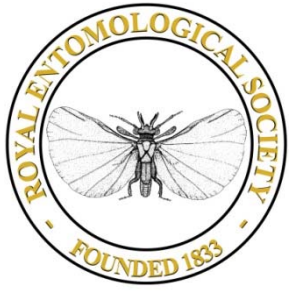
Royal Entomological Society



HANDBOOKS FOR

THE IDENTIFICATION

OF BRITISH INSECTS

To purchase current handbooks and to download out-of-print parts visit:
http://www.royensoc.co.uk/publications/index.htm

ROYAL ENTOMOLOGICAL
SOCIETY OF LONDON

Vol. IV. Part 10.

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS

COLEOPTERA

HISTEROIDEA

By

D. G. H. HALSTEAD

LONDON
Published by the Society
and Sold at its Rooms
41, Queen's Gate, S.W. 7

28th February, 1963

Price 4s. 6d.

REGULATIONS

1.—No member shall be allowed to borrow more than five volumes at a time, or to keep any of them longer than three months.

2.—A member shall at any time on demand by the Librarian forthwith return any volumes in his possession.

3.—Members damaging, losing, or destroying any book belonging to the Society shall either provide a new copy or pay such sum as the Council shall think fit.

COLEOPTERA

HISTEROIDEA

Sphaeritidae and Histeridae

By D. G. H. Halstead

The Superfamily Histeroidea includes three families, Sphaeritidae, Syntellidae and Histeridae. The Syntellidae, composed of a single genus with four species, are found in Mexico and the Orient. The Sphaeritidae, also monogeneric, contain only three species, one of which, *Sphaerites glabratus* (F.), occurs in Scotland and northern England. The family Histeridae, with more than 3000 species and many genera, is represented in the British Isles by 45 indigenous species.

Biology

The biology of the Sphaeritidae awaits discovery. *Sphaerites glabratus* (F.) may be associated with a species of fungus growing in the coniferous woods in which it occurs.

A little is known about the biology of Histerids. Eggs, generally whitish, oblong-ovate and slightly curved, are laid in the spring or early summer. There are three larval instars; a rounded cell within the substratum, or a cocoon formed from material of the substratum, may be made prior to pupation during late summer or autumn. The adults emerge after a few weeks and soon hibernate. There is one generation a year in temperate climates.

In Histerids the hind wings are usually well developed and flight is strong. Characteristic of this family is the instinctive ability to feign death when alarmed: the head is drawn into the prothorax, the legs are retracted beneath the body and the beetle remains motionless.

Histerids are probably all carnivores, preying on mites, insect larvae and primitive insects. Certain species appear to be restricted in their diet, e.g. *Saprinus virescens* (Payk.) preys on the larvae of beetles of the Chrysomelid genus *Phaedon*, and *Teretrius picipes* (F.) preys on the immature stages of Bostrychoid beetles.

The majority of Histerids inhabit dung, carrion and decaying vegetable matter. They are attracted to the habitat when it is in the ammoniacal stage of decay, when fly and beetle larvae, their prey, are most numerous. The myrmecophilous habit is common and a few termitophiles exist in the tropics. In the British Isles there are four myrmecophiles, but one, *Dendrophilus punctatus* (Herbst), is by no means restricted to this habit. A number of Histerid species are associated with mammals: of the British species, *Onthophilus sulcatus* (F.) and *Margarinotus marginatus* (Er.) are found in the nest of *Talpa* (the mole). Species of *Gnathoncus* and *Dendrophilus* are found in birds' nests; they are also to be found in granaries and warehouses, where, however, they are of no economic importance. Members of the genus *Microlomalus* live under bark.

The stalked hypopi of mites are sometimes found attached to the propygidium and the pygidium.

Larvae

Keys to the genera and some of the species of larval Histeridae are given by Perris (1877) and Hinton (1945). The main character of the Histerid larva is a penicillus (brush) of long setae situated at the base of the cutting edge of the large and prominent sickle-shaped mandibles.[1] The body is usually narrow and subparallel ; the thoracic region is well sclerotised, brown, and the ten-segmented abdomen is whitish. Urogomphi, which are generally two-segmented, are borne terminally on the abdomen.

Only 10 of the 45 species of British Histeridae are known in larval form. These are *Teretrius picipes* (F.), *Abraeus globosus* (Hoff.), *Gnathoncus nanus* (Scriba), *Dendrophilus punctatus* (Herbst), *Microlomalus flavicornis* (Herbst), *Hister quadrimaculatus* L., *H. unicolor* L., *Atholus duodecimstriatus* (Schr.), *Carcinops pumilio* (Er.) and *Margarinotus cadaverinus* (Hoff.). Characters for the separation of the genus *Saprinus* are given by Hinton (1945).

Valuable information on rearing techniques is given by Walsh *et al.* (1954), who also reproduce a figure of the larva and pupa of *H. unicolor* L., from Schiodte (1861–83, *De Metamorphosi Eleutheratorum Observationes*).

Collecting

Dung, carrion, rotting vegetable matter including fungi and the soil beneath these, oozing sap of trees, grass roots, flood refuse, ants' nests, birds' nests (especially those in hollow trees) *etc.*, should all be worked for Histerids. Again the reader is referred to Walsh, where collecting techniques and preparation of material for the collection, are fully discussed.

Characters of Adult Histeroid Beetles

Adult Histeridae are characterised by the geniculate (elbowed) antenna with solid club, generally of three fused segments, by the compact strongly convex-oval form, sometimes cylindrical or somewhat flattened, and by the hard, generally shining, exoskeleton. Both the propygidium and pygidium are commonly exposed and the elytra are generally truncate. The legs are more or less flattened and can be retracted against the body. The tibiae are commonly dentate and the number of tarsal segments of the front, mid and hind legs is 5–5–5, except in the *Acritini* where it is 5–5–4.

The Sphaeritid adult characters may be found in the key and by reference to figure 1, but perhaps the most apparent difference is that the form is not compact.

The parts of the typical Histerid beetle are identified in figures 2*a* and 2*b*.

Notes on Nomenclature and on the Keys

Certain species have been placed in the genus *Margarinotus*, following Wenzel (1944). Lewis (1906) erected a new genus, *Peranus*, to receive

[1] A mandibular penicillus is also found in the somewhat similar larvae of the genus *Helophorus* (Hydrophiloidea). Larvae of this genus and of Histeridae can be separated on ocelli : *Helophorus*, 5 or 6 ocelli, Histeridae, ocelli absent or with only one on each side.

Fowler, 1887–1913[2]	Joy, 1932	Kloet and Hincks, 1945	Present Handbook
Acritus punctum (Aubé)	*Halacritus punctum* (Aubé)	*Acritus punctum* (Aubé)	*H. punctum* (Aubé)
.	.	*Acritus atomarius* (Aubé)	*Aeletes atomarius* (Aubé)
[3]*Acritus nigricornis* (Hoff.)	*A. nigricornis* (Hoff.)	*A. nigricornis* (Hoff.)	*A. nigricornis* (Hoff.)
Acritus minutus (Herbst)			
Saprinus immundus (Gyll.)	*S. immundus* (Gyll.)	*S. aeneus* var. *immundus*	*S. immundus* (Gyll.)
Saprinus nitidulus (F.)	*S. semistriatus* (Sciba)	*S. semistriatus* (Scriba)	*S. semistriatus* (Scriba) *S. cuspidatus* Ihssen *S. subnitescens* Bickh.
Saprinus quadristriatus (Hoff.)	*S. rugiceps* (Dufts.)	*S. rugiceps* (Dufts.)	*Hypocaccus rugiceps* (Dufts.)
Saprinus metallicus (Herbst)	*S. metallicus* (Herbst)	*S. metallicus* (Herbst)	*Hypocaccus metallicus* (Herbst)
Saprinus rugifrons (Payk.)	*S. rugifrons* (Payk.)	*S. rugifrons* (Payk.)	*Hypocaccus rugifrons* (Payk.)
Saprinus maritimus (Steph.)	*Pachylopus maritimus* (Steph.)	*P. maritimus* (Steph.)	*Baeckmanniolus maritimus* (Steph.)
Gnathoncus ?	*G. punctulatus* Thom.	*G. punctulatus* Thom.	*G. nanus* (Scriba)
Gnathoncus ?	.	*G. rotundatus* var. *nannetensis* Mars.	*G. nannetensis* (Mars.)
Gnathoncus nidicola Joy	*G. nidicola* Joy	*G. nidicola* Joy	*G. schmidti* Reitt.
Carcinops 14-*striata* (Steph.)	*C. quattuordecimstriata* (Steph.)	*C. quattuordecimstriata* (Steph.)	*C. pumilio* (Er.)
Carcinops minima Aubé	*Cissister minima* (Aubé)	*Kissister minima* (Aubé)	*K. minima* (Aubé)
Hister bimaculatus L.	*H. bimaculatus* L.	*H. bimaculatus* L.	*Peranus bimaculatus* (L.)
Hister 12-*striatus* Schr.	*H. duodecimstriatus* Schr.	*H. duodecimstriatus* Schr.	*Atholus duodecimstriatus* (Schr.)
Hister merdarius Hoff.	*H. merdarius* Hoff.	*H. merdarius* Hoff.	*Margarinotus merdarius* (Hoff.)
Hister cadaverinus Hoff.	*H. cadaverinus* Hoff.	*H. cadaverinus* Hoff.	*Margarinotus cadaverinus* (Hoff.)
Hister succicola Thom.	*H. striola* Sahlb.	*H. striola* Sahlb.	*Margarinotus striola* (Sahlb.)
Hister stercorarius Hoff.	*H. stercorarius* Hoff.	*H. stercorarius* Hoff.	*Margarinotus stercorarius* (Hoff.)
Hister purpurascens Herbst	*H. purpurascens* Herbst	*H. purpurascens* Herbst	*Margarinotus purpurascens* (Herbst)
Hister marginatus Er.	*H. marginatus* Er.	*H. marginatus* Er.	*Margarinotus marginatus* (Er.)
Hister neglectus Germ.	*H. neglectus* Germ.	*H. neglectus* Germ.	*Margarinotus neglectus* (Germ.)
Hister carbonarius Ill.	*H. carbonarius* Ill.	*H. carbonarius* Ill.	*Margarinotus carbonarius* (Ill.)

[2] Fowler, Vol. VI (Supplement), 1913, introduces the genus *Microlomalus* Lewis (misspelt as *Micromalus*) to receive the species *Paromalus flavicornis* (Herbst) and *P. parallelepipedus* (Herbst) and refers to the introduction by Lewis of the genera *Halacritus*, *Hypocaccus*, *Kissister* and *Pachylopus*.

[3] *Acritus nigricornis* (Hoff.) (= *minutus* (Payk.), *nec* (Herbst)).

certain species of *Hister* sens. lat. and re-erected the genus *Atholus* Thomson, containing certain species. Bickhardt (1910, *Histeridae, in* Junk, W., *Coleopterorum Catalogus,* Berlin) regards these genera as subgenera. The author is following Lewis in the present book. Other nomenclatorial changes have been made in accordance with recent work on the family, and in order to facilitate ready correlation with British works the table on the previous page is given

The imported species, *Dendrophilus xavieri* Mars., is included in the key.

" One species only " in the description of a genus, means that in the British Isles there is one species belonging to the genus.

Acknowledgments

I am much indebted to the Trustees of the British Museum (Nat. Hist.), for facilities afforded ; to Dr. E. B. Britton for the same, and for assistance and advice ; to Dr. G. Dahlgren for information regarding the *Saprinus semistriatus* group and to Mr. M. E. Bacchus and Mr. C. W. Coombs for testing the keys. For supply or loan of material I wish to thank the authorities of the Royal Scottish Museum ; the Manchester University Museum; the Norwich Castle Museum ; the University Museum of Zoology, Cambridge ; the South London Entomological and Natural History Society ; Rev. C. E. Tottenham, Dr. S. Stockmann, Mr. A. A. Allen and a number of other private collectors. Thanks are also due to Miss H. Rix for typing the manuscript.

Much of this work was carried out whilst in receipt of a Treasury bursary from the Agricultural Research Council.

References

Blair, K. G., 1938, The British species of *Acritus Lec.* (Col. Histeridae). *Ent. mon. Mag.* **74** : 53–54.

Brown, W. J., 1944, Some new and poorly known species of Coleoptera, 2. *Canad. Ent.* **76** : 6.

Dahlgren, G., 1962, Über eininge *Saprinus*-arten (Col. Histeridae). *Opusc. ent.* **27** : 237–248.

Fowler, W. W., 1887–1913, *The Coleoptera of the British Islands,* vols. 3 and 6 (Suppl.). London.

Hinton, H. E., 1945, The Histeridae associated with stored products. *Bull. ent. Res.* **35** : 309–40.

Ihssen, G., 1949, *Saprinus semistriatus* Scriba—eine Mischart. *Saprinus cuspidatus* nov. spec. ; *Saprinus meridionalis* nov. spec. (Coleopt. Histeridae). *Koleopt. Z.* **1** : 176–90.

Joy, N. H., 1932, *Practical Handbook of British Beetles.* 2 vols. London.

Kloet, G. S. and Hincks, W. D., 1945, *A Check List of British Insects.* Stockport.

Lewis, G., 1906, New species of Histeridae and notices of others. *Ann. Mag. nat. Hist.* (7) **17** : 401–2.

—— 1910, *Ibid.* (8) **6** : 56.

Perris, E., 1877, *Larves de Coléoptères.* Paris.

Reichardt, A., 1941, *Faune de l'URSS. Insectes Coléoptères* **5**. *Sphaeritidae et Histeridae,* 1. Moscow [In Russian, with German keys].

Stockmann, S., 1957, Beiträge zur Kenntnis der Koleopterenfauna Ostfennoskandiens, 5. Die *Gnathoncus*—Arten Ostfennoskandiens. *Notul. ent. Helsingf.* **37** : 67–76.

Walsh, G. B. *et al.*, 1954, *A Coleopterist's Handbook.* London.

Wenzel, R. L., 1944, On the classification of the Histerid beetles. *Zoological Series Field Museum of Natural History (Chicago)* **28** : 51–151.

—— 1955, The Histerid beetles of New Caledonia (Coleoptera : Histeridae). K. P. Schmidt Anniversary Vol. 1, *Fieldiana, Zool.* **37** : 601–34.

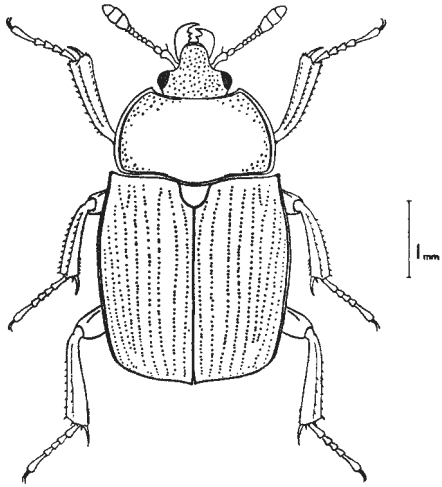


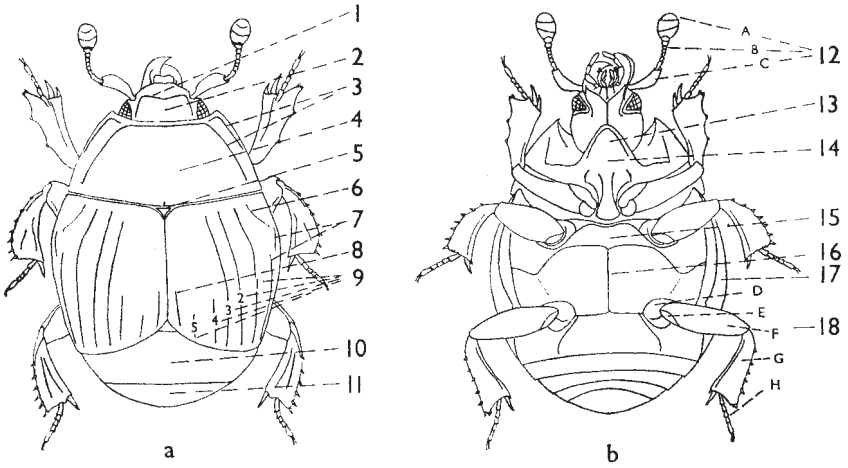
FIG. 1.—*Sphaerites glabratus* (Fabricius).

Superfamily **HISTEROIDEA**

KEY TO FAMILIES

Elytra with nine longitudinal rows of punctures; anterior tibiae not dentate, bearing small spines only; scutellum large; form open (fig. 1). . . . SPHAERITIDAE

Elytra never with nine longitudinal rows of punctures (not as in fig. 1); anterior tibiae commonly dentate (figs. 2*a*, *b*); scutellum small; form compact HISTERIDAE



FIGS. 2*a*, 2*b*.—*Hister unicolor* L. (2*a*) Dorsal view: (1) frontal stria; (2) frons; (3) pronotal stria; (4) pronotum; (5) scutellum; (6) humeral stria; (7) subhumeral striae; (8) sutural stria; (9) dorsal striae, 1–5; (10) propygidium; (11) pygidium. (2*b*) Ventral view: (12) antenna (*A*, club; *B*, funiculus; *C*, scape); (13) gular lobe; (14) prosternum; (15) mesosternum; (16) metasternum; (17) elytral epipleuron; (18) posterior leg (*D*, coxa; *E*, trochanter; *F*, femur; *G*, tibia; *H*, tarsus).

Family SPHAERITIDAE

Genus **Sphaerites** Duftschmidt

One species only, **Sphaerites glabratus** (Fabricius) (fig. 1).

Shining, black with a brassy or green metallic reflection. (Apices of the posterior trochanters contiguous to the femora.) Length 4·5–6 mm. *In decaying fungi (may be truly associated with this) at oozing sap of trees and in dung ; generally in coniferous forests. Rare. Scotland, Cumberland and Northumberland.*

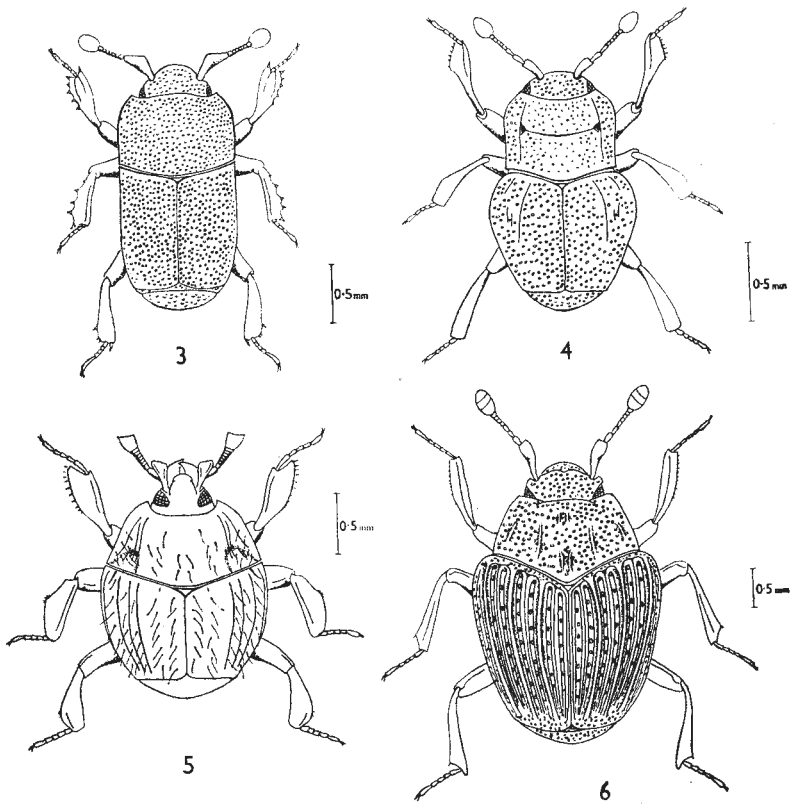
Family HISTERIDAE

KEY TO GENERA

(If the length of the specimen $\leq 0{\cdot}8$ *mm., direct reference to couplet* 19 *may be made. If, by taking this course, difficulties arise, the key must be worked through from the beginning.)*

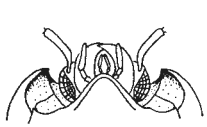
1 Pronotum with a deep transverse furrow in the middle (fig. 4)
Plegaderus Erichson

One species only, **Plegaderus dissectus** Erichson (fig. 4). Length 1–1·5 mm. Black to brown. Pronotal punctures finer than elytral punctures. *In wet decaying wood of* Ulmus *(elm),* Fagus *(beech), etc. Rare, but common locally, especially in Windsor Forest and the New Forest. S. England to Nottingham.*

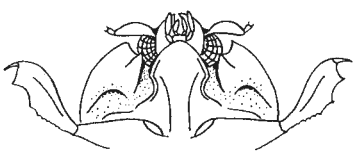


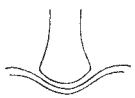
FIGS. 3–6.—(3) *Teretrius picipes* (F.) ; (4) *Plegaderus dissectus* Er. ; (5) *Hetaerius ferrugineus* (Ol.) ; (6) *Onthophilus sulcatus* (F.).

– Pronotum without a deep transverse furrow in the middle.....2
2 Pronotum and elytra with longitudinal keels (fig. 6)....**Onthophilus** Leach (p. 10)
– Pronotum and elytra without keels.....3
3 Club of antenna obconical and unsegmented; elytra and pronotum with sparse but long pubescence (fig. 5).....**Hetaerius** Erichson
One species only, **Hetaerius ferrugineus** (Olivier) (fig. 5).
Length 1·5–2 mm. Light reddish-brown. Pronotum with a large fovea at posterior angles. *Myrmecophilous, with the ants* Formica fusca *L., and* F. sanguinea *Lat. Very rare. S. and E. England.*
– Club of antenna oval and usually appearing segmented (segments fused); elytra and pronotum glabrous 4
4 Apical region of prosternum bent ventrally and forming a gular lobe (figs. 2*b*, 7, 9) . .5
– Apical region of prosternum not or very slightly bent ventrally; gular lobe absent (fig. 8) or very small.....12

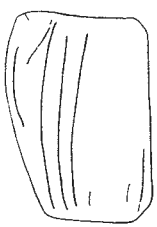

7

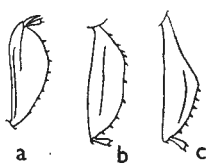

8


9


10


11


12

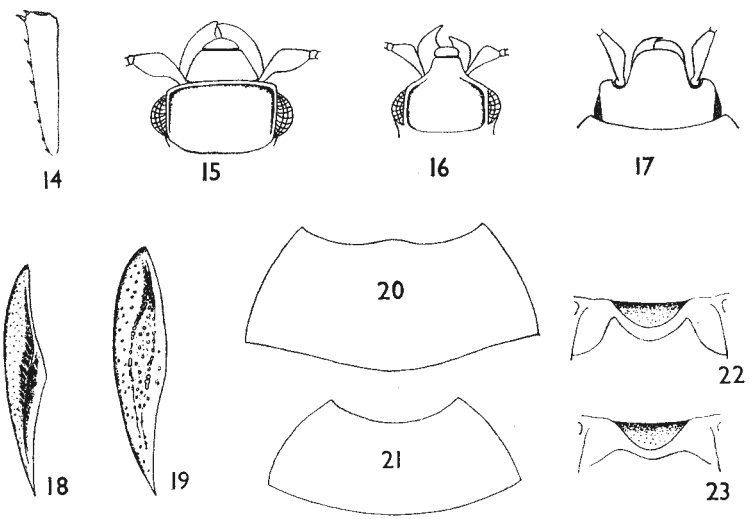


13

FIGS. 7–13.—(7) *Peranus bimaculatus* (L.), ventral view of part of prosternum and head; (8) *Saprinus semistriatus* (Scriba), the same; (9) *Carcinops pumilio* (Er.), ventral view of prothorax (to show antennal cavities); (10) *Hister unicolor* (L.), base of prosternum and apex of mesosternum; (11) *Peranus bimaculatus* (L.), the same; (12) *Margarinotus stercorarius* (Hoff.), left elytron; (13) *Dendrophilus punctatus* (Herbst), tibia (*a*, anterior; *b*, intermediate; *c*, posterior).

5 Antennal cavities anterior (fig. 7).....6
– Antennal cavities posterior (fig. 9).....9
6 Pronotum with a distinct fovea near front angles; a large red mark at elytral apices.....**Peranus** Lewis
One species only, **Peranus bimaculatus** (Linnaeus) (=*Hister bimaculatus* L.). Black, shining; elytra with a large, well-defined red area apically. Length 3·5–4·5 mm. *In compost heaps, dung etc. Local.*
– Pronotum without a fovea near front angles; elytra black.....7

7 Elytra without subhumeral striae, or with two abbreviated subhumeral striae (fig. 2*a*), or with one subhumeral stria extending from basal half or basal third to apex 8
– Elytra with one subhumeral stria, usually almost entire, but abbreviated in *Margarinotus stercorarius* (Hoff.) (fig. 12) ..... **Margarinotus** Marseul (p. 10)
8 Mesosternum emarginate in front, prosternum rounded at base (fig. 10) **Hister** Linnaeus (p. 9)
– Mesosternum truncate or very feebly sinuous in front, prosternum quite straight at base (fig. 11) ..... **Atholus** Thomson
One species only, **Atholus duodecimstriatus** (Schrank) (= *Hister duodecimstriatus* Schr.). Elytra black. Length 4–5·5 mm. *In dung and compost heaps. Local, but rare in Scotland.*
9 All tibiae dilated (fig. 13) ..... **Dendrophilus** Leach (p. 11)
– Anterior tibiae dilated, intermediate and posterior tibiae slender 10



FIGS. 14–23.—(14) *Myrmetes piceus* (Payk.), anterior tibia; (15) *Hypocaccus rugiceps* (Dufts.), head (to show ridge); (16) *Saprinus virescens* (Payk.), head; (17) *Teretrius picipes* (F.) head (to show mandible size); (18, 19) Epipleura (showing degree of puncturation); (20) *Margarinotus neglectus* (Germar), pronotum; (21) *Margarinotus carbonarius* (Ill.), pronotum; (22) *Microlomalus parallelepipedus* (Herbst), basal region of mesosternum; (23) *Microlomalus flavicornis* (Herbst), basal region of mesosternum.

10 Body elongate; elytra with dorsal striae more or less indistinct; scutellum inconspicuous ..... **Microlomalus** Lewis (p. 11)
— Body oval; elytra regularly and strongly striate; scutellum conspicuous 11
11 Elytra with four dorsal striae; length 1–1·8 mm.; anterior tibiae parallel-sided for middle half ..... **Kissister** Marseul
One species only, **Kissister minima** (Aubé). Black, antennae and legs red. Anterior tibiae dilated and with three teeth; elytra with four fine dorsal striae. *At grass roots, especially in sandy places and at the roots of* Rumex acetosella *L. (Sheep's sorrel) (A. A. Allen*, 1960, Ent. mon. Mag. **96** : 272). *Local. S. England to Lincolnshire.*
— Elytra with five dorsal striae; length 1·6–2·8 mm.; anterior tibiae broadened from base to apex ..... **Carcinops** Marseul
One species only. **Carcinops pumilio** (Erichson) (= *Carcinops quattuordecimstriata* (Steph.)). Black, strongly shining. *In carrion, rotting grain, decaying vegetable matter, bat-dung etc. Very local, England.*

12 Mandibles small, not prominent (fig. 17); length 0·8–1·5 mm., except for *Teretrius picipes* (F.), length 1·8–2·4 mm. (*see* couplet 17).....17
— Mandibles large, prominent (figs. 15, 16); length 1·5–5·5 mm.....13
13 Anterior tibiae without distinct teeth, only small spines present (fig. 14); elytra and pronotum impunctate, and elytra only indistinctly striate at sides
Myrmetes Marseul

A monotypic genus. **Myrmetes piceus** (Paykull). Length 2–2·8 mm. Dark to light brown, dull. *Myrmecophilous, with the ant* Formica rufa *L. Local. England and Scotland.*

— Anterior tibiae with distinct teeth; elytra more or less punctured and striate....14
14 Eyes separated from the frons by a distinct rim (figs. 15, 16).....15
— Eyes not separated from the frons by a rim.....**Gnathoncus** duVal (p. 11)
15 Pronotum impunctate except for a very narrow row of punctures at the basal margin.....**Baeckmanniolus** Reichardt

One species only, **Baeckmanniolus maritimus** (Stephens) (= *Pachylopus maritimus* (Steph.)). Length 3–5 mm. Black sometimes with a brassy reflection. Elytral striae strongly punctured; anterior tibiae with six or seven teeth. *Found on the coast in dung, etc. Local.*

— Pronotum punctate (often with an impunctate disc).....16
16 Rim separating eyes from frons continued forward behind antennal fossae and then traversing frons to form a ridge (fig. 15).....**Hypocaccus** Thomson (p. 13)
— Rim separating eyes from frons continued forward behind antennal fossae but not traversing frons (fig. 16).....**Saprinus** Erichson (p. 14)
17 Form subcylindrical; posterior tibiae bearing teeth apically (*see* fig. 3)
Teretrius Erichson

One species only, **Teretrius picipes** (Fabricius) (fig. 3). Length 1·8–2·14 mm. Black or dark-brown. *Preys on the immature stages of the beetles* Lyctus brunneus *Stephens, and* L. fuscus (*L.*) *and other Bostrychoids. Very rare. South England and ? Norfolk.*

— Form oval and somewhat globular, posterior tibiae without teeth 18
18 Posterior tarsi five-segmented; elytral epipleura without striae; length 1–1·5 mm..
Abraeus Leach (p. 11)
— Posterior tarsi four-segmented; elytral epipleura with striae; length 0·8–1·4 mm.
19
19 Scutellum visible; dorsal surface with distinct deep punctures.....20
— Scutellum not visible; dorsal surface with indistinct shallow punctures
Aeletes Horn

One species only, **Aeletes atomarius** (Aubé) (= *Acritus atomarius* (Aubé)). Length 0·8–1 mm. Dark brown. *Found in the burrows of the beetle* Dorcus parallelopipedus (*L.*). (*Associated with the ant* Lasius brunneus (*Lat.*) *on the Continent.*) *Worcester and Herefordshire.*

20 Pronotum with a transverse line of crenulate (scalloped) punctures at the basal margin, in the middle this line arched forward from the base; anterior tibiae multisetose..... **Acritus** LeConte (p. 11)
— Pronotum without a transverse line of crenulate punctures at the basal margin; anterior tibiae with spinules.....**Halacritus** Schmidt

One species only, **Halacritus punctum** (Aubé) (= *Acritus punctum* (Aubé)). Length 1–1·4 mm. Dark brown. *A maritime species occurring on the sand and under seaweed just above high-water level. S. England to Leicestershire. Local.*

Genus **Hister** Linnaeus

Key to Species

1 Prothorax coarsely punctured on under surface of margins; punctures bearing long setae. Black, but each elytron with two more or less distinct red markings, often confluent (the red marks are obscured or indistinct in some specimens—at least twenty varieties have been named). Length 8–11 mm. *In dung, carrion etc. Very rare, S. England* .....**quadrimaculatus** Linnaeus
– Prothorax with under surface of margins not coarsely punctured; punctures, if present, without setae.....

2 Length 8–10 mm.; elytra with subhumeral striae, the outer abbreviated behind and usually indistinct in front (sometimes represented by a few punctures only), the inner abbreviated in front (*see* fig. 2*a*); anterior tibiae with three teeth, the apical bifid. Black. *In compost heaps, cow-dung, rotting fungus, etc. Local*
unicolor Linnaeus

– Length 3·5–4·5 mm.; elytra without subhumeral striae; anterior tibiae with four teeth, the apical bifid. Black. *In cow-dung, etc. Local, apparently not recorded from Scotland*.....**bissexstriatus** Fabricius

Genus **Margarinotus** Marseul

KEY TO SPECIES

1 Pronotum with two striae near lateral margin.....2
– Pronotum with one stria near lateral margin.....4
2 Form long-oval, subparallel; antennal club red or red-brown; anterior tibiae with four teeth, the apical bifid (often only three teeth distinct). Area between the lateral striae of the pronotum often punctate. Black. Length 5–7·5 mm. *In rotting vegetation, birds' nests, etc. Local*.....**merdarius** (Hoffmann, J. J.)
– Form short-oval; antennal club black-brown; anterior tibiae with five or six teeth.....3
3 Dorsal stria 3 with a shallow fovea at base, the fovea sometimes extending over dorsal stria 4; frontal stria bi-arcuate. Black. Length 5·5–7 mm. *In carrion, putrid fungi, etc. Local*.....**striola** (Sahlberg)
– Dorsal stria 3 without a shallow fovea at base; frontal stria in the form of a semicircle, usually indistinct in the middle and sometimes very slightly depressed. Black. Length 6–9 mm. *In carrion, rotting vegetation, etc. Common*
cadaverinus (Hoffmann, J. J.)
4 Subhumeral stria on elytra abbreviated behind for approximately one-half and in front for approximately one-eighth (fig. 12). (Puncturation of pygidium and propygidium exceedingly coarse.) Black. Length 4–6 mm. *In dung, very rare, S. England to Lancashire*.....**stercorarius** (Hoffmann, J. J.)
– Subhumeral stria on elytra almost entire.....5
5 Epipleura of elytra finely and sparsely punctured (fig. 18); elytra usually with a large ill-defined reddish spot apically, but not infrequently the elytra are quite black. Length 3·5–4·5 mm. *Rotting vegetation, compost heaps, etc. Local*
purpurascens (Herbst)
– Epipleura of elytra distinctly punctured (fig. 19); elytra always unicolorous black.....6
6 Elytra with sutural stria almost entire and often meeting dorsal stria 5 basally; pronotum generally distinctly punctured at sides. Length 4–5·5 mm. *In nests of* Talpa (*the mole*). *England and Scotland. Local*....**marginatus** (Erichson)
– Elytra with sutural stria reaching only from about middle to apex; pronotum not punctured at sides.....7
7 Length 5·5–7·5 mm.; long-oval; pronotum less strongly narrowed in front (fig. 20); frontal stria more distinctly angled in the middle. *In carrion, flood refuse, moss, etc. Local*.....**neglectus** (Germar)
– Length 4–6 mm.; short-oval; pronotum more strongly narrowed in front (fig. 21); frontal stria less distinctly angled in the middle, sometimes without angle. *In carrion, dung, rotting vegetation, etc. Common*.....**carbonarius** (Illiger)

Genus **Onthophilus** Leach

KEY TO SPECIES

1 Pronotum with five raised keels, the central one double and interrupted, the spaces between them having coarse round punctures (fig. 6). Length 2·4–4 mm. *In the nests of* Talpa (*the mole*). *Rare, S. England to Nottinghamshire*
sulcatus (Fabricius)
– Pronotum with six raised keels, the spaces between them having elongate punctures. Length 1·8–2·4 mm. *In horse-dung, rotting vegetation, leaf litter, etc. Common*
striatus (Forster)

Genus **Dendrophilus** Leach

KEY TO SPECIES

1 Dorsal surface without distinct punctures, though micropunctate. Elytra with fine entire striae. Length 2–3 mm. Dark brown, dull. *Myrmecophilous, in the nests of* Formica rufa *L. Local*.....**pygmaeus** (Linnaeus)

– Dorsal surface with distinct punctures 2

2 Elytra with sutural stria absent; dorsal stria 5 usually absent but may be present on basal half of elytron. Length 2·6–4 mm. Black to dark brown. *Found with the ant* Formica rufa *L., but also in birds' nests, carrion, granaries, etc. Local*
punctatus (Herbst)

– Elytra with sutural stria generally present but may be obsolete or present only at the base; dorsal stria 5 present and as long as dorsal stria 4. Length 2·5–3·8 mm. Black. *Found in rotting grain and flour in warehouses and flour mills in Bristol, London and Liverpool. A native of Japan, but also found in N. America*
xavieri Marseul

Genus **Microlomalus** Lewis

KEY TO SPECIES

1 Form long-oval, distinctly narrowed in front and behind; mesosternal striae characteristic (fig. 23). Black or dark brown. Length 1·8–2·5 mm. *Under bark of* Quercus (*oak*), Fagus (*beech*) *etc., and sometimes in the rotten wood. Local, S. England*.....**flavicornis** (Herbst)

– Form parallel, not distinctly narrowed in front and behind; mesosternal stria characteristic (fig. 22). Black to dark brown. Length 1·8–2·0 mm. *Under bark. Very rare indeed. New Forest, Hants*.....**parallelepipedus** (Herbst)

Genus **Abraeus** Leach

KEY TO SPECIES

1 Anterior tibiae angularly dilated, with a tooth before apex (fig. 29). Brown. Length 1·3–1·5 mm. *In moist rotten wood of* Fagus (*beech*), Fraxinus (*ash*), *etc. Local*.....**globosus** (Hoffmann, J. J.)

– Anterior tibiae dilated and rounded, without tooth before apex (fig. 30). Brown. Length 1–1·3 mm. *In rotten wood. S. England to Warwick, rare*
granulum Erichson

Genus **Acritus** LeConte

KEY TO SPECIES

1 Dorsal surface shining, not reticulate between punctures but apical punctures of elytra often becoming longitudinally rugose (wrinkled). Brown. Length 0·8–1·0 mm. *In rotting vegetation, haystack refuse, etc. Common*
nigricornis (Hoffmann, J. J.)

– Dorsal surface comparatively dull, reticulate between punctures. Dark brown to black. Length 0·8–1·0 mm. *Found on burnt ground associated with the fungus* Pyronema confluens (*Discomycetes*). *Surrey, Essex, Kent and Dorset*
homoeopathicus Wollaston

Genus **Gnathoncus** du Val

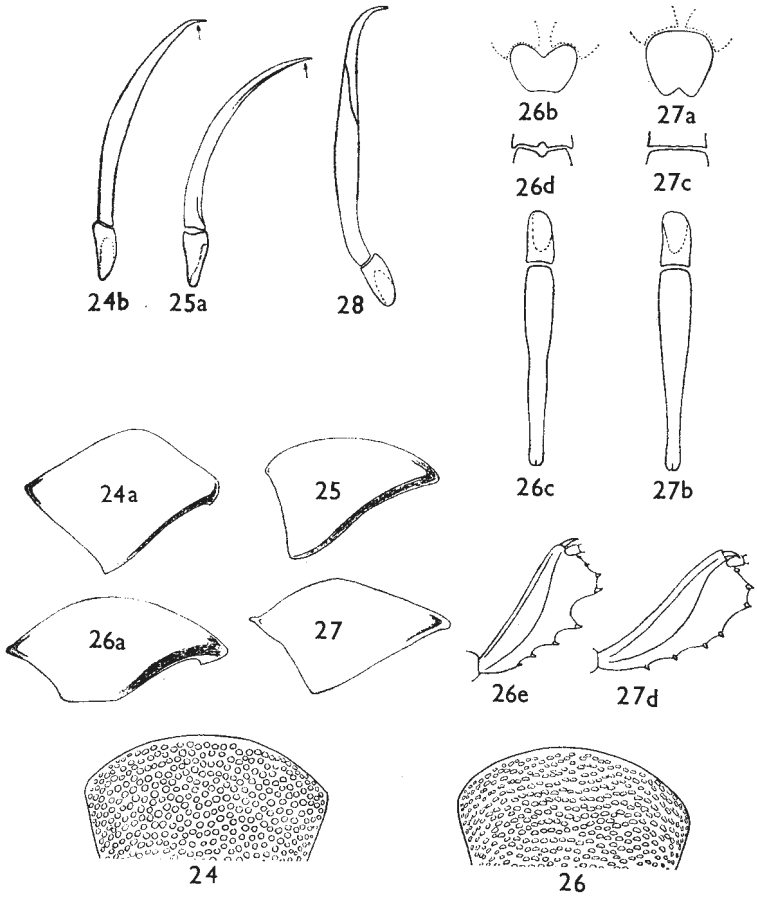
In this genus some of the external characters are difficult to appreciate without material for comparison. Genitalia of male *Gnathoncus* should be dissected in order to confirm specific determination.

The male has large broad flat setae beneath the four basal segments of the front tarsi; these are not present in the female.

Dissection of genitalia

The following technique is suggested :

Soften the specimen by placing it in boiling water for 1–2 minutes. Place on a flat surface on its back and hold with the index finger, leaving only the last abdominal segments exposed. Insert a fine needle between the apex



FIGS. 24–28.—*Gnathoncus* spp. (24, 24*a*, 24*b*) *G. nannetensis* (Mars.): (24) pygidial puncturation, outline, basal half; (24*a*) lateral view, eighth abdominal sternite, ♂; (24*b*) aedeagus, profile. (25, 25*a*) *G. buyssoni* Auzat, ♂: (25) lateral view, eighth abdominal sternite; (25*a*) aedeagus, profile. (26–26*e*) *G. nanus* (Scriba); (26) pygidial puncturation, outline, basal half; (26*a*) lateral view, eighth abdominal sternite, ♂; (26*b*) tenth abdominal tergite, ♂; (26*c*) aedeagus, dorsal view; (26*d*) junction of parameres and basal piece, ventral view; (26*e*) anterior tibia, ♂. (27–27*d*) *G. schmidti* Reitt., ♂: (27) lateral view, eighth abdominal sternite; (27*a*) tenth abdominal tergite; (27*b*) aedeagus, dorsal view; (27*c*) junction of parameres and basal piece, ventral view; (27*d*) anterior tibia, ♂; (28) *G. nidorum* Stockmann, aedeagus, profile.

of the pygidium and the last abdominal sternite. The pygidium may now be moved dorsally, exposing the aperture left by the retracted genitalia. Remove the genitalia with a pair of very fine forceps (a fine needle should be used in the case of *Saprinus*). Boil the genitalia in 10 per cent. caustic potash solution for two minutes or leave in nearly boiling solution for a little longer. Place in water and dissect under a binocular microscope.

KEY TO SPECIES

1 Pygidium with punctures of basal half distinctly round (fig. 24). If pygidial microsculpture dense, sutural stria one-third to one-half elytral length.....2
– Pygidium with punctures of basal half not distinctly round, oblong or ovate (fig. 26). (In *G. schmidti* some of the central punctures of the basal half of the pygidium are more rounded, but dense pygidial microsculpture is associated with a sutural stria of one-tenth to one-sixth elytral length).....3
2 Sutural stria one-sixth to one-third elytral length; interspaces of pygidium with sparse, often indistinct, microsculpture; apical half of elytra more or less smooth. Male genitalia (figs. 24*a*, 24*b*). Black. Length 2·4–4·0 mm. *In birds' nests, carrion, fungi* (Polyporus) *and in granaries. Local*
nannetensis (Marseul) (= *rotundatus* var. *a.* Hoffmann)
– Sutural stria one-third to one-half elytral length; interspaces of pygidium with dense distinct microsculpture; apical half of elytra usually distinctly rugose, especially towards hind angles. Male genitalia (figs. 25, 25*a*). Black. Length 2·2–3·4 mm. *In birds' nests (recorded from Scandinavia in squirrel nests and in fungi* (Polyporus *and* Poria)). *Berkshire, Hampshire, Kent, Norfolk, Surrey, Sussex*.....**buyssoni** Auzat
3 [4]Puncturation of basal half of pygidium transverse, punctures oblong or ovate (fig. 26) interspaces without distinct microsculpture; front tibia deeply emarginate between the spines in both sexes (fig. 26*e*); apical half of elytra with slight rugosity or smooth; male genitalia (figs. 26*a*–26*d*). Black or dark brown. Length 1·8–3·0 mm. *In nests of birds, especially pigeon* (Columba), *bat roosts, carrion and in granaries. Local*.....**nanus** (Scriba) (= *punctulatus* Thomson)
– Puncturation of basal half of pygidium not so transverse, punctures somewhat rounded (pygidial puncturation denser than in *G. buyssoni* or *G. nannetensis*) interspaces with distinct microsculpture; front tibia of male only slightly emarginate between the spines (fig. 27*d*); front tibia of female more distinctly but not deeply emarginate; apical half of elytra usually with strong rugosity (sutural stria one-tenth to one-sixth elytral length); male genitalia (figs. 27–27*c*). Dark brown or black. Length 2·0–3·0 mm. *In birds' nests, rarely in carrion or granaries. Local*
schmidti Reitter (= *nidicola* Joy and *punctator* Reichardt, *nec* Rtt.)

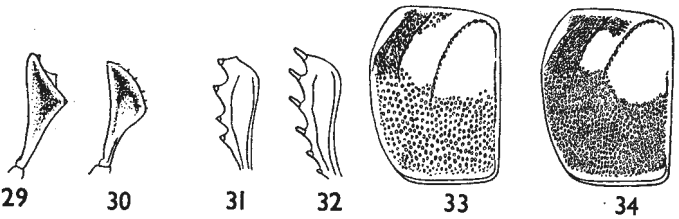
[4] A new species, *Gnathoncus nidorum* Stockmann, was described from Scandinavia in 1957. This species may be present in the British fauna. The following description will serve to distinguish it from *G. nanus*:
Front tibia not distinctly emarginate between the spines. Sutural stria one-third to one-half elytral length. Smaller, 1·6–2·8 mm. Male, aedeagus characteristic (fig. 28).

Genus **Hypocaccus** Thomson

KEY TO SPECIES

1 Elytra dull, closely and rugosely punctured, each elytron with an oval smooth area towards the base. Black, sometimes slightly greenish. Length 3–3·8 mm. *In dung, carrion, etc., generally found on sandhills near the coast. Rare*
rugiceps (Duftschmid)
– Elytra shining, basal half to third only micropunctate, without well-defined smooth area.....2
2 Anterior tibiae with four teeth (fig. 31), a trace of a fifth sometimes present; frons with general transverse rugosity. Dark metallic green colour or, rarely, brownish. Length 2·5–3·2 mm. *In dung, carrion etc., found on coastal sandhills. Rare. S. England to Lincolnshire*.....**metallicus** (Herbst)

– Anterior tibiae with six teeth (fig. 32); frons without general transverse rugosity. Light green metallic colour or black. Length 2·5–3·2 mm. *In dung, carrion, etc., frequently coastal, on sandhills but also inland. Local, apparently not recorded from Scotland*.....**rugifrons** (Paykull)



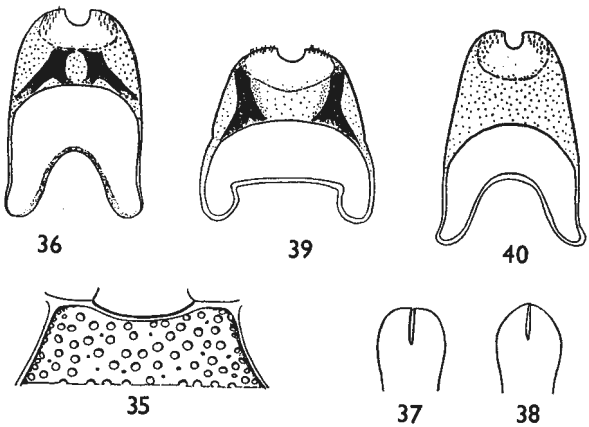
FIGS. 29–34.—(29–32) Anterior tibia of: (29) *Abraeus globosus* (Hoff.); (30) *Abraeus granulum* Er.; (31) *Hypocaccus metallicus* (Herbst); (32) *Hypocaccus rugifrons* (Payk.). (33) *Saprinus aeneus* (F.), left elytron. (34) *Saprinus immundus* (Gyll.), the same.

Genus **Saprinus** Erichson

KEY TO SPECIES

1 Disc of pronotum impunctate or with very small punctures; colour black, often with a dark brassy reflection.....2

– Disc of pronotum punctate; colour metallic green. Length 3–3·5 mm. *Preys on the larvae of species of the Chrysomelid genus* Phaedon. (*It bears a strong superficial resemblance to the adult* Phaedon.) *Rare. S. England to Yorkshire*
virescens (Paykull)



FIGS. 35–40.—*Saprinus* spp. (35–37) *S. semistriatus* (Scriba): (35) mesosternum; (36) eighth abdominal segment, ♂; (37) aedeagal apex, dorsal view. (38–39) *S. cuspidatus* Ihssen: (38) aedeagal apex, dorsal view; (39) eighth abdominal segment, ♂. (40) *S. subnitescens* Bickh., eighth abdominal segment, ♂.

2 Elytra closely and rugosely punctured, with a well-defined smooth area towards base traversed by dorsal stria 4 (figs. 33, 34); length 2·8–4 mm.....3

– Apical half of elytra diffusely punctured, without a well-defined smooth area towards base; length 4–5·5 mm.....3

3 Spaces between punctures on elytra in many places as broad as punctures ; impunctate area of elytra between the dorsal stria 4 and 2 nearly equal to that between the sutural stria and dorsal stria 4 (fig. 33) ; sutural stria generally entire. Black, shining, often with a brassy reflection. Length 2·8–3·5 mm. *In carrion, dung, etc. Common*.....**aeneus** (Fabricius)

– Spaces between punctures on elytra in all cases narrower than punctures ; impunctate area of elytra between dorsal stria 4 and 2 approximately a fourth or less of the area between the sutural stria and dorsal stria 4 (fig. 34) ; sutural stria generally interrupted. Black, shining, but generally lacking a brassy reflection. Length 3–4 mm. *In dung, carrion, etc. Local. S. England to Lincolnshire.*
immundus (Gyllenhal)

4 Mesosternum usually with very coarse puncturation (fig. 35), rarely with finer punctures ; aedeagus apically truncate (fig. 37)[5] ; eighth abdominal segment of male characteristic (fig. 36). Black with a brassy reflection. Length 4–7 mm. *In carrion, rarely dung. Common*.....**semistriatus** (Scriba)

– Mesosternum never with very coarse puncturation, with fine punctures, or with disc impunctate or without punctures ; aedeagus[5] apically pointed (fig. 38). Black with a brassy reflection.....5

5 *Only males of the following species can be separated.*
Male[6], eighth abdominal segment characteristic (fig. 39)[5] ; length 4–7 mm. *Habitat as for* S. semistriatus *but not as common as that species England : Cambridgeshire, Devon, Gloucestershire, Kent, Lincolnshire, Norfolk, Oxfordshire, Suffolk, Surrey ; Wales : Caernarvonshire, Carmarthenshire, Glamorgan, Pembrokeshire ; Scotland : Dumfriesshire*.....**cuspidatus** Ihssen

– Male[6], eighth abdominal segment characteristic (fig. 40)[5] ; length 4–7 mm.
subnitescens Bickhardt, 1909 (= *meridionalis* Ihssen, 1949)
(*I have found two specimens of this species in old British collections, one from Colgate, Sussex, viii*.1892, *the other lacking data.*)

[5] For technique of genitalia dissection see page 12.

[6] The male has a median shallow furrow on the metasternum and long lanceolate ventral setae on the four basal segments of the front tarsi ; these characters are not present in the female.

Numerals in heavy type indicate pages on which illustrations occur. Principal reference is given first. Synonyms are in italics.

The Royal Entomological Society of London is a scientific Society founded in 1833 and incorporated by Royal Charter in 1885 for the improvement and diffusion of Entomological Science exclusively.

The principal **Publications** of the Society are the following :

TRANSACTIONS. Papers published in the Transactions are issued separately and separately priced. One volume is issued every year at a subscription price of £10 10s. 0d.

PROCEEDINGS : Series A. Contains short papers on general entomology. Four parts are issued annually at a subscription price of £2 8s. 0d.

PROCEEDINGS : Series B. Consists exclusively of short papers on systematic entomology. Six parts are issued each year at a subscription price of £2 8s. 0d.

PROCEEDINGS : Series C. Contains the minutes of meetings, Presidential Addresses, etc. A part is issued before each meeting as an agenda paper. The annual subscription price is £1 4s. 0d.

The above are supplied free to Fellows. Further copies can be obtained by Fellows on special terms.

Other publications issued by the Society, in addition to the *Handbooks* (for particulars of which see p. ii of cover), are the following :

The Generic Names of British Insects. Nine parts so far published, covering the Rhopalocera, Odonata, Neuroptera, Hymenoptera Aculeata, Carabidae, Hydradephaga, Hemiptera-Heteroptera, and Staphylinidae.

Stylops : A Journal of Taxonomic Entomology. 1932–1935, Vols. 1–4 (all issued). £2 3s. 0d. per Vol.

Hübner : A biographical and systematic account of the entomological works of Jacob Hübner and the supplements thereto. By Francis Hemming, 2 Vols., £2 10s. 0d.

The Centenary History of the Society. 10s. 6d.

Communications offered to the Society for publication should be addressed to the Registrar at the Society's Rooms. Those intended for the Transactions must be communicated by a Fellow of the Society.

Meetings are held at the Society's Rooms on the first Wednesday in each month, except January (third Wednesday) and August (no meeting).

Particulars concerning the Fellowship can be obtained on application to the Registrar, 41, Queen's Gate, London, S.W.7.

Handbooks for the Identification of British Insects.
Parts now Available

I.	Part 2	*Thysanura and Diplura.* By M. J. Delany	8 pp.	3s. 6d.
	„ 5	*Dermaptera and Orthoptera.* By W. D. Hincks. (Second edition).	24 pp.	8s. 0d.
	„ 6	*Plecoptera.* By D. E. Kimmins.	18 pp.	4s. 6d.
	„ 9	*Ephemeroptera.* By D. E. Kimmins.	18 pp.	4s. 6d.
	„ 10	*Odonata.* By F. C. Fraser. (Second edition).	49 pp.	13s. 6d.
	„ 12–13	*Mecoptera, Megaloptera, Neuroptera.* By F. C. Fraser.	40 pp.	13s. 6d.
	„ 16	*Siphonaptera.* By F. G. A. M. Smit.	94 pp.	26s. 6d.
II.	„ 3	*Hemiptera-Homoptera : Fulgoromorpha.* By W. J. Le Quesne.	68 pp.	17s. 6d.
IV.	„ 1	*Coleoptera : Introduction and Key to Families.* By R. A. Crowson.	59 pp.	13s. 6d.
	„ 3	*Coleoptera : Hydradephaga.* By F. Balfour-Browne.	34 pp.	8s. 0d.
	„ 8(*a*)	*Coleoptera : Staphylinidae* (part). By C. E. Tottenham.	79 pp.	20s. 0d.
	„ 9	*Coleoptera : Pselaphidae.* By E. J. Pearce.	32 pp.	8s. 0d.
	„ 10	*Coleoptera : Sphaeritidae and Histeridae.* By D. G. H. Halstead.	16 pp.	4s. 6d.
V.	„ 5(*b*)	*Coleoptera : Phalacridae.* By R. T. Thompson.	17 pp.	4s. 6d.
	„ 7	*Coleoptera : Coccinellidae and Sphindidae.* By R. D. Pope.	12 pp.	3s. 6d.
	„ 9	*Coleoptera : Lagriidae to Meloidae.* By F. D. Buck.	30 pp.	8s. 0d.
	„ 11	*Coleoptera : Scarabaeoidea.* By E. B. Britton.	29 pp.	10s. 0d.
	„ 12	*Coleoptera : Cerambycidae.* By E. A. J. Duffy.	18 pp.	4s. 6d.
	„ 15	*Coleoptera : Scolytidae and Platypodidae.* By E. A. J. Duffy.	18 pp.	4s. 6d.
VI.	„ 1	*Hymenoptera : Introduction and Key to Families.* By O. W. Richards.	94 pp.	26s. 6d.
	„ 2(*a*)	*Hymenoptera : Symphyta* (part). By R. B. Benson.	47 pp.	13s. 6d.
	„ 2(*b*)	*Hymenoptera : Symphyta* (cont.). By R. B. Benson.	88 pp.	20s. 0d.
	„ 2(*c*)	*Hymenoptera : Symphyta* (concl.). By R. B. Benson.	114 pp.	26s. 6d.
VII.	„ 2(*ai*)	*Hymenoptera : Ichneumonoidea* (part). By J. F. Perkins.	116 pp.	32s. 6d.
	„ 2(*aii*)	*Hymenoptera : Ichneumonoidea* (contd.). By J. F. Perkins.	96 pp.	25s. 0d.
VIII.	„ 1(*a*)	*Hymenoptera : Cynipoidea* (part). By R. D. Eady and J. Quinlan.	81 pp.	20s. 0d.
	„ 2(*a*)	*Hymenoptera : Chalcidoidea* (part). By Ch. Ferrière, G. J. Kerrich.	40 pp.	11s. 0d.
	„ 3(*d*)	*Hymenoptera : Proctotrupoidea* (part). By G. E. J. Nixon.	107 pp.	26s. 6d.
IX.	„ 1	*Diptera : Introduction and Key to Families.* By H. Oldroyd. (Second edition.)	49 pp.	10s. 0d.
	„ 2	*Diptera : Nematocera* (part). By R. L. Coe, Paul Freeman, P. F. Mattingly.	216 pp.	26s. 6d.
X.	„ 1	*Diptera : Syrphidae.* By R. L. Coe.	98 pp.	23s. 6d.
	„ 4(*a*)	*Diptera : Cyclorrhapha* (part). By F. I. van Emden.	134 pp.	26s. 6d.

Sole agent : E. W. Classey, 353, Hanworth Road, Hampton, Middlesex.

Adlard and Son, Ltd., South Street, Dorking, Surrey.