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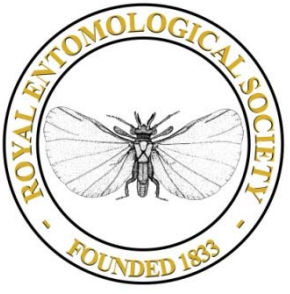

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THE IDENTIFICATION

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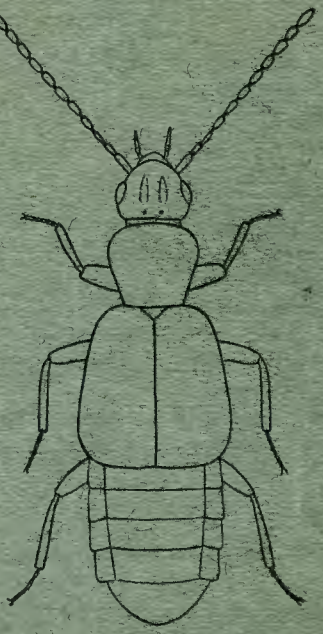

COLEOPTERA

STAPHYLINIDAE

SECTION (*a*) PIESTINAE TO EUAESTHETINAE

By

C. E. TOTTENHAM

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HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS

The aim of this series of publications is to provide illustrated keys to the whole of the British Insects (in so far as this is possible), in ten volumes, as follows:

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- „ 5. Dermaptera and Orthoptera.
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The Society is indebted to the Royal Society for a grant towards the cost of initiating this series of *Handbooks*.

A list of parts now available appears on the back cover.

COLEOPTERA

Family STAPHYLINIDAE

By The Rev. C. E. Tottenham.

Introductory.

The family Staphylinidae contains in the British Isles about 950 species, that is to say about one-quarter of the total number of Coleoptera occurring in the country. It is one of the most neglected families and consequently offers great scope for those who wish to do some useful work in addition to just forming a collection. The beginner can feel that he can immediately accomplish something. Records of species from all districts are badly needed; large numbers of even the commonest species have never been fully described; the description, with figures, of the aedeagus in the male and, where it exists, of the spermatheca in the female, yet remains to be done in the case of more than half of the British species; a comparative study of the apical abdominal segments of genera and species is an important task yet to be undertaken; many of the larvae have never been described and the life histories and habits of many species are as yet unknown.

The Handbook on the Staphylinidae will be published in 3 parts:

(*a*) Piestinae to Euaesthetinae (the present work).
(*b*) Paederinae to Tachyporinae. } to follow.
(*c*) Aleocharinae. }

Characteristics.

Size very variable, in British species ranging from less than 1 mm. to 35 mm. General form usually long and narrow, but sometimes rather broad and short. Elytra usually much abbreviated leaving the greater part of the abdomen exposed; elytral suture straight. Abdomen consisting of eight segments, namely segments 2–9, the tergite of the 2nd segment wholly or partially concealed beneath the elytra; no sternite to segment 2; the segments flexible.*

Head very variable in shape, sometimes inserted in the pronotum, often with a neck of varying width. Eyes very variable in size, situated at the

* In the text, where a number is given for an abdominal tergite or sternite, the number refers to the segment to which it belongs; this can be determined by counting backwards from the last or 9th segment. In cases where the apical segments are apt to be telescoped and any difficulties might be experienced, the number of the wholly "visible segment" is given.

sides, sometimes protruding beyond the lateral margins of the head. Eyes compound. Two ocelli are also present in the Omaliinae and one in the Motopsiinae. Antennae usually 11-segmented, rarely 10- or 9-segmented, very variable in form, either elongate, or thickened towards the apex or with the terminal segments forming a club. The antennae are situated in various positions on the head ; although they are placed somewhere along the anterior margin of the vertex, their position will depend upon whether the clypeus is large, small or wanting. The pronotum also varies very much in shape. Wings are usually present, completely folded beneath the elytra ; sometimes the wings are much reduced in size, and some species are apterous or have apterous forms. The abdomen is generally rather flat with upturned side margins, but sometimes cylindrical. The tarsi are 5-, 4- or 3-segmented and in some genera heteromerous. The sexes may generally be distinguished by the structure of the last abdominal segment ; in many cases, however, the males may be easily recognised by other secondary sexual characters which may be present on head, pronotum, legs, antennae, or various abdominal segments.

The larvae are nearly always campodeiform ; many of them bear a close superficial resemblance to Carabid larvae but may be distinguished by 5-segmented legs (Carabids 6-segmented) ; the legs have single claws whereas in many Carabid larvae they have two claws.

Habits.

The habits of the different species of the Staphylinidae are so diverse that it would be very near the truth to say that they can be found anywhere. Several chapters would be required to treat the subject adequately ; here it is only possible to give a summary which is necessarily incomplete. Many species are to be found in decaying organic matter, therefore heaps of cut vegetation, dead grass, dead leaves, manure heaps, seaweed and other tidal refuse, rotting fungi, the dung of animals, carcasses, etc., abound in species of the family. Many species, however, are attached to living organisms ; thus fungi yield many species, often in great abundance ; some Staphylinids may be found on flowers of various herbaceous plants, shrubs or trees. Moss is a frequent habitat, its fauna varying according to the situation in which it is growing and to some extent according to the species of moss, e.g., *Sphagnum* may be considered the principal habitat of some species ; moss on tree stumps, in woods, on hill sides, in wet places and even behind waterfalls is sure to yield some Staphylinids. The nests of birds and mammals and of Hymenoptera have their own Staphylinid fauna. Some species of the family are subterranean (e.g., *Bledius*) and these can best be obtained by digging with a penknife or some such implement ; the species of this genus generally occur in colonies and occur especially in coastal areas and along river banks ; their presence may be detected by the small castings which they throw up. A few of the littoral species of Staphylinidae are to be found under seaweed on rocks or beneath shingle or stones on the shore below the level of high water. Whereas it is known that many species are predators and carnivorous, many are fungivorous, some feed on algae, some are found on flowers and are probably phytophagous, and some are, in the larval state, parasitic on dipterous pupae, yet the exact feeding habits of many species are not yet known.

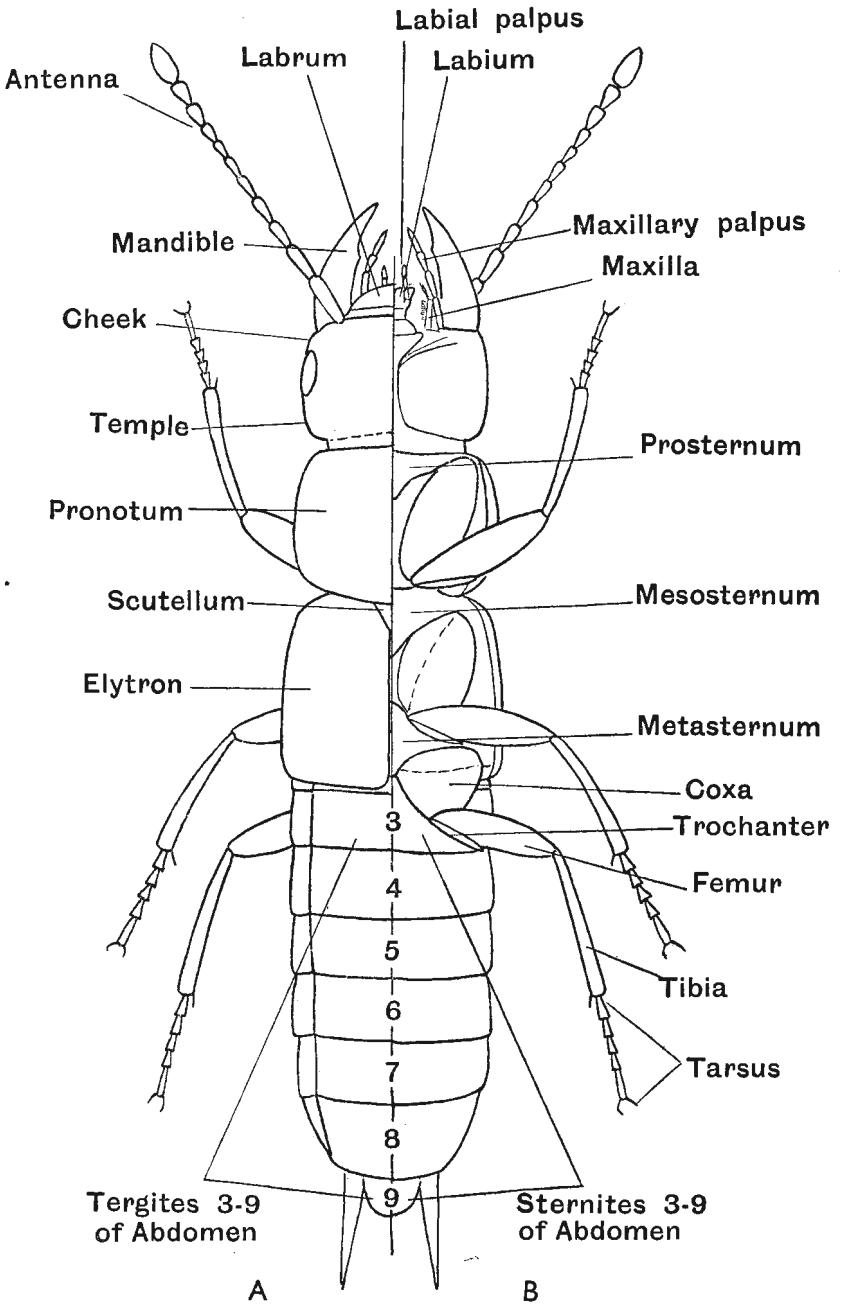


FIG. 1.—A Staphylinid beetle (schematic) to show principal structure (A, upper side. B, under side).

Collecting and Preserving.

It will be evident from the preceding section that many different methods must be adopted for the collecting of Staphylinidae and that various kinds of apparatus may be required. Probably the most useful thing is a large mackintosh ground-sheet, which comes in handy for sifting rubbish heaps etc., for beating insects out of fungus or carcasses, and for any kind of sorting that has to be done. Since many species are to be found at the bases of tufts of grass and of *Juncus*, especially in winter, a small tenon saw will be found invaluable ; this is a much more effective weapon for cutting off the tuft than a knife. A trowel is useful for digging up moles' nests, and for digging shingle to be sifted. Sieves are very useful but perhaps not indispensable. A large cinder sieve is an advantage in sifting flood refuse, manure heaps, dead leaves, etc. Small-meshed sieves are useful for shingle or wood debris, and with their aid many small specimens can be found which might otherwise escape detection. If the small sieves are sewn into the ends of sleeves of unbleached calico (i.e., forming the bottoms of small bags), they are not cumbrous to carry. Flood refuse is best brought home in a large, closely woven sack (without holes), and searched in comfort indoors, after having been hung up to dry for some hours. Some species, which are rarely found otherwise, are plentiful in flood refuse. The sweeping net and beating tray cannot be omitted from the Staphylinid collector's outfit, although perhaps they form the least useful items of his equipment : a mortise chisel also is of service in working the bark of fallen trees and dead wood.

Killing can be done in the field, although it is preferable to bring home alive some of the most fragile species, such as *Myllaena*. The author has found 3-in. tubes of $\frac{5}{8}$-in. diameter the most useful, but it is wise to have a few larger ones at hand in case large species should be plentiful, and a number of very small tubes for species to be taken alive. After giving most of the recommended things a fair trial, the author has come to the conclusion that there is no killing agent anything like so serviceable as ethyl acetate or amyl acetate. The collecting tubes should have a small piece of blotting-paper pushed well down to the bottom to prevent the insects from being against the glass. A small piece of blotting-paper (about the size of a penny) should be moistened with the acetate, then screwed up and dropped into the tube ; as soon as it ceases to be effective a second moistened piece may be added ; the tube is thus gradually filled with beetles and small pieces of damp blotting-paper. Before the tube is finally corked up, a moistened piece can be placed in flat, and gently pressed down to prevent the insects being shaken about. The important thing is to see that the blotting-paper is not *wet ;* if necessary it should be held in the air for a few seconds, until all surface moisture has evaporated, before being placed in the tube. Insects thus killed will remain relaxed and clean ; they can be set at any time from the next day to months later ; if left too long they can be relaxed by being repacked in another tube in layers between pieces of blotting-paper again moistened with the killing agent. Although the author has known some of the small delicate species to be quite satisfactory if killed this way along with other species after no less than three months, he recommends that such species should have special treatment, be brought home alive, and then killed like the others in a separate tube.

Staphylinidae should be mounted on cards ; gum tragacanth is as suitable a mounting medium as any. Care should be taken that the gum does not get on to the surface of the insect. If time permits it is best only to gum down the terminal segment of the antennae, since gum is apt to give a false impression of the relative lengths and widths of the segments. If possible, antennae should always be mounted to show the same aspect, since the segments are often much broader (both actually and also in proportion to their lengths) in one aspect than in another ; the terminal segment often is a useful guide to ensure this. Before mounting care should be taken to see that the abdomen has not been allowed to telescope in ; if it has done so it can easily be extended with the aid of a fine pin inserted in the apex. Much trouble can be avoided by doing any desired dissections before mounting ; the aedeagus of the male and in many cases the spermatheca of the female afford reliable, often the best, and sometimes the only reliable distinctions by which the species may be known. These organs may be mounted on the same card as the insect. If it is desired to show such things as sternites of the abdomen which exhibit specific characters, these too can be removed with a sharp knife or needle and mounted beside the specimen. A straight surgical needle, which only costs a few pence, is very useful as a dissecting instrument. The author recommends system in the mounting of specimens ; by adhering to a rigid rule, such as mounting tergites on left and sternites on right, much unsightly labelling can be avoided. Uniformity in mounting is a great advantage ; this applies both to the whole insect and to any parts that may be mounted along with it. The little extra time taken in uniform mounting is counterbalanced by the time saved in identification of the specimens to say nothing of the greater accuracy to be obtained in the determinations.

Distribution.

The extent of the distribution of the different species of Staphylinidae in this country is not at all well known. There are no published lists for many areas, and a great many of the published records are unreliable. To collect them together would involve a search through hundreds of volumes ; the results would not justify the time and labour. In many cases the records would provide a long list of widely scattered places which would be indicative of collectors' activities more than of the distribution of the species recorded. I have, therefore, only attempted to give some indication of the types of situation in which the different species are found, a rough indication of their abundance, and, where possible, any limited areas in which they are known to occur.

No collecting has been done in the greater part of the country ; collectors have too frequently visited a few known localities to obtain their series of a species. It takes a long time to know the Staphylinid fauna of any district, however small ; neither can it be said to be static ; those interested in the family will find many unexpected species by diligent search in any locality and, by collecting anywhere, can contribute numerous new records to help to fill in the picture of the distribution of the species.

Classification.

The classification here adopted is that given in Junk's *Coleopterorum Catalogus* (**5** and **6**), which was also followed in my paper on *The Generic*

Names of British Insects, Part 9, Staphylinidae (1949, *Roy. ent. Soc. Lond.*). In my opinion this classification lacks balance in some parts. Since genera and higher categories depend for their limitations on the particular character or set of characters chosen for their definition and upon the importance placed upon any one set of characters as compared with another set, they are entirely subjective things and there is room for difference of opinion. Since very many, probably over 50 per cent. of even the commonest species of Staphylinidae, have not yet been fully described, it is premature to speculate upon phylogenetic relationships and all attempts to build a classification are based upon a partial knowledge of the structure of the species. I have thought it best therefore to aim at uniformity. The departures I have made from this classification are : (1) I have assigned a different status to a few groups which are placed in the Catalogue as Tribes, but are here called Subfamilies. In so doing I have reverted to the classification given in Fowler, *Coleoptera of the British Isles*, **2**, the standard work on the British Staphylinidae. (2) The genus *Actocharis* I have removed from the Oxytelinae to the Bolitocharini (Section (c)) a position which it once held. I have adhered to the order of genera set out in the check-list of my paper on the Generic Names.

Nomenclature.

The nomenclature followed is that given in the check-list. Since in that list sufficient synonymy was given to bring it into line with Fowler, the Catalogue, or more recent literature on British Staphylinidae, there is no need to give any synonymy here, except in the very few cases where more recent work has necessitated a change of name.

A number of nomenclatural changes have been put forward by Blackwelder (1952, *Bull. U.S. nat. Mus.* **200**). These I am not adopting because (1) some of them are based upon very debatable points and concern cases which must go before the International Commission ; (2) some merely affect the authorship assigned to a generic name ; of these, some in my opinion are wrong, others may be correct, but no evidence is given as to the earlier date of authorship and I have been able to find none ; (3) some are founded upon what appears to me to be a false theory of nomenclature which is inconsistent with the Rules of Nomenclature and which, apparently, does not work. I cannot accept any genus which is given a status which excludes its type species, or distinct genera with the same species as type but called by two synonyms, or genera founded upon species whose identity is unknown, to mention three of the least desirable features of that work.

Keys.

There are many keys which cover the whole or nearly the whole of the British Staphylinid fauna. I have considered it more useful to attempt, at least in part, some alternative keys than to copy those already to be found in literature. It is frequently much easier to recognise at sight some distinctive species than it is to trace it down to its correct genus by means of keys. By making use of " distinctive appearance " and outline figures I have tried to overcome some of the difficulties. As far as possible " comparisons " have been omitted, or only given as additional characters, except

in some cases which can be figured. Since these keys are designed for the identification of British species, the keys to subfamilies and genera may not apply to other faunas.

Figures.

The figures have been drawn with the aid of camera lucida. The whole figures aim at giving the general appearance of the insect. No attempt has been made to illustrate puncturation and many details, such as pubescence or tibial spurs, and details of the front of the head have been omitted. The size of the figures prevents detailed accuracy in small structures. Since no part of the insect is a perfect sphere, the accuracy of contours depends upon the angle from which the part in question is viewed. This must always be remembered when identifying Staphylinidae especially in comparing specimens with figures or other specimens. It must also be remembered that the antennal segments, which often provide good specific characters, often vary considerably both in their actual breadth and also in the proportions of length to breadth according to the position in which the antennae are lying. The scale of the figure is only given in the case of the whole insects. Where no scale is given, if two or more figures in a set are drawn for the purpose of comparison they are drawn to the same scale. Dotted lines indicate the approximate position of depressions which usually have no definite boundaries and may be somewhat variable.

Measurements.

These are given from the front of the head to the apex of the abdomen. Many species vary considerably in size: this often detracts from the value of size comparisons. The differences in size are also increased by the state of the abdomen. In some species a specimen with the abdomen fully extended is half as long again as when the abdomen is telescoped in. In the case of common species I have given measurements from good series with abdomen extended; in the case of rarities the measurements may be less accurate.

Bibliography.

A full bibliography will be given at the end of Section (*c*). A few references to short papers will be given in the text.

Key to Subfamilies.

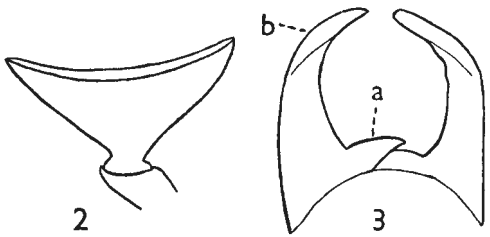
1 Antennae 9-segmented, the last segment forming a stout club; pronotum, elytra and abdomen with distinct ridges or keels; size small, 1–2 mm. (fig. 5)
Micropeplinae (p. 9)

– Antennae 11-segmented (rarely, *Hypocyptini* (in Section (*b*)) 10-segmented).....2.

2 Last segment of labial palpi very large, dilated, somewhat crescent-shaped (fig. 2); mandibles very large, held forward (but crossed) in repose. (The only British species is readily recognisable by its size (6–10 mm.), form and colour, the head, basal half and sutural region of elytra, apex of abdomen being black, the pronotum, humeral region of elytra and base of abdomen red) (fig. 106)
Oxyporinae (p. 57)

– Last segment of labial palpi normal.....3.

3 Pronotum and elytra with distinct ridges ; abdominal tergites with oblique furrows from middle of base towards apical angles and with stout, recurved hairs at sides ; insect brown, with distinctive appearance (fig. 6) ..... PSEUDOPSINAE (p. 11)
– Pronotum and elytra without or not both having distinct ridges.....4.



FIGS. 2–3.—2, Apex of labial palpus of *Oxyporus rufus* (Linnaeus) ; 3, Mandibles of *Siagonium quadricorne* (Kirby & Spence), male (*a*, mandible ; *b*, horn).

4 ♂ with large horns on mandibles (fig. 3) ; insect rather flat, parallel-sided and of characteristic appearance (fig. 4) : anterior coxae globose.....PIESTINAE (p. 9)
– Mandibles without horns.....5.
5 Antennae inserted on the upper surface of the head, at or near the level of the front margin of the eyes.....6.
– Antennae inserted otherwise, under the side margin or on the front.....7.
6 Head large and broad ; eyes large, bulging, *Cicindela*-like, occupying most of the sides of the head ; pronotum more or less barrel-shaped without side border ; last segment of abdomen with long, nearly parallel-sided tergite which is truncate or rounded at apex. Insects of distinctive appearance (figs. 107, 112, 117) STENINAE (p. 58)
– Head more or less small, eyes not bulging, temples usually present ; pronotum not barrel-shaped ; last segment of abdomen otherwise ALEOCHARINAE (Section (*c*))
7 Antennae inserted at front of head, inside base of mandibles.....8.
– Antennae inserted under sides of head or front, outside base of mandibles....10.
8 Antennae with 2-segmented club ; head with eyes close to base, therefore without temples but with long cheeks ; pronotum with two longitudinal depressions ; elytra very short and broad, at suture shorter than pronotum ; anterior coxae very small ; insect very small, not exceeding 2 mm. of compact form and distinctive appearance (fig. 118).....EUAESTHETINAE (p. 74)
– Antennae not having 2-segmented club ; head with distinct temples and short cheeks ; pronotum without longitudinal depressions ; anterior coxae large ; size very variable, 3–30 mm.....9.
9 Antennae distant, more distant from one another than from the eyes ; prosternum not produced in front of coxae ; suture of elytra simple ; apical segment of abdomen with long styles .....STAPHYLININAE (Section (*b*))
– Antennae close, closer to one another than to the eyes ; prosternum produced before the coxae into a " neck-plate " ; suture usually imbricate ; last segment of abdomen without long styles.....XANTHOLININAE (Section (*b*))
10 Antennae extremely slender, somewhat hair-like, with very long hairs ringed round the apex of most segments.....11.
– Antennae normal.....12.
11 Posterior coxae triangular, prominent.....HABROCERINAE (Section (*b*))
– Posterior coxae transverse.....TRICHOPHYINAE (Section (*b*))
12 Vertex of head with one or two ocelli.....13.
– Vertex of head without ocelli.....14.
13 Vertex of head with two ocelli ; tarsi 5-segmented.....OMALIINAE (p. 16)
– Vertex of head with one ocellus in the middle ; head in front of eyes somewhat 5-sided ; pronotum with sides crenulate and with posterior angles excised, (fig. 12).....METOPSIINAE (p. 13)
14 Tarsi 3-segmented.....OXYTELINAE (*pars*) (p. 37)
– Tarsi 4- or 5-segmented.....15.

15 Species very small, 1½–2 mm., a little fusiform, cylindrical, very pubescent ; insect of distinctive appearance (fig. 7) ; habitat under bark...PHLOEOCHARINAE (p. 13)
– Species not very pubescent, or if pubescent then distinctly larger and of different appearance .....16.
16 Body nearly always fusiform, with abdomen strongly narrowed from base to apex ; head sunk in pronotum, hiding the temples ; anterior femora scarcely visible from above ; head usually transverse, with sloping cheeks and small temples ; maxillary palpi normal ; posterior coxae transverse ; tarsi 4- or 5-segmented ; tergite 8 in ♀ 4-lobed.....TACHYPORINAE (Section (*b*))
– Body not fusiform.....17.
17 Shape of pronotum and general form as in figs. 13, 14 ; small broad insects less than 3 mm. long.....PROTEININAE
– Shape of pronotum and general form quite different ; mostly much larger insects, if very small then narrow and elongate.....18.
18 Posterior coxae transverse ; tarsi 5-segmented : last segment of abdomen without styles (four genera of one species each, all readily distinguished by their general appearance) (figs. 68, 70-72).....OXYTELINAE (*pars*) (p. 37)
– Posterior coxae conical ; maxillary palpi with last segment extremely small, often scarcely visible, penultimate segment much widened apically ; body parallel-sided, more or less linear ; anterior femora plainly visible from above, stouter than the other two pairs and with distinct prominence or tooth on underside (except in *Paederus*) ; head before eyes with parallel cheeks, temples as large or larger than eyes ; tergite 8 of abdomen simple, last segment with distinct styles.....PAEDERINAE (Section (*b*))

Subfamily PIESTINAE.

Genus **Siagonium** Kirby & Spence.

Anterior coxae globose ; paratergites, at least on basal segments with distinct separated flat dorsal surface ; tarsi 5-segmented ; 2nd to 5th visible tergites with oblique striae on each side from base to sides. This latter character (present also in Oxytelinae) will help to distinguish the single British species, which from its characteristic appearance is not likely to be confused with any other species.

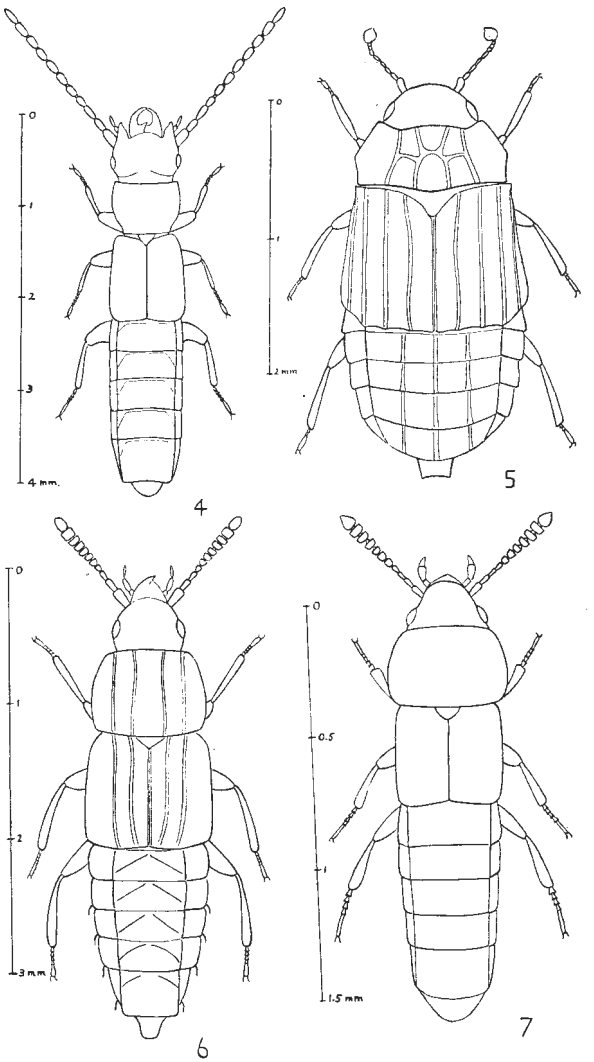
Flat, linear, parallel-sided, black or brownish black with the elytra generally for the most part reddish brown ; pronotum transverse, shining, rather sparingly punctured ; elytra seriately punctured, a complete punctured stria near suture, outside this a row of punctures on basal half, laterally with three somewhat irregular arcuate rows of punctures ; apex more finely and closely punctured throughout. Head in ♂ with ridges in front of eyes produced into blunt variable horns, and mandibles furnished with long sharp horns ; antennae much longer in ♂ than in ♀. 4–5·5 mm. ; (fig. 4). *Under bark ; often common ; S. England, Midlands, Ireland*.....**quadricorne** Kirby & Spence

Subfamily MICROPEPLINAE.

Genus **Micropeplus** Latreille.

Easily recognised by the strongly ridged pronotum, elytra and abdomen and by the 9-segmented antennae whose last segment forms a distinct club ; underside of prothorax with furrows for reception of antennae ; tarsi 3-segmented. The species cannot be confused with those of any other genus. The head in the male is produced into a point.

The beetles are to be found in decaying heaps of vegetation and on mud and soil. They are very sluggish in their movements.

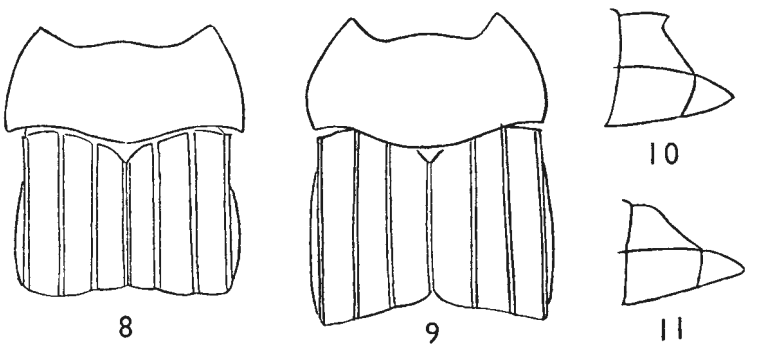


FIGS. 4–7.—4, *Siagonium quadricorne* (Kirby & Spence); 5, *Micropeplus porcatus* (Fabricius); 6, *Pseudopsis sulcata* Newman; 7, *Phloeocharis subtilissima* Mannerheim.

KEY TO SPECIES.

(In the following key the combined sutural ridge is not included in the number of ridges mentioned.)

1 Elytra impunctate between the ridges and with 3 ridges on each. Black or brown with sides of pronotum, base of antennae and legs red. 1·5 mm. *Rare; recorded from wide-spread localities*.....**tesserula** Curtis.
– Elytra punctured between the ridges.....2.
2 Each elytron with 4 ridges (fig. 5); head with central furrow on basal half; elytra wider than pronotum; sides of pronotum angled near middle.....3.
– Each elytron with 3 ridges (figs. 8, 9); head with two or more furrows in basal half; elytra narrower than or scarcely as wide as pronotum; sides of pronotum rounded near middle.....4.



FIGS. 8–11.—Pronotum and elytra of 8, *Micropeplus staphylinoides* (Marsham); 9, *M. fulvus* Erichson. Side view of apex of abdomen of 10, *M. staphylinoides* (Marsham); 11, *M. fulvus* Erichson.

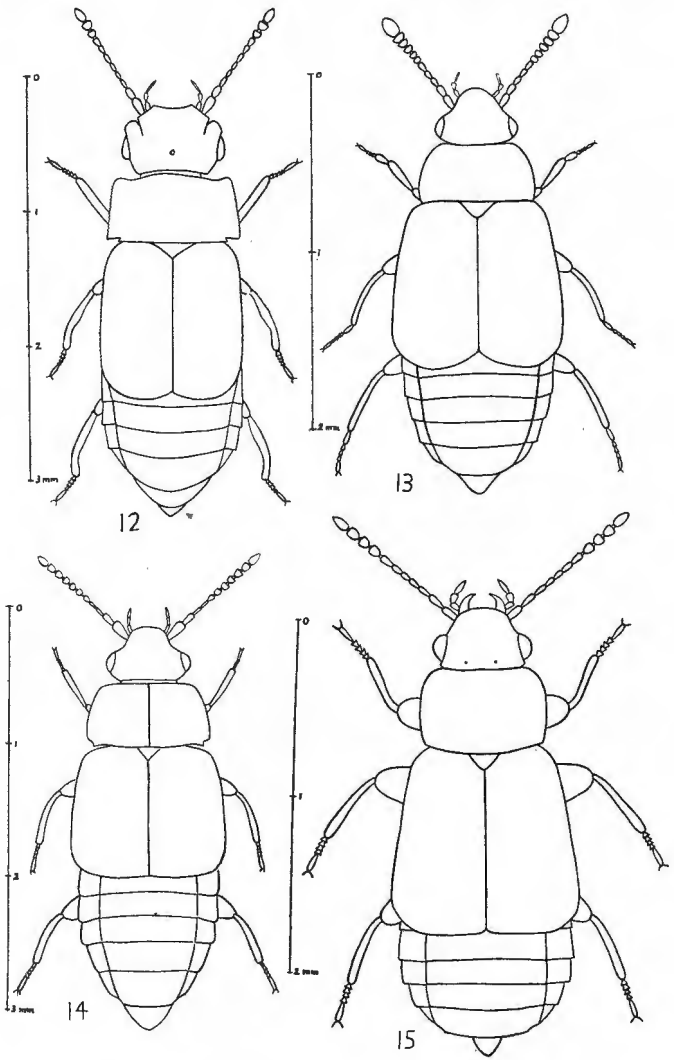
3 Upper surface shining, head and middle of pronotum very strongly rugose; sides of pronotum reddish; smaller, 1·7–2 mm. *Rare; Ireland*....**caelatus** Erichson
– Upper surface dull, head and middle of pronotum very finely rugose; larger, 2–2·5 mm. (fig. 5). *Not common, local but wide-spread*.....**porcatus** (Fabricius)
4 Central ridge of 4th visible tergite prolonged into a tooth-like process almost reaching hind margin of the segment when viewed from the side (fig. 10); elytra much narrower than pronotum, shorter (fig. 8); centre of head at base with 2 indistinct furrows converging anteriorly, bounded by 2 basal round depressions. 2 mm. *Wide-spread, sometimes common*.....**staphylinoides** (Marsham)
– Central ridge of 4th visible tergite ending bluntly about the middle of the segment (fig. 11); elytra not much narrower than pronotum, longer (fig. 9); centre of head at base with 5 not very distinct converging furrows. 2 mm. *Not uncommon; generally distributed*.....**fulvus** Erichson

Subfamily PSEUDOPSINAE.

Genus **Pseudopsis** Newman.

Pronotum and elytra with strong longitudinal ridges. Easily distinguished from *Micropeplus* (the only other ridged genus) by its larger size, 11-segmented antennae without club and by the shape of the pronotum. The abdominal tergites have oblique impressions from middle of base towards apical angles. There is one British species.

Head black, rest of body brown to brownish black, abdomen usually lighter than fore-parts; pronotum with four longitudinal ridges; elytra with two longitudinal ridges on disc of each; antennae and legs ferruginous; abdomen with stout recurved bristle near apical corners of each segment; 2·5–4 mm.; (fig. 6). *In stack refuse; not common, very local; England, Ireland*. . . . **sulcata** Newman



FIGS. 12–15.—12, *Metopsia gallica* (Koch); 13, *Proteinus ovalis* Stephens; 14, *Megarthrus denticollis* (Beck); 15, *Eusphalerum luteum* (Marsham).

Subfamily PHLOEOCHARINAE.

Genus **Phloeocharis** Mannerheim.

The genus may be distinguished from the *Omaliinae* by the absence of ocelli; from most of the *Oxytelinae* it may be distinguished by its 5-segmented tarsi, and from all by the strongly developed posterior trochanters which are about one-third the length of the coxae (in *Oxytelinae* about one-fifth). These characters are not easy to see, but the characters given below will serve to distinguish the single British species.

Brownish black to black, with elytra sometimes reddish brown, antennae and legs ferruginous; whole body covered with long grey pubescence, very convex, somewhat cylindrical and a little fusiform; pronotum without depressions; 1·5–2 mm.; (fig. 7). The small size, narrowness and dense pubescence taken in conjunction with its general appearance will distinguish the species. *Under bark, in moss on trees, etc.; not common, local, but widespread*

subtilissima Mannerheim

Subfamily METOPSIINAE

(= PHLOEOBIINAE auct.).

Genus **Metopsia** Wollaston.

Vertex of head with one ocellus in the middle near base; anterior coxae transverse, sublinear; elytra short; tarsi 5-segmented; head in front of eyes somewhat 5-sided, broad and feebly emarginate on anterior margin; colour ferruginous brown, dull, head often a little darker; pronotum very transverse, with hind angles strongly excised; sides almost straight with feeble wide crenulations; puncturation throughout large, shallow, not close; (fig. 12).

The shape of the head and pronotum will serve to distinguish the species of this genus from all other British Staphylinidae.

KEY TO SPECIES.

1 Antennae longer and more slender. ♂: Triangular emargination of hind margin of sternite 8 with transparent border at sides only, depth of emargination exceeding one-third the length of the sternite; paramere distinctly longer than median lobe, reaching about the width of the median lobe beyond the apex of the lobe, with outer edge (seen in profile) angled; intermediate and hind tibiae (especially the former) strongly bent before the middle, thickened towards apex and before base where they are distinctly narrowed (figs. 16, 17). *In moss, stack refuse, etc.; often common, somewhat local but widely distributed*..... **gallica** (Koch)

– Antennae shorter and more robust. ♂: Emargination of hind margin of sternite 8 smaller, its depth about one-fifth the length of the sternite, with transparent border at its apex as well as at its sides, so that the emargination appears much larger than it really is; paramere only just reaching beyond the apex of the median lobe, with its outer edge strongly rounded; posterior and intermediate tibiae slightly bent (the former scarcely), the outer edges forming even arcs, the thickness more or less uniform throughout. Probably this species does not occur in this country, all references in British literature probably refer to the former species..... [**clypeata** (Müller)]

Subfamily PROTEININAE.

Vertex of head without ocelli; anterior coxae transverse and sublinear; prothoracic stigmata concealed by sides of pronotum; tarsi 5-segmented; small, rather broad insects.

KEY TO GENERA.

1 Pronotum with posterior angles strongly excised (figs. 14, 24–26); insect dull **Megarthrus** Stephens (p. 15)
– Pronotum with sides rounded and posterior angles not excised (fig. 13); insect shining..... **Proteinus** Latreille (p. 14)

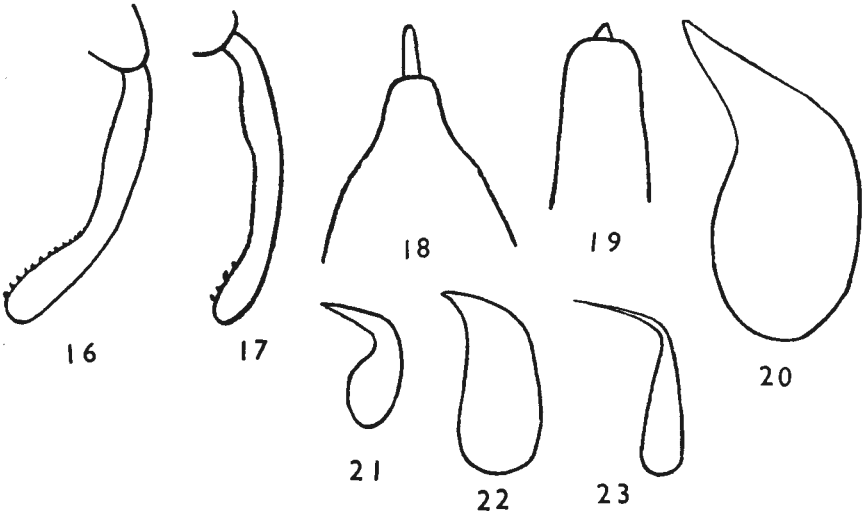
Genus **Proteinus** Latreille.

The species of this genus are easily recognised by their small size, rather oval form, black or brownish-black colour and very shining appearance.

They occur in fungus and rotting vegetation, etc., sometimes in great profusion.

KEY TO SPECIES.

1 Base of pronotum very finely margined; average size larger, 1·5–2 mm.; antennae dark or with basal segment clear red.....2.
– Base of pronotum not margined; average size smaller, 1–1·8 mm.; antennae with at least two basal segments clear red.....4.
2 Head and pronotum strongly shagreened, dull; 1st segment of antennae normally clear red, 8th segment transverse; ♂: aedeagus, fig. 21. *Common* **brachypterus** (Fabricius)
– Head and pronotum more finely shagreened, shining; 1st segment of antennae normally dark or brownish red.....3.



FIGS. 16–23.—16, 17, Middle and hind tibiae of *Metopsia gallica* (Koch). Apex of aedeagus of 18, *Megarthrus sinuatocollis* (Lacordaire); 19, *M. affinis* Miller. Aedeagus of 20, *Proteinus ovalis* Stephens; 21, *P. brachypterus* (Fabricius); 22, *P. macropterus* (Gyllenhal); 23, *P. atomarius* Erichson.

3 8th segment of antennae broader than long; elytra deeply punctured, 2·5 times as long as pronotum (fig. 13). ♂: 1st segment of front tarsi shorter, distinctly shorter than the remaining segments together; hind tibiae with minute teeth on lower half of interior edge; aedeagus, fig. 20. *Common*.....**ovalis** Stephens
– 8th segment of antennae not broader than long; elytra finely punctured, 2–2·25 times as long as pronotum. ♂: 1st segment of front tarsi very long, as long as the remaining segments together; hind tibiae without teeth. *Very local and rare*.....**crenulatus** Pandellé

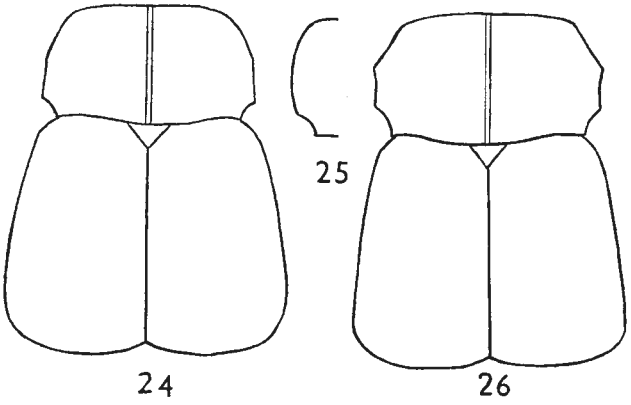
4 Larger, 1·3–1·8 mm.; penultimate segment of antennae about twice as broad as long; head and pronotum strongly shagreened, dull; first two segments of antennae clear red. ♂: 1st segment of posterior tarsi longer than the next three; middle tibiae with minute teeth on apical half; hind tibiae thickened, and indented in middle of inner margin; aedeagus, fig. 22. *Local and not common*.....**macropterus** (Gyllenhal)

– Smaller, 1–1·2 mm.; penultimate segment of antennae about three times as wide as long; head and pronotum feebly shagreened, shining; antennae entirely red. ♂: 1st segment of anterior tarsi not as long as next three, tibiae simple; aedeagus, fig. 23. *Local, not common*.....**atomarius** Erichson

Genus **Megarthrus** Stephens.

The species of this genus may be known by their small size, rough sculpture, strongly transverse pronotum which is channelled down the middle and has strongly excised posterior angles. The latter character will serve to distinguish the genus from all others except *Metopsia* from which it may be distinguished by the smaller size, black or mostly black colour and the normal shape of the head. Length 1·5–2·5 mm.

The beetles are mostly to be found in decaying vegetation.



FIGS. 24–26.—24, Pronotum and elytra of *Megarthrus affinis* Miller; 25, Side of pronotum of *M. depressus* (Paykull); 26, Pronotum and elytra of *M. sinuatocollis* (Lacordaire).

KEY TO SPECIES.

1 Upper surface, except head, rust-red; antennae with at least the 3 basal segments red. *In rotten fungi; very local; southern England*.....**hemipterus** (Illiger)

– Upper surface (except sometimes sides of pronotum) black or brownish-black; antennae (except sometimes basal segment) black.....2.

2 Basal segment of antennae clear red; sides of pronotum nearly even from apex to emargination at hind angle; side margins of pronotum reddish; fig. 14. *Local but widespread; England and Ireland*.....**denticollis** (Beck)

– Antennae entirely dark.....3.

3 Pronotum entirely dark, with side margins rounded from apex to emargination at hind angles (fig. 25). *Common*.....**depressus** (Paykull)

– Pronotum with side margins angled near middle, straight or slightly arcuate in front of angle, arcuate between angle and emargination at hind angles.....4.

4 Sides of pronotum broadly and distinctly red; elytra less strongly punctured, longer in proportion to their breadth and to the pronotum (fig. 24). ♂: Apex of aedeagus produced into a very short blunt point (fig. 19). *Rather common; England* ..... **affinis** Miller

– Sides of pronotum unicolorous with disc, or sometimes obscurely reddish; elytra more strongly punctured, shorter in proportion to their breadth and to the pronotum (fig. 26). ♂: Aedeagus produced into a rather long point (fig. 18). *Rather common* ..... **sinuatocollis** (Lacordaire)

Subfamily OMALIINAE.

This subfamily may be recognised by the pair of ocelli on the head, about level with the hind margin of eyes, near the neck; the tarsi are 5-segmented. In *Philorinum* the ocelli are very difficult to see, but its size and general appearance will distinguish it from other 5-segmented species.

KEY TO GENERA.

1 Last segment of maxillary palpi extremely small, so that the palpi appear 3-segmented; head with long temples ..... 2.

– Last segment of maxillary palpi long; palpi clearly 4-segmented ..... 3.

2 Head as broad as pronotum; pronotum transverse with sides rounded (fig. 67) **Coryphium** Stephens (p. 36)

– Head much narrower than pronotum; pronotum with sides strongly angled and therefore somewhat hexagonal in shape, and with sides crenulate (fig. 69) **Eudectus** Redtenbacher (p. 36)

3 Abdomen strongly punctured; elytra strongly punctured in distinct longitudinal rows; 5 mm. or more; (fig. 61) ..... **Acidota** Stephens (p. 31)

– Abdomen impunctate or very finely punctured ..... 4.

4 Elytra very short, at suture about as long as pronotum and half as long as together broad, distinctly widened behind, with rounded posterior angles; abdomen strongly widened and with sides distinctly rounded; black; (fig. 51) **Micralymma** Westwood (p. 28)

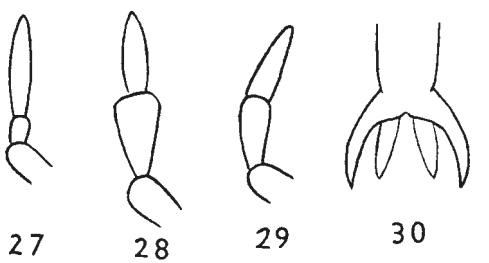
– Elytra longer than pronotum, normal shape ..... 5.

5 Pronotum strongly cordate (figs. 63–66); antennae long and slender with all segments distinctly longer than broad ..... 6.

– Pronotum not cordate; sometimes narrowed at base, but then general form transverse quadrate or with sides rounded ..... 8.

6 Maxillary palpi with last segment about 4 times as long as the penultimate, which is very small (fig. 27); tarsal claws simple; head without deep depression in middle towards base but with longitudinal depression on each side of middle **Lesteva** Latreille (p. 32)

– Maxillary palpi with last segment about the same length as penultimate; head deeply, quadrately depressed in middle; the depression bordered on each side by longitudinal furrow ending at ocellus ..... 7.



FIGS. 27–30.—Apical segments of maxillary palpi of 27, *Lesteva*; 28, *Geodromicus*; 29, *Anthophagus*. 30, Claws of *Anthophagus*.

7 Tarsal claws simple ; elytra black or red-brown ; maxillary palpi with penultimate segment considerably widened at apex where it is distinctly wider than last segment, somewhat pear-shaped (fig. 28) ; habitat ground
Geodromicus Redtenbacher (p. 35)

– Tarsal claws with pad at base (fig. 30) ; elytra testaceous ; maxillary palpi with penultimate segment very little widened at apex, more than twice as long as broad, scarcely wider than last segment (fig. 29). Habitat flowers
Anthophagus Gravenhorst (p. 34)

8 Head between eyes with 2 deep, large, puncture-like depressions far in front of ocelli ; the latter distinct ; elytra very long, each more than twice as long as broad ; pronotum much narrower than elytra ; (fig. 52)
Orochares Kraatz (p. 28)

– Head without puncture-like depressions before ocelli, often with weak depressions or elongate furrows from the ocelli ..... 9.

9 5th segment of posterior tarsi shorter than 1–4 together ..... 10.

– 5th segment of posterior tarsi as long as or longer than 1–4 together ..... 16.

10 Elytra distinctly shorter than together broad ; form rather parallel-sided ; 4 mm. ; (fig. 62) ..... **Arpedium** Erichson (p. 31)

– Elytra distinctly or much longer than broad ..... 11.

11 Form small, narrow, parallel-sided, 3 mm. or less, width not exceeding 1 mm. ..... 12.

– Form broad, not linear or parallel-sided, 3–6 mm., width clearly over 1 mm. ..... 13.

12 Head contracted behind eyes ; antennae long, slender, with penultimate segments not transverse ; colour black or mostly so, with legs and base of antennae yellowish ; posterior tarsi very long, almost as long as tibiae, with 1st segment nearly same length as 5th and as 2nd–4th together ; puncturation of fore-parts rather strong and close and more or less uniform ; (fig. 49).
Philorinum Kraatz (p. 28)

– Head not contracted behind eyes, with rather large temples ; antennae short, rather stout, with penultimate segments transverse ; puncturation of fore-parts fine, dissimilar ; labrum deeply emarginate ; posterior tibiae spinose ; (fig. 50) ..... **Xylodromus** Heer (p. 27)

13 Fore-parts strongly, deeply punctured ..... 14.

– Fore-parts very finely punctured ..... 15.

14 Head behind eyes with large temples, not or slightly contracted ; head without furrows ; tibiae pubescent ; size larger 4–6 mm. ; (fig. 60)
Olophrum Erichson (p. 30)

– Head behind eyes strongly contracted to neck, with distinct oblique furrows from base ; tibiae feebly spinose ; size smaller ; 3 mm. ; (fig. 54).
Anthobium Samouelle (p. 30)

15 Pronotum with large puncture at each side before middle, from which runs a depression to base ; outside this depression the pronotum appears double-bordered ; elytra closely, finely, evenly punctured ; antennae slender, without evident thickening of last 7 segments ..... **Deliphrum** Erichson (p. 29)

– Pronotum without large puncture at sides, but impressed at sides near middle and more strongly so at posterior angles, not double-bordered outside the depressions ; elytra rather irregularly but distinctly striately punctured, the rows of punctures slightly oblique (converging posteriorly) ; antennae with the last 7 segments distinctly but not strongly thickened ; (fig. 53)
Phyllodrepoidea Ganglbauer (p. 28)

16 Tarsi relatively wide, fringed with long hairs ; elytra very long, fully twice length of pronotum, sometimes produced at sutural angle ; (fig. 15)
Eusphalerum Kraatz (p. 18)

– Tarsi thin, simple ; elytra normal ..... 17.

17 Last segment of maxillary palpi thinner than penultimate ; last segment of posterior tarsi much longer than 1–4 together ; form linear, parallel-sided ; (fig. 48)
Phloeonomus Heer (p. 25)

– Last segment of maxillary palpi not thinner than penultimate ; last segment of posterior tarsi scarcely longer than 1–4 together ; form variable ..... 18.

18 Pronotum with two longitudinal depressions on disc, much narrower than elytra ; elytra parallel-sided, with apical margin straight ; (fig. 47)
Omalium Gravenhorst (p. 23)

– Pronotum without depressions, or if with slight depressions then almost as broad as elytra ..... 19.

19 Form very convex ; size small, 1·5 mm. ; pronotum with side margins crenulate ; elytra somewhat rounded at sides ; dark red-brown ; (fig. 31) **Acrulia** Thomson (p. 19)

– Form not very convex (except in *Hapalaraea pygmaea*), pronotum with side margins not crenulate ; elytra parallel-sided ..... 20.

20 Base of third segment of antennae very thin ; elytra closely finely seriately punctured ; pronotum with sides almost completely rounded and posterior angles not marked, very obtuse, almost rounded ; pronotum with fine close punctures which are connected by a network of fine lines ; (fig. 32) **Acrolocha** Thomson (p. 19)

– Base of 3rd segment of antennae not very thin ; elytra either confusedly punctured or, if seriately punctured, then rather strongly so and without scratchy ground-sculpture ; pronotum with puncturation not connected by network of fine lines ; abdomen more parallel-sided ; (fig. 33) ..... **Hapalaraea** Thomson (p. 19)

Genus **Eusphalerum** Kraatz.

This genus may be recognised from all other Omaliinae by the rather broad tarsi which are fringed with long hairs. The elytra are long or very long, sometimes strongly produced at the sutural angle ; the pronotum is transverse, with a strong close circular ground sculpture, and in most species with a very fine puncturation ; the insects are rather flat and several of them are distinctive by reason of their reddish-yellow fore-parts.

The beetles are found on flowers : the three testaceous species often on Umbelliferae, and primulae *on primroses :* minutum *occurs in marshy places :* lapponicum *is rare and only occurs in the Highlands of Scotland :* primulae *and* sorbi *are less widely distributed and less common than* luteum *and* ophthalmicum *: all are local but often abundant where found.*

Key to Species.

1 Tibiae spinose (subg. **Eusphalerum** s. str.). Black, pronotum black-brown becoming reddish-brown at sides ; elytra brown ; head sparingly punctured, wide, striate near eyes ; pronotum rather shining, fairly strongly punctured, with ground sculpture stronger than in the other species ; size larger 3–4 mm.
(Somewhat resembling genus *Hapalaraea* in build, but easily distinguishable by the structure of the tarsi and by the circular ground sculpture of the pronotum) ..... **primulae** (Stephens)

– Tibiae simple (subgenus **Onibathum** Tottenham) ..... 2.

2 Head and pronotum dark, black to black-brown ; elytra dark ; red-brown to black ..... 3.

– Head and pronotum pale, reddish ; elytra testaceous ..... 4.

3 Elytra longer, black to black-brown ; pronotum broader, less contracted in front, with puncturation stronger and closer ; ♀ with sutural angles of elytra prolonged into a strong tooth ..... **minutum** (Fabricius)

– Elytra shorter, paler, red-brown or brownish ; pronotum narrower, more contracted in front, with puncturation finer and sparser ; ♀ with sutural angle of elytra only shortly produced ..... **lapponicum** (Mannerheim)

4 Pronotum closely punctured, the distance between the punctures being for the most part a little less than their diameters ; head generally more or less striate near eyes, especially towards the front ; hind body testaceous in both sexes ; 2–3 mm. ; (fig. 15) ..... **luteum** (Marsham)

– Pronotum more sparingly punctured, the distance between the punctures being for the most part double their diameters ; head not striate near eyes ..... 5.

5 Metasternum black ; size larger, 2–3 mm. ; puncturation of pronotum less sparing ; abdomen black in both sexes ..... **torquatum** (Marsham)

– Metasternum yellow ; size smaller, 1·5–2 mm. ; puncturation of pronotum more sparing ; abdomen black in ♂, reddish-testaceous in ♀ ..... **sorbi** (Gyllenhal)

Genus **Acrulia** Thomson.

Body very convex ; sides of pronotum crenulate ; 5th segment of posterior tarsi distinctly longer than 1–4 together ; sides of elytra somewhat rounded.

1 Reddish-brown, head darker, apex of abdomen yellow ; fore-parts moderately punctured, the puncturation close on pronotum and elytra ; pronotum without depressions on disc ; somewhat explanate at exterior angles ; 1·5–2 mm.; (fig. 31).
The size, colour and convex form taken together will serve to distinguish this species from all other Omaliinae except *Hapalaraea pygmaea*, from which it may be known by its shining, not pubescent upper surface, shorter basal segments of posterior tarsi and the crenulate sides of pronotum. *Very rare ; under bark, etc. ; N. England, Scotland, Wales*..... **inflata** (Gyllenhal)

Genus **Acrolocha** Thomson.

Base of 3rd segment of antennae very thin ; elytra finely, seriately punctured. Black, with the elytra brown to black. 1·5-2 mm. The pronotum in *sulcula* has a peculiar sculpture, consisting of punctures united by fine lines ; it could be described as a mesh with punctures at the points of intersection, or as punctures with lines radiating from them, variable in number, usually three to five from each puncture ; the same sculpture may be seen in *striata*, but is not so evident.

Key to Species.

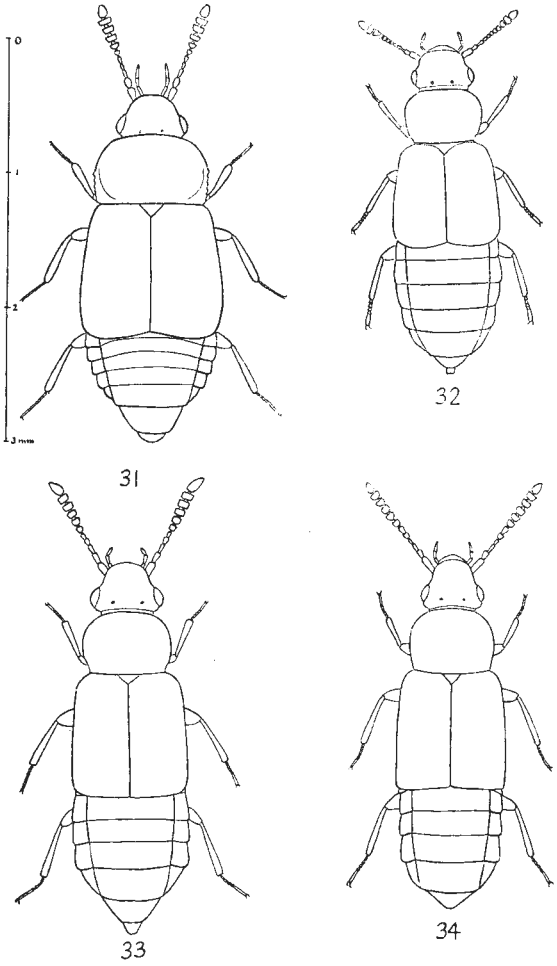
1 Pronotum rather convex with the posterior angles somewhat rectangularly rounded and with feeble trace of depression on disc at the most ; (fig. 32). *In horse dung, vegetable refuse, etc. ; widely distributed and often common*.... **sulcula** (Stephens)
– Pronotum flatter, with posterior angles more rectangular, and with feeble depressions on disc and distinct, but not deep, broad depressions laterally in basal half making the sides appear broadly explanate. *South London.* (At the time of writing this species has not been recorded from Britain, all records referring to the previous species, but Mr. A. A. Allen informs me that he has taken it in his garden) ..... **striata** (Gravenhorst)

Genus **Hapalaraea** Thomson.

The species of this genus are for the most part small, parallel-sided, rather linear insects ; from *Phloeonomus* they may be known by the last segment of the maxillary palpi which is not thinner than the penultimate, and by the last segment of the posterior tarsi which is about as long as the first 4 segments together. They may be distinguished from *Xylodromus* by the last segment of the posterior tarsi being not shorter than segments 1–4 together, and by the front of the head not being bilobed. The impressions on the disc of the pronotum are either absent or obsolete.

Key to Subgenera.

1 Vertex of head at back with a pair of depressions or linear furrows before the ocelli .....2.
– Vertex of head without depressions or furrows before the ocelli ; small species, not exceeding 3 mm.....3.



FIGS. 31–34.—31, *Acrulia inflata* (Gyllenhal) ; 32, *Acrolocha sulcula* (Stephens) ; 33, *Hapalaraea pygmaea* (Gyllenhal) ; 34, *H. ioptera* (Stephens).

2 Head very transverse with strongly outstanding eyes ; head and pronotum with fine circular microsculpture (same type as the abdomen) ; colour reddish-brown, with abdomen a little darkened, antennae very long and slender **Hypopycna** Mulsant & Rey

– Head less transverse with normal eyes ; head and pronotum without ground sculpture or with ground sculpture of irregular short lines ; form more convex and more linear ; antennae shorter ; size larger, over 3 mm. ; colour black, or if red-brown then with seriately punctured elytra..... **Phyllodrepa** Thomson

3 Body linear, parallel-sided, rather flat, elytra longer than together broad **Dropephylla** Mulsant & Rey

– Body long oval, somewhat convex ; elytra as long as broad ; colour entirely red-brown ..... **Hapalaraea** s. str.

Subgenus **Hypopycna** Mulsant & Rey.

Small, 2 mm.; rather flat, with very transverse head and with eyes strongly outstanding; antennae long and slender; head very sparingly punctured; pronotum strongly narrowed behind, transverse, distinctly, but not closely punctured; elytra a little longer than together broad, a little more strongly punctured than pronotum; abdomen with basal segments darkened; the shape of the head will serve to distinguish the species. The head and pronotum have a weak circular ground sculpture which will serve to distinguish the species from all other *Hapalaraea*, as will also its general shape and long slender legs. *Very rare; has only been recorded from Surrey*.....**rufula** (Erichson)

Subgenus **Phyllodrepa** Mulsant & Rey.

KEY TO SPECIES.

1 Puncturation of elytra stronger, tending distinctly to be seriate, stronger than on pronotum, punctures not joined by fine scratches; average size larger, 5 mm.; colour generally light, reddish-brown; antennae with 5 basal segments red; abdomen very finely, but distinctly more punctured than in the following species. *In stack refuse, etc.; very local and rare; England (not in the north)* **salicis** (Gyllenhal)

– Puncturation of elytra finer, not stronger than that of pronotum, punctures joined by a sparse network of irregular fine scratches; colour for the most part black..2.

2 Antennae and palpi in greater part black; fore-parts smooth and shining; pronotum mostly without ground-sculpture, and with slightly sparser puncturation; two first visible tergites of abdomen in fresh specimens with 2 spots of grey pubescence; pronotum entirely black. *In stack refuse, flowers etc.; widely distributed, somewhat local, sometimes common*.....**floralis** (Paykull)

– Antennae and palpi for the greater part reddish; pronotum with puncturation somewhat closer than in *floralis* and with more scratches between the punctures .....3.

3 Body covered with short whitish hairs; first two visible tergites each with two spots of grey pubescence; pronotum black, less transverse, more convex; elytra with puncturation less definite. *Very local and rare*.....**puberula** (Bernhauer)

– Body scantily covered with whitish hairs, visible only at sides; first tergite only with spots of grey pubescence; pronotum with sides reddish-brown, more transverse, flatter, sides straighter behind; elytra with puncturation more definite. *Very rare, only recorded from few places in S. England*.....**nigra** (Gravenhorst)

NOTE.—The three black species, *floralis*, *puberula* and *nigra* very closely resemble one another; the pubescence by which *puberula* is distinguished is not very evident; the patches of pubescence on the basal one or two tergites are often not visible at all, and careful comparison is required for the determination of the species.

Subgenus **Dropephylla** Mulsant & Rey.

KEY TO SPECIES.

1 Elytra strongly punctured in more or less distinct, slightly oblique, longitudinal rows, of which there are 6–7 between the suture and the shoulder.....2.

– Elytra confusedly punctured, or if somewhat seriate, then the punctures extremely fine and the number of rows between the suture and the shoulder approximately 8–10 .....3.

2 Pronotum strongly and deeply punctured, the punctures very similar to those of elytra, for the most part separated by less than their diameter; insect convex; colour very variable, head black, pronotum red (sometimes extensively dark on disc), elytra red with scutellary region and apical regions extensively dark (often the red reduced to a distinct longitudinal patch near shoulders), abdomen dark, often with basal segments and usually the paratergites of the basal segments reddish, antennae reddish-yellow, (fig. 34). *On flowers, etc.; widely distributed, sometimes common, rarer towards the north*.....**ioptera** (Stephens)

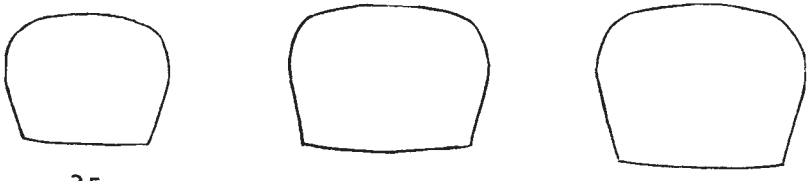
– Pronotum much more finely and shallowly punctured than the elytra, the punctures for the most part more than their diameter apart; insect slightly convex. *Rare; Scottish Highlands*.....**linearis** (Zetterstedt)

3 Pronotum somewhat strongly, not closely shagreened between the punctures and with sides less rounded (fig. 35); prevailing colour black or black-brown; antennae dark apically; elytra very finely punctured, the punctures being somewhat seriate. *Under bark, etc.; widely distributed, often common*
vilis (Erichson)

– Pronotum not shagreened between the punctures; sides of pronotum more strongly rounded in front.....4.

4 Entirely reddish-testaceous (except head), apex of abdomen and sometimes scutellary and apical regions of elytra a little infuscate; puncturation of pronotum and elytra distinctly closer and more regular than in all other species of the subgenus. *Rare; Scottish Highlands*..... **heeri** (Heer)

– Prevailing colour black, brown or reddish-brown (elytra somewhat lighter than rest of the body); pronotum with sides more rounded and puncturation less close and regular.....5.



FIGS. 35–37.—Pronotum of 35, *Hapalaraea vilis* (Erichson); 36, *H. gracilicornis* (Fairmaire & Laboulbéne); 37, *H. grandiloqua* (Luze).

5 Antennae gradually and less thickened apically, apical segments not, or not very much darker than the basal; prevailing colour lighter, pronotum generally reddish-brown, a little shorter, with sides less strongly rounded in front and less straight behind (fig. 36). *Under bark; rare, a few scattered localities*
gracilicornis (Fairmaire & Laboulbéne)

– Antennae more thickened apically, apical segments generally much darker than the basal 5 or 6; prevailing colour darker; sculpture of pronotum and elytra a little stronger; pronotum with sides more strongly rounded in front and a little straighter behind (fig. 37). *Rare; Scotland*..... **grandiloqua** (Luze)[1]

NOTE 1.—Bernhauer (1943, *Mitt. Münch. ent. Ges.* **33** : 172) has described another species of this subgenus under the name *propinqua*. He says the stature is twice as big as *grandiloqua*, from which it may be known by the presence of longitudinal depressions on pronotum and by the deeper puncturation which is much thicker on the pronotum, considerably sparser on the elytra. He gives the length as 2.5 mm. *H. grandiloqua* measures 2.5–3.25 mm. and (at any rate sometimes) has slight depressions on pronotum. It is probable that *propinqua* must be placed as a synonym of *grandiloqua*. Both are described from Scotland.

NOTE 2.—Most of the species of the subgenus are difficult to determine without careful comparison. Of the two commoner species *ioptera* may be known by its colour, convex form, and strong puncturation of pronotum and strong seriate puncturation of elytra, and *vilis* may be known by its small size, dark colour and especially the microsculpture of the pronotum. Of the others *linearis* is only likely to be confused with *ioptera*, *heeri* may be recognised by its reddish-testaceous colour and the very close regular puncturation of the pronotum; it is sometimes confused in collections with *Xylodromus testaceous* (*q.v.*, p. 27).

Subgenus **Hapalaraea** s. str.

Dark red-brown, with head darker or nearly black, sometimes abdominal tergites and apex of elytra darker, antennae and legs red-brown; antennae slender; pronotum convex, with distinct small depressions near posterior angles; puncturation of pronotum rather strong and regular, that of elytra less regular; (fig. 33). In general appearance somewhat like *Acrulia inflata* but without crenulate sides to pronotum and with very short scanty pubescence. *In fungi, under bark, etc.; not common, and very local; less common in the north*
pygmaea (Gyllenhal)

Genus **Omalium** Gravenhorst.

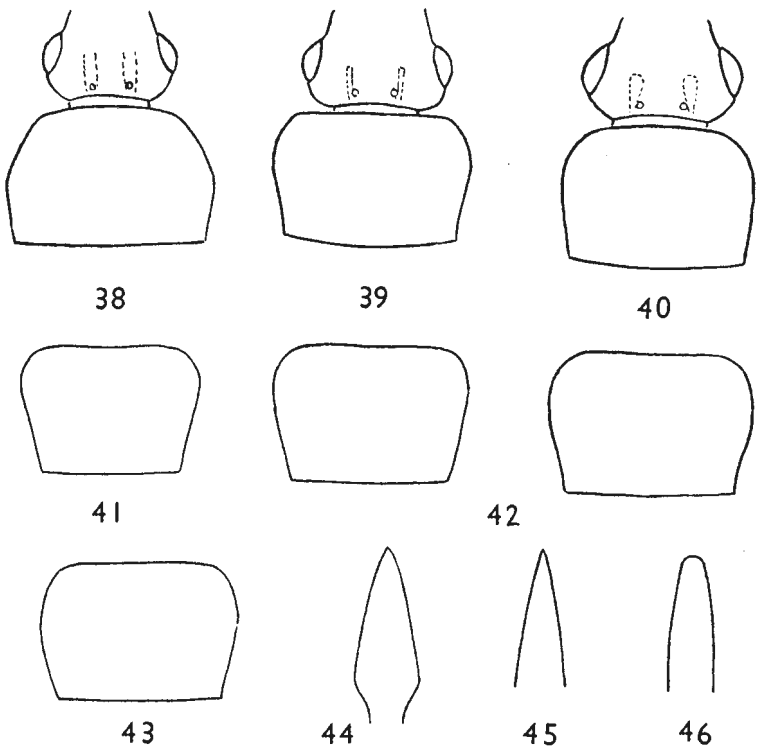
Closely related to the preceding and two following genera, and some authors include them. Pronotum narrower than elytra and with two distinct longitudinal depressions on disc. Head with distinct basal foveae at ocelli.

Key to Species.

1 Head and pronotum smooth and shining, with extremely fine scattered punctures; antennae long with segments 2–5 distinctly longer than broad; pronotum and elytra generally reddish-brown. 4–5 mm. *In seaweed, common*
laeviusculum Gyllenhal
– Head and pronotum with strong or moderate punctures, the puncturation close or sparing, or if puncturation fine then antennae short, with segments entirely red (*rugulipenne*) ..... 2.
2 Pronotum widest about middle, strongly narrowed in front so that the anterior margin is narrower than the posterior (fig. 38), with depressions large and deep; elytra short with broad explanate margins; basal furrows of head elongate (broader than in *caesum*, etc.); puncturation of head and pronotum closer and finer than in *rivulare*; 3–4 mm. *Common* ..... **excavatum** Stephens
– Pronotum less strongly narrowed in front with anterior margin not narrower than posterior, with depressions less marked ..... 3.
3 Basal furrows of head elongate, linear ..... 4.
– Basal furrows of head round or roundish, not linear ..... 6.
4 Head broader, sides behind eyes more sloping (fig. 40); head more shining, less closely punctured; antennae with 5 basal segments red; colour dark; basal furrows of head slightly wider than in *caesum*; aedeagus with median lobe pointed, narrower than in *caesum* (fig. 45); 3–4 mm. *Apparently very rare but widely distributed* ..... **rugatum** Rey (*subruficorne* Bagnall)
– Head narrower, sides behind eyes less sloping (fig. 39) ..... 5.
5 Pronotum red-brown (sometimes darker on disc), elytra brownish with shoulders and lateral and apical margins pale reddish; antennae with segments 1–5 red; aedeagus with median lobe rather blunt (fig. 46); average size smaller, 3–3·5 mm. *Not common but widely distributed* ..... **italicum** Bernhauer
– Pronotum and elytra dark; antennae usually dark, if somewhat lighter then more or less uniformly so, and without clearly distinct five red basal segments; aedeagus with median lobe pointed (fig. 44). *Common* ..... **caesum** Gravenhorst
6 Size larger, 3–5 mm ..... 7.
– Size smaller, less than 3 mm. and head without microsculpture ..... 11.
(*Note.*—Small specimens of *allardii* might be placed in this group, but they may be recognised by the microsculpture of the head.)
7 Colour generally red-brown; antennae short, entirely red-brown; 4–5 mm. *Seaweed, not common* ..... **rugulipenne** Rye
– Colour generally black-brown, with elytra often lighter; antennae longer with apical segments usually dark ..... 8.
8 Neck dull, alutaceous, finely punctured; pronotum less widened and less rounded anteriorly. *Coastal; seaweed, carcasses, etc.* ..... **riparium** Thomson
– Neck shining, strongly punctured ..... 9.

9 Head with more or less transverse, fine but evident microsculpture (especially evident in the impunctate front region); puncturation of head and pronotum fine; elytra with at least the shoulders and abdomen with the paratergites and apex reddish, paler: antennae less thickened apically with 5 basal segments red; size smaller, 3–3·5 mm..... **allardii** Fairmaire & Brisout

– Head without microsculpture, puncturation of head and pronotum stronger; general colour dark, but with elytra sometimes pale at shoulders; antennae more thickened apically.....10.



FIGS. 38–46.—Head and pronotum of 38, *Omalium excavatum* Stephens; 39, *O. caesum* Gravenhorst; 40, *O. rugatum* Mulsant & Rey. Pronotum of 41, *O. laticolle* Kraatz (from Norway); 42, "*O. brevicolle*" (2 specimens from Scotland); 43, *O. oxyacanthae* Gravenhorst. Apex of median lobe of aedeagus of 44, *O. caesum* Gravenhorst; 45, *O. rugatum* Mulsant & Rey; 46, *O. italicum* Bernhauer.

10 Puncturation of head close and strong throughout; antennae shorter, more thickened apically, usually with 6 basal segments and 11th reddish, sometimes entirely reddish; puncturation of elytra closer and more confused than in *rivulare*; 4–5 mm. (This species somewhat resembles *caesum*, from which it can be easily recognised by the basal foveae of head.) *Not common; widely scattered* **septentrionis** Thomson

– Puncturation of head sparser, head almost impunctate in front; antennae longer, less thickened apically, apical half dark; puncturation of elytra less confused. Very variable; 3·5–4·5 mm.; (fig. 47). *Very common*..... **rivulare** (Paykull)

11 Pronotum broadest at anterior third, considerably broader in front than behind (fig. 42); posterior angles of head marked and very obtuse; sides of head between eyes and posterior angles longer. *Not common, northern.* (See note below) **brevicolle** Thomson

– Pronotum broadest about the middle, with sides rather evenly rounded, somewhat straight in basal half (fig. 43); not much broader in front than behind; posterior angles of head rounded, or if marked, somewhat rectangular; the sides from eyes to angles shorter.....12.

12 Size larger, 2–2·5 mm.; frontal furrows of head not meeting the basal foveae. *Sometimes common; local but widely distributed*.....**oxyacanthae** Gravenhorst

– Size smaller, 1·5–2 mm.; frontal furrows of head meeting or almost united with the basal foveae. *Rare; very local but widespread*.....**exiguum** Erichson

NOTE.—I have retained the name *brevicolle* Thomson, but am not convinced that this species occurs in Britain. I do not know the species. British specimens are extremely like *laticolle* Kraatz and I think it possible that some or all should be referred to this species. In this Steel agrees (1953, *Ent. mon. Mag.* **89**: 198). However, in British specimens the pronotum is very variable; in *laticolle*, judging by two Norwegian specimens, the pronotum is widest just behind the anterior angles, and the sides are strongly convergent behind, almost straight (fig. 41). Amongst the few British specimens which I have seen, in some the pronotum is very similar in shape but scarcely so long, in others the sides are rounded from near the anterior angles to the middle and then strongly concave and narrowed; (fig. 42). Possibly there are two species occuring in the country. Until it has been possible to compare the British insects with authentic specimens of both *brevicolle* and *laticolle* and until long series have been studied and the genitalia examined, an element of doubt must remain.

Genus **Phloeonomus** Heer.

Posterior tarsi with 5th segment longer than 1–4 together; head with distinct foveae before the ocelli; parallel-sided, flat.

The beetles are generally found under bark or at sap.

Key to Subgenera.

1 Maxillary palpi with last segment nearly three times as long as penultimate; impressions on pronotum distinct, but weak; elytra much longer than broad, moderately strongly, closely punctured, without ground sculpture; size larger, 3–4 mm..... **Xylostiba** Ganglbauer

– Maxillary palpi with last segment not much longer than the penultimate; elytra with strong ground sculpture and very weak fine puncturation (or none); elytra not or very little longer than broad.....2.

2 Size larger, 2·5–3 mm.; shining, with obsolete depressions on pronotum and with a weak, or traces of, central furrow.....**Phloeostiba** Thomson

– Size smaller, 1·5–2 mm.; very dull; depressions on pronotum distinct, no central furrow..... **Phloeonomus** s. str.

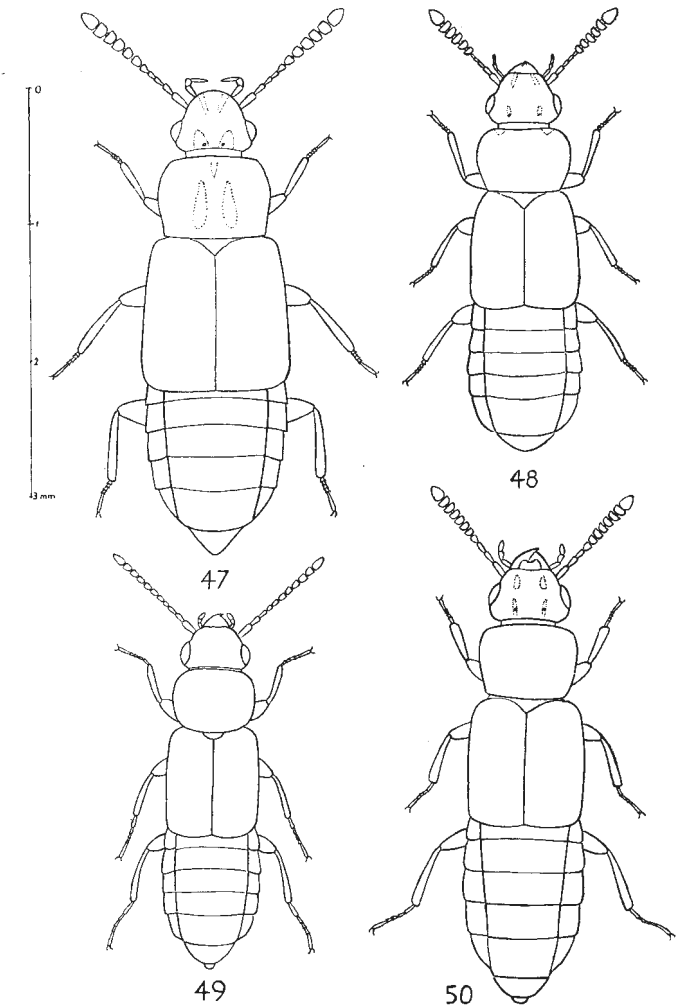
Subgenus **Xylostiba** Ganglbauer.

Black or brownish-black with elytra brown; 5 basal segments of antennae red; legs red; head very shining with a few distinct fine punctures, with large, somewhat circular foveae close to the ocelli and with 2 distinct rather broad longitudinal furrows in front; pronotum finely, irregularly, sparingly punctured, with sides rounded in front and straight and almost parallel in basal half, posterior angles nearly rectangular, flat, with 4 large shallow depressions (2 on disc and 1 at each side from near base to the middle or beyond), with ground sculpture weak, close, largely linear; elytra more than twice as long as pronotum, very closely, rather finely punctured and without ground sculpture; antennae with segments 6–11 distinctly wider than 2–5, and with 7–10 transverse; 3–4 mm. Easily distinguished by the shape of the pronotum, length of elytra and absence of ground sculpture on the latter. *Rare; Scottish Highlands*

monilicornis (Gyllenhal)

Subgenus **Phloeostiba** Thomson.

Distinguished from *Xylostiba* by the short elytra with distinct ground sculpture and weak puncturation ; from *Phloeonomus* s. str. by the absence of (or but faint) depressions on pronotum, at least traces of central furrow, larger size, and more shining surface.



FIGS. 47–50.—47, *Omalium rivulare* (Paykull) ; 48, *Phloeonomus planus* (Paykull) ; 49, *Philorinum sordidum* (Stephens) ; 50, *Xylodromus concinnus* (Marsham).

KEY TO SPECIES.

1 Pronotum with distinct, but small, depressions on the anterior margin opposite the basal depressions of the head; average size larger, 2·25–3 mm., broader; elytra longer than broad, with puncturation closer and stronger; more shining; elytra paler, reddish-brown; (fig. 48). *Local, widely distributed, sometimes common* **planus** (Paykull)

– Pronotum without depressions on anterior margin; average size smaller, 2–2·5 mm., narrower; elytra about as long as, or scarcely longer than broad, with puncturation sparser and weaker; less shining; elytra darker, brown to brownish black. *Not common; Scottish Highlands*.....**lapponicus** (Zetterstedt)

Subgenus **Phloeonomus** s. str.

Distinguished from *Phloeostiba* by the distinct depressions on the disc of pronotum, smaller size and dull surface. The surface is very closely, distinctly alutaceous, and the puncturation is very weak and fine or almost wanting, characters which will readily separate the subgenus from the small species of *Omalium* which also have distinct depressions on pronotum.

KEY TO SPECIES.

1 Puncturation of elytra scarcely visible; antennae yellow with apical segments darkened; surface duller, pronotal depressions smaller and less deep. *Under fir bark; common*.....**pusillus** (Gravenhorst)

– Puncturation of elytra very weak and sparing but distinctly visible under strong magnification; surface less dull; antennae entirely yellow; pronotal depressions deeper and larger. *Under bark of deciduous trees*....**punctipennis** Thomson

NOTE.—Some authors regard these two beetles as belonging to one species, namely *pusillus* (Gravenhorst).

Genus **Xylodromus** Heer.

Parallel-sided; posterior tarsi with 5th segment shorter than 1–4 together; labrum strongly emarginate or bilobed; pronotum with sides rounded, almost straightly narrowed behind middle, rather closely, finely punctured, without or with very feeble traces of depressions; head with weak or no depressions near ocelli; elytra longer than broad, very finely punctured; antennae rather short, stout.

KEY TO SPECIES.

1 Size larger, 2·75–4 mm.; colour black or black brown usually with elytra dark red-brown; legs and antennae reddish brown.....2.

– Size smaller, 2–2·5 mm.; colour testaceous red, with head and sometimes apex of abdomen a little darker, pronotum a little redder, and elytra a little more testaceous.

Easily confused with *Hapalaraea heeri* but distinguished by its larger size, less close puncturation of the pronotum, and by the structure of the posterior tarsi and the labrum. *Very rare and local; southern England*.....**testaceus** (Erichson)

2 Elytra more shining, very finely strigosely punctured. *Common; haystacks and vegetable refuse*.....**concinnus** (Marsham)

(*a*) Elytra red-brown, *forma typica*.

(*b*) Body almost entirely black or black-brown, var. **fuliginosus** Heer.

– Elytra rather dull, more closely and not strigosely punctured. *Somewhat local* **depressus** (Gravenhorst)

(*a*) Elytra red-brown, *forma typica*.

(*b*) Body entirely black, var. **aterrimus** nov.

Genus **Philorinum** Kraatz.

Posterior tarsi very long, almost equal to the tibiae, with first segment very long almost equal to the three following together and to the fifth ; pronotum without impressions : ocelli very small and difficult to see.

Black, elytra brown or brownish-black, legs and base of antennae reddish-yellow ; antennae slender, none of the segments transverse ; puncturation of fore-parts rather strong, close and regular, that of elytra a little closer and less regular ; abdominal segments very finely punctured in apical half, with weak ground sculpture which is distinctly transverse linear at extreme bases ; form parallel-sided ; 2–3 mm. ; (fig. 50). The structure of the antennae and posterior tarsi and the puncturation of the fore-parts will distinguish the species from all other Omaliinae of similar size and general appearance. The size and general appearance will distinguish it from species of other subfamilies if the ocelli cannot be detected. *On flowers of gorse, etc., widely distributed, local, sometimes common*
sordidum (Stephens)

Genus **Micralymma** Westwood.

Elytra very abbreviated, sutural length less than that of pronotum ; external apical angles of elytra strongly rounded ; posterior margins of elytra sloping ; sides of abdomen very rounded ; apterous.

Black, legs and base of antennae brown ; upper surface dull, finely, rather closely punctured, with close somewhat circular ground sculpture ; (fig. 51). The shape of the elytra and abdomen will serve to distinguish the species from all other British Staphylinidae. *In fissures of rock, under seaweed on rocks, etc., often below high water level ; widely distributed round the coast*..... **marinum** (Strøm)

Genus **Orochares** Kraatz.

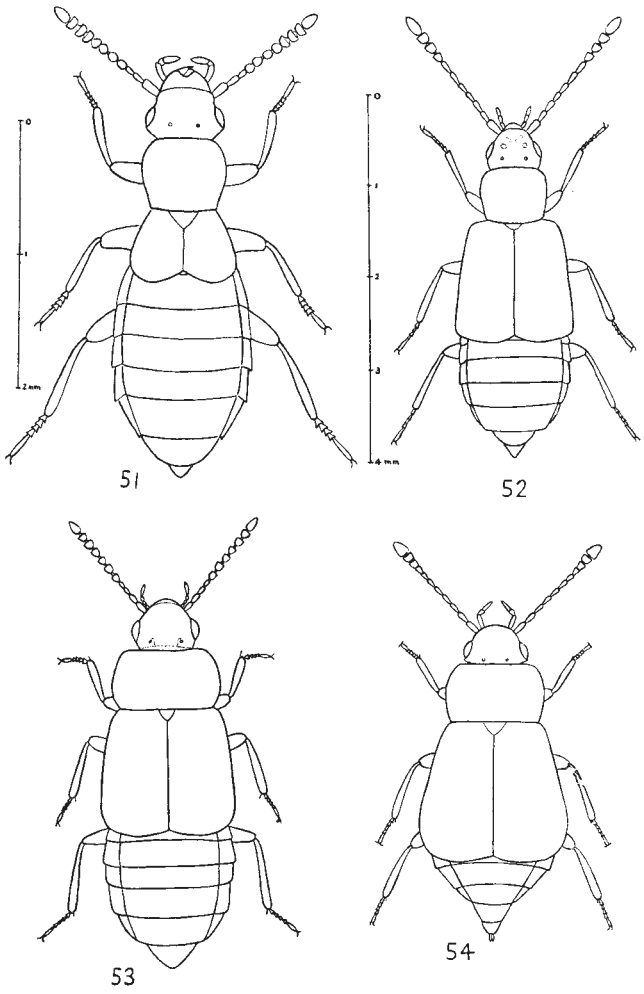
Head with two deep puncture-like depressions some distance in front of the ocelli ; posterior tarsi with 5th segment shorter than 1–4 together.

Head and pronotum almost black, the latter brown at sides ; elytra testaceous brown ; abdomen black ; legs and base of antennae yellow-brown. Head almost smooth ; pronotum with sides strongly rounded, a little straighter towards posterior angles, narrowly distinctly guttered at side margins, more broadly at posterior angles, extremely finely and sparingly punctured ; elytra very long, more than twice the length of the pronotum, very much broader than pronotum, closely punctured, the punctures tending to be seriate in places ; abdomen shining ; 3·5–4 mm. ; (fig. 52). This species is distinct by reason of the long elytra, which are much broader than pronotum, and especially by the depressions on the head. *Very rare ; southern England*.... **angustatus** (Erichson)

Genus **Phyllodrepoidea** Ganglbauer.

Rather flat, broad, not parallel-sided ; elytra quadrate, punctate-striate ; pronotum without large puncture near middle of sides ; posterior tarsi with 5th segment shorter than 1–4 together.

Body red-brown, with head darker, elytra sometimes somewhat infuscate ; apex of antennae nearly black, the 4 basal segments of antennae, palpi and legs clear yellow-red ; antennae rather slender, none of the segments transverse ; basal half of head and pronotum finely, irregularly punctured ; pronotum with depressions at sides in basal half, and often with 3 feeble somewhat circular depressions on disc (two near middle and one near base) ; 4–5.5 mm. ; (fig. 53). The size, general form and quadrate striately punctured elytra will distinguish the species. Easily separated from *Acidota* spp. by the impunctate abdomen, and from *Hapalaraea salicis* by the broader form. *Rare ; Scotland*
crenata (Gravenhorst)



FIGS. 51–54.—51, *Micralymma marinum* (Strøm); 52, *Orochares angustatus* (Erichson); 53, *Phyllodrepoidea crenata* (Gravenhorst); 54, *Anthobium unicolor* (Marsham).

Genus **Deliphrum** Erichson.

Broad, not parallel-sided; pronotum with a large puncture-like depression near the sides at about the middle, with a distinct, not deep, depression from this point to the posterior angles, outside which depression the sides are double-bordered. These characters will at once distinguish the genus.

Head and abdomen black, pronotum black with sides pale reddish-brown ; elytra and legs pale reddish-brown ; antennae black with basal segments brown ; head shining, very finely punctured ; pronotum very transverse, with sides entirely rounded and posterior angles obtusely rounded, puncturation very fine and close ; elytra much longer than broad, closely, finely punctured, less shining ; 3·5–4 mm. *In dung, refuse, etc. ; not common, mainly northern England, Scotland and Ireland*..... **tectum** (Paykull)

Genus **Anthobium** Samouelle.

The beetles of this genus somewhat resemble *Olophrum*, but they are smaller and flatter, with distinct furrows on the head and with temples strongly sticking out behind the eyes, very short ; head narrowed to neck. The tibiae also are spinose, whereas in *Olophrum* they are pubescent. The strong puncturation of the pronotum will distinguish them from *Phyllodrepoidea* and *Deliphrum*.

Both are common and are found in moss, dead leaves, decaying fungi, etc. Immature specimens of the two British species are very hard to distinguish.

Key to Species.

1 Head black or dark brown ; pronotum less transverse, with sides less evenly rounded, with distinct central furrow at least in anterior half ; size smaller and narrower ; elytra less coarsely and more regularly punctured ; 2·5–3 mm. **atrocephalum** (Gyllenhal)

– Head red-brown ; pronotum more transverse, with sides more evenly rounded, without or with very obsolete central furrow ; size larger and broader ; elytra more coarsely and less regularly punctured ; 3–3·5 mm. (fig. 54) **unicolor** (Marsham)

Genus **Olophrum** Erichson.

The species of this genus are easily recognised by their large size, broad shape, and the strongly punctured fore-parts ; the larger size, pubescent tibiae, and head scarcely contracted behind and without foveae will separate them from *Anthobium*.

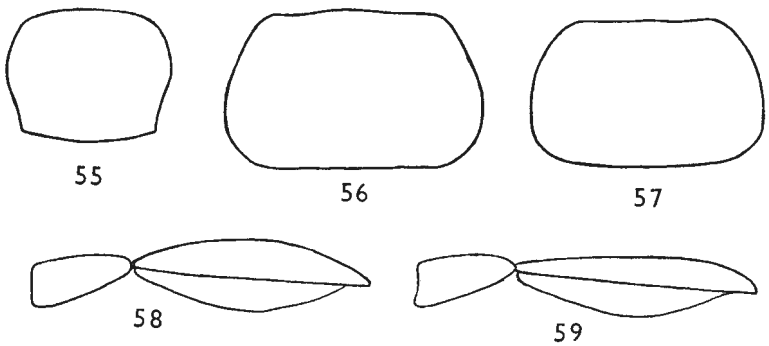
Key to Species.

1 Pronotum with sides emarginate towards posterior angles (fig. 55), closely, uniformly (a little more strongly in middle near base) punctured, much more finely and closely than elytra ; build narrower ; head and pronotum dark, the latter reddish at sides (sometimes both reddish) ; 4–5 mm. *Rare ; Scotland ; a mountain species*..... **consimile** (Gyllenhal)

– Pronotum with sides rounded posteriorly, sometimes feebly, not emarginate ; puncturation stronger and sparser, generally with an ill-defined smooth patch at centre..... 2.

2 Size small, 3–4 mm. ; colour pale, reddish-testaceous ; depressed ; pronotum narrower than base of elytra. (This species closely resembles *Anthobium unicolor* Marsham in size, colour and general appearance ; it is, however, slightly larger, has longer antennae which are entirely pale and with the penultimate segments distinctly longer than broad, the puncturation of the elytra is stronger and sparser, the elytra are shorter, and the tibiae are pubescent ; whereas in *A. unicolor* the antennae are dark towards apex and the penultimate segments are not longer than broad, the elytra are longer and the tibiae are finely spinose). *Rare ; Scotland*..... **assimile** (Paykull)

– Size larger, 4·5–6 mm. ; colour variable ; convex or less depressed ; pronotum at its widest part wider than base of elytra..... 3.



FIGS. 55–59.—Pronotum of 55, *Olophrum consimile* (Gyllenhal); 56, *O. piceum* (Gyllenhal); 57, *O. fuscum* (Gravenhorst). Contour of elytra and pronotum, seen from side, of 58, *O. piceum* (Gyllenhal); 59, *O. fuscum* (Gravenhorst).

3 Pronotum relatively broader (fig. 56), with some of the punctures as large as those of elytra; puncturation of pronotum sparser; body more convex (viewed laterally) (fig. 58); colour very variable, usually lighter than in *fuscum*. *Generally distributed but rarely abundant*.....**piceum** (Gyllenhal)

– Pronotum relatively narrow (figs. 57, 60); puncturation usually closer, not as strong as that of elytra; form more depressed (viewed laterally); (fig. 59) .... 4.

4 Form broader; puncturation of elytra closer and stronger; antennae longer; pronotum (fig. 57) with sides more explanate. *Not common, very local, mainly northern*.....**fuscum** (Gravenhorst)

– Form narrower and more parallel-sided; puncturation of elytra weaker and more diffuse; antennae shorter; pronotum with sides less explanate; (fig. 60). *Sometimes common at Wicken Fen; Wood Walton Fen*.....**nicholsoni** Donisthorpe

Genus **Arpedium** Erichson.

This genus may be distinguished by its general form and in particular by the very short, strongly punctured elytra.

Colour variable, pronotum and elytra usually reddish-brown, head and abdomen varying from almost the same colour to almost black; legs and antennae red, the latter with all the segments longer than broad; pronotum with sides and posterior angles completely rounded; upper surface (except elytra) covered with a close strong circular ground sculpture, giving a dull appearance; head with a few very fine punctures, pronotum irregularly not closely, very finely punctured; elytra closely, strongly punctured; abdomen very finely and very closely punctured; 4 mm.; (fig. 62). *Wet moss, roots of heather; mountainous districts, Wales, N. England, Scotland, Ireland*.....**brachypterum** (Gravenhorst)

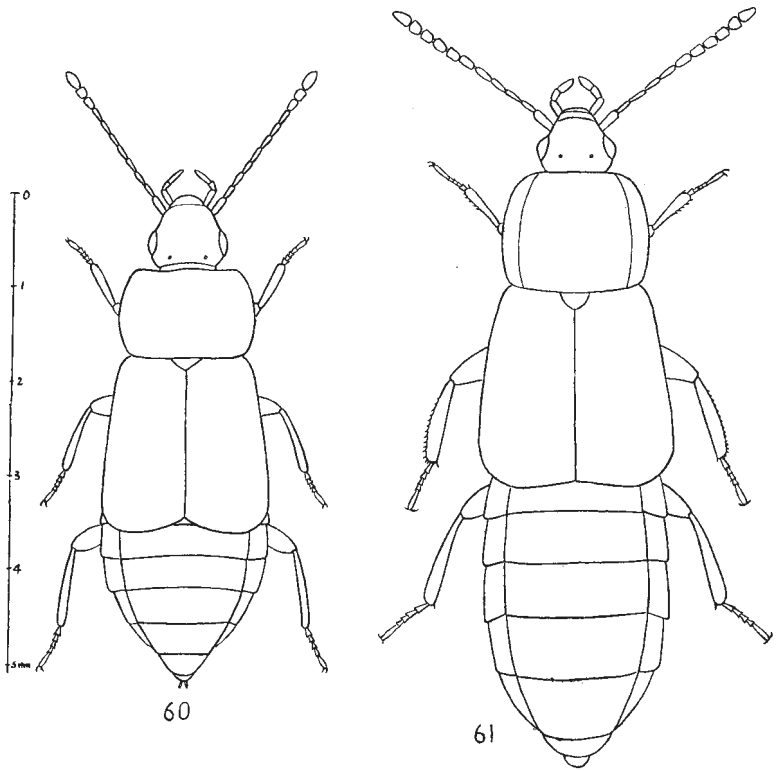
Genus **Acidota** Stephens.

The species of this genus may be easily recognised by the strongly punctured abdomen, in which respect the genus is unique amongst the British Omaliinae. The beetles are rather large, 4–6 mm., parallel-sided, flat; the elytra are strongly seriately punctured.

KEY TO SPECIES.

1 Pronotum relatively to its width much longer, strongly convex, with sides and base deeply explanate ; puncturation of head and pronotum strong and close ; elytra much more deeply and uniformly punctured ; prevailing colour usually pitchy ; sides of pronotum and abdomen lighter, elytra usually lighter, dark reddish-brown; size larger, 4·5–6 mm.; (fig. 61). *In moss; rare; very local but widely distributed*.....**crenata** (Fabricius)

– Pronotum much more transverse, rather flat, with sides feebly explanate ; puncturation of head and pronotum strong but less close ; elytra less strongly, seriately, but not so uniformly punctured ; prevailing colour reddish-testaceous ; 4–5 mm. The var. *ferruginea* Lacordaire is smaller and narrower than the type with shorter elytra whose puncturation is more confused. *In moss, etc. ; very local but widely distributed*.....**cruentata** Mannerheim

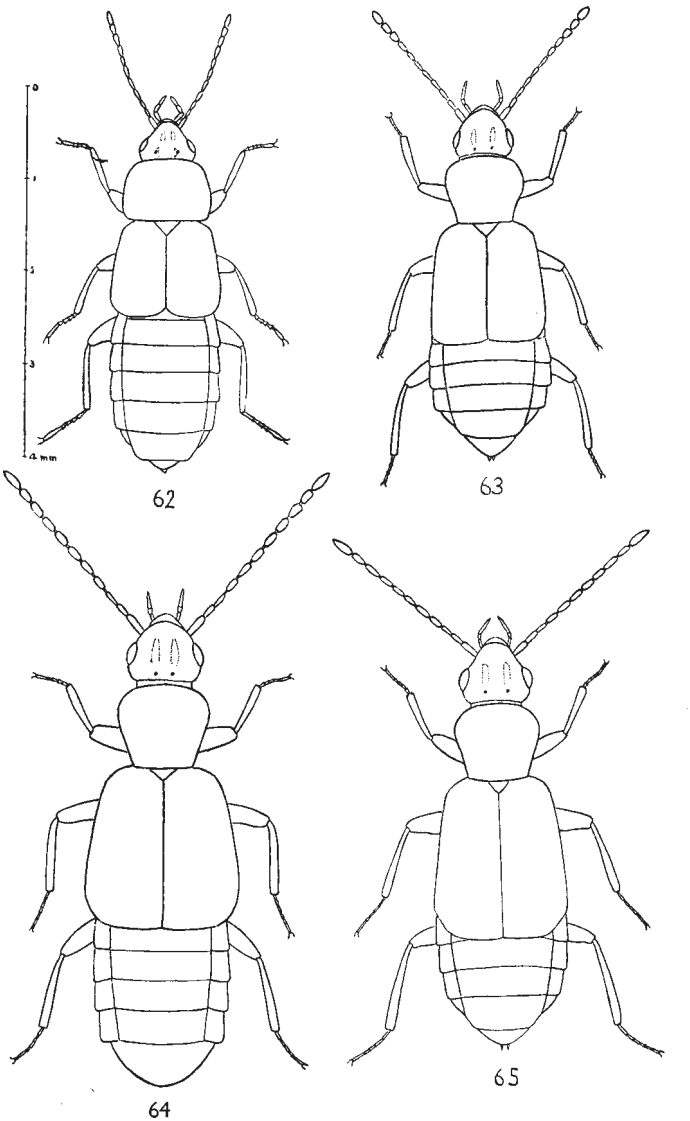


FIGS. 60–61.—60, *Olophrum nicholsoni* Donisthorpe ; 61, *Acidota crenata* (Fabricius).

Genus **Lesteva** Latreille.

This genus, together with *Anthophagus* and *Geodromicus*, may be distinguished from the rest of the British Omaliinae by the very cordate pronotum. The very small penultimate segment of the maxillary palpi, which is about as broad as long and the very elongate last segment, which is about 4 times as long as the penultimate (fig. 27), will readily separate the genus from these two.

The species of this genus fall naturally into three groups which may be distinguished from one another by the strength of the puncturation of the elytra : (1) puncturation very strong, moderately close (*heeri*, *punctata*) ; (2) puncturation rather strong and close (*longo-elytrata*, *monticola*) ; (3) puncturation very close and fine (*pubescens*, *fontinalis*). Since these differences, though obvious, are nevertheless comparative they have not been used primarily in the following key ; but with a correctly named specimen



FIGS. 62–65.—62, *Arpedium brachypterum* (Gravenhorst) ; 63, *Lesteva heeri* (Fauvel) ; 64, *L. monticola* Kiesenwetter ; 65, *L. longo-elytrata* (Goeze).

from each group they will prove the easiest starting point for the determination of the beetles. The colour of the species is very variable.

The beetles are found in moss and in damp places.

KEY TO SPECIES.

1 Sides of pronotum (behind widest part) without margin ; elytra short ; puncturation very strong and moderately close ; size small, 3·5–4 mm. (compared with *heeri*, pronotum longer, narrower at base relatively to greatest width, 3rd segment of antennae longer). *Common*.....**punctata** Erichson

– Sides of pronotum with a distinct linear margin.....2.

2 Elytra longer, more than twice the length of the pronotum ; puncturation rather strong and very close ; (fig. 65). *Common*.....**longo-elytrata** (Goeze)
The form with colour entirely black is var. **maura** Erichson

– Elytra shorter, less than or not more than twice the length of the pronotum....3.

3 Size smaller, 3·5–4 mm. ; colour often pale ; puncturation of elytra very strong and moderately close ; antennae short, penultimate segments only a little longer than broad, scarcely longer than the eye (only to be compared with *punctata* vide supra) ; (fig. 63). *Common*.....**heeri** Fauvel

– Size larger, 4–5 mm. ; colour usually dark ; puncturation of elytra less close and less strong, or very close and fine ; antennae very long, penultimate segments much longer than broad, longer than the eye.....4.

4 Puncturation of elytra rather strong and close (similar to that of *longo-elytrata*, from which it may also be distinguished by the elytra being more widened behind and by the longer antennae) ; (fig. 64). *Very local and rare ; mountainous districts*.....**monticola** Kiesenwetter

– Puncturation of elytra and pronotum very close and fine.....5.

5 Pronotum more sparingly punctured, spaces between the punctures being in great part equal or greater than the diameter of the punctures ; species generally dark, with rather dark antennae. *Very local and rare ; a few scattered records from southern England*.....**fontinalis** Kiesenwetter

– Pronotum more closely punctured, spaces between the punctures being less than the diameter of the punctures, which are often contiguous. *Local, widely distributed*.....**pubescens** Mannerheim

Genus **Anthophagus** Latreille.

The structure of the maxillary palpi whose last segment is about as long as the penultimate (fig. 29) will separate the genus from *Lesteva* ; from *Geodromicus* it may be known by the membranous pad at the base of the claws (fig. 30), by the testaceous elytra, and by the floral habitat of the species.

KEY TO SUBGENERA.

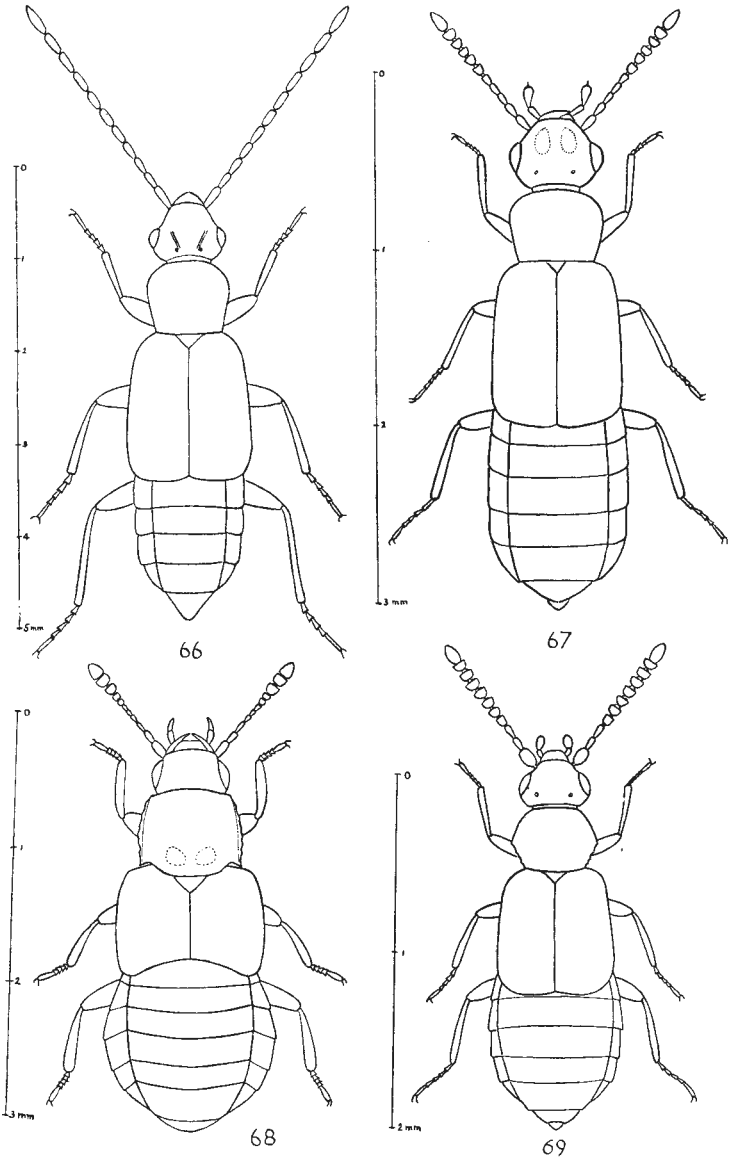
1 Head and pronotum more or less shagreened between the punctures ; prosternum simply shagreened, sometimes obsoletely punctured on the sides
Anthophagus s.str.

– Head and pronotum smooth between the punctures ; prosternum largely and rather closely punctured at least on the sides.....**Phaganthus** Rey

KEY TO SPECIES.

1 Size larger, 4·5–5 mm. ; pronotum red (occasionally dark red or almost black) ; elytra strongly widened towards apex ; head strongly, and near the eyes closely, punctured ; pronotum strongly and closely punctured, only impunctate in centre near base ; sides of pronotum distinctly emarginate towards base ; middle segments of antennae fully twice as long as broad ; (fig. 66). *A northern species*
(Subgen. *Phaganthus*) **caraboides** (Linnaeus)

– Size smaller, 3–4 mm. ; pronotum dark ; elytra hardly widened behind towards apex ; head very feebly and finely punctured ; pronotum finely, shallowly, sparingly punctured, central impunctate area extending practically the whole length ; sides of pronotum not, or scarcely, emarginate towards base ; middle segments of antennae about 1½ times as long as broad. *North and Wales*
(Subgen. *Anthophagus*) **alpinus** (Paykull)



FIGS. 66–69.—66, *Anthophagus caraboides* (Linnaeus); 67, *Coryphium angusticolle* Stephens; 68, *Syntomium aeneum* (Müller); 69, *Eudectus whitei* Sharp.

Genus **Geodromicus** Redtenbacher.

The species of this genus may be easily recognised by their large size, cordate pronotum, simple claws and by the penultimate segment of the maxillary palpi which is widened at apex where it is distinctly wider than

the last segment, which is of nearly the same length, and also by the deep longitudinal furrows on the head (in front of the ocelli) which are somewhat convergent behind with the space between them strongly depressed, shining, more or less impunctate. The black (*nigrita*) or red-brown (*globulicollis*) colour of the elytra, and the simple claws will separate the species from *Anthophagus*. The structure of the maxillary palpi and the central shining depression on the head, and also their more shining less pubescent surface and sparing puncturation will separate them from *Lesteva*.

KEY TO SPECIES.

1 Body entirely black, legs black or black-brown with reddish tarsi, antennae red to brownish-black ; elytra more than twice as long as pronotum ; head very sparingly, rather finely punctured except in front ; pronotum moderately strongly, not closely punctured ; elytra more strongly and more closely punctured ; abdomen very finely punctured ; average size larger, 5–7 mm. *Wet moss ; local, not common ; a northern species*
plagiatus Fabricius var. **nigrita** Müller

Note.—In the type form, which does not occur in Britain, the elytra have a red band on each or common red spot.)

– Body red-brown, abdomen darker ; legs and antennae entirely red ; elytra about twice as long as pronotum, much shorter than in *nigrita* ; average size smaller, 5 mm. ; sculpture very similar to that of *nigrita*. *Moss ; rare ; a mountain species ; N. Wales, Scotland*..... **globulicollis** (Mannerheim)

Genus **Eudectus** Redtenbacher.

As in *Coryphium* Stephens the last segment of the maxillary palpi is extremely small so that the palpi appear 3-segmented ; distinguished from *Coryphium* by the narrower head, which is narrower than the pronotum (about equal to the width of its posterior border) and by the shape of the pronotum which is sharply angled about the middle of the sides so that the pronotum is hexagonal ; also the sides are more crenulate.

KEY TO SPECIES.

1 Colour black, antennae black, legs brown with tibiae largely and femora black; pronotum practically straight behind the angle of the side; elytra shorter, puncturation more distinct; (fig. 69). *Extremely rare ; only a few specimens known from the Scottish Highlands and North England*..... **whitei** Sharp

2 Colour entirely brown ; pronotum distinctly emarginate immediately behind the angle in the middle of the side ; elytra longer, the puncturation much closer and more confused..... **giraudi** Redtenbacher

Note.—I have included *giraudi* in the key, although it probably does not occur in Britain, since *whitei* is placed in catalogues as a variety of this species. The distinctions given above are based on two specimens only in the British Museum, namely the type of *whitei* Sharp and a continental specimen of *giraudi* Redtenbacher.

Genus **Coryphium** Stephens.

Maxillary palpi with penultimate segment strongly dilated and the last segment extremely small, scarcely visible. Distinguished from *Eudectus* by the shape of the pronotum which is scarcely angular but very strongly widened and rounded at sides, and also by the head being almost as broad as the pronotum. These characters will distinguish the genus from all our other Omaliinae.

Colour variable, ranging from almost entirely black to head black, pronotum reddish-brown, elytra a little lighter brown, abdomen brownish; legs reddish; antennae black with three basal segments clear read to dark brown; puncturation of fore-parts moderately fine, close; pronotum with 2 parallel, close, longitudinal furrows in the middle, usually united by an arcuate furrow near base (these furrows sometimes rather obsolete); antennae slender, not thickened apically, with all segements at least as long as broad; 2.75–3 mm.; (fig. 67). *Under bark, in moss, etc., ; rare ; but very widely distributed*

angusticolle Stephens

Subfamily Oxytelinae.

Distinguished from the Omaliinae by the absence of ocelli on the head, by the double lateral edge of the upturned sides of the abdomen and, in most species, by the 3-segmented tarsi. There is much to be said for Reitter's division of the family into a number of tribes, but his arrangement has its defects; I am retaining the arrangement of Junk's Catalogue, not grouping the genera, for uniformity, but do not consider the arrangement satisfactory. The genus *Actocharis* will be included in the *Bolitocharini* (Section *c*).

Key to Genera.

1 Tarsi 5-segmented....2.
– Tarsi 3-segmented....5.
2 Size small, 2·5–3 mm.; fore-parts metallic, strongly punctate; tibiae simple; (fig. 68)....**Syntomium** Curtis (p. 38)
– Size large, 6–9 mm.; not metallic....3.
3 Elytra with punctured striae; body black (elytra sometimes dark brown); tibiae spinose; (fig. 71)....**Elonium** Leach (p. 38)
– At least pronotum and elytra red or reddish-brown; elytra not seriately punctured....4.
4 Elytra very broad, almost quadrate, at widest nearly twice as wide as pronotum; tibiae slender, without spines; antennae very long, 3 mm.; pronotum with large deep depression in middle near base; (fig. 70)....**Deleaster** Erichson (p. 38)
– Elytra only a little wider than pronotum, much longer than broad; anterior and middle tibiae spinose, the latter considerably broadened centrally; antennae relatively short, 2 mm.; pronotum without basal depression; (fig. 72)
Manda Blackwelder (p. 39) (= *Acrognathus* Erichson)
5 At least the anterior tibiae with spines or distinct bristles on outer edge....6.
– Tibiae simple, without spines....10.
6 Front tibiae with two rows of spines on outer edge; body somewhat cylindrical; pronotum without depressions, but with central channel or at least with smooth central line; elytra separated from pronotum by distinct broad pedicel
Bledius Samouelle (p. 48)
– Front tibiae with one row of spines or bristles; body somewhat flat; pronotum fitting elytra normally, without distinct pedicel....7.
7 Pronotum without evident depressions but with well marked central channel (middle coxae separate, scutellum large); (fig. 85)
Platystethus Mannerheim (p. 47)
– Pronotum without central channel, with or without more or less evident depressions....8.
8 Pronotum with 3 longitudinal furrows or depressions, with space between slightly raised and large feeble depressions towards sides (middle coxae separate, scutellum small); (figs. 78, 79)....**Oxytelus** Gravenhorst (p. 44)
– Pronotum otherwise....9.
9 Pronotum very strongly transverse, almost twice as wide as long, with evident strongly punctured depressions on each side of middle, sides rounded; elytra broader than long, evenly punctured; prevailing colour black; length 3·5–5 mm.; (fig. 77)....**Aploderus** Stephens (p. 44)
– Pronotum not transverse, with sides nearly straight and converging posteriorly; elytra strongly punctured in rows, much longer than broad; prevailing colour testaceous; length 2–2·5 mm. (fig. 74)....**Planeustomus** du Val (p. 40)

10 Elytra gaping at sutural angle, exposing the wings ; pronotum more or less quadrate, size 1–2 mm. ; (fig. 88).....**Thinobius** Kiesenwetter (p. 55)
– Elytra contiguous at sutural angle, not exposing wings ; pronotum more or less cordate ; size variable, mostly more than 2 mm.....11.
11 Scutellum distinct ; pronotum with arcuate depression near base ; elytra very much longer than broad ; last segment of maxillary palpi longer than the penultimate ; (fig. 73).....**Ancyrophorus** Kraatz (p. 40)
– Scutellum scarcely visible ; pronotum with more or less evident depressions, without arcuate depression near base (except in *arcuatus*) and with elytra not, or not appreciably, longer than broad ; last segment of maxillary palpi not longer than penultimate, small or very small and scarcely visible ; (fig. 75)
Carpelimus Samouelle (p. 40)

Genus **Syntomium** Curtis.

Tarsi 5-segmented ; tibiae without spines ; fore-parts metallic ; length 2·5–3 mm. The single species may be easily recognised by its size, metallic coloration, shape and strong puncturation.

Fore-parts dark green or bronze, metallic, abdomen black ; elytra about twice as broad as sutural length, very much wider than pronotum which is wider than head ; pronotum with smooth central line, on each side of which near the base is a large shallow depression ; fore-parts strongly punctured, the elytra more strongly and more rugosely ; (fig. 68). *Moss, especially in woods and damp places ; widespread but not usually abundant*.....**aeneum** Müller

Genus **Deleaster** Erichson.

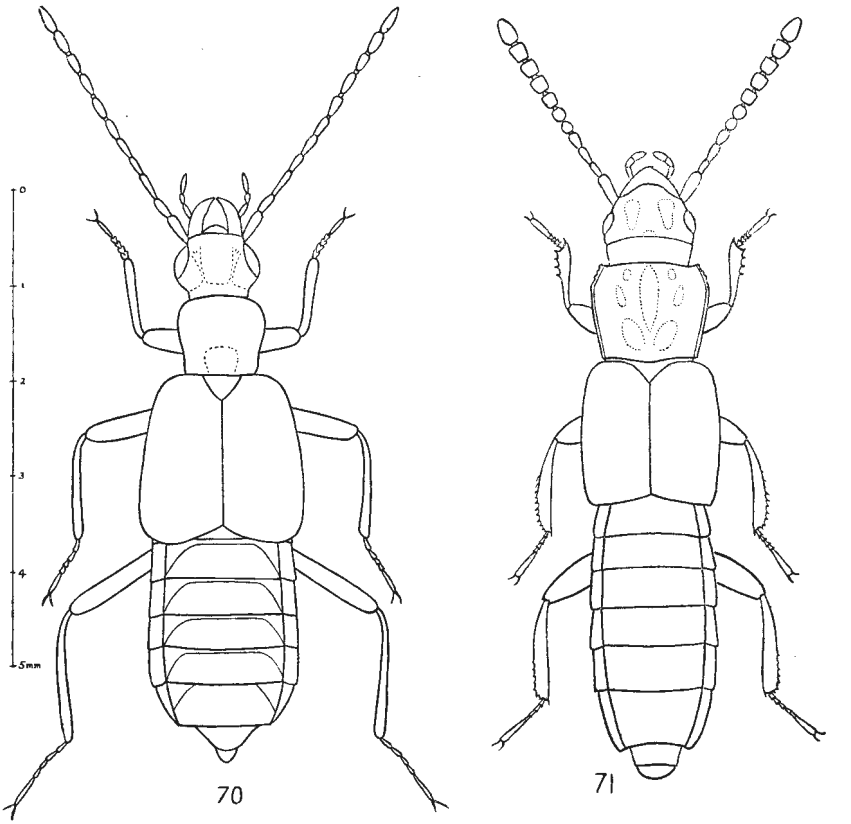
Tarsi 5-segmented ; tibiae slender, without distinct spines ; pronotum with large central depression near base and large depression on each side from base almost to apex. In shape somewhat like *Anthophagus* (Omaliinae) from which it can be easily separated by the pronotal depressions. Larger than any other British Oxytelinae or Omaliinae, and easily distinguished from all British Staphylinidae by its size, shape and colour.

Head black, pronotum and elytra brick red, antennae and legs pale red ; elytra quadrate, nearly twice as broad as pronotum ; pronotum shining and diffusely, rather strongly punctured on disc, dull and shagreened in basal depression and at sides ; elytra very superficially punctured and with very close, irregular, indefinite ground sculpture ; head with distinct linear furrows from front of eyes converging towards neck ; 7–9 mm. ; (fig. 70). *Rotten leaves, under stones, edges of streams, etc. ; rare and local but of wide distribution*....**dichrous** (Gravenhorst)
(*a*) Elytra unicolorous red, *forma typica*.
(*b*) Elytra darkened at posterior angles, var. **leachi** Curtis.

Genus **Elonium** Leach.

Tarsi 5-segmented ; anterior and middle tibiae spinose ; elytra punctate-striate ; black ; length 6–9 mm. The size, colour and striate elytra render the single British species easily distinguishable.

Black, fore-parts shining ; head variously punctured, with neck strongly closely punctured and separated from vertex by a distinct ridge at level of hind angles of eyes ; pronotum with a deep longitudinal furrow in anterior two-thirds, large depressions on either side of middle near base, and less marked depressions near sides ; pronotum finely and sparingly punctured ; elytra finely punctured in rather deep striae ; abdomen finely and sparingly punctured ; (fig. 71). *Vegetable refuse, manure, etc. ; generally distributed, but usually not abundant*
striatulum (Fabricius)



FIGS. 70–71.—70, *Deleaster dichrous* (Gravenhorst); 71, *Elonium striatulum* (Fabricius).

Genus **Manda** Blackwelder.

(= *Acrognathus* Erichson)

Tarsi 5-segmented; anterior and middle tibiae spinose, the latter considerably widened near middle; length 6–8 mm.; mandibles long and forwardly directed (but crossed). The size, narrow parallel-sided build, and its brown colour render the single species easily distinguishable.

Head black, the rest of the body red-brown, pronotum on disc and elytra near apex darkened; legs reddish, paler; antennae with apical half dark. Head with moderate puncturation, neck impunctate; pronotum with puncturation similar to head but closer, and with smooth central line; elytra very closely and finely punctured and finely shagreened, dull, with traces of three smooth longitudinal lines, slightly raised, in anterior half; elytra much longer than broad; abdomen finely and sparingly punctured; (fig. 72). *Wet moss, etc., by stagnant ponds; rare, but sometimes in fair numbers when found; a few localities in S. England*..... **mandibularis** (Gyllenhal)

Genus **Planeustomus** Jacquelin du Val.

These insects in general appearance closely resemble *Manda* but are very much smaller ; they differ from that genus in the somewhat seriate sculpture of the elytra and they are said to have the tarsi 3-segmented. The tarsi, however, are so slender that it is impossible to be sure of the segmentation. The insects are of distinctive form and cannot be confused with other genera. They are very small and slender, 2–2·5 mm.

Key to Species.

1 Head and at least the apex of abdomen black, pronotum and elytra red-brown, the latter often infuscate ; series of punctures on pronotum distinct ; elytra much longer than pronotum, distinctly, seriately punctured; (fig. 74). *Very rare, but occasionally taken in some numbers ; a few scattered southern localities* **palpalis** (Erichson)

– Yellowish, abdomen brown ; pronotal series reduced to scattered punctures ; elytra as long as pronotum, with only traces of striae at base, sparse shallower punctures elsewhere (from Fauvel's description). *Only once found in the New Forest*..... **flavicollis** Fauvel
(*Note.*—I doubt the accuracy of this record.)

Genus **Ancyrophorus** Kraatz.

Black, with elytra brownish and legs yellow to yellowish-brown ; elongate, parallel-sided, flat ; tarsi 3-segmented ; tibiae not spinose ; pronotum with an arcuate depression near the base, interrupted by smooth central line ; elytra much longer than broad. The arcuate depression on the pronotum will serve to distinguish the genus ; *Carpelimus arcuatus* has a similar depression, but in this species the depression is deeper and complete, there is no smooth central line and the elytra are not longer than broad.

The two British species are to be found in wet moss and on the banks of streams and rivers ; they are both extremely local but very widespread ; they appear to be more abundant in the north and in the western half of England.

Key to Species.

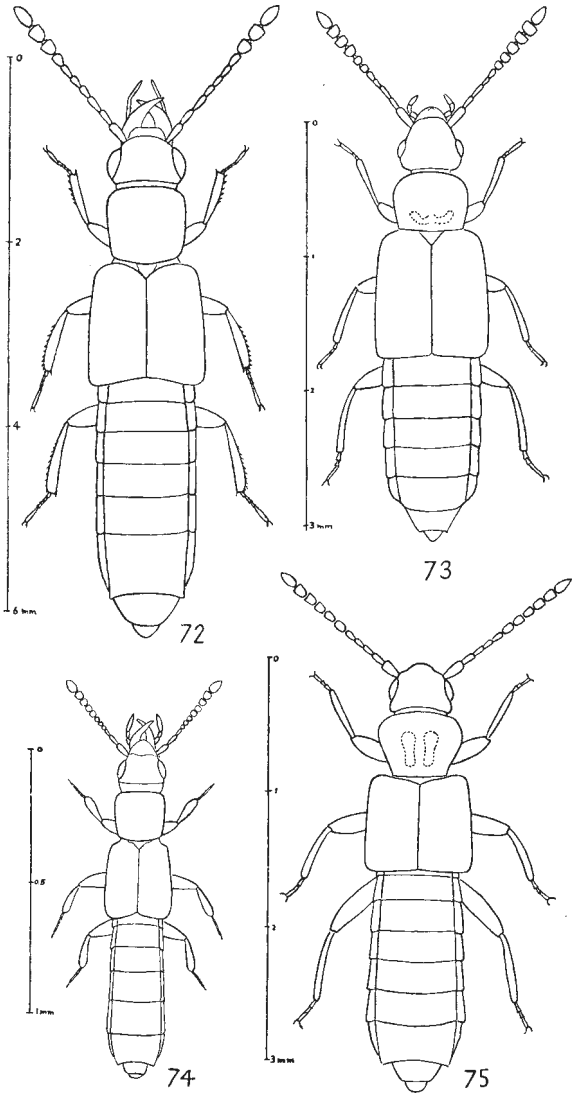
1 Size larger, 4–6 mm. ; antennae much longer than head and pronotum ; with all the segments longer than broad ; elytra shorter relatively to their breadth **aureus** Fauvel

– Size smaller, 2·5–3·5 mm. ; antennae shorter, not much longer than head and pronotum, with penultimate segments slightly transverse ; elytra longer relatively to their breadth ; (fig. 73)..... **omalinus** (Erichson)

Genus **Carpelimus** Samouelle.

Tarsi 3-segmented, tibiae not spinose ; elytra not gaping at apex of sutural angle ; pronotum generally with two weak, longitudinal depressions on disc which are sometimes divided and sometimes obsolete especially in front, sometimes also with an arcuate depression before the base ; size 1·5–4·5 mm.

This genus is badly in need of revision. It has been divided into a number of subgenera, some of them of doubtful value. There is some confusion in literature with regard to these, partly owing to difficulties and errors in nomenclature. The species often very closely resemble one another and require careful comparison for their determination. Possibly when the genitalia have been studied some of the difficulties will be overcome.



FIGS. 72–75.—*Manda mandibularis* (Gyllenhal); 73, *Ancyrophorus omalinus* (Erichson); 74, *Planeustomus palpalis* (Erichson); 75, *Carpelimus bilineatus* Stephens.

KEY TO SUBGENERA.

1 Pronotum with a deep, transverse, arcuate depression before the base in addition to the discal depressions ..... **Amisammus** Des Gozis

– Pronotum without transverse basal depressions. (*Note.*—In some species the discal depressions are divided into two and the basal depression of each pair is somewhat arcuate, but they never join to form a single large arcuate depression) ..... 2.

2 Head, pronotum and elytra dull, extremely finely and closely punctured and with an exceptionally close short pubescence ; size large, circa 4 mm. ; elytra flat, longer than broad ; all the segments of antennae longer than broad ; species maritime **Teropalpus** Solier

– Puncturation variable, surface not abnormally pubescent, usually somewhat shining (dull in *elongatulus*) ..... 3.

3 Head distinctly constricted behind, temples somewhat swollen, pronotal depressions distinct, but often weak ..... **Carpelimus** s.str.

– Head not or scarcely constricted behind, temples very little swollen, pronotum with indistinct depressions ..... **Troginus** Mulsant & Rey

Subgenus **Amisammus** Des Gozis.

Pronotum with a large deep transverse depression before base behind the discal depressions ; tarsi clear yellow-red, sometimes 2 basal segments of antennae and tibiae reddish or reddish-brown ; elytra transverse ; 3·5–4·5 mm. *Sandy banks of rivers, etc. ; local but widespread, extending as far north as S. Scotland*

(In the transverse basal depression of the pronotum the species resembles *Ancyrophorus* and it is of about the same size as *A. omalinus ;* it may be easily recognised by the transverse elytra as well as by the stronger closer puncturation, etc. ; in *Ancyrophorus* the elytra are much longer than broad)

arcuatus Stephens

Subgenus **Carpelimus** s.str.

KEY TO SPECIES.

1 Antennae with segment 5 and sometimes also segments 6 and 7 distinctly longer than broad, segment 3 only a little shorter than 2 (at least more than half its length) ..... 2.

– Antennae with segments 5–7 distinctly transverse, 5 thicker than 6, and with segment 3 much shorter than 2 (about half its length or less) ; mostly smaller species ..... 6.

2 Antennae with at least basal half clear red ; pronotum with depressions obsolete or very superficial ; surface shining ; puncturation minute and very close ; elytra usually brownish ; legs clear red ; 2–3 mm. *Not common ; local but very widely distributed* ..... **fuliginosus** (Gravenhorst)

– Antennae with the 1st segment only (or at most first two) clear red ; pronotum with distinct depressions or foveae ; surface only moderately shining ; puncturation less fine ; elytra normally black ..... 3.

3 Antennae with segments 5–7 distinctly longer than broad, 5 not wider than 6, and segment 3 only a little shorter than 2 ; size larger, 3–4 mm. ; pronotum transverse ; antennae with basal segments light ..... 4.

– Antennae with segment 5 distinctly longer than broad, 6–7 about as long as broad, 5 not appreciably broader than 6 ; pronotum less transverse (fig. 80) ; size smaller, 2·5 mm.

(Distinguished from *corticinus*, which it closely resembles in size, by the above characters and also by the long antennae with basal segment pale like the legs, the broader form and stronger and closer puncturation of elytra and especially of the abdomen ; from *elongatulus*, which it resembles in the pale basal segment of antennae, by the structure of the antennal segments, and by the punctate, more shining pronotum, longer elytra, etc.). *Very rare, a few scattered localities in the southern half of England* ..... **impressus** (Lacordaire)

4 Eyes large, temples shorter, rounded but not bulging (fig. 82) ; first segment of antennae dark (see Steel, 1953, *Ent. mon. Mag.* **89** : 214). *Rare ; Berkshire and Sussex* ..... **obesus** (Kiesenwetter)

– Eyes moderate, temples longer, bulging ; first segment of antennae clear red .... 5.

5 Puncturation of pronotum and elytra stronger, pronotum usually more rugose and duller at sides, more strongly narrowed towards base (fig. 75) ; average size larger, 3·25–4 mm. *Common* ..... **bilineatus** Stephens

– Puncturation of pronotum and elytra finer ; pronotum usually less rugose and less dull at sides, less strongly narrowed towards base (fig. 81) ; average size smaller, 3–3·75 mm. *Common* ..... **rivularis** (Motschulsky)

6 Pronotum not uniformly sculptured, the middle and anterior part being unsculptured and rather smooth, very shining ; elytra rather irregularly punctured and very shining, the space between the punctures at least as wide, but often twice as wide, as the diameter of the punctures or even wider ; antennae pitchy-brown (after Scheerpeltz). *One specimen, Dorset coast*. . **dispersepunctatus** (Scheerpeltz)

– Pronotum uniformly sculptured throughout ; elytra rather regularly and rather closely punctured, the spaces between the punctures at most as wide as but in many places much smaller than the diameter of the punctures . . . . . 7.

7 Sculpture of head and pronotum not punctate, shagreened or roughly sculptured . . 8.

– Head and pronotum punctate, though often very finely and closely . . . . . 10.

8 Size larger, 2–3 mm. ; basal segment at least (often 2nd also) of antennae clear reddish-testaceous ; puncturation of elytra very close and fine ; colour of pronotum (and sometimes rest of body) often somewhat reddish-brown. *Common*.

(The pale basal segment of antennae together with the sculpture of the pronotum which does not resolve itself into punctures under a high magnification will distinguish this species) . . . . . **elongatulus** (Erichson)

– Size smaller, not exceeding 2 mm. ; basal segment of antennae dark . . . . . 9.

9 Puncturation of elytra very strong (almost as strong as that of *bilineatus*, very much stronger than that of *corticinus*, *elongatulus*, etc.), and more sparing ; pronotal depressions often interrupted, thus forming two large rather oblique depressions on disc and two broad transverse, slightly arcuate depressions near base ; legs, except knees and tarsi, black or brownish-black. *Rare ; a few scattered localities in southern half of England* . . . . . **foveolatus** (Sahlberg)

– Puncturation of elytra very fine and close, surface rather dull ; abdomen punctured nearly as strongly as elytra but less closely ; legs pitchy or pitchy-testaceous, with femora darker. *Salt marshes, S. England ; also recorded from Midlands*
halophilus (Kiesenwetter)

10 Antennae entirely yellow ; form very small and linear (less than 2 mm.) ; pronotum feebly transverse ; elytra much longer than broad ; head with temples very large, almost parallel-sided, as long as the eye. *Extremely rare ; South England*.

(Very similar to *gracilis*, from which it may be known by the entirely yellow antennae and by the long, parallel-sided temples) . . . . . **subtilis** (Erichson)

– Antennae with base yellow ; elytra longer than broad ; very small species not exceeding 2 mm. . . . . 11.

– Antennae entirely dark, at most with basal segment pitchy-red ; temples almost as long as eyes, outstanding and rounded, so that the width of head across them is hardly less than that across the eyes ; pronotum very transverse ; elytra not longer than broad ; pronotum closely, finely punctured ; elytra much more strongly, closely punctured ; 1·75–2·75 mm. *Common*
corticinus (Gravenhorst)

11 Eyes larger, temples shorter, equal to one-third the length of the eye ; antennae with segments 9 and 10 not strongly transverse. *Probably common*. (This species and the following have been confused and many of the records for *pusillus* probably refer to *lasti*) . . . . . **lasti** (Scheerpeltz)

– Eyes smaller, temples longer, equal to half the length of the eye or more . . . . . 12.

12 Eyes larger, more convex, width of head across them greater than width across temples ; antennae with segments 4 and 6 less transverse ; pronotum transverse, much broader than long, with base nearly straight. *Probably common*. (See note on last species) . . . . . **pusillus** (Erichson)

(This species is extremely like *lasti*, from which it only differs in its smaller eyes, larger temples, and slightly more transverse penultimate segments of antennae ; if my interpretation of the species is correct, it appears also to be a little narrower, especially the pronotum.)

– Eyes smaller, less convex, width across them equal or less than width across temples ; antennae with segments 4 and 6 distinctly transverse ; pronotum scarcely transverse, with base rounded (sec. Scheerpeltz) (I believe this character of the more rounded base of the pronotum is not satisfactory and that it is often due to the angle at which the pronotum is viewed). *Very rare ; a few widely scattered localities* . . . . . **gracilis** (Mannerheim)

(*Note*.—Sections 11 and 12 are from Scheerpeltz. *See* Scheerpeltz, 1946, *Ent. mon. Mag.* **82** : 306–307.)

Subgenus **Troginus** Mulsant & Rey.

Distinguished by the form of the temples, which slope very gradually backwards to the neck : species less than 2 mm.

KEY TO SPECIES.

1 Upper surface dull, very thickly clothed with grey pubescence, which gives the insect a grey-black appearance ; body narrow, elongate and uniformly broad. *Rare ; in the burrows of* Bledius *spp. ; Cumberland, Norfolk*
schneideri (Ganglbauer)

– Upper surface somewhat shining, sparsely and finely pubescent ; elytra only a very little longer than pronotum, scarcely as long as broad ; tarsi rust-red. *One specimen recorded from Cornwall* ..... **despectus** (Baudi)

Subgenus **Teropalpus** Solier.

Body densely clothed with short pubescence ; antennae with all segments longer than broad ; pronotal depressions indistinct.

Larger than other British species of *Carpelimus*, 4 mm. or more, surface dull owing to the pubescence ; antennae blackish, with segments 2–4 often brownish ; legs dark, brownish-black, with tarsi and knees (very narrowly) clear red ; (fig. 76). The elongate antennal segments combined with the fact that the 1st segment is dark will alone distinguish the species ; (fig. 76). *Maritime ; rare ; south Devon* ..... **unicolor** (Sharp)

Genus **Aploderus** Stephens.

Distinct from *Oxytelus* and *Platystethus* by the surface of the pronotum which lacks the longitudinal depressions of the former and the central furrow of the latter ; instead there are two arcuate (convex inwardly) depressions near the centre on the anterior half of the disc. Distinct from *Carpelimus* by the spinose anterior tibiae.

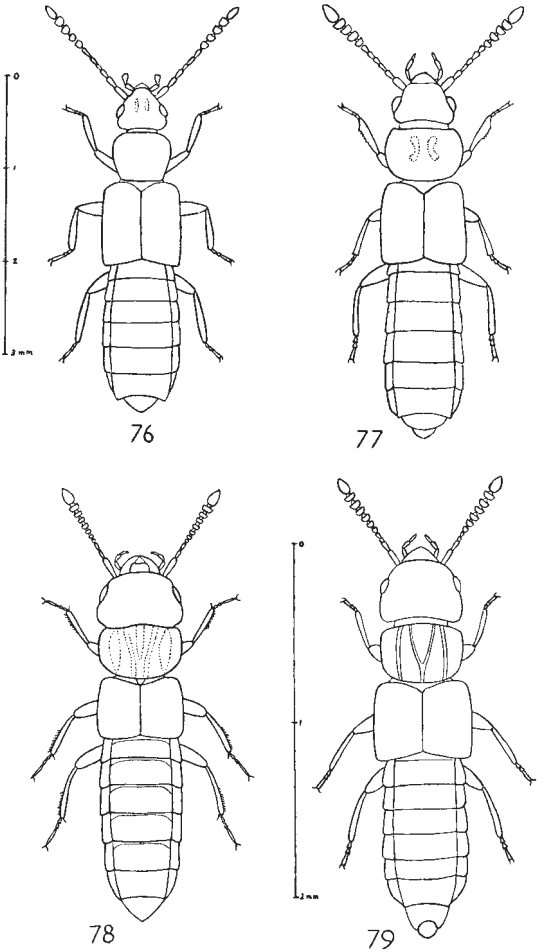
Black, elytra red-brown to dark brown, often dark in sutural region ; antennae black, lighter at least on basal segment ; legs testaceous. Elytra closely and moderately strongly punctured ; pronotum with punctures moderately strong but very irregularly spaced ; anterior tibiae emarginate externally near apex ; (fig. 77). *In dung, vegetable refuse, etc. ; common in the south, rarer in the north* ..... **caelatus** (Gravenhorst)

Genus **Oxytelus** Gravenhorst.

Tarsi 3-segmented ; anterior tibiae with one row of spines ; pronotum with evident longitudinal depressions.

KEY TO SUBGENERA.

1 Sides of pronotum crenulate ..... **Styloxis** Des Gozis
– Sides of pronotum not crenulate ..... 2.
2 1st segment of antennae constricted before apex (fig. 83) ; sides of elytra with impressed line forming raised ridge at edge of upper surface ; elytra yellowish-brown ..... 3.
– 1st segment of antennae simple ; elytra black, pitchy or reddish-brown, not yellowish ..... 4.
3 Last segment of maxillary palpi as long as penultimate ; eyes larger, with larger facets ..... **Oxytelus** s.str.
– Last segment of maxillary palpi shorter than penultimate ; eyes smaller, with smaller facets ..... **Tanycraerus** Thomson



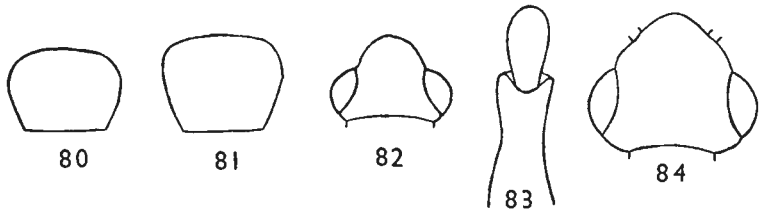
FIGS. 76–79.—76, *Carpelimus unicolor* (Sharp); 77, *Aploderus caelatus* (Gravenhorst); 78, *Oxytelus inustus* Gravenhorst; 79, *O. tetracarinatus* (Block).

4 Head triangular; penultimate segments of antennae longer than broad; sides of elytra with impressed line forming raised ridge at edge of upper surface **Epomotylus** Thomson

– Head not triangular; penultimate segments of antennae transverse; elytra without impressed line ..... **Anotylus** Thomson

Subgenus **Oxytelus** s.str. and Subgenus **Tanycraerus** Thomson.

1st segment of antennae constricted; reflexed sides of elytra with impressed line; elytra yellow-brown; 3·5–4·5 mm.



FIGS. 80–84.—Pronotum of 80, *Carpelimus impressus* (Lacordaire); 81, *C. rivularis* (Motschulsky). 82, Head of *C. obesus* (Kiesenwetter). 83, Basal segments of antenna of *Oxytelus laqueatus* (Marsham). 84, Head of *O. sculptus* Gravenhorst.

KEY TO SPECIES.

1 Eyes larger with large facets; temples short, in the ♀ half as long as the eyes; in the ♂ scarcely quite as long as the eyes; head with one central furrow; front of head dull; last segment of maxillary palpi at least as long as the penultimate. *Rare; a few southern localities*.....(Subgen. *Oxytelus*) **piceus** (Linnaeus)

– Eyes smaller, with small facets; temples in ♀ almost as long as the eyes, in ♂ twice as long; head with three longitudinal furrows (often indistinct); front of head shining; last segment of maxillary palpi shorter than penultimate. *Very common*.....(Subgen. *Tanycraerus*) **laqueatus** (Marsham)

Subgenus **Epomotylus** Thomson.

Head triangular; reflexed sides of elytra with impressed line forming ridge at edge; penultimate segments of antennae longer than broad.

Pitchy-black, often with pronotum and elytra pitchy red or reddish brown. *Common*.....**sculptus** Gravenhorst

Subgenus **Anotylus** Thomson.

First segment of antennae simple; sides of elytra without impressed line.

KEY TO SPECIES.

1 Head, pronotum and elytra shining or rather shining.....2.

– Head, pronotum and elytra dull.....5.

2 Antennae entirely red; elytra usually dark, somtimes reddish-brown; about 3 mm. *Decaying seaweed, shore refuse etc.; maritime; local but widespread* **maritimus** (Thomson)

– Antennae dark.....3.

3 Size smaller, 2–2·5 mm.; elytra usually reddish brown. *Common* **nitidulus** Gravenhorst

– Size larger, 3–5 mm.; colour usually black, elytra sometimes brownish.....4.

4 Head with vertex somewhat depressed, distinctly foveolate in middle at base, shagreened in front, puncturation rather confluent at base and sides, ridges behind bases of antennae dull and sculptured; punctures of pronotum more confluent; elytra more strigose and more closely sculptured; average size larger, 3–5 mm.; ♀ with head much smaller, less quadrate and usually duller in front than in ♂. *Very common*.....**sculpturatus** Gravenhorst

– Head with vertex convex, not depressed, with basal fovea absent or indistinct, front shining, puncturation hardly confluent, ridges shining; puncturation of pronotum less confluent; sculpture of elytra rather stronger and less confluent; average size smaller, 3–4·5 mm.; (fig. 78). *Very common*...**inustus** Gravenhorst

5 Size larger, 3 mm.; puncturation fine but distinct and easily distinguishable from the ground sculpture. *Common, widely distributed*.....**complanatus** Erichson

– Size smaller, 1·5–2 mm.; entirely dull, puncturation more or less absent and indistinguishable from the ground sculpture.....6.

6 Clypeus shining. *Rare, very local*.....**clypeonitens** Pandellé
– Antennal ridges and sometimes a small spot or two on vertex shining. *Extremely rare ; ? maritime*.....**speculifrons** Kraatz
– Head entirely dull.....7.
7 Anterior tibiae simple; (fig. 79). *Very common*.....**tetracarinatus** (Block)
– Anterior tibiae distinctly emarginate near apex on exterior margin.....8.
8 Legs usually rather dark ; ♂ with two small keels near middle of penultimate sternite. *Very rare and local*.....**fairmairei** Pandellé
– Legs light ; ♂ with distinct central plate on penultimate sternite. *Very rare and local*.....**saulcyi** Pandellé

Subgenus **Styloxis** Des Gozis.

Sides of pronotum crenulate.

Key to Species.

1 Elytra black.....2.
– Elytra red.....3.
2 Last segment of posterior tarsi longer than the other two together ; head in front dull and strongly shagreened , sides of pronotum rather evenly rounded (more strongly in front than behind) ; crenulations strong ; puncturation of head and pronotum closer, less deep, more strigose ; 1st segment of antennae dark. *Very common*.....**rugosus** (Fabricius)
– Last segment of posterior tarsi about equal to the other two together ; head in front shining, not shagreened ; sides of pronotum rounded in middle, thence rather straightly narrowed to apex and base ; crenulations weak ; puncturation of head and pronotum sparser, deep, less strigose ; 1st segments (at least) of antennae red. *Rare*.....**fulvipes** Erichson
3 Broader ; vertex of head depressed ; front of head strongly shagreened ; eyes more prominent ; between vertex of head and eyes strigosely punctured ; pronotum more closely and roughly punctured. *Much less common than the type form*.....**rugosus** var. **pulcher** Gravenhorst (= *terrestris* Lacordaire)
– Narrower ; vertex of head not depressed ; front shining ; eyes less prominent ; between vertex of head and eyes not or scarcely strigose ; pronotum less closely and less confluently punctured. *In decaying seed potatoes in the ground ; local ; probably often overlooked*.....**insecatus** Gravenhorst

Genus **Platystethus** Mannerheim.

Easily distinguished from the British species of *Oxytelus* by the pronotum which has a single central channel and lacks the three longitudinal depressions of that genus ; the elytra are dehiscent at the apex.

There is considerable confusion with regard to the three small species. Fowler gives head, pronotum and elytra " very strongly and coarsely punctured " in *capito*, " moderately or sparingly punctured " in *nodifrons* and *nitens*. Reitter gives pronotum and elytra " strongly and thickly punctured " in *capito* and *nodifrons*, " finely and sparingly punctured " in *nitens*. It would seem that it would be necessary to see the type of *nodifrons* to clear up the difficulties finally ; possibly there are two species confused under the name *nitens*.

Key to Subgenera.

1 Head strongly contracted behind (fig. 86).....**Platystethus** s.str.
– Head scarcely contracted behind, almost straight but a little convergent behind the eyes (fig. 85).....**Craetopycrus** Tottenham

Subgenus **Platystethus** s.str.

Black, elytra often brown ; legs very variable in colour. Elytra moderately strongly and rather closely punctured, the punctures, especially apically, sometimes appearing a little strigose ; ground sculpture of elytra longitudinal, irregular, strigose ; 4–5 mm. (sometimes as small as 3 mm.). *In dung ; common* **arenarius** (Fourcroy)

Subgenus **Craetopycrus** Tottenham.

KEY TO SPECIES.

1 Size larger, 3·5–4 mm. Elytra dull or rather dull with very evident alutaceous ground sculpture.....2.
– Size smaller, 2–3·5 mm. Elytra very shining, without ground sculpture.....3.
2 Elytra usually unicolorous black, ground sculpture very strong, punctures sparse, very fine and shallow, scarcely bigger than the ground sculpture. *Muddy places ; rare ; scattered localities in southern England*.....**alutaceus** Thomson
– Elytra usually with a large ill-defined yellow-brown patch on disc near suture ; ground sculpture weaker and finer ; punctures larger and deeper, much larger than the ground sculpture ; (fig. 85). *Muddy banks of ponds and rivers ; very common*.....**cornutus** (Gravenhorst)
3 Average size larger ; puncturation of head, pronotum and elytra large.....4.
– Average size smaller ; puncturation fine and sparse, that of elytra very fine and sparse ; head with distinct longitudinal furrows near eyes. *Wet places and under bark ; very local, southern half of England*.....**nitens** (Sahlberg)
4 Puncturation of sides of pronotum confluent ; body with scanty whitish hairs ; antennae proportionately longer and with penultimate segments less transverse ; puncturation of elytra stronger. *Not common ; very local, southern half of England*.....**capito** Heer
– Puncturation of sides of pronotum close but not confluent ; body smooth ; antennae proportionately shorter with penultimate segments a little more transverse ; puncturation of elytra weaker. *Not common ; very local, southern half of England* **nodifrons** (Sahlberg)

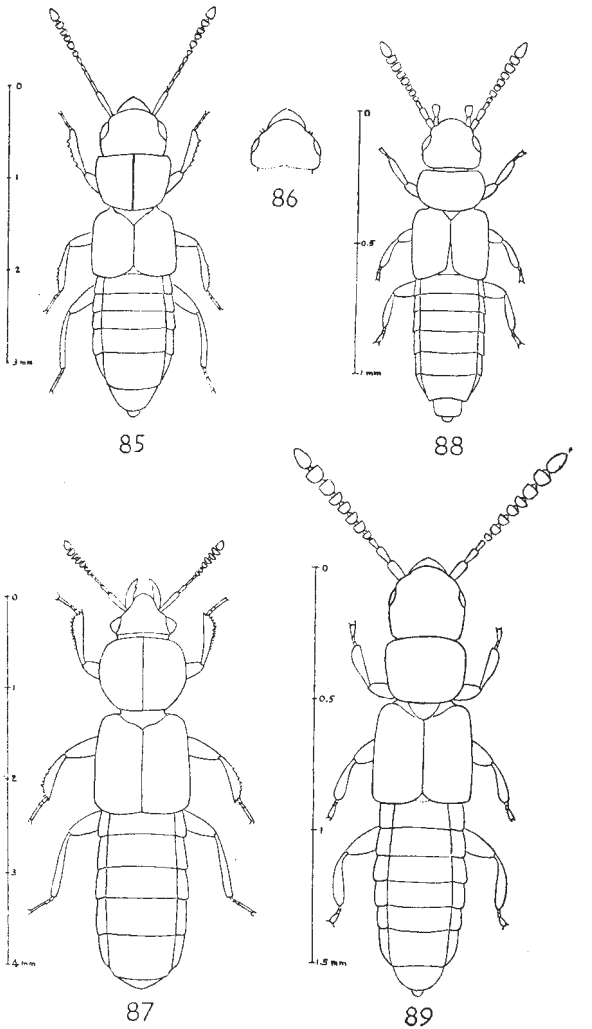
Genus **Bledius** Samouelle.

Tarsi 3-segmented ; anterior and middle tibiae spinose, the anterior with two rows of spines ; elytra separated from the pronotum by a short pedicel or neck ; pronotum with an impressed or smooth line down the middle ; a few species with the pronotum produced in front into a long horn and/or with horns or prominences on the head. Some of the species are very difficult to determine and the genus is much in need of revision, especially in the *pallipes*-group of species.

The beetles are fossorial in habit and, as a rule, are to be found by digging ; some frequent sandy banks of rivers ; others occur in sandy or clayey places round the coast and in salt marshes. Their presence may be detected by the little heaps of castings which they throw up, somewhat resembling those made by the sandhopper. Most of them are common when found, but are localised by their habitats, often only occurring in a restricted portion of an apparently suitable habitat.

KEY TO SUBGENERA.

1 Front of head rounded and with the margin raised in the form of a fine gutter ; posterior tibiae fringed with very long hairs and with four spines on outer edge near apex ; ♂ with pronotum produced in front into a long horn and with two long upwardly directed horns on the head near the eyes (fig. 90) ; ♀ with two elevated laminae on head.....**Euceratobledius** Znojko
– Front of head not rounded and front margin not raised in form of gutter (except in *Elbidus*) ; posterior tibiae not as above.....2.



FIGS. 85–89.—85, *Platystethus cornutus* (Gravenhorst); 86, Head of *P. arenarius* (Fourcroy); 87, *Bledius opacus* (Block); 88, *Thinobius brevipennis* Kiesenwetter; 89, *T. newberyi* Scheerpeltz.

2 Head in both sexes without horns or raised prominences; pronotum not produced into a horn; size smaller, 3–4·5 mm. ..... 4.

– Head in both sexes with distinctly raised prominences, either large blunt tubercles, lamina or laminate horns. Size larger, 5–8 mm. (except in *unicolor*, which is about 3·5 mm.) ..... 3.

3 Pronotum in ♂ produced in front into a long horn (figs. 91–93); head in both sexes with distinct blunt prominences near eyes; anterior angles of pronotum not very prominent ..... **Bledius** s.str.

– Pronotum in ♂ not produced into a horn; head in ♂ with two laminate prominences (fig. 94); anterior angles of pronotum prominent

Elbidus Mulsant & Rey

4 Mandibles slender, directed forwards and not crossed in repose or only crossed at tip.....5.
– Mandibles less slender, crossed in repose ; labrum entire..**Hesperophilus** Stephens
5 Labrum strongly bilobed ; antennae gradually thickened, without distinct club; (colour black, size 4 mm.).....**Astycops** Thomson
– Labrum entire ; antennae with rather distinct 3-segmented club; (elytra almost entirely pale, or usually with at least apical margins pale testaceous or reddish, size 3 mm.).....**Cotysops** Tottenham

Subgenus **Euceratobledius** Znojko.

The single British species of this subgenus may be distinguished at once by the pronotum being prolonged into a horn in front with tuft of hairs at apex and the head also having two rather long upwardly directed horns in the ♂ (fig. 90). Both sexes may be distinguished readily from the larger species of *Bledius* s.str., which they somewhat resemble, and from *Elbidus*, by the very prominent sharp anterior angles of the pronotum and by the four large spines towards the apex of the external edge of the posterior tibiae ; 6–8 mm.

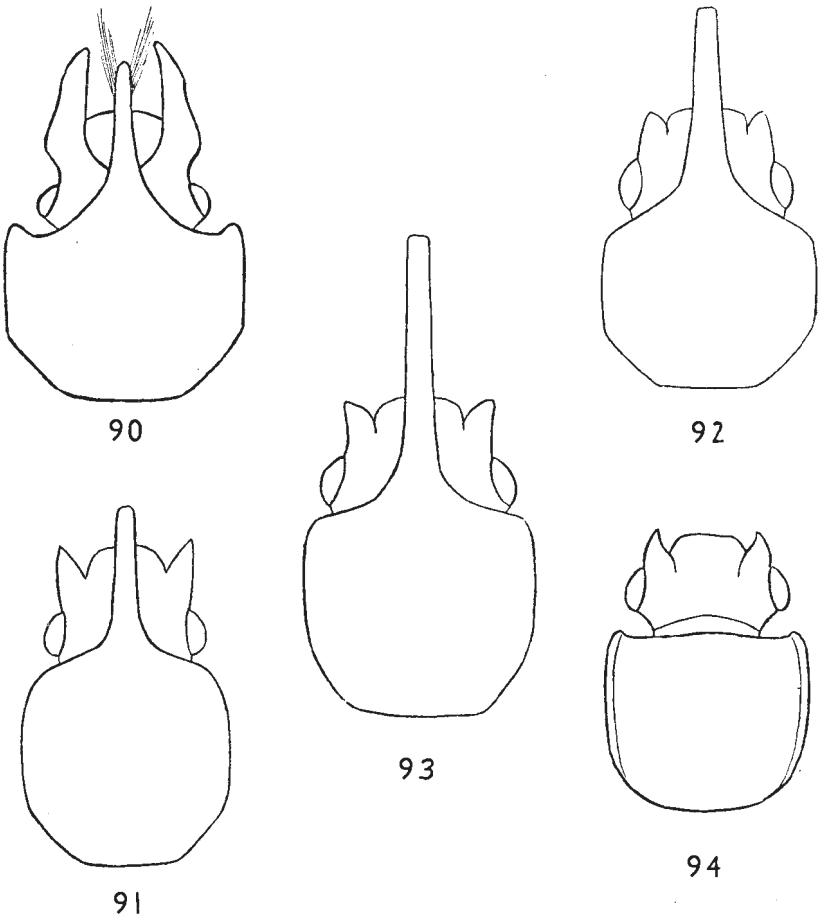
1 Black or black-brown, mouth parts, antennae and legs light..**furcatus** (Olivier)
– Elytra red or reddish, with scutellary region dark.....var. **skrimshirii** Curtis
Only recorded from a few places on the coasts of Norfolk, Suffolk and North Wales and the east coast of Ireland. The type form is extremely rare.

Subgenus **Bledius** s.str.

Distinguished from *Euceratobledius* in the ♂ by the absence of horns on the head and in both sexes by having only one spine at apex of posterior tibiae ; both sexes have large raised prominences or tubercles on the head at each side near the base of the antennae, which prominences are not laminate as in *Elbidus* ; the anterior angles of the pronotum are blunter than in these two subgenera.

Key to Species.

1 Size small, 3–4 mm. ; elytra usually distinctly longer than together broad, black or dark reddish brown ; head (with eyes) fully as broad as pronotum. *Salt marshes, estuaries ; local ; south and east coasts and Manchester district.*
Note.—The horn of the pronotum in the ♂ and the prominences on the head in the ♀ will distinguish the species at once from other similarly coloured species of the genus of the same size.....**unicornis** (Germar)
– Size larger, 6–8 mm. ; elytra not longer than together broad, red, with the scutellary region black or blackish (the black colour sometimes extending along the base and to the apex of the suture) ; head (with eyes) narrower than pronotum.....2.
2 Pronotum less closely and less regularly punctured, with impunctate areas on disc as well as near central line ; horn of pronotum longer, extending beyond front of head and often beyond mandibles, longer than half the anterior margin of pronotum ; sides of pronotum towards base less rounded and more abruptly contracted .....3.
– Pronotum more closely and more regularly punctured, without impunctate areas except along each side of central line ; horn of pronotum shorter, generally extending not beyond front of head, or at any rate not to apex of mandibles, about as long as half the anterior margin of pronotum ; sides of pronotum towards base more rounded and less abruptly contracted (fig. 91). *Salt marshes round the coast (not Scotland) ; very local*.....**tricornis** (Herbst)



FIGS. 90–94.—Head and pronotum of 90, *Bledius furcatus* (Olivier); 91, *B. tricornis* (Herbst); 92, *B. germanicus* Wagner; 93, *B. spectabilis* Kraatz; 94, *B. bicornis* (Germar).

3 Dark scutellary patch more extensive, extending along the base to the shoulders, and along the suture almost to apex; 2nd segment of antennae darkened, at least in part; ♂ with the anterior margin of pronotum sloping backward from the horn; anterior angles of pronotum less prominent (fig. 92); median lobe of aedeagus almost parallel-sided, less rounded, almost truncate at apex
germanicus Wagner (= *limicola* Tottenham)

– Dark scutellary patch less extensive, not or only obscurely extended along the base, and extended along suture to about the middle; 2nd segment of antennae not darkened; ♂ with the anterior margin of pronotum almost at right angles to the horn; anterior angles more prominent (fig. 93); aedeagus with the median lobe with sides rather strongly narrowed in a curve towards the apex which is much rounded..... **spectabilis** Kraatz

Since the above two species have only recently been recognised as distinct in this country, it is impossible to give the distribution of each. The records are from a number of places round the coast, especially the south, as far north as Solway and Forth. Both occur on the south and south-east coasts; probably spectabilis *is found in the more sandy localities and* germanicus *in clay; possibly both in salt marshes.*

Subgenus **Elbidus** Mulsant & Rey.

Distinguished from the two preceding subgenera by the absence of a horn on the pronotum in ♂ ; the ♀ may be known from *Euceratobledius* by the less prominent angles of the pronotum, and from *Bledius* s.str. by the prominences on the head being somewhat laminate and not blunt tubercles.

Key to Species.

1 Elytra lighter, pale reddish, suture sometimes darkened, with puncturation weak and sparse ; horns in ♂ when viewed from the side more laminate, i.e., more extensive longitudinally at base. *Norfolk and Lincoln Coasts*.... **diota** Schiødte

– Elytra darker, brownish-red, sometimes obscurely darker on suture and basal region, with puncturation deeper, much closer and more evident ; horns in ♂, when viewed sideways, less laminate, more like compressed horns. *Very local ; south and east coasts, Manchester district* ..... **bicoornis** (Germar)

Subgenus **Hesperophilus** Stephens.

Key to Species.

1 Pronotum with distinct central furrow.....4.

– Pronotum without central furrow, but with more or less smooth, flat or raised, central line.....2.

2 Pronotum with posterior angles rectangular, pronounced (fig. 95), with puncturation very weak and shallow and with surface dull and with strong ground sculpture ; elytra red, obscurely darkened round scutellum ; antennae and legs yellow, the former much lighter on basal segments ; 3·5 mm. *Sandy banks of streams ; rare ; N. England, Ireland*.....**erraticus** Erichson

– Pronotum with posterior angles blunt or rounded, with puncturation strong and surface shining, with very weak sparse ground sculpture.....3.

3 Elytra considerably longer than together broad ; puncturation of pronotum and elytra a little weaker, that of elytra close ; elytra rather dull, testaceous-brown, generally extensively darkened in sutural region ; pronotum with sides feebly rounded in front and roundly, not very obliquely contracted to basal angles (fig. 96) ; head without impression at base ; 7th sternite of ♂ produced at sides into long slightly inwardly curved spines ; 3·5 mm. The var. *nigricans* Erichson has the elytra entirely or almost entirely black. *Sandy, clayey cliffs ; Bridlington (common)*.....**dissimilis** Erichson

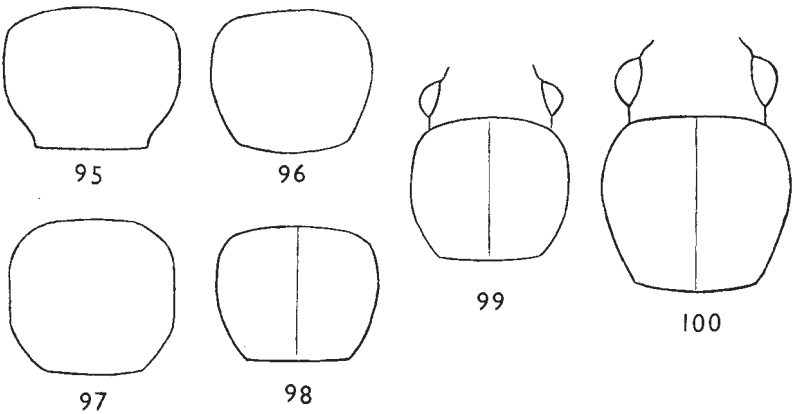
– Elytra not or not appreciably longer than together broad ; puncturation of pronotum and elytra a little stronger, that of the elytra not close ; elytra red, feebly darkened round scutellum ; pronotum with sides almost straight in front, nearly linearly, very obliquely contracted behind (fig. 97) ; head with a puncture-like depression in middle close to neck ; 7th sternite of ♂ with hind angles pointed but not produced into spines ; 3·5–4 mm. *Sandy places on coast ; a few localities in Suffolk, Kent, Sussex*..... **occidentalis** Bondroit

4 Posterior angles of pronotum (viewed from above) quite blunt or rounded, the sides in front of them not at all emarginate ; (figs. 98–100) ..... 5.

– Posterior angles of pronotum (viewed from above) well marked, projecting in minute tooth ; with sides in front of them distinctly emarginate ; (figs. 101–103) 9.

5 Pronotum strongly and more closely punctured, with surface more shining ; elytra more strongly punctured.....6.

– Pronotum weakly and more sparingly punctured, surface dull ; elytra more weakly or finely punctured.....7.



FIGS. 95–100.—Pronotum of 95, *Bledius erraticus* Erichson ; 96, *B. dissimilis* Erichson ; 97, *B. occidentalis* Bondroit ; 98, *B. gallicus* (Gravenhorst). Head and pronotum of 99, *B. femoralis* (Gyllenhal) ; 100, *B. praetermissus* Williams. (Not all to same scale.)

6 Head broader in proportion to pronotum ; pronotum less transverse (fig. 99) with puncturation a little more feeble ; elytra a little more sparingly punctured ; antennae entirely dark ; colour of elytra usually uniform, castaneous, rarely almost black ; narrower and smaller, 3·75–5 mm. ; ♂ sternite 8 with almost the whole width of apical margin scarcely emarginate, the emargination bordered with a strong spine on each side. *Sandy places ; very local but sometimes common ; southern England*..... **femoralis** (Gyllenhal)

– Head narrower in proportion to pronotum ; pronotum more transverse (fig. 98), more parallel-sided, with puncturation a little stronger and that of elytra a little closer ; antennae usually with the basal segment light, sometimes dark and scarcely different from *femoralis* ; elytra very variable in colour ; size larger, 4–5·75 mm. ♂ sternite 8 with shallow emargination in middle for about half its width, the emargination bordered on each side by a long hair. *Sandy places ; very local, not common, scattered localities from S. Scotland to southern England, Ireland*..... **gallicus** (Gravenhorst)

(*a*) Elytra black, *forma typica*.

(*b*) Elytra dark red, size larger, sternite 8 of ♂ with longer and narrower emargination, var. **sharpi** Fowler.

(*c*) Elytra clear red, size smaller, posterior angles of pronotum slightly less rounded, var. **laetior** Mulsant & Rey.

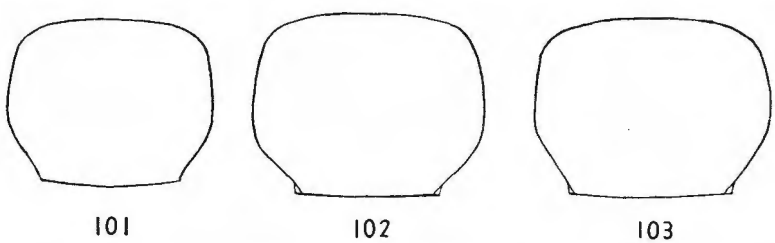
7 Pronotum more transverse (fig. 87) ; elytra strongly, deeply punctured ; red colour of elytra generally deeper ; size larger, 4–4·5 mm., broader. *Sandy places ; very local ; scattered localities from South coast to southern Scotland, Ireland*..... **opacus** (Block)

– Pronotum less transverse (fig. 100) ; elytra finely punctured ; colour of elytra generally more testaceous-red ; narrower and smaller, 2·5–3·75 mm..... 8.

8 Average size larger, 3–3·75 mm. ; pronotum and abdomen darker, black or almost black ; apical segment of maxillary palpi infuscate ; antennae more darkened apically ; microsculpture of pronotum strong, creating a dull surface. *Sandy places, near coast ; very local but often abundant where found ; scattered localities from S. coast to Solway district of Scotland ; Ireland.* (*Note.*—This remark applies to this species and the next taken together ; *praetermissus* was not recognised until 1929, and probably most of the records for *atricapillus* really refer to *praetermissus*. Both definitely occur in the southern counties of England) **praetermissus** Williams

– Average size smaller, 2·5–3 mm. ; pronotum and abdomen lighter, generally dark reddish-brown ; apical segment of maxillary palpi pale ; antennae less darkened apically ; microsculpture of pronotum sparser and very superficial, creating a more shining surface..... **atricapillus** (Germar)

9 Elytra entirely black*.....12.
– Elytra red, red-brown, brown or pitchy-brown.....10.
10 Elytra clear red, antennae entirely reddish-yellow (sometimes slightly infuscate apically); size small, 3–3·5 mm., narrow. *Sandy places; very local but widespread*.....**longulus** Erichson
– Elytra lighter or darker brown or red-brown, sometimes darker in scutellary region (if almost black then antennae entirely yellow); size larger, 3·5–4·5 mm., broader.....11.
11 Antennae clear yellow, elytra uniformly pitchy-brown or dark reddish-brown; pronotum more closely punctured. (Very dark specimens might be confused with the black species, especially *annae*, from which they may be distinguished by the coarser and closer puncturation of the pronotum). *Yorkshire*
defensus Fauvel
– Antennae with apical half dark, elytra very variable in colour; pronotum less closely punctured. *Scotland*.....**arcticus** Sahlberg (= *denticollis* Fauvel)
12 Pronotum less transverse (fig. 101).....13.
– Pronotum more transverse (figs. 102, 103).....14.
13 Tarsi very long and slender; elytra a little more than one and a half times as long as pronotum, finely and closely punctured. *Only recorded from Norfolk coast*.....**filipes** Sharp
– Tarsi normal; elytra about one and a third times as long as pronotum, rather strongly and sparingly punctured (as also compared with *pallipes*); anterior coxae light. *Recorded from a few very scattered localities*....**terebrans** (Schiødte)
14 Pronotum very dull with very superficial puncturation; hind border considerably narrower than anterior border; (fig. 102). *Rare; Scotland and Shropshire-Worcestershire border*.....**annae** Sharp
– Pronotum not much narrower behind than in front; (fig. 103); compared with *fuscipes*, average size larger, club of antennae relatively narrower, elytra longer, about one and a half times as long as pronotum, antennae usually lighter, legs clear reddish-yellow (anterior coxae dark) *River banks; common, especially in the Midlands and South*.....**pallipes** (Gravenhorst)
– Smaller than preceding, club of antennae relatively wider, elytra shorter, about one and a third times as long as pronotum, antennae usually dark, legs darker, a rather dirty yellow-red, sometimes almost black. *Sandy places. Sometimes common; mostly coastal areas at or near estuaries*.....**fuscipes** Rye



FIGS. 101–103.—Pronotum of 101, *Bledius filipes* Sharp; 102, *B. annae* Sharp; 103, *B. pallipes* (Gravenhorst).

Subgenus **Astycops** Thomson.

Black, antennae and legs pale yellowish; 1st segment of former dark. Very like *pallipes* and its allies, but easily distinguished by the bilobed front of the head and by the dark 1st segment of the antennae. *Banks of rivers; locally common, especially in the Midlands and North; widespread*.....**subterraneus** Erichson

* I have only seen very few specimens, possibly not correctly named, of some of the species in this section of the key; it is quite likely that, when they have been adequately studied and the specific distinctions found out, this section may not be accurate.

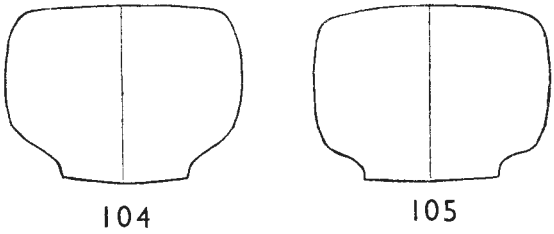
Subgenus **Cotysops** Tottenham.

Small species recognised by the front of the head which is not bilobed, together with the slender mandibles which are not, or only at the tips, crossed in repose. The elytral puncturation is very close and fine. The species occur in sandy places around the coast.

Key to Species.

1 Sides of pronotum almost parallel or possibly slightly widest behind; sides from posterior angles obliquely sloping to the basal portion which is not very much produced (fig. 104).
  (*a*) Elytra sandy coloured with base and suture darker, the extent of the dark colour variable. *Widely distributed and common where found* **arenoides** Tottenham *forma typica.*
  (*b*) Elytra black or mostly black. *A few scattered localities* var. **fergussoni** Joy.

– Sides of pronotum less parallel, slightly widest near front; sides from posterior angles more horizontal and therefore the basal portion of pronotum more produced (fig. 105). Average build a little longer and stouter. Colour as in previous species, but nearly always the dark colour extending over at least basal half of elytra. *Southern England, South Wales, South Ireland, scattered localities* **subniger** Schneider



Figs. 104–105.—Pronotum of 104, *Bledius arenoides* Tottenham; 105, *B. subniger* Schneider.

Genus **Thinobius** Kiesenwetter.

The beetles of this genus are very linear and minute, rarely exceeding 2 mm. Superficially they somewhat resemble small species of *Carpelimus*, but may be easily recognised by the shape of the elytra which are rounded at the sutural angle, and consequently gape apart there and reveal the wings folded beneath. Many of the species are very rare, but possibly they have been overlooked on account of their small size.

They are to be found in tufts of grass and under stones and shingle by rivers, etc.

Key to Subgenera.

1 Head quadrate, as broad as pronotum, with eyes small and distant from the neck, i.e., the temples much longer than the eyes; head not narrower than pronotum; form more linear and elongate ..... **Thiphonilus** Tottenham

– Head less quadrate, more rounded or triangular, with eyes larger and nearer to neck, i.e., temples shorter or about as long as eyes; head narrower than pronotum; form usually less linear..... **Thinobius** s.str.

Note.—T. macrocerus Joy, from the description, appears to be intermediate between these subgenera; the quadrate, parallel-sided head would place it in the former; the " temples slightly longer than the diameter of the eye " (what

is meant by " diameter " ?) would suggest the latter ; " thorax scarcely broader than head " is ambiguous. I have here retained the species in *Thinobius* s.str. where it is placed in Junk *Col. Cat.*

T. newberyi Scheerpeltz in Junk, *Col. Cat.*, is placed in *Thinobius* s.str., but an examination of the cotypes in the Cambridge University Museum has convinced me that the species should be in *Thiphonilus*, and so I have included it in the key to this subgenus.

Subgenus **Thinobius** s. str.

KEY TO SPECIES.

1 Antennae short and stout, with segments 4–10 small, distinctly transverse and with the 11th not twice as long as 10th, stout ; whole upper surface black ; legs and antennae dark ; size smaller, 1 mm. or less ; (fig. 88). *Fen districts, Lancashire, Isle of Wight, Devon*.....**brevipennis** Kiesenwetter

– Antennae long and slender, with 5th and 6th segments slightly longer than broad, and 11th as long or longer than 9th and 10th together ; elytra brown ; size larger.....2.

2 11th segment of antennae longer than 9th and 10th together ; head quadrate, parallel-sided, with temples slightly longer than the " diameter " of the eyes ; head " scarcely " narrower than pronotum ; " 2 mm." (From description.) *Very rare ; Inverness-shire*.....**macrocerus** Joy

– 11th segment of antennae not longer than 9th and 10th together ; head slightly rounded and then narrowed behind eyes ; temples shorter than longitudinal diameter of the eyes ; head clearly, but not much, narrower than pronotum ; 1·5 mm. *N. England, Scotland, Ireland*.....**longipennis** (Heer)

Subgenus **Thiphonilus** Tottenham.

KEY TO SPECIES.

1 Upper surface and legs and antennae uniformly pale reddish-testaceous, only the extreme apex of abdomen dark ; 4th segment of antennae very small and transverse, much narrower than 5th ; puncturation of pronotum very close and fine, surface dull ; head more strongly and more sparingly punctured, fully as strongly as pronotum, not so closely ; elytra extremely finely and closely punctured ; puncturation of abdomen stronger, rather close on basal segments more sparing on apical segments ; (fig. 89). *Cumberland*..**newberyi** Scheerpeltz

– At least head, pronotum and abdomen dark ; 4th segment of antennae longer than broad, not, or not appreciably narrower than 5th.....2.

2 Body almost black, with elytra pitchy-brown, antennae and legs pitchy-brown ; 4th segment of antennae shorter than 5th and a little narrower ; size larger, 2·25 mm. *Very rare ; Scotland*.....**major** Kraatz

(*Note.*—According to some authors the British species is *angusticeps* Fauvel, which differs from *major* Kraatz by having the head in front of the constriction longer than broad ; in the only British specimen which I have examined, the head is broader than long, so I have retained the name *major* Kraatz, under which the insect was first known in Britain.)

– Body pitchy-brown, with elytra dirty testaceous ; antennae and legs pale reddish-testaceous, 5th segment of antennae scarcely differing from 6th ; size smaller, 1·75–2 mm.....3.

3 Antennae shorter and stouter, segments 4–8 globose ; head more thickly punctured, dull. *Very rare ; Scotland*.....**brunneipennis** Kraatz

– Antennae longer and more slender, segments 5–6 longer than broad (including the apical pedicels) ; head less closely, a little more strongly punctured, shining....4.

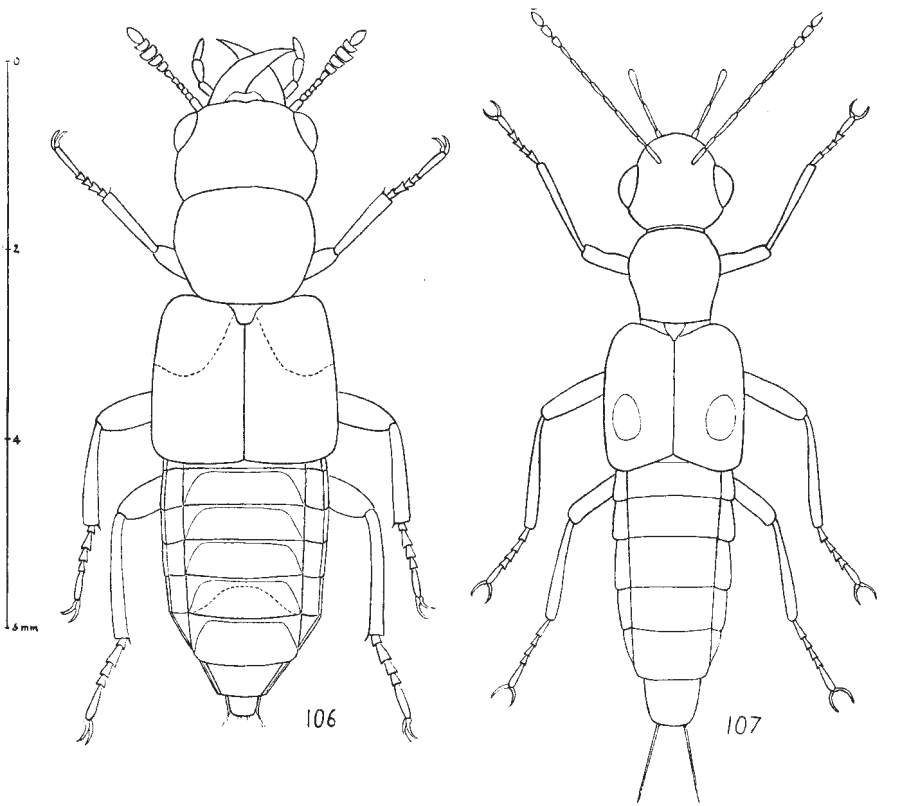
4 Form broader and less parallel; antennae longer, pronotum more transverse, with angles more distinct; elytra longer and broader; head broader, with foveae on each side of vertex more distinct; upper surface with puncturation finer; elytra brighter testaceous in colour and broader in proportion to pronotum; legs more robust. *Very rare; Inverness-shire*.....**bicolor** Joy
(*Note.*—Distinctions between this and the following taken from the description).

– Form narrower and more parallel-sided; antennae shorter; head narrower, with foveae less distinct; pronotum less transverse, with angles less distinct; elytra shorter and narrower, less bright in colour and narrower in proportion to pronotum; upper surface with puncturation stronger; legs less robust. *Ireland, North England, Scotland*.....**linearis** Kraatz

Subfamily Oxyporinae.

Genus **Oxyporus** Fabricius.

Last segment of labial palpi very large, dilated, crescent-shaped (fig. 2); anterior coxae prominent, conical; intermediate coxae widely separated; mandibles large, directed forwards in repose (but crossed); antennae inserted under front of head just outside base of mandibles; antennae very strongly flattened apically, the penultimate segments very transverse, the last six (or seven) forming a distinct gradual club.



Figs. 106–107.—106, *Oxyporus rufus* (Linnaeus); 107, *Dianous coerulescens* (Gyllenhal).

The genus contains only one British species, which may be readily distinguished from all other British Staphylinidae by its colour, size and shape.

Head, last three and a half segments of abdomen, apical half of elytra and scutellum black ; the black of the elytra is extended forwards in the form of a triangle with apex at scutellum ; pronotum and rest of abdomen red ; humeral area of elytra testaceous red ; palpi yellow ; antennae red, somewhat infuscate at sides ; legs red with base of femora, trochanters and coxae black ; surface smooth and shining, with a few rows of irregular rather strong punctures on disc of elytra ; 7–11 mm. ; (fig. 106). *In the gills of fungi ; local but widespread and sometimes common* ..... **rufus** (Linnaeus)

Subfamily Steninae.

A large cosmopolitan family of distinctive appearance. The eyes are very large and prominent ; the antennae are inserted on the upper surface of the head, about the level of the anterior margins of the eyes ; coxae small, posterior pair separated by a bilobed process of the metasternum ; pronotum somewhat barrel-shaped without side borders ; last abdominal segment elongate, sides not strongly converging, apex more or less truncate.

Key to Genera.

1 Side of head behind eye distinctly greater than width of eye ; last segment of abdomen terminated on each side by a long hair-like style (fig. 107) **Dianous** Samouelle (p. 74)

– Side of head behind eye much less than width of eye, the eyes occupying almost the whole of the side ; abdomen without long hair-like styles at apex, the styles being very short and scarcely perceptible ; labial palpi, etc., on end of a very long tubes (figs. 113–116) ..... **Stenus** Latreille (p. 58)

Genus **Stenus** Latreille.

A large genus of which the species can be easily known by their distinctive appearance. In addition to the characters given above in the Key to Genera all the British species, except five, can at once be distinguished from *Dianous* by their uniform black or blackish colour and the absence of an orange spot on each elytron. They occur mostly in wet places but some species prefer dry ground. The male genitalia often afford excellent specific characters.

Key to Subgenera.

1 Abdomen with raised margins at sides ..... 2.

– Abdomen cylindrical, without raised margins ..... 5.

2 4th segment of tarsi simple (in 2 species of subgenus *Nestus* somewhat bilobed) and not evidently broader than the 3rd segment ..... 3.

– 4th segment of tarsi strongly bilobed and evidently broader than the 3rd segment ..... 4.

3 Hind tarsi very long, as long as or nearly as long as the tibiae, with the 1st segment longer than the 5th ; mostly larger species ; basal tergites of abdomen never with 4 keels at base ..... **Stenus** s. str.

– Hind tarsi shorter, not or but little longer than half the length of the tibiae, with 1st segment about as long as 5th ; species not large ; basal tergites of abdomen with keels of variable number or without keels ..... **Nestus** Rey

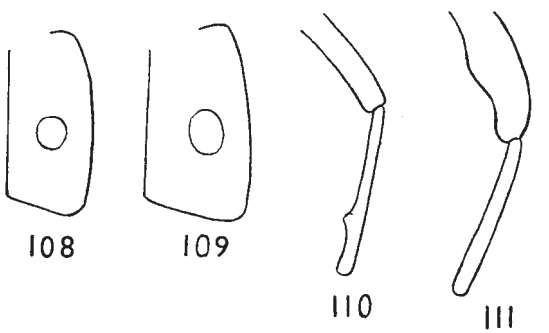
4 Hind tarsi long and slender, distinctly longer than half the length of the tibiae, with 1st segment longer than 5th; pronotum with distinct central channel (except in *fuscicornis*) ..... **Parastenus** Heyden
– Hind tarsi not or scarcely longer than half the length of the tibiae, with 1st segment about equal to 5th; pronotum without central channel **Hemistenus** Motschulsky
5 4th segment of tarsi not bilobed, or if somewhat bilobed then scarcely broader than 3rd segment ..... **Tesnus** Rey
– 4th segment of tarsi strongly bilobed and evidently broader than the 3rd segment **Hypostenus** Rey

Subgenus **Stenus** s.str.

Abdomen bordered; tarsi with 4th segment simple; tarsi long and slender, nearly as long as the tibiae, and with 1st segment usually longer than 5th.

KEY TO SPECIES.

1 Each elytron with a round orange or yellow spot ..... 2.
– Elytra black, unicolorous ..... 5.
2 Legs entirely black ..... 3.
– Legs in part at least testaceous, never entirely black ..... 4.
3 Maxillary palpi with the 1st segment and base of second testaceous; spots on elytra smaller, a little nearer to the suture (fig. 108); build a little narrower and smaller; 5 mm.; aedeagus, fig. 120. *Margins of ponds, rivers, etc.; local* **2-guttatus** (Linnaeus)
– Maxillary palpi with the 1st segment only testaceous; spots on elytra larger, a little further from the suture (fig. 109); build larger and more rubust, 6 mm.; aedeagus, fig. 121. *Similar situations; local, not north* ..... **comma** Leconte



FIGS. 108–111.—Elytron of 108, *Stenus 2-guttatus* (Linnaeus); 109, *S. comma* Leconte. Posterior femur and tibia of 110, *S. ater* Mannerheim; 111, *S. juno* (Paykull).

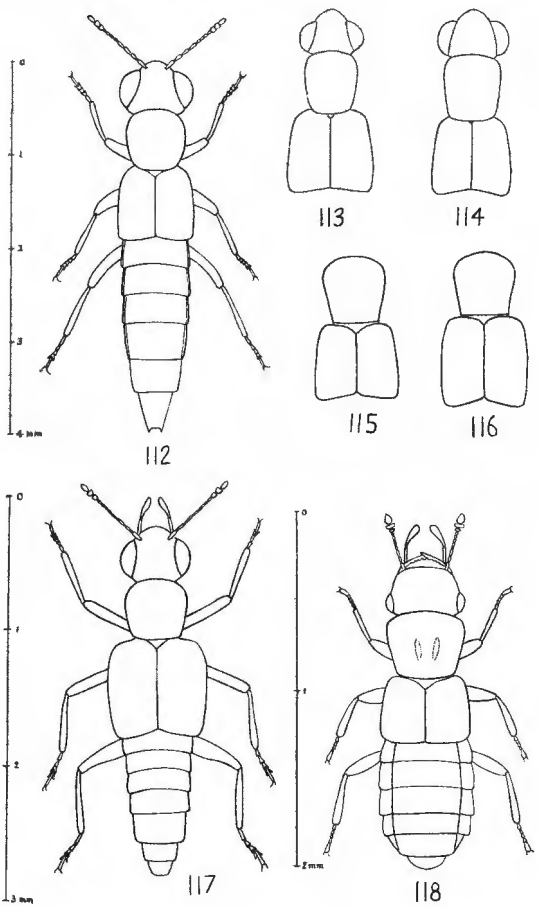
4 Size larger, robust, 7 mm.; basal tergites of abdomen with distinct central keel at base of each; aedeagus, fig. 128. *Marshy places; common, rarer towards north* **bimaculatus** Gyllenhal
– Size smaller, slender, 4–5 mm.; basal tergites of abdomen without central keel at base; aedeagus, fig. 122. *Margins of rivers, ponds, etc.; local but widespread* **guttula** Müller
5 Legs entirely black ..... 6.
– Legs in part at least testaceous or pale reddish or brown ..... 9.

6 Basal tergites of abdomen without central keel at base ; 5 mm. ; aedeagus, fig. 125. (Size and build of *ater* but more shining, elytra shorter and more diffusely punctured ; abdomen much more diffusely and more strongly punctured.) *Dry places ; rare ; scattered localities mostly in S.E. England*
asphaltinus Erichson

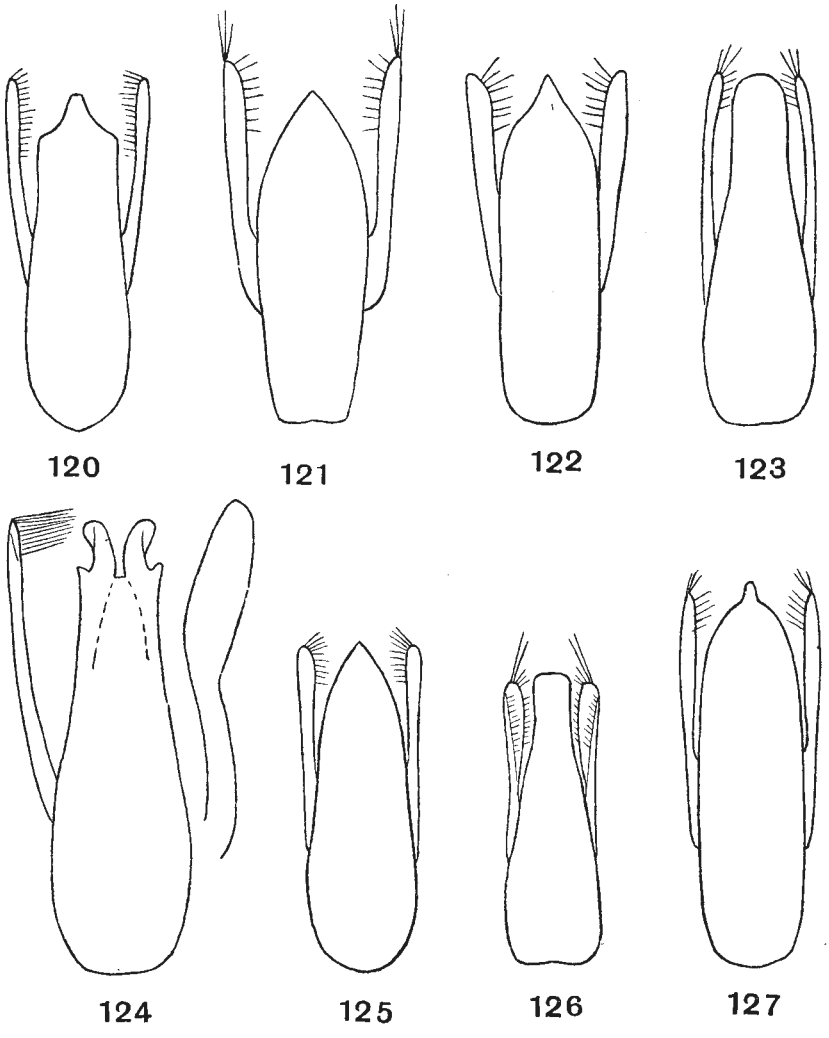
– Basal tergites of abdomen with central longitudinal keel at base of each.....7.

7 Head scarcely narrower than elytra.....8.

– Head distinctly narrower than elytra ; ♂ without prominence on hind tibiae, 5–6 mm. ; aedeagus, fig. 126. (Very like *ater* but pronotum much shorter, scarcely longer than broad). *Marshy places ; rare ; a few scattered localities in S.E. England*.....**longitarsis** Thomson



FIGS. 112–118.—112, *Stenus brunnipes* Stephens. Head, pronotum and elytra of 113, *S. incrassatus* Erichson ; 114, *S. boops* Ljungh ; 115, *S. impressus* (Germar) ; 116, *S. subaeneus* Erichson. 117, *S. fornicatus* Stephens ; 118, *Euaesthetus bipunctatus* (Ljungh).



FIGS. 120–127.—Aedeagus of 120, *Stenus 2-guttatus* (Linnaeus); 121, *S. comma* Leconte; 122, *S. guttula* Müller; 123, *S. ater* Mannerheim; 124, *S. juno* (Paykull) (one paramere detached to show shape); 125, *S. asphaltinus* Erichson; 126, *S. longitarsis* Thomson; 127, *S. guynemeri* Du Val.

8 Form larger and more robust, 6–7 mm.; pronotum about as long as broad; ♂ with posterior femora strongly thickened and posterior tibiae simple (fig. 111); aedeagus, fig. 124. *Very common*.....**juno** (Paykull)

– Form smaller and narrower, 5–6 mm.; pronotum more elongate, distinctly longer than broad; ♂ with posterior femora simple and hind tibiae with distinct prominence on inner margin at posterior third (fig. 110); aedeagus, fig. 123. *Dry places; local; mainly south England*.....**ater** Mannerheim

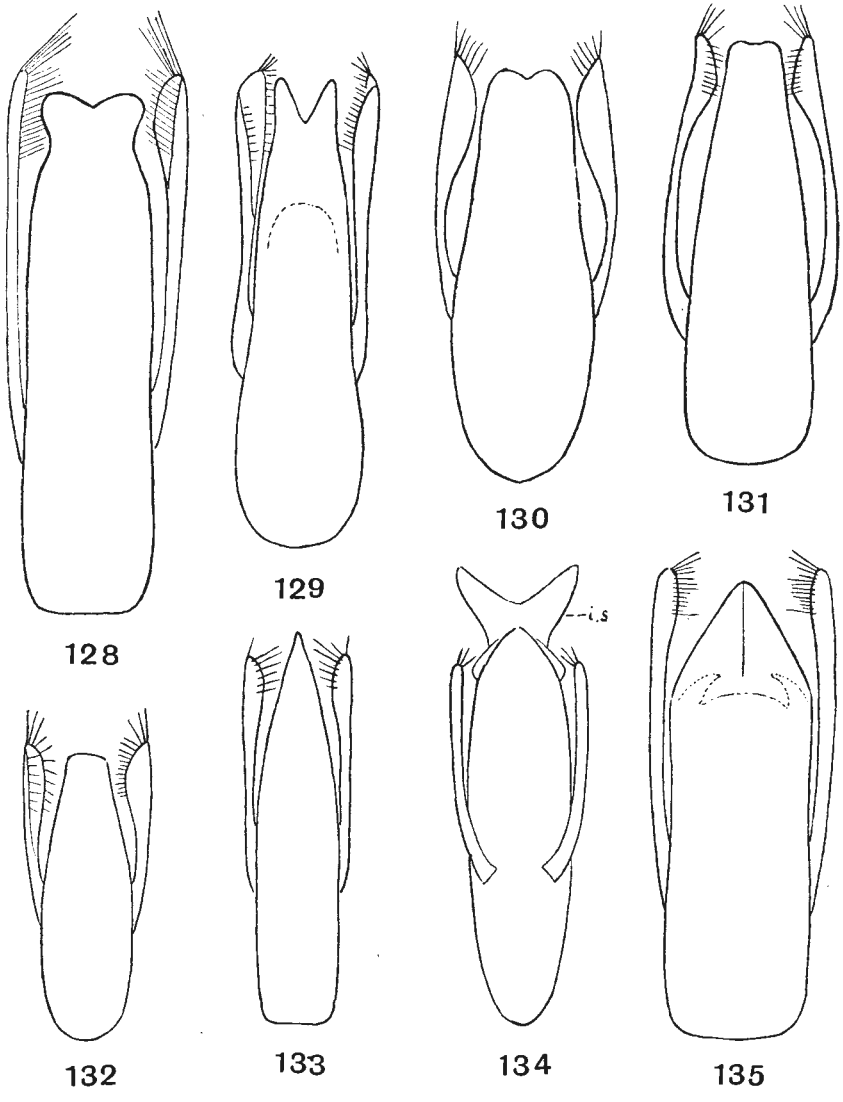
9 Basal tergites of abdomen without central keel....10.
– Basal tergites of abdomen with distinct central keel....11.
10 Pronotum and elytra very uneven, rugosely sculptured; pronotum with broad deep central longitudinal depression; surface shining; head with a narrow more or less impunctate raised shining area in middle; distinct golden pubescence especially at sides of abdominal tergites; legs red with apical half of femora and basal and apical quarters of tibiae black, the colour being sharply defined; 5–6 mm.; aedeagus, fig. 127. *Under stones, in wet moss, by fast streams and under waterfalls; very local, but widely distributed*....**guynemeri** Jacquelin du Val
– Pronotum and elytra rather even; sculpture weak, close, relatively fine; pronotum without central depression; surface dull or not very shining; head without smooth central area, evenly punctured throughout; distinct silvery pubescence especially towards sides of abdominal tergites and in patches on elytra; light colour of legs less reddish, more yellowish or brownish, the colours of the tibiae being less, or not at all, defined; 5–6 mm.; aedeagus, fig. 133. *Wet moss, fast streams; only recorded from Co. Durham*....**fossulatus** Erichson
11 Size smaller, 3–4 mm.; tibiae dark brown; legs more or less uniformly coloured, dark, with base of femora somewhat lighter; aedeagus, fig. 132. (The small size and colour of the legs will easily distinguish this species from the rest of the subgenus.) *Very rare; eastern counties*....**proditor** Erichson
– Size larger, 5–6·5 mm.; tibiae testaceous or reddish with knees more or less darkened....12.
12 Pronotum more thickly punctured than elytra; punctures of elytra distinct, not confused or confluent, spaces between appearing flat and shining; upper surface shining; 5–5·5 mm.; palpi with at least apical segment black; aedeagus, fig. 131. *Marshy places; very local; usually rare (not N. Scotland)* **lustrator** Erichson
– Pronotum not more thickly punctured than elytra; punctures of elytra more or less confluent or rugose, the spaces between having the appearance of narrow ridges; last segment of maxillary palpi light....13.
13 Form broader; punctures of elytra less confluent; upper surface duller; legs narrowly dark at knees; puncturation of abdomen regular on each tergite, closer; keels at bases longer, in certain lights giving the impression of linear furrows reaching one-third to one-half the length of the tergite; aedeagus, fig. 129. *Common*....**clavicornis** (Scopoli)
– Form narrower; punctures of elytra more confluent; upper surface more shining; less broadly dark at knees; puncturation of abdomen sparser and less regular on each tergite, sparser in centre than at sides; keels shorter, in certain lights giving the impression of small, not linear depressions; aedeagus, fig. 130. *Common*....**rogeri** Kraatz

Subgenus **Nestus** Rey.

Abdomen bordered; 4th segment of tarsi simple or partially bilobed but scarcely broader than 3rd segment (*argus* and *nigritulus* only); tarsi not much longer than half the length of tibiae; species nearly all smaller than those of *Stenus* s. str.

Key to Species.

1 Legs entirely black....2.
– Legs light or dark brown, never black....~~13~~. 15
2 Basal tergites of abdomen with 4 keels at base....3.
– Basal tergites of abdomen without keels or with one or three keels, i.e., one central 11.
3 Pronotum with a deep and rather broad, very evident channel from a little before the base to beyond the middle; upper surface very shining; puncturation of pronotum and elytra strong, not close, that of head and abdomen finer; elytra with evident depressions between shoulders and suture; 3–4 mm.; aedeagus, fig. 142. *Manure heaps, etc.; local, sometimes common, becoming rare in the north* **melanopus** (Marsham)
– Pronotum with a narrow, not deep central channel throughout its length, sometimes rather obsolete in front....4.
– Pronotum without central channel or at most with abbreviated trace of one....5.



Figs. 128–135.—Aedeagus of 128, *Stenus bimaculatus* Gyllenhal; 129, *S. clavicornis* (Scopoli); 130, *S. rogeri* Kraatz; 131, *S. lustrator* Erichson; 132, *S. proditor* Erichson; 133, *S. fossulatus* Erichson; 134, *S. palposus* Zetterstedt (i.s. = internal sac); 135, *S. boops* Ljungh.

4 Upper surface shining ; pronotum and elytra strongly, head less strongly, abdomen finely punctured ; puncturation less close ; head large, much broader than pronotum ; pronotum longer in proportion to width ; 3·5–5 mm. ; aedeagus, fig. 145. *Marshy places ; East Anglia and recorded from a few other scattered localities in England and Ireland*..... **nitens** Stephens

– Upper surface rather dull ; pronotum and elytra moderately strongly, head not strongly punctured ; puncturation much closer especially on head ; head small, not much broader than pronotum ; pronotum shorter in proportion to width ; 3·5–5 mm. ; aedeagus, fig. 140. (Distinguished from *boops* by the longer elytra, relatively narrower head, less rugose puncturation of elytra, the central channel of pronotum, etc.) *Marshy places, banks of rivers, wet clay etc. ; somewhat local but generally distributed and common*
canaliculatus Gyllenhal

5 Elytra with evident white pubescence forming a distinct patch at each side near middle ; size larger and broader ; puncturation of head and pronotum rather strong, very close and rugose, making the surface very dull, that of elytra fully as strong, a little less close, obscured by pubescence, that of abdomen moderate and close ; 5 mm. ; aedeagus, fig. 134. *Only recorded from Lough Neagh*
palposus Zetterstedt

– Elytra without evident pubescence (or at least without distinct patches)..... 6.

6 Head almost as broad as elytra (fig. 114) ; surface not very shining ; puncturation close, moderately strong on fore-parts, fine on abdomen, much closer and finer on apical than on basal tergites ; puncturation of elytra, especially towards apex and sides, distinctly confluent, rugose or strigose ; 4–5 mm. ; aedeagus, fig. 135. *Common*..... **boops** Ljungh

– Head narrower than elytra..... 7.

7 Head hardly, or very little wider than pronotum..... 8.

– Head distinctly wider than pronotum..... 9.

8 Size larger, 3·75–5 mm. ; elytra very broad, very much broader than head and pronotum (fig. 113) ; aedeagus fig. 136. (More likely to be confused with *boops* than with any other species, but very easily distinguished by the small head and very broad elytra ; in *boops* the elytra are not or are scarcely broader than head and very little broader than pronotum.) *Very local ; not north*
incrassatus Erichson

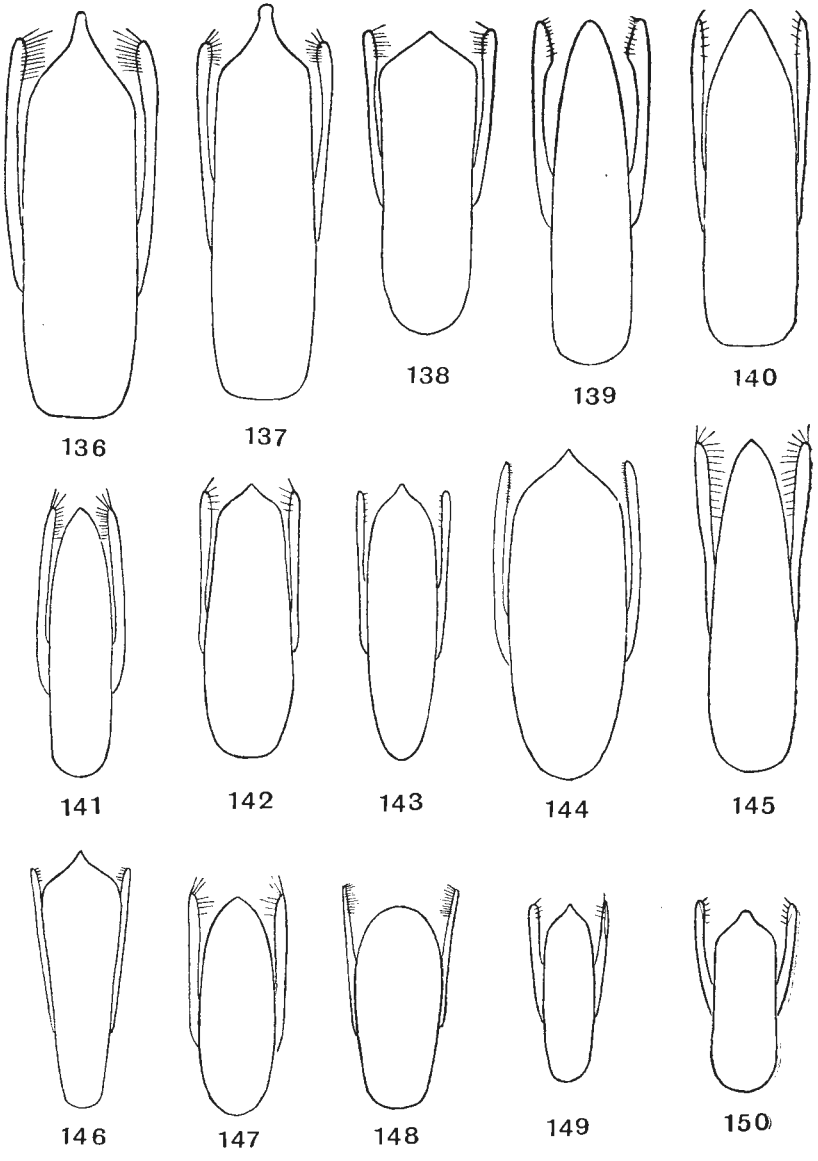
– Size smaller, 2·75–3·5 mm. ; elytra normal, scarcely broader than head, longer than broad ; aedeagus fig. 147. (Easily confused with the next three species, but can be distinguished by the pronotum which is much more rounded at the sides in front, by the depressions on the head being closer and the space between more evidently raised, and by the elytra being evidently longer than broad ; in the following three species the elytra are about as long as broad, and in *morio* the puncturation of the abdomen is much finer. In size and general appearance it closely resembles *argus*, which species has much broader head, brownish legs, the 4th segment of tarsi partially bilobed, and the puncturation of pronotum and elytra less close.) *Very local and not common ; England*.... **atratulus** Erichson

9 Puncturation of head slightly finer than that of pronotum ; puncturation of abdomen finer and a little closer ; head more depressed between eyes (if the insect is tilted well forward the contour is flat or feebly concave, lower than the level of the eyes) ; 3–4 mm. ; aedeagus, fig. 139. *Rare ; recorded from a few localities in southern half of England*..... **morio** Gravenhorst

– Puncturation of head slightly coarser, approximately equal to that of pronotum ; puncturation of abdomen stronger ; head less flattened between eyes (if the insect is tilted forwards, the contour is feebly convex and in the middle slightly higher than the level of the eyes)..... 10.

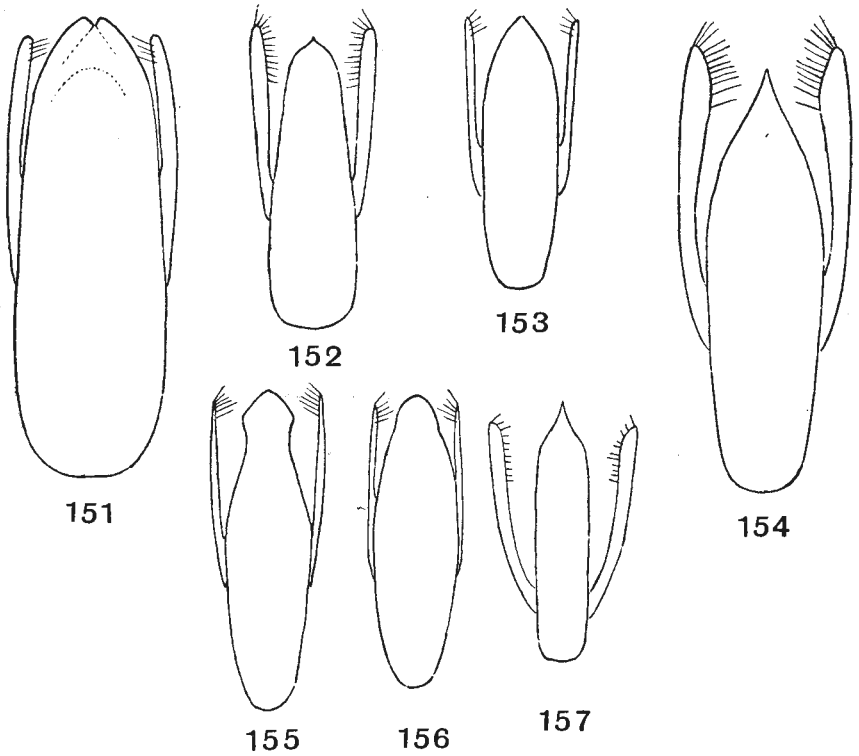
10 Puncturation of abdomen less strong and rather sparing in the middle of each tergite ; elytra usually showing very feeble depressions ; 3–4 mm. ; aedeagus, fig. 137. *Sometimes common, but very local though widespread*
melanarius Stephens

– Puncturation of abdomen more strong, closer, more or less uniform throughout each tergite ; elytra without trace of depressions, even ; 3–4 mm. ; aedeagus, fig. 138. *Rare ; recorded from a few localities in the southern counties*
subdepressus Mulsant & Rey



FIGS. 136–150.—Aedeagus of 136, *Stenus incrassatus* Erichson; 137, *S. melanarius* Stephens; 138, *S. subdepressus* Mulsant & Rey; 139, *S. morio* Gravenhorst; 140, *S. canaliculatus* Gyllenhal; 141, *S. vafellus* Erichson; 142, *S. melanopus* (Marsham); 143, *S. argus* Gravenhorst; 144, *S. incanus* Erichson; 145, *S. nitens* Stephens; 146, *S. fuscipes* Gravenhorst; 147, *S. atratulus* Erichson; 148, *S. nanus* Stephens; 149, *S. pusillus* Stephens; 150, *S. exiguus* Erichson.

11 4th segment of tarsi simple ; size smaller, not exceeding 3 mm.....12.
– 4th segment of tarsi partially bilobed ; basal tergites of abdomen with three keels, one evident in the middle and one less evident towards each side at base ; 3–4·5 mm. ; aedeagus, fig. 151. (Size and general appearance somewhat like *boops*, but distinguished by the bilobed tarsal segment, the abdominal tergites with 3 keels instead of 4 (the centre keel evident), the close and more uniform puncturation of abdomen, the scarcely confluent puncturation of the elytra and the elytra being straight, almost parallel-sided, whereas in *boops* they are distinctly widened and rounded in apical half of sides.) *Not common ; marshy places ; local but widely distributed*.....**carbonarius** Gyllenhal
12 Basal tergites of abdomen without keel *and* pronotum without evident depressions 13.
– Basal tergites of abdomen with small central keel (often very obsolete, and sometimes apparently absent) and pronotum with evident depressions near middle on each side often connected by a somewhat obsolete transverse basal depression 14.
13 Body with rather long, evident, white pubescence ; surface rather shining ; pronotum longer than broad ; puncturation of elytra not close or rugose ; head much broader than pronotum ; 2·5–3 mm. ; aedeagus, fig. 144. *Usually rare ; occurs in a few localities in Scotland*.....**incanus** Erichson
– Body normally pubescent ; pronotum as broad as long, somewhat circular ; upper surface dull ; puncturation of elytra very close, rugose ; head scarcely broader than pronotum ; 2–3 mm. ; aedeagus, fig. 148. *Common*.....**nanus** Stephens
14 Elytra scarcely longer than pronotum, less uneven, slightly less closely punctured ; pronotum more shining, less closely punctured, less depressed, less rounded at sides ; 2–2·75 mm. ; aedeagus, fig. 150. *Rare ; very local*....**exiguus** Erichson
– Elytra longer than pronotum, more uneven, more closely punctured ; pronotum less shining, more closely punctured, more depressed, more rounded at sides ; 2–3 mm. ; aedeagus, fig. 149. *Common, rarer in the north*....**pusillus** Erichson
(*Note.*—When the abdominal keels cannot be detected, the depressions on the pronotum, the uneven elytra, the narrower pronotum and the relatively broad head will readily distinguish *pusillus* and *exiguus* from dark-legged specimens of *nanus* in which species the pronotum and elytra have quite even surfaces.)
15 4th segment of tarsi bilobed for half its length ; elytra longer than pronotum, plainly longer than broad ; puncturation of foreparts strong, not close, not confused, that of abdomen moderate ; legs dark brown, femora often almost black ; size larger, 2·75–3·5 mm. ; aedeagus, fig. 143. (Closely resembles *atratulus* (q.v., page 64) ; easily distinguished from *morio* and its allies by the colour of the legs, the bilobed tarsal segment (fig. 191) and the more sparing puncturation of pronotum and elytra.) *Local, but widely distributed ; England*
argus Gravenhorst
– 4th segment of tarsi simple ; legs usually lighter ; size smaller.....16.
16 Borders of abdomen feeble ; pronotum a little longer than broad ; elytra as broad or broader than long ; puncturation of pronotum and elytra strong, not close (very similar to that of *argus*) ; basal tergites of abdomen with 4 small keels ; 2–2·75 mm. ; aedeagus, fig. 146. *Local*.....**fuscipes** Gravenhorst
– Borders of abdomen normally strong.....17.
17 Palpi testaceous ; legs testaceous ; basal tergites of abdomen with one keel in centre at base ; pronotum wider than long, almost circular, only a little wider than head ; puncturation of pronotum and elytra moderately strong, close, rugose ; upper surface dull ; 2–2·75 mm. ; aedeagus, fig. 152. *Very local ; southern half of England ; recorded from Ireland*.....**circularis** Gravenhorst
– Palpi dark ; legs brown.....18.
18 Basal tergites of abdomen with 4 keels ; head much wider than pronotum ; pronotum longer, apparently longer than broad ; puncturation stronger, less close (similar to that of *fuscipes* or *argus* but a little closer and finer) ; abdomen more parallel-sided ; upper surface more shining ; 2–3 mm. ; aedeagus, fig. 141. *Very local, usually rare ; England, mostly south, and South Ireland*
vafellus Erichson
– Basal tergites of abdomen without keels ; head almost as wide as pronotum ; pronotum broader than long ; puncturation finer and very close ; abdomen more fusiform ; upper surface less shining ; 2–3 mm. ; aedeagus, fig. 148. *Common*.....**nanus** Stephens



FIGS. 151–157.—Aedeagus of 151, *Stenus carbonarius* Gyllenhal; 152, *S. circularis* Gravenhorst; 153, *S. opticus* Gravenhorst; 154, *S. nigritulus* Gyllenhal; 155, *S. crassus* Stephens; 156, *S. formicetorum* Mannerheim; 157, *S. brunnipes* Stephens.

Subgenus **Tesnus** Rey.

Abdomen not bordered; 4th segment of tarsi simple, or if somewhat bilobed then not much wider than 3rd segment.

KEY TO SPECIES.

1 4th segment of tarsi simple; basal tergites of abdomen with 4 small keels at base ..... 2.

– 4th segment of tarsi somewhat bilobed; basal tergites of abdomen without keels or with very obsolete keels ..... 4.

2 Upper surface shining; puncturation of fore-parts strong and distinct, that of abdomen moderately strong; head not much broader than pronotum ..... 3.

– Upper surface very dull; puncturation of fore-parts rather fine, very close and rugose, that of abdomen extremely fine; head plainly broader than pronotum; elytra distinctly rounded at sides; legs usually brown to blackish-brown; size very small, 2–2·75 mm.; aedeagus, fig. 153. (In size and general appearance very like small species of subgenus *Nestus* but at once distinguished by the non-bordered abdomen; easily separable from the two following species by the dull appearance, close puncturation of fore-parts and by the head being much broader than pronotum.) *Marshy places; a few scattered localities; usually very rare* ..... **opticus** Gravenhorst

3 Size larger, 3–4 mm.; legs quite black; abdominal keels more evident; head narrower in proportion; punturation slightly stronger and slightly less regular; aedeagus, fig. 155. *Usually in dry places; very local but widespread, not common.* **crassus** Stephens

– Size smaller, 2·25–3 mm.; legs dark brown to blackish; abdominal keels less evident; head broader in proportion; puncturation slightly less strong and slightly more regular; aedeagus, fig. 156. *Wet places; local and rare; southern England, Ireland*..... **formicetorum** Mannerheim

4 Legs black; puncturation of elytra rather close and strong, that of abdomen rather close and less strong, almost similar to that of head; abdomen without or with very obsolete keels; 4th segment of tarsi very feebly bilobed; 3–4 mm.; aedeagus, fig. 154. (Somewhat resembles *S. boops* but easily distinguished by duller surface, and strongly punctured abdomen without borders.) *Marshy places; widespread*..... **nigritulus** Gyllenhal

– Legs brown; puncturation very strong and distinct, that of abdomen strong, becoming finer towards apex, uniform; basal tergites of abdomen without keels; 4th segment of tarsi distinctly bilobed, but not much broader than 3rd segment (fig. 192); 3–4 mm.; (fig. 112); aedeagus, fig. 157. (Somewhat similar to *latifrons* (q.v., page 74).) *Common*..... **brunnipes** Stephens

Subgenus **Hemistenus** Motschulsky.

Fourth segment of tarsi strongly bilobed; tarsi short; abdomen bordered.

Key to Species.

1 3rd segment of tarsi bilobed for half its length; body clothed with whitish pubescence..... 2.

– 3rd segment of tarsi entire; body scarcely pubescent..... 7.

2 Tarsi yellow or brown..... 3.

– Tarsi black..... 4.

3 Size larger, 5–7 mm.; tarsi yellow; puncturation stronger and deeper; elytra relatively shorter and broader; tarsi broader; ♀ sternite 8 longer; aedeagus, fig. 159. *Common; somewhat local but widespread*..... **pallitarsis** Stephens

– Size smaller, 4–5 mm.; tarsi yellow or brownish; puncturation finer and more superficial; elytra relatively longer and narrower; tarsi narrower; ♀ sternite 8 shorter; aedeagus, fig. 160. *Extremely local, recorded from a few scattered localities*..... **niveus** Fauvel

4 Surface of elytra even; puncturation stronger; 5–6 mm.; aedeagus, fig. 164. *Common, widespread but somewhat local*..... **binotatus** Ljungh

– Surface of elytra uneven; puncturation finer..... 5.

5 Abdomen narrowed from base to apex; ♂ with sternite 9 narrower and feebly emarginate at apex; ♀ with sternite 8 produced into a blunt point; 6–7 mm.; aedeagus, fig. 158. *Very local and rare; scattered localities* **eanescens** Rosenhauer

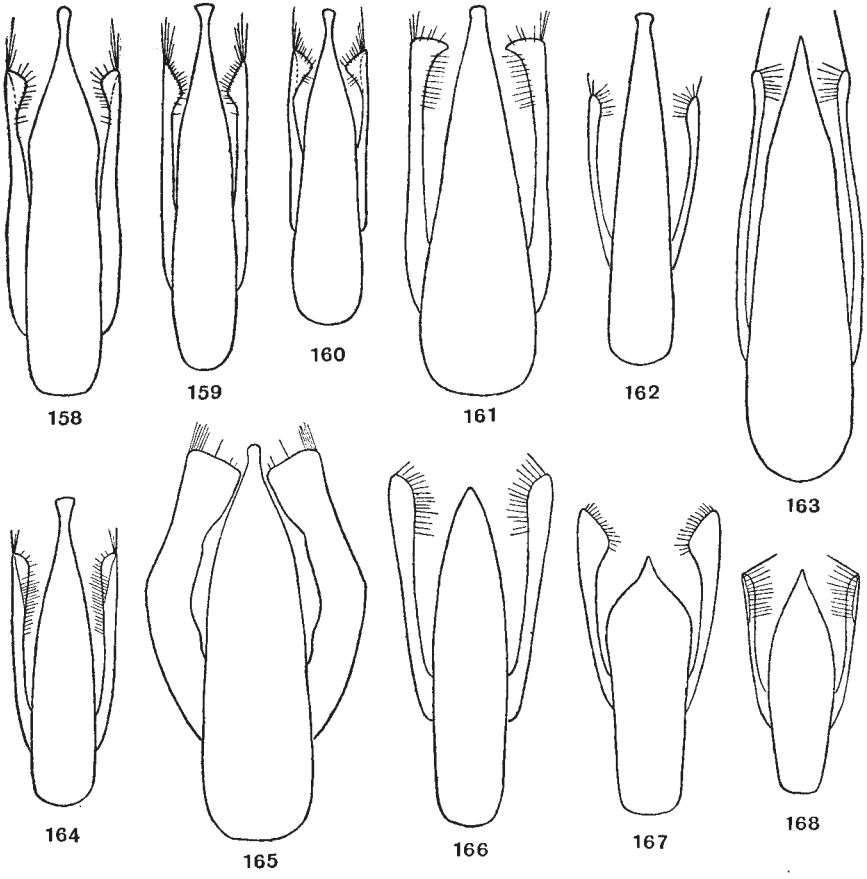
– Abdomen nearly parallel-sided until near apex..... 6.

6 Size larger, 6–7 mm.; pronotum longer; puncturation a little stronger; ♂ with sternite 9 broadly emarginate at apex with sharp apical angles, near each of which is a long hair; ♀ with sternite 8 produced into a sharp point, sternite 9 as in ♂ but divided; aedeagus, fig. 165. *Common*..... **pubescens** Stephens

– Size smaller, 5–6·5 mm.; pronotum shorter; puncturation a little finer and closer; ♂ with sternite 9 not emarginate at apex, narrower, without sharp apical angles and without long hairs; ♀ with sternite 8 produced into a blunt point, sternite 9 as in ♂ but divided; aedeagus, fig. 161. *Local recorded from a few widespread localities*..... **umbratilis** Casey (= *pseudopubescens* Strand), (see Steel, 1953, *Ent. mon. Mag.* **89** : 198)

7 Form very narrow and linear; legs entirely testaceous; 3–4 mm.; aedeagus, fig. 167. (Distinct from all others of the present subgenus; somewhat similar to *erichsoni* in subgenus *Parastenus*, but easily distinguished both by subgeneric characters also by the black basal segment of the antennae and by the sparse punctuation on the disc of the pronotum.) *Common in marshy places, but rare towards the north and in Ireland*..... **flavipes** Stephens

– Form more or less broad, normal; legs in part at least dark..... 8.



FIGS. 158–168.—Aedeagus of 158, *Stenus canescens* Rosenhauer; 159, *S. pallitarsis* Stephens; 160, *S. niveus* Fauvel; 161, *S. umbratilis* Casey; 162, *S. picipes* Stephens; 163, *S. nitidiusculus* Stephens; 164, *S. binotatus* Ljungh; 165, *S. pubescens* Stephens; 166, *S. bifoveolatus* Gyllenhal; 167, *S. flavipes* Stephens; 168, *S. picipennis* Erichson.

8 Basal tergites of abdomen with a small keel in centre at base; upper surface very shining; legs black (tarsi sometimes brownish-black); basal segment of antennae black; 4–5 mm., aedeagus, fig. 166. *Common*.....**bifoveolatus** Gyllenhal

– Basal segments of abdominal tergites without keel.....9.

9 Abdomen closely, strongly and uniformly punctured, the puncturation nearly as strong as that of elytra or pronotum; upper surface rather dull; elytra with surface nearly even; basal segment of antennae black.....10.

– Abdomen rather sparingly and irregularly punctured, especially in the centre and towards apices of tergites; upper surface shining; elytra with distinct depressions; basal segment of antennae black or testaceous.....11.

10 Elytra distinctly longer and much broader than pronotum, slightly broader than head ; puncturation of elytra and of centre of abdominal tergites slightly more close ; legs usually darker, varying from brown with darker knees to black with brown tarsi ; 4–5·5 mm. ; aedeagus, fig. 162. *Widespread and fairly common* ..... **picipes** Stephens

– Elytra scarcely longer and but little broader than the pronotum, slightly narrower than head, consequently general form more parallel-sided ; puncturation of elytra and centre of abdominal tergites slightly less close ; legs usually lighter and more brightly coloured, varying from reddish-brown with feebly darker knees to brown with darker knees ; 3·25–3·75 mm. *Rare ; very local but widespread* ..... var. **brevipennis** Thomson

11 Basal segment of antennae black ; puncturation finer ; basal segments of abdominal tergites less deeply impressed at their bases ; elytra distinctly widened behind ; larger, with abdomen more parallel-sided ; 4·5–5·5 mm. ; aedeagus, fig. 163. *Common*..... **nitidiusculus** Stephens

– Basal segment of antennae yellow ; puncturation coarser ; basal segments of abdominal tergites more deeply impressed at their bases ; elytra parallel-sided ; abdomen more conical ; average size smaller, 3–4·5 mm. ; aedeagus, fig. 168 : *Not common ; very local but widespread*..... **picipennis** Erichson

Subgenus **Parastenus** Heyden.

Abdomen bordered ; 4th segment of tarsi bilobed ; tarsi plainly longer than half tibiae.

Key to Species.

1 Abdomen very narrowly bordered, especially towards apex, cylindrical ; antennae (except club) and palpi entirely testaceous ; legs testaceous, not or scarcely darkened at knees ; puncturation of abdomen close and fine ; size small, 3·5–4 mm. ; aedeagus, fig. 177. (Distinct from *erichsoni* by parallel-sided elytra and closer and finer puncturation of abdomen ; from *palustris* by paler legs, not broadly darkened at knees and by testaceous 1st segment of antennae ; from *flavipes* by the longer tarsi, etc. ; from small species of subgenus *Hypostenus*, with which it might possibly be confused by reason of the very narrow borders of the abdomen, by the fact that it has these borders and by the testaceous 1st segment of antennae). *Marshy places ; local, sometimes common where it occurs ; England*..... **pallipes** Gravenhorst

– Abdomen strongly bordered, not cylindrical..... 2.

2 Elytra strongly widened behind, at base narrower, at apex much wider than pronotum, at suture not longer than pronotum ; antennae (except club), palpi and legs testaceous ; abdomen punctured rather strongly at base and more finely towards apex, the puncturation somewhat sparse in the middle of the tergitest owards their apical borders ; 3–4 mm. ; aedeagus, fig. 175. *Usually in a chalky or sandy places, in moss, etc. ; local but widespread* .... **erichsoni** Rye

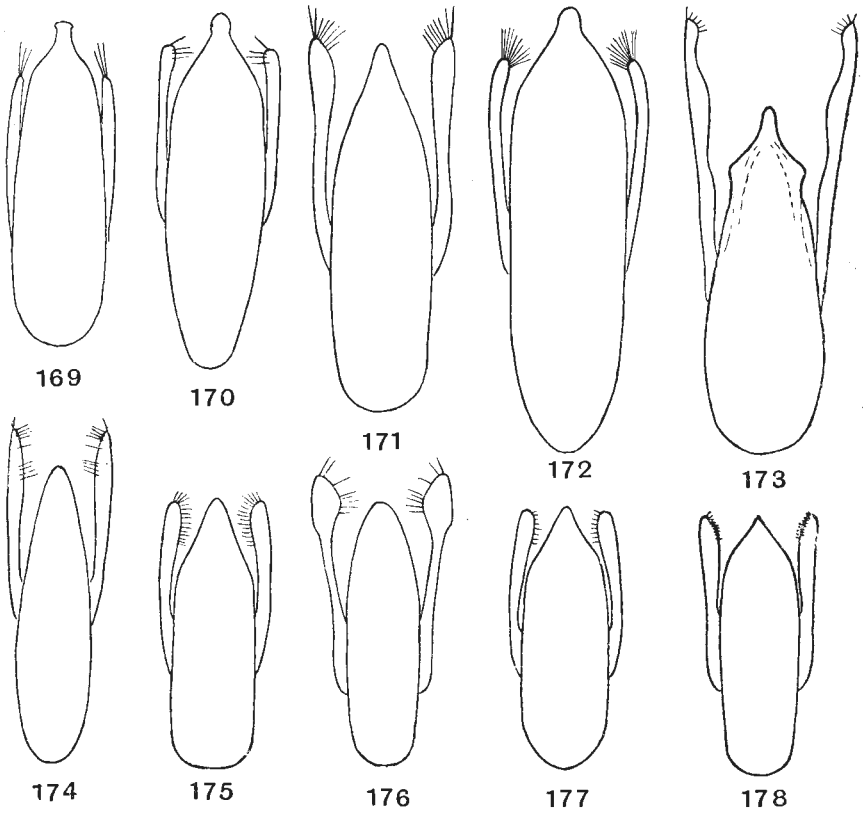
– Elytra quite or almost parallel-sided (in *palustris* slightly widened, *q.v.* p, 72. .... 3.

3 Size, larger, 5·5–6 mm. ; pronotum and elytra very strongly punctured, the puncturation comparable with that of *S. lustrator* and stronger than that of *juno* ; abdomen conical, strongly punctured at base, becoming finely punctured at apex, with long whitish pubescence ; antennae long and slender ; legs clear reddish-testaceous, with at least intermediate and posterior femora very broadly dark at apex ; antennae with 1st segment testaceous or infuscate ; palpi testaceous ; aedeagus, fig. 172. *Very local and rare ; a mountain species ; recorded from a few localities in N. England and Scotland*..... **glacialis** Heer

– Size smaller, 3–5 mm. ; pronotum and elytra moderately punctured, (i.e., very much finer than *juno*) ; antennae shorter..... 4.

4 Antennae with the base entirely testaceous, apical segment of maxillary palpi testaceous ; legs entirely testaceous, with at most posterior femora narrowly darkened at knees..... 5.

– Antennae with at least the basal segment dark or darkened ; palpi with the apical segment black or distinctly darkened (except sometimes in *aceris*)..... 6.



FIGS. 169–178.—Aedeagus of 169, *Stenus aceris* Stephens ; 170, *S. impressus* Germar ; 171, *S. palustris* Erichson ; 172, *S. glacialis* Heer ; 173, *S. geniculatus* Gravenhorst ; 174, *S. ossium* Stephens ; 175, *S. erichsoni* Rye ; 176, *S. subaeneus* Erichson ; 177, *S. pallipes* Gravenhorst ; 178, *fuscicornis* Erichson.

5 Elytra about as long as pronotum (fig. 115) ; puncturation a little sparser, posterior femora scarcely ringed with black at knees ; 4–5 mm. ; aedeagus, fig. 170. (Upper surface with a leaden reflection, a character by which it can be distinguished from *geniculatus* which it resembles in size and short elytra.) *Common*
impressus Germar

– Elytra distinctly longer than pronotum ; puncturation a little closer , posterior femora generally distinctly, but rather narrowly, ringed with black at knees ; 4–5 mm. ; aedeagus, fig. 169. *Rather common ; somewhat local (not Scotland)*
aceris Stephens

6 Pronotum with distinct, rather deep and broad central channel (at least in middle) ; size larger, 4–5 mm. . . . . 7.

– Pronotum without or with very obsolete central channel ; size smaller, 3 mm. ; legs uniformly brown or blackish-brown, with femora narrowly lighter at base ; elytra at suture scarcely longer than pronotum and without depressions ; aedeagus, fig. 178. (Quite distinct from other species of the subgenus ; easily confused with *S. (Nestus) fuscipes*, from which it may be distinguished by the bilobed 4th tarsal segment (fig. 193), by the longer antennae and maxillary palpi, the broader pronotum, longer elytra, and absence of 4 keels on basal abdominal tergites). *In moss, etc. ; very local ; not common ; England*
fuscicornis Erichson

7 Elytra distinctly longer than pronotum, with evident depressions.....8.
– Elytra about as long as pronotum, without or with indistinct depressions....10.
8 Upper surface shining.....9.
– Upper surface rather dull; tibiae infuscate; two basal segments of antennae dark; 4–5 mm.; aedeagus, fig. 174. (Very like *subaeneus*, but on the average a little smaller and narrower, with elytra and hind body much more closely and finely punctured, with head narrower in proportion to eyes with inner margin of eyes more convergent in front). *Moss, vegetable refuse, etc. Common* **ossium** Stephens

Smaller, narrower and more shining; puncturation slightly less close; black rings on femora less developed. *Lundy Island*.....var. **joyi** Scheerpeltz

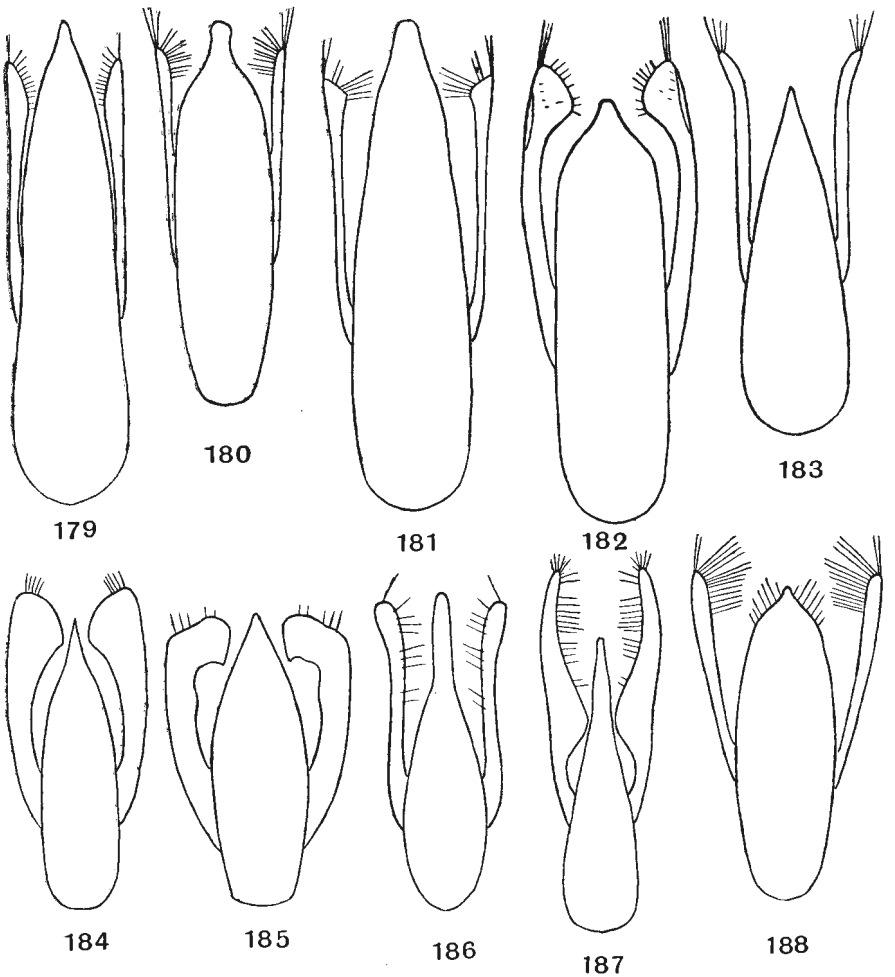
9 Puncturation finer; knees only narrowly dark; antennae paler with 1st segment darkened; elytra relatively narrower; 4–5 mm.; aedeagus, fig. 169. *Somewhat local, rather common (not Scotland)*.....**aceris** Stephens
– Puncturation stronger; tibiae infuscate; femora with apical half dark; antennae darker, with two basal segments dark; elytra relatively broader; 4–5 mm.; fig. 116; aedeagus, fig. 176. (Very like *ossium*, q.v. supra). *Local; not abundant, widely distributed*.....**subaeneus** Erichson
10 Legs testaceous, with knees narrowly dark; size larger, 4–4·5 mm.; elytra parallel-sided; upper surface rather dull; puncturation of fore-parts a little closer, that of abdomen rather strong and close; border of abdomen broader; aedeagus, fig. 173. (In size and short elytra very like *impressus* but easily distinguished by the dull black colour without leaden reflection.) *Dry places; very local and not common, but widely distributed*.....**geniculatus** Gravenhorst
– Legs usually somewhat infuscate or dark brown, with femora broadly dark; size smaller, 3–3·5 mm.; elytra slightly widened behind; upper surface rather shining; puncturation of fore-parts less close, that of abdomen fine and close; borders of abdomen narrower; aedeagus, fig. 171. (The elytra are much less widened behind than in *erichsoni*, from which species and from *pallipes* it may be distinguished by the dark 1st segment of antennae and by the darker legs, and from *pallipes* also by its less cylindrical, more strongly bordered abdomen.) *Marshy places; very local but sometimes abundant where found; east and south-east England*.....**palustris** Erichson

Subgenus **Hypostenus** Rey.

Abdomen without border; 4th segment of tarsi strongly bilobed.

Key to Species.

1 Elytra unicolorous.....2.
– Each elytron with a large orange spot in apical half; surface shining; puncturation very strong throughout; antennae, palpi and legs red, the latter with knees broadly dark; 6–7 mm.; aedeagus, fig. 179. *Marshy places; rare; a few southern localities*.....**kiesenwetteri** Rosenhauer
2 Abdomen conical, strongly narrowed from base to apex; size very small, 2·5 mm.; elytra very broad, distinctly dilated at sides, together distinctly broader than long; puncturation strong; legs black (tarsi often brownish) with basal quarter of tibiae clear yellow; (fig. 117); aedeagus, fig. 187. *Damp places; very local; S. England, Ireland*.....**fornicatus** Stephens
– Abdomen not conical, normal shape; elytra not strongly dilated at sides; size over 3 mm.....3
3 Antennae with at least the base entirely testaceous.....4
– Antennae with basal segment black, the rest testaceous (club sometimes darker).....5.
– Antennae with two basal segments black or blackish (the rest variable).....7.
4 Fore-parts very strongly punctured; upper surface very shining; elytra transverse, broader than head; legs red with knees broadly dark; 5–7 mm.; aedeagus, fig. 180. *Marshy places; common, becoming rarer in the north* **cicindeloides** (Schaller)
– Fore-parts very finely and closely punctured; upper surface not very shining; elytra fully as long as broad, not broader than head; legs red with knees broadly dark; 5–6·5 mm.; aedeagus, fig. 181. *Marshy places; not common, local, southern half of England*.....**solutus** Erichson



FIGS. 179–188.—Aedeagus of 179, *Stenus kiesenwetteri* Rosenhauer ; 180, *S. cicindeloides* (Schaller) ; 181, *S. solutus* Erichson ; 182, *S. similis* (Herbst) ; 183, *S. fulvicornis* Stephens ; 184, *S. tarsalis* Ljungh ; 185, *S. oscillator* Rye ; 186, *S. latifrons* Erichson ; 187, *S. fornicatus* Stephens ; 188, *Dianous coerulescens* (Gyllenhal).

5 Legs testaceous with knees black ; puncturation moderate, close, more or less uniform throughout (much stronger than in *solutus*) ; 5–7 mm. ; aedeagus, fig. 182. *More frequently in drier situations ; common*.....**similis** (Herbst)
- Legs black with tarsi testaceous or brownish.....6.

6 Puncturation coarser ; surface of elytra towards sides less flat, more ridge-like between the punctures ; pronotum more narrowed behind, less barrel-shaped, behind the middle straighter ; fore-parts less shining, a little more conspicuously pubescent ; ♂ with sternite 8 distinctly emarginate at apex ; 4–6 mm. ; aedeagus, fig. 184. *Common*..... **tarsalis** Ljungh

– Puncturation finer, sometimes resembling that of *bifoveolatus*, surface of elytra flat ; pronotum less narrowed behind, barrel-shaped, more rounded behind, widest nearer the middle ; surface a little more shining, less pubescent on fore-parts ; ♂ with sternite 8 not emarginate at apex ; 3·75–5 mm. ; aedeagus, fig. 185. *Very rare and extremely local ; found in several very scattered localities ; probably overlooked*..... **oscillator** Rye

(*Note.*—These two species require very careful comparison ; the characters by which they differ are somewhat variable in both species, and it is probable that they overlap ; the primary and secondary sexual characters of the ♂ are the reliable, constant characters.)

7 Antennae with the middle segments testaceous ; legs usually brown, rather light ; puncturation strong ; 3–4 mm. ; aedeagus, fig. 183. *Rather common, somewhat local*..... **fulvicornis** Stephens

– Antennae with the middle segments dark ; legs usually dark reddish-brown with tibiae usually black ; puncturation stronger ; 3–4 mm. ; aedeagus, fig. 186. *Rather common ; somewhat local ; rarer in the north*..... **latifrons** Erichson

(*S. latifrons* and *S. fulvicornis* are very similar to *S. brunnipes* (p. 68) ; *fulvicornis* may be easily distinguished by the testaceous middle segments of the antennae ; *latifrons* can be distinguished from *brunnipes* by its more strongly bilobed 4th segment of the tarsi (fig. 194), by the longer elytra and the less strong puncturation.)

Genus **Dianous** Samouelle.

Last segment of abdomen with two long hair-like styles : temples longer than in *Stenus*.

1 Colour deep blue- or greenish-black with a large orange spot on each elytron ; legs black ; 6–8 mm. ; (fig. 107) ; aedeagus, fig. 188. (Easily distinguished from the black-legged, orange-spotted species of *Stenus* by the bluish or greenish tint, by its larger size, smoother and more shining surface, finer puncturation and the large size of the orange spot, which is situated much nearer to the side margins than to the suture and occupies nearly half the elytral width, whereas in *Stenus* spp. it is small, situated more or less in the centre of the elytron and occupies about one-third or less of the width.) *In wet moss, by running streams, behind waterfalls ; widely distributed, but localised by its habitat (not Ireland)*
coerulescens (Gyllenhal)

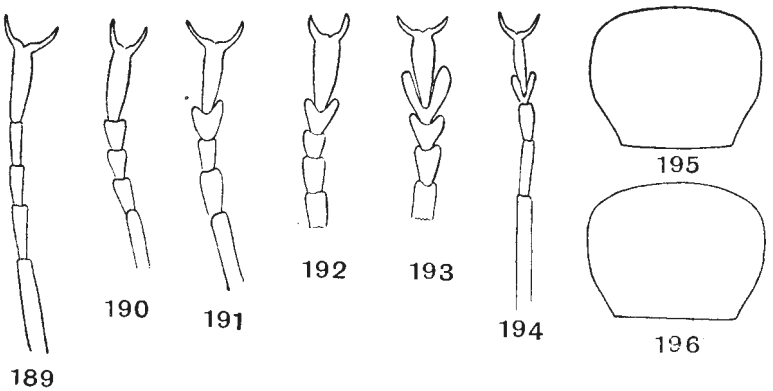
Subfamily Euaesthetinae.

This subfamily is regarded by many authors as merely a tribe of the *Steninae*. So far as the British beetles are concerned it consists of one genus only. The antennae are inserted on the front of the head between the bases of the mandibles ; the posterior coxae are contiguous.

Genus **Euaesthetus** Gravenhorst.

Species very small, of compact build and distinctive appearance (fig. 118). Antennae short, the last two segments forming a club ; eyes small, situated at the back of the sides, leaving practically no temples and long cheeks ; pronotum somewhat cordate, with two distinct longitudinal depressions on disc in basal half ; elytra very short and broad, transverse ; maxillary palpi with last segment long and stout in its apical half ; tarsi 4-segmented.

The beetles are usually found in marshy places, at roots of grass, haystack refuse, flood refuse, etc. They are all very local but very widespread, sometimes occurring in numbers where found.



FIGS. 189–196.—Posterior tarsus of 189, *Stenus proditor* Erichson ; 190, *S. melanarius* Stephens ; 191, *S. argus* Gravenhorst ; 192, *S. brunnipes* Stephens ; 193, *S. fuscicornis* Erichson ; 194, *S. latifrons* Erichson. Pronotum of 195, *Euaesthetus ruficapillus* Lacordaire ; 196, *E. laeviusculus* Mannerheim.

KEY TO SPECIES.

1 Fore-parts rugosely punctured, dull ; sutural striae of elytra not or very indistinctly marked ; colour usually darker, brownish-black with head reddish-brown, sometimes with part or the whole of the body reddish-brown like the head ; legs, palpi and antennae red, with the apical half of last segment of maxillary palpi and the apical segment of antennae a little darkened ; average size larger, 1·5–2 mm. (fig. 118)..... **bipunctatus** (Ljungh)

– Fore-parts shining, finely punctured, not rugose ; sutural stria of elytra marked ; antennae and palpi clear red ; average size smaller, 1·25–1·75 mm.....2.

2 Elytra more finely punctured than pronotum ; pronotum more closely punctured, more widened in front (fig. 195), with depressions longer and deeper ; head a little duller and more rugose ; form narrower..... **ruficapillus** Lacordaire

– Elytra scarcely more finely punctured than pronotum ; pronotum less widened in front (fig. 196), with depressions shorter and less deep ; head a little more shining and less rugose ; pronotum more sparingly punctured ; form broader **laeviusculus** Mannerheim.

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