cerodontha* RONDANI in ihrer von NOWAKOWSKI (1962) vorgeschlagenen Umgrenzung. Die Parasiten gehören zu vier Dacnusini-Gattungen (*Laotris*, *Exotela*, *Dacnusa* und *Chorebus*) und zu der außerhalb der Dacnusini stehenden Gattung *Dapsilarthra*.

2. Für verschiedene Gruppen europäischer *Chorebus*-Arten einschließlich der *affinis*-Gruppe (die in vorliegender Arbeit erstmalig in dieser Form umgrenzt wird) und für den sehr schwierigen *ovalis/lateralis*-Komplex werden revidierte Bestimmungstabellen gegeben. Auch für die Parasiten bestimmter Wirtsgruppen werden Tabellen zur Unterscheidung angeführt, um die Determination gezüchteten Materials zu erleichtern.

3. Von den Dacnusini-Parasiten dieses Publikationsteiles zeigen alle *Laotris*- und *Chorebus*-Arten einen hohen Grad von Wirtsspezifität; nur die eine *Exotela* und die zwei *Dacnusa*-Arten greifen auch andere Agromyziden-Gattungen an. Wiederum wurde eine komplette Wirt-Parasiten-Liste zusammengestellt, die gleichzeitig eine Revision früherer Berichte für Europa berücksichtigt.

4. Vierzehn neue Arten werden beschrieben, eine *Dapsilarthra*-, eine *Laotris*- und zwölf *Chorebus*-Spezies.

Резюме

1. Шестая часть настоящей серии занимается с европейскими паразитами Alysiini рода *Cerodontha* RONDANI в границах, которых предлагал NOWAKOWSKI (1962). Паразиты принадлежат четырмя родам Dacnusini (*Laotris*, *Exotela*, *Dacnusa*, *Dacnusa* и *Chorebus*) и одному роду вне Dacnusini *Dapsilarthra*.

2. Для различных групп европейских видов *Chorebus*, включая группу *affinis*, (которая в этой статье впервые обграничивается) и для очень трудного комплекса *ovalis/lateralis* даются ревидированные определительные таблицы. Для паразитов определённых групп даются тоже таблицы для различения, чтобы дать возможность для детерминации выращенного материала.

3. От паразитов Dacnusini этой статьи показывают все виды *Laotris* и *Chorebus* высокий уровень специфики к хозяевам; только один вид *Exotela* и два вида *Dacnusa* нападают и на другие рода Agromyzidae. Снова составляется полный список хозяин-паразит который включает ревизии раньших данных для Европы.

4. Описывается четыренадцать видов, один у *Dapsilarthra*, один у *Laotris* и двенадцать у *Chorebus*.

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References

Burghele, A. D., Contributii la Studiul unor Hymenoptere care parasitenzã stadii acvatice de Insecte. Analela Univ. C. I. Parhon, no **22**, p. 143–169; 1959a.

–, New Rumanian species of Dacnusini (Hym. Braconidae) and some ecological observations upon them. Ent. mon. Mag., **95**, 121–126; 1959b.

–, Neue Beiträge zur Kenntnis der Dacnusinen (Hymenoptera, Braconidae). Ent. Tidskr., **81**, 131–139; 1960.

Docavo Alberti, I., Contribución al conocimiento de los Braconidae de España. I. Nuevos hollazgos de géneros y especies. Entomophaga, **7**, 343–348; 1962.

–, Nuevas aportaciones al conocimiento de los Dacnusini de España (Hym. Braconidae). Graellsia, **21**, 25–39; 1965.

–, Mi vida entomológica. An. Univ. Valencia, **41**, 1–95; 1967.

Fulmek, L., Parasitinsekten der Blattminierer Europas. 's-Gravenhage, 203 pp.; 1962.

Goureau, C., Mémoire pour servir à l'histoire des Diptères dont les larves minent les feuilles des plantes et à celle de leurs parasites. Ann. Soc. ent. France, (sér. 2) **9**, 131–176; 1851.

Griffiths, G. C. D., Host records of Dacnusini (Hym., Braconidae) from leaf-mining Diptera. Ent. mon. Mag., **92**, 25–30; 1956.

–, The Agromyzidae (Diptera) of Woodwalton Fen. Ent. mon. Mag., **98**, 125–155; 1963.

–, The Alysiinae (Hym. Braconidae) parasites of the Agromyzidae (Diptera). I. General questions of taxonomy, biology and evolution. Beitr. Ent., **14**, 823–914; 1964. – II. The parasites of *Agromyza* Fallén. Beitr. Ent., **16**, 551–605; 1966a. – III. The parasites of *Paraphytomyza* Enderlein, *Phytagromyza* Hendel and *Phytomyza* Fallén. Beitr. Ent., **16**, 775–951; 1966b. – IV. The parasites of *Hexomyza* Enderlein, *Melanagromyza* Hendel, *Ophiomyia* Braschnikov and *Napomyza* Westwood. Beitr. Ent., **17**, 653–696; 1967. – V. The parasites of *Liriomyza* Mik and certain small genera of Phytomyzinae. Beitr. Ent., **18**, 5–62; 1968.

Groschke, F., Miszellen über Blattminen und Blattminierer I (Dipt. Agromyzidae). Dtsch. ent. Ztschr., **1**, 138–156; 1954.

Haliday, A. H., Hymenoptera Britannica. Fasc. 2: *Alysia*. London, 28 pp.; 1839.

Heymons, R., Süßwasser-Hymenopteren aus der Umgebung Berlins. Dtsch. ent. Ztschr., **52**, 137–150; 1908.

Königsmann, E., Revision der paläarktischen Arten der Gattung *Dapsilarthra*. Beitr. Ent., **9**, 580–608; 1959.

Kurdjumov, N. V., Hyménoptères-parasites nouveaux ou peu connus. Rev. russe Ent., **12**, 223–243; 1912.

Marshall, T. A., Les Braconides. In: André, E., Species des Hyménoptères d'Europe et d'Algérie. Gray, **5**, 635 pp.; (1891–1896) 1891.

–, A monograph of British Braconidae. Trans. ent. Soc. London, Part VI, 1895, p. 363 to 398; 1895. – Part VII, 1897, p. 1–31; 1897.

Nees ab Esenbeck, C. G., Hymenopterorum Ichneumonibus affinium monographiae, genera Europaea et species illustrantes. **1**. Pars II: Monographia Ichneumonidum Alysioideorum, p. 195–298. Stuttgart & Tübingen, 1834.

Nixon, G. E. J., The British species of *Dacnusa* (Hym., Fam. Braconidae). Trans. Soc. brit. Ent., **4**, 1–88; 1937.

–, A revision of the European Dacnusini (Hym., Braconidae, Dacnusinae). Ent. mon. Mag., **79**, 20–34, 159–168; 1943. **80**, 88–108, 140–151, 193–200, 249–255; 1944. **81**, 189–204, 217–229; 1945. **82**, 279–300; 1946. **84**, 207–224; 1948. **85**, 289–298; 1949. **90**, 257–290; 1954.

Nowakowski, J. T., Introduction to a systematic revision of the family Agromyzidae (Diptera) with some remarks on host-plant selection by these flies. Ann. zool., Warszawa, **20**, 67–183; 1962.

–, Vorläufige Mitteilung zu einer Monographie der europäischen Arten der Gattung *Cerodontha* Rond. (Diptera, Agromyzidae). Pol. Pismo ent., **37**, 633–661; 1967.

DOI: 10.21248/contrib.entomol.18.1-2.63-152

RUSCHKA, F. & THIENEMANN, A., Zur Kenntnis der Wasserhymenopteren. Z. wiss. Insekten-Biol., **9**, 82–87; 1913.

SCHULZ, W.-A., Schwimmende Braconiden. Ann. Soc. ent. Belge, **51**, 164–173; 1907.

STELFOX, A. W., Further new species of Dacnusini (Hym., Braconidae) from Ireland and notes on several other species. Ent. mon. Mag., **93**, 111–120; 1957.

THOMSON, C. G., LII. Bidrag till Braconidernas kännedom. Opusc. ent., Lundae, fasc. 20, p. 2141–2339; 1895.

TOBIAS, V. I., Contribution to the fauna of the subfamily Alysiinae (Hymenoptera, Braconidae, Alysiinae) of the Leningrad region. Trudy Zool. Inst., **31**, 81–137; 1962.

Table 27

Biometric Data

		Absolute Measurements (1 = 0.01 mm.)																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Head							Antennal Segments			Maxillary Palpus Segments				Thorax			Hind Leg			Hind Tarsal Segments				
		Width	Length	Height	Eye-width (lateral)	Distance between Eyes	Clypeus Width	Mandibles Width	3	4	5	3	4	5	6	Length	Width	Height	Femur	Tibia	Tarsus	1	2	3	4	5
1	♂	60	35	48	17	28	22	10	14	12	11	9	11	8	10	91	45	59	50	78	71	26	14	10	7	11
2	♀	62	34	46	17	28	21	9	13	12	11	8	11	7	9	89	45	58	53	75	69	26	14	10	7	10
3	♀	61	34	50	17	27	21	10	13	12	11	9	12	9	10	89	46	61	58	78	71	30	13	9	7	10

Nos. 1–2. *Laotris striatula* (HALIDAY) ex *Cerodontha* (*Dizygomyza*) *luctuosa* MEIGEN, Stuttgart, Germany.

Table 28

Biometric Data

		Absolute Measurements (1 = 0.01 mm.)																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Head							Antennal Segments			MaxillaryPalpus Segments				Thorax			Hind Leg			Hind Tarsal Segments				
		Width	Length	Height	Eye-width (lateral)	Distance between Eyes	Clypeus Width	Mandibles Width	3	4	5	3	4	5	6	Length	Width	Height	Femur	Tibia	Tarsus	1	2	3	4	5
1	♂	67	39	51	20	36	22	12	17	15	14	13	17	13	16	111	56	76	69	95	85	34	17	12	9	12
2	♀	69	33	50	18	34	23	10	17	14	13	11	15	13	16	100	54	74	69	96	87	34	17	14	9	12
3	♀	57	32	43	15	28	21	11	16	13	12	9	12	10	11	85	41	58	61	83	74	31	15	11	7	10
4	♂	69	37	50	19	39	24	11	19	15	14	12	17	13	16	104	50	74	74	99	85	34	19	12	9	11
5	♀	56	31	43	16	30	22	8	16	13	12	10	14	10	12	77	41	56	61	78	74	30	14	11	9	10

Nos. 1–2. *Chorebus talaris* (HALIDAY): 1, ex *Cerodontha* (*Poemyza*) *incisa* MEIGEN on *Festuca gigantea*, Poland; 2, ex *C.* (*P.*) *pygmaea* MEIGEN on *Brachypodium*, Ireland.

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28	29	30	31	32	A	B	C	D	E	F	G	H	I	J	K	L
Wing Length	Gaster Length	Petiole: Width	Petiole: Length	Total Body Length	Length/Width of Head	Length/Height of Head	Width of Head/Distance between Eyes/Width of Clypeus	Width of Mandibles/Length of Head	Antennal Segments 3 4 5	Height/Length of Thorax	Thorax Width/Head Width	Wing Length/Body Length	Hind Tibia/Tarsus	Hind Tarsal Segments 1 2 3 4 5	Lengths of Petiole/Gaster	Width/Length of Petiole
238	109	23	37	238	1.7	1.4	2.2:1:0.8	3.6	1.1:1:0.9	1.5	1.3	1.0	0.9	1.9:1:0.7:0.5:0.8	2.5	1.6
238	104	22	36	224	1.9	1.4	2.2:1:0.7	3.6	1.1:1:0.9	1.5	1.4	0.9	0.9	1.9:1:0.7:0.5:0.8	2.9	1.7
273	95	21	32	209	1.8	1.5	2.3:1:0.8	3.4	1.1:1:0.9	1.5	1.3	0.8	0.9	2.3:1:0.7:0.6:0.8	3.0	1.5

...*aotris rupestris* sp. nov., holotype.

					Ratios											
28	29	30	31	32	A	B	C	D	E	F	G	H	I	J	K	L
Wing Length	Gaster Length	Petiole: Width	Petiole: Length	Total Body Length	Length/Width of Head	Length/Height of Head	Width of Head/Distance between Eyes/Width of Clypeus	Width of Mandibles/Length of Head	Antennal Segments 3 4 5	Height/Length of Thorax	Thorax Width/Head Width	Wing Length/Body Length	Hind Tibia/Tarsus	Hind Tarsal Segments 1 2 3 4 5	Lengths of Petiole/Gaster	Width/Length of Petiole
319	148	27	39	291	1.7	1.3	1.9:1:0.6	3.3	1.1:1:0.9	1.5	1.2	0.9	0.9	1.9:1:0.7:0.5:0.7	3.8	1.4
295	118	28	41	248	2.1	1.5	2.1:1:0.7	3.3	1.2:1:0.9	1.4	1.3	0.8	0.9	1.9:1:0.8:0.5:0.7	2.9	1.5
271	104	23	36	226	1.8	1.4	2.0:1:0.7	2.8	1.2:1:0.9	1.5	1.4	0.8	0.9	2.0:1:0.8:0.5:0.7	2.9	1.6
310	143	24	46	281	1.9	1.4	1.7:1:0.6	3.3	1.2:1:0.9	1.4	1.4	0.9	0.9	1.9:1:0.7:0.5:0.6	3.1	1.9
262	108	19	32	219	1.8	1.4	1.9:1:0.7	3.8	1.3:1:1.0	1.4	1.4	0.8	0.9	2.1:1:0.8:0.6:0.7	3.4	1.6

...*horebus subasper* sp. nov., holotype.
...5. *Chorebus asperrimus* sp. nov., Tatry, Poland (4 the holotype).

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Table 29

Biometric Data

		Absolute Measurements (1 = 0.01 mm.)																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Head							Antennal Segments			Maxillary Palpus Segments				Thorax			Hind Leg			Hind Tarsal Segments				
		Width	Length	Height	Eye-width (lateral)	Distance between Ey	Clypeus Width	Mandibles Width	3	4	5	3	4	5	6	Length	Width	Height	Femur	Tibia	Tarsus	1	2	3	4	5
1	♂	55	28	43	16	28	19	12	16	14	12	9	12	7	9	76	39	54	54	74	68	25	13	9	7	11
2	♀	56	34	46	17	26	19	11	17	16	14	10	12	8	10	78	39	56	56	81	72	29	14	10	7	11
3	♂	44	28	39	12	22	17	8	15	11	10	7	10	7	8	65	30	42	43	62	63	24	13	9	7	10
4	♀	40	30	40	15	16	15	7	13	11	10	6	9	7	8	63	28	41	41	63	65	26	14	9	7	9
5	♀	59	32	46	17	28	19	12	16	14	12	9	14	10	13	83	41	58	58	80	72	29	15	11	8	10
6	♂	54	32	41	20	26	19	11	14	12	11	–	12	9	10	68	38	56	50	64	59	22	12	9	7	9
7	♀	58	32	43	17	27	19	14	15	14	13	7	12	9	11	72	41	54	52	72	61	23	12	8	7	10
8	♂	52	28	39	16	27	19	11	14	12	11	7	11	8	10	67	35	52	49	65	61	22	13	9	7	10
9	♂	50	28	40	16	24	17	9	14	13	12	7	12	7	10	64	34	50	49	68	59	22	13	9	7	9
10	♀	54	30	39	15	25	17	11	14	13	12	7	11	8	10	64	34	50	53	70	59	22	12	9	7	9
11	♂	63	35	49	20	30	22	12	17	15	14	9	16	11	13	93	44	65	59	89	81	32	16	11	9	11
12	♀	59	32	46	18	28	21	9	16	15	13	8	14	11	13	80	40	59	56	78	73	28	16	10	9	10
13	♂	69	35	54	15	35	26	11	16	13	11	9	13	9	11	106	49	71	59	93	85	32	19	13	9	13
14	♀	67	35	50	15	34	23	14	15	12	11	9	12	8	11	98	47	74	65	91	87	31	19	13	10	13
15	♂	62	32	47	17	31	21	11	16	13	12	9	14	9	12	83	42	60	61	83	72	28	15	11	8	10
16	♀	53	32	45	16	25	17	7	15	13	12	8	12	8	13	74	34	52	49	73	67	26	13	11	7	9
17	♀	55	34	43	18	25	21	10	16	12	12	9	11	8	11	81	37	58	53	77	69	27	15	10	7	9
18	♂	56	30	41	14	29	19	11	15	13	12	10	13	9	11	78	41	59	55	75	66	26	13	10	7	9
19	♀	56	31	43	16	26	21	12	14	13	12	9	12	9	11	72	39	58	52	74	68	25	15	10	7	10
20		58	32	44	17	26	19	9	15	12	11	9	13	8	15	78	40	59	58	81	71	26	16	11	8	11

Nos. 1–2. *Chorebus flavipes* (GOUREAU) ex *Cerodontha* (*Dizygomyza*) *iraeos* ROBINEAU-DESVOIDY; 1, Stuttgart, Germany; 2 Woodwalton, England.

No. 3. *Chorebus crenulatus* (THOMSON) ex *Cerodontha* (*Cerodontha*) *denticornis* PANZER, Poland.

No. 4. *Chorebus diremtus* (NEES) ex *Cerodontha* (*Cerodontha*) *fulvipes* MEIGEN, Poland.

No. 5. *Chorebus rubicundus* sp. nov., holotype.

Nos. 6–7. *Chorebus enephes* (NIXON) ex *Cerodontha* (*Poemyza*) *deschampsiae* SPENCER: 6, Mühlhausen, Germany; 7, Bieszczady, Poland.

No. 8. *Chorebus ganesa* (NIXON) ex *Cerodontha* (*Poemyza*) *deschampsiae* SPENCER, Germany.

Nos. 9–10. *Chorebus ninella* (NIXON) ex *Cerodontha* (*Poemyza*) *calamagrostidis* NOWAKOWSKI: 9, Röderbrunn, Germany; 10, Woodwalton, England.

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26	27	28	29	30	31	32	Ratios A	B	C	D	E			F	G	H	I	J					K	L
Hind Coxa		Wing Length	Gaster Length	Petiole		Total Body Length	Length/ Width of Head	Length/ Height of Head	Width of Head/ Distance between Eyes/ Width of Clypeus	Width of Mandibles/ /Length of Head	Antennal Segments			Height/Length of Thorax	Thorax /Head Width	Wing /Body Length/	Hind Tibia/Tarsus	Hind Tarsal Segments					Lengths of Petiole/ Gaster	Width/Length of Petiole
Width	Length			Width	Length						3	4	5					1	2	3	4	5		
16	21	228	91	20	33	205	2.0	1.6	2.0:1:0.7	2.4	1.1:1:0.9			1.4	1.4	0.9	0.9	1.9:1:0.7:0.6:0.8					2.8	1.7
14	22	246	93	24	36	209	1.7	1.4	2.1:1:0.7	3.0	1.1:1:0.9			1.4	1.4	0.9	0.9	2.0:1:0.7:0.5:0.8					2.6	1.5
10	19	190	111	17	28	200	1.6	1.5	2.1:1:0.8	3.3	1.3:1:0.9			1.5	1.5	1.0	1.0	1.9:1:0.7:0.5:0.8					4.0	1.6
13	18	198	91	14	27	190	1.4	1.3	2.5:1:0.9	4.0	1.2:1:0.9			1.5	1.4	1.0	1.0	1.9:1:0.7:0.5:0.6					3.3	2.0
15	24	238	109	20	35	214	1.9	1.5	2.1:1:0.7	2.6	1.1:1:0.9			1.4	1.5	0.9	0.9	1.9:1:0.8:0.6:0.7					3.1	1.8
14	21	205	102	17	32	205	1.7	1.3	2.1:1:0.7	2.8	1.2:1:0.9			1.2	1.4	1.0	0.9	1.8:1:0.8:0.6:0.8					3.2	1.9
16	23	228	95	19	34	205	1.8	1.3	2.1:1:0.7	2.4	1.1:1:0.9			1.3	1.4	0.9	0.8	1.9:1:0.7:0.5:0.8					2.8	1.8
14	21	200	87	17	28	184	1.9	1.4	1.9:1:0.7	2.5	1.2:1:0.9			1.3	1.5	0.9	0.9	1.7:1:0.7:0.6:0.8					3.1	1.7
13	21	205	102	17	28	195	1.8	1.4	2.1:1:0.7	3.0	1.1:1:0.9			1.3	1.5	0.9	0.9	1.7:1:0.7:0.6:0.7					3.7	1.7
13	22	214	80	18	30	172	1.8	1.3	2.1:1:0.7	2.7	1.2:1:0.9			1.3	1.6	0.8	0.8	1.8:1:0.7:0.5:0.8					2.7	1.7
17	26	281	148	28	41	276	1.8	1.4	2.1:1:0.7	3.0	1.2:1:0.9			1.4	1.4	1.0	0.9	1.8:1:0.6:0.5:0.6					3.6	1.5
16	23	252	139	24	37	243	1.9	1.5	2.1:1:0.7	3.4	1.1:1:0.9			1.3	1.5	1.0	0.9	1.8:1:0.7:0.6:0.7					3.7	1.5
16	28	291	115	28	37	267	1.9	1.5	2.0:1:0.7	3.2	1.2:1:0.9			1.5	1.4	0.9	0.9	1.7:1:0.7:0.5:0.7					3.1	1.3
16	26	271	128	30	40	257	1.9	1.4	2.0:1:0.7	2.6	1.1:1:0.9			1.3	1.4	0.9	1.0	1.7:1:0.7:0.5:0.7					3.2	1.3
15	28	252	104	19	35	214	2.0	1.5	2.0:1:0.7	2.8	1.2:1:0.9			1.4	1.5	0.8	0.9	1.9:1:0.8:0.5:0.7					2.9	1.9
13	22	214	92	18	30	195	1.7	1.4	2.1:1:0.7	4.2	1.1:1:0.9			1.4	1.6	0.9	0.9	2.0:1:0.8:0.6:0.7					3.1	1.7
17	26	238	87	17	32	200	1.6	1.3	2.2:1:0.8	3.4	1.3:1:1.0			1.4	1.5	0.8	0.9	1.8:1:0.7:0.5:0.7					2.8	1.9
14	24	252	96	17	32	205	1.9	1.4	2.0:1:0.7	2.7	1.1:1:0.9			1.3	1.4	0.8	0.9	2.0:1:0.8:0.6:0.7					3.0	1.9
13	24	233	91	19	32	190	1.8	1.4	2.1:1:0.8	2.5	1.1:1:0.9			1.3	1.4	0.8	0.9	1.7:1:0.7:0.5:0.7					2.9	1.7
14	24	248	87	19	32	209	1.8	1.4	2.2:1:0.7	3.5	1.2:1:0.9			1.3	1.4	0.8	0.9	1.7:1:0.7:0.5:0.7					2.8	1.6

Nos. 11–12. *Chorebus poemyzae* sp. nov. ex *Cerodontha* (*Poemyza*) *incisa* MEIGEN, Poland: 11, on *Agropyron repens*, Piska Forest; 12, on *Calamagrostis epigejos*, Sieraków.

Nos. 13–14. *Chorebus vitripennis* sp. nov.: 13, Co. Down, Ireland; 14, holotype, Wales.

Nos. 15–16. *Chorebus asramenes* (NIXON) ex *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN: 15, Oxshott, England; 16, Röderbrunn, Germany.

No. 17. *Chorebus agraules* (NIXON) ex *Cerodontha* (*Poemyza*) *muscina* MEIGEN, Germany.

Nos. 18–20. *Chorebus difficilis* sp. nov.: 18, ex *Cerodontha* (*Poemyza*) *pygmaea* MEIGEN, Stuttgart, Germany; 19, holotype ex *C.* (*P.*) *pygmaea* MEIGEN, England; 20, ex *C.* (*Dizygomyza*) *chaixiana* GROSCHKE, Germany.

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Table 30 see p. 152.

Table 31
Biometric Data

		Absolute Measurements (1 = 0.01 mm.)																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Head							Antennal Segments			Maxillary Palpus Segments				Thorax			Hind Leg			Hind Tarsal Segments				
		Width	Length	Height	Eye-width (lateral)	Distance between Eyes	Clypeus Width	Mandibles Width	3	4	5	3	4	5	6	Length	Width	Height	Femur	Tibia	Tarsus	1	2	3	4	5
1	♂	61	34	50	17	30	21	10	21	14	13	12	16	9	11	98	45	66	58	93	92	37	19	15	10	13
2	♀	59	35	46	17	24	20	9	16	13	12	9	10	9	10	87	39	56	51	79	78	34	15	10	7	10
3	♀	56	34	46	17	22	20	9	17	14	13	9	11	9	12	87	40	58	54	78	78	32	16	11	8	11
4	♂	52	31	41	17	24	18	8	18	13	13	8	14	9	11	80	36	54	52	78	78	34	15	11	8	11
5	♀	53	32	43	19	19	17	7	19	15	14	10	15	9	13	80	36	54	52	76	72	32	14	10	7	10
6	♂	63	37	54	15	28	22	11	18	14	13	9	12	9	9	93	44	67	59	87	83	34	16	12	9	13
7	♀	68	43	61	21	28	24	13	21	14	13	9	13	10	10	104	48	72	63	88	84	34	17	13	9	12
8	♀	54	34	44	18	26	21	7	16	13	12	10	12	7	9	78	40	59	50	76	72	28	16	10	8	10
9	♂	46	26	37	14	24	17	7	13	11	11	6	8	6	8	72	34	44	41	67	69	28	13	9	7	10
10	♀	46	28	39	14	22	19	7	14	13	11	7	9	7	9	73	36	46	46	69	71	29	14	9	7	12
11	♂	61	36	49	17	30	19	9	18	15	13	11	16	10	12	97	42	64	65	95	93	37	19	13	10	13
12	♂	48	28	39	13	24	21	9	15	14	12	7	9	7	8	71	37	46	46	71	76	30	14	11	8	13
13	♀	51	28	40	14	22	21	10	14	13	11	7	9	6	8	71	39	49	49	74	71	29	13	9	7	12
14	♂	50	32	41	13	24	21	9	15	14	13	6	8	6	8	79	37	56	54	80	80	13	16	11	8	13
15	♀	44	30	39	15	21	–	7	12	11	10	6	7	6	8	72	34	50	48	67	63	26	12	8	6	9
16	♂	60	35	50	16	28	–	10	21	15	13	9	13	9	11	106	46	74	74	106	95	41	18	31	10	14
17	♂	44	29	39	12	23	20	8	15	13	13	7	9	6	7	72	32	50	48	76	77	30	16	10	8	12
18	♀	44	28	37	11	22	19	8	14	12	10	6	8	6	7	71	32	49	48	69	69	25	12	8	7	13

Nos. 1–3. *Chorebus cytherea* (NIXON), Germany: 1, ex *Cerodontha* (*Dizygomyza*) *spinata* GROSCHKE, Oberbayern; 2, ex *C.* (*D.*) *luctuosa* MEIGEN, Stuttgart; 3, ex *C.* (*D.*) *chaixiana* GROSCHKE, Stuttgart.

Nos. 4–5. *Chorebus stilifer* sp. nov., Germany.

Nos. 6–7. *Chorebus iridis* sp. nov., Italy (7 the holotype).

No. 8. *Chorebus fordi* (NIXON) ex *Cerodontha* (*Poemyza*) *lateralis* MACQUART, Poland.

Nos. 9–10. *Chorebus siniffa* (NIXON) ex *Cerodontha* (*Dizygomyza*) *morosa* MEIGEN, Poland.

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							Ratios																		
26	27	28	29	30	31	32	A	B	C	D	E			F	G	H	I	J					K	L
Hind Coxa		Wing Length	Gaster Length	Petiole		Total Body Length	Length/ Width of Head	Length/ Height of Head	Width of Head/ Distance between Eyes/ Width of Clypeus	Width of Mandibles/ Length of Head	Antennal Segments			Height/Length of Thorax	Thorax /Head Width	Wing /Body Length	Hind Tibia/Tarsus	Hind Tarsal Segments					Lengths of Petiole/ Gaster	Width/Length of Petiole
Width	Length			Width	Length						3	4	5					1	2	3	4	5		
18	29	291	135	19	42	286	1.8	1.5	2.1:1:0.7	3.4	1.4:1:0.9			1.5	1.4	1.0	1.0	1.9:1:0.8:0.5:0.7					3.2	2.2
15	24	243	98	17	37	228	1.7	1.3	2.4:1:0.8	3.8	1.2:1:0.9			1.6	1.5	0.9	1.0	2.2:1:0.7:0.5:0.7					2.7	2.2
17	24	240	106	20	38	226	1.7	1.4	2.5:1:0.9	3.9	1.2:1:0.9			1.5	1.4	0.9	1.0	2.0:1:0.7:0.5:0.7					2.8	1.9
13	23	243	118	13	41	238	1.7	1.3	2.2:1:0.7	3.6	1.4:1:1.0			1.5	1.4	1.0	1.0	2.2:1:0.7:0.6:0.7					2.9	3.1
15	23	238	108	10	39	228	1.7	1.3	2.9:1:0.9	4.3	1.3:1:0.9			1.5	1.5	1.0	1.0	2.3:1:0.7:0.5:0.7					2.8	3.7
17	24	252	122	22	43	262	1.7	1.5	2.3:1:0.8	3.3	1.3:1:0.9			1.4	1.4	1.0	1.0	2.1:1:0.8:0.6:0.8					2.8	2.0
17	27	276	130	26	46	286	1.6	1.4	2.4:1:0.9	3.3	1.5:1:0.9			1.4	1.4	1.0	1.0	2.0:1:0.8:0.6:0.7					2.8	1.8
15	24	243	96	17	35	216	1.6	1.3	2.1:1:0.8	4.9	1.2:1:0.9			1.3	1.3	0.9	1.0	1.8:1:0.7:0.5:0.7					2.7	2.0
12	21	222	106	13	31	209	1.8	1.4	1.9:1:0.7	3.5	1.1:1:1.0			1.6	1.4	0.9	1.0	2.1:1:0.7:0.6:0.8					3.4	2.4
14	21	233	111	17	34	224	1.7	1.4	2.2:1:0.9	3.7	1.1:1:0.9			1.6	1.3	1.0	1.0	2.1:1:0.7:0.5:0.8					3.3	2.0
17	28	310	139	21	44	286	1.7	1.3	2.1:1:0.7	4.2	1.2:1:0.9			1.5	1.5	0.9	1.0	2.0:1:0.7:0.5:0.7					3.2	2.1
11	21	248	99	19	32	200	1.7	1.4	2.0:1:0.8	3.0	1.1:1:0.9			1.5	1.3	0.8	1.1	2.1:1:0.8:0.6:0.9					3.2	1.7
13	22	257	108	21	35	226	1.8	1.4	2.4:1:0.9	2.8	1.1:1:0.9			1.4	1.3	0.9	1.0	2.2:1:0.7:0.6:0.9					3.1	1.7
15	23	262	102	24	34	219	1.6	1.3	2.1:1:0.8	3.4	1.1:1:0.9			1.4	1.3	0.8	1.0	2.0:1:0.7:0.5:0.8					3.1	1.4
13	21	228	83	21	26	186	1.5	1.3	2.2:1: –	4.0	1.1:1:0.9			1.4	1.3	0.8	0.9	2.2:1:0.7:0.5:0.8					3.2	1.2
17	26	327	139	30	36	281	1.7	1.4	2.2:1: –	3.4	1.4:1:0.9			1.4	1.3	0.8	0.9	2.3:1:0.7:0.6:0.8					3.8	1.2
12	23	219	108	21	30	214	1.6	1.4	1.9:1:0.8	3.5	1.1:1:1.0			1.4	1.4	1.0	1.0	1.9:1:0.6:0.5:0.8					3.3	1.4
13	21	228	113	25	30	219	1.6	1.3	2.1:1:0.9	3.3	1.2:1:0.9			1.4	1.4	1.0	1.0	2.1:1:0.7:0.6:1.1					3.8	1.2

No. 11. *Chorebus vernalis* sp. nov., holotype.

Nos. 12 – 13. *Chorebus metallicus* sp. nov., Poland.

Nos. 14 – 15. *Chorebus nigriscaposus* (NIXON): 14, ex *Cerodontha* (*Icteromyza*) *geniculata* FALLÉN, Poland; 15, ex *C.* (*I.*) *calosoma* HENDEL, Denmark.

No. 16. *Chorebus lanigerus* (STELFOX) ex *Cerodontha* (*Icteromyza*) *calosoma* HENDEL, Denmark.

Nos. 17 – 18. *Chorebus gracilipes* (THOMSON): 17, lectotype, Sweden; 18, ex *Cerodontha* (*Icteromyza*) *geniculata* FALLÉN, Poland.

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Table 30
Biometric Data

		Absolute Measurements (1 = 0.01 mm.)																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Head			Eye-width (lateral)	Distance between Eyes	Clypeus Width	Mandibles Width	Antennal Segments			Maxillary Palpus Segments				Thorax			Hind Leg			Hind Tarsal Segments				
		Width	Length	Height					3	4	5	3	4	5	6	Length	Width	Height	Femur	Tibia	Tarsus	1	2	3	4	5
1	♂	51	28	39	13	25	19	9	14	10	10	9	11	6	9	65	34	50	43	61	51	21	9	8	6	9
2	♀	65	33	48	18	30	22	11	17	14	13	–	15	9	10	76	46	67	59	75	63	25	11	9	7	11
3	♂	66	36	51	16	32	24	13	18	13	12	8	12	9	10	86	45	69	64	86	71	28	13	10	7	12
4	♀	61	35	46	19	29	–	–	16	13	12	–	–	–	–	83	46	62	59	80	64	24	12	9	7	11
5	♂	69	39	54	21	32	23	10	21	15	13	11	15	11	13	96	46	74	63	95	93	37	19	14	10	13
6	♀	56	31	44	16	24	21	9	18	15	14	11	14	9	12	85	39	59	54	78	77	31	15	11	8	11
7	♂	78	41	60	22	40	24	12	24	16	14	14	19	13	15	117	60	81	78	109	106	44	21	14	10	16
8	♀	73	39	59	21	37	24	11	22	17	15	14	19	13	15	117	59	78	80	109	104	44	21	15	10	15
9	♂	65	36	51	17	31	23	11	20	16	15	13	16	11	13	96	47	67	65	95	90	38	17	13	9	12
10	♀	64	35	50	19	28	21	10	19	15	14	11	15	11	14	95	43	65	66	96	88	36	17	12	9	14

Right part of table 30

							Ratios																
26	27	28	29	30	31	32	A	B	C	D	E			F	G	H	I	J					K	L
Hind Coxa		Wing Length	Gaster Length	Petiole		Total Body Length	Length/ Width of Head	Length/ Height of Head	Width of Head/ Distance between Eyes/ Width of Clypeus	Width of / Length Mandibles/ of Head	Antennal Segments			Height/ Length of Thorax	Thorax/ Head Width	Wing/ Body Length	Hind Tibia/ Tarsus	Hind Tarsal Segments					Lengths of Petiole/ Gaster	Width/ Length of Petiole
Width	Length			Width	Length						3	4	5					1	2	3	4	5		
12	19	190	76	14	27	178	1.8	1.4	2.0:1:0.7	3.0	1.3:1:1.0			1.3	1.5	0.9	0.8	2.2:1:0.8:0.6:0.9					2.8	1.9
14	23	238	87	17	40	190	2.0	1.5	2.2:1:0.7	2.9	1.2:1:0.9			1.1	1.4	0.8	0.8	2.2:1:0.8:0.6:0.8					2.2	2.4
15	24	262	115	17	43	243	1.8	1.4	2.0:1:0.7	2.8	1.4:1:0.9			1.2	1.4	0.9	0.8	2.1:1:0.8:0.6:0.9					2.7	2.5
13	21	255	96	20	43	217	1.7	1.3	2.1:1: –	–	1.2:1:0.9			1.3	1.3	0.8	0.8	2.1:1:0.8:0.6:0.9					2.2	2.2
19	28	281	148	19	50	286	1.8	1.4	2.1:1:0.7	3.9	1.4:1:0.9			1.3	1.5	1.0	1.0	2.0:1:0.7:0.5:0.7					3.0	2.6
16	22	257	102	15	39	238	1.8	1.5	2.3:1:0.8	3.5	1.2:1:0.9			1.4	1.4	0.9	1.0	2.1:1:0.7:0.5:0.7					2.6	2.6
21	35	300	143	25	59	316	1.9	1.5	2.0:1:0.6	3.4	1.5:1:0.6			1.4	1.3	1.1	1.0	2.2:1:0.7:0.5:0.8					2.4	2.4
19	32	300	130	26	54	295	1.9	1.5	2.0:1:0.6	3.5	1.3:1:0.9			1.5	1.3	1.0	0.9	2.1:1:0.7:0.5:0.7					2.4	2.1
18	28	281	130	20	43	267	1.8	1.4	2.1:1:0.7	3.3	1.2:1:0.9			1.4	1.4	1.0	0.9	2.2:1:0.7:0.5:0.7					3.0	2.2
18	31	276	126	21	43	271	1.8	1.4	2.3:1:0.8	3.4	1.3:1:0.9			1.5	1.5	1.0	0.9	2.2:1:0.7:0.6:0.8					3.0	2.1

Nos. 1–2. *Chorebus transversus* (NIXON) ex *Cerodontha* (*Butomomyza*) *angulata* LOEW: 1, Stuttgart, Germany; 2, Bookham, England.

Nos. 3–4. *Chorebus humeralis* sp. nov.: 3, holotype, Ireland; 4, ex *Cerodontha* (*Butomomyza*) *angulata* LOEW, Denmark.

Nos. 5–6. *Chorebus merella* (NIXON), Germany: 5, ex *Cerodontha* (*Butomomyza*) *scirpi* KARL, Stuttgart; 6, ex *C.* (*Dizygomyza*) *caricicola* HERING, Oberbayern.

Nos. 7–8. *Chorebus nobilis* sp. nov., Hessen, Germany.

Nos. 9–10. *Chorebus pelion* (NIXON), Hessen, Germany.

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