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Cover: Male *Aleochara (Ceranota) ruficornis* Gravenhorst *R. C. Welch*

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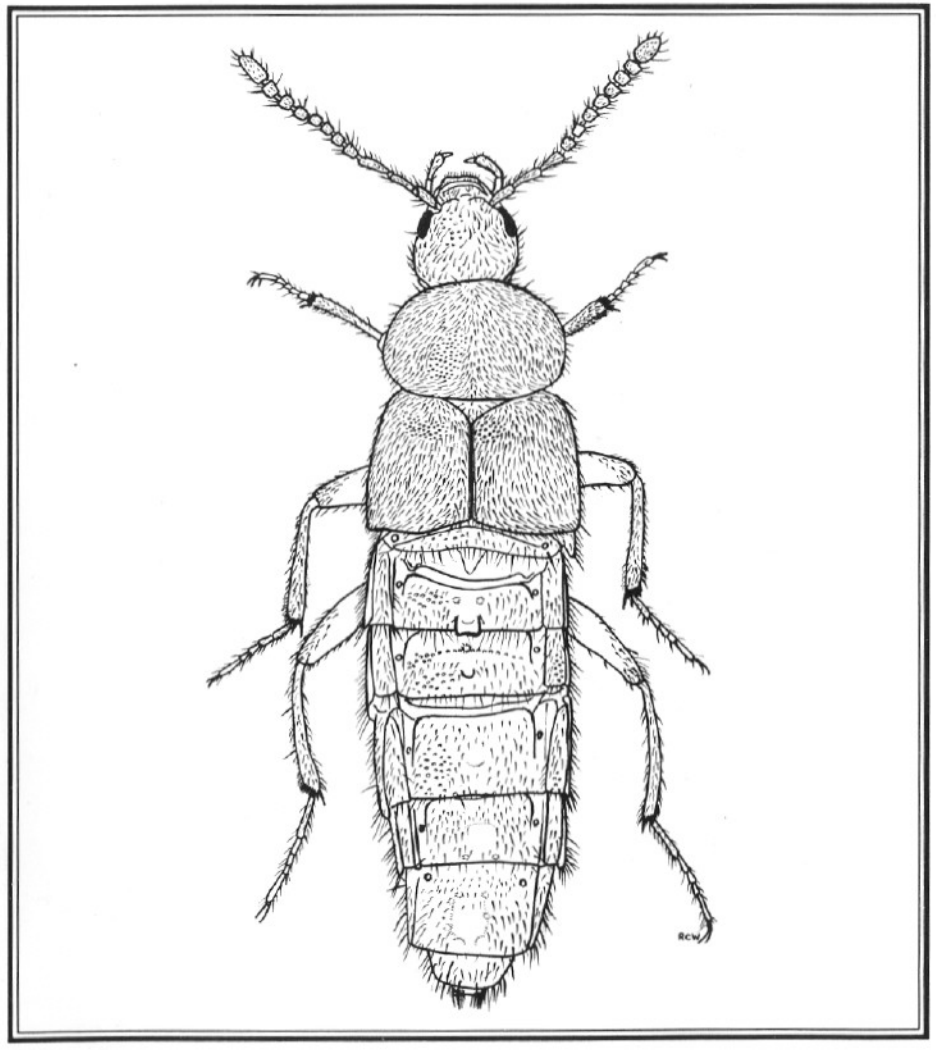

The British species of the genus *Aleochara*
Notes

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The British species of the genus *Aleochara* Gravenhorst (Staphylinidae)

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Introduction

A complete review of the British species of *Aleochara* Gravenhorst has been desired for some considerable time, for the most recent published key dealing exclusively with the British fauna is to be found in Joy (1932). This paper is a considerably revised and updated version of my doctoral thesis (Welch, 1965b), to incorporate those species recently added to the British List, numerous changes of nomenclature and classification, and a modern synopsis of the ecology, status and distribution of our species. The paper is in four main sections. I begin by reviewing the subgeneric classification in general and the species of three of the more difficult subgenera or species-groups in particular. This is followed by a new check list of British *Aleochara*, arranged according to the subgenera that I have chosen to adopt. Thirdly, I present a new and detailed key to species, which is supported by numerous illustrations. Finally, comments on identification and notes on the ecology and status of all of the British species are presented.

A subsidiary aim of this review has been to promote a stable specific nomenclature. Studies into the genus *Aleochara* have, in the past, been made difficult by the plethora of specific synonyms. Certainly during the nineteenth and early twentieth centuries practically every British and European authority provided a different interpretation as to the use of a particular specific name. For example, a problem arises when attempting to decide to which species British coleopterists were referring when they used the name "*A. moesta*". The true *moesta* of Gravenhorst is a distinctive species with extensive red coloration of the elytra, and was known by its synonym *A. crassiuscula* Sahlberg by Fowler & Donisthorpe (1913) and Joy (1932). *A. moesta sensu* Erichson was used by these and many other authors for a smaller, uniformly dark, species which Kloet & Hincks (1945) listed as a synonym of *A. diversa* Sahlberg, which itself was later shown to be a complex of three species.

Subgeneric classification

The genus *Aleochara s. lat.* has been the subject of innumerable taxonomic and phylogenetic revisions resulting in a seemingly endless succession of different subgeneric

groupings, some of which are occasionally elevated to generic status. Fowler (1888) recognised five subgenera: *Aleochara* Gravenhorst, *Baryodma* Thomson, *Ceranota* Stephens, *Polystoma* Stephens and *Rheochara* Mulsant & Rey. He further subdivided *Baryodma* to include *Coprochara* Mulsant & Rey and *Polychara* Mulsant & Rey, but in their supplementary volume Fowler & Donisthorpe (1913) used the names *Polychara* and *Baryodma* for separate subgenera. They also confirmed the removal of *A. morion* Gravenhorst into a new genus *Exaleochara* Keys and suggested that, because of its differing tarsal formula, it should be placed in the Myrmedoniini; this classification was adopted by Joy (1932). Modern systematists have placed this species in the genus *Tinotus* Sharp and variously associated it with the tribes Hoplandriini (Seevers, 1978) or Aleocharini (Lohse, 1974). However, the structure and development of its larvae indicate a close relationship with *Aleochara* (Welch, 1965b). Joy also raised *Polystoma* to generic status for the three distinctive littoral species of *Aleochara*. Subdivisions within *Aleochara* were ignored by Kloet & Hincks (1945) but Tottenham (1949) adopted eleven subgenera including *Emplenota* Casey which replaced Joy's genus *Polystoma*. In the last published revision of the *Check List of British Insects* (Pope, 1977) subgenera were again omitted.

With the lack of any recent keys to the British Aleocharini, many coleopterists have been using the works of continental authors (e.g. Palm, 1946, 1972; Strand & Vik, 1968; Freude, Harde & Lohse, 1974) all of whom retained the use of subgenera. Unfortunately their interpretation differed from that of Tottenham (1949). In my own earlier study of the genus (Welch, 1965b) I recommended the use of only eight subgeneric names, transferring the single British representatives in the three subgenera *Dyschara* Mulsant & Rey, *Homoeochara* Mulsant & Rey and *Euryodma* Reitter into other larger subgenera. I also tentatively subdivided *Emplenota* into two subgroups. These decisions were based upon the characters found in the adult beetles and the larvae of those species known at that time. Examination of museum collections at that time resulted in the deletion of *A. ripicola* Mulsant & Rey from the British fauna; the only known examples all proved to be *A. curtula* Goeze (Welch, 1965a).

In recent years Klimaszewski (1984) and Klimaszewski & Jansen (1993) have published major revisions of the systematics and phylogeny of the *Aleochara* of North America and southern Africa, respectively. Klimaszewski (1984) believes that "the most important characters for the reconstruction of phylogeny and for classification of the genus [*Aleochara*] are those associated with the mesosternum: absence or presence and length of carina", and states that "these characters proved to be invariable within the subgenera". In the resulting phylogeny of *Aleochara* proposed by Klimaszewski he recognises seven subgenera in America north of Mexico, but two of these do not occur in Europe. The subgenera *Polychara* and *Xenochara* were both described by Mulsant & Rey in 1874 and the former name has been widely used for the majority of European species. However, on the basis of page priority Klimaszewski has selected *Xenochara* Mulsant & Rey as the valid subgeneric name and has included within it species formerly placed in the subgenera *Baryodma* and *Isochara* Bernhauer. Use of the name *Baryodma* has caused considerable confusion in the past, not least in North America where the interpretation of early

systematists was based on a misidentification of the type species (Klimaszewski, 1984). In Europe, however, *A. intricata* Mannerheim has been placed consistently in the subgenus *Baryodma* and certainly none of Klimaszewski's possible phylogenies for *Aleochara* allow for the inclusion of this species within his subgenus *Xenochara*. Based upon the distinctive shape of the adult beetle and on larval characters, which appear to be intermediate between those of *Aleochara s. str.* and some *Xenochara*, I propose to retain *intricata* as the sole British species in the subgenus *Baryodma*. Klimaszewski also follows Seevers (1978) in recognising the subgenus *Calochara* Casey, comprising six North American species, and into which he has transferred the introduced European species *A. villosa* Mannerheim, from *Polychara*. Although I am prepared to accept Klimaszewski's ruling on *Xenochara*, I am not convinced that the decision to split off *villosa* is necessary, or indeed valid (see comments below on mesosternal carina development in *Emplenota*). A provisional examination of *villosa* larvae reared from dipterous puparia from a dovecote at Wytham, Oxford, (Welch, 1981) suggests that they closely resemble larvae of species now placed in the subgenus *Xenochara*. I therefore propose retaining *villosa* in this subgenus and not adopting Klimaszewski's proposed placing of it in *Calochara*, where it would have been the sole British representative.

Lohse's (1989) decision to elevate *Rheochara* to generic rank would appear to be unacceptable from my own studies of the structure of both adults and larvae of *A. spadicea* (Erichson), the only British representative. As a result I propose to retain it as a subgenus of *Aleochara*. Likovsky (1974) retained *brevipennis* Gravenhorst in its traditional position in the subgenus *Euryodma*, but in my earlier study (Welch, 1965b) I tentatively suggested moving this species into the subgenus *Aleochara s. str.* where it had earlier been placed by Bernhauer (1901). Riegel (1971) has since reared larvae of *brevipennis* which show remarkable similarities with those of both *curtula* and *A. lata* Gravenhorst and, as *brevipennis* appears to fulfil most of Klimaszewski's (1984) criteria for inclusion in the subgenus *Aleochara s. str.*, that is where I have placed it.

The subgenus *Coprochara*

Members of this subgenus are readily distinguished by the presence of a pair of parallel lines of setigerous punctures running longitudinally either side of the unpunctured mid-line of the pronotum. Prior to the 1960s, identification of British material was simple: if uniformly dark, the specimen was *A. bilineata* Gyllenhal, whereas if each elytron had a red spot at the angle of its hind margin and the elytral suture, it was *A. bipustulata* (Linnaeus). The discovery in 1963 of a female red-spotted *Coprochara* with a distinctly different spermatheca, from Spurn Head, Yorkshire, put an end to this simplistic approach. Comparison with a female *A. verna* Say in the Cameron Collection in the Natural History Museum, London, and with a Norwegian specimen on loan from Dr A. Strand, showed them to be identical with the Spurn specimen and I duly introduced the species as British under that name (Welch, 1969a). Although most dissected specimens of *bipustulata* had only two or three coils in their spermathecal duct, the specimen I used to illustrate this species (Welch, 1965b, 1969a fig. 3) exhibited what I considered at that time to be an

extreme example of coiling in the spermathecal duct. Later, Likovsky (1974) provided two illustrations of the spermatheca of *bipustulata*, one of which had even more coils in its duct than my specimen. The reason I chose to figure this multi-coiled specimen was to show that it was still distinct from the Spurn *verna*. I had obtained some North American specimens of *verna* for comparison from the Casey Collection in the Smithsonian Institution, Washington D.C., but none of these had their spermathecal duct coiled into the spherical mass which is so typical of the European "*A. verna*". Instead they more closely resembled my many-coiled form of *bipustulata* (Figs. 9B-C) and I rashly dismissed them as being "within the range of variation of *A. bipustulata*" (Welch, 1965b).

Doubts as to the identity of the Spurn "*verna*" were revived when Klimaszewski (1984) reviewed the North American species of *Aleochara*. During this study he examined European specimens identified as *verna* and distinguished two distinct types. One of them "was identical in every aspect with Nearctic specimens of *A. verna*, thus proving that this species has an Holarctic distribution". His illustrations of the second type (Klimaszewski, 1984, figs. 30-31) were identical to mine of the European concept of *verna* (Welch, 1969a, figs. 4-6). Klimaszewski refrained from pursuing changes in European nomenclature, believing this second type to "possibly represent an undescribed species". Dr G.A. Lohse visited North America shortly afterwards and concluded that the species previously referred to in Europe as *verna* was in fact *A. binotata* Kraatz. His descriptions and figures (Lohse, 1986, figs. 1a-c) accord well with my own. His figures and key to species from this paper were included *verbatim* in volume 12 of *Die Käfer Mitteleuropas* (Lohse & Lucht, 1989, pp. 237-239, fig. 145). Following this later publication, Prof. J.A. Owen re-examined his own British material of *Coprochara* and among 44 specimens previously regarded as *bipustulata* he positively identified three male and three female examples of the true *verna* Say and seven males and two females which he tentatively attributed to *A. pauxilla* (Mulsant & Rey). He also re-examined the "*verna*" from the Cameron Collection and found them to be *binotata*. In collaboration with Prof. Owen, I published a note correcting the identity of the Spurn specimen to *binotata* (Welch, 1990). Thus between us we must have created a precedent by both deleting *verna* from, and reinstating it to, the British List in adjacent papers in the same issue of a journal. I have since re-examined some slides of spermathecae which I made in the 1960s from "*bipustulata*" collected in the vicinity of Silwood Park, Berkshire, approximately 10% of which have proved to be from the true *verna*.

The question as to whether any of Owen's specimens are *pauxilla*, or indeed whether this species occurs in Britain at all, has been the subject of much debate and speculation. Horion (1967) regarded *pauxilla* as having a southern European and Mediterranean distribution, being also known from North Africa. Although he listed earlier published records from Germany, he knew of no reliable record from Germany or Austria. Lohse (1986) also describes this species as having a Mediterranean distribution extending west to the Canary Islands and north to southern Slovakia, and in a contemporary letter to me he expresses the firm belief that "*A. pauxilla* will not occur in Great Britain". Prof. Klaus Peschke and his co-workers at Freiburg, Germany, have been studying *Aleochara* for

many years and have recently started a multidisciplinary study into the evolution of the genus. In recent correspondence with Christian Maus (1996 *in litt.*), who is making a special study of the subgenus *Coprochara*, he states that he has examined museum material of *pauxilla* of which the most northerly specimen came from Hungary. He has also examined some of Prof. Owen's "species C" (?= *pauxilla*) and is of the opinion that they are small specimens of *verna*. He remarks that *pauxilla* is "very similar (and probably closely related) to *A. binotata* and big *A. pauxilla* specimens are difficult to distinguish from small *A. binotata*". He also believes *pauxilla* to be quite rare as most museums have only a few specimens in their collections.

It is clear that three species of red-spotted *Coprochara* occur in Great Britain and although *bipustulata* is the most common, it is probable that *verna* has a similarly wide distribution whereas *binotata* appears to be much rarer. Prof. Owen kindly loaned me specimens which he had identified as *verna* and *pauxilla* from his own collection and M.L. Denton provided further material previously identified by Prof. Owen. To date, I am in agreement with Christian Maus in that all the British specimens I have examined which were believed to be *pauxilla*, are *verna*. On the known distribution of *pauxilla* in Europe it would appear unlikely to occur in the British Isles. Hyman (1994) comments that "the identification of *A. pauxilla* is at present only provisional and it is possible that it may refer to another, as yet unknown, species". On the strength of the above opinions and the evidence available to me at present, I have considered it prudent to omit *pauxilla* from the British List and from my key to species below.

The *funebris-sparsa* species group

It was not until the publication of Kloet & Hincks' (1945) *Check List* that the name *diversa* Sahlberg was adopted by British coleopterists for the species which, at least since Fowler's time (1888), had been known as *moesta* Gravenhorst. The misuse of this name has been briefly discussed above and Fowler & Donisthorpe (1913) provide a useful summary of their views on the relevant nomenclature at that time. From the 1940s until the mid-1960s British coleopterists distinguished two similar species: *diversa* in the subgenus *Polychara*, and *A. sparsa* Heer which was placed in a separate subgenus *Homoeochara* based primarily on the shape of its maxillary palps. The general appearance of these two species, together with the marked similarities in their larvae, led me to the opinion that both should be placed in the former subgenus (Welch, 1965b). About the same time Likovsky (1965) described a new species — *A. stichai* Likovsky — which he had found mixed with *sparsa*. Shortly afterwards Strand (1966) recognised this new species in Norway which, in turn, prompted Johnson to examine his own material and, upon the discovery of a single male collected in Merionethshire, Wales, he added *stichai* to the British List (Johnson, 1967).

Whilst visiting Helsinki in 1968 I took the opportunity of visiting the Zoological Museum and examining Sahlberg's type of *diversa*. The specimen was a male with its genitalia dissected out. It was immediately obvious that its aedeagus differed markedly from that dissected from numerous British specimens previously identified as *diversa*.

The aedeagus of the type specimen more closely resembled that of *stichai* in general shape whereas those of British specimens were much more heavily built with the ventral margin noticeably thickened and with the paired dorsal sclerites within the internal sac of this organ larger and differently shaped. The type specimen did, however, appear to resemble a male in my own collection which I had not previously been able to identify with certainty. The following year I received a reprint from Likovsky (1968) and learned that it was he who had dissected Sahlberg's type of *diversa* and had compared it with Bernhauer's type of *diversa* var. *albovillosa*. He concluded that most of the specimens previously regarded as *diversa* were this latter species, which was common and widespread throughout Europe. Johnson's (1967) figure of the aedeagus of "*diversa*" is clearly that of *A. albovillosa* Bernhauer. The true *diversa* appeared to be a much rarer species. From Likovsky's figures of the internal dorsal sclerites of the aedeagus I was able to confirm the identity of my doubtful male from Silwood Park, Berkshire, as the true *diversa* Sahlberg. Further examination of the *Aleochara* in my collection at that time produced only one possible female *diversa* taken at the same time as the male. Although the males of these four closely related species can be determined after some practice, like Likovsky (1968) I was unable to separate females of *stichai* and *diversa* with any certainty (Welch, 1969b).

As a result of the above studies, four closely related species — *albovillosa*, *diversa*, *sparsa* and *stichai* — were confirmed as occurring in Great Britain. Although this nomenclature was universally adopted by European coleopterists it appears that this was not the final answer and more recent changes have been proposed for the first two species in this group. During his study of the Aleocharinae, Likovsky (1984) discovered that many names in current usage were junior homonyms and among the numerous new names he proposed was *kamila* to replace both Sahlberg's 1876 *A. (Baryodma) diversa* and his own interpretation (Likovsky, 1968) of *diversa*. This Slovakian publication was either unnoticed or ignored in Britain although the name change was adopted in Scandinavia (Biström & Silfverberg, 1985). However, its inclusion in Lohse & Lucht (1989) will inevitably lead to its more general acceptance and I have adopted its use below.

A further name change appears to have slipped unannounced into a number of recent British publications. Duff (1993) refers to *A. funebris* Wollaston as a synonym of *albovillosa* when discussing a record for *moesta*, whilst Hodge & Jones (1995) under their entry for *A. diversa* state: "Very close to *A. sparsa* Heer and *A. funebris* Wollaston (formerly *A. albovillosa* Bernhauer) ...". As far as I can ascertain this name change first appeared in British literature in Hyman's unpublished (1986) review of the status of British Coleoptera where he attributed the name to Wollaston but did not provide a date for the author. Whitehead (1990) adopted this name change but knew only that this species was described in 1864. With the assistance of Prof. Owen and Dr R.G. Booth, I eventually traced this new synonymy to a paper by Likovsky (1981). At the end of an account of a joint Czechoslovakian-Iranian expedition to Iran, he provides a list of all the known species of Palaearctic and Oriental *Aleochara* in the subgenus *Polychara*. In this list, without any explanation, he gives *funebris* Wollaston, 1864, as the valid name for *albovillosa* Bernhauer, 1901. Wollaston's (1864) brief description of *funebris* was based

on four specimens collected by himself and Dr Crotch from three of the Canary Islands, and he comments that the new species "very closely resembles the European *A. moesta*; and ... I suspect that it is probably conspecific with the insect which I actually referred to the *moesta* in my Madeiran Catalogue". He adds that the four specimens "differ from *moesta* in being (particularly on the head and prothorax) rather more strongly punctured, in their prothorax being perceptibly narrower or less transverse, and in their legs and the base of their antennae being a little paler. The species would seem, also, to ascend to a somewhat larger stature".

During a later visit to the Natural History Museum, London, I was permitted to examine the Wollaston Collections. His Canary Islands Collection contained two specimens of *funebris*: one bearing a red "type" label was from Taganana, Tenerife, while the other was a Crotch specimen from Gomera. When Johnson (1970) studied Wollaston's *Atomaria* Stephens (Cryptophagidae), he pointed out that, in the past, staff at the Museum often attached a type label to the first specimen in a series and that such specimens should more correctly be regarded as syntypes pending the published designation of a lectotype. Unfortunately both specimens proved to be females, with spermathecae typical of *albovillosa* but indistinguishable from other closely related species. However, both possessed the narrower, less apically expanded, third segment to their maxillary palps and in every other respect appeared identical to *albovillosa*. Wollaston referred to them as having a "shining, intensely black surface and ferrugineous legs"; these specimens now appeared somewhat paler in general body colour so are presumed to have faded slightly over the past 130 years. A third specimen was located in the Museum's General Collection which had been incorporated from the Sharp Collection and bore a blue disc and the inscription "Ins. Canar.". Although it was without an abdomen, its general appearance and the shape of its maxillary palps suggested that it was conspecific with Wollaston's material but was probably collected after he had described *funebris*. I next examined a single specimen in Wollaston's Madeira Collection standing over the name *moesta*, collected from Ribeiro de Sta. Luzia. This was also a female but appeared identical to his Canary Islands material. In search of male *funebris* I obtained two specimens on loan from the second Wollaston Collection housed in the Hope Entomological Collections at Oxford University Museum. One was the remaining Wollaston Canary Islands specimen from Baranco de Galga, Palma, while the other was the second Crotch specimen from Gomera. Unfortunately both of these also proved to be females, indicating that no males were present among the material upon which Wollaston based his description of *funebris*.

In order to convince myself that Likovsky's synonymy is valid, I set about trying to locate male specimens from the Canary Islands, or Madeira, that had been identified as either *albovillosa* or *funebris*. In a recent list of Canarian Staphylinidae, Hernandez, Outerelo & Gamarra (1994) record *funebris* from four islands. Subsequent correspondence revealed that Hernandez had died in 1994 and his successor, Dr G. Ortega, was unable to be of assistance. Dr Outerelo informed me that he possessed no specimens of either *funebris* or *albovillosa*, and I received no reply from Dr Gamarra. I next turned to Christian Maus, but the collection of the Institut für Biologie at Freiburg contained no

Canary Island or Madeira material of either species. He suggested other coleopterists whom he knew had staphylinid material from these islands: Dr Volker Assing sent me two male *funebris* collected on 12.iv.1992 at Aquamanga (Oratava), Tenerife, and another male from Rabocol, Madeira, collected on 7.vii.75; Dr Lothar Zerche sent me a single male identified as *albovillosa* collected at Madre del Agua, near Agua Garcia, Tenerife, on 9.vii.1995; and Paul Wunderle also loaned me one male and two female *Aleochara* which he had collected together at 1000 m at El Cedro, Gomera, on 28.x.1990, together with a second male taken on 30.x.1990 at La Laguna alto Fayal-Brezal at 1300 m on the same island. All the above specimens that I have examined appear identical in every external character and in the detailed structure of their aedeagi and spermathecae, with what we have until now referred to as *albovillosa*. There now remains no doubt in my mind that this species is synonymous with the *funebris* of Wollaston, which takes precedence and becomes the valid name.

The littoral species

In the standard works on British Coleoptera the three littoral species, known then as *A. algarum* Fauvel, *A. grisea* Kraatz and *A. obscurella* Gravenhorst, were all grouped under the name *Polystoma* Stephens, which Fowler (1888) considered to be a subgenus of *Aleochara*, while Joy (1932) regarded it as a separate genus. When Allen (1937) described a new species — *A. phycophila* Allen — he placed it in what he regarded as the subgenus *Polystoma*; there it remained until Tottenham (1949) grouped all four species under *Emplenota* Casey, which he regarded as a subgenus of *Aleochara* as did Blackwelder (1952) and Likovsky (1974), but Seevers (1978) raised it to generic status. Although most European and North American taxonomists appear to have more or less accepted this simplified arrangement, it was not to last. Much earlier, Reitter (1909) had created two new subgenera for the European littoral species of *Aleochara*, placing *grisea* in the subgenus *Polycharina* Reitter on account of its longer first tarsal and third antennal segments. The remaining two species were grouped under *Polystomaria* Reitter, a subgenus to replace Stephens' 1835 name *Polystoma* which was preoccupied. Up until the early 1980s there may have been some confusion at the generic and subgeneric levels but, although no further specimens of *phycophila* had been found in nearly fifty years since its discovery, British coleopterists felt secure in their understanding and identification of the remaining three littoral species.

All this changed abruptly when Lohse (1985) discovered that Fauvel (1862) had been responsible for introducing some fundamental errors in nomenclature which had persisted undetected ever since. Fauvel had apparently introduced the name *algarum* to replace the *obscurella* of Gravenhorst (1806) and had then compounded his error by using that name for a species previously described as *A. punctatella* by Motschulsky in 1858. Dr Lohse notified me of his findings immediately upon publication and I communicated them via the section on The British Insect Fauna in *Antenna* **10**(3):152 (1986). Now that the name "*obscurella* Gravenhorst" is to be used for a different species to that to which it has been applied for over 100 years, it is imperative that in any future records (whether they be

personal, local lists, national recording schemes, or published papers) there should be no doubt as to which interpretation of the name is being used. For a few years at least it may be prudent to adopt the following guidelines:

* *A. (Emplenota) obscurella* Gravenhorst (= *algarum* Fauvel), although the persistent use of *algarum* can still be interpreted correctly.
* *A. obscurella* Gravenhorst or *A. (Emplenota) obscurella* Gravenhorst, will be meaningless unless in a list together with *A. (Emplenota) punctatella* Motschulsky.
* *A. (Emplenota) punctatella* Motschulsky, should be self-explanatory and does not require qualification.
* *A. (Emplenota) grisea* Kraatz, retains the specific name with which we are familiar.

Klimaszewski (1984) placed all of the North American littoral *Aleochara* in the subgenus *Emplenota*, but Lohse (1985) raised *Emplenota* to generic status for the true *obscurella* Gravenhorst (the species previously known as *algarum*) and placed both *grisea* and *punctatella* Motschulsky in the genus *Polystomota* Casey; a slightly condensed version of Lohse's (1985) key appears in Lohse & Lucht (1989). Hyman (1986) used these generic names in his review of British Coleoptera and also placed *phycophila* in the genus *Polystomota*. More recently Assing (1995), in a review of Palaearctic littoral *Aleochara*, follows Lohse (1985) in recognising *Emplenota* and *Polystomota* as being worthy of generic status. Unfortunately there appear to be inconsistencies in the characters used by Lohse and Assing to separate *Emplenota* from *Polystomota*. In my earlier study (Welch, 1965b), I examined five male specimens from the Natural History Museum's collections of *A. albopila* Mulsant & Rey, a mainly Mediterranean species, and specimens of the Japanese *A. fucicola* (Sharp) sent to me by Kohei Sawada. Both of these species have the typical *Emplenota* aedeagus, with a pronounced pair of ventro-lateral lobes, and my drawings of their genitalia correspond well with Assing's (1995) figures for both of these species. Although Klimaszewski (1984), Lohse (1985) and Assing (1995) all regard the absence of a mesosternal carina as one of the characteristics of their genus *Emplenota*, I found that the specimens of *albopila* which I examined all possessed a carina which varied from one-third to half the length of the mesosternum, whilst those of *fucicola* possessed a well-developed carina in the anterior half of their mesosternum. Clearly the validity of these generic or subgeneric subdivisions of *Aleochara* is open to further scrutiny and is not as clear cut as these authors would have us believe. The direction of the pronotal hairs may be a useful character to separate British coastal species, but Klimaszewski's photo-micrographs of three North American *Emplenota* indicate that their pronotal hairs are not arranged in the same pattern as those described by Lohse (1985) and Assing (1995). Only those of *phycophila* Allen show some similarities with Nearctic species.

Although it is possible that two (or more) phylogenetically separate groups could have colonised the seashore, and if they had done so would have acquired the dense pubescence typical of other littoral Staphylinidae, I am not convinced that this necessarily occurred in this group of species. Of the many littoral species of *Aleochara* from Atlantic and Pacific coasts whose aedeagus and spermatheca I have either examined, or for which I have seen detailed figures, a case could equally well be made to demonstrate that they

exhibit progressive stages of development, albeit with some noticeable gaps. With some trepidation I therefore propose to adopt Lohse's specific nomenclature but to place all four British littoral species in the one subgenus *Emplenota*. This arrangement also makes it easier to decide where to place Allen's single female type of *phycophila*. Many people have, over the years, expressed doubts about the validity of this species. Recently Assing (1995) commented that "it was not possible to clarify the identity of *Aleochara phycophila* with certainty" as he was unable to examine Allen's type specimen. However, based upon my more detailed description (Welch, 1965b) he concluded that it "represents an aberrant specimen of *E. obscurella*", presumably basing his decision on the specimen's lack of a mesosternal keel "which would characterize the species as a member of *Emplenota*". However, the spermatheca of *phycophila* most closely resembles that of *grisea* and *punctatella* in lacking the collar to the stem which is present in *obscurella*. Dr Lohse (*in litt.*) had earlier expressed the same opinion that, having no mesosternal carina, *phycophila* should be placed in *Emplenota*, but he accepted that there could be additional littoral species in Europe as he too had a specimen from the Bay of Biscay of what he believed to be an undescribed species of *Polystomota* (i.e. it was definitely not *phycophila*).

Check List of British Species

Family STAPHYLINIDAE

Subfamily ALEOCHARINAE

Tribe ALEOCHARINI

ALEOCHARA Gravenhorst, 1802

S. **COPROCHARA** Mulsant & Rey, 1874
bilineata Gyllenhal, 1810
binotata Kraatz, 1858
= *verna* sensu auct. not Say, 1836
bipustulata (Linnaeus, 1761)
= *nitida* Gravenhorst, 1836
verna Say, 1836
= *pauxilla* sensu auct. Brit not (Mulsant & Rey, 1874)

S. **ALEOCHARA** Gravenhorst, 1802 sensu stricto
brevipennis Gravenhorst, 1806
= var. *curta* Sahlberg, C.R., 1831
= *fumata* sensu Erichson, 1837 not Gravenhorst, 1802
curtula (Goeze, 1777)
= *crassicornis* sensu Donisthorpe, 1925 not Boisduval & Lacordaire, 1835
= *fuscipes* sensu Gravenhorst, 1802 ? (Linnaeus, 1758)
= *ripicola* sensu Tottenham, 1939 not Mulsant & Rey, 1874
lata Gravenhorst, 1802

S. **BARYODMA** Thomson, 1858
intricata Mannerheim, 1831
= *bipunctata* sensu Erichson, 1837 not (Olivier, 1795)

S. **XENOCHARA** Mulsant & Rey, 1874
cuniculorum Kraatz, 1858
discipennis Mulsant & Rey, 1853
fumata Gravenhorst, 1802
= *mycetophaga* Kraatz, 1856
funebris Wollaston, 1864
= *albovillosa* Bernhauer, 1901
= *diversa* sensu auct. not Sahlberg, J., 1856
= *moesta* sensu Erichson, 1837 not Gravenhorst, 1802
inconspicua Aubé, 1850
kamila Likovsky, 1984
= *diversa* Sahlberg, J., 1876 not Mulsant & Rey, 1853
lanuginosa Gravenhorst, 1802
lygaea Kraatz, 1862
maculata Brisout, 1863
moerens Gyllenhal, 1827
= *fungivora* Sharp, 1870
moesta Gravenhorst, 1802
= *crassiuscula* Sahlberg, C.R., 1831
sanguinea (Linnaeus, 1758)
= *brunneipennis* Kraatz, 1856
= *lugubris* Aubé, 1831
sparsa Heer, 1839
= *succicola* (Thomson, C.G., 1867)
stichai Likovsky, 1965
tristis Gravenhorst, 1806
villosa Mannerheim, 1830

S. **CERANOTA** Stephens, 1839
ruficornis Gravenhorst, 1802

S. **RHEOCHARA** Mulsant & Rey, 1875
spadicea (Erichson, 1837)
= *procera* (Erichson, 1837)

S. **EMPLENOTA** Casey, 1906
grisea Kraatz, 1856
obscurella Gravenhorst, 1806
= *algarum* Fauvel, 1862
phycophila Allen, 1937
punctatella Motschulsky, 1858
= *obscurella* sensu auct. not Gravenhorst, 1806

Identification

As a result of their highly specialised life cycle, all adult *Aleochara* can vary considerably in size which, in turn, can lead to variation in the development of external morphological characters and surface sculpturation. It is assumed, from those species so far reared in the laboratory, that the larvae of all *Aleochara* are obligate parasites of cyclorrhaphous Diptera. The ultimate size of any adult will therefore depend upon the volume of the parasitised puparium and the available food resource which the fly pupa provides for the developing larva. Of the species reared under experimental conditions, most have proved not to be host specific. However, in their natural environment the choice of available dipterous hosts may be limited. Even within any species of fly, shortage of larval food can result in the production of small adults. Size variation can also affect the development of the ovaries which, in turn, will affect adult fecundity (Welch, 1993). In the key to species (below) I have provided an approximate range of lengths for each species based upon specimens which I have examined.

In a few of the difficult groups already mentioned above, closely related species may only be separated on differences in their genitalia, and in some, identification may only be made with certainty in one sex. For these reasons, confident identification of British *Aleochara* to species level often requires that the genitalia are dissected out, then cleared and critically examined under a high power. To facilitate the use of the key to species, and in particular so that the reader may be able to understand what is meant by some of the technical terms that are used, I have first provided some detailed labelled diagrams of generalized *Aleochara* genitalia (Figs. 1-4).

Key to abbreviations used in Figs. 1-4 (p. 13):

a apex of aedeagus
ac aedeagus capsule
ai apical invagination of spermatheca
ap′ point of articulation with condyle of paramere
ap″ point of articulation with aedeagus capsule
ar anterior region of aedeagus
bs basal swelling of aedeagus
ca crista apicalis
cf condylar fold of paramere
cp crista proximalis
ct crista transversalis
d dorsal margin of paramere
de ductus ejaculatorius
df dorsal fold of paramere
dp dorsal plate of aedeagus
dpf dorso-proximal fold of paramere
ds dorsal sclerite of internal sac
f flagellum
fb flagellar base
fm foramen mediale
il internally projecting lamella
m membraneous area of aedeagus
oa ostial aperture of aedeagus
pf proximal fold of paramere
pp palp of paramere
s sensilla
sa apical portion of spermathecal stem
sb basal portion of spermathecal stem
sc chitinized portion of spermathecal stem
sga attachment of spermathecal duct
sh head of spermatheca
sm membraneous portion of spermathecal duct
sn neck of spermatheca
v velum
va ventro-apical edge of paramere
ve ventro-proximal edge of paramere
vf ventral fold of paramere
vm ventral margin of aedeagus
vp ventro-proximal fold of paramere
vs ventral sclerite of internal sac

FIG. 1

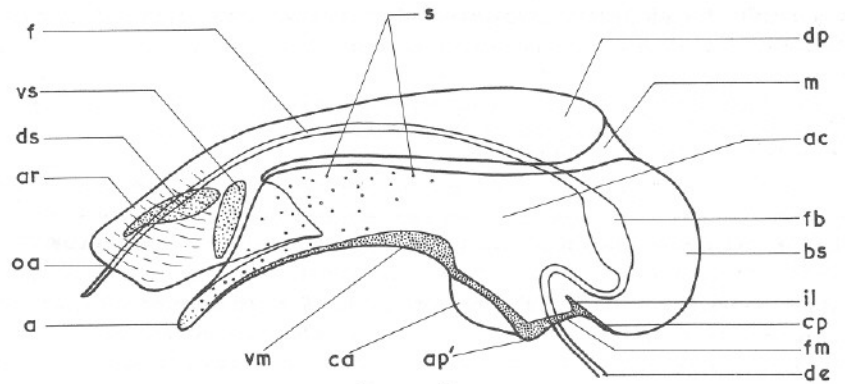


FIG. 2

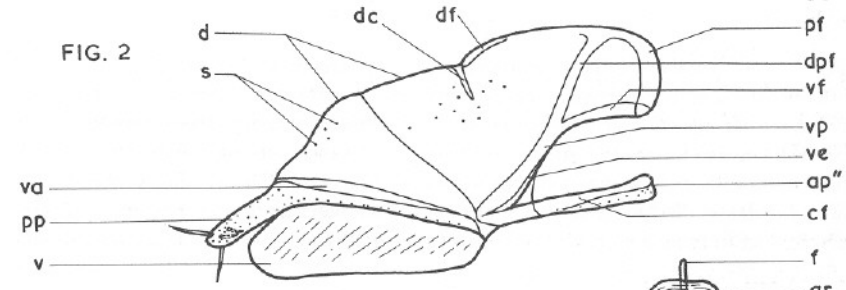


FIG. 4

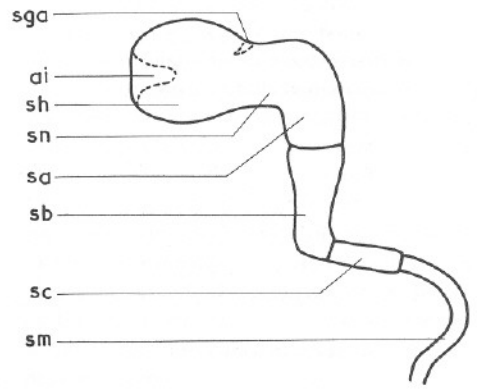
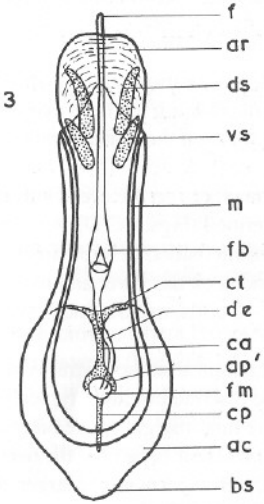


FIG. 3



Figs. 1-4: Generalized *Aleochara* genitalia.
1 Aedeagus, lateral view.
2 Paramere, lateral view.
3 Aedeagus, dorsal view.
4 Spermatheca.

Key to species

1. Pronotum with two irregular longitudinal rows of setigerous punctures, converging slightly towards the head, either side of a smooth unpunctured mid-line (subgen. *Coprochara*). *2*

- Pronotal disc uniformly punctured, occasionally with four larger punctures arranged in a fairly regular rectangle but never with distinct longitudinal rows of punctures. *5*

2. Elytra uniformly black or suffused with blackish-brown, never with either a distinct red mark or reddish-yellow coloration spreading from the hind margin over the rear half. Aedeagus (Figs. 11, 11A). Spermatheca (Fig. 11B). Length 2.5-5.5 mm. . . . . 1. ***bilineata*** Gyllenhal

- Elytra either black with a well-defined red spot extending from the hind margin close to the sutural angle, or brownish-red with a somewhat diffuse reddish-yellow mark spreading from the hind margin. The spermatheca provides the best means of separating the species in this group (Figs. 8-10). *3*

3. Red coloration on the elytra not clearly defined but generally suffused over much of the elytra with only the scutellary region and front third dark. Punctures on the elytra circular, moderately strong, and fairly diffuse (Figs. 7C-D), those on the hind-body appearing equally close and moderately strong on all tergites. Aedeagus strongly arched with the apical half of the capsule gradually narrowing to a fine point (Figs. 7A-B). Spermatheca with a broad stem widening gradually to a large head; outer margin of the stem ± evenly curved; duct forming a broader, ± spherical mass of 10-12 coils (Fig. 10). Length 2-5 mm. . . . . 2. ***binotata*** Kraatz

- Red coloration on the elytra forming a fairly well-defined spot in the sutural angle, which may extend along the hind margin. Puncturation on the abdomen not so strong, becoming more diffuse on the apical tergites. *4*

4. Punctures on the elytra strong, circular and close. Red elytral spot small and more sharply defined (Figs. 6C-D). Aedeagus strongly arched with the apical half broader and ± parallel-sided before narrowing abruptly to its apex (Figs. 6A-B). Spermatheca with head and neck narrower and more delicate; stem ± straight between two marked angles; duct of 7-12 coils, narrow and fusiform (Fig. 9). Length 2-4 mm. . . . . 4. ***verna*** Say

- Punctures on the elytra weakly crescent-shaped and more diffuse. Red elytral spot larger, may be discrete but more typically with its edge less sharply defined, frequently spreading along the hind margin to the outer angle (Figs. 5C-D). Aedeagus more gently arched with its apical half broad but the narrowing more marked before an abrupt angle to its apex (Figs. 5A-B). Spermatheca larger, stouter and more evenly curved to a duct of 2-4 coils (Fig. 8). Length 2-5 mm. . . . . 3. ***bipustulata*** (Linnaeus)

5. Whole body shagreened with reticulated microsculpture, and covered with dense whitish-yellow pubescence which lies horizontally at right-angles to the elytral suture and diverges from the pronotal mid-line. Littoral species (subgen. *Emplenota*). *6*

- Never with whole body shagreened and never with coarse whitish-yellow pubescence: body mostly shiny with at most head and thorax shagreened, or body closely punctured. *9*

6. Hairs in the pronotal mid-line directed towards the rear, laterad to which they are aligned diagonally towards the hind angle (Fig. 22B). Mesosternum with a longitudinal carina occupying approximately half its length (Fig. 57). Hind margin of sternite 8 produced to a median point, more pronounced in the male (as *moerens*, Fig. 61). Hind tarsi with segment 1 as long as 2 and 3 together. *7*

- Hairs in the pronotal mid-line directed towards the head, laterad to which they describe an arc, first forward and then out towards the side margins (Fig. 21B). Mesosternum without a longitudinal carina (as *brevipennis*, Fig. 55). Hind margin of sternite 8 rounded or slightly angled but never produced into a pronounced median point. Hind tarsi with segment 1 shorter than 2 and 3 together. *8*

7. Puncturation on the elytra stronger and more dense than on the pronotum. Antennae longer, reaching to the hind margin of the pronotum; segment 4 elongate to quadrate, 5 quadrate to slightly transverse, 6-10 transverse. Abdominal tergites finely shagreened. Aedeagus with its ventral margin thickened and expanded (Figs. 22, 22A). Spermatheca (Figs. 18, 18A). Length 3.5-5.5 mm. . . . . 27. ***grisea*** Kraatz

- Puncturation on the elytra and pronotum equally fine and dense. Antennae shorter, at most reaching to the hind angle of the pronotum; segment 4 transverse, 5-10 strongly transverse. Abdominal tergites strongly shagreened. Aedeagus with its ventral margin weakly thickened (Figs. 23, 23A). Spermatheca (Figs. 19, 19A-C). . . . . 30. ***punctatella*** Motschulsky

8. Larger species, with the whole body strongly shagreened, black, often brownish near the apex. Legs, antennae and palpi brownish; tarsi and terminal segments of the palpi lighter. Antennae with segment 4 quadrate to elongate, 5-10 transverse. Head with vertex finely punctured. Pronotum and elytra with dense whitish-yellow pubescence. Hind margin of tergite 8 evenly rounded in the female, emarginate in the male. Aedeagus with paired ventro-lateral projections (Figs. 21, 21A). Spermathecal stem with a distinct collar (Figs. 17, 17A). Length 3.5-6 mm. . . . . 28. ***obscurella*** Gravenhorst

- Smaller species, with the whole body finely shagreened, blackish-brown. Elytra brownish-red; tarsi lighter. Antennae with segment 4 quadrate, 5-10 strongly transverse (Fig. 20C). Head with two strong setigerous punctures on vertex between eyes and strongly punctured on either side of the mid-line. Pronotum and elytra with pubescence less dense. Female with the hind margin of tergite 8 emarginate in the middle (Fig. 20E), hind margin of sternite 8 slightly angled in the mid-line (Fig. 20D). Spermatheca (Figs. 20, 20A-C). Male unknown. Length 3.5 mm. . . . . 29. ***phycophila*** Allen

9. Mesosternum without a median longitudinal carina (Fig. 55). Mainly larger species, length 3-9 mm. *10*

- Mesosternum with a median longitudinal carina, either partial or complete (Figs. 56-59). . . *13*

10. Large, yellowish to brownish-red species. Pronotum as broad as the elytra. Tergite 3 in the male with a large and broad peg-like projection in the middle of the hind margin; tergites 4, 5 & 7 with smaller, variably developed protuberances. Aedeagus (Figs. 29D-E). Spermatheca (Figs. 29, 29A-C). Length 5-8 mm. (subgen. *Ceranota*).. . . . . 25. ***ruficornis*** Gravenhorst

- Never uniformly coloured brownish-yellow. Secondary sexual characters not developed on the abdominal tergites of the male (subgen. *Aleochara s. str.*).. . . . . *11*

11. Antennae with segment 4 elongate, 5-10 at most twice as broad as long. Smaller brownish-red to blackish-brown species. Legs and palpi red to brownish-red. Antennae brownish-red to brown with basal segments sometimes lighter. Hind body ± gradually narrowing towards the apex. Aedeagus (Figs. 16D-E). Spermatheca (Figs. 16, 16A-C). Length 3-6 mm. . . . . 5. ***brevipennis*** Gravenhorst

- Antennae with segment 4 transverse, 5-10 2.5-3 times as broad as long. Large, broad species. Length 5-9 mm. *12*

12. Elytra dark red with black lateral margins often expanding apically at posterior angles; area around the scutellum and the rest of the body black. Hind margin of tergite 8 emarginate in the middle in the male. Antennae brownish-black to black with the basal segments lighter. Legs and palpi brownish-red to brown, segment 3 of the palps often darker. Aedeagus with a distinctive "crochet" hook at its apex (Figs. 12, 12A). Spermatheca (Figs. 15, 15A-B). . . . . 6. ***curtula*** (Goeze)

- Elytra uniformly black or with a reddish tinge to the centre and/or hind margins, the rest of the body black. Hind margin of tergite 8 straight in the male. Antennae blackish-brown to black. Legs brown to blackish-brown. Palpi blackish-brown with segments 4 & 5 red. Aedeagus (Figs. 13, 13A). Spermatheca (Figs. 14, 14A-C). . . . . 7. ***lata*** Gravenhorst

13. Legs narrow, hind tarsus (excluding the claws) as long as hind tibia. Antennae long and narrow, reaching beyond the hind margin of the pronotum, segments 5-10 quadrate to weakly transverse. Elytra with hind margins sinuate close to the posterior angles. Found in the underground nests and burrows of mammals. *14*

- Legs stout, hind tarsus (including the claws) shorter than hind tibia. Antennae variable. *15*

14. Body uniformly black with the exception of the hind margin and disc of each elytron red. Legs and palpi brownish-red. Antennae shorter, brownish, reaching one-third of the way down the elytra. Head half the width of the pronotum. Body distinctly attenuated both anteriorly and posteriorly. Mesosternum with a carina occupying three-quarters of its length (as *sparsa*, Fig. 58). Aedeagus (Figs. 31B-C). Spermatheca (Figs. 31, 31A). In rabbit burrows, etc. Length 3.5-5 mm. (subgen. *Xenochara* part). . . . . 9. ***cuniculorum*** Kraatz

- Elytra and pronotum uniformly brownish-red to blackish-brown, head and hind-body darker. Legs, palpi and antennae yellow to brownish-red. Antennae long and slender, reaching half-way down the elytra. Head three-quarters the width of the pronotum. Pronotum, elytra

and hind-body ± parallel-sided. Mesosternum with a very short median carina (as *villosa*, Fig. 56). Aedeagus (Figs. 32C-D). Spermatheca (Figs. 32, 32A-B). In moles' nests. Length 4.5-5 mm. (subgen. *Rheochara*). . . . . 26. ***spadicea*** (Erichson)

15. Abdomen and elytra strongly punctured throughout.. . . . . *16*

- Abdomen not densely punctured throughout; if puncturation dense, then only on basal tergites or in transverse grooves of tergites; puncturation often sparse. *18*

16. Abdomen strongly narrowed posteriorly. Mesosternal carina complete to apex and raised to form a prominent keel. Elytra strongly and densely punctured, with posterior margins and a triangular area in the centre of each red. Head and pronotum closely and finely punctured. Legs reddish. Antennae and palpi blackish-brown; basal segments of antennae and apical palpal segments lighter. Aedeagus (Figs. 25, 25A). Spermatheca (Figs. 27, 27A). Length 3.5-5.5 mm. (subgen. *Baryodma*). . . . . 8. ***intricata*** Mannerheim

- Broad, parallel-sided species with the abdomen only narrowing near apex. Mesosternal carina complete but forming a low ridge (subgen. *Xenochara* part). *17*

17. Pronotum and elytra with long, dense, outstanding pubescence. Head and pronotum shiny with fine, dense puncturation. An all-black species with a red mark at the hind margin of each elytron. Antennae black. Legs and palpi blackish-brown; tarsi lighter. Aedeagus with a long flagellum coiled in the base (Figs. 28C-D). Spermatheca with the base of the duct loosely coiled (Figs. 28, 28A-B). Length 5-6 mm.. . . . . 23. ***tristis*** Gravenhorst

- Pronotum and elytra with recumbent pubescence. Head and pronotum finely shagreened with fine, dense puncturation. Elytra light yellowish-red to red, with a blackish-brown triangular mark around the scutellum and elytral suture, and lateral margins brownish. Legs, palpi and basal segments of the antennae reddish-brown, the remainder of the antennae darker. Aedeagus (Figs. 24, 24A). Spermatheca with the stem broad and twisted (Fig. 26). Length 3-5 mm. . . . . 19. ***moesta*** Gravenhorst

18. Mesosternum with a carina occupying approximately two-thirds of its length (as *sparsa*, Fig. 58). *19*

- Mesosternal carina either complete to apex (as *lanuginosa*, Fig. 59), or very short (as *villosa*, Fig. 56). *24*

19. Pronotum shagreened. Elytra longer in proportion to the pronotum, with the suture as long as the pronotum (Figs. 47, 47A), brownish-red with the lateral margins and area around the scutellum darker. Head, pronotum and hind-body brownish-black; pronotum sometimes lighter but always darker than the elytra. Legs yellowish- to brownish-red; antennae and palpi slightly darker, segment 4 quadrate, 5-10 weakly transverse (Fig. 47B). Abdomen with tergite 4 finely and evenly punctured throughout. Male with hind margin of tergite 8 ± straight (Fig. 60A), and sternite 8 produced to a median point (Fig. 60), the hind margins of both evenly rounded in the female. Aedeagus with an internal dorsal sclerite strong and

hooked (Figs. 47C-D). Spermatheca with a narrow constriction in the stem and a well-defined head (Figs. 50, 50A-D). length 3..5-5 mm..... 20. ***sanguinea*** (Linnaeus)

- Pronotum shiny, even if fine microsculpture present. Elytra not much longer than pronotum with suture shorter than the length of the pronotum. Uniformly black to brownish-black species. *20*

20. Abdominal tergite 4 strongly punctured in the transverse groove; hind-body becoming smoother towards the apex. Antennae brownish, male with the terminal segment equal in length to the three preceding segments together (Fig. 45F), female with the last segment equal to slightly more than the two preceding ones (Fig. 45G). Legs and palpi brownish-red. Aedeagus with paired swellings on the ventro-lateral margin (Figs. 45D-E). Spermatheca with a slight waist in the stem (Figs. 45, 45A-C). Length 2-3.5 mm.... 13. ***inconspicua*** Aubé

- Abdominal tergite 4 with the transverse groove shiny and more finely punctured (Figs. 43-44). Antennae with the terminal segment at most equal to slightly more than the combined length of the two preceding segments, but often shorter..... *21*

21. 4th segment of the maxillary palpi narrowing evenly from base to apex, segments 4 & 5 together less than 70% of the length of the 3rd segment (Fig. 35A). Tergite 4 with puncturation in the transverse groove not so much stronger than on the remainder of the segment (Fig. 43). Antennae with terminal segments less transverse (Fig. 39B). Aedeagus with strongly sclerotized, weakly expanded ventro-lateral margins, crista apicalis well developed but narrow and elongate, apex with a hook-tip (Fig. 35), dorsal sclerites of the internal sac large with a long, strong apical tooth and expanded base (Fig. 35B). Spermatheca (Figs. 39, 39A). Length 3.5-5 mm. ..... 12. ***funebris*** Wollaston

- 4th segment of the maxillary palpi with base distinctly swollen, particularly on the outer margin, segments 4 & 5 together at least 70% of the length of the 3rd segment and usually much more (Figs. 36A, 37A, 38A). Aedeagus never with ventro-lateral margins thickened, dorsal sclerites of the internal sac formed differently and proportionally smaller. *22*

22. 3rd segment of the maxillary palpi strongly expanded from the base, so that the width at its apex is equal to half its length or more (Fig. 36A). Antennae with terminal segments more transverse (Fig. 40B). Tergite 4 with punctures in the transverse groove slightly stronger than on the rest of the sclerite (Fig. 44). Aedeagus with the crista apicalis small and weakly developed, its ventral margin evenly curved to the apex and without a hook-tip (Fig. 36), the dorsal sclerites of the internal sac weakly developed (Fig. 36B). Spermatheca (Figs. 40, 40A). Length 3-5.5 mm. ..... 21. ***sparsa*** Heer

- 3rd segment of the maxillary palpi longer and more gradually expanded so that the width at its apex is less than half its length (Figs. 37A, 38A). Aedeagus with crista apicalis large and well-rounded, apex with a hook-tip, the dorsal sclerites of the internal sac more strongly developed and differently shaped (Figs. 37B, 38B). Length 3.5-5.5 mm..... *23*

23. Pronotum without microsculpture, only with micropunctures between dense, moderately strong puncturation. Head with puncturation strong and moderately dense with some fine

microsculpture present particularly on the clypeus and frons; micropunctures also present. Elytral microsculpture indistinct. Black species with elytra and the hind margin of tergites sometimes brownish. Antennae, palpi and legs brown, the base of the antennae and tarsi paler. Hind margin of sternite 8 obtusely angled at the middle in the female (Fig. 41B), that of the male produced to a ± obtuse angle (Fig. 41C). Aedeagus with its ventral margin curving gradually towards the apex (Fig. 37), the dorsal sclerites of the internal sac more evenly curved (Fig. 37B). Spermatheca (Figs. 41, 41A)..... 14. ***kamila*** Likovsky

- Pronotum and head with microsculpture in the form of a fine network between punctures which are sparse and fairly fine on the head, moderately strong and dense on the pronotum; micropunctures also present. Elytral microsculpture well-marked. Body black with the base of the antennae, palpi and legs red-brown, tarsi paler. Hind margin of sternite 8 scarcely angled at the middle in the female (Fig. 42B), that of the male produced to an almost acute angle (Fig. 42C). Aedeagus with its ventral margin strongly arched (Fig. 38), the dorsal sclerites of the internal sac strongly curved and with an apical hook (Fig. 38B). Spermatheca (Figs. 42, 42A). ..... 22. ***stichai*** Likovsky

24. Pronotum finely shagreened. Head, pronotum and abdomen brownish-red to black. Legs, palpi and antennae reddish to brownish-red. Mesosternal carina complete or very short.... *25*

- Pronotum smooth and shiny. Mesosternal carina complete (as *lanuginosa*, Fig. 59). Colour varied..... *26*

25. Mesosternum with a very short carina, extending approximately one-quarter of its length (Fig. 56). Head, pronotum and abdomen brownish-black to black. Pronotum as wide as the elytra at shoulders. Elytra brownish-red to brown, with the hind margin evenly rounded by the posterior angles. Abdominal tergite 4 finely and fairly densely punctured throughout. Antennae reddish to brownish-red, segment 4 elongate. Aedeagus (Figs. 46D-E). Spermatheca with a narrow waist between head and neck (Figs. 46, 46A-C). Length 3-4.5 mm. ..... 24. ***villosa*** Mannerheim

- Mesosternal carina complete to apex. Head brownish-black to black. Pronotum and abdomen brownish-red to black. Pronotum wider than elytra at shoulders. Elytral hind margin sinuate by the posterior angles. Abdominal tergite 4 moderately strongly and fairly densely punctured throughout, the puncturation in the transverse groove rather closer and stronger. Antennae brownish-red to brown with the basal segments lighter, segment 4 transverse. Aedeagus (Figs. 54B-C). Spermatheca (Figs. 54, 54A). Length 3-5 mm.... 16. ***lygaea*** Kraatz

26. Large, broad species closely resembling *curtula* in shape and colour. Head, pronotum and abdomen black. Elytra reddish, with a large triangular black area around the scutellum and black lateral margins expanded mid-way along the length of the elytra. Palpi black, with segments 4 & 5 reddish-brown. Antennae black, narrow, with segments 4 & 5 quadrate. Abdominal tergite 4 densely and evenly punctured. Legs reddish-brown to black, tarsi lighter. Aedeagus (Figs. 30, 30A). Spermatheca (Figs. 33, 33A-B). Length 5-7 mm..... 10. ***discipennis*** Mulsant & Rey

- Smaller species, length 3-5.5 mm. Differently coloured: elytra entirely brownish-red, black, or black with a red mark extending from the hind margin. *27*

27. Black, shiny species. Elytra black, with or without a red mark at the hind margin. Legs reddish to blackish-brown, palpi brown to blackish-brown. *28*

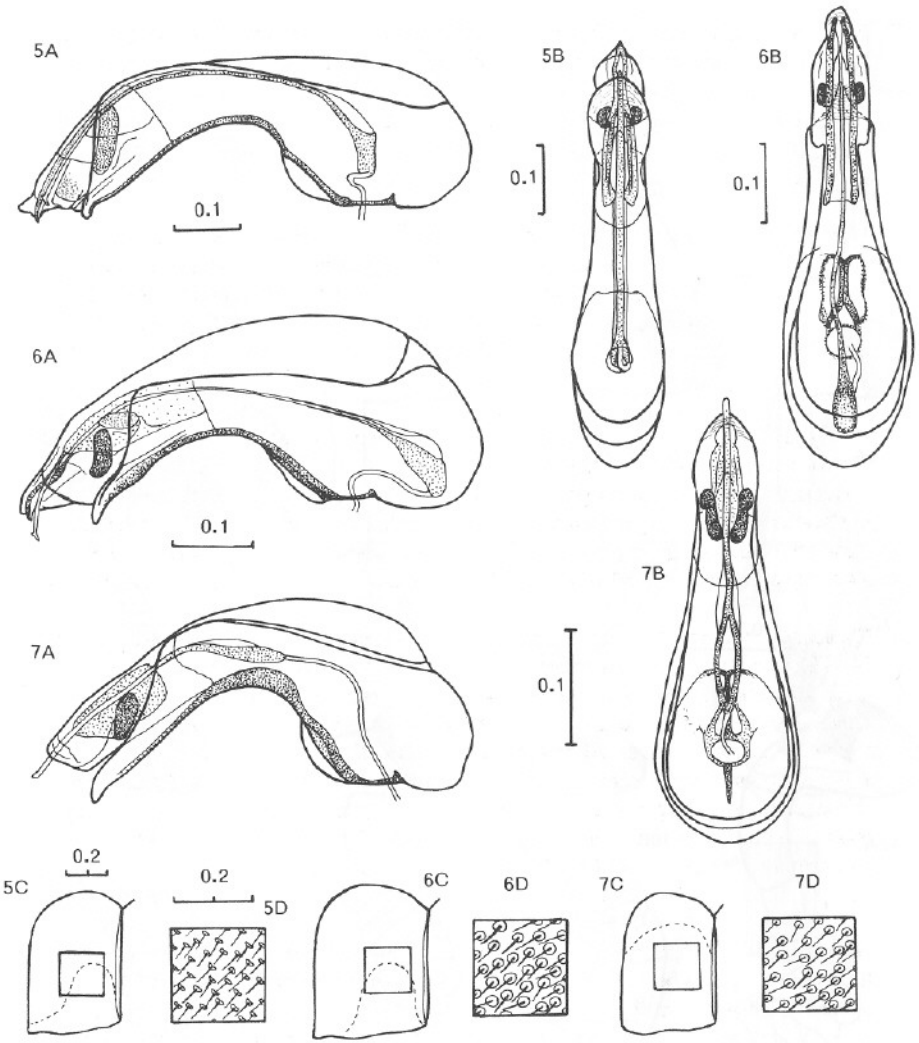
- Body colour varying from brownish-red to brownish-black. Elytra always of a lighter brownish-red. Legs and palpi yellowish-red to red. Antennal segment 4 quadrate, 5-10 transverse. *29*

28. Elytra black, with a large and conspicuous reddish mark extending from the hind margin. Antennae, legs and palpi brownish to blackish-brown; tarsi lighter. Antennal segments 4-10 transverse. Abdominal tergite 4 with puncturation strong and dense in the transverse groove, moderately strong and sparse over the rest of the sclerite. Aedeagus (Figs. 34D-E). Spermatheca (Figs. 34, 34A-C). Length 3.5-5 mm. ..... 17. ***maculata*** Brisout

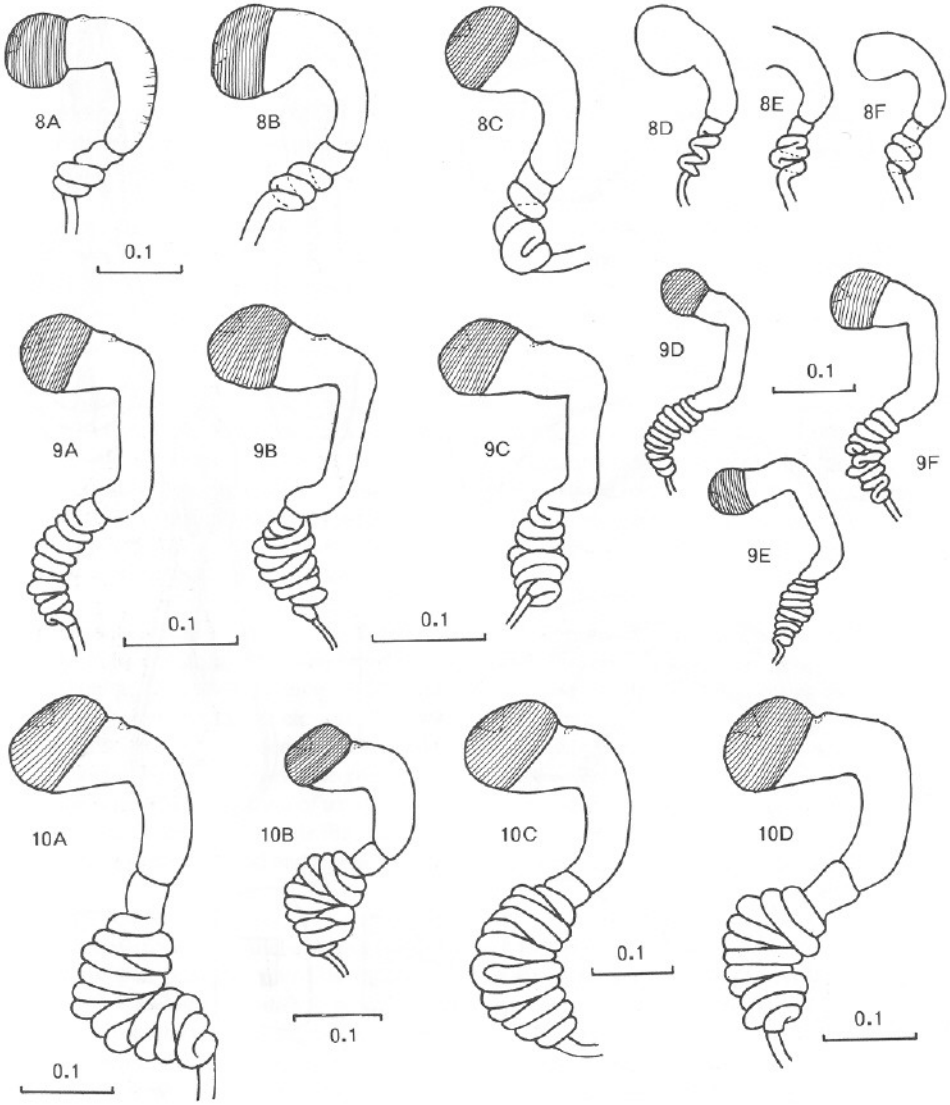
- Elytra black, with the hind margin often lighter reddish-brown, in some specimens extending to the elytral disc. Antennae black. Palpi brown. Legs reddish- to blackish-brown; tarsi lighter. Antennal segment 4 quadrate, 5-10 transverse. Abdominal tergite 4 densely and strongly punctured in the transverse groove, the puncturation on the rest of the sclerite finer towards the hind margin. Aedeagus with a pronounced angle in its ventral margin and the sclerite within the internal sac characteristically bifurcated (Figs. 53D-E). Spermathecal stem with a swollen collar (Figs. 53, 53A-C). Length 3-5.5 mm..... 15. ***lanuginosa*** Gravenhorst

29. Broader species, more attenuated anteriorly and posteriorly; abdomen noticeably narrowed from base to apex. Pronotum broadest near the posterior angles, wider than the elytra at shoulders (Fig. 49). Antennae brown to blackish-brown, segments 1-3 yellowish-red, the terminal segment more elongate (Fig. 49A). Elytra darker, with puncturation fairly fine, rugose, and not very dense. Abdominal tergite 4 densely punctured throughout, with puncturation in the transverse groove coarser and slightly more dense than over the rest of the sclerite. Hind margin of tergite 8 emarginate, and sternite 8 evenly rounded or slightly angled, in both sexes (male Figs 62, 62A). Aedeagus (Figs. 49B-C). Spermatheca with an elongate, narrow head and a broader sub-divided stem (Figs. 52, 52A-B). Length 3.5-5 mm... ..... 11. ***fumata*** Gravenhorst

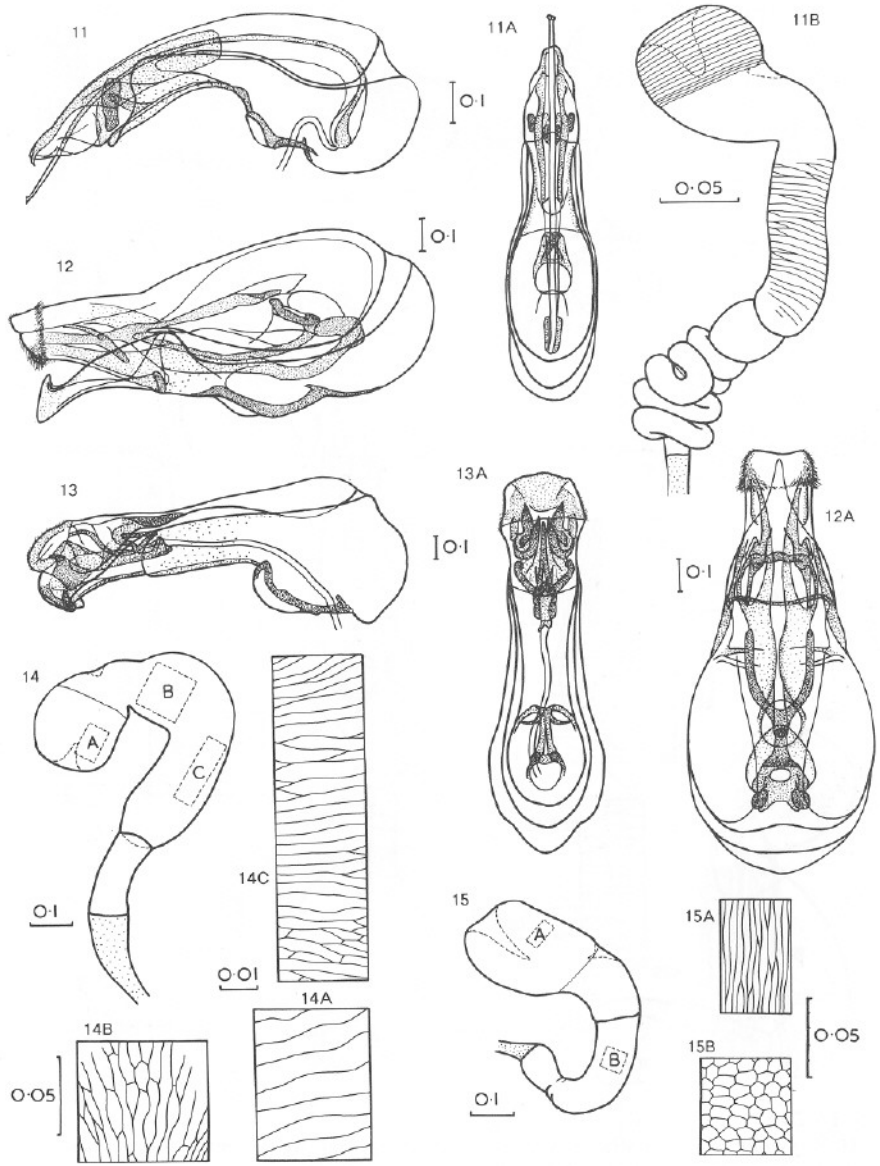
- Narrower, more parallel-sided species; abdomen only narrowed near its apex. Pronotum more transverse, broadest behind the middle and wider than the elytra at shoulders (Figs. 48, 48A). Antennae brownish to brownish-black, segments 1-2 lighter yellowish-red to brownish, the terminal segment not so elongate (Fig. 48B). Abdominal tergite 4 strongly and densely punctured in the transverse groove, more finely and sparsely punctured over the rest of the sclerite. Hind margin of tergite 8 emarginate in both sexes, sternite 8 produced to a median point in the male, evenly rounded in the female (male Figs. 61, 61A). Aedeagus (Figs. 48C-D). Spermatheca with a deep apical invagination in a bulbous head which narrows into an undifferentiated and narrow stem (Figs. 51, 51A). Length 3-5 mm..... ..... 18. ***moerens*** Gyllenhal



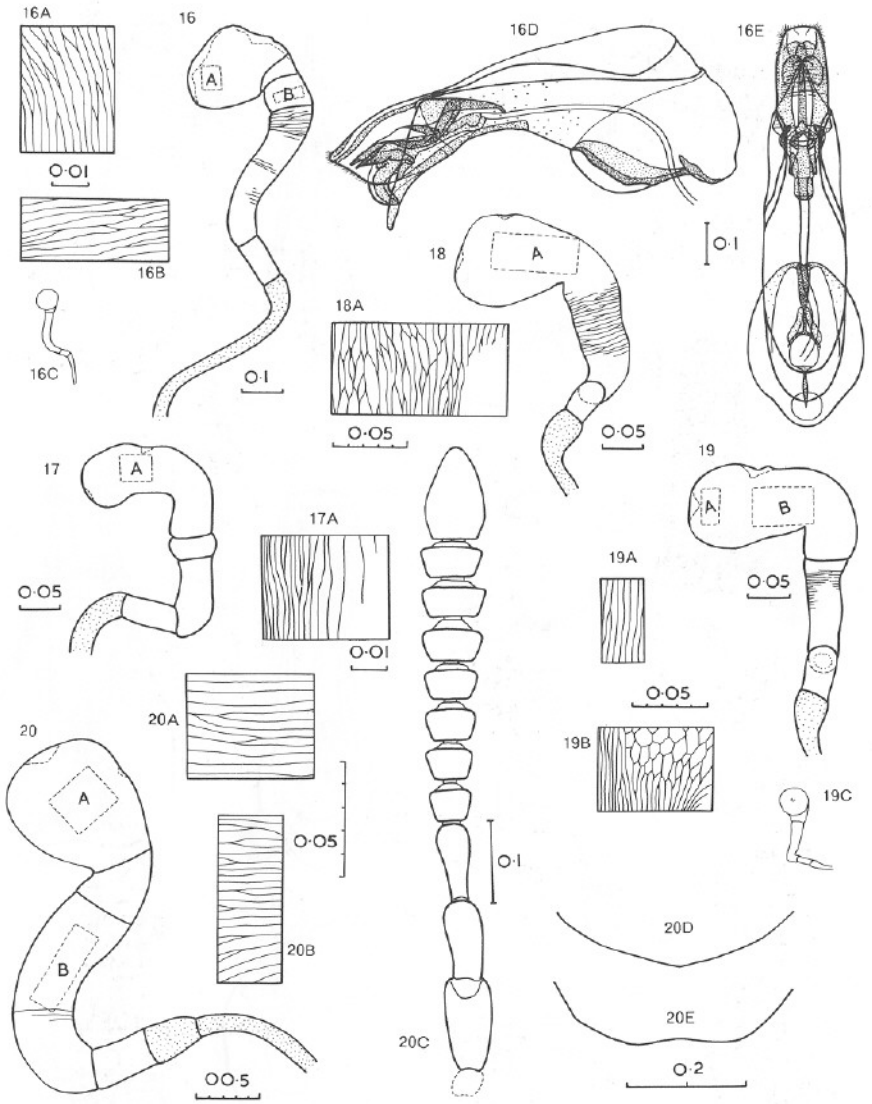
Figs. 5-7: A: aedeagus lateral view; B: aedeagus, dorsal view; C: left elytron; D: detail of puncturation.
5 *bipustulata*.
6 *verna*.
7 *binotata*.



Figs. 8-10: spermathecae.
8 *bipustulata* (**D-F** shown reduced).
9 *verna*.
10 *binotata*.

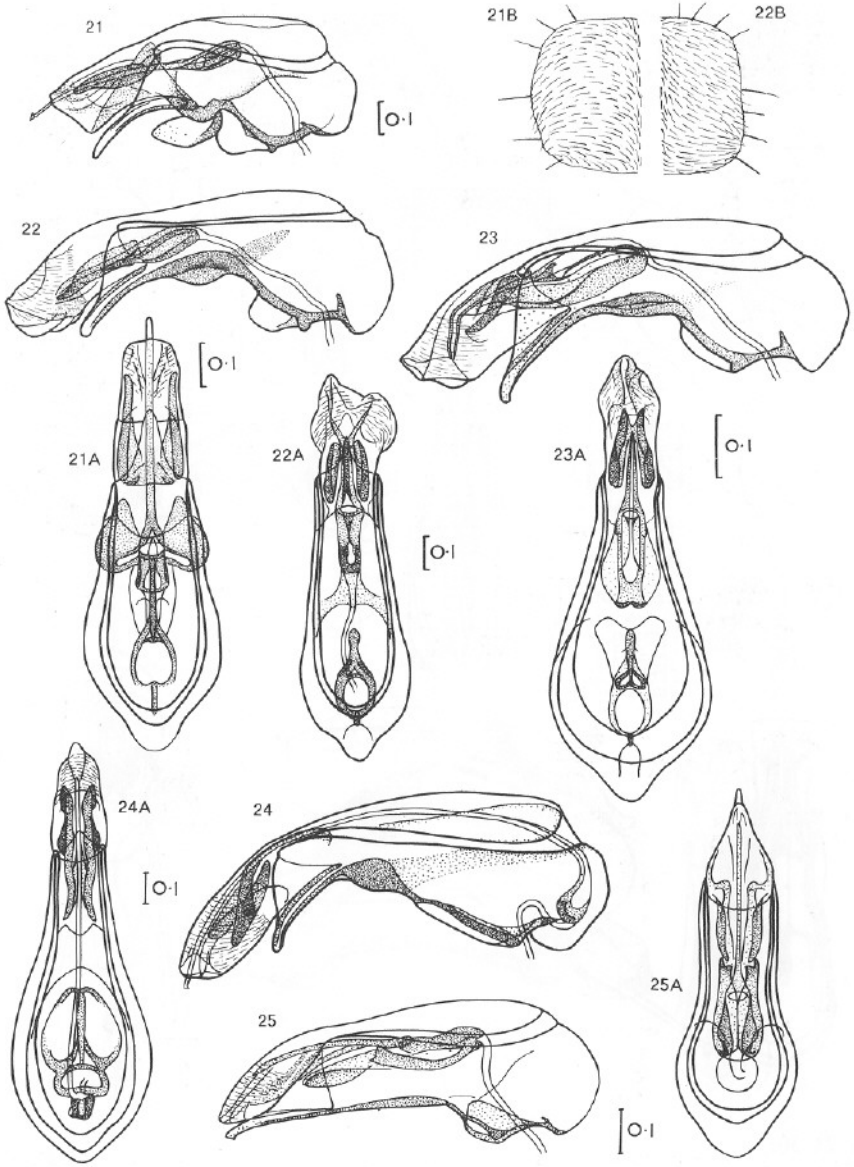


Figs. 11-15:
11 *bilineata* aedeagus, lateral view; **A**: aedeagus, dorsal view; **B**: spermatheca.
12 *curtula* aedeagus, lateral view; **A**: aedeagus, dorsal view.
13 *lata* aedeagus, lateral view; **A**: aedeagus, dorsal view.
14 *lata* spermatheca; **A-C**: details of sculpturation.
15 *curtula* spermatheca; **A-B**: details of sculpturation.



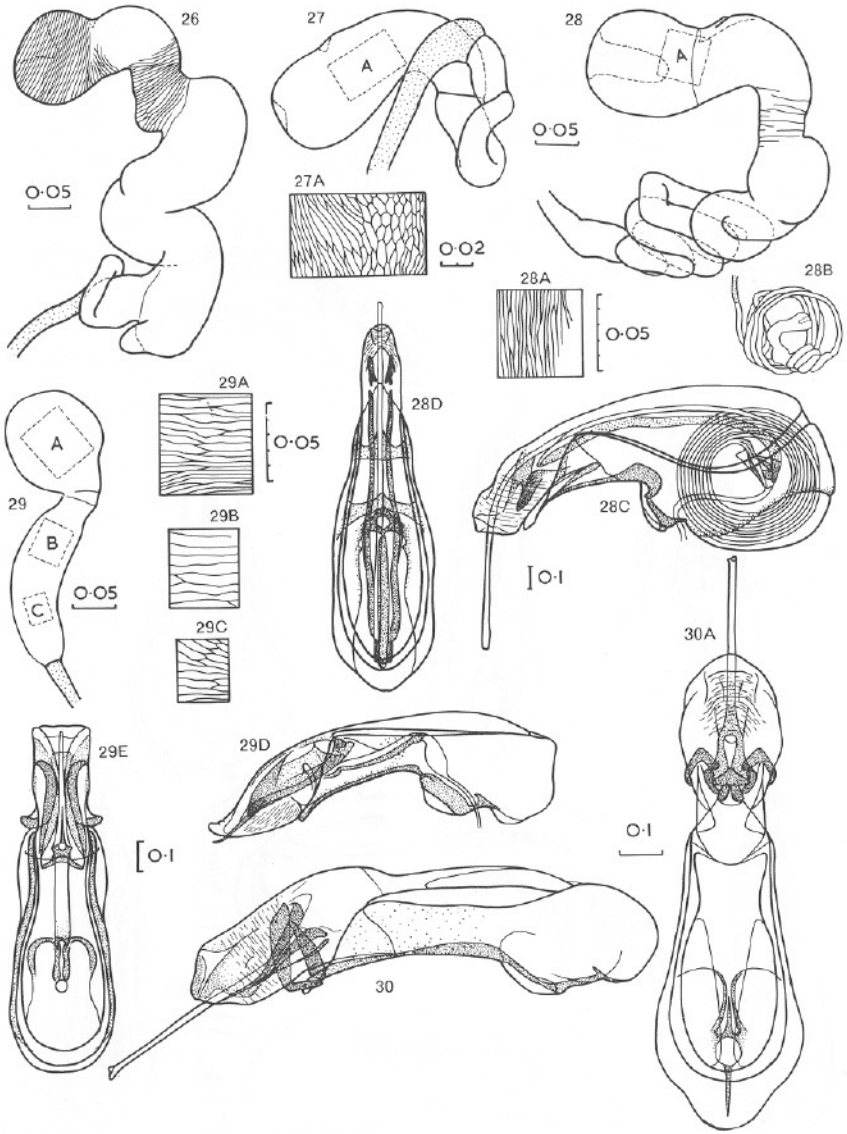
Figs. 16-20:

16 *brevipennis* spermatheca; **A-B**: details of sculpturation; **C**: spermatheca, viewed at right angles to **16**; **D**: aedeagus, lateral view; **E**: aedeagus, dorsal view.
17 *obscurella* spermatheca; **A**: detail of sculpturation.
18 *grisea* spermatheca; **A**: detail of sculpturation.
19 *punctatella* spermatheca; **A-B**: details of sculpturation; **C**: spermatheca, viewed at right angles to **19**.
20 *phycophila* spermatheca; **A-B**: details of sculpturation; **C**: female left antenna, dorsal view; **D**: hind margin of female sternite 8; **E**: hind margin of female tergite 8.



Figs. 21-25: aedeagus, lateral view; **A**: aedeagus dorsal view.

21 *obscurella*; **B**: pronotum, left half dorsal view.
22 *grisea*; **B**: pronotum, right half dorsal view.
23 *punctatella*.
24 *moesta*.
25 *intricata*.



Figs. 26-30:

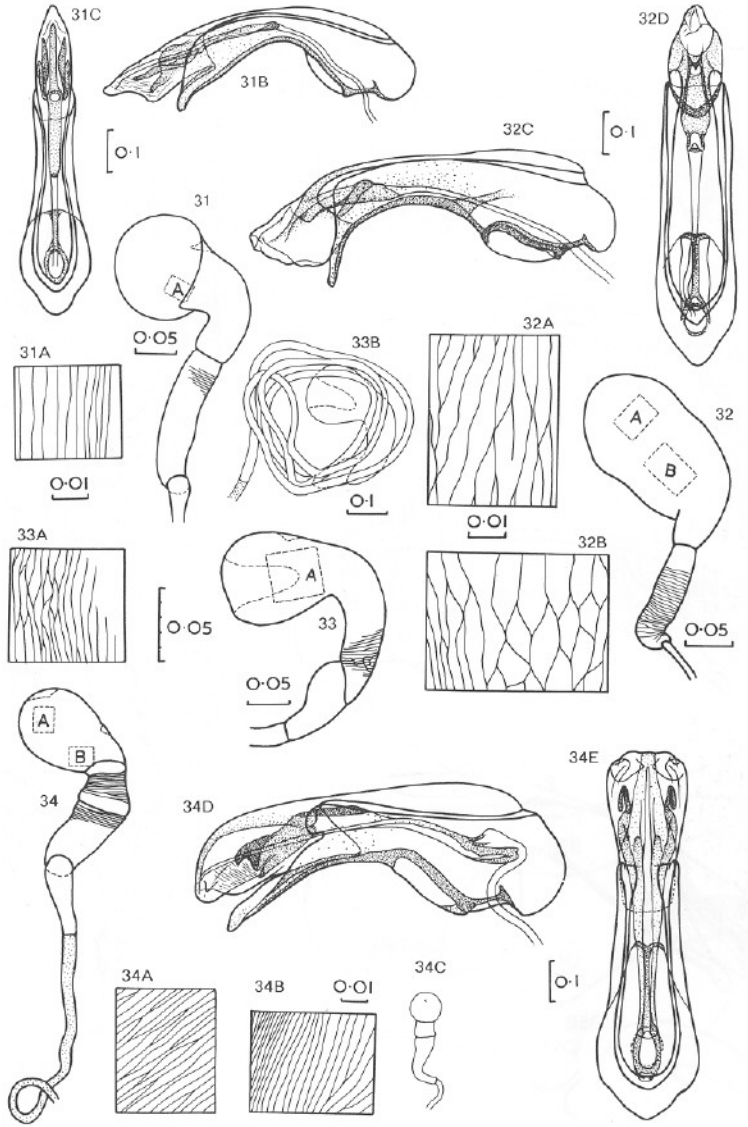
26 *moesta* spermatheca.

27 *intricata* spermatheca; **A**: detail of sculpturation.

28 *tristis* spermatheca; **A**: detail of sculpturation; **B**: spermatheca, viewed at right angles to 28; **C**: aedeagus, lateral view; **D**: aedeagus, dorsal view.

29 *ruficornis* spermatheca; **A-C**: details of sculpturation; **D**: aedeagus, lateral view; **E**: aedeagus, dorsal view.

30 *discipennis* aedeagus, lateral view; **A**: aedeagus, dorsal view.



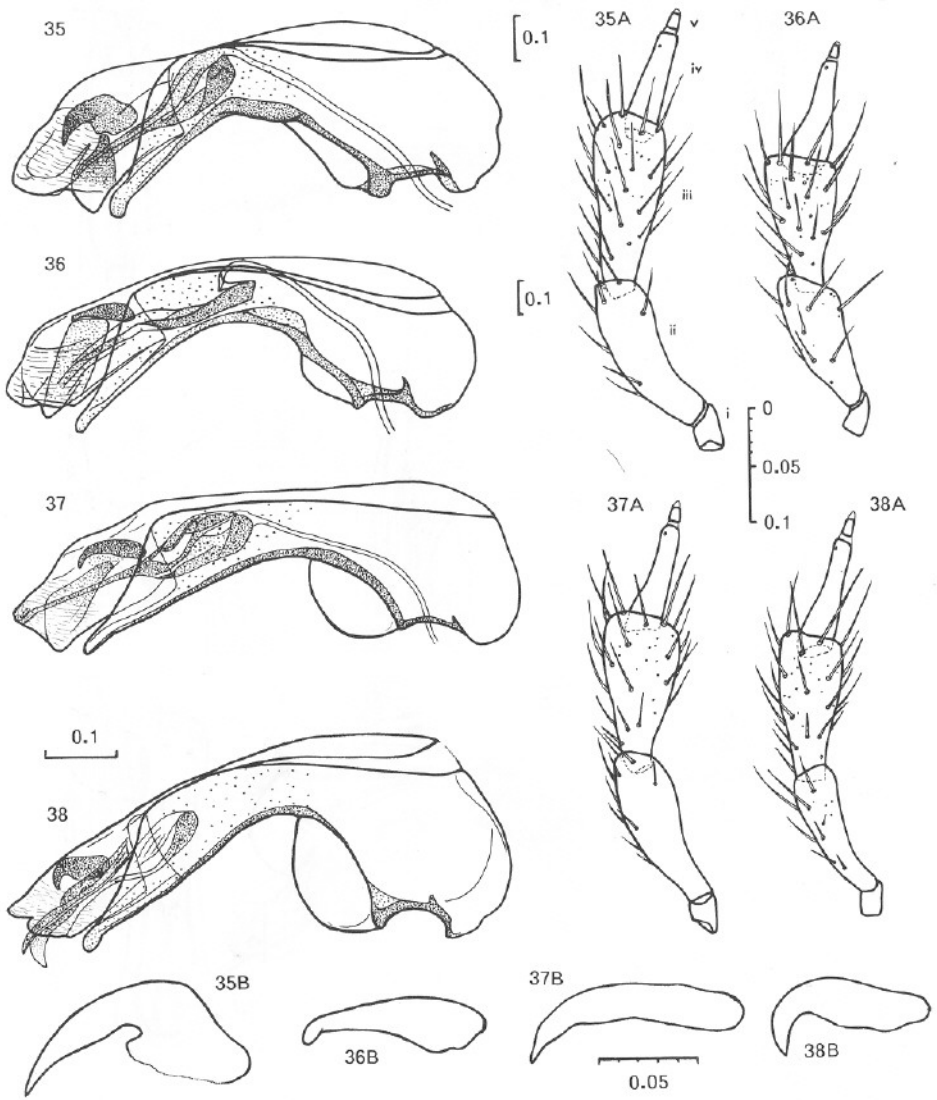
Figs. 31-34:

31 *cuniculorum* spermatheca; **A**: detail of sculpturation; **B**: aedeagus, lateral view; **C**: aedeagus, dorsal view.

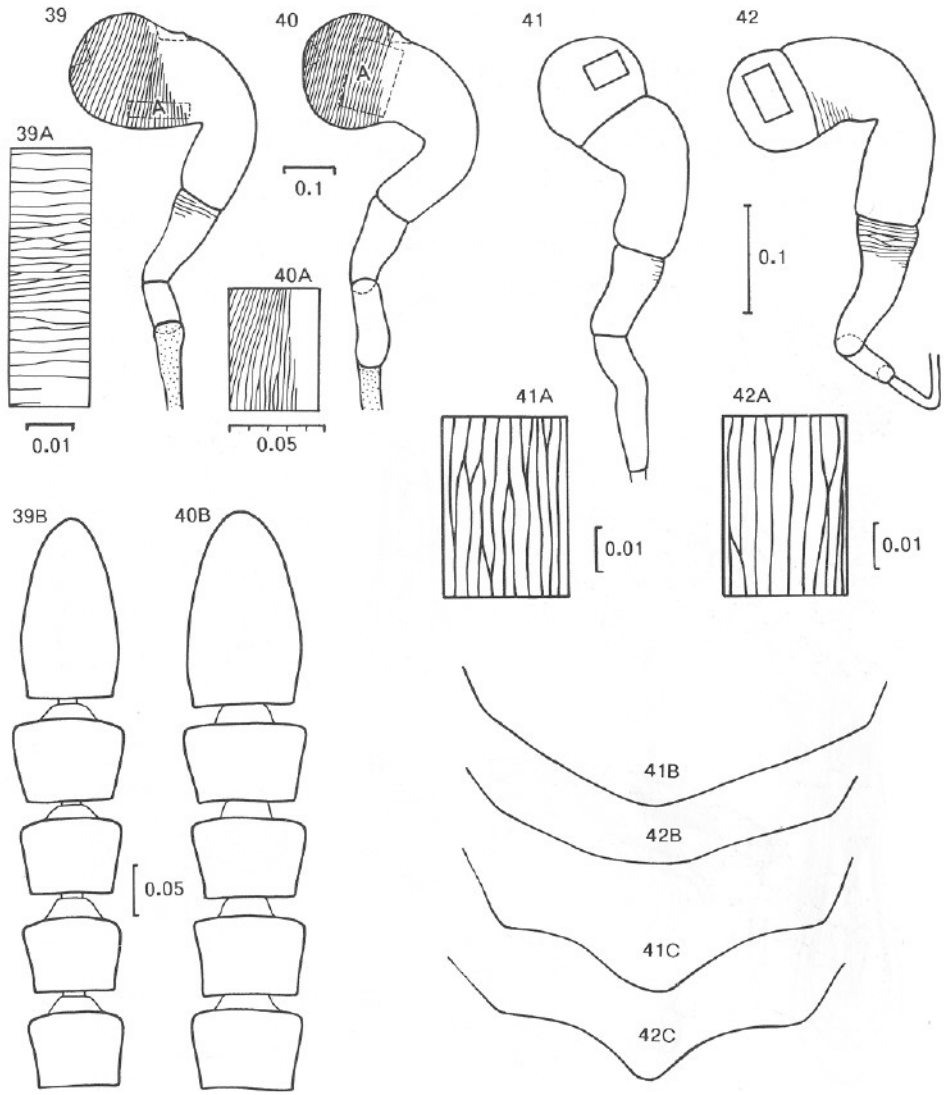
32 *spadicea* spermatheca; **A-B**: details of sculpturation; **C**: aedeagus, lateral view; **D**: aedeagus, dorsal view.

33 *discipennis* spermatheca; **A**: detail of sculpturation; **B**: detail of spermathecal duct.

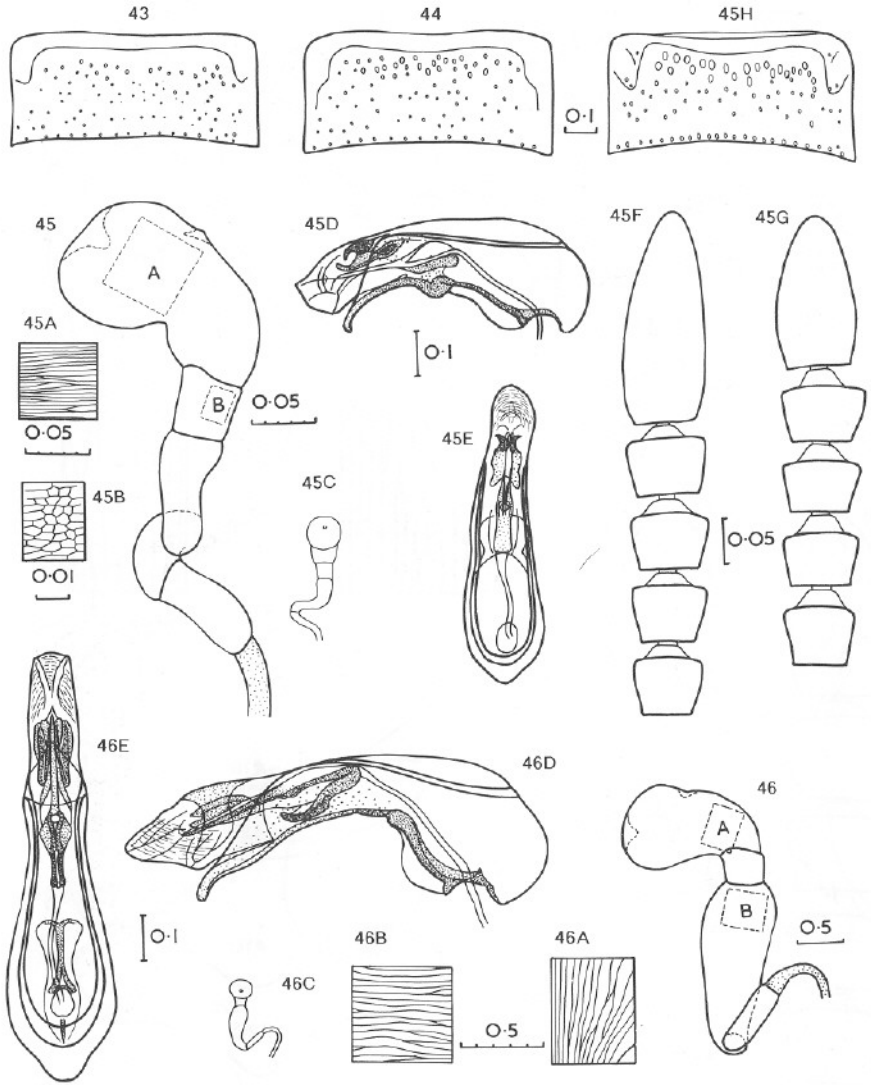
34 *maculata* spermatheca; **A-B**: details of sculpturation; **C**: spermatheca, viewed at right angles to 34; **D**: aedeagus, lateral view; **E**: aedeagus, dorsal view.



Figs. 35-38: aedeagus lateral view; A: left maxillary palp, dorsal view; B: dorsal sclerite of internal sac.
35 *funebris*.
36 *sparsa*.
37 *kamila*.
38 *stichai*.



Figs. 39-42:
39 *funebris* spermatheca; A: detail of sculpturation; B: male left antenna, dorsal view, segments 7-11.
40 *sparsa* spermatheca; A: detail of sculpturation; B: male left antenna, dorsal view, segments 7-11.
41 *kamila* spermatheca; A: detail of sculpturation; B: hind margin of female sternite 8; C: hind margin of male sternite 8.
42 *stichai* spermatheca; A: detail of sculpturation; B: hind margin of female sternite 8; C: hind margin of male sternite 8.



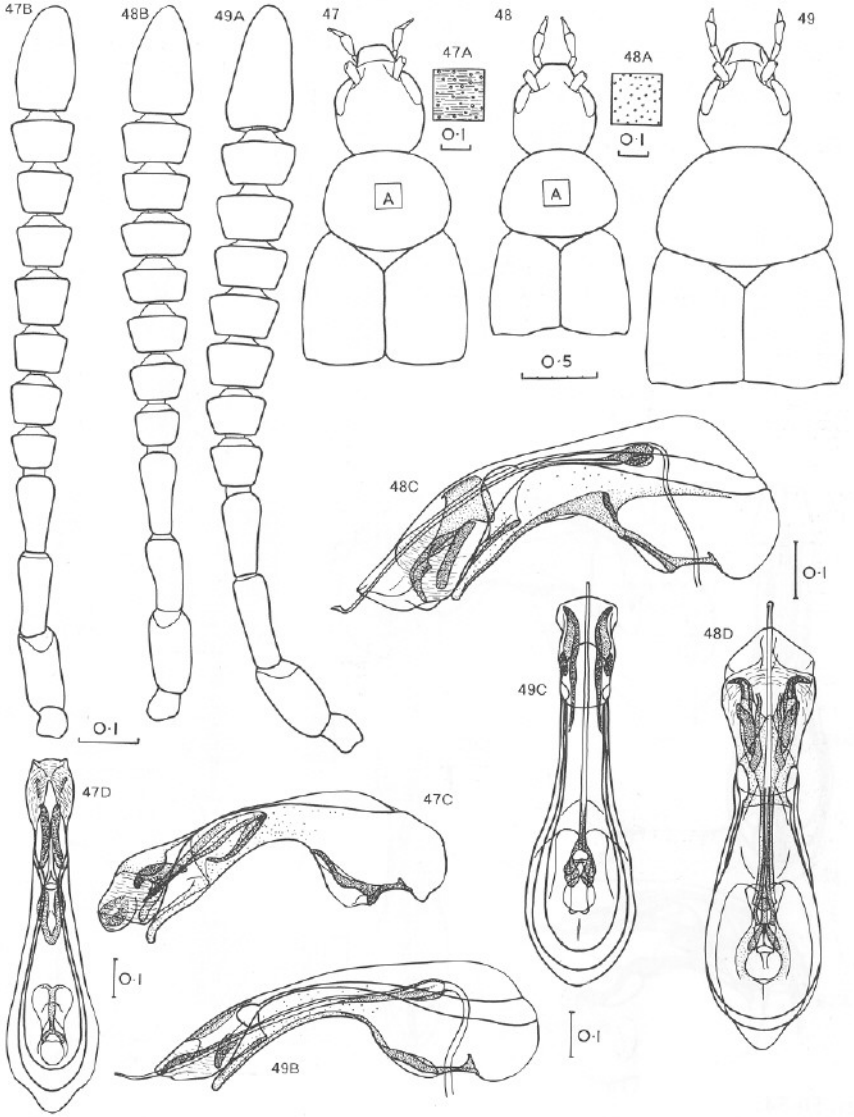
Figs. 43-46:

43 *funebris* puncturation of tergite 4.

44 *sparsa* puncturation of tergite 4.

45 *inconspicua* spermatheca; **A-B**: details of sculpturation; **C**: spermatheca, viewed at right angles to **45**; **D**: aedeagus, lateral view; **E**: aedeagus, dorsal view; **F**: male antenna, dorsal view, segments 7-11; **G**: female left antenna, dorsal view, segments 7-11; **H**: puncturation of tergite 4.

46 *villosa* spermatheca; **A-B**: details of sculpturation; **C**: spermatheca, viewed at right angles to **46**; **D**: aedeagus, lateral view; **E**: aedeagus, dorsal view.

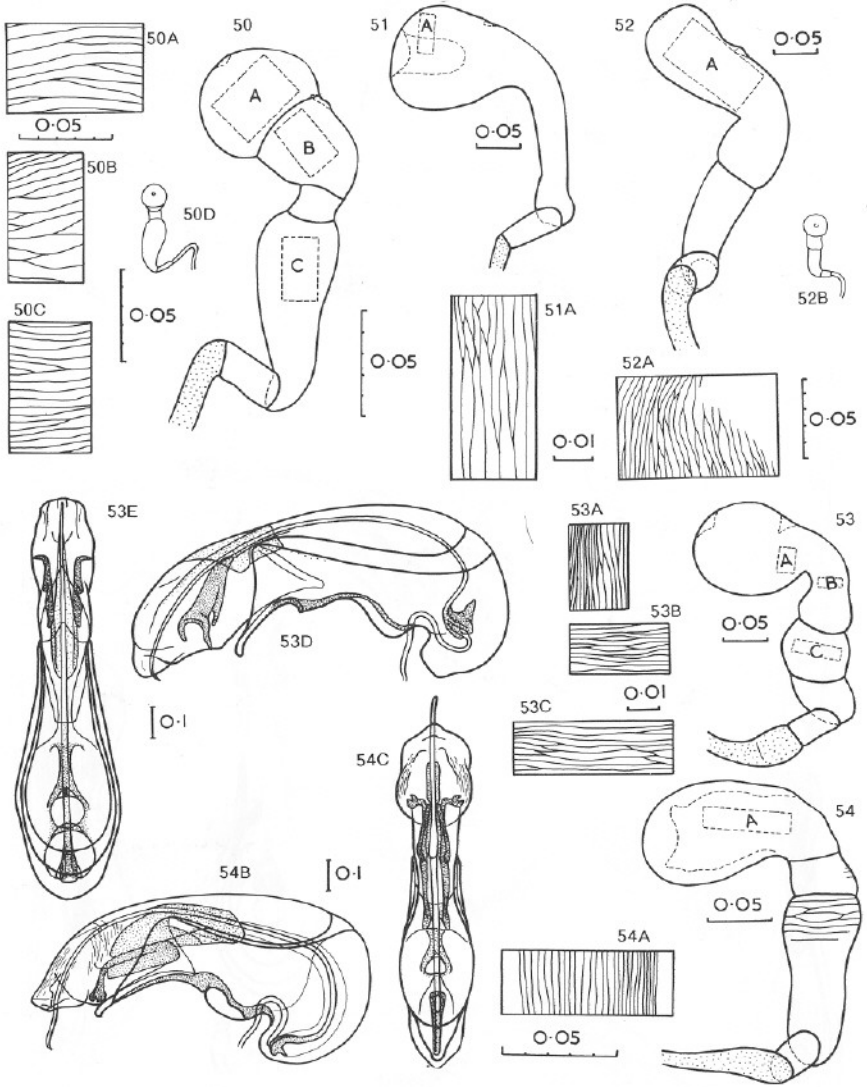


Figs. 47-49:

47 *sanguinea* anterior body, dorsal view; **A**: detail of pronotal puncturation/sculpturation; **B**: female left antenna, dorsal view; **C**: aedeagus, lateral view; **D**: aedeagus, dorsal view.

48 *moerens* anterior body, dorsal view; **A**: detail of pronotal puncturation; **B**: female left antenna, dorsal view; **C**: aedeagus, lateral view; **D**: aedeagus, dorsal view.

49 *fumata* anterior body, dorsal view; **A**: female left antenna, dorsal view; **B**: aedeagus, lateral view; **C**: aedeagus, dorsal view.



Figs. 50-54:

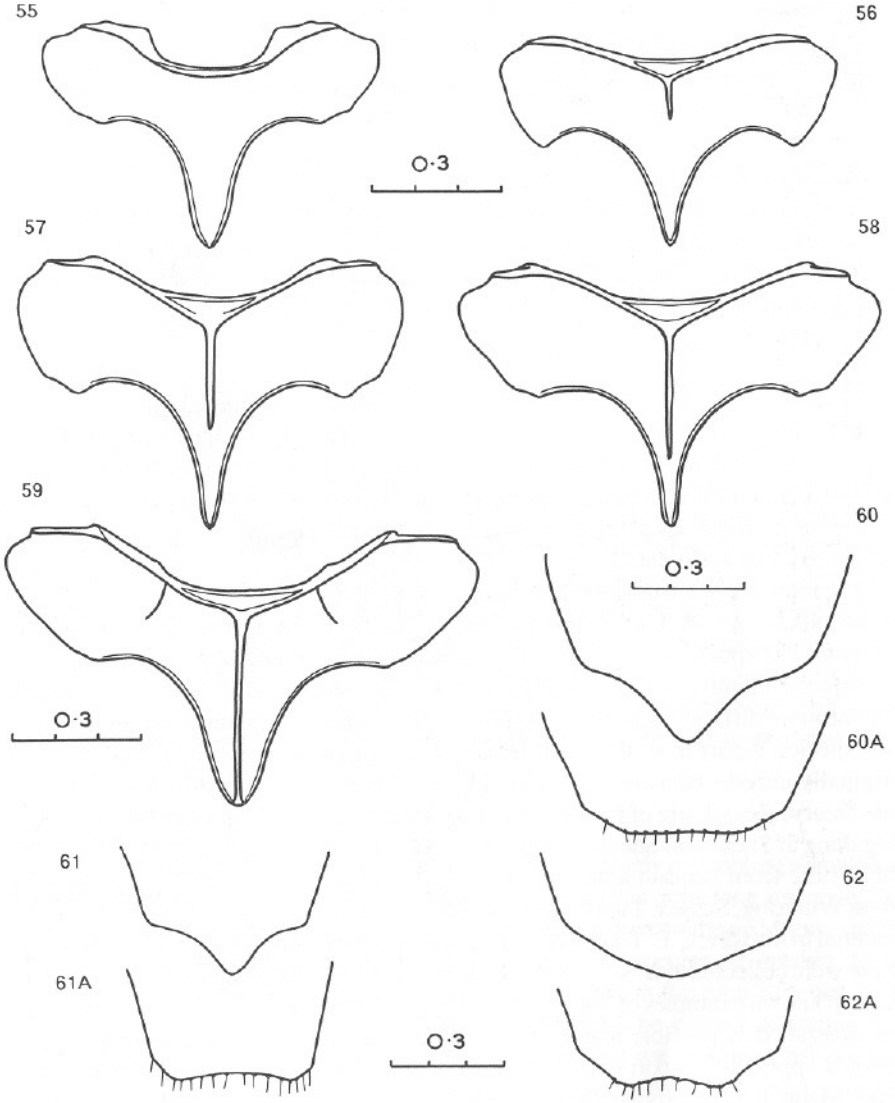
50 *sanguinea* spermatheca; A-C: details of sculpturation; D: spermatheca, viewed at right angles to 50.

51 *moerens* spermatheca; A: detail of sculpturation.

52 *fumata* spermatheca; A: detail of sculpturation; B: spermatheca, viewed at right angles to 52.

53 *lanuginosa* spermatheca; A-C: details of sculpturation; D:aedeagus, lateral view; E: aedeagus, dorsal view.

54 *lygaea* spermatheca; A: detail of sculpturation; B:aedeagus, lateral view; C: aedeagus, dorsal view.



Figs. 55-62:

55 *brevipennis* mesosternum.

56 *villosa* mesosternum.

57 *grisea* mesosternum.

58 *sparsa* mesosternum.

59 *lanuginosa* mesosternum.

60 *sanguinea* male hind margin of sternite 8; A: male hind margin of tergite 8.

61 *moerens* male hind margin of sternite 8; A: male hind margin of tergite 8.

62 *fumata* male hind margin of sternite 8; A: male hind margin of tergite 8.

Species notes

In this section more detail is given about the identification of individual species, with comments of their ecology, distribution and conservation status. Where appropriate, I have added the national status categories taken from Hyman (1994).

1. ***bilineata*** Gyllenhal.

A distinctive all-dark species with the two rows of pronotal punctures characteristic of the subgenus *Coprochara*. Usually recorded singly, throughout the British Isles in various habitats e.g. dung and vegetable refuse. It has been found locally in the cultivated East Anglian fens in association with the Cabbage Root Fly *Delia radicum* (Linnaeus) (Dipt: Anthomyiidae).

2. ***binotata*** Kraatz [RDB K]; 3. ***bipustulata*** (Linnaeus); 4. ***verna*** Say [RDB K].

The recent recognition that three very closely related species of red-spotted *Coprochara* occur in Britain not only causes problems in identification but invalidates all earlier records until such time as specimens can be dissected and their identity confirmed. As more material is critically examined it may become possible to recognise the species by their overall appearance.

The more diffuse reddish-yellow colour on the elytra, coupled with generally stronger puncturation and circular elytral punctures, should assist in the initial separation of *binotata*. The spherical mass formed by the coils of the non-angled spermathecal duct will confirm the identity of females (Figs. 10A-D). The shape and structure of the aedeagus may be more difficult to ascertain. *A. binotata* does appear to be much rarer than the other two species. Apart from the small female from dog dung at Spurn, Yorkshire, which I originally introduced as *verna*, to date I know of only four other British specimens. The most recent records are of two females: one taken by S.A. Williams on 14.viii.1996 from dog dung at Shellness, Sheppey, Kent (Fig. 10C), and one collected by Dr R.G. Booth on 28.ix.1992 from beneath a dead Curlew *Numenius arquata* on the beach at East Head, West Wittering, Sussex. Two further specimens were determined by P.M. Hammond from material in the Rev. C.E. Tottenham's Collection in the Natural History Museum, London; these were collected at Boscombe, Hampshire, on 13.viii.1948 and currently represent the earliest known examples of *binotata* from Britain. It will be apparent that all four localities are coastal. It is possible that *binotata* favours coastal localities as several continental records appear to support such a distribution. Specimens in the Cameron Colection are from Malta and San Roque, Spain (near Gibraltar), and a pair in the Wollaston Madeira Collection, determined by Klimaszewski, were taken "on the sandhills of ... [locality indecipherable]". *A. binotata* probably warrants RDB 3 ranking, for although rare, on present knowledge it cannot be considered to be at risk from any known agent.

A. bipustulata is by far the most widely distributed species and will be the most regularly encountered member of this group. The crescent-shaped elytral punctures may distinguish this species, although the angle at which light shines on the specimen can alter their perceived shape. Although the coiling of the spermathecal duct varies, normally only

two or three coils are present which, with the more even curve of the stout stem, should confirm the identity of females (Figs. 8A-F). Males may prove slightly more difficult but the key features to look for are: the gradual tapering of the aedeagus towards the apex, best seen in ventral view; the steep angle from the dorsal surface of the aedeagus capsule to the hook-tipped apex, seen in side view; and the almost comma-shaped dorsal sclerites when viewed dorsally. The species is most commonly recorded from dung, particularly that of sheep, horse, dog etc., although occurring almost as frequently in carrion and rotting vegetable matter. The larvae parasitise several species of anthomyiid Diptera.

The more sharply defined red spots and the coarser, closer, circular punctures on the elytra of *verna* may assist in the separation of this species. With the exception of the four specimens mentioned above, I am convinced that all the remaining British "non-*bipustulata*" that I have examined, are *verna*. Their spermathecae seem to have a distinctive shape in which the stem is angled in such a way as if almost to enclose a rectangle. The multiple coiling of the spermathecal duct is very variable, although it appears probable that in most British specimens the coils take the form of an elongate cylinder which may be curved or slightly tapered towards the spermathecal duct (Figs. 9A, 9D-F). In North American specimens from the Casey Collection this coiled mass is shorter and broader (Figs. 9B-C), which gave rise to the earlier confusion over the identity of the Spurn specimen (Welch, 1989, 1990). The aedeagus offers few distinctive characters: the shape of the apical portion in both lateral and dorsal (or ventral) views, and the smaller dorsal sclerites, should separate it from the other two species. It appears that *verna* is equally as widespread as *bipustulata* and locally could comprise up to 10% of red-spotted *Coprochara*. From the data so far available, it would seem that *verna* frequents similar habitats to those of *bipustulata* (Whitehead, 1993). I suspect that *verna* is worthy of no more than Notable status.

5. ***brevipennis*** Gravenhorst [Notable].

A more or less uniformly dark and broad species, most closely resembling a small *lata* from which it is easily separated by the elongate basal segments of its long antennae. The elongate, sinuous spermathecal stem and the long, tapering apex to the aedeagus, should distinguish *brevipennis* from any of the smaller all-dark species. It appears to be hygrophilous, typically found in *Sphagnum* or other mosses, at the roots of grass, or in tussocks, throughout the British Isles. Hyman (1994) may be correct in stating that *brevipennis* is less common in the south than previously, but was wrong to believe it to be absent from the extreme north of Scotland: in recent years it has been most frequently encountered in upland moorland habitats in Scotland (including Orkney) and northern England. It is certainly known from more than 100 10 km squares and so hardly qualifies as nationally Notable, but is probably noteworthy outside Scotland.

6. ***curtula*** (Goeze).

Its redder elytra should avoid confusion with the closely related all-black *lata*. The only other species of comparable size and colour is *discipennis*, a species more typical of

dung habitats that has more slender antennae and a mesosternal carina, this being absent in *curtula*. This is the most common carrion-frequenting British species of *Aleochara*, occurring throughout the British Isles except for northern Scotland including the northern isles and Outer Hebrides.

7. ***lata*** Gravenhorst.

For identification, see comparisons with the previous two species. Almost all records for this species are from carrion, often with *curtula*, although Prof. J.A. Owen recently found it in cut grass and there are old records from bones and haystack refuse. It has a southern distribution, with most records from south of a line from The Wash to Cardigan Bay, although it was found at three sites in Yorkshire in the early 1980s. It appears to be infrequently recorded and may be becoming rarer although there is no obvious reason for this. Possibly collectors do not consider its occurrence sufficiently noteworthy.

8. ***intricata*** Mannerheim.

This is a very distinctive species due to its strongly narrowed and densely punctured hind-body. It could be confused with a small *tristis* but that species has more erect pubescence, a broader hind-body and darker legs. The almost straight ventral margin to the aedeagus and the way in which the stem of the spermatheca coils back over itself, are confirmatory features. *A. intricata* is widely distributed throughout the British Isles but appears to be absent from the north of Scotland and the Outer Hebrides. It usually occurs in small numbers in dung, particularly horse dung although at its northernmost localities in Inverness-shire it frequents sheep dung. It has also been recorded from moss and haystack refuse, in carrion, faggots and flood refuse, and twice in nests of the Robin *Erithacus rubecula*.

9. ***cuniculorum*** Kraatz.

Its long slender legs should separate *cuniculorum* from all other species except *spadicea*, from which it can be distinguished by colour alone. Despite having red markings on the elytra *cuniculorum* is unlikely to be confused with red-spotted species in the subgenus *Coprochara*, or with the much broader *maculata*. The species is widely distributed throughout the British Isles as far north as the Outer Hebrides. It is typically found in Rabbit *Oryctolagus cuniculus* burrows but is also known from the underground nests and burrows of other mammals and birds e.g. Badger *Meles meles* and Sand Martin *Hirundo riparia*. There are occasional records of its occurrence in other habitats, e.g. from a dead bird, under a dead Mole *Talpa europaea*, in moss, and in decaying wood.

10. ***discipennis*** Mulsant & Rey [Notable].

This species bears a superficial resemblance to *curtula* but is easily separated by its more slender antennae and the presence of a mesosternal carina. Although there are several records from carrion, it is typically found in fresh dung with an apparent preference for equine rather than bovine dung. It has also been taken on the wing and in the rotten wood

of a dead tree. I am aware of less than 30 records for this species, all of which are from southern England apart from an old record from flood refuse in Cumberland. The relative paucity of recent records for this large and distinctive species suggests that *discipennis* should be returned to its former (Shirt, 1987) RDB 3 category.

11. ***fumata*** Gravenhorst [RDB K].

The pointed hind margin of the 8th sternite, and more delicate aedeagus with less well-developed dorsal sclerites, should separate male *fumata* from the similar *moerens*, a species with which it was found to be commonly confused in many British collections. General body shape and puncturation of the abdominal tergites should separate female specimens but if in doubt the spermathecal shapes provide conclusive identification. The only other species with which *fumata* was found to be confused is *sanguinea*, but the presence of fine shagreenation on the head and pronotum, and the incomplete mesosternal carina, should separate this species without the need for dissection. A species occurring predominantly in fungi, where it is frequently taken with *moerens*. It is the rarer of the two species and appears to have a more localised distribution. It may have a closer association with the larger *Boletus* fungi, although it is occasionally taken in other habitats such as carrion, in an owl's nest and a tree cavity. Although there are a few records from Scotland and northern England, most confirmed records are from south-eastern England where it may be locally common in Surrey and Berkshire. Although I have confirmed records from more than 30 10 km squares, it is certainly rare outside south-east England and is probably best regarded as a nationally Notable species.

12. ***funebris*** Wollaston; 14. ***kamila*** Likovsky [Notable]; 21. ***sparsa*** Heer; 22. ***stichai*** Likovsky [Notable].

It is apparent that difficulties will persist in the identification of this group of species, particularly of female specimens. The external characters used to separate them in my key must be regarded as provisional as I have seen very few female specimens which I have been able to identify as *kamila* with confidence. It is very doubtful if any of these four species can be separated on spermathecal characters alone, whereas the detailed structure of the aedeagus provides a means by which males can be identified with some degree of certainty. The morphological similarity of the adults is not helped by the fact that there appear to be no obvious differences in their distributions or habitat requirements. All four species have been found in a variety of habitats and although most commonly taken in carrion they have been recorded in dung, decaying vegetable matter, nests of birds and mammals, fungi, moss, and old bones.

Most records attributed to *diversa* and *sparsa* that date from before the late 1960s will have to be ignored unless they have been confirmed by the re-examination of dissected specimens. However, most specimens originally determined as *diversa*, or post-1970 as *albovillosa*, will probably prove to be what is now known as *funebris*. This is not only the most easily distinguishable of the four species, from the shape of its maxillary palpi alone, but has also proved to be a common species found in a diverse range of habitats and is

probably widely distributed throughout the British Isles. Similarly, the majority of older *sparsa* records will refer to that species which is, if anything, even more common and widespread than *funebris*.

Unfortunately, it is among specimens previously identified as *sparsa* that those of the two closely related species, *kamila* and *stichai*, have been found. On the data currently available it would seem that *stichai* is also widely distributed whereas *kamila* is a much rarer species and may prove to be confined to southern Britain, being known as far north as Derbyshire (C. Johnson, *pers. comm.*). However, there are far too few records as yet to be able to define confidently the distribution of these last two species. Most of my own records for *kamila* are from bracket fungi on elm *Ulmus* and ash *Fraxinus* in Huntingdonshire, although three were taken with *villosa* in accumulated droppings in a dovecote at Wytham, Oxfordshire (Welch, 1981) and single specimens were collected from rabbit burrows and a dead Fox *Vulpes vulpes* at Silwood Park, Berkshire. Other published records for *kamila* (as *diversa*) include: three males from Ashtead, Surrey — one in wood mould from the interior of an old oak *Quercus* in i.1976, and in iii.1976 one in bones and one in a 'bird's nest' trap (Owen, 1976); four in compost and one in a bracket fungus at Broadway, Worcestershire, 1988-90, and one in a dead Shag *Phalacrocorax aristotelis* at St Michael's Mount, Cornwall, viii.1986 (Whitehead, 1992); from five Leicestershire sites in rotting fungi, tree cavities and a Badger sett (Lott, 1995); and in the red rotten wood of an old oak at Plas Newydd, Anglesey (Hammond & Hines, 1994), adding to the evidence for a possible association with fungoid trees. I do not believe that *stichai* warrants Notable status, but the much rarer *kamila* certainly does and on the basis of its currently known distribution could be considered of RDB 3 rank.

13. ***inconspicua*** Aubé [RDB K].

The elongate terminal antennal segment immediately distinguishes the male of this species from all other British *Aleochara*. The female could be confused with species in the *funebris-sparsa* group, but the shape of the maxillary palpi will separate all except *funebris*, from which it differs in having much coarser punctures in the transverse groove of the anterior abdominal tergites. The aedeagus of *inconspicua* has an almost recurved apex and the restricted collar in the stem of the spermatheca provide further means to separate it from *funebris*. The first British specimen was found in a hollow in a cliff face at Dunwich, Suffolk, in ix.1933 by K.J. Blair. It was long regarded as the rarest British *Aleochara* until 1961 when R.M. Dobson discovered it parasitising Wheat Bulb Fly *Delia coarctata* (Fall.) (Dipt: Anthomyiidae) near Peterborough and Whittlesey, Cambridgeshire. It was later learned from J. Bond (*pers. comm.*) that he had reared it from puparia collected at Crowland, Lincolnshire, in v.1953. The following month, Rev. C.E. Tottenham found seven specimens in small clumps of grass discarded on a Cambridge allotment. Recent records are from: pitfall traps in a walled garden at Heddon-on-the-wall, Northumberland, iv.1966 and on chalk grassland at Royston, Hertfordshire, vii-xii.1974 (Welch, 1983); at Thorne Moor, Yorkshire, x.1990 (Denton, 1992); and in a recently scraped area of Stonesby Quarry, Leicestershire (Lott, 1995). Being known from less than

ten sites, and possibly vulnerbale to pesticides used to control its host, *inconspicua* must warrant a return to its former (Shirt, 1987) RDB 2 status.

15. ***lanuginosa*** Gravenhorst.

Its generally dark colour and dense puncturation of the basal abdominal tergites should distinguish *lanuginosa* from any other dark species of similar size. The angle in the ventral margin of the aedeagus is diagnostic of this species and the shape of the spermatheca is also distinctive. This species is almost ubiquitous in cow dung throughout the British Isles. It has been found in all types of dung, carrion, flood refuse, grass tussocks and the roots of reeds, in leaf litter and straw in a deer pen, on a bracket fungus and on bones.

16. ***lygaea*** Kraatz [RDB I].

This species bears a superficial resemblance to *lanuginosa*, from which the shagreened head and pronotum should separate it, as well as *villosa* whose short mesosternal carina contrasts with the complete one in *lygaea*. The spermathecae of *lygaea* and *villosa* are similar although the collar region of the stem is more constricted in the latter species. This is a rare species known from a variety of habitats in scattered localities, mainly in southern England north to Bradgate Park, Leicestershire. There are late nineteenth-century records from the banks of the River Nith in Dumfries, Scotland, and from Silloth, Cumberland in 1910. There is also a Hudson Beare specimen in the Royal Scottish Museum taken at Glenfarg, Perthshire, in viii.1922. The most recent published record may be of a female specimen that I sieved from cut grass at Monks Wood, Huntingdonshire, in vi.1965 (Welch, 1968). Early records are from carrion, seaweed, dung, flood refuse, in an old fungoid stump and by sweeping. From the number of historical localities *lygaea* could be considered only to warrant Notable status, but the paucity of recent records would indicate that it deserves at least RDB 3 status.

17. ***maculata*** Brisout [RDB I].

This species is without doubt very rare in Britain and has been recorded, usually singly, from 15 sites in southern England since it was first found by Rev. H.S. Gorham in shingle beside the R. Lyn, Devon, in 1870. Several of these records, including the most northerly (from Church Stretton, Shropshire), also date from the nineteenth century. One specimen was collected from moss and dead leaves, but the remainder have all been taken by sweeping. For more than half a century, the last published record of *maculata* was of two specimens swept by A.A. Allen from grass in Windsor Forest in viii.1941 (Allen, 1942), although he took a further specimen there on 22.v.1946 (Allen, *pers. comm.*). Then on 1.vi.1993, P.F. Whitehead found a single specimen in clitter at 395 m on an exposed and unvegetated hillside on the Malvern Hills, Worcestershire (Whitehead, 1996). An editorial footnote to Allen's (1942) account provides data for four specimens in the J.J. Walker Collection at Oxford, including a J.R.leB. Tomlin specimen labelled "Malvern, Worcs." but without date. Two specimens are in the G.W Nicholson Collection, in Cambridge University Museum, one of which bears a label with the data: "Malvern Hills, Worcs.,

29.4.16"; this record does not appear to have been published. It is exciting that a species, which I was beginning to think was extinct in Britain, should be rediscovered at one of its former localities. The distribution of *maculata* in continental Europe suggests an affinity for alpine regions and Whitehead believes (on the strength of the few British records) that it may have an upland distribution here also. However, in the 1920s a number of specimens were recorded from lowland sites, including the Suffolk Breckland, although some of these were from chalk downland and most appear to be on well-drained soils.

18. ***moerens*** Gyllenhal [Notable].

Separation of this species from *fumata* has been discussed under that species (above). Typically associated with fungi, it has also been recorded from moss and dead leaves, haystack litter, flood refuse, by sweeping a burnt area, under beech *Fagus* bark, in carrion, and in dog dung. It is widely distributed throughout the British Isles and is by far the most common fungus-frequenting species occurring in Scotland. It is probably best left classified as nationally Notable.

19. ***moesta*** Gravenhorst [RDB K].

This species most closely resembles *tristis* in having coarse puncturation on the abdominal tergites, but its general shape and elytral coloration make it an easily recognisable species. The spermatheca is unlike that of any other British *Aleochara* and the aedeagus is sufficiently distinctive to allow separation from other species. In the Introduction to this paper I discussed the confusion over the use of the name "*moesta*"; fortunately, most records of the true *moesta* were first published under the name *crassiuscula*. It was first found in England during 1908, when G.C. Champion found *c.*20 specimens in dung at Great Yarmouth, Norfolk. Later the same year it occurred at Lewisham, Kent; Hanwell, Middlesex; and in dry manure heaps near Oxford, where it continued to be recorded at intervals up until 1938. It was also found regularly at Harpenden, Hertfordshire, from 1924-27, and in Windsor Forest, Berkshire, on several dates in 1927 and 1934. Other localities comprise: Salisbury Plain, Wiltshire, in 1915; Ashley, Cheshire, in 1923; and Westerham, Kent, also 1923. A.A. Allen has one specimen from fermenting grass at Lampton, Middlesex, on 28.viii.1944, and there is a Donisthorpe specimen in the R.W. Lloyd Collection from the same locality, taken on 19.ix.1944. The last known capture of this species in England was by the Rev. C.E. Tottenham at Cambridge on 26.iv.1945. The northern records listed by Hyman (1994) under this species should be disregarded unless verified specimens can be produced.

It is unusual to have a species which was locally and sporadically common for at least three decades, apparently then to die out. Such an occurrence suggests that the species somehow arrived — perhaps naturally — in southern England around 1908, established itself at a time when manure was commonly used as a fertilizer, only to decline and possibly become extinct within 40 years. Loss of a specialised habitat, climatic change, or a contraction of its distribution in continental Europe may have been responsible. The

lack of any confirmed records for *moesta* over the last 50 years must indicate that this is an Endangered species and so deserving of RDB 1 status.

20. ***sanguinea*** (Linnaeus) [Notable].

This species has frequently been found in collections mixed with *moerens*, from which it can be separated by its shagreened head and pronotum, and by *moerens* having stronger puncturation in the transverse grooves of the abdominal tergites. The genitalia, particularly the spermatheca, are distinctive and should provide an easy means of separation. The incomplete development of the mesosternal carina in *sanguinea* contrasts with the full-length carina in both *moerens* and *fumata*. *A. sanguinea* is rare in Britain and is known from approximately 20 localities in south-east and central England as far north as Staffordshire and Derbyshire. There is a specimen in the B.S. Williams Collection from Liverpool, which I have not seen. It has been recorded from a variety of habitats including carrion, haystack refuse, in a bird's nest, with the ant *Lasius brunneus*, in cow dung, beaten from a lime *Tilia* tree, and in a fungus. On the limited number of recent confirmed records, I can see no justification for removing its former (Shirt, 1987) RDB 3 status.

23. ***tristis*** Gravenhorst.

This species is very distinctive and is not easily confused with any other British species. It can be separated from *maculata* by its larger and broader size, and densely punctured abdominal tergites. In this last character it resembles *moesta*, but the elytral markings and size should permit easy separation. The broader hind-body, darker legs and more erect pubescence, make it distinct from *intricata*. The many-coiled aedeagal flagellum is diagnostic, as is the shape of the spermatheca. In Britain *tristis* is a rare species, with a predominantly south-eastern distribution although recorded from the Welsh Marches and Lancashire, and there is a nineteenth-century record from Ireland. It is usually found singly or in very small numbers in dung or carrion, but has been found in stack and flood refuse, on decaying sappy wood, and beaten from a hedge.

24. ***villosa*** Mannerheim [RDB K].

This species can be separated from all similarly-sized dark *Aleochara* by means of its very short mesosternal carina. Shagreenation of the anterior body and differences in the puncturation of the abdominal tergites will separate it from *lanuginosa*, as well as from *kamila* which occurred with *villosa* in an Oxford dovecote (Welch, 1981). The elongate 4th antennal segment, longer elytra and finer puncturation on the tergites distinguish it from *lygaea*. The shape and structure of the aedeagi of these three species are distinctive, and although the spermathecae of *villosa* and *lygaea* are of similar shape, the more constricted collar in the stem distinguishes *villosa*. This species has been recorded from 20 localities, mostly scattered throughout England although I have seen specimens from Braemar, Aberdeenshire, Scotland, and from Killarney, Ireland. Although recorded from a manure heap, a heap of fowl dung and a stable midden, most specimens in British collections originate from dovecotes in the Scarborough district of Yorkshire, taken in

1930. There were no more records until I found a breeding population in the thick accumulation of droppings and straw in an occupied dovecote at Wytham, Oxford (Welch, 1981). In continental Europe this species has been found in the nests of birds frequenting holes in trees and even in a Mole's nest, but in Britain there can be no doubt that its main habitat was in dovecotes that are in continuous use. When I returned to Wytham in July 1994, the dovecote had been cleaned out to be used as a store and it no longer housed any birds; no *villosa* could be found and this once thriving population was presumed to be extinct. Of those dovecotes surviving in Britain, only a very small number still house doves or pigeons; those that do are likely to be kept clean of accumulated droppings, resulting in a depletion of *villosa*'s primary habitat. I am of the opinion that this species should now be considered Endangered and given RDB 1 status.

25. ***ruficornis*** Gravenhorst [Notable].

This should not be confused with any other British species and the male is unique in the development of projections from the abdominal tergites. It is widely distributed throughout England and southern Scotland, where it is known from Mull and the Inner Hebrides and as far north as Aviemore, Inverness-shire. It has been recorded from Wales, but not from Ireland. A number of the early records suggested some sort of association with at least three species of ant, but it had also been taken under horse dung, in hedge refuse, in stream-side moss, on a sandy river bank, in grass tussocks and on ferns, and by sweeping. Up until the middle of this century it was regarded as a rare species but since then it has been taken fairly frequently in woodlands, either by sweeping or more commonly in pitfall traps. It would appear that woodland provides its main habitat, although it is sometimes found in open situations, and it has been suggested that *ruficornis* may have a subterranean mode of life. Being such a distinctive species, the modest number of recent records would indicate that it is probably best regarded as nationally Notable.

26. ***spadicea*** (Erichson).

This light-coloured, more or less parallel-sided species with its long slender legs and antennae, should not be confused with any other British *Aleochara*. The aedeagus has its apex sharply angled downwards and the large bulbous head of the spermatheca is distinctive. Only occasional specimens had been taken by sweeping prior to N.H. Joy's discovery in 1906 that its true habitat is in the subterranean nests of the Mole; W.O. Steel (*pers. comm.*) found approximately 40 in one nest. Although most records are from southern Britain, it has been taken in Scotland at several sites in the central lowlands and as far north as Elgin. It is not known from Ireland.

27. ***grisea*** Kraatz; 28. ***obscurella*** Gravenhorst; 29. ***phycophila*** Allen [RDB I]; 30. ***punctatella*** Motschulsky.

Some aspects of the morphological differences between the four littoral species have already been discussed above. *A. phycophila* is still only known from Allen's type specimen from Studland, Dorset, where it was sieved from seaweed on 12.viii.1937. The

remaining three species are widely distributed in seaweed and carrion around the coasts of the British Isles including Shetland. *A. grisea* and *punctatella* are typically found in the drier strings of seaweed associated with sandy beaches, whereas *obscurella* is more commonly found in the deep accumulations of seaweed characteristic of rocky shores. Most *obscurella* tend to be larger than most *grisea*, with *punctatella* noticeably smaller. Although these are littoral species, exclusively preying upon and parasitising seaweed flies *Coelopa* spp., each has been recorded from at least one inland locality: *grisea* was taken at Hartlebury, Worcestershire, in June 1925 by Rev. Tottenham; *obscurella* was taken at Oxshott, Surrey, in ix.1892; and *punctatella* was found at Chester by W.E. Sharp in 1908, at Berrow, Worcestershire, by H. Last, and on an islet in Lough Ree, Ireland. *A. phycophila* remains something of an enigma and, provided that it is the good species that Tony Allen and myself believe it to be, is probably best retained in the RDB I category.

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Diaperis boleti Linnaeus (Tenebrionidae) widespread on the Sandlings Heaths of East Suffolk

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The highlight of the autumn 1996 field meeting of the Dipterists Forum in Suffolk proved to be Coleoptera rather than Diptera. Investigation of birch polypores *Piptoporus betulinus* (Bull. ex Fr.) Karst., in order to generate records of *Tetratoma fungorum* Fabricius (Tetratomidae) for the Heteromera Recording Scheme, provided the unexpected discovery of *Diaperis boleti* in a county where it was last seen over a hundred years ago.

The first encounter with this great rarity was in a forestry shelter belt in Rendlesham Forest (TM 34) on 19.x.1996. Tapping a polypore on a dead standing birch *Betula* produced a single *D. boleti* as well as numerous *T. fungorum* and *Cis bilamellatus* Wood (Cisidae). Further investigation of polypores on this trunk revealed a total of two teneral and two mature adults, as well as the characteristic large tubular galleries. The whole section of shelterbelt was then examined and, while dead birches with polypores were widely found, only one further bracket revealed more beetles - three mature adults and what was assumed to be a larva. Apart from the birches, the main tree in the belt was oak *Quercus* and all were young trees, with girths of no more than 30 cm. Spurred on by this discovery we decided to carry out a rapid search of similar areas in the immediate neighbourhood. The first dead birch with polypores spotted on Lower Hollesley Common revealed one mature adult and a teneral. Polypores examined in rather shady mixed woodland near Staverton Park and in an open forestry shelterbelt along the edge of Blaxhall Common drew blanks. A further positive record was gained at Tunstall Forest (TM 35), again in an open forestry shelterbelt. Visits to Minsmere Reserve and Dunwich Heath were negative. The following day Peter Chandler found another locality in Walberswick National Nature Reserve (TM 47).

The ease with which it was widely found across the Sandlings Heaths suggests a large and dynamic population. The absence of earlier records, however, suggests that this is a new feature, and that the population has formerly been at a very low ebb and therefore difficult to detect, perhaps just ticking over. Two reasons for the change in fortunes suggest themselves: i) ragged shelterbelts with dead and dying birches are a relatively recent feature, following major windblows in the late 1980s; and ii) 1995 and 1996 have been unusually warm and dry summers. Perhaps these two factors have combined to stimulate such a spectacular increase in numbers. *Diaperis* is only known in the county from a record for Barham, E. Suffolk, from the last century (Brendell, 1975), and has been recorded in recent years only from Holme Fen, Cambs. (R. S. Key & D. Hemingway, *pers. comm.*), near Lewes, E. Sussex (Hodge, 1991) and E. Kent (in Hyman, 1992). It is listed as Red Data Book Category 2 (Vulnerable) (Brendell in Shirt, 1987).

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Tachys walkerianus Sharp (Carabidae), a patio beetle?

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On 9th June 1996 I saw several small ground beetles running quickly in the sunshine on my small patio here in Faversham. I thought that they were *Metabletus truncatellus* (Linnaeus) but tubed one just to be sure. Several days later I examined the beetle and much to my surprise I saw that it was *Tachys walkerianus*, an identification later confirmed by my friend Mr A.A. Allen. It seems most unlikely that it is a natural inhabitant of my small town garden and I can only suggest that it was originally brought here in bags of moss and pondweed, probably from Romney Marsh. It appears to be the first record for the county. I have since seen the beetle from time to time in the summer running in between the flagstones and I look forward to seeing it in future years.

Field Meeting

Exmoor and the Quantocks - Fri. 4th to Sun. 6th July 1997. Leader: Dave Boyce - Tel.: (01398) 323665 (during office hours) or (01398) 323188 (home).

A Coleopterists' Weekend based in Exmoor National Park. Despite being a National Park, Exmoor has been surprisingly poorly worked for Coleoptera in recent years. The list for the area stands at 1,198 species, but many of these are only known from old records. Exmoor includes a good range of habitats that should support a very diverse beetle fauna. Particularly noteworthy are the large expanses of heather moorland, coastal heath and ancient oakwoods and parkland, many of which have no beetle records. Recent casual recording has turned up rarities such as *Quedius riparius*, *Leptura sexguttata*, *Strangalia aurulenta* and *Apion semivittatum*, which provide a tantalising glimpse of the many further exciting discoveries that undoubtedly still await. It would also be nice to re-find species such as *Miscodera arctica*, *Trichonyx sulciollis*, *Medon piceus*, *Aleochara maculata*, *Agriotes sordidus*, *Ochrosis ventralis*, *Psylliodes attenuata*, *Apion sorbi* and *Lixus vilis*, which have not been recorded for a number of years.

This year's meeting will be based in the Exmoor National Park's Pinkery Centre, opened in 1995, which lies at the heart of the moorland. It is surrounded by large areas of upland grassland, heath and mire, most of which are included within the North Exmoor Site of Special Scientific Interest and are in the ownership of the Exmoor National Park Authority. Accommodation will be in 2-3 bedded rooms, some with en suite bathrooms while the remainder use communal facilities. Bed and breakfast plus an evening meal will cost approximately £20.00 per night for Friday and Saturday. For those wishing to stay on for Sunday night, accommodation will cost approximately £15.00. On the Sunday there will be no catering, but the nearby hostelries in Simonsbath and Challacombe can be used by way of compensation.

For further details and to book your space please contact Dave Boyce (c/o Exmoor National Park, Exmoor House, Dulverton, Somerset TA22 9HL), **as soon as possible and certainly no later than 31st May 1997.**

The British species of the genus *Aleochara* Gravenhorst (Staphylinidae)
By R. Colin Welch
We anticipate that many coleopterists will wish to make extensive use of Dr Welch's new key to *Aleochara*, in this issue. For those who prefer to keep their journals in mint condition, we are making available a limited number of extra copies of this issue for £3.50 including postage and packing. Please send payment with your order to the Hon. Treasurer: **P.J. Hodge, 8 Harvard Road, Ringmer, Lewes, East Sussex BN8 5HJ**.

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