



HARVARD UNIVERSITY
LIBRARY
OF THE
MUSEUM OF COMPARATIVE ZOOLOGY

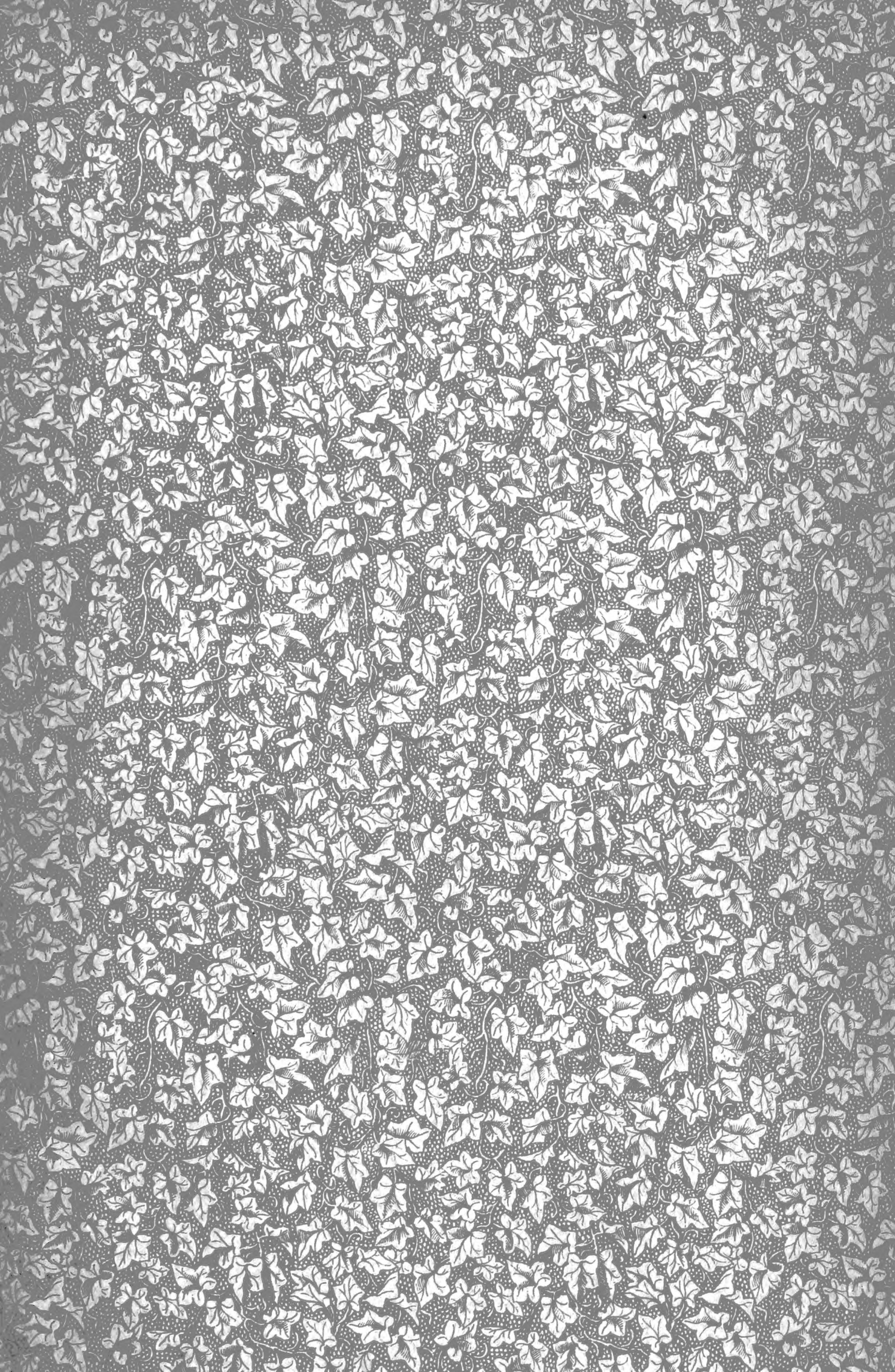


FROM THE
WILLARD PEELE HUNNEWELL
(CLASS OF 1904)
MEMORIAL FUND

20,603.

The income of this fund is used for the purchase of entomological books

May 1, 1903.



THE COLEOPTERA
OF
THE BRITISH ISLANDS

LONDON :
PRINTED BY GILBERT AND RIVINGTON, LIMITED,
ST. JOHN'S HOUSE, CLERKENWELL ROAD.

THE
COLEOPTERA
OF
THE BRITISH ISLANDS.

*A DESCRIPTIVE ACCOUNT OF THE FAMILIES, GENERA, AND
SPECIES INDIGENOUS TO GREAT BRITAIN AND IRELAND,
WITH NOTES AS TO LOCALITIES, HABITATS, ETC.*

BY THE
REV. CANON FOWLER, M.A., F.L.S.
SECRETARY TO THE ENTOMOLOGICAL SOCIETY OF LONDON, AND EDITOR (FOR COLEOPTERA) OF
THE "ENTOMOLOGIST'S MONTHLY MAGAZINE."

VOL. III.
CLAVICORNIA
(LEPTINIDÆ-HETEROCERIDÆ.)



P
LONDON:
L. REEVE AND CO., 5, HENRIETTA STREET, COVENT GARDEN
1889.

LIBRARY
MUSEUM OF
ANTHROPOLOGY

COLEOPTERA.

CLAVICORNIA (*continued*).

THIS division of the Coleoptera, as has been already observed (vol. i. p. 217), must be regarded as more or less artificial, and as adopted for the sake of convenience, rather than as being scientifically accurate, and perhaps it must be admitted that the more the various forms are studied, the more obvious does it become that the division is a very loose one, and that certain of its members present such close affinities to other families that they can hardly be separated from them; in fact, it seems more than probable that the term Clavicornia, as applied to a group, will, sooner or later, be abandoned altogether; as, however, it has already been adopted in this work, it seems the best course still to retain it; the group Clavicornia is therefore regarded as containing the Hydrophilidæ (vol. i. pp. 217–261), the Staphylinidæ (vol. ii.), and the whole of the various families contained in the present volume; the Staphylinidæ have been, for convenience' sake, placed in a separate volume, but, as a matter of fact, their proper position appears to be between the Pselaphidæ (*Euplectus*) on the one hand, and the Trichopterygidæ (*Ptinella*) on the other; in one sense, therefore, the present volume commencing with the Leptinidæ and Silphidæ, ought rather to be regarded as the second and not the third volume, the order of the families being Hydrophilidæ, Leptinidæ, Silphidæ, Scydmanidæ, Pselaphidæ, Staphylinidæ, Trichopterygidæ, &c.

As regards the arrangement of the Clavicorn series I have followed almost entirely that of the catalogue published by the Rev. A. Matthews and myself in 1883; Mr Matthews has studied the anatomy of the group almost more than any other Coleopterist, and his arrangement will, in most points, be found to be correct and logical; at the same time it must be borne in mind that it is perfectly impossible to construct any linear arrangement or tabulated synopsis of the families; their affinities are so intermingled and so closely inosculate one with another, that all attempts to do this have proved utterly unsatisfactory, and, for all practical purposes, worse than useless. I have therefore merely given below the chief characters of each family, being convinced that to draw up a practically useful dichotomous table of the families is an impossibility. I am largely indebted to the work on the Classification of the Coleoptera of North America, by Dr. Leconte and Dr. Horn, for many of the

characters I have adopted, and beg here to express my obligation to their work generally, but I cannot help thinking that their table of the Clavicorn families (Introduction, p. xxxi) would tend far rather to mystify than to instruct the ordinary student of Coleoptera, and yet it is probably the best yet published; in no group is a general acquaintance with forms more needed, as there are a very large number of obscure and closely allied genera contained in the various families; every student, therefore, is strongly recommended to make himself acquainted with as many members of the group as possible superficially, before he begins to study the complex as a whole.

Hydrophilidæ. This family is chiefly distinguished by the great development of the maxillary palpi; these in many instances are several times longer than the antennæ, which are inserted under the sides of the front, and are composed of from six to nine joints and terminate in a club, which is usually 3-jointed; the abdomen is made up of five, rarely seven, free segments; the tarsi are all five-jointed, and the middle and posterior tibiæ are often ciliate and compressed for swimming; the size is very variable (from $\frac{4}{5}$ mm. to 48 mm.).

Leptinidæ. Closely allied to the Silphidæ, but differing in their transverse mentum, long filiform antennæ, small anterior coxæ, very short metasternum, and the fact that the sternal epipleuræ of the elytra are almost obsolete or very little pronounced; eyes entirely wanting or represented by translucent eye spots; size small.

Silphidæ. Mentum quadrate, antennæ straight, inserted under the margin of the front, 11-jointed, rarely 9- or 10-jointed, thickened towards apex or more often furnished with a club; eyes finely granulated, sometimes absent; thorax margined; anterior coxæ large, conical and contiguous; abdomen composed of five or six ventral segments; elytra often not covering the whole body; legs sometimes stout, sometimes slender; tibiæ, as a rule, spinose externally; tarsi usually, but not always, 5-jointed; size very variable ($\frac{1}{2}$ mm. to 30 mm.).

Scydmenidæ. Mentum transverse: antennæ 11-jointed, inserted upon the front, thickened or clavate; maxillary palpi long with the last joint very small; anterior coxæ subovate, contiguous; thorax not or scarcely transverse; elytra covering the abdomen entirely or with the pygidium rarely exposed (as in *Euthia*); abdomen with five or six free ventral segments; legs moderately long, tarsi 5-jointed with the claws simple; size very small.

Clavigeridæ. Allied to the Pselaphidæ, but distinguished by having the joints of the antennæ varying in number from two to six and the palpi one-jointed and rudimentary; the head is long and cylindrical, and the basal segments of the abdomen are connate and deeply excavated; size very small.

Pselaphidæ. Mentum small, more or less quadrate; antennæ in-

serted on the front above the base of the mandibles, as a rule 11-jointed; maxillary palpi usually very long; anterior coxæ conical, contiguous; thorax very variable; elytra very much abbreviated, leaving a great part of the abdomen exposed; abdomen composed of six or seven free ventral segments; legs long with the femora usually clavate; tarsi 3-jointed with the claws equal or unequal and very often single; size very small.

Staphylinidæ. The characters of this family will be found fully discussed at the beginning of vol. ii.; the principal distinguishing ones are as follows:—Elytra truncate, with a straight suture, never dehiscent, very much abbreviated, so that the greater part of the abdomen is exposed (except in rare instances); wings when present completely folded beneath the elytra; abdomen or hind body composed of seven segments, all freely movable, and all entirely, or almost entirely, corneous, even when more or less hidden by the elytra; size very variable ($\frac{3}{4}$ mm. to 28 mm.).

Trichopterygidæ. This family contains the most minute of all Coleoptera; its genera may be known by their pedunculated lanceolate wings which are fringed on both sides with long setæ, and by their 3-jointed tarsi; the maxillæ are bilobed; their antennæ are generally long and very slender and ornamented with long verticillated hairs; the last three joints usually form an elongate club; they vary much in outward form, and in many characters exhibit a close affinity to the Staphylinidæ, from which they appear to lead by an easy gradation into the other Clavicorn groups.

Corylophidæ. The members of this family are very small oval or round convex insects, which are very closely related to the Trichopterygidæ through having their wings fringed with long hairs; the wings, however, are much shorter, and the species are further distinguished by having the maxillæ unilobed and the tarsi 4-jointed (the third joint being small and concealed in an emargination of the second joint); the abdomen is composed of six free ventral segments.

Sphæriidæ. Only one genus is contained in this family, which is closely allied to both the Trichopterygidæ and the Corylophidæ; the wings are fringed with long hairs; the maxillæ have two lobes;* the antennæ are 11-jointed with a loose 3-jointed club; the abdomen is composed of only three ventral segments, and the tarsi are 3-jointed; the form is very small, round, and convex, the upper surface being glabrous and very shining.

Phalacridæ. This family contains a few genera of small ovate or subhemispherical insects which are very shiny and almost, if not quite, glabrous; the head is sunk in the thorax, with the eyes half hidden; antennæ inserted under the elevated margin of the forehead, 11-jointed,

* According to the generally received opinion, the maxillæ of *Sphærius* have only one lobe, but Mr. Matthews has lately discovered that they are really bilobed.

with the last three joints forming a club; maxillæ with two lobes; anterior coxæ globular; thorax as broad as elytra, margined at sides; elytra entirely covering abdomen; legs short and rather stout, tarsi 5-jointed, claws armed with a tooth at base; size small.

Coccinellidæ. Form usually rounded, seldom oval, convex, often subhemispherical, usually shining and glabrous, but in some genera strongly pubescent; antennæ usually 11-jointed, terminated by a more or less distinct club, inserted on the forehead near eyes; mandibles, as a rule, concealed; maxillæ with two lobes; thorax transverse and usually short, anterior coxal cavities, except in one or two genera, closed behind; elytra covering abdomen, which is composed as a rule of five free ventral segments (sometimes of six or seven), the first being furnished with more or less distinct coxal lines; legs short, more or less retractile, tarsi apparently 3-jointed, but really 4-jointed, the third joint being very minute and concealed in the lobes of the second joint; claws appendiculate or toothed.

Endomychidæ. This family is closely allied to the preceding; the species that belong to it, however, are more elongate in form and usually are furnished with a transverse groove before base of thorax and a longitudinal impression on each side; the antennæ and legs are longer and the anterior coxal cavities are always open behind; the chief difference, however, appears to lie in the fact that the claws are simple and the first ventral segment has no coxal lines; the tarsi are plainly 4-jointed,* or apparently 3-jointed, the third joint being very small and concealed.

Erotylidæ. The members of this family are closely allied to the preceding, but may be easily distinguished by having the anterior coxal cavities closed behind; from all the species of the Endomychidæ except the Mycetænia, they may be known by having the tarsi distinctly 4-jointed, and, occasionally, 5-jointed; the antennæ are 11-jointed and are inserted at the sides of the forehead, with the last three or four joints forming a distinct club; the thorax is distinctly margined; the elytra completely cover the abdomen, which is composed of five usually equal segments; the legs are moderately long and the claws are simple.

Colydiidæ. The members of this family are distinguished by their usually elongate or cylindrical form, small globular anterior and middle coxæ, and simple 4-jointed tarsi; the upper surface is, as a rule, shining and glabrous; the antennæ are inserted under the margin of the front, and are short, 10- or 11-jointed, rarely 8-jointed, and terminate in a small club; the anterior coxal cavities are almost always closed behind; the elytra always cover the abdomen, which is composed of five ventral segments, the first being the largest.

* This is only the case with the Mycetænia which might perhaps, with advantage, be formed into a separate family.

Histeridæ. This family is very well defined, and its members are, with few exceptions, oval or oblong-oval insects, of a shining black or brownish colour, glabrous, with the elytra sculptured with very distinct striæ; the size is variable, some of the genera being rather large and some (as *Acritus*) very minute; the antennæ are short, geniculate, and usually received in grooves beneath the thorax, and terminate in a very compact club; the anterior coxal cavities are open behind; the elytra are truncate behind, leaving the pygidium and propygidium exposed; the abdomen is composed of five ventral segments, the first being the largest; the legs are short and retractile, with the tibiæ compressed and the anterior pair almost always toothed; the tarsi are 5-jointed (except in *Acritus* and one or two other genera where they are heteromerous), and the anterior pair at least are received in grooves on the tibiæ.

Micropeplidæ. This aberrant family has been by many authors included under the Staphylinidæ by reason of the much abbreviated elytra: its present position, however, seems more natural; the antennæ are received in a cavity beneath the margin of the thorax, and are terminated by an obsoletely 3-jointed, almost solid, club; they are inserted under the sides of the forehead; all the coxæ are distant, and the anterior coxal cavities are open behind; the abdomen is composed of six segments; the tarsi are very short, 3-jointed, the last joint being much longer than the rest; the strongly-ribbed thorax, elytra and abdomen will serve to distinguish our single genus.

Nitidulidæ. The characters of this family are very variable; the species are mostly small insects with the last one or two segments of the abdomen very often, but by no means always, exposed: sometimes a considerable portion of the abdomen is not covered by the elytra: the antennæ are inserted under the margin of the front, and are as a rule 11-jointed, and terminated by a 3-jointed club; the maxillæ (except in the Brachypterina) are composed of one lobe; the abdomen is composed of five free ventral segments, except in a few genera, where the male has an extra dorsal segment; the tarsi are 5-jointed, except in the Rhizophagina, in which they are heteromerous in the male; the fourth joint is always very small; in shape the species vary from short and round or ovate to long and cylindrical.

Trogositidæ. This family is closely related to the Nitidulidæ, but may easily be distinguished by the fact that the tarsi have the first joint, and not the fourth, very small; the maxillæ have two lobes, and the elytra always cover the abdomen.

Monotomidæ. This family bears a considerable relation to the Nitidulidæ, but, apart from other characters, it may be distinguished by the shape of the anterior coxæ, which in the last named family are transverse, and in the Monotomidæ are rounded; the antennæ are inserted under the sides of the forehead, and terminate in a solid or obsoletely 2-jointed club; the head is large and the eyes are strongly

granulated; the thorax is not, or scarcely, transverse, and is more or less distinctly crenulate at the sides; the elytra are truncate and leave the pygidium exposed; the tarsi are 3-jointed; the species are elongate and more or less depressed, and are usually dull and strongly sculptured, being more or less scabrous.

Lathridiidæ. A rather extensive family of minute insects, the constitution of which has not altogether been settled: form usually more or less oval, with the head and thorax narrower than the elytra, but sometimes parallel or even filiform; head varying in shape, but usually rather large in proportion, antennæ 8-11 jointed, terminating in a more or less distinct club; maxillæ with two lobes, maxillary palpi 4-jointed, with the last joint large: anterior coxæ conical and prominent, with the coxal cavities closed behind; thorax variable in shape; elytra covering abdomen; abdomen composed of five free ventral segments, of which the first is the longest; legs moderate, tarsi 3-jointed, with the first joint elongate terminating in two small simple claws.

Cucujidæ. An extensive family, of which only a few outlying members are found in Britain, and which is very differently constituted by different authors: they are elongate or oblong, and more or less depressed, insects; the antennæ are inserted at the margin of the front, and are 11-jointed, sometimes long and slender, sometimes with the apical joints enlarged, and forming an indistinct club; anterior coxæ small, with the cavities closed in some tribes and open in others; thorax often denticulate at sides; elytra covering abdomen in all our tribes; tarsi 5-jointed in both sexes, or with the posterior tarsi occasionally 4-jointed in the males, first joint usually very small.

Byturidæ. A very doubtful family which has been placed in very different positions by various authors, and can only be considered as located provisionally; the single genus, of which it consists, is distinguished by its 5-jointed tarsi, of which the fourth joint is small, and the second and third joints are lobed beneath, and by having the anterior coxal cavities narrowly closed behind, as well as by its toothed claws; the antennæ are inserted before the eyes and terminate in a loose 3-jointed club; the abdomen is composed of five free equal segments; the genus appears to be most closely related to the *Telmatophilina*, but also bears strong affinities to the *Mycetophagidæ* and the *Nitidulidæ*, as will be seen by a comparison of their characters.

Cryptophagidæ. An extensive family of minute insects which are easily distinguished from the *Lathridiidæ* by having the tarsi all 5-jointed in both sexes or heteromerous in the males; in some respects they approach certain of the *Cucujidæ*, from which they may be known by the distinct club of the antennæ and the longer first ventral segment; the form is variable, being either oblong, oval, or almost circular, and the pubescence and sculpture is also very different in the various genera; the antennæ are 11-jointed, and are inserted at the sides

of the front, or on the front, being distant or approximate at base; the anterior coxæ are transverse and oval, and except in the *Diphylina* the cavities are open behind.

Scaphidiidæ. This family is placed in its present position partly on account of the formation of the anterior coxal cavities, of which one half is formed by the prosternum and the other half by the mesosternum:* in *Ephistemus* the formation is somewhat analogous, and the present family seems therefore to come somewhat naturally after that genus; in some respects the characters of the family are somewhat anomalous; form more or less boat-shaped, with the elytra broadly truncate and not covering abdomen; antennæ 10-11-jointed, with the last five or six joints enlarged and forming a slight club, inserted at the margin of the forehead, which is somewhat prolonged in front; thorax margined at sides and sinuate at base; elytra with a sutural and marginal stria; legs very long and slender, with the tarsi filiform, 5-jointed, abdomen composed of six free ventral segments, of which the first is the largest and the fifth longer than the three preceding ones; the species range in size from about $2\frac{1}{2}$ -6 mm.

Mycetophagidæ. Oval or oblong insects, of small or moderate size, often handsomely variegated with yellowish or orange-red spots, and with the upper surface always more or less pubescent; they are characterized by having the tarsi all 4-jointed in the female, and the anterior pair 3-jointed in the male, the intermediate and posterior pair in the latter sex being 4-jointed as in the female; the mandibles are bifid at apex; the antennæ are inserted before the eyes and are 11-jointed, with the apical joints gradually thickened or forming a club; the anterior coxal cavities are always open behind; the thorax is transverse, truncate at apex, and the elytra usually cover the abdomen, which is composed of five free and almost equal segments.

Dermestidæ. An important family of insects which vary considerably in size and general appearance; form oblong oval or oval, in some cases almost round, usually strongly pubescent, and sometimes squamose; head variable in size, furnished, except in *Dermestes*, with a frontal ocellus; antennæ inserted in front of the eyes, usually 11-jointed, but variable, clavate or thickened at apex; thorax short, usually excavate beneath for the reception of the antennæ; anterior coxal cavities open behind; elytra covering abdomen, not striated; abdomen composed of five free convex segments; legs short, somewhat contractile, tibiæ with distinct spurs, tarsi 5-jointed, with the fifth joint long, and the first four joints as a rule short, claws simple.

Byrrhidæ. This family is in many respects allied to the preceding, but may as a rule be distinguished by the much more strongly retractile

* Dr. Sharp informs me that this formation is not so uncommon as Mr. Matthews supposed it to be; the position of this family may therefore have to be modified.

legs of which the tibiæ are compressed and generally sulcate for the reception of the tarsi, and also by the connate anterior segments of the abdomen, as well as by the usually striated elytra; the antennæ are, as a rule, 11-jointed, rarely 10-jointed, with the apical joints, in our genera, forming a club; the anterior coxal cavities are open behind; the elytra cover the abdomen, which is composed of five segments, of which the first two or three are usually connate; the tarsi are 5-jointed, with the last joint elongate, except in *Aspidiphorus*, in which they are heteromerous; the species are short, oval, and very convex, and vary very much in size.

Georyssidæ. This and the succeeding family are more or less aquatic in their habits, and by some authors are placed near the Hydrophilidæ; the family Georyssidæ contains a single genus, *Georyssus*, which is very closely allied to *Elmis*, but may at once be distinguished by the distinct 3-jointed club of the antennæ, and the short 4-jointed tarsi; all the coxæ are distant, and the anterior pair are compressed and flattened at the tip, forming two plates which conceal the prosternum; according to Thomson these plates are formed by the laminate trochanters; the elytra are entire, and are very roughly sculptured; the abdomen is composed of five segments, of which the first is very large and the last three are free.

Parnidæ. The following are the chief characteristics of this family, which has by many authors been divided into two separate families, the Parnidæ and Elmidæ: head usually retractile; antennæ variable, either filiform and moderately long, as in *Elmis*, or very short, with the second joint dilated and ear-shaped, as in *Parnus*; eyes rounded, sometimes hairy: anterior coxal cavities open behind, all the coxæ distant; prosternum prolonged behind the coxæ; legs slender, sometimes very long, tarsi 5-jointed, with joints 1-4 short, equal, fifth very long, claws strong, simple; abdomen in our genera composed of five ventral segments; upper surface strongly pubescent, and often pilose, in the Parnina, and the form larger and subcylindrical; in the Elmina the pubescence is very fine and scanty, and the form is more depressed and much smaller.

Heteroceridæ. An aberrant family, of somewhat doubtful affinities, containing a single genus *Heterocerus*, which by its subaquatic habits, general form, strong pubescence, and very short antennæ, appears to be allied to *Parnus*, but differs in several very important points; the following are its chief characters; head large, with the eyes half-hidden, antennæ short, inserted above the base of the mandibles near the inner margin of the eyes, with first two joints large and ciliate, and joints 5-11 forming an oblong serrate club; thorax transverse with the angles rounded, and the anterior coxal cavities open behind; elytra completely covering abdomen, which is composed of five ventral segments, of which the two last are free, and the first is furnished with a stridulating organ; legs fossorial, tarsi 5-jointed, apparently 4-jointed, the first joint being minute and obsolete; size $2\frac{1}{2}$ - $5\frac{1}{2}$ mm.

LEPTINIDÆ.

This family contains two genera *Leptinus* and *Leptinillus*, the latter of which, from North America, was at first included with the former; they differ from the Silphidæ in their transverse mentum, very long filiform antennæ, the very short metasternum, and the fact that the sternal epipleuræ of the elytra are almost obsolete, or very little pronounced; the eyes are entirely wanting, or represented by translucent eye spots.

LEPTINUS, Müller.

This genus at present contains one or two species from Europe, the Caucasus district, and North America; they are found living with various small rodents and birds, sometimes on their bodies and sometimes in their nests, but, as Dr. Horn observes, it has not been yet determined whether they are true parasites or merely guests; our single species, *L. testaceus*, is also occasionally found in numbers in the nests of humble-bees.

L. testaceus, Müll. Oval, much depressed, of a dull, testaceous colour, clothed with rather strong yellowish pubescence; head projecting, almost semicircular, much narrower than thorax, antennæ very long, filiform; thorax transverse, crescent-shaped, rounded and narrowed in front, broadest behind, with the posterior angles prominent and acute, very closely punctured, fully as broad at base as elytra; scutellum rather large, triangular; elytra about twice as long as thorax, and of about the same breadth, with sides subparallel, obtusely rounded at apex, very obsoletely striated, and very finely and somewhat rugosely punctured; legs testaceous, femora rather stout, tibiæ sparingly spinose; posterior tarsi with the first joint almost three times as long as second. L. 2 mm.

In dead leaves, rotten wood mould, birds' nests, on small rodents, &c.; also in the nests of *Bombi*; very rarely in nests of *Formica fuliginosa*; rare; Chatham (J. J. Walker, in numbers), Tilgate Forest, Caterham, Cobham Park, Chatham, Purley oaks; Guestling near Hastings; Needwood, Burton-on-Trent, in large numbers in a humble-bee's nest (Rev. H. S. Gorham); Ripon (Waterhouse), three specimens—one on mouse in a trap, one on leg of trousers, and one behind some old ivy; Scotland, very rare, about the nests of *Bombi*, Clyde and Forth districts.

SILPHIDÆ.

This family contains a large number of genera which are widely distributed over the surface of the world, but, as at present known, are chiefly characteristic of colder and temperate, rather than of tropical regions; some of these are very large and conspicuous insects, while others are obscure and minute; the members of the family differ very much in size, shape, and general appearance, and by many authors are divided up into three or four separate families; they are, as a whole, distinguished by their large quadrate mentum, large and prominent

anterior coxæ, which are conical and contiguous, and finely granulated eyes which are sometimes wanting; the maxillæ are bilobed; the antennæ are straight, inserted before the eyes, and thickened, or more often furnished with a club; the thorax is margined; the prothorax has the epimera and episterna not distinct; the mesosternum is short, and its epimera reach the coxæ; the metasternum is large; the abdomen has, as a rule, six free segments; in *Sphærites* only it has five; the legs are variable, sometimes stout, sometimes slender; as a rule the tibiæ are distinctly spined externally; the tarsi also vary as regards the number of their joints.

The family may be divided into the following tribes: there is, however, a very great difference in the views of authors regarding the division: *Sphærites*, for instance, is regarded by some as merely a genus of the Silphina, by others as a tribe of the Silphidæ, and by others as a separate family Sphæritidæ.

I. Anterior coxal cavities closed behind.

- | | |
|---|--------------|
| i. Posterior coxæ laminate; size very minute; tarsi all 4-jointed in both sexes | CLAMBINA. |
| ii. Posterior coxæ simple; tarsi variable, but never all 4-jointed in both sexes. | |
| 1. Upper surface, as a rule, glabrous or almost glabrous, shining; episterna of mesothorax small and linear, of metathorax hidden | ANISOTOMINA. |
| 2. Upper surface pubescent, dull; episterna of mesothorax rather large, subquadrate, of metathorax free | CHOLEVINA. |

II. Anterior coxal cavities open behind.

- | | |
|--|-------------|
| i. Abdomen with five free ventral segments | SPHÆRITINA. |
| ii. Abdomen with six free ventral segments | SILPHINA. |

CLAMBINA.

This tribe has by many authors been placed in close proximity to the Trichopterygidæ, and it does in fact bear a close relationship to that family, from the fact that the edge of the wings is fringed with long hairs; in other points, however, especially in the fact that in most species the body is retractile and capable of being rolled up into a ball, the tribe is closely related to *Agathidium*; the head is large and transverse, and the antennæ 11-jointed, 10-jointed, or 9-jointed, with 2-jointed club; the anterior coxæ are conical and contiguous with the cavities closed behind, and the middle coxæ in our two British genera are slightly separated; all the tarsi are 4-jointed; the species are all very minute, of convex and short oval form, and are found in decomposing vegetable matter.

There are two British genera which may be separated as follows:—

- | | |
|---|----------------------------|
| I. Antennæ 10-jointed, with club 2-jointed, inserted at a distance from eyes; abdomen with six segments | CALYPTOMERUS, <i>Redt.</i> |
| II. Antennæ 9-jointed, with club 2-jointed, inserted near eyes; abdomen with five segments | CLAMBUS, <i>Fisch.</i> |

CALYPTOMERUS, Redtenbacher. (*Comazus*, Fairm.)

This genus comprises four or five species from Europe and North America; they are found in vegetable refuse, flood rubbish, &c.; the larva of *C. dubius* (*enshamensis*) is described and figured by Perris (Ann. Fr. 1852, p. 574, t. 14, fig. 1-10); it is 2 mm. in length, of a livid colour, setose at sides, broader in front and gradually narrowed behind, covered with very small roughnesses or tubercles which are visible under a high power; the thoracic segments are proportionally large; the anal appendage is like a fleshy nipple, helping progression, and serving as a *point d'appui*, when the insect wishes to move from place to place; the pupa is chiefly remarkable for the small space occupied by the abdominal segments.

C. dubius, Marsh. (*enshamensis*, Steph.; *cephalotes*, Dej.). Short oval, convex, of a lighter or darker testaceous colour, shining, thickly clothed with very fine silky yellowish pubescence, very finely punctured; head very large, larger than thorax, antennæ short, testaceous, with the club slightly darker; thorax very short, with the anterior and posterior angles almost confluent, sides very short; scutellum minute, triangular; elytra five times as long as thorax, scarcely dilated at sides, very convex in front and sloped towards apex, with a sutural stria which is abbreviated in front, sutural angle somewhat acuminate; under-side testaceous, pubescent; legs pale. L. $\frac{2}{3}$ mm.

In haystack and flood refuse, &c.; local but not uncommon in some places; Croydon, Ripley, Lee, Mickleham, Birdbrook (Essex); Hastings; Glanvilles Wootton; Wivenhoe (tidal refuse); Ely; Wicken Fen (in sedge); Kuowle near Birmingham (on damp walls); Repton; Northumberland district, rare, sea-coast near Hartley; Scotland, not common, amongst straw in outhouses, Solway, Tweed and Forth districts; Ireland, Rathkurby, Waterford, near Dublin, &c.

CLAMBUS, Fischer.

About a dozen species are comprised in this genus, five of which are found in Europe, and the remainder have been recorded from North America, the Canary Islands and Ceylon; it appears therefore to be rather widely spread, and is probably much more extensive than at present known; the species are very minute convex insects, and have the power of rolling themselves up into a ball; they differ from *Calyptromerus* in having the antennæ 9-jointed, and in the smaller head and longer thorax; the metasternum is excavate in front for the reception of the head, and the posterior coxæ are semicircular; the species are found in hot-beds, and among moss, dead leaves, and vegetable refuse generally.

I. Elytra more or less distinctly pubescent.

i. Pubescence close, fine, and short; size smaller *C. PUBESCENS*, Redt.

ii. Pubescence long and diffuse; size larger *C. ARMADILLO*, De. G.

II. Elytra entirely without pubescence. *C. MINUTUS*, Sturm.

C. pubescens, Redt. Short oval, not quite as convex as the following species, thickly clothed with very short and fine pale silky pubescence, of a lighter or darker pitchy colour, with the sides of the thorax lighter, apparently impunctate; antennæ yellow; thorax as broad as elytra, and broader than head (which is large), very transverse, posterior angles rounded; elytra three times as long as thorax, narrowed towards apex; under-side thickly and very finely pubescent; legs pale yellow, last segment of abdomen with a raised fold. L. $\frac{1}{2}$ – $\frac{2}{3}$ mm.

In vegetable refuse, hot-beds &c.; not uncommon and probably very widely distributed in many parts of England; Chatham, Darent Wood, &c.; Hastings and other localities in the South; Knowle, Smallheath, Edgbaston, Repton, &c.; Manchester district; Northumberland district, rare; Scotland, not common, Solway district.

This and other species of *Clambus* are probably very often overlooked, as they have the power of rolling themselves up into a ball, and so lying quiet until danger is passed; in walking they hold their large heads stretched out horizontally, which gives them a peculiar appearance.

C. armadillo, De. G. Very closely allied to the preceding, but of darker, usually black, colour, and clothed with much more sparing and longer pubescence; the margins of thorax are brownish-red, and the legs and antennæ are reddish; in this and in the other species the disc of elytra is sometimes lighter; the last segment of the abdomen is more thickly pubescent, but has no fold. L. $\frac{2}{3}$ – $\frac{3}{4}$ mm.

In moss, dead leaves, vegetable refuse, hot-beds, &c.; commoner than the preceding in some localities, and less common in others; London district, generally distributed; Hastings; Devon; Soham, Cambridge; Midland districts, Bewdley, Sutton Park, Salford Priors, Repton, &c.; Manchester district; Northumberland district, common; Scotland, not common, Solway, Tweed, and Forth districts; Ireland, near Dublin and Belfast.

C. minutus, Sturm. On an average distinctly larger than the two preceding, and distinguished by its very smooth, shining, and glabrous surface; the sides of the thorax are rather distinctly yellowish or yellowish-red, and the disc of the elytra is often lighter; the last segment of the abdomen is furnished with a little brush of hairs, and in the male has also a small fovea. L. $\frac{3}{4}$ –1 mm.

In vegetable refuse, flood rubbish, &c., rare, but perhaps overlooked or confounded with the preceding; Dulwich; Cobham Park; Horning Fen; Southampton; Exeter; Tewkesbury; Bewdley; Yardley; Manchester district; Northumberland district; Scotland, not common, Solway district.

A fourth species, *C. punctulum*, has been included in the British list, but has been dropped, as the specimens on which it was introduced appear to be only small *C. minutus*; *C. punctulum* is smaller and rounder than *C. minutus*, and has the last joint of the antennæ only as long as broad, and the last segment of the abdomen bare; in *C. minutus* the antennæ have the last joint much longer than broad, and the last

segment of the abdomen is furnished with a brush of hairs, as above mentioned.

The genus *Cybocephalus* is now rightly regarded as belonging to the Clambina rather than to the Nitidulidæ.

ANISOTOMINA.

This tribe contains a considerable number of small genera, which are distinguished by having the upper surface glabrous or almost glabrous and the anterior coxal cavities closed behind; the body is oval and convex, and in some genera capable of being contracted into a ball; the antennæ and tarsi are very variable, and afford good characters for the separation of the genera; of these about ten are represented in Europe, nine of which occur in Britain; some of the species are very rare, and many are exceedingly difficult to determine; they are found in moist fungi, under bark, by sweeping herbage at sundown, &c.

- I. Head with distinct antennal groove on its under-side; thorax with the posterior angles rounded; elytra not striated with the exception of a sutural stria which is sometimes absent; tibiæ finely spinose; tarsi dissimilar in the sexes.
- i. Club of antennæ 3-jointed. AGATHIDIUM, *Ill.*
 - ii. Club of antennæ 4-jointed AMPHICYLLIS, *Er.*
 - iii. Club of antennæ 5-jointed, 2nd joint small LIODES, *Er.*
- II. Head without or with indistinct* antennal grooves on under-side; thorax with the posterior angles right angles or obtuse, but not rounded; elytra more or less plainly striated; tibiæ distinctly spinose; tarsi similar in the sexes.
- i. Base of thorax margined; posterior tarsi with less than five joints.
 - 1. Anterior and intermediate tarsi 5-jointed, posterior 4-jointed.
 - A. Club of antennæ apparently 4-jointed, the second joint being scarcely visible or quite concealed; mesosternum not carinate CYRTUSA, *Er.*
 - B. Club of antennæ plainly 4-jointed, the second joint being small but distinctly visible; mesosternum carinate ANISOTOMA, *Ill.*
 - 2. Anterior tarsi 5-jointed, intermediate and posterior tarsi 4-jointed; club of antennæ 3-jointed. COLENIS, *Er.*
 - 3. Anterior tarsi 4-jointed, intermediate and posterior tarsi 3-jointed; club of antennæ 5-jointed, second joint small AGARICOPHAGUS, *Schmidt.*
 - ii. Base of thorax not margined; all the tarsi 5-jointed.
 - 1. Club of antennæ 5-jointed, second joint small HYDNOBIUS, *Schmidt*
 - 2. Club of antennæ 3-jointed TRIARTHON, *Schmidt.*

* Horn mentions *Cyrtusa* as possessing antennal grooves; Thomson and Reitter, on the contrary, class it with the species having no antennal grooves.

AGATHIDIUM, Illiger.

This genus contains about fifty species which are chiefly found in Europe, Northern Asia, and North America; in all probability many more will be discovered; one or two have occurred in the Canary Islands; they are small shining, more or less globose, insects, many of which have the power of rolling themselves up into a ball like *Clambus*; they are usually black or brownish, but occasionally the thorax is bright red; the antennæ are terminated by a 3-jointed club; the mandibles are stout, and the left one sometimes strongly projects or is furnished with a process varying from a small tooth to a long curved horn; the thorax has the posterior angles rounded and the margins always more or less distinctly lighter; the mesosternum is more or less plainly carinate; the tarsi are variable in the female, which sex in some species has the anterior tarsi with five joints and the rest with four, and in other species has four joints to all the tarsi; the elytra are not striated on disc, and even the sutural stria is often wanting or very much abbreviated. Thomson divides the genus into two on the formation of the meso- and metasternum, but his division is not satisfactory, as it does not separate the species that have variable tarsi in the females, a character that has much more weight than the comparatively slight differences on which he founds his two genera. The species of *Agathidium* are found under bark, in fungi, moss, dead leaves, &c.

The larvæ of *Agathidium* appear in many points to strongly resemble those of *Leiodes* and *Choleva*; that of *A. seminulum*, according to Perris, has the segments clothed with a coriaceous skin in the place of corneous scuta; the mandibles are bidentate, and the eight first abdominal segments are furnished with a small tubercle on each side; the last segment is terminated by two cerci and a long clavate anal appendage; the whole surface is set with whitish silky hairs; the larva of *A. mandibulare* is described by Schiödte as oblong-ovate, convex, of a pale fuscous colour, with the corneous parts fuscous; antennæ and legs short and stout; cerci stout, sparingly setulose, scarcely as long as the ninth abdominal segment; these larvæ are found in the same habitat as the perfect insects.

- I. Elytra with flatly and widely rounded shoulders; female with the anterior tarsi 5-jointed and the intermediate and posterior tarsi 4-jointed; insect with complete ability to roll up into a ball.*
 - i. Elytra with a sutural stria reaching middle, finely but distinctly punctured.
 1. Head and thorax bright red, elytra deep black, considerably longer than together broad . . . *A. NIGRIPENNE*, *Kuj.*
 2. Upper surface black or deep brown, elytra scarcely longer than together broad.
 - A. Third joint of the antennæ very long, as long as the next three together; thorax broadest behind middle; size larger and broader . . . *A. ATRUM*, *Payk.*

* The German term for this "Kugelvermögen Vollständig," is very expressive, and might with advantage be literally translated and adopted by English authors.

- B. Third joint of the antennæ much shorter, scarcely as long as the next two together; thorax broadest before middle; size smaller and narrower A. SEMINULUM, L.
- ii. Elytra without sutural stria, impunctate A. LEVIGATUM, Er.
- II. Elytra with obtuse humeral angles; species with incomplete ability to roll up into a ball; tarsi of female variable.
 - i. Head with the temples not swollen behind eyes, eyes, when the head is retracted, reaching the angles of thorax.
 - 1. Elytra without sutural stria, very closely and rather distinctly punctured A. MARGINATUM, Sturm.
 - 2. Elytra with a distinct sutural stria reaching from apex to about middle.
 - A. Front margin of clypeus broadly and rather deeply emarginate A. CONFUSUM, Bris. (*clypeatum*, Sharp)
 - B. Front margin of clypeus truncate or feebly bisinuate.
 - a. Colour variable, usually brownish yellow, with the sides of thorax and the elytra darker; all the tarsi of female 4-jointed; elytra impunctate A. VARIANS, Beck.
 - b. Colour black; anterior tarsi of female 5-jointed; elytra finely punctured.
 - a*. Antennæ unicolorous red; clypeus not separated from forehead by a line A. GLOBOSUM, Muls. (*convexum*, Sharp.)
 - b*. Club of antennæ, except sometimes apex, black; clypeus separated from forehead by a more or less distinct line A. ROTUNDATUM, Gyll.
 - ii. Head with the temples plainly swollen and projecting behind eyes; eyes not reaching the angles of thorax.
 - 1. Upper surface less distinctly punctured; left mandible of male simple A. NIGRINUM, Sturm.
 - 2. Upper surface more distinctly punctured; left mandible of male very much developed, often with a tooth or long horn on its upper surface A. RHINOCEROS, Sharp.

A. nigripenne, Kug. Head and thorax bright red, elytra deep black, more elongate and less convex than in any of our other British species; under-side blackish or blackish-brown; antennæ reddish with darker club; head and thorax very finely punctured, the latter transverse with all the angles rounded, a little narrowed in front; elytra finely but distinctly punctured with faint traces of rows of punctures, and with a deep sutural stria reaching from apex to beyond middle; legs red. L. 2-2 $\frac{2}{3}$ mm.

Male with the anterior tarsi slightly dilated, posterior femora terminating in a blunt tooth.

Under bark of dead ash and other deciduous trees, at sap, &c.; local; not recorded from the London district; New Forest; Glanvilles Wootton (dead brambles in May); Dean Forest; Sutton Park; Needwood; Markfield, near Leicester; Sherwood Forest;

Repton; Darlington; Ripon; Manchester district; Northumberland district, not uncommon in many localities, Wallington, Gosforth, Jesmond, Ravensworth, Whittle Dene, &c.; Scotland, rare, at oozing sap of trees, Forth and Clyde districts; I have also received it from Ireland from Mr. J. J. Walker, who has found it at Westport (Co. Mayo) and Rathmullan (Co. Donegal).

A. atrum, Payk. Shining black, with the margins of thorax and usually the extreme margin of elytra pitchy; under-side blackish or pitchy with apex lighter; antennæ reddish-brown with the two first joints of the club darker and the last joint lighter; head thickly and distinctly punctured; thorax ample, very finely punctured, much more so than head and elytra, broadest behind middle, with all the angles rounded; elytra finely but plainly punctured, with a distinct sutural stria reaching from apex to beyond middle; legs reddish-brown, posterior femora often blackish. L. $2\frac{2}{3}$ mm.

Male with the posterior femora produced into a tooth at apex, and the metasternum in middle furnished with a little bunch of hairs.

In dead leaves, moss, fungi, &c.; rather local, but, as a rule, not uncommon; London district, generally distributed; The Holt, Farnham; Hastings; Swansea; Yardley; Sutton Park; Cannock Chase; Needwood; Sherwood Forest; Langworth Wood, Lincoln; Manchester district; Northumberland district rare, but rather widely distributed; Scotland, Lowlands and Highlands, not rare, Solway, Tweed, Forth, and Tay districts.

A. seminulum, L. Lighter or darker pitchy brown, sometimes reddish brown, with the margins of thorax and elytra lighter, and the under-side always reddish-brown, a character, which together with its smaller and narrower form, will easily separate dark examples from the preceding species; antennæ reddish-brown with yellowish club; head very finely punctured; thorax scarcely visibly punctured, with sides strongly rounded, broadest before middle, and if viewed when quite level apparently dilated in front; elytra finely but distinctly punctured, with a sutural stria reaching from apex to about middle; legs reddish. L. 2 mm.

Male with the posterior femora produced at apex into a rounded angle.

In dead leaves, moss, rotten wood, &c.; local; London district, not uncommon; St. Leonard's Forest, Sussex; New Forest; Southampton; Parkhurst Forest, Isle of Wight, in nests of *F. rufa* (J. J. Walker); Dean Forest, common; Coleshill; Knowle; Cannock Chase; Sherwood Forest; Chat Moss; Repton; Ripon; not recorded from any locality in England further north than Yorkshire, or from Scotland.

A. lævigatum, Er. This species is easily distinguished by its smooth and impunctate surface and the absence of a sutural stria on the elytra; it is black or pitchy, with the margins of the elytra distinctly reddish-brown; antennæ brownish-red, with the first two joints of the club brown, and the last lighter; thorax very broad, broader than elytra, widest about middle; elytra smooth; under-side black, abdomen sometimes

pitchy; legs reddish or brownish-red, posterior femora sometimes blackish, without distinction in the sexes. L. 2 mm.

In moss, dead leaves, rotten wood, &c; London district generally distributed and common; Dover; Hastings; Glanvilles Wootton; New Forest; Isle of Wight; Knowle; Dudley; Buddon Wood, Leicestershire; Chat Moss; Bold records it as very rare in the Northumberland district, and says he has only one local specimen; Scotland, Lowlands and Highlands, among moss, common, Solway, Forth, Tay, Dec, and Moray districts; it appears probable from the Scotch record that the species has been overlooked in the northern counties of England.

A. marginatum, Sturm. A small species, globose, pitchy-black or black with the extreme margins of thorax, and the apex of elytra more or less broadly, pitchy-brown; head extremely finely punctured, antennæ reddish with the club, except apical joint, blackish; thorax short, scarcely as broad as elytra, narrowed in front, broadest behind, very finely and scarcely visibly punctured; elytra thickly and distinctly punctured without sutural stria; legs brownish-red, posterior femora blackish L. $1\frac{1}{4}$ – $1\frac{1}{2}$ mm.

Male with the anterior tarsi slightly dilated, the apex of elytra less deflexed, and the left mandible rather strongly developed; female with all the tarsi 4-jointed.

In haystack and flood refuse, &c.; not common; Caterham, Forest Hill, Weybridge, Horsell, Sheerness, Chatham; Deal; Hastings; Littlington; Norfolk fens (specimens variable in size); Wallasey, near Liverpool; Northumberland district, widely dispersed but not common; Scotland, very rare, Forth district; also taken by Mr. Bold at Tain, Ross-shire. Ireland, Portmarnock.

A. confusum, Bris. (*clypeatum*, Sharp, *polonicum*, Wank., *piceum*, Thoms. nec. Er., *mandibulare*, W.C., nec. Sturm.). Very like the preceding in size, shape, and colour, but easily distinguished by having the clypeus distinctly, although shallowly, emarginate, and by the presence of a sutural stria on elytra reaching from apex to about middle; the elytra are distinctly, although finely punctured; in the female the tarsi are all 4-jointed, and in the male the left mandible is considerably developed. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

In fungi; very rare; New Forest, Lyndhurst (Sharp); Headley Lane (E. W. Janson); Northumberland district, North Seaton (Bold); Dr. Power is said to have taken a specimen, but I have not noticed it in his collection.

In the catalogue of Heyden, Reitter, and Weise (1883) this species is given as synonymous with *piceum*, Er.; I have, however, followed the synonymy given by Reitter himself in the Bestimmungs-Tabellen der Eur. Col. Necrophaga, published in 1885.

A. varians, Beck. Colour very variable, sometimes entirely testaceous, with the disc of thorax and base of elytra darker, sometimes dark, with the head and margins of thorax, and apex and margins only of elytra light; head large, sparingly and very finely punctured; antennæ reddish-yellow, with the two first joints of the club blackish;

thorax about as broad as elytra, broadest behind middle, narrowed in front, exceedingly finely punctured; elytra impunctate with a distinct sutural stria reaching to about the middle; legs reddish-brown. L. $1\frac{3}{4}$ -2 mm.

Male with the left mandible sometimes considerably developed, female with all the tarsi 4-jointed.

In vegetable refuse, rotten wood, at the damp bottoms of old woodstacks, &c.; not uncommon, but somewhat local. Darent Wood, Shirley, Croydon, Caterham, &c.; Glanvilles Wootton; Knowle; Needwood; Repton; Ripon; Lincoln; Liverpool and Manchester district; Northumberland district, not rare, in fungi growing on decaying trees; Scotland, rare, Solway and Forth districts.

The colour and impunctate elytra will easily distinguish this species from its allies.

A. globosum, Muls. (*convexum*, Sharp). This species is allied to *A. marginatum*, but at once distinguished by the presence of a sutural stria on the elytra which reaches from apex to about middle, and by the female tarsi; the antennæ also are unicolorous red, whereas in *A. marginatum* the first two joints of the club are almost always dark; it is also allied to *A. rotundatum*, but is larger than that species and less pointed at apex, and may further be easily distinguished by the colour of the antennæ which in *A. rotundatum* always have the club dark. L. $1\frac{2}{3}$ - $1\frac{4}{5}$ mm.

In the male the left mandible is sometimes very much developed; in the female the tarsi are 5- 4- 4-jointed.

In dead leaves, moss, &c.; rare; Shirley, Esher, Bexley, Chatham, Darent, Hainault, Birch Wood, Loughton, Mickleham, Highgate (Champion, Power, &c.); Hopwas Wood, Tamworth (Blatch); Drinkwater Park, Manchester; Repton; Scotland, rare, Lowlands, Highlands, Solway, Tay, and Dee districts (Sharp).

A. rotundatum, Gyll. One of the smallest, if not the smallest, of our species; deep black, shining, with the extreme margins of thorax, and apex of elytra obscurely pitchy; form globose but rather longer and not quite as broad as in other species; head finely punctured, antennæ reddish with club dark (often lighter at apex); thorax fully as broad as elytra, very finely punctured, the punctuation being scarcely visible except at sides; elytra with a sutural stria reaching to about middle with punctuation, as in thorax, visible at sides; legs reddish or reddish-brown. L. $1\frac{1}{3}$ - $1\frac{1}{2}$ mm.

Male with the left mandible often produced or furnished with a horn; female with tarsi 5- 4- 4-jointed.

In fungoid growth on dead trees, under bark, &c.; rare in England; Esher, Caterham, Darent Wood, Cobham Park, Chatham; Cannock Chase; Sherwood Forest; Wallasey; Bowden Park, Manchester; Northumberland district; Scotland, under bark, not rare, Solway, Tay, Dee, Sutherland, and probably other districts.

This species is closely allied to *A. marginatum*, but is easily dis-

tinguished by the presence of a sutural stria, and the very indistinct punctuation of disc of elytra.

A. nigrinum, Sturm (*staphylæum*, Gyll.) This and the succeeding species are placed in a separate group by Reitter together with *A. arcticum*, Thoms., and *A. discoideum*, Er.; the species belonging to this group are easily distinguished by having the temples swollen and projecting behind the eyes; *A. nigrinum* is the largest British species of the genus; in general appearance it much resembles *A. atrum*, but is rounder and more globose; in colour it varies, being usually black or pitchy black with the edges of thorax and apex of elytra pitchy-brown, but varieties occur which are almost entirely of a light pitchy-brown colour; head very finely punctured, antennæ reddish, with club, except apex, dark; thorax short and convex, hardly visibly punctured, broadest behind middle; elytra plainly and rather thickly punctured, with a sutural stria reaching from apex to middle; breast black, abdomen reddish-brown; legs reddish-brown, or pitchy, with tarsi lighter. L. 3 mm.

Male with the anterior tarsi slightly dilated, female with the tarsi 5- 4- 4-jointed.

In dead leaves, faggot stacks, fungoid growth, &c.; not common; Chatham, Darenth Wood, Caterham, Sanderstead, Coombe Wood, Shirley, Esher, Weybridge, Highgate, Loughton, &c.; Hastings; New Forest; Sherwood Forest; Needwood; Ripon; Manchester district; Northumberland district, rare, Bothal, Gibside, Gosforth, banks of Irthing. Scotland, Lowlands, Highlands, under bark, rare, Solway, Forth, Tay, and Moray districts.

The pale variety is the *A. staphylæum* of Gyllenhal (Ins. Suec. ii. 569. 13), which he expressly says has a 3-jointed club; it cannot therefore be referred to the var. *ferrugineum* of *Amphicyllis globus*, with which many authors identify it.

A. rhinoceros, Sharp. Allied to the preceding species, but evidently more acuminate behind, and more distinctly punctured, with a more deeply impressed sutural stria, and with the antennæ rather stouter, the apical joints being more transverse; the colour is usually deep pitchy red, sometimes almost black, and the legs are of a dark reddish-brown colour; the chief peculiarity, however, lies in the extreme development of the left mandible of the male, which in some cases is only increased in length and curved, in others bears a short tooth on its upper surface, and in others has this tooth prolonged into a very long, elevated, recurved horn reaching far above the head; female with tarsi 5- 4- 4-jointed. L. $2\frac{1}{4}$ – $2\frac{3}{4}$ mm.

Under bark of dead firs, &c.; Rannoch, Perthshire (first taken by Messrs. Sharp and Bishop in the autumn of 1864). I have also received it from the same locality from the Rev. A. E. Hodgson.

AMPHICYLLIS, Erichson.

This genus contains two European species, one of which is found in

Britain; it resembles *Leiodes* in form, but is easily distinguished by the 4-jointed club of the antennæ (the club of *Leiodes* being 5-jointed with the second joint very small) and the non-spinose posterior tibiæ; it is also related to *Agathidium*, but the latter genus is less globose and has the club of the antennæ 3-jointed, and the mesosternum keeled instead of tuberculate.

A. globus, F. Very convex, almost hemispherical, head and elytra shining black, thorax bright red; antennæ red, with the two middle joints of the club blackish; head thickly and finely punctured, mouth parts red; thorax at hinder margin more than double as broad as long, plainly narrowed in front, anterior angles rounded, posterior angles obtuse, thickly and finely punctured; elytra rather distinctly punctured, with a deep sutural stria reaching from apex to about middle; mesosternum tuberculate at apex; legs reddish-brown, posterior femora often blackish. L. $2\frac{1}{2}$ mm.

Male with the three first joints of the anterior tarsi and the two first joints of the intermediate tarsi widened and pubescent beneath; female with all the tarsi 4-jointed.

In dead leaves, faggot stacks, rotten wood and fungoid growth; not common, but occasionally occurs in numbers; Woking, Caterham, Coombe Wood, Darenth Wood, Chatham, Purley Down, Wimbledon, Dulwich, Highgate, Sheppy; Essex; Hastings; New Forest; Church Stretton; Sherwood Forest; Northumberland district, very rare, Gosforth and Long Benton; not recorded from Scotland.

V. ferrugineum, Sturm. This variety is entirely rufo-ferruginous; it is less common than the type form; I have taken it near Lincoln and it has occurred at Ripon and in other localities.

LIODES, Latreille (*Anisotoma*, Reitter *et auct.*)

This genus contains about a dozen species from Europe and North America, four of which are found in Britain; like *Anisotoma* they have a 5-jointed club with the sixth joint very small, but they may be distinguished from that genus by their more hemispherical shape, and by having the mesosternum tuberculate at apex and not carinate; they are also, as a rule, larger and dark-coloured, occasionally being furnished with yellow spots on the elytra.

The larva of *L. glabra* (*Anisotoma glabra*) is described and figured by Schiodte, i. 37, Pl. x. fig. 7. It is very like that of *Choleva fusca*, but is more parallel-sided and more gradually narrowed behind; the head projects, but is small, and very much narrower than the prothorax; the three thoracic segments are very transverse, of about equal size, with the angles rounded, and with strong muscular impressions; the abdominal segments are much contracted in front and behind, and gradually decrease in breadth: the ninth segment is about as long as broad and cylindrical, and bears a very short anal appendage and two long cerci; legs and antennæ short; this larva is pale with the corneous parts fuscous; it is found in fungi. I have retained the name of *Liodes* for this genus, although Reitter and several authors have changed it to *Anisotoma*, as the interchange of the names of genera gives rise to so much confusion;

if a change must be made, it will be far better to adopt entirely new names rather than call *Necrophorus Silpha*, and *Silpha Necrophorus*, *Liodes Anisotoma*, and *Anisotoma Liodes*, and so on, as is now done in many cases.

- I. Elytra finely pubescent with a yellow spot at each shoulder; female with tarsi 5- 4- 4-jointed L. HUMERALIS, *Kug.*
- II. Elytra glabrous without spots at shoulder.
 - i. Size larger; elytra with very distinct rows of larger punctures; female with tarsi 5- 4- 4-jointed L. GLABRA, *Kug.*
 - ii. Size smaller; elytra with rows of larger punctures indistinct or irregular; female with all the tarsi 4-jointed.
 - 1. Elytra coarsely and almost evenly punctured; sutural stria of elytra almost reaching base L. CASTANEA, *Herbst.*
 - 2. Elytra finely punctured with feeble rows of larger punctures; sutural stria of elytra reaching a little beyond middle L. ORBICULARIS, *Herbst.*

L. humeralis, *Kug.* Black, almost hemispherical, with a broad patch at the shoulder of each elytra reddish or reddish-yellow; the mouth-parts and a more or less obscure spot on forehead are also reddish, and the margins of thorax are reddish-brown; head finely punctured, antennæ reddish, with the club blackish or dark brown, except the apical half of the last joint which is reddish-yellow; thorax transverse, narrowed in front, broadest behind, finely punctured, posterior angles rather marked; elytra thickly and finely punctured, with double rows of larger punctures, the whole surface clothed with very fine brownish-yellow pubescence; under-side and legs reddish-brown. L. $2\frac{3}{4}$ – $3\frac{1}{2}$ mm.

Male with the three first joints of the anterior tarsi strongly dilated, and the posterior femora dilated into an obtuse tooth at apex.

In powdery fungus on old logs, stumps, &c.; locally common; London district in many localities; Wrabness, Essex; Hastings; Glanvilles Wootton; New Forest; Devon; Sutton Park, Birmingham; Cannock Chase; Needwood; Robius' Wood, Repton; Liverpool and Manchester districts; commoner further north; Northumberland and Durham district, common; Scotland, Lowlands and Highlands, in fungi under bark, common throughout almost the whole country.

L. glabra, *Kug.* Larger and broader than the preceding species, black, shining; head finely punctured, antennæ brownish-red, with the club, except at extreme apex, blackish; thorax very transverse, finely punctured, posterior angles obtuse, but well marked, with the extreme margins pitchy-red; elytra finely punctured with distinct rows of larger punctures, and a deep sutural stria reaching from apex to about middle; under-side and legs reddish-brown. L. $3\frac{1}{4}$ – $3\frac{3}{4}$ mm.

Male with the three first joints of the anterior tarsi feebly dilated.

Under bark of fir; local and only found in the extreme north of England and in Scotland; Northumberland district, rare; Scotland, Highlands, Tay, Dee, and Moray districts.

L. castanea, *Herbst.* Ovate, rather convex, pitchy-black, usually with a castaneous or reddish-brown tinge; head finely punctured,

antennæ brownish with the club, except apex, darker; thorax extremely finely and scarcely visibly punctured with margins lighter than disc; posterior angles distinct; elytra somewhat acuminate behind, with irregular rows of rather coarse punctures, and the interstices between these rather coarsely punctured, so that the whole surface almost appears to be evenly punctured; the spaces between the punctures are very finely punctured or cross-striated; the sutural stria almost reaches base of elytra; under-side and legs brown-red. L. 3 mm.

Male with the three first joints of the anterior tarsi rather strongly dilated.

Scotland, Highlands, under bark of fir; local; Tay, Dee, and Moray districts. Dr. Sharp has found it in some numbers at Rannoch.

L. orbicularis, Herbst. A small, short oval, somewhat globose species, pitch-black or darker or lighter pitch-brown, antennæ reddish with the club, except apical joint, blackish; head finely punctured, with the mouth-parts and often a spot on forehead reddish; thorax very finely and hardly visibly punctured, with the margins rather broadly lighter, posterior angles distinct, elytra with fine and somewhat indistinct rows of large punctures, interstices very finely punctured, sutural stria deep and reaching to about middle; under-side and legs rather bright reddish or brownish-red. L. 2-2½ mm.

Male with the anterior tarsi feebly dilated, posterior trochanters projecting in a small point, posterior femora furnished with a small tooth in middle.

In dry and powdery fungoid growth on old trees; rare; Darenth Wood, Ashstead, Claygate, Strood, Caterham, Cobham Park; Hastings; Lewes; New Forest; Cannoek Chase; Delamere Forest, Cheshire; Nocton, near Lincoln; Ripon; Northumberland district, Gosforth, rare; not recorded from Scotland.

CYRTUSA, Erichson.

This genus contains about half a dozen species from Europe and North America; they are very small insects of a lighter or darker testaceous or reddish-brown colour, and much resemble the smallest species of *Anisotoma*, from which they differ in having the antennæ apparently 10-jointed and the club 4-jointed, the second joint of the club being very minute and scarcely visible even under a high power; it differs further from this latter genus in not having the mesosternum carinate; from *Colenis* it may be known by the formation of the club of the antennæ and the fact that the tarsi are 5-5-4-jointed.

- I. Form larger, less elongate, and more convex; posterior tibix gradually widened to apex; posterior angles of thorax rectangular C. MINUTA, *Ahr.*
 I. Form smaller, more elongate, and less convex; posterior tibix abruptly widened at apex; posterior angles of thorax blunt (but not rounded) C. PAUXILLA, *Schmidt.*

C. minuta, Ahr. Short oval, convex, subglobose, testaceous or reddish brown, shining; antennæ reddish with club brown; head thickly and rather plainly punctured; thorax transverse, finely punctured, with the sides somewhat strongly rounded, posterior angles rather sharp right angles; elytra with regular rows of punctures reaching nearly to base, interstices rather thickly and plainly punctured, with a sutural stria reaching from apex to about middle; legs testaceous, tibiæ, especially the middle pair, strongly spined. L. $1\frac{1}{4}$ – $1\frac{2}{5}$ mm.

Male with the posterior femora gradually widened to apex, and furnished at apex with a recurved tooth.

By evening sweeping, &c.; rare; Scarborough; Scotland, Lowlands, very rare, Solway district, banks of Firth in flood refuse; the specimens formerly referred to *C. minuta* must be most of them referred to *C. pauxilla*, which is, apparently, confined to the London district and the south.

C. pauxilla, Schmidt. This species is allied to the preceding, but differs in being, on an average, decidedly smaller, and of more elongate and depressed form; the posterior angles of the thorax are blunt, although not rounded off, and in the male the posterior femora are abruptly dilated at apex and terminate in a right angle on the lower side instead of in a recurved tooth; the second joint of the club of the antennæ is also rather more visible, and the punctuation of the interstices of the elytra is more diffusè; these latter characters, however, are not very obvious. L. vix 1 mm.

By evening sweeping; not uncommon in the London district, Mickleham, Shirley, Forest Hill, Caterham, Claygate, Cobham, Birchwood, Maidstone, Gravesend, Chatham; Hastings; New Forest; Plymouth.

ANISOTOMA, Illiger. (*Liodes*, Latr.).

This genus contains a considerable number of species, the majority of which are found in Europe; several, however, have been described from Northern Asia and North America, and it is probable that the number at present known will be largely increased in course of time; about fifty species are now recognized as European, of which nearly half are found in Britain; many of these are extremely closely allied, and are very difficult to determine with accuracy. The late Mr. Rye took a great interest in the group, and added several new species; it is, however, doubtful whether all his species can be regarded as distinct; in the present book the arrangement of Reitter has been in the main followed, as his work (*Bestimmungs-Tabellen der Eur. Col. Necrophaga*, 1885), is the latest that has appeared on the subject. The habits of the genus are at present very imperfectly known; the species are, as a rule, captured by sweeping after sunset in damp and dewy places, but they occasionally occur in fungi, or on sandhills. I have also found them early in hot mornings, sitting upon stones in the sun. The genus *Anisotoma* is distinguished from its nearest allies by having the anterior and intermediate tarsi 5-jointed and the posterior tarsi 4-jointed.

The larvæ of *Anisotoma* and its allies appear to bear a close relation to that of *Choleva*.

Reitter divides the genus into the four following groups:—

- I. Posterior angles of thorax projecting, more or less pointed, fitting closely to the base of elytra (Group I.).
- II. Posterior angles of thorax blunt or rounded, seldom right-angled.
 - i. Interstices of elytra without cross striation.
 - 1. Side margins of elytra without distinct outstanding hairs (Group II.).
 - 2. Side margins of elytra set with distinct outstanding hairs; posterior angles of thorax rounded (Group III.).
 - ii. Interstices of the elytra, especially at the sides, with cross striation (Group IV.).

The first group is not as yet represented in our fauna; the second, containing two species (*A. ciliaris* and *A. furva*) may perhaps with reason be separated; but the fourth, containing the two British species *A. parvula* and *A. rugosa*, may with more reason be classed with the third: our species will then fall into two groups which are very uneven in point of numbers.

- I. Side margins of elytra without distinct outstanding hairs; posterior angles of thorax, rounded, blunt, or rarely right-angled (Group I.).
- II. Side margins of elytra with distinct outstanding hairs; posterior angles of thorax rounded (Group II.).

The characters on which many of the species are separated are very slight, and in many cases comparative, so that a table is not of much value, unless taken in conjunction with the detailed descriptions; except in two or three instances, all our species of *Anisotoma* are of a bright chestnut-red, or testaceous-reddish colour; they vary in size from about 2 mm. to nearly 7 mm., and are of oval or oblong-oval form, and more or less convex, with the thorax gradually rounded at sides, narrowed in front, and broadest behind; the antennæ terminate in a more or less distinct club, and their eighth joint is much smaller than those above and below it; the elytra are furnished with rather strong punctured striæ, and the interstices, at least the alternate ones, are, as a rule, punctured in fine rows: the shape of the tibiæ, and of their apical spines are also useful characters for determination.

GROUP 1.

This group contains all our British species except two; its members are distinguished from those of the other group by not having the sides of the elytra set with distinct outstanding hairs.

- I. Interstices of elytra without cross striation.
 - i. Club of antennæ narrow, last joint not narrower than the penultimate.
 - 1. Anterior tibiæ dilated towards apex.
 - A. Average size larger (4–6½ mm.); form oblong oval or long-oval.
 - a. Second joint of antennæ much longer than broad, club usually dark A CINNAMOMEA, Panz.

- b. Second joint of antennæ scarcely longer than broad, club usually light A. OBLONGA, *Er.* (*grandis*, Fairm.).
- B. Average size smaller ($2\frac{1}{2}$ – $4\frac{1}{2}$ mm.); form short oval.
 - a. Colour dark pitchy-brown or blackish; length 3 – $4\frac{1}{2}$ mm.; antennæ with the penultimate joints more transverse, and the last hardly as broad as the preceding A. PICEA, *Ill.*
 - b. Colour brown-red or yellowish-red; length $2\frac{1}{4}$ – $3\frac{3}{4}$ mm.; antennæ with the penultimate joints less transverse and the last quite as broad as or broader than the preceding.
 - a* Thorax not quite as broad as elytra, with sides distinctly rounded, posterior angles blunt A. DUBIA, *Kug.**
 - b* Thorax as broad as elytra, with sides almost parallel from a little behind middle to base, posterior angles almost right angles A. OBESA, *Schmidt.**
- 2. Anterior tibiæ narrow.
 - a. Thorax smooth on disc: mesosternum strongly and sharply keeled; striæ of elytra with the punctures set comparatively far apart.
 - a*. Size smaller; posterior angles of thorax right angles A. BADIA, *Sturm.*
 - b*. Size larger; posterior angles of thorax slightly obtuse A. SIMILATA, *Rye.†*
 - b. Thorax more or less plainly punctured throughout: mesosternum finely keeled.
 - a*. Striæ of elytra more coarsely punctured A. SCITA, *Er.*
 - b*. Striæ of elytra more finely punctured.
 - a†. Posterior angles of thorax very obtuse, almost rounded A. OVALIS, *Schmidt.*
 - b†. Posterior angles of thorax slightly obtuse, but projecting.
 - a†. Club of antennæ unicolorous; upper surface ferruginous.
 - *. Club of antennæ long and narrow, with the last joint not broader than the penultimate A. BRUNNEA, *Sturm.*
 - **. Club of antennæ broad, with the last joint slightly broader than the penultimate A. CLAVICORNIS, *Rye.*
 - b†. Club of antennæ dark; upper surface usually dark, or with thorax dark and elytra ferruginous A. PUNCTULATA, *Gyll.* (*litura*, Steph.).
 - ii. Club of antennæ as a rule broad, with the last joint plainly narrower than the penultimate.
 - 1. Anterior tibiæ narrow.

* These two species are so closely allied that they can hardly be regarded as specifically distinct.

† It appears to be very probable that this species may eventually prove to be a form of the preceding.

- A. Posterior margin of thorax sinuate on each side; posterior tibiæ of male very much curved.
- a*. Club of antennæ dark; posterior femora of male with a large lobe-like tooth, ending in a point A. CALCARATA, *Er.*
- b*. Club of antennæ ferruginous; posterior femora of male with a large lobe-like tooth, rounded at apex A. CURVIPES, *Schmidt* (*macropus*, *Rye*).
- B. Posterior margin of thorax straight; posterior tibiæ of male almost straight.
- a. Posterior angles of thorax obtuse; colour ferruginous A. RUBIGINOSA, *Schmidt*.
- b. Posterior angles of thorax almost right angles; colour variable, sometimes entirely black A. NIGRITA, *Schmidt*.
2. Anterior tibiæ dilated towards apex.
- A. Form long oval; elytra broadest at or behind middle.
- a. Thorax with two or three larger punctures on disc before scutellum, besides the usual basal row; size larger (length 4-4½ mm.) A. SILESIACA, *Kraatz*.
- b. Thorax without larger punctures before scutellum besides the usual basal row; size smaller (length 3-3½ mm.)
- a*. Thorax hardly as broad as elytra; club of antennæ large and broad A. CURTA, *Fairm.*
- b*. Thorax fully as broad as elytra: club of antennæ smaller and narrower A. LUNICOLLIS, *Rye*.
- B. Form short oval; elytra broadest before middle, and thence narrowed to apex.
- a. Posterior margin of thorax sinuate on each side near posterior angles, size larger and more depressed A. TRIEPKEI, *Schmidt*.
- b. Posterior margin of thorax straight, size smaller, and more convex A. PALLENS, *Sturm*.
- II. Interstices of elytra with more or less distinct cross striation.
- i. Posterior angles of thorax obtuse; size larger; last joint of antennæ distinctly narrower than the preceding A. RUGOSA, *Steph*.
- ii. Posterior angles of thorax sharp right angles; size much smaller; last joint of antennæ not narrower than the preceding A. PARVULA, *Sahlb*.

A. cinnamomea, Panz. Oblong, rather convex, ferruginous or reddish-testaceous, shining; head rather large, finely punctured, antennæ moderately long, with the 2nd and 3rd joints elongate, cylindrical, the 3rd being half as long again as the 2nd, club black, last joint as broad as the penultimate; thorax about as broad as elytra, thickly and finely punctured, moderately rounded at the sides, with posterior angles obtuse, but almost right angles: elytra fully twice as long as thorax, sides sub-parallel until a little before apex, with regular punctured striæ, interstices very finely punctured, the alternate ones with rows of larger punctures. L. 4½-6½ mm.

Male with the posterior legs very long, the femora emarginate and furnished with strong teeth at apex, the tibiæ very strongly curved, intermediate pairs much curved, intermediate femora toothed at base; female with the apical angle of the posterior femora somewhat prominent.

By evening sweeping among dead leaves in autumn, but more especially in truffles; rare; Mr. Champion says that he has invariably found it by sweeping as above under old beech-trees. Chatham, Caterham, Mickleham, Sanderstead, Amberley; Eythorne, near Dover; Audley End, Saffron Walden, in truffles (Curtis); Marlborough; Devon; Swansea; Scotland, very rare, Forth District; Ireland, near Belfast and Dublin; the species, as might be expected, is common in France in the Périgord district.

A. oblonga, Er., *grandis*, Fairm.). About the size of smaller specimens of the preceding species, but rather more elliptical, and with shorter antennæ, which have the club of the same colour as the rest of the body; the species may be easily recognized by the shorter second joint of the antennæ, which is scarcely longer than broad; thorax with the anterior angles less marked, and the posterior angles more nearly right angles; elytra with sides rather more rounded, and somewhat broader proportionally, with more strongly punctured striæ; in the male the posterior tibiæ are more evenly curved, and the posterior femora are strongly emarginate and toothed at apex; in this point, however, the specimens appear to be somewhat variable. L. 4-5 mm.

The two species *A. oblonga*, Er., and *A. grandis*, Fairm., appear now to be considered identical; the chief difference on which they were separated seems to have been taken from their sexual characters; the denticulation, however, of the apex of the posterior femora of male appears to vary in degree, and the same probably applies to the female, which in *A. grandis* is said to have the posterior femora angulated, and in *A. oblonga* rounded. In case, however, the two species should again be separated, it may be as well to give the records under different headings:—

A. oblonga. One specimen taken by Mr. Harris near Burton-on-Trent and named as *A. oblonga*, by Dr. Kraatz; Farnham, Surrey (one male, Champion); one specimen beaten from broom in a wood near York (Hutchinson); Sherwood Forest; Dumfries, Scotland.

A. grandis. Caterham, Mickleham, Esher, by evening sweeping in the autumn in woods (Champion); Mickleham "Hilly Field" under trees (Rye); Tilgate Forest; Loughton and Cowfold (Power); Highgate (Janson); Bretby Wood, near Burton-on-Trent, where I captured a fine specimen on September 30th, 1879, by sweeping in the evening when the grass was so wet that water could be wrung out of the net at each sweep: this specimen was named for me as *A. grandis*, and it is worthy of note that it comes from the same locality as the original specimen of *A. oblonga*.

A. picea, Ill. Oblong ovate, convex, of a deep pitchy-black colour,

shining, antennæ moderate, ferruginous; thorax as broad as elytra, closely punctured, much narrowed in front, posterior margin truncate, hind angles rounded; elytra with sides rounded, with rather strongly punctured striæ, each interstice with two more or less irregular rows of very fine punctures, alternate interstices with larger punctures; legs red. L. $3\frac{1}{3}$ mm.

Male with the posterior legs elongate, the femora with an obtuse tooth on each side at apex, and the tibiæ curved, female with the posterior femora terminating in an obtuse angle somewhat rounded.

Very rare; Scotland, Forth, Clyde, and Tay districts; the few specimens captured were all, or nearly all, taken by Mr. Foxcroft; the species is one of the most distinct of the whole genus.

A. dubia, Kug. Subovate, ferruginous or reddish testaceous, occasionally quite pale, sometimes with the head and thorax pitchy, and the elytra ferruginous, size also variable; head thickly punctured, with larger impressions on vertex; antennæ moderate, with 3rd joint half as long again as 2nd, club darker or lighter; thorax not quite as broad as elytra, thickly punctured, rather long proportionally, with sides strongly and evenly rounded, posterior angles very obtuse or rounded; elytra with strongly punctured striæ, interstices very finely but not very closely punctured, alternate ones with the usual larger punctures; legs moderately stout. L. $2\frac{1}{4}$ – $3\frac{1}{2}$ mm.

Male with the posterior legs elongate, femora furnished at apex with a small tooth on each side, tibiæ feebly biarcuate; female with the posterior femora terminating in an obtuse angle at apex.

By evening sweeping in woods, on sand-hills, &c.; local, but not uncommon in many places; it is perhaps the most common British member of the genus except *A. calcarata*; Chatham, Darent Wood, Caterham, Mickieham, Woking, Esher, Shirley, Coombe Wood; Harwich; Deal; Hastings; Glanvilles Wootton; New Forest; Exeter; Repton, and other Midland localities; Manchester district; Hartlepool; Holy Island (in numbers), J. J. Walker; Mr. Bold records the capture of large numbers on the sea-shore near Whitby in October and adds, "They were on a sandy slope, with head to windward; whence they came bothered me entirely."* Scotland, rather common, Solway, Tweed, Forth, Tay, and Moray districts; Ireland, Portmarnock.

The following varieties of this very variable species may perhaps be mentioned:—

V. bicolor, Schmidt. Size smaller, head and thorax pitchy, elytra ferruginous; it occurs with the type.

* It is probable that many of the Anisotomina which are now exceedingly rare, will be found plentifully as their habits become better known: they appear to have a great affinity for the sea-shore or the sand-hills adjoining, and many should perhaps be looked for in late autumn: the capture of *Hydnobius punctatissimus* in very large numbers by Mr. T. Wood near Kingsgate, quite late in the autumn of 1886, is an example: *A. ciliaris* and *Hydnobius Perrisii*, and several of the commoner species have occurred in numbers near or not far from the sea-coast.

V. longipes, Schmidt. Size larger, colour entirely ferruginous, legs apparently more elongate; rare, Northumberland district, Hartford Bridge.

The *V. pallescens*, Schmidt, is probably founded on more or less immature specimens.

A. obesa, Schmidt. Very closely allied to the preceding, with which it is probably identical; it is about the same size, shape, and colour, but has the third joint of the antennæ a little longer in proportion, the sides of the thorax not so strongly rounded, and subparallel from a little behind middle to base, and the teeth at the apex of posterior femora of male more or less obsolete; the difference of the relative length of the second and third joints of the antennæ is, however, not very apparent in some cases, and the other differences are not very striking; of two males of the species that I have before me, that of *A. dubia* has the punctuation of the striæ of elytra considerably the stronger, but the latter species appears to vary in this respect. L. 3-3½ mm.

By evening sweeping; rare; Esher; Weybridge; Wicken and Burwell Fens; Sherwood Forest (where I have taken several specimens at the end of August); Scotland, Moss Morran (Power).

A. badia, Sturm. A small shining species, ovate, sub-globose, very convex, variable in colour, sometimes almost entirely pitchy, and with the head and thorax usually darker than the elytra, often, however, entirely ferruginous; head obsoletely punctured, antennæ ferruginous, with rather a narrow club, last joint as broad as the two penultimate joints; thorax at base as broad as elytra, strongly narrowed in front, hind margin truncate, posterior angles well marked, almost right angles, disc impunctate, smooth and shining, a point that will distinguish it from almost all allied species; elytra very convex, usually lighter at apex, with strongly punctured striæ which become more obsolete towards apex, interstices scarcely visibly punctured, except for the larger rows in the alternate ones; legs short, shorter than in any other species of the group, posterior tibiæ only just reaching apex of elytra, tarsi rather long proportionally. L. 1½-2 mm.

By evening sweeping; occasionally in moss and dead leaves; local but not uncommon in some places; London district, generally distributed, Chatham, Cuxton (Kent), Faversham, Mickleham, Croydon, Caterham, Esher, Reigate, Cowley, Purley Down; Hastings; Glanvilles Wootton; Repton, near Burton-on-Trent, and other Midland localities; Hartlepool; Northumberland district, Hetton Hall, near Belford.

A. similata, Rye. Mr. Rye describes this species as "closely allied to *A. badia*, from which it differs in its rather larger size and lighter colour, the more slender basal joints of its antennæ, and its proportionally rather longer elytra, of which the punctures are, though regular and well defined, much more delicate, the fourth stria from the suture being moreover, slightly waved about the upper third." L. 2 mm.

Two specimens taken by Mr. Rye at Shirley, near Croydon, by evening sweeping, and returned by Dr. Kraatz as distinct from *A. badia*.

A. scita, Er. Very closely allied to *A. dubia*, and equally variable in colour; it is chiefly distinguished by having the anterior tibiæ less widened; this character, however, is not altogether trustworthy, and it is quite possible that the species are not really distinct; it appears, however, to have the thorax widest at or very near the base (instead of nearer the middle), with a much more shallow emargination for the reception of the head, and is, on the average, considerably smaller. L. $2\frac{1}{2}$ – $2\frac{2}{3}$ mm.

The species was first taken as British near York by Mr. Hutchinson, and has occurred in some small numbers to Dr. Sharp in the Solway district, Scotland. I have also taken a specimen near Hunstanton, Norfolk, which was somewhat doubtfully referred to this species by Mr. Rye.

A. ovalis, Schmidt. Oval, convex, ferruginous; head thickly and finely punctured, antennæ rather long, with a somewhat elongate club of which the three last joints are equal in breadth; thorax at base somewhat narrower than elytra, thickly and finely punctured, narrowed towards apex, with sides evenly rounded, base truncate, posterior angles almost right angles; elytra very convex, with moderately strongly punctured striæ, interstices very closely and finely punctured, the alternate ones with larger punctures. L. 3 – $3\frac{1}{3}$ mm.

Male with the posterior legs somewhat elongate, femora simple, rounded at apex, tibiæ moderately curved, female with the posterior tibiæ almost straight.

By evening sweeping; local, and as a rule not common; Caterham, Forest Hill, Claygate; Matlock; Scarborough; Whalley, Lancashire; Northumberland district, recorded by Mr. Bold as not uncommon, and often found on the tops of walls, beneath trees, especially after rain; Scotland, scarce, Solway and Tay districts.

Reitter (Best. Tab. der Eur. Col., p. 101) distinguishes this species from *A. scita* on the ground that the latter species has only one puncture on each side of forehead, whereas *A. ovalis* has two; *A. scita*, however, appears, at all events in some cases, to have two; it is a differently shaped insect as compared with *A. ovalis*, and has the sculpture of elytra considerably stronger.

A. brunnea, Sturm. Entirely ferruginous, shining, with a narrow club to its concolorous antennæ, last joint not broader or narrower than the preceding; thorax not sinuate at base, with the posterior angles almost right angles, distinct; striæ of elytra moderately finely punctured, somewhat irregular, the third stria somewhat waved in middle; male with the posterior legs rather elongate, the femora unarmed, and the posterior tibiæ curved, especially in middle. L. $1\frac{1}{2}$ – $2\frac{1}{4}$ mm.

By evening sweeping; very rare; Weybridge (Power); Mickleham, on the wing (Marsh); Scarborough (Lawson).

This species was originally considered by Dr. Kraatz as a small form

of *A. obesa*, and as such was expunged from our lists (Ent. Annual 1859, p. 122); Mr. Rye, however, in reintroducing the species (Ent. Monthly Mag. IX. 135), discusses the whole question, and proves satisfactorily that it is distinct; in fact it is more closely related to *A. calcarata* than to *A. obesa*, from which latter it is easily distinguished, among other points, by the singly curved posterior tibiæ of the male, the less dilated anterior tibiæ, and the relative length of the second and third joints of the antennæ: from small specimens of *A. calcarata* it may be known by the truncate hind margin of thorax, and more acute posterior angles of the same, as well as by the unarmed posterior tibiæ; it somewhat resembles *A. litura*, but may be easily separated from that species by the narrower and entirely ferruginous club of the antennæ, and the comparatively wider apical joints.

A. clavicornis, Rye. Oval, convex, ferruginous-testaceous, thorax not very closely punctured, with sides evenly rounded, truncate at base, elytra rather coarsely but not deeply punctured; distinguished from all other species by the structure of the antennæ, which are very short, gradually widened towards apex, with the fourth, fifth, and sixth joints unusually small, and the apical joints, though short, as wide as the two preceding, which are very transverse. L. $2\frac{1}{2}$ mm.

This species was described by Rye from a single specimen taken in flood refuse on the banks of the Nith, near Thornhill, Dumfries, October, 1873, by Dr. Sharp; it has occurred since in France and Southern Europe.

A. punctulata, Gyll. (*litura*, Steph., *ornata*, Fairm.). Oblong, ferruginous, with the head and thorax often more or less pitchy, and the elytra, as a rule, with the suture, and a more or less defined streak on each side, darker; occasionally almost the whole insect is of a dark pitchy colour; antennæ moderate, with the club rather long, fuscous or blackish; thorax a little narrower at base than elytra, with the sides very gently rounded, posterior angles almost right angles, upper surface finely and not very closely punctured; elytra with strongly punctured striæ, interstices scarcely visibly punctured, except for the large punctures in the alternate ones. L. $2\frac{1}{2}$ –3 mm.

Male with the posterior legs elongate, the femora unarmed, and the tibiæ rather strongly curved.

By evening sweeping in autumn among dead leaves, in flood rubbish, &c.; local but not uncommon in some places; Mickleham, Caterham, Shirley, Forest Hill, Highgate, Darenth; Folkestone; Hastings; Glanvilles Wootton; New Forest; Burton-on-Trent; Lincoln; Hartlepool; Northumberland district, rare, Wallington, Gosforth, &c.; Scotland, Lowlands, rare, Solway, Forth, and Dee districts; Ireland, Portmannock.

A. calcarata, Er. Oblong ovate, ferruginous, with the head and thorax sometimes somewhat darker, exceedingly variable in size: head thickly and finely punctured, antennæ moderately long, with fuscous club, last joint narrower than penultimate: thorax not quite as broad

as elytra, with sides rather strongly rounded in front, base bisinuate, posterior angles nearly right angles, but blunt, or even almost rounded, upper surface finely and not very thickly punctured; elytra with strongly punctured striæ, interstices extremely finely punctured, except for the rows of larger punctures in the alternate ones. L. $1\frac{3}{4}$ – $3\frac{1}{2}$ mm.

Male with the posterior legs elongate, the femora terminating in a large sharp tooth at apex, and the tibiæ very strongly arcuate; female with the posterior femora terminating in a slightly prominent angle, tibiæ almost straight.

By evening sweeping, &c.; generally distributed and moderately common throughout the greater part of England; Bold, however, records it as rare in the Northumberland district; Scotland, common, Solway, Forth, Dee, Moray and probably other districts; Ireland, Belfast, Portmarnock, Waterford, &c.

A. curvipes, Schmidt (*macropus*, Rye). Oblong-ovate, convex, ferruginous, (immature examples testaceous); antennæ rather short, with the club scarcely darker, and the last joint evidently narrower than the preceding; thorax with the sides evenly rounded, slightly sinuate on each side at base, posterior angles obtuse, upper surface closely and finely punctured; elytra with strongly punctured striæ, sides subparallel until behind middle and thence narrowed and rounded to apex; anterior tibiæ slender, posterior femora coarsely punctured beneath. L. 2–3 mm.

Male with the posterior legs elongate, the femora armed beneath with a large lobe-like tooth which has the external angle rounded, tibiæ moderately curved to apex.

By evening sweeping under fir trees; very rare; Esher, five examples taken by Mr. Champion in August, 1873.

This species is allied to small examples of *A. calcarata*, but differs in being always of a uniform clear ferruginous colour, of rather larger build, with the base of thorax not distinctly sinuate near posterior angles; the punctures of the striæ of elytra are larger, and the lobe-like tooth at the apex of posterior femora is rounded and not sharply prominent.

A. rubiginosa, Schmidt. Globose-ovate, strongly convex, shining, ferruginous or yellowish-red; head large, finely and not very thickly punctured, forehead with only two larger punctures, antennæ short and stout with the third joint a little longer than the second, club thick, as a rule concolorous but sometimes darker, last joint much narrower than the preceding; thorax strongly rounded at sides, base truncate, finely and sparingly punctured, posterior angles blunt; elytra rounded at sides, broadest in middle, with strong punctured striæ, interstices scarcely visibly punctured, except for the larger punctures in the alternate ones; legs very stout, tibiæ strongly spined. L. 2 – $2\frac{2}{3}$ mm.

Male with the posterior femora terminating in an oblique and slightly prominent tooth, tibiæ slightly curved.

This species has been alternately introduced and omitted from our lists on two or three occasions, and I here introduce it again with some reserve, on a specimen named for me on the Continent as "*près rubiginosa*," (now in the possession of Mr. Mason), which must, I think, be referred to this species, as it is certainly not sufficiently distinct to be regarded as a new species.

The species appears to be chiefly distinguished by having the thorax more convex than the elytra, by the very fine and at the same time diffuse punctuation of the thorax, and the almost invisible punctuation of the interstices of the elytra.

A. nigrita, Schmidt. Oblong-oval, moderately convex, colour variable, sometimes almost entirely pitchy black, sometimes quite light ferruginous, and varying between these two extremes; antennæ reddish, with the club dark brown; thorax at base almost as broad as elytra, narrowed in front, hind margin truncate, posterior angles almost right angles, upper surface convex, very finely and not very thickly punctured; elytra rather long, more than twice as long as thorax, with strongly punctured striæ, which are rather irregular towards suture, interstices finely and very sparingly punctured; legs ferruginous, posterior tibiæ short and straight in both sexes. L. $2-2\frac{3}{4}$ mm.

Male with the posterior femora terminating in a large sharp tooth.

By evening sweeping, under fir-trees; very local; London district, not uncommon, Chatham, Esher, Woking, Shirley, Reigate; it has also occurred in the New Forest.

A. silesiaca, Kr. A large and fine species; oblong-oval, very convex, entirely ferruginous, except the club which is darker, sometimes blackish, and the eye and apex of mandibles which are black: head and thorax closely and very distinctly punctured; thorax a little narrower than elytra, with sides slightly rounded, base truncate, posterior angles almost right angles: elytra twice as long as thorax, convex, with strongly punctured striæ, interstices very finely and closely but distinctly punctured, so that they appear rather dull, alternate interstices with rather closely set rows of somewhat large punctures. L. $4\frac{1}{2}-4\frac{3}{4}$ mm.

Male with the anterior tarsi rather strongly dilated, posterior femora simple with the apical angle rounded, tibiæ slightly curved.

A single specimen was taken by Dr. Sharp in July, 1866, at Invercannich, at the foot of Glen Affrick, Inverness-shire: the species was formerly introduced by Mr. Crotch into the British list as a large specimen of *A. ovalis*, named *A. silesiaca* by M. Schiödt: the two species, however, differ entirely in sculpture, the elytra of *A. ovalis* being much more finely punctured; the latter insect is moreover less elongate and more ovate, and has the club of the antennæ longer and less stout. *A. silesiaca* somewhat resembles *A. furva*, but has longer posterior legs and no cilia at the margins of the elytra, besides being different in other respects.

A. curta, Fairm. Oval, very convex, almost equally narrowed in front and behind, of a shining testaceous reddish colour; antennæ short with club slightly darker, stout and broad; head usually darker than the rest of the body, very finely and closely punctured; thorax very convex, not quite as broad at base as elytra, posterior angles obtusely rounded, closely but distinctly punctured; elytra twice as long as thorax, with rather deep and closely and strongly punctured striæ, interstices obsoletely punctured, alternate rows with widely set larger punctures. L. 3-3½ mm.

Male with the posterior femora terminating in a blunt angle, or as Fairmaire in his description says, "terminated above and below by two small and slightly projecting teeth," * posterior femora curved.

The species is closely allied to *A. dubia*, but is easily distinguished by its rather longer build, the much stronger punctuation of its thorax, the sides of which are more contracted behind, by the apical joint of the antennæ being distinctly narrower than the penultimate, and by the different curvature of the posterior tibiæ of the male.

Sandy places, by evening sweeping under fir-trees, very rare; one example taken by Mr. Champion at Esher, October, 1873, and one by the Rev. T. Laundry Browne near Norwich; it appears to be very common on the sandy coasts of Normandy, and also occurs near Paris; it will probably be found in numbers on our south-east coast.

A. lunicollis, Rye. Oblong ovate, convex, shining, ferruginous; antennæ with the club somewhat elongate, fuscous, last joint distinctly narrower than the penultimate; thorax in middle a little broader than elytra, ample and convex, sides strongly rounded, base truncate, upper surface finely and moderately thickly, but distinctly punctured; posterior angles rounded; elytra with rather strongly and thickly punctured striæ, the punctures being somewhat smaller than in some of the allied species, interstices finely but distinctly punctured; intermediate and posterior tibiæ rather stout. L. 2⅔ mm.

Male with the intermediate tibiæ dilated towards apex and slightly curved, posterior femora produced in a lobe terminating in a tooth above and below at apex, tibiæ slightly curved.

By evening sweeping, in flood refuse, &c.; very rare; Forest Hill (Marsh); Sydenham (Waterhouse); Cowley (Power); Scarborough (Lawson); Hartlepool (Gardner). This species is allied to *A. calcarata*, but differs in the more rounded sides and angles of thorax, and the truncate base of the same, and also in its more oblong build, and closer set and smaller punctures of the striæ of the elytra, as well as by the less strongly dilated posterior tibiæ of the male.

A. triepkei, Schmidt. Oval, moderately convex, lighter or darker

* The descriptions of the male characters of *Anisotoma* often vary very much in different authors; the posterior femora are usually dilated in a lobe, which from above appears single, but in reality is double, being formed of two plates separated by a groove, as will be seen by viewing the tibiæ sideways; the apex of each of these plates is terminated by one or more teeth, or is obtuse or rounded; some authors describe the characters on one plate, some on both, and hence arises the confusion.

ferruginous or brownish-red; antennæ rather short, club long, as long as the rest of the antennæ, first and last joints not so broad as the others; thorax at base narrower than elytra, rounded at sides, broadest in middle, base bisinuate, posterior angles almost rounded, upper surface rather thickly and very distinctly punctured; elytra with sides not strongly rounded, rather depressed on disc, with strongly punctured striæ, the punctures, however, being not as large as in some of the allied species, interstices very finely punctured, alternate ones with distinct larger punctures. L. $3-4\frac{1}{4}$ mm.

Male with the posterior legs elongate, the femora angularly dilated and finely denticulate in middle, and rounded at apex, tibiæ biarcuate.

By evening sweeping; very rare; Forest Hill (Power); Weybridge; Hartlepool (Gardner); Scotland very rare, Forth and Tay districts; the first British specimen was taken by Mr. Hislop, near Falkirk.

This species is allied to *A. dubia*, but differs in its more oval and depressed form, bisinuate base of thorax, and broad head; as well as by having the last joint of the antennæ narrower than the penultimate, and the forehead furnished with two instead of four depressions; it appears to vary very much in size; in Dr. Sharp's collection there is a large, almost pitchy-ferruginous, male, which is nearly $4\frac{1}{2}$ mm. in length.

A. pallens, Sturm. Short oval, of a light testaceous colour, strongly convex; head large, antennæ very short, club a little darker; thorax narrower at base than elytra, as broad or broader in middle than at base, base truncate, posterior angles obtuse, upper surface thickly and finely punctured; elytra convex with rather finely punctured striæ, interstices thickly and exceedingly finely punctured; legs in both sexes stout, posterior legs short, shorter than in any other species in the group except *A. badia*, femora rather broad. L. 2 mm.

Male with the posterior tibiæ slightly curved.

By evening sweeping in sandy places near the coast; three specimens taken by Mr. J. J. Walker at Deal on September 19th, 1873.

This species by its short legs and antennæ and general appearance seems at first sight to belong to the other group which contains *A. ciliaris* and *A. furva*; it is, however, readily distinguished from these, apart from its smaller size, by the absence of cilia on the margins of the elytra and the somewhat longer and less stout posterior tibiæ, as well as by the much finer punctuation of the thorax, and the finer punctuation of the striæ and interstices of the elytra: it is one of the species that will probably be found in considerable numbers in Britain, as it is widely distributed on the continent, having occurred in France, Germany, Austria, and Russia.

The next two species are easily distinguished from all the others belonging to the genus by the distinct cross striation of the interstices of the elytra.

A. rugosa, Steph. Short oval, moderately convex, ferruginous or brownish-red, shining; head and thorax thickly and distinctly punctured, antennæ comparatively long, with rather a long club, the last joint of which is much narrower than the penultimate, and is rather long and pointed; thorax at base slightly narrower than elytra, narrowed in front, base truncate, posterior angles obtuse and almost rounded; elytra oval, rounded at sides, with rather feeble and not strongly punctured striæ, interstices very plainly transversely rugose, and besides this more or less distinctly punctured; the alternate interstices are also furnished with larger punctures; legs red. L. 3-4 mm.

Male with the posterior legs elongate, the femora dilated and rounded at apex, and the tibiæ strongly curved.

By evening sweeping; very rare; London district (Stephens and Janson); Caterham (Champion); Weybridge; Mickleham (Power); Scarborough (Lawson); Hartlepool (Gardner); Northumberland district, banks of the Irthing, near Gilsland; Ireland, North Bull, near Dublin.

A. parvula, Sahlb. A very small species, which can only be compared with *A. badia* from which it is easily distinguished by the distinct cross striation of the interstices of the elytra; the thorax moreover, which is impunctate on disc in *A. badia*, is finely punctured throughout; the sculpture of the elytra is much finer and the posterior legs are longer; the form is short oval and convex: antennæ rather long, with the club a little darker; thorax rather short, base truncate, posterior angles sharp right angles, upper surface very finely punctured; elytra with finely punctured striæ, interstices cross-striated; legs simple in both sexes. L. 1-1½ mm.

By evening sweeping in woods; rare; Chatham, Darenth Wood, Mickleham, Caterham, Esher, Whitstable; Bognor; Glanvilles Wootton; Plymouth; Scotland, rare, Solway, Tweed and Forth districts; it probably occurs in many other localities; it is usually uncommon but is somewhat widely distributed in Northern and Central Europe.

GROUP 2.

This group contains the two rare species *A. ciliaris* and *A. furva*, which are distinguished from those of the preceding group by having the side margins of the elytra set with distinct outstanding hairs; they may be also easily recognized by their short and stout dilated posterior tibiæ, which hardly extend to the apex of the elytra, a point in which they differ from all the other species of the same size: *A. badia* has rather short posterior tibiæ, but they are scarcely dilated, and the whole insect is of an entirely different appearance and much smaller: it is important that these characters should be carefully noted, as the short hairs on the margins of the elytra of *A. furva* are apt to get rubbed off.

- I. Side margins of elytra set with long hairs; thorax broadest just behind middle; size smaller; colour lighter. *A. CILIARIS*, *Schmidt*.
 II. Side margins of elytra set with short hairs; thorax broadest just before base; size larger; colour darker . . . *A. FURVA*, *Er*.

A. ciliaris, Schmidt. Short elliptical, very convex, of a reddish-brown or reddish testaceous colour; head rather large, thickly punctured, antennæ short, with well-marked club, of which the last joint is considerably narrower than the penultimate; thorax short, distinctly narrower than elytra, broadest just behind middle, posterior angles rounded, finely and thickly punctured; elytra very convex, with distinct and rather long outstanding hairs on margins, with rather fine striæ, interstices flat, somewhat finely and thickly punctured; legs stout, posterior tibiæ short and dilated towards apex, strongly spinose externally; male with the anterior tarsi scarcely dilated. L. $3-3\frac{1}{4}$ mm.

In sandy places, especially on sand-hills near the sea; rare; the first British specimens were recorded by Mr. G. R. Waterhouse; Mr. W. G. Blatch has found it in considerable numbers on the sand-hills near Swansea, and Mr. Moncreaf has taken it at Cumberland Fort near Portsea.

A. furva, Er. Very closely allied to the preceding, but larger, and of a darker reddish colour, with the thorax broadest just before base and exactly as broad as the elytra; the club of the antennæ is longer, and the penultimate joint is more transverse; the interstices of the elytra are not so closely punctured, and the marginal cilia are shorter and less apparent, and the posterior tibiæ are less thickened; the general form, moreover, is rather longer and less convex. L. $3\frac{1}{2}-3\frac{3}{4}$ mm.

On sand-hills, &c.; very rare; Constantine, Lancashire (Power); in Dr. Sharp's collection there is a fine specimen without locality; it has also been recorded from Devonshire.

COLENIS, Erichson.

This genus contains five or six species from Europe and North America; they are minute globose insects, of a testaceous colour, and are distinguished by having the antennæ with a 3-jointed club, the mesosternum carinate, and the tarsi 5-4-4-jointed: one species is found in Britain. Curtis describes another as *C. Latifrons* which is mentioned in Waterhouse's catalogue as "*Leiodes?*" and is given as synonymous with *C. dentipes*: in the European catalogue of Heyden, Reitter, and Weise it is mentioned as a distinct species, but Reitter omits it altogether in his work on the Necrophaga. I cannot find out anything further about it, and believe that we only possess one species.

C. dentipes, Gyll. (*immunda*, Sturm., *aciculata*, Steph., *brunnea*, Steph. coll.). Short oval, strongly convex, reddish-yellow or reddish-brown, shining; head moderately large, antennæ rather long with the last joint narrower than the preceding, reddish-brown; thorax behind about as broad as elytra, narrowed in front, gently rounded at sides, anterior angles rounded, basal margin truncate, posterior angles sharp right angles, upper surface impunctate; elytra with very fine punctured striæ, the interstices finely transversely strigose, sutural stria distinct from apex to beyond middle; legs reddish testaceous. L. $1-1\frac{1}{3}$ mm.

Male with the posterior femora broad and compressed, with a blunt tooth between base and middle, and a sharp tooth between middle and apex.

By beating, evening sweeping, &c. ; London district, not uncommon and generally distributed; Hastings; New Forest; Glanvilles Wootton; Devon; Knowle, near Birmingham; Bretby, near Burton-on-Trent; Matlock; Lincoln; Northumberland district, not rare; Scotland, scarce, Solway, Tweed, Forth, and Clyde districts; Ireland, near Belfast and Dublin.

AGARICOPHAGUS, Schmidt.

This genus contains three European species, of which two occur very rarely in Britain; they resemble *Anisotoma* in having a 5-jointed club to the antennæ, the second joint of the club being very small, and in the fact that the mesosternum is carinate; they differ, however, in having the tarsi 4- 3- 3-jointed.

- I. Larger, long oval; interstices of elytra moderately thickly cross-striated A. CEPHALOTES, Schmidt.
 II. Smaller, short oval; interstices of elytra very thickly cross-striated A. CONFORMIS, Er.

A. cephalotes, Schmidt. Oblong-oval, not very convex, of a lighter or darker reddish testaceous or ferruginous colour; head large, very finely punctured and cross-striated; antennæ moderate, with rather long 5-jointed club; thorax as broad as elytra, with sides slightly rounded and very little narrowed in front, with all the angles rounded, upper surface extremely finely punctured and cross-striated, so that it appears a little dull; elytra with distinctly punctured striæ, sutural stria rather strong, reaching from apex to about middle, interstices rather thickly and plainly cross-striated; legs reddish testaceous. L. 2 mm.

Male with the head larger than in female, and with the posterior femora dilated, emarginate beneath, and armed in the middle with a recurved tooth.

By evening sweeping in and about woods; rare; London district, where it occurs in several localities; Shirley, Caterham, Claygate, Mickleham, Tilgate, Shepherds Well (Champion, Power, and Waterhouse); Rusper (Gorham).

A. conformis, Er. Very closely allied to the preceding, but smaller and of a shorter oval form, with the head smaller, and the thorax more narrowed in front; the elytra also are more thickly cross-striated, and the posterior femora of the male are only armed with a minute tooth in middle. L. $1\frac{1}{3}$ - $1\frac{1}{2}$ mm.

A specimen in Dr. Power's collection named *A. conformis* has been confirmed for me by Herr Reitter as belonging to this species; this specimen is from Mickleham, and there are others in Dr. Power's collection from Birch Wood and Cowfold; the differences appear to me so slight that I should be very sorry to separate the species if mixed. *A. conformis* has been before introduced into the British list by Mr.

Crotch and then dropped as being only a small *cephalotes*, and I should prefer to consider Dr. Power's specimens as all belonging to the latter species, were it not for Reitter's determination; *A. præcellens*, Hampe, the third European species, is regarded by Reitter as synonymous with *A. cephalotes*; it is plain therefore that the species are all very closely connected.

HYDNOBIUS, Schmidt.

This genus contains about eight species, two of which are found in North America and one in Chili; the others occur in Europe; four of these have hitherto been discovered in Britain; they have, as a rule, been considered very rare, but one or two have lately been found in large numbers; Rye added a fourth species, *H. spinipes*, Gyll., but afterwards withdrew it, believing that his specimen was only a highly developed male of *H. strigosus*; *H. spinipes* appears, however, to be more closely related to *H. punctatus* (of which it has been by some authors considered as the female) than to *H. strigosus*; the genus resembles *Triarthron* in having all the tarsi 5-jointed, but differs from that genus in having the club 5-jointed with the second joint small, as in *Anisotoma*.

Our species may be distinguished as follows:—

- I. Size larger ($3\frac{1}{2}$ –4 mm.); punctuation very coarse; side margins of elytra set with fine hairs *H. FERRISI*, Fairm.
- II. Size smaller ($1\frac{1}{3}$ – $2\frac{1}{2}$ mm.); punctuation finer; side margins of elytra without hairs.
 - i. Length 2– $2\frac{1}{2}$ mm.; club of antennæ nearly always dark, last joint plainly narrower than the penultimate.
 1. Colour variable, nearly always pitchy black, but sometimes ferruginous; punctuation of elytra somewhat confused; male with the posterior femora armed with a large triangular recurved tooth *H. PUNCTATISSIMUS*, Steph.
 2. Colour always ferruginous or reddish-yellow; rows of punctures on elytra regular, those of the interstices being almost as strong as those of the regular striæ; male with the posterior femora armed with a spiniform tooth *H. PUNCTATUS*, Sturm.
 - ii. Length $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.; club of antennæ reddish testaceous, last joint hardly, if at all, narrower than the penultimate *H. STRIGOSUS*, Schmidt.

H. Perrisi, Fairm. Oblong ovate, somewhat depressed, varying in colour from ferruginous (in somewhat immature specimens) to dark reddish-brown, which latter is the usual colour of the insect; the elytra are often obscurely darker at suture; head large, rather strongly punctured; antennæ short, with well-marked blackish club, the last joint of which is narrower than the penultimate; thorax narrower than elytra, narrowed in front, broadest behind middle, and thence narrowed to base, posterior angles very obtuse, almost rounded, upper surface thickly and

coarsely punctured, base truncate; elytra long, rather depressed on disc, with strongly punctured striæ, and with the interstices very distinctly punctured, sometimes presenting a slightly rugose appearance; legs rather stout, tibiæ somewhat dilated towards apex in both sexes. L. $3\frac{1}{2}$ –4 mm.

Male with the posterior legs longer, the femora dilated and terminating above and below in a well-marked, but not sharp, tooth; tibiæ rather strongly curved.

In sandy places on the coast; rare; first introduced as British on two old specimens in Mr. Waterhouse's collection, supposed to have come from Scotland; three specimens were also found by Mr. Rye among some undetermined *Anisotomidæ* in the Rev. H. Clark's collection; it has also been recorded from Gateshead, but has been considered one of our rarest British Coleoptera until quite recently, when most of our collections have been supplied with it through the liberality of Mr. J. Gardner, who has taken it in numbers near Hartlepool.

H. punctatissimus, Steph. Oblong-ovate, rather depressed, usually of a deep pitchy black colour, but variable in this respect, and occasionally ferruginous; head rather large in both sexes, finely and rather diffusely punctured; antennæ moderate, reddish with dark club, last joint narrower than the penultimate; thorax about as broad as elytra with sides rounded and narrowed in front, posterior angles rounded, upper surface rather diffusely punctured; elytra with moderately strongly punctured striæ, and the interstices also plainly punctured; the sculpture, however, is rather confused and irregular; legs entirely ferruginous, or black with the knees reddish, tarsi always reddish-yellow. L. 2 – $2\frac{1}{2}$ mm.

Male with the posterior femora armed with a strong triangular recurved tooth.

By evening sweeping; also in sandy places on and near cliffs; very local; Caterham; Mickleham; Kingsgate; Glanvilles Wootton; Uphill, near Weston-super-Mare; Mablethorpe, Lincolnshire; Scarborough; Constantine, Lancashire; Northumberland district, very rare, Saltwell and Long Benton; Scotland, very rare, Forth district.

This has usually been considered one of our rarest British species, but quite recently Mr. Theodore Wood has found it by hundreds on the shore and on and about the cliffs at Kingsgate near Margate; it has usually been distinguished from *H. punctatus* by its dark pitchy black colour, but among these there were a number of apparently mature light ferruginous specimens which plainly belong to the species, of which they must be regarded as a light variety.

H. punctatus, Sturm. Very closely allied to the preceding, but of smaller average size, and distinguished by being invariably of a ferruginous colour, and by the more regular punctuation of the elytra, the punctures on the interstices being as large and regular as those of the striæ; the male also has the posterior femora terminated by a long spiniform tooth. L. 2 mm.

By sweeping, &c.; very rare; Mr. Crotch records eight specimens of this species and *H. spinipes* (which, as above observed, is regarded by some authors as a form of the female of *H. punctatus*) from "North Wales, Liverpool, and Scotland;" Purley

Down and Mickleham (Power); Manchester and Liverpool district, Hightown (Archer); Mr. Crotch's specimens named *H. spinipes* must evidently be referred to this insect, as *H. spinipes*, if distinct, appears not to have been found in Britain.

H. strigosus, Schmidt. A very small species, oblong, lighter or darker reddish testaceous or ferruginous, sometimes with the head and thorax darker; antennæ entirely reddish testaceous, with a moderately long club, of which the last joint is about as broad as the penultimate; thorax about as broad as elytra, narrowed in front, broadest near base, posterior angles blunt, upper surface finely punctured; elytra with sides subparallel until a little before apex, with rather fine rows of punctures, interstices more or less plainly wrinkled transversely, sutural stria deep; legs clear yellow. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Male with the posterior femora armed with a broad triangular tooth.

By evening sweeping; rare; Chatham, Darent Wood, Caterham, Mickleham, Forest Hill, Maidstone, Sheppy, Bearstead, Claygate, Birdbrook (Essex), Sanderstead; Shipley near Horsham; Bognor, in plenty (Waterhouse); Barmouth (Blatch).

TRIARTHRON, Maerkel.

This genus contains one species which is found very rarely in England and in Central Europe; it is distinguished from all the other members of the Anisotomidæ except *Hydnobius* by having all the tarsi 5-jointed; from *Hydnobius* it differs in having the club of the antennæ 3-jointed; in the latter genus it is 5-jointed.

T. Maerkeli, Schmidt. Oblong oval, convex, of a reddish-yellow colour, shining; head rather larger in male than in female, finely punctured; antennæ moderately long, with broad and distinct 3 jointed club; thorax behind middle as broad as elytra, transverse, with sides rounded, posterior angles rounded, upper surface finely punctured; elytra with sides gently rounded, with strongly punctured striæ, interstices almost smooth, except for a few widely spread large punctures on the alternate ones; legs rather short. L. 3 – $3\frac{1}{2}$ mm.

Male with the posterior femora compressed, excised underneath at base, and dilated and denticulate in middle, anterior tarsi somewhat dilated.

By evening sweeping, invariably beneath fir-trees; very rare; Esher (Power and Rye); Shirley (Janson); Woking (Saunders and Champion); New Forest (Janson); in the latter locality some very large specimens have been obtained.

SILPHINA.

This tribe contains the largest members belonging to the family, including the well-known "Necrophori" or "Burying beetles;" the anterior coxæ are conical and prominent and furnished with a large trochantin or paracoxa, and the posterior coxæ are contiguous; the anterior coxal cavities are open behind; the abdomen has six free ventral segments, and the tarsi are all 5-jointed.

- I. Antennæ apparently 10-jointed, the second joint being very small, with an abrupt capitate 4-jointed club **NECROPHORUS, F.**
- II. Antennæ distinctly 11-jointed, with a gradual club, or simply thickened towards apex.
- i. Thorax suborbicular; eyes very large; general shape like *Necrophorus* **NECRODES, Wilkin.**
- ii. Thorax more or less semicircular; eyes small or moderate; form ovate **SILPHA, L.**

NECROPHORUS, Fabricius.

This genus is distinguished from the other members of the *Silphina* by having the antennæ apparently 10-jointed, and terminated by a very abrupt round club made up of four joints: the antennæ are, however, really 11 jointed, the second joint being very small; the *Necrophori* are large insects, sometimes black, but more often black with the elytra traversed by broad orange bands; the genus contains a considerable number of species, which are chiefly found in Europe, Northern Asia and North America; very few have hitherto been discovered in tropical countries: as the well-known "burying beetles" they are familiar to all observers of nature; in the larger carcasses, which they frequent in considerable numbers, and in the birds, small quadrupeds, frogs, &c., which they bury bodily they lay their eggs, which hatch and grow into thick fleshy larvæ, sustained by the food thus provided for them; these larvæ in shape somewhat resemble those of *Cercyon*, but are provided with short legs; when full-grown they attain a considerable size; those of *N. vespillo* and *N. mortuorum* are figured by Schiödte I., viii. figs. 1, 11, and 15; the head is small, and is furnished with short antennæ; the prothorax is narrower, but considerably longer, than the meso- and meta-thorax; the abdominal segments are furnished with rather small corneous plates, each of which is furnished with four teeth pointing backwards; the ninth segment bears two short cerci, which are more elongate in *N. mortuorum* than in *N. vespillo*. The colour of these larvæ is dirty-white or yellowish, with the corneous parts of a deeper dirty-yellow colour; the pupa does not present any striking peculiarity; it is considerably narrowed behind, and is terminated by two small cerci; when the larva has reached maturity, it forms for itself a cell underground, in which it undergoes its transformation to the perfect insect.

The *Necrophori* resemble each other very closely in structure, so that a separate description is not necessary in each case: the head varies somewhat in size, but is strongly narrowed at some little distance behind eyes; the antennæ vary chiefly as regards the colour of the club; the thorax is trapezoidal, with the angles rounded, slightly narrowed behind, with large explanate borders, which are much more strongly punctured than disc; in the middle there is a central furrow, and the anterior part of the disc is uneven, the central part being rather raised; the elytra are dilated behind, or subparallel, truncate, and leaving part of the abdomen

exposed; legs stout, posterior tibiæ either straight or curved; some of the species are very variable as regards size.

About a dozen species of *Necrophorus* are found in Europe, of which seven are regarded as British; one of these, however, *N. germanicus*, is somewhat doubtfully indigenous.

- I. Elytra black, without orange bands.
 - i. Club of antennæ black, epipleuræ red *N. GERMANICUS*, *L.*
 - ii. Club of antennæ reddish-yellow, epipleuræ black or obscurely brown *N. HUMATOR*, *F.*
- II. Elytra black, with large orange bands.
 - i. Club of antennæ black *N. MORTUORUM*, *F.*
 - ii. Club of antennæ reddish yellow.
 - 1. Posterior tibiæ straight.
 - A. Thorax with long yellow hairs on all the margins *N. VESTIGATOR*, *Hersch.*
 - B. Thorax without yellow hairs on margins.
 - a. Anterior orange band continued without interruption across both elytra; abdomen with thin pubescence at extreme apex *N. RUSPATOR*, *Er.*
 - b. Anterior orange band of elytra interrupted by a longitudinal common dark band at suture: abdomen broadly and thickly pubescent before apex *N. INTERRUPTUS*, *Steph.*
 - 2. Posterior tibiæ curved; thorax with yellow hairs on anterior margin *N. VESPILLO*, *L.*

N. germanicus, *L.* The largest species of the genus; black, with a spot on forehead (which is obscure in female), and the epipleuræ of elytra reddish testaceous, antennæ short, with the club black; thorax trapezoidal, with angles rounded, disc finely channelled and punctured, rather raised, sides strongly punctured; scutellum long; elytra closely punctured with two feebly raised longitudinal lines on each; legs somewhat stout, anterior tarsi of male dilated and furnished beneath with reddish brush-like hairs. L. 25–32 mm.

Very rare and doubtfully indigenous; recorded by Stephens from Moushold Heath near Norwich, Oxford, and the banks of the Thames above Windsor, and by Curtis from Norfolk; it has lately been recorded from Fairlight near Hastings, in the catalogue of the Coleoptera of the neighbourhood compiled by Mr. E. A. Butler and others.

N. humator, *Goeze*. Entirely black, with the head and thorax shining, and the elytra thickly punctured and duller; club of antennæ yellowish-red, thorax slightly narrowed behind, finely and diffusely punctured on disc, thickly and strongly at sides; elytra with three rather distinctly raised lines on each; anterior tarsi strongly dilated in male. L. 18–28 mm.

In carcases; common and generally distributed throughout the kingdom.

N. mortuorum, *F.* (*vespilloides*, *Herbst*). Black, with two orange bands on the elytra, the latter of which is reduced to two large kidney-shaped patches: this point and the black club of the antennæ will at

once distinguish it from all our allied species; thorax without pubescence; abdomen with dark pubescence except at apex, which is furnished with a tuft of yellowish hairs, posterior tibiæ straight; anterior tarsi dilated in male; the size is very variable, some specimens being very small. L. 10-15 mm.

In carcasses, decaying fungi, &c.; rather local in some districts, but, as a rule, common and generally distributed in England and Scotland, and probably in Ireland.

N. vestigator, Hersch. Black, with two orange bands on the elytra; club of antennæ orange-red; thorax considerably dilated in front, with long yellow hairs on all the margins, which are also present to a less extent on the head; the abdomen and femora are also covered with yellow pubescence: it most closely resembles *N. vespillo*, but is easily distinguished from that species by the straight posterior tibiæ, and the emarginate posterior trochanters which terminate in two short spines. L. 16-18 mm.

In carcasses, &c.; not common; London district, Battersea Fields (Stephens), Weybridge; Deal; Dawlish, Devon; Cromer, Norfolk; not recorded from the northern districts of England, or from Scotland; Ireland, near Belfast (Haliday).

N. ruspator, Er. (*investigator*, Zett). Black, elytra with two orange bands, the anterior of which is not interrupted at suture, but is continued in common across their whole breadth; the black band between the two is more regular and less dentate than in the other species; thorax without pubescence; abdomen with scanty, dark pubescence, except for a yellowish tuft of hair at the apex; posterior tibiæ straight, posterior trochanters emarginate at apex; male with the anterior tarsi strongly dilated, and furnished as in the allied species with yellow brush-like hairs beneath. L. 15-18 mm.

In carcasses, &c.; local; Shirley, Mickleham, Weybridge, Shipley near Horsham; Hastings; Devon; common in the Midlands; Manchester and Liverpool districts; Northumberland and Durham; Scotland, common, Selway, Forth, Tay, and probably other districts; Ireland, near Dublin, Waterford, &c.

V. Microcephalus, Thoms. This variety differs from the type in having a very small more or less triangular head; the apex of the posterior trochanters, which are recurved in the type form, are straight, and the clypeus is only feebly emarginate; the specimens appear to be males: it has occurred at Weybridge and other localities.

N. interruptus, Steph. (*fossor*, Er.). This species is closely allied to the preceding, but may be distinguished by having the anterior band interrupted more or less broadly at suture, and by the distinct yellowish or yellowish-grey pubescence of the abdomen; the club of the antennæ is orange-yellow, the thorax is not pubescent, and the posterior tibiæ are straight; the posterior trochanters are obscurely emarginate at apex. L. 12-18 mm.

In carcases, &c ; rare; Dulwich; Caterham; Weybridge; Wimbledon; Tilgate Forest; Dover; Hastings; New Forest; Phillack, Cornwall; Hunstanton, Norfolk, Norwich.

V. gallicus, Duv. This variety has the posterior trochanters hooked, instead of obscurely emarginate at apex, and the clypeus of the male more deeply emarginate. I have only seen one or two British specimens, without locality attached.

N. vespillo, L. This species may at once be known from all the other orange-banded species by the strongly curved posterior tibiæ: the thorax has a yellow fringe of hairs in front, and the abdomen is thickly clothed with yellow pubescence, so that superficially it bears a strong resemblance to *N. vestigator*: apart, however, from the shape of the tibiæ, it may be easily known from that species by having the thorax much less dilated in front, and by the long pointed posterior trochanters. L. 15–20 mm.

In carcases; not uncommon and generally distributed throughout the greater part of England; rarer further north; Scotland, not common, Solway, Forth, and Moray districts; Ireland, Dublin, Waterford, Belfast, &c., and probably general.

NECRODES, Wilkin (*Asbolus*, Voet).

This genus in shape much resembles *Necrophorus*, but in several points is more closely related to *Silpha*, and has by many authors been regarded merely as a sub-genus of this latter genus; it might perhaps be more correct so to consider it, but external structure certainly ought to have some weight, and the single European species of *Necrodes* differs so much in this point from all our native species of *Silpha* that it appears to be the best plan to separate it at all events provisionally; representatives of the genus have also been recorded from India and South America.

N. littoralis, L. A large species, somewhat variable in size, black, with the thorax shining, and the elytra somewhat dull; head triangular, strongly contracted behind eyes, which are prominent; antennæ black, with the three last joints reddish-yellow, club very gradual (a point that at once separates the genus from *Necrophorus*); thorax rather broader than long, with the sides strongly rounded, disc almost smooth, finely punctured, sides thickly punctured, with an indistinct central furrow, and more or less obsolete depressions towards base; scutellum long, pointed behind, thickly punctured; elytra much widened behind, thickly punctured, with rather strongly raised margins, and three raised lines on each; third interstice with a strong tubercle behind middle; in the male the posterior legs are very much enlarged, the femora being very strongly thickened, and the tibiæ very much curved; the anterior tarsi are also dilated. L. 13–25 mm.

In carcases; somewhat local, but not uncommon, and generally distributed throughout the country.

SILPHA, Linné.

This genus in its broadest sense contains a large number of species which are widely distributed over the surface of the globe, but are, as at present known, more characteristic of the northern and temperate zones than of tropical regions; if we exclude the *Necrophorus*-like genus *Necrodes*, all our species may be easily known by their broad more or less ovate shape, continuous outline, and small head, which is more or less retracted beneath the thorax when the insect is at rest; the exotic forms, however, present great degrees of variation, and, in some instances, supply strong connecting links between the various sub-genera. Thomson, Reitter, and others divide the genus *Silpha*, as it has been usually regarded in our British catalogues, into several separate genera: some of these are more and some less distinct, and therefore, although one or two certainly, perhaps, ought to be entirely divided off, I have thought it best to regard them, as has been done in other instances, as sub-genera: no genus or group has suffered more from the late revival of obsolete names than this; in Herr Reitter's monograph, published in 1885, not a single genus of the tribe Silphina goes by the name that it bore in the catalogue of Heyden, Reitter, and Weise, published in 1883, with the exception of *Pterolema*, which is not represented in our fauna; and, what is worse, although *Silpha* survives, yet it is applied to *Necrophorus*; it is true that some, at all events, of the changes of nomenclature appear to be historically correct, as far as the law of priority goes, but in many instances the descriptions of the old authors of the last century are so meagre, that it is almost impossible to tell what their type really was; and, at any rate, when the names *Silpha* and *Necrophorus* have been in use with their present connotation for upwards of ninety years (v. Fabricius, Syst. El. I. 333 and 336), it certainly seems a "reductio ad absurdum" of the present rage for reviving old names, to thus mix them up and confuse them past all recognition; the same remarks will apply to *Necrodes*, *Oiceoptoma*, and *Phosphuga*, which have been in use for nearly sixty years, and to many other genera in other groups and families.

The larvæ of several species of *Silpha* are well known, and in some cases they have proved very injurious to crops; this is especially the case with the larva of *Silpha opaca*, which at times does very great damage to beet and mangold-wurzel; the larva, like the generality of the *Silpha* larvæ, is shaped much like a wood-louse, and is black and rather shining, with the thoracic segments rounded or obtusely angled at base and the abdominal segments with the posterior angles rather sharp and produced; the last segment bears two sharp spinose cerci; when full-fed these larvæ bury themselves three or four inches in the earth and emerge as perfect beetles at the end of two or three weeks (See Curtis, "Farm Insects," p. 391). If it can be proved that the eggs of the beetle are laid originally in putrefying matter, Miss Ormerod's suggestions ("Manual of Injurious Insects," p. 13) that artificial manure should be used where attacks are frequent, or that the ordinary farm-yard manure should be applied in the autumn instead of in the spring, might be productive of very good results; it appears to me, however, that this is by no means a certain fact, for I have found the larvæ of a species of *Silpha* which I believe to be *S. opaca* or a

closely allied species at the roots of wild plants on the side of cliffs in the Isle of Wight, and if the larva at one period of its existence is a plant-feeder, there is no reason why it should not be so from the time it hatches out of the egg; the insect appears only to attack the leaves, and not to affect the root directly; if, therefore, the field is left to itself, it may recover after the larvæ have all assumed the pupa stage, which happens about the beginning of July.

The larvæ of *Silpha rugosa* and *S. obscura* are described and figured by Schiödte I. p. 35, Pl. IX. i. 15; they are very different in shape, the former being much more elongate than the latter, with the angles of the thoracic segments rounded, and those of the abdominal segments strongly produced; the prothoracic segment is not much narrower in front than behind, and the cerci are three times as long as the anal appendage; the larva of *S. obscura* is broad in front and narrowed behind, almost shield-shaped, with the prothorax very large, semicircular, with posterior angles blunt; all the other segments except the tenth are strongly produced at the posterior angles, and become gradually narrower; the tenth is broad and subquadrate, and bears a short blunt anal appendage and two short cerci; the head, which in the larva of *S. rugosa*, is rather large and projecting, is almost concealed behind the thorax, and the antennæ are much longer than in this latter species; their appearance rather tends to prove that the species are, as they are regarded by many authors, generically distinct.

- I. Thorax truncate or emarginate in front; head not elongate; mandibles not produced.
 - i. Intermediate coxæ not widely separated; elytra in both sexes rounded together at apex.
 - 1. Head moderately or slightly contracted behind eyes; labrum moderately emarginate.
 - A. Antennæ with club not strongly marked, and with second joint equal to third; tibiæ straight; colour unicolorous black (in our species) *SILPHA*, i. sp. (*Parasilpha*, Reitter).
 - B. Antennæ with club strongly marked, and with second joint longer than third; tibiæ curved, more so in the male than in the female; elytra reddish testaceous, with two black spots on each (in our species) *DENDROXENA*, *Mots.* (*Xylodrepa*, Thoms.).
 - 2. Head short and broad, not narrowed at all behind eyes; labrum emarginate to base (*Oiceoptoma*, *Leach*).
 - A. Antennæ with very gradual club, seventh joint very little narrower than eighth, second joint quite twice as long as third *ACLYPEA*, *Reitter*.
 - B. Antennæ with well-marked club, seventh joint much narrower than eighth, second joint about a quarter longer than third *BLITOPHAGA*, *Reitter*.
 - ii. Intermediate coxæ very widely separated; elytra with the sutural angle produced in female; antennæ with second joint shorter than third *THANATOPHILUS*, *Leach.* (*Pseudopelta*, *Reitter*).
- II. Thorax forming a complete semicircle; head much longer than broad; mandibles produced.
 - i. Antennæ very short and stout; elytra smooth; legs stout, with tibiæ widened towards apex *ABLATTARIA*, *Reitter*.
 - ii. Antennæ long and slender; elytra ribbed; legs slender *PHOSPHUGA*, *Leach.* (*Peltis*, *Reitter*, *nec auct.*).

(Sub-Gen. **Silpha**, i. sp. (*Parasilpha*, Reitter).

This sub-genus contains about eight European species, of which three are British; they are rather large, and are of a unicolorous black colour; they are chiefly distinguished by the sculpture of the elytra.

- I. Elytra with three very distinct raised keels on each; upper surface rather shining; interstices evenly punctured . . . **S. TRISTIS**, Ill.
- II. Elytra with three less distinct raised lines on each, the outer one being the strongest.
 - i. Upper surface rather shining; interstices of elytra coarsely and unevenly punctured, with slightly raised irregular smooth spaces, which are more or less confluent . . . **S. NIGRITA**, Creutz.
 - ii. Upper surface very dull; interstices of elytra evenly and rather strongly punctured **S. OBSCURA**, L.

S. tristis, Ill. A rather large, oblong, or elliptical species, somewhat depressed, black, rather shining; head contracted behind eyes, antennæ rather long, with second and third joints of about equal length, and a rather gradual four-jointed club; thorax transverse, with anterior margin truncate, and posterior margin rather strongly sinuate, impressed at base, more closely punctured at sides than on disc, posterior angles rounded; scutellum acuminate, thickly punctured; elytra subparallel, with three strongly raised smooth keels on each, interstices very closely but evenly, distinctly and rather coarsely punctured; legs moderately stout. L. 13–15 mm.

Male with the first four joints of the anterior tarsi dilated and furnished beneath with brush-like hairs, intermediate tarsi feebly dilated.

In carcases, moss, &c.; often found on pathways; not uncommon in some districts, but very local; Southend, Sheerness, Chatham, Deal, Dover; Isle of Wight; Alverstoke; Swansea; Barmouth; Sutton Park; Repton; Nottinghamshire; Crosby near Liverpool; Lancaster; Northumberland district; Carlisle; Scotland, rare, Solway and Forth districts.

S nigrata, Creutz. (*tyrolensis*, var. Laich., *alpina*, Germ.). In size and shape very like the preceding, but easily distinguished by the sculpture of the elytra, which have the inner two lines very indistinctly raised, and the third only moderately raised, and the interstices coarsely, unevenly and rugosely punctured, the punctures being separated by more or less distinct smooth and somewhat raised spaces, which are confluent. L. 12–14 mm.

In carcases, &c.; London district, very rare, and apparently not found in the south of England; not uncommon further north in some localities; Smallheath near Birmingham; Erdington; Repton; Matlock; Bala, N. Wales; Shropshire; Nottinghamshire; York; Lake district; Northumberland and Cumberland; Scotland, not common, Solway, Tay and Dee districts.

S. obscura, L. Of the same size and general shape as the two preceding, but easily distinguished from *S. tristis* by its much duller

appearance, and the much less distinctly raised lines on elytra, as well as by the somewhat coarser punctuation of the interstices; from *S. nigrita*, it may be known by having the interstices evenly punctured, as well as by its less shining appearance and more even and broader thorax. L. 12–14 mm.

In carcasses, at roots of grass, &c.; frequently found on pathways; not uncommon in some districts, but local; London district, rather common, Box Hill, Merton, Sheerness, Southend, Chatham, &c.; Herne Bay; Ramsgate; Deal; Dover; Hastings; Brighton; Glanvilles Wootton; Bournemouth; Isle of Wight; Devonshire; Nottinghamshire; Cambridgeshire; summit of Skiddaw in company with *Leistus montanus*; Northumberland district, rare; Dr. Sharp considers the species to be doubtful as Scottish; Murray records it as “not common but generally distributed,” but he must have made a mistake as no other record appears to be known.

(Sub-Gen. **Dendroxena**, Mots. (*Xylodrepa*, Thoms.)

The single European species belonging to this sub-genus is easily distinguished by its colour, and also by its habitat; it is found on trees where it appears to devour the larvæ of caterpillars; it is local but not at all uncommon in some localities.

S. quadripunctata, L. Oblong-oval, slightly convex, smooth and shining; head, antennæ, and legs black, thorax black with margins broadly reddish testaceous, scutellum black or pitchy, elytra reddish testaceous with two round black spots on each, one at base, and one behind middle; head narrowed behind eyes; antennæ moderate, with second joint longer than third, and with well-marked four-jointed club; thorax transverse, emarginate in front, posterior angles rounded, disc less thickly punctured than sides, margined; scutellum large, pointed behind, thickly punctured; elytra with rather broadly raised margins, rugosely punctured, with three indistinctly raised lines; legs moderately stout, anterior tarsi with the first four joints clothed with yellowish pubescence beneath. L. 12–14 mm.

Male with the anterior tarsi somewhat dilated and the posterior tibiæ strongly curved.

On oaks and other trees; not found in carcasses; it feeds on Lepidopterous and other larvæ; not uncommon in the Midland and Southern districts, but rarer further north; Darenth Wood; Coombe Wood; Loughton; New Forest; Plymouth; Llangollen; Sutton Park; Dean Forest; Burton-on-Trent; Sherwood Forest; Nocton, near Lincoln; Northumberland district, rare; Scotland, very rare, Forth, Tay, Moray, and Sutherland districts; Ireland, the Dargle, near Dublin.

(Sub-Gen. **Aclypea**, Reitter.)

This sub-genus and the next have usually been regarded as one, under the name of *Oiceoptoma*; there are, however, considerable differences between them, as regards the formation of the club of the antennæ and the relative length of the joints and also in the sculpture of the elytra.

Aclypea contains three European species, of which one is found rarely in Britain.

S. reticulata, F. (*undata*, Müll.). Oblong, somewhat depressed, black; head not narrowed behind eyes, thickly and rugosely punctured, antennæ rather short with very gradual club, second joint much longer than third; thorax transverse, with sides moderately rounded, apical border straight, narrower than basal border, which is sinuate, posterior angles rounded, upper surface very thickly and comparatively finely punctured, depressed obscurely on each side towards posterior angles; scutellum large, pointed behind, thickly punctured; elytra with sides subparallel, with three raised lines on each, of which the external one is considerably the strongest, interstices coarsely punctured, with irregular transverse elevations, but with no marked tubercle behind middle; legs black. L. 11–13 mm.

Male with the first four joints of anterior tarsi dilated.

In carcasses, &c.; rare; Battersea Fields, London; Swansea, Crymlyn Burrows; Cambridge; Nottinghamshire; Dr. Power has also taken it at a place called "King's hedges," but I do not know the locality.

(Sub-Gen. **Blitophaga**, Reitter.)

Three European species are contained in this sub-genus, of which one is found in Britain; in general appearance it is closely connected with *S. dispar* and its allies, but may at once be separated by the formation of the head, and the deep emargination of the labrum.

S. opaca, L. Oblong-oval, almost quadrangular, somewhat depressed, black, clothed with close yellowish or yellowish-red pubescence; head not contracted behind eyes, antennæ moderately long, with club well marked; thorax transverse, with sides rounded, anterior margin feebly sinuate at sides, posterior margin strongly sinuate, disc with evident depressions, finely and closely punctured; scutellum pointed, thickly punctured; elytra parallel-sided, rounded at apex, with three distinct raised keels on each, interstices finely punctured, the third with a strong tubercle behind middle; legs moderately stout. L. 10 mm.

Male with the first four joints of anterior tarsi dilated.

In carcasses, moss, &c.; local in England; London district, not common, Woking and Coombe Wood, Surrey; Suffolk; Sheerness; Whitstable; Deal; Exmouth; Devon; Swansea; Knowle; Cannock Chase; Nottinghamshire; Chat Moss; Ripon; Northumberland district; Scotland, rather common, Solway, Tweed, Clyde, Forth, Tay, Dee, and Moray districts; Ireland, Portmarnock.

(Sub-Gen. **Thanatophilus**, Leach. (*Pseudopelta*, Reitter.)

This sub-genus contains about eight European species, of which four are found in Britain; the first is easily distinguished from all our other species of *Silpha* by its red thorax and black elytra; the other three are dark, obscure-looking insects.

- I. Thorax red, elytra black; length 13–16 mm *S. THORACICA, L.*
- II. Thorax concolorous with elytra, dull black, or brownish; length 8–10 mm.
 - i. Elytra with the interstices furnished with very strongly raised ridges or tubercles, placed transversely *S. RUGOSA, L.*
 - ii. Elytra with the interstices smooth.
 - 1. Scutellum finely pubescent, elytra almost without pubescence; base of thorax moderately sinuate *S. SINUATA, F.*
 - 2. Scutellum very thickly, and elytra thickly, covered with yellowish pubescence; base of thorax strongly sinuate *S. DISPAB, Herbst.*

S. thoracica, L. A large, broad, rather depressed, elliptical species with red thorax and velvety-black elytra, head and thorax clothed with yellow pubescence; head black, contracted behind eyes, antennæ short with strongly marked four-jointed club; thorax much broader at base than apex, emarginate in front, basal margin not strongly sinuate, posterior angles rounded, upper surface very uneven, thickly and finely punctured at sides, more strongly on disc; scutellum acuminate, somewhat concave; elytra broader behind than thorax, finely punctured, with the suture and the external keel strongly raised, the latter terminating behind in a strong blunt tubercle, and the internal lines feebly raised until near apex, then stronger and continued to apex; legs black, rather stout and spinose; humeral angle of elytra dentate in both sexes, sutural angle distinctly produced in female, obtuse in male. L. 13–16 mm.

In carcasses, fungi, &c.; also by sweeping; not uncommon, and generally distributed throughout England, Wales, and Scotland, and probably in Ireland. I have once taken it by sweeping in a wood near Lincoln on a hot day.

S. rugosa, L. An obscure, dark-coloured, species, of an oblong-oval or elliptical shape, with the head and thorax rather thickly clothed with yellowish-grey pubescence; antennæ short, with a strongly marked three-jointed club, the eighth joint also being somewhat dilated; thorax emarginate in front, basal margin sinuate, sides strongly rounded in front, upper surface thickly and finely punctured, and covered with large and bare, slightly raised, elevations, which are arranged in irregular rows; posterior angles rounded; scutellum acuminate, thickly pubescent, except for a bare patch on each side; elytra with sides subparallel, finely punctured, with the suture and three lines raised, and the interstices furnished with raised elevations or tubercles, placed transversely, apex truncate in male, sinuously produced in female; legs moderately stout. L. 10–11 mm.

In carcasses, &c.; the commonest member of the genus in Britain; generally distributed throughout the kingdom.

S. sinuata, F. In size and colour, and also in the structure and sculpture of head and thorax, as well as in the pubescence of the same, much resembling the preceding; it is, however, at once distinguished by the elytra, which are finely punctured; and have the interstices between the ridges plain, and not furnished with transverse raised elevations or tubercles; in the female the apex is emarginate and very strongly pro-

duced at sutural angle; in the male it is truncate; in some respects this species resembles *S. opaca*, but the latter species has the head not contracted behind eyes, the thorax more even, the antennal club more gradual, and the elytra more coarsely punctured, and thickly covered with yellowish pubescence, whereas in *S. sinuata* they are almost glabrous. L. 10–12 mm.

In carcasses, &c.; not uncommon in the London district and the South, but perhaps commoner in the Midlands; further north it becomes rarer; Northumberland and Durham district, rare; Scotland, rare, Solway and Forth district; Ireland, near Belfast.

S. dispar, Herbst. Allied to the preceding, from which it may be distinguished in having the scutellum wholly, and not partially, covered with thick yellowish pubescence, and the elytra plainly pubescent; the base of the thorax is more strongly sinuate, and the disc of the same is more even; the sutural angle of the elytra, moreover, is considerably less strongly produced; this species bears a much closer resemblance to *S. opaca* than *S. sinuata* does; it may however be easily known by having the head contracted behind eyes, and also by the shape of the thorax, which has the anterior margin plainly emarginate, whereas in *S. opaca* it is almost truncate; the sides also are less narrowed in front in the latter species. L. 10 mm.

In carcasses, &c.; rare; Norfolk; Caernarvon; Charnwood Forest, Leicestershire; Repton, very rare; Northumberland and Durham district, rare, Prestwich and South Shields; Scotland, rare, sea coast, and banks of rivers and lakes, under dead fish, Solway, Forth, and Moray districts (Paisley, Loch Leven, &c.); Ireland, neighbourhood of Armagh, shores of Lough Neagh (Rev. W. F. Johnson).

(Sub-Gen. **Ablattaria**, Reitter.)

This genus was formed by Reitter to include *S. lævigata* and one or two allied species which have been hitherto placed under *Phosphuga*: it is one of the most distinct of the sub-genera by reason of its short stout antennæ, stout legs, and smooth elytra, but can hardly be regarded as a distinct genus; it differs very widely from *S. atrata*, with which it has for so long been classed by many authors.

S. lævigata, F. (*polita*, Sulz.). Oblong oval, convex, deep black, moderately shining; head elongate; antennæ rather short and stout, with the first joint elongate, and the club very gradual; thorax semi-circular, thickly and evenly punctured, with posterior angles rounded; scutellum pointed behind, thickly punctured; elytra closely and rather deeply punctured, without raised lines, with a strong raised margin; legs stout, tibiæ dilated and produced into a blunt tooth at apex. L. 11–13 mm.

Male with anterior tarsi dilated.

In carcasses, at roots of grass, crawling on pathways, &c.; not uncommon especially near the sea and in chalky districts; Lewisham, Gomshall, Box Hill, Sheerness,

Chatham ; Ramsgate ; Herne Bay ; Dover ; Hastings ; Glanvilles Wootton ; Isle of Wight ; Devonshire ; Mawgan, St. Columbs ; Swansea ; Weston-super-Mare ; Cannock Chase ; Repton ; Northumberland and Durham district, South Shields, Hartlepool &c. ; not recorded from Scotland.

(Sub.-Gen. **Phosphuga**, Leach. (*Peltis*, Reitter *nec* auct.)

This sub-genus contains one variable European species, which has been subdivided by some authors into three or four separate species ; it appears, however, to be best to retain them as varieties ; according to Reitter, Geoffroy first applied the name of *Peltis* (in 1762) to *Silpha atrata* ; he therefore substitutes the name for that of *Phosphuga*, and revives Laicharting's name *Ostoma* for the genus of Trogositidæ usually known as *Peltis*.

S. atrata, L. Oval or oblong-oval, moderately convex, shining black ; head elongate, antennæ long and slender with the three last joints forming a rather distinct club ; thorax forming an almost complete semi-circle, with disc somewhat raised in middle, and depressed at sides, closely punctured at sides, posterior angles obtusely rounded ; elytra with strong margins, strongly and rugosely punctured, with the suture and three lines distinctly elevated into keels, without tubercle behind middle ; legs slender and elongate. L. 10–11 mm.

In carcasses, moss, rotten wood, under dead bark, &c. ; common and generally distributed throughout England and Scotland ; apparently represented mostly in Ireland by the *var. subrotundata*.

V. brunnea, Herbst. Of a reddish-brown colour and rather small ; this variety appears to be chiefly found in high districts. L. 9–10 mm.

V. subrotundata, Steph. Larger and more ovate than the type form, with the elytra considerably more rounded at sides, and often of a brownish or reddish-brown colour ; the centre of the disc of thorax is more sparingly punctured, and the central raised line is the longest. L. 11–14 mm.

This variety has been recorded from Glanvilles Wootton, Devonshire, and South Wales, but appears to be rare in England ; in Ireland, however, it is very common in several localities ; Reitter gives Scotland only as a locality, but has probably made a mistake between this country and Ireland ; I have not seen a Scottish specimen, and Dr. Sharp does not record it from that country.

CHOLEVINA.

This family has been divided by Reitter into three groups, Bathysciæ, Cholevæ, and Colones ; the former of these comprises a large number of genera and species, the majority of which have been comparatively lately described ; the other two comprise three or four genera, one or two of which have been, however, further subdivided by some authors ; the anterior coxæ are cylindric-conic, prominent, and contiguous ; according to Horn they have no trochanter, but this does not appear to be invariably

the case; the upper surface is finely pubescent, and the elytra are usually transversely strigose.

- I. 8th joint of antennæ distinctly smaller than 7th and 9th; abdomen with six free ventral segments.
- i. Last joint of maxillary palpi as long as the preceding; tarsi all 5-jointed; antennæ variable, filiform or clavate *CHOLEVA*, Latr.
 - ii. Last joint of maxillary palpi short, subulate.
 1. Antennæ short and stout with gradual club; tarsi all 5-jointed; eyes large *CATOPS*, Payk.
 2. Antennæ rather long, thickened gradually to apex, but without club; tarsi 4- 5- 5-jointed; eyes very small *BATHYSCIA*, Schiödte.
- II. 8th joint of antennæ not smaller than 7th and 9th; abdomen with five free segments (sometimes four only in female) *COLON*, Herbst.

CHOLEVA, Latreille.

The genus *Choleva*, or, as it used to be called, *Catops*, contains more than a hundred species, the majority of which are found in Europe and the adjacent countries; representatives, however, are known from North and South America (Caraccas, Chili, &c.), and also from Tasmania, and it is probable that the genus is very widely distributed; they are of a dull black or fuscous, occasionally red-brown colour, and are found chiefly in the carcasses of birds or small animals, or in fungi; a few live in ants' nests; they are exceedingly active in their movements and are in many cases soft and fragile, so that care is required in their preservation, and they should, if possible, be mounted soon after their capture; they may be distinguished from *Colon* by the small eighth joint of the antennæ, and by their abdomen having six distinct segments instead of five; in many points, such as length and stoutness of antennæ, pubescence, size, shape, dilatation of tarsi in male, &c., they differ considerably, and in consequence have been divided into several genera by Thomson and others; one of these, *Catops*, Payk, is evidently distinct, but it seems better to consider the others as at the most sub-genera; the species vary considerably in size (from 1 or $1\frac{1}{2}$ to 5 mm.), and are of an oval or oblong-oval form, with more or less distinct fine pubescence; the elytra are, as a rule, very finely sculptured, and, except in the first sub-genus, the striæ, with the exception of the sutural stria, are either entirely wanting or very obsolete.

The larva of *C. fusca* is described and figured by Schiödte, I. p. 36, Pl. x., Fig. 1; it is broad in front and much narrowed behind, pale, with the corneous parts fuscous; the head is small, about one-fourth as broad as the prothorax; the antennæ are longer than the head and have the second joint elongate; the prothorax is large and ample, considerably rounded in front, longer than either meso- or metathorax, but of equal breadth with these segments; the abdominal segments are all considerably narrower than the thoracic segments, and gradually decrease in size; the ninth is much narrower than the eighth, and bears two very long slender cerci; the anal appendage is cylindrical, longer than the ninth segment; legs long and slender; the dorsal

scuta are complete and are covered with minute setæ; the larva bears a considerable resemblance to that of *Liodes*.

- I. Mesosternum simple without carina; elytra without cross striation.
 - i. Intermediate tarsi of male simple; tarsi slender; antennæ long and slender.
 - 1. Species larger ($4\frac{1}{2}$ –5 mm.) and more elongate; posterior femora twice as long as coxæ Sub.-Gen. *CHOLEVA*, i. sp.
 - 2. Species smaller ($1\frac{1}{2}$ –3 mm.), more or less ovate; posterior femora one and a half times as long as coxæ Sub.-Gen. *NARGUS*, *Thoms.*
 - ii. Intermediate tarsi of male with the first joint dilated; tarsi rather stout; antennæ, as a rule, sensibly or strongly thickened towards apex Sub.-Gen. *PTOMAPIAGUS*, *Hellw.*
- II. Mesosternum carinate; elytra with fine cross striation Sub.-Gen. *NEMADUS*, *Thoms.*

(Sub.-Gen. **Choleva**, i. sp.)

The species belonging to this sub-genus are easily distinguished by their elongate form, long legs and slender antennæ, and large size, as well as by the more distinct sculpture of the elytra; with regard to the first three or four species there has been considerable difference of opinion among various authors, and the question cannot be considered as yet having been settled finally; the shape of the thorax in *C. angustata* and its near allies varies considerably in different specimens, but this part appears never to be widest behind as in *C. agilis*, whereas *C. spadicea* is very distinct by reason of its sculpture and the wide margins of the thorax; I have followed Reitter in considering *C. angustata*, *C. intermedia*, and *C. cisteloides* as separate species, and in regarding *C. Sturmii* as the male or a variety of *C. angustata*, but I do not feel at all sure whether it would not be more correct to regard all four species as merely forms of one variable species, as the distinctions are after all very slight, and seem to be more or less variable; for further particulars as to the group, and in fact as to the whole genus generally, the student is referred to Andrew Murray's Monograph of the Genus *Catops* (*Annals and Magazine of Natural History*, July, 1856).

- I. Thorax narrower than elytra, broadest at or about middle.
 - i. Thorax feebly punctured with margins not strongly explanate.
 - 1. Pubescence of elytra even without raised hairs at sides and apex; posterior trochanters of male moderately produced.
 - A. Sutural angle of elytra in female produced into a small sharp tooth; pubescence yellow; posterior femora of male not dilated *C. ANGUSTATA*, *F.*
 - B. Sutural angle of elytra in female simple; pubescence of elytra greyish-brown; posterior femora of male dilated *C. CISTELOIDES*, *Fröhl.*
 - 2. Pubescence of elytra uneven at sides and apex, with rows of raised hairs; posterior trochanters of male long, gouge-shaped *C. INTERMEDIA*, *Kraatz.*

- ii. Thorax strongly punctured, with margins rather broadly explanate *C. SPADICEA*, Sturm.
 II. Thorax as broad as elytra, broadest at base *C. AGILIS*, Ill.

C. angustata, F. Elongate, dark brown, with the head, and sometimes thorax, dark, antennæ long, reddish-testaceous or reddish-brown; thorax broader than long, rounded at sides, broadest before middle, with posterior angles blunt, finely punctured; elytra long, finely punctured, with rather distinct striæ; in the female the sutural angle is produced into a small tooth; legs long and slender; ferruginous; posterior trochanters of male more or less produced into a point, femora with a small tooth on the first third. L. 5 mm.

In moss, vegetable refuse, &c.; local, and not as common as *C. cisteloides*. Mr. Champion records it as rare in the London district, but it seems to be generally distributed throughout England from the southern to the northern counties; it is, perhaps, most common in the Midlands; Mr. Bold records it as less common in the Northumberland district than *C. cisteloides*; Scotland, rare, Forth district; Ireland, near Belfast and Dublin.

C. Sturmii appears to be the male of *C. angustata*, or a variety of the male; it only differs in one or two very unimportant particulars, such as the somewhat more elongate elytra, and the depth of the impressions on the segments of the abdomen; it cannot, however, be in any way regarded as a separate species; it has been recorded from the London district, Mickleham, &c., by Mr. Champion and Dr. Power, from Hampton-in-Arden by Mr. Blatch, and from Repton by Mr. W. Garneys.

C. cisteloides, Fröhl. This species may be distinguished from *C. angustata* by its colour, which is darker, and usually pitchy or pitchy-black; the thorax is broadest in the middle and evenly rounded from the middle towards apex and base; the antennæ are always more or less darkened towards apex; the posterior trochanters of the male are acuminate and produced into a more or less projecting tooth on their inner side, and the posterior femora of the male are rather plainly widened, but without a tooth on their first third; the sutural angles of the elytra are not produced as in *C. angustata*. L. 5 mm.

In moss, dead leaves, vegetable refuse, by sweeping, &c.; rather common and generally distributed throughout England and Wales; Scotland, local, Forth district; it is probably common in Ireland.

C. intermedia, Kraatz. This species appears to derive its name from being intermediate between *C. angustata* and *C. spadicea*, being shorter and broader than the former, and not nearly as robust as the latter, from which, moreover, it may be distinguished by the sculpture and the form of the margins of thorax; from *C. angustata* and *C. cisteloides* it may be known by the pubescence of the elytra being uneven at sides and apex with rows of raised hairs, and by the long, pointed, gougé-shaped trochanters of the male; it must, however, be

admitted that the first of these characters is not easy to distinguish ; in colour it is more or less fuscous with the elytra and sides of thorax sometimes lighter ; it may also, as a rule, be separated from *C. cisteloïdes* by the shape of the thorax, and from both that species and *C. angustata* it may be known by the shape of the elytra, which have the sides distinctly less parallel and more dilated. L. 5 mm.

In moss, dead leaves, &c. ; rare ; Birch Wood, Claygate, Lee, Shirley, Cowley, Highgate ; Dover ; Hastings ; Wicken Fen ; Knowle, near Birmingham ; Lancaster.

C. spadicea, Sturm. A rather broad and robust species ; head, thorax, and under surface pitchy black, elytra chestnut brown ; in some specimens the thorax also is more or less brown ; head rather long, with prominent eyes, antennæ long and slender, reddish-testaceous, darker towards apex ; thorax plainly narrower than elytra, broader than long, with the sides rather strongly rounded, upper surface strongly punctured, margins broad and explanate, posterior angles obtuse and rounded ; elytra rounded and dilated at sides, broadest, as a rule, a little behind middle, with rather distinct striæ, and the interstices plainly and rugosely punctured ; legs ferruginous, posterior trochanters gouge-shaped. L. 5 mm.

In dead leaves, fungi, &c. ; rare ; Highgate (Waterhouse and Power) ; Bexley, Surrey (Champion), Coombe Wood (Rye), Shirley, near Croydon, and St. Mary Cray (Sharp) ; Bishop's Wood, Dulwich ; Holm Bush, near Brighton (Power) ; Repton (W. Garneys) ; Drinkwater Park, Manchester (Reston) ; Lincoln (one specimen taken in Langworth Wood by myself) ; Scotland, rare, Tay district (Raunoch (Sharp)).

C. agilis, Ill. Shorter, broader, and more convex than *C. angustata* and its allied species, and easily distinguished by its short thorax, which is broadest at or just before base ; colour variable, lighter or darker ferruginous brown ; antennæ reddish, usually darker towards apex ; thorax finely punctured, with the lateral margins not raised, about as broad at base as elytra, with posterior angles obtusely rounded ; elytra convex, very feebly striate^d, closely but rather distinctly punctured ; legs ferruginous, male with the posterior trochanters armed on the inner side with a short curved strong pointed tooth, and the middle tibiæ bent strongly inwards. L. $4\frac{1}{2}$ –8 mm.

In dead leaves, moss, haystack refuse, &c. ; not uncommon, and rather widely distributed throughout the southern and midland districts ; less common further north ; Scotland, rare, Clyde district and Isle of Arran ; Ireland, near Belfast.

(Sub.-Gen. **Nargus**, Thomson.)

This sub-genus contains sixteen European species, of which three are British ; they are much smaller and more ovate than the members of the preceding sub-genus, but by their slender antennæ and in other points they much resemble them ; they are easily distinguished from the species belonging to the other sub-genera.

- I. Posterior angles right angles ; upper surface dull ;
size larger **C. VELOX**, Spence.

II. Posterior angles of thorax blunt or rounded; size smaller.

- i. Upper surface dull, shagreened or alutaceous between punctures C. WILKINI, Spence.
 ii. Upper surface shining, smooth between punctures C. ANISOTOMOIDES, Spence.

C. velox, Spence. Oval, dull, ferruginous-red, with the head brown, reddish in front, very finely punctured; antennæ long and slender, reddish-testaceous, with the penultimate joints often darker; thorax transverse, as broad behind as elytra, with sides rounded and narrowed in front, posterior angles right angles, pointed a little inwards, very finely punctured; elytra scarcely widened in middle, very thickly and finely punctured, with very indistinct striæ; legs ferruginous, anterior tibiæ somewhat widened at apex. L. $2\frac{1}{2}$ –3 mm.

In dead leaves, haystack refuse, carcasses, &c.; common and generally distributed throughout the greater part of England; Scotland, not uncommon, Tweed, Solway, Forth and Clyde districts; I have seen no record from Ireland, but it is probably common in that country.

C. Wilkini, Spence (*præcox*, Er.). Much smaller than the preceding, and of an oblong-oval shape, gradually narrowed behind, and with the elytra considerably narrower in proportion; colour reddish or brownish; antennæ not as long proportionally as in *C. velox*; thorax transverse, slightly broader than elytra, very finely punctured, with posterior angles obtuse; elytra rather narrow and almost truncate at extreme apex, with the punctuation fine, but more distinct than on thorax, with obsolete or very feeble striæ; legs reddish, anterior tibiæ slightly widened towards apex. L. $2-2\frac{1}{4}$ mm.

In dead leaves, moss, haystack refuse, &c.; not as common as *C. velox*, but very generally distributed throughout England; Scotland, not common, Solway and Forth districts; it has been taken in Darenth Wood in company with *Formica fuliginosa*.

C. anisotomoides, Spence. This species is very easily distinguished from the preceding by its more shining appearance, and short oval form; it is very convex, of a ferruginous brown colour, which is somewhat variable; antennæ rather long and slender; thorax transverse, as broad at base as base of elytra, very thickly punctured, posterior angles obtuse; elytra oval, convex, with the striæ, except the usual sutural stria, quite obsolete, somewhat distinctly punctured, with the spaces between the punctures smooth; legs reddish. L. $1\frac{1}{2}$ –2 mm.

In moss, dead leaves, &c.; not uncommon, but local; London district, generally distributed; Essex; Hastings; Glanvilles Wootton; Exeter; Bristol; Knowle, near Birmingham; Stratford-on-Avon; Hunstanton, Norfolk; Northumberland district, not uncommon; Scotland, local, in moss, Tweed and Forth districts.

(Sub-Gen. **Ptomaphagus**, Hellwig.)

The species belonging to this sub-genus are characterized by having the first joint of the intermediate tarsi of the male dilated and by the

fact that the antennæ are in almost all cases distinctly thickened towards apex; the genus *Catopomorphus*, of which there is no British representative, forms a connecting link between this and the preceding sub-genus; the species belonging to this last-named genus are distinguished by the very long last joint of the antennæ and by their being always found in ants' nests. The name *Ptomaphagus* has been by many authors applied to *C. sericeus* and *C. varicornis*, while the name *Catops* has been retained for the species belonging to the present sub-genus; as, however, the type species of *Catops* described by Paykull appears to have been *C. sericeus*, it appears more correct to confine the name of *Catops* to the species with truncate elytra.

The species belonging to the sub-genus *Ptomaphagus* are, in many cases, extremely hard to determine with certainty; this is more especially the case with *C. tristis* and its allies, which appear as a rule to be mixed in collections; the differences in one or two cases are so slight, that it is doubtful whether all the species can really be considered as distinct; in fact Murray regards *C. longula*, *C. grandicollis*, and *C. rotundicollis* (= *Kirbyi*), and the two continental species *C. abdominalis* and *C. montivaga* as all varieties of *C. tristis*.

I. Thorax more or less distinctly narrowed before base.

- i. Pubescence greyish or yellowish; antennæ rather long, slender, or more or less distinctly thickened towards apex.

1. Thorax with sides rounded completely to base, not sinuate before posterior angles.

- A. Antennæ long and slender, only slightly thickened towards apex, with sixth joint always longer than broad in male, sometimes as long as broad in female; size larger (4-5 mm).

- a. Colour fuscous-brown; posterior angles of thorax scarcely projecting *C. FUSCA, Panz.*
 b. Colour black; posterior angles of thorax distinctly projecting *C. NIGRICANS, Spence.*

- B. Antennæ moderate, distinctly, but not strongly thickened, with sixth joint about as long as broad in male, sometimes transverse in female.

- a. Antennæ with joints 6-8 of nearly equal length, feebly transverse *C. LONGULA, Kell.*

- b. Antennæ with eighth joint half as long as sixth, strongly transverse.

- a*. Last joint of antennæ as broad as penultimate; thorax not quite as broad as elytra.

- a†. Elytra shorter; antennæ ferruginous with darker club *C. CORACINA, Kell.*

- b†. Elytra longer; antennæ dark with first two and last joints reddish yellow *C. MORIO, F.*

- b*. Last joint of antennæ narrower than penultimate; thorax ample, fully as broad as elytra *C. GRANDICOLLIS, Er.*

2. Thorax slightly sinuate before the posterior angles which are usually projecting.
- A. Sixth joint of antennæ always longer than broad in male, sometimes as long as broad in female; apical joint of antennæ usually (but not always) lighter than the rest of the club *C. NIGRITA, Er.*
- B. Sixth joint of antennæ always as long as broad in male, sometimes transverse in female; club of antennæ usually unicolorous.
- a. Thorax less narrowed behind, with sculpture finer *C. TRISTIS, Panz.*
- b. Thorax more narrowed behind, with sculpture stronger *C. KIRBYI, Spence.*
- ii. Pubescence blackish or grizzly; antennæ short, strongly thickened; size rather large (4-4½ mm.) *C. CHRYSOMELOIDES, Panz.*
- II. Thorax not narrowed before base, almost semicircular; antennæ short and plainly thickened.
- i. Club of antennæ narrow; thorax fully as broad as elytra, with somewhat projecting posterior angles *C. FUMATA, Spence.*
- ii. Club of antennæ broader; thorax hardly as broad as elytra with posterior angles right angles *C. WATSONI, Spence.*

***C. fusca*, Panz.** Rather a large and broad species, oval, convex, of a dark brown fuscous colour, with the head and the thorax, except margins, darker or even black; the colour, however, is somewhat variable; head and thorax very closely punctured, with yellowish pubescence; antennæ long, feebly thickened towards apex, ferruginous; thorax broadest behind middle, much broader than long at base, posterior angles right angles, slightly projecting; elytra convex, rather broad, widened in middle, considerably narrowed to apex, very obsolete striated, thickly punctured; legs reddish. L. 4-4½ mm.

In dead leaves, garden and haystack refuse, carcasses, &c.; generally distributed throughout England but never abundant; Scotland, in outhouses, not common, Tweed, Solway, Forth, and Clyde districts; Ireland, Portmarnock, &c.; Mr. Bold says that nearly all his specimens from the Northumberland district were found in cellars.

***C. nigricans*, Spence.** (*caliginosus*, Steph., *flavicornis*, Thoms. (?) *soror*, Newm.). Very like the preceding in size and general appearance, but easily distinguished by its darker colour and by the antennæ being almost always dark with the base reddish, as well as by the more evidently projecting posterior angles of the thorax; thorax with the greatest width in the middle, very thickly and finely punctured, almost always with two or three more or less obsolete depressions on disc; elytra oval, convex, thickly and finely punctured, with the striæ a little more evident than in *C. fusca*; legs reddish-brown, femora blackish. L. 4-4½ mm.

In dead leaves, moss, haystack refuse, &c.; generally distributed throughout England, but never very common; Mr. Bold is inclined to refer his Northumberland specimens to Thomson's *C. flavicornis*, but they probably belong to the variety of *C. nigricans* with unicolorous reddish antennæ, which sometimes occurs; Scotland, not common, Solway and Forth districts.

C. longipennis, Chaud., appears to be a variety of this species; it has the elytra more convex and dilated and the striæ of the elytra more feebly marked; Erichson's *C. fuliginosus* is also referred by many authorities to *C. nigricans*, but there seems to be some doubt regarding the matter.

C. longula, Kell. (*pilicornis*, Thoms.). Elongate, black, oval; antennæ as long as head and thorax, rather robust with the basal joints and the terminal joint, at least at apex, reddish testaceous, joints 6-8 of nearly equal length; thorax thickly punctured, clothed with yellowish-grey pubescence, with sides rounded, and narrowed in front and behind, posterior angles right angles; elytra long, indistinctly striated, finely pubescent, appearing, like many of the allied species, to be covered with a kind of bluish bloom; legs blackish-brown or ferruginous, tarsi lighter. L. 4-4 $\frac{1}{3}$ mm.

Under moss, in fungi, dead birds, &c.; rare; Manchester district; Ripon (Waterhouse); Manchester district; Hartlepool; Wallington, Northumberland; Scotland, rare, Forth and Solway districts; Ireland near Waterford (Power).

Murray regards this species as a variety of *C. tristis*; it differs, however, considerably in shape, and in having the club of the antennæ less distinct; it appears to be identical with *C. pilicornis*, Thoms.

C. coracina, Kell. A rather small, black species, which may be distinguished from all the succeeding species except *C. morio*, by having the last joint of the antennæ as broad as the penultimate, and from the latter species by its smaller size, shorter elytra, and unicolorous club of the antennæ; head and thorax thickly and finely punctured, with fine short yellowish pubescence, the latter almost as broad as elytra, broadest in middle, with the posterior angles right angles, not projecting, and appearing at first sight obtuse; elytra short oval, without yellow pubescence at base of elytra, but with the usual ashen-grey or bluish bloom, thickly punctured, indistinctly striated; legs pitchy-red. L. 3-3 $\frac{1}{2}$ mm.

The male has a small prominence on the under side of the anterior femora.

In dead animals, &c.; rare in England; Shirley near Croydon; Esher; Bewdley; Coleshill; Knowle; Needwood near Burton-on-Trent; Ripon (Waterhouse); Northumberland district, "near Wooler, very rare;" Scotland, not uncommon, Solway, Forth, Dee, Moray, and Shetland districts.

C. morio, F. This species may be recognized by its rather long oblong-oval shape, obtuse posterior angles of thorax, and the colour of the antennæ, which, as a rule, have the first two joints ferruginous, and the rest, with the exception of the last, blackish; the last joint is yellow; rarely however the whole antennæ are ferruginous, and this fact, as in other species, sometimes gives rise to confusion; the general colour is black with yellowish grey pubescence on the thorax, and an ashy-grey bloom on the elytra; head and thorax thickly and finely punctured, the

latter rather depressed with sides gently rounded; elytra rather long, more distinctly sculptured than thorax, with scarcely a trace of striæ, with the sides subparallel, evenly and slightly rounded; legs ferruginous red, with the femora, or at all events the posterior ones darker. L. $3\frac{1}{2}$ – $3\frac{3}{4}$ mm.

In haystack refuse, dead birds, fungi, &c.; not common although somewhat widely distributed; London district, rather rare, Sheerness, Chatham, Lee, Shirley, Caterham, Barnes, Coombe Wood, Ashstead; Bewdley; Coleshill; Sutton Park; Alcester; Sherwood; Repton; Liverpool and Manchester district; Northumberland district, rare, in moss, in shady woods, Wallington (Power); Scotland, rare, Solway, Tweed, and Clyde districts; Ireland, Portmarnock, &c.

C. grandicollis, Er. This species bears some resemblance to *C. tristis*, and by one or two authors has been considered to be a variety of that species; it is however easily distinguished by its broader and more ovate form, and especially by its large and ample thorax, which is fully as broad as elytra, or even broader in the middle than the elytra at base; the colour is blackish or blackish-brown; head and thorax thickly punctured, covered with distinct yellowish pubescence; antennæ moderately long, gradually thickened, reddish, darker towards apex; thorax very transverse, with sides strongly rounded, posterior angles obtuse; elytra ovate, broad, convex, thickly sculptured, with a purplish-grey bloom, and yellowish pubescence along the base, which is not very distinct in many cases; legs ferruginous with femora, at all events the posterior ones, darker. L. $3\frac{1}{2}$ –4 mm.

In carcasses, haystack refuse, vegetable and flood rubbish, &c.; local, but rather widely distributed throughout England and the greater part of Scotland; Ireland, near Waterford, and probably generally distributed.

C. nigrita, Er. (*affinis*, Steph.). Oblong-oval, black; antennæ with joints 1–6 ferruginous, and the rest brown, except the last, which is yellowish-red, but sometimes, especially in dried specimens, appears to be unicolorous with the penultimate joints; thorax hardly half as broad again as long, slightly variable, but as a rule broadest in middle, with posterior angles either slightly pointed, or right angles, or even somewhat obtuse,* clothed with yellowish pubescence; elytra finely punctured, with yellowish pubescence at base, and a purplish bloom on the rest of their surface; legs ferruginous, posterior femora sometimes darker. L. $3\frac{1}{3}$ –4 mm.

In moss, fungi, carcasses, &c.; occasionally by sweeping; not uncommon and widely distributed throughout England; recorded by Bold as not uncommon in the Northumberland district beneath dead birds, &c.; it is however scarce in Scotland, and has been found in the Forth district only; it is probably not uncommon in Ireland.

This species is very closely allied to *C. tristis*, but has the antennæ

* This point is discussed by Murray, Monograph of the genus *Catops*, page 35, note; it is the variability in points that are regarded as distinguishing characters that causes the confusion in this group of the genus.

longer and thinner and the club not well defined, whereas in this latter species the club is short, thick and well marked.

C. tristis, Panz. Very closely resembling the preceding in size and form and apparently often mixed with it in collections; black or brownish; antennæ shorter and with more abrupt club than in *C. nigrita*, with the first five or six joints reddish, and the apical joints more or less fuscous, the last often reddish; thorax not as broad as in the preceding species, especially behind, and more transverse, broadest in or a little before middle, posterior angles sharp right-angles; elytra thickly punctured, with very feeble traces of striæ, and with the usual purplish bloom, and a yellowish pubescence at base; in all cases this pubescence must be observed in fresh specimens; legs ferruginous or reddish-brown, femora darker, and tarsi, as in many other species, often lighter. L. $3\frac{1}{3}$ –4 mm.

In moss, haystack refuse, decaying vegetable matter, carcasses, &c.; often by sweeping; generally distributed and common throughout the kingdom.

C. Kirbyi, Spence (*rotundicollis*, Kell.). This species is given by Murray (l. c. p. 43) as a variety of *C. tristis*, but he says that it is not without hesitation that he removes it from the list of distinct species, and he adds, "The characters, however, which distinguish it being all variations in degree, and at times approaching more or less to the type of *tristis*, I have come to look upon it as a variety of that species. It is well known that carcass-feeding beetles are always more subject to variation than others, owing to the chance of the food of the larvæ becoming exhausted before they are full fed. This species may be a starved variety." These remarks are well worthy of note in considering allied species of *Necrophaga*, whether we hold Murray's view regarding this particular species or not, as a diminution of food must affect the size, and also the development of the chitin, which might cause some alteration in the shape of thorax, &c.; *C. Kirbyi* is smaller than *C. tristis*, and has the sides of the thorax much more strongly inflexed before base and so more rounded and dilated in front; the sculpture of the thorax is also more strongly marked, a character which seems to preclude its being considered a starved variety; the antennæ are not so much thickened, and the elytra are shorter and more ovate. L. 3– $3\frac{1}{2}$ mm.

In decaying animal and vegetable matter; local, but not uncommon; London district, occasionally in profusion and apparently generally distributed throughout England; Scotland, local, Solway, Forth, and Dee districts; it is probably widely distributed in Ireland.

C. chrysomeloides, Panz. This species may very easily be distinguished by its large size taken in conjunction with its short stout antennæ; the pubescence also is blackish or of a grizzly grey colour, and is rather thick and distinct; form ovate, convex, colour deep brown or black; antennæ shorter than head and thorax with a strong and abrupt

black or dark brown club, basal joints red ; thorax very transverse, with the sides plainly rounded, narrowed in front and behind, posterior angles sharp right angles, somewhat projecting ; elytra finely and thickly punctured, with indistinct striæ, and with an ashy-grey bloom ; legs ferruginous, femora often darker. L. 4-4½ mm.

In dead birds and animals, decaying fungi, &c. ; generally distributed throughout the greater part of England, and occasionally taken in numbers, but rarer in the north than in the south and midland districts ; Northumberland district not common (Bold) ; Scotland, not common, Solway, Tweed, Forth, Dee and Moray districts.

C. fumata, Spence (*scitulus*, Er.). Oblong oval, of a deep pitchy-brown colour, sometimes almost black ; antennæ short and thick, but with the club not broad, usually unicolorous reddish, and joints 4-5 hardly transverse ; thorax almost semicircular, forming a continuous or almost continuous line with elytra, not narrowed at base, very transverse, thickly and finely punctured, with distinct greyish pubescence, posterior angles sharp and somewhat projecting ; elytra oval, thickly punctured, without trace of striæ ; legs ferruginous. L. 3 mm.

In dead birds and animals, haystack refuse, &c. ; rather common and generally distributed throughout the country. I once took it in great profusion by shaking a hedgehog hung up by a keeper in Seal Wood, near Burton-on-Trent ; it is common in Scotland, but Bold records only one specimen from the Northumberland district ; he has probably confused this and the next species.

C. Watsoni, Spence (*agilis*, F., *fumatus*, Er., *nec* Spence). Very like the preceding, and rather hard to distinguish from it ; in fact, it has by many authors been regarded as only a variety ; the club of the antennæ, however, is broader, with joints 4-6 transverse, and is, usually, of a darker colour, and the posterior angles of the thorax are right angles, and are not, or scarcely, projecting ; the differences, however, as a matter of fact are very slight, and it would perhaps be the best course to unite the two species, which are very distinct from any that we possess ; they most closely resemble *C. sericeus*, at first sight, but are, of course, easily distinguished by the elytra not being truncate at apex. L. 3 mm.

In dead animals, &c. ; often by sweeping ; not uncommon and generally distributed throughout the greater part of England. Bold records it as very abundant in moss, dead leaves, &c., in the Northumberland district. Scotland, not common, Solway, Forth, and Dee districts. Bold's record, as above mentioned, may be in error.

(Sub-Gen. **Nemadus**, Thomson.)

This sub-genus only contains one very rare British species, which is distinguished from all the preceding species by having the mesosternum carinate and the elytra finely but distinctly cross-striated, and from *Catops*, which it resembles in these particulars, by the fine mesosternal carina, the dilatation of the first joint of the intermediate tarsi of the male, and the fact that the apex of the elytra is rounded and not truncate.

C. colonoides, Kraatz. Oblong ovate, head and thorax blackish-brown, elytra dark-brown, lighter towards apex, clothed with distinct silky pubescence; antennæ about as long as head and thorax, gradually and very slightly thickened towards apex (a point that will at once distinguish it from any species of *Colon*, some of which it much resembles); thorax about a fourth broader than long, with sides moderately rounded, extremely thickly and finely granulated, posterior angles sharp, projecting backwards; elytra gradually narrowed to apex, finely strigose transversely, not truncate; legs ferruginous-brown; under-side blackish-brown, with the margins of each segment lighter. L. $1\frac{1}{2}$ – $1\frac{7}{8}$ mm.

Very rare; first taken by Dr. Power, at the end of March, 1861, at the Holt Forest, Hampshire, from the débris of fern, in an old hovel; it has also been taken by Mr. Champion at Ashted, Surrey, in "rotten wood mould of decaying oaks," and by Mr. Waterhouse, near Ripon; it has occurred, too, in the New Forest; according to Kraatz it is taken near Berlin, in loose sand at the foot of old oak-trees, and is frequent on moors: Reitter says that it occurs in north and Mid-Europe in nests of *Formica cunicularia*.

CATOPS, Paykull.

This genus contains six European species, of which two are found in Britain; one of these is common, the other is extremely rare; they are distinguished from the members of the genus *Choleva* by their truncate elytra and the very short and subulate last joint of the maxillary palpi; as mentioned above, Paykull's type on which he described the genus *Catops* appears to have been *C. sericeus*, and it is perhaps better therefore to adopt this name, although many authors have included the species under the genus *Ptomaphagus*.

- I. Antennæ less thickened, club entirely black; first joint of posterior tarsi as long as the next two together . . . *C. SERICEUS*, F.
 II. Antennæ shorter and thicker, club reddish-yellow at apex; first joint of posterior tarsi as long as the next three together *C. VARICORNIS*, Rosenh.

C. sericeus, F. (*truncatus*, Gyll.). Oblong-oval, of a dark pitchy-black or blackish-brown colour, clothed with very distinct silky pubescence; head large, antennæ short and stout, dark with reddish base, plainly thickened; thorax a little broader than long, fully as broad at base as elytra, and often more darkly coloured, finely wrinkled transversely, posterior angles pointed, projecting backwards; elytra gradually becoming narrower from base to apex, with apex broadly truncate, more or less distinctly strigose transversely; legs dark ferruginous-brown, femora often darker; size very variable. L. 2–3 mm.

In moss, decaying seaweed, haystack and vegetable refuse, small carcasses, &c.; common, and generally distributed throughout the kingdom.

C. varicornis, Rosenh. Closely allied to the preceding, but easily distinguished by the antennæ, which are shorter and thicker, and are ferruginous at apex as well as base, and by the long first joint of the

posterior tarsi which equals in length the three following taken together ; the elytra also are more rounded and are not so strongly truncate ; the average size also is somewhat larger. L. $2\frac{1}{2}$ – $3\frac{1}{2}$ mm.

In moss, leaves at the foot of trees, flood refuse, &c. ; very rare ; Richmond (Guyon) ; Folkestone (Power) ; it has also been recorded from Staffordshire and from Sherwood Forest.

COLON, Herbst.

The species belonging to this genus very closely resemble some of the small species of *Choleva*, but may at once be distinguished by not having the eighth joint of the antennæ smaller than the seventh ; the antennæ are short and are terminated by a distinct 5-jointed club, and the tarsi are all 5-jointed ; according to the Munich catalogue there are twenty-nine species, but the number has been somewhat modified since the date of its publication ; they are chiefly confined to Europe, but representatives have been recorded from Northern Asia and Alaska ; in all probability the species are much more numerous than they are supposed to be, but they are, as a rule, extremely rare, and very difficult to determine, as they are exceedingly alike, and their specific distinction often rests with the male ; owing to their rarity very little is known about their habits ; they are usually taken by evening sweeping in early summer, and from one or two captures that have been made it is quite possible that they might be found in larger numbers on open and seemingly barren spots on the sides of hills, &c., where the collector would not, as a rule, think of searching for them. The following table of the species is more or less a provisional one, as many of them require very careful study and comparison with other species before they can be determined with any accuracy.

This genus may be divided into two sub-genera as follows :—

- I. Anterior tarsi simple in both sexes COLON, i. sp.
- II. Anterior tarsi moderately dilated in female, more strongly dilated in male MYLÆCHUS, Latr.

(Sub-Gen. **Colon**, i. sp.).

- I. Form longer oval ; thorax scarcely broader at base than elytra ; elytra with rather distinct traces of striæ ; posterior femora of male without tooth C. VIENNENSE, Herbst.
- II. Form shorter oval ; thorax ample, plainly broader at base than elytra ; elytra with only slight traces of striæ.
 - i. Thorax less strongly punctured ; eighth joint of antennæ considerably smaller than ninth ; posterior femora of male with a very small tooth C. SERRIPES, Sahlb.
 - ii. Thorax more strongly punctured ; eighth joint of antennæ only slightly smaller than ninth ; posterior femora of male with a strong sharp tooth C. PUNCTICOLLE, Kr.

C. viennense, Herbst. Oblong, rather long and narrow, of a brownish or reddish-brown colour, with rather close yellowish pubescence ; antennæ reddish-brown, with club usually darker ; thorax almost as long

as broad, very closely, but distinctly punctured, posterior angles obtusely rounded; elytra about as broad at base as thorax, very closely and not very finely punctured, with distinct traces of fine striæ in front; legs reddish-brown. L. $2\frac{1}{3}$ –3 mm.

Male with the posterior tibiæ somewhat curved, and the posterior femora without tooth before apex, but somewhat widened and terminating in a sharp angle at apex.

By evening sweeping in early summer; rare; Lee, Chatham, Darent Wood, Birch Wood, Peckham, Caterham (Champion, Walker, and Power); Chobham and Bromley (Saunders); New Forest; Ilfracombe (Saunders); Scotland, very rare, Solway district, banks of Nith in flood refuse.

C. serripes, Sahlb. (♀ *fusculum*, Er., ♂ *simplex*, Thoms.). Oval, convex, fuscous, a little shining, clothed with yellowish pubescence, very closely punctured; antennæ reddish-brown, with club darker; thorax shorter, broader, and more ample than in the preceding species, broader at base than elytra, with the posterior angles obtuse or rounded; elytra very finely and closely punctured, with traces of striæ usually visible in front; legs ferruginous. L. $1\frac{1}{2}$ –2 mm.

Male with the posterior femora furnished behind middle with a very small and sometimes obsolete tooth; they appear also to be often very finely crenulated on their under-side.

By evening sweeping; rare; Maidstone (Gorham); Lee (Kent); Hammersmith Marshes (Sharp); The Holt, Farnham (Power); Wicken Fen; Scotland, rare; Solway and Clyde districts, banks of Nith in flood refuse, &c.

C. puncticolle, Kr. (♀ *dentipes*, Er., nec Sahlb.). This species is exceedingly closely allied to the preceding, and is considered by some authors as merely a variety; it appears, however, to be quite distinct by reason of its more coarsely punctured thorax, and by the larger size of the eighth joint of the antennæ, as well as by the fact that the posterior femora of the male are armed with a rather strong sharp tooth; it is also a little larger than *C. serripes*. L. $1\frac{3}{4}$ – $2\frac{1}{2}$ mm.

Very rare; I only know of three specimens which are in Dr. Sharp's collection, one without locality, and two others from Eccles, Thornhill, near Dumfries, which are somewhat doubtfully referred to this species.

(Sub-Gen. **Mylæchus**, Latreille.)

I. Thorax longer, a little less long than broad.

i. Anterior tibiæ of male straight; posterior femora with a more or less distinct small sharp tooth before apex.

1. Thorax considerably more strongly punctured than elytra, only slightly narrowed in front . . . *C. ANGULARE*, Er.

2. Thorax only a little more strongly punctured than elytra, strongly narrowed in front . . . *C. MICRUPS*, Czwal.

ii. Anterior tibiæ of male curved; posterior femora simple *C. RUFESCENS*, Kr.

II. Thorax shorter, distinctly broader than long.

i. Size smaller; form more elongate; anterior tibiæ

of male straight; thorax not or scarcely broader than elytra.

1. Thorax evidently more strongly punctured than elytra.

A. Anterior margin of clypeus straight in male; posterior femora of male with a very long slender curved tooth before apex

C. DENTIPES, *Sahlb.*, v. *Zebel*, *Kr.*, v. *Barnevillei*, *Kr.*

B. Anterior margin of clypeus with a slight emargination in male; posterior femora of male with a small tooth before apex . . .

C. BRUNNEUM, *Latr.*

2. Thorax not more strongly punctured than elytra.

A. Posterior femora of male with a long straight spinose tooth before apex, terminating in a tuft of hairs.

a. Size larger; colour darker; elytra with traces of striæ

C. APPENDICULATUM, *Sahlb.*

b. Size smaller; colour lighter; elytra without traces of striæ

C. CALCARATUM, *Er.*

B. Posterior femora of male with a very small tooth before apex; elytra with traces of striæ

C. DENTICULATUM, *Kr.*

ii. Size larger; form broader; anterior tibiæ of male curved; thorax evidently broader than elytra; posterior femora simple in both sexes . .

C. LATUM, *Kr.*

C. angulare, *Er.* Oblong-oval, somewhat narrowed behind, blackish-brown or dark-brown, with yellowish pubescence; antennæ ferruginous, lighter at base and apex, club with the apex obtusely pointed; thorax about as broad at base as elytra, almost as long as broad, with the posterior angles right angles or somewhat acute, very closely and somewhat deeply punctured; elytra distinctly and somewhat rugosely punctured; legs ferruginous. L. 2-2½ mm.

Male with the posterior femora furnished with a very small sharp tooth in the middle, apical angle pointed and slightly projecting.

By evening sweeping; it has also once been found on a wall; very rare; Forest Hill (Marsh); Caterham, Peckham, Mickleham (Sharp and others); Stretford, near Manchester (Reston); Scotland, very rare, Solway and Tay districts, banks of Nith in flood refuse (Sharp), and Braemar.

Small examples of this species appear to be the *C. rectangulum*, *Chaud.*

C. microps, *Czwal.* This species differs from the preceding in having the thorax less strongly punctured, and strongly narrowed from posterior third to apex; the thorax, also, is narrower at base, being hardly as broad as the elytra. L. 2½ mm.

The sole locality for this species, which was described by Czwalina in 1881, is given as England, and Reitter treats it as a good species, resting on a female in Kraatz's collection from England; the male appears to be unknown.

C. rufescens, *Kraatz.* Rather long-oval, of a reddish or brownish-red colour, with the antennæ and legs lighter; thorax as broad as elytra,

and much more strongly punctured, nearly as long as broad, with posterior angles almost right angles; elytra finely but distinctly punctured. L. 2 mm.

Male with the anterior tibiæ curved and the posterior femora simple; concerning the latter point, however, there seems to be some doubt, as some authors say that the posterior femora are furnished with a small straight tooth before apex.

By evening sweeping; very rare; Caterham (Champion, two specimens); in Dr. Sharp's collection there is a male without locality from Crotch.

C. dentipes, Sahlb. (*♂ spinipes*, Hal.). Oblong-oval, moderately convex, brown, with silky, greyish-yellow pubescence; antennæ short and stout, reddish-brown; thorax as broad as elytra, much broader than long, about twice as strongly punctured as elytra, not strongly contracted in front, with the posterior angles obtuse; elytra rather finely and closely punctured, without trace of dorsal striæ; legs reddish. L. 2-2½ mm.

Male with the posterior femora armed behind middle with a very long thin spinose tooth which is a little curved.

By evening sweeping, during early summer; very rare; Darenth Wood and Caterham (Champion); Esher (Power); Ilfracombe (Saunders); Ripon (Waterhouse); Bewdley, Knowle, and Church Stretton (Blatch); Northumberland district, a fine male, by sweeping low herbage in a wood on the Irthing; Scotland, Balmuto, Fifeshire (Power); Ireland, near Dublin (Power).

V. Zebei, Kr. This variety differs from the type form in being on an average larger, and in having the thorax more strongly punctured; it is by many authors considered a separate species. L. 2-3 mm.

By evening sweeping, during early summer; very rare; Chatham (Walker); Mickleham and Caterham (Champion); Birch Wood and Claygate Lane, Esher (Power); Tonbridge Wells (Saunders); Ilfracombe (Saunders); Scotland, Balmuto, Fifeshire (Power).

V. Barnevillei. This variety appears to be punctured about as strongly as the type form, but to have the punctuation somewhat rugose; it is described as "much resembling *C. Zebei*," but smaller, with the antennæ always entirely testaceous, the thorax darker than the elytra, which are more strongly punctured, and the shorter and less regularly curved hind femoral spine of male; these characters, however, are somewhat variable, and Mr. Rye (Ent. Mo. Mag. xii. 177) comes to the conclusion that the British examples taken by Mr. Waterhouse at Studley, near Ripon, and by Mr. Champion, at Caterham (and returned to him by M. Tournier as *C. Barnevillei*) are only undeveloped specimens of *C. Zebei*.

C. brunneum, Latr. Short-oval, rather convex, lighter or darker brown, with yellowish, somewhat golden, pubescence; antennæ ferruginous or ferruginous-red with the club, except the last joint, darker; thorax about one and a quarter times as broad as long, narrowed in front, and very slightly, sometimes almost imperceptibly, contracted before base, with posterior angles nearly right angles or slightly obtuse, rather finely and closely punctured; elytra a little narrowed towards

apex, more finely punctured than thorax, without traces of dorsal striæ, but appearing in certain lights somewhat transversely wrinkled; legs brownish-red. L. $1\frac{1}{2}$ – $2\frac{1}{2}$ mm.

Male with the anterior margin of the clypeus slightly emarginate in middle, and the posterior femora furnished behind middle with a small tooth.

By sweeping in the evening, and occasionally by beating; very widely distributed and sometimes not uncommon; London district generally distributed; Esher, Shirley, Forest Hill, Caterham, Ashted, Dorking, Sevenoaks, Darenth, Chatham, &c.; Herne Bay; Wrabness, Essex; Glanvilles Wootton; Knowle; Portishead; North Wales; Repton; Northumberland district; Scotland, not rare, Solway, Tweed, Forth, Moray, and Clyde districts; Ireland, Co. Wicklow.

This species seems to be very variable in size and colour, and many mistakes have been made in consequence; it is by far the commonest species of the genus.

C. appendiculatum, Sahlb. Oblong-ovate, slightly convex, fuscous, clothed with fine silky greyish-yellow pubescence; antennæ ferruginous with a rather strong club, which is darker except at apex; thorax transverse, not broader than elytra, very closely and finely punctured, with the posterior angles nearly right angles; elytra a little narrowed towards apex, very thickly and finely punctured, with traces of fine striæ towards base; legs ferruginous. L. 2–3 mm.

Male with the posterior tibiæ curved, and the posterior femora armed with a long spinose tooth, furnished at apex with a tuft of hairs.

By evening sweeping; very rare; Reigate (Brewer); Birch Wood (Power); Scotland, very rare, Solway district, banks of Nith (Sharp).

C. calcaratum, Er. (♀ *pygmæum*, Er.). This species is allied to the preceding, but may be distinguished by its smaller size and lighter colour, and also by the fact that the elytra present no traces of dorsal striæ; in the male the posterior margin of the thorax is not emarginate near the posterior angles, whereas in the preceding species there is a slight emargination; the posterior femora of the male are armed with a long spinose tooth as in the allied species. L. $1\frac{1}{2}$ –2 mm.

Very little appears to be known regarding this species as British; it was, I believe, taken by Haliday, and there is a doubtful specimen in Dr. Sharp's collection from Eccles, Thornhill, near Dumfries.

C. denticulatum, Kr. This species is closely allied to the two preceding species, and appears to be intermediate between them as regards size; the colour is usually dark brown; the distinguishing character is found in the male, in which sex the posterior femora are furnished with a small pointed straight tooth, instead of with a long spinose tooth as in the other two species. L. $1\frac{3}{4}$ – $2\frac{1}{4}$ mm.

By evening sweeping; very rare; Hythe (Rye); Darenth Wood (Power); Scotland, Tweed district, Cheviots (Sharp).

C. latum, Kr. One of the most distinct species of the genus, and easily known by its short and broad oval form, and very large ample thorax, which is plainly broader than the elytra, and has the sides dilated behind middle, and the posterior angles somewhat prominent; colour fuscous or fuscous-brown; punctuation fine and even; elytra narrowed behind with very fine transverse striæ; legs ferruginous, tibiæ dilated towards apex and denticulate externally; posterior femora simple in both sexes. L. $2\frac{1}{2}$ –3 mm.

By evening sweeping; very rare; Shirley near Croydon (Janson); Shiere, near Guildford (Capron); The Holt, Farnham (Power); Bishops Wood (Sharp); Greenhithe (Waterhouse); Eastham, near Liverpool (Ellis); Scotland, very rare, Clyde district (Sharp).

BATHYSCIA, Schiödte (*Adelops*, auct.).

Our single species of *Bathyscia* is the sole British representative of a group which is one of considerable extent, both as regards species and genera; the members of the group are to a great extent cave-frequenting insects, and have the eyes either rudimentary or entirely wanting, as is the case with so many other of the vertebrates and invertebrates that inhabit like localities; it is quite possible that more species will be found in Britain, but our bone caves that have hitherto been discovered, are not of very great extent, and researches made in them by Mr. Matthews and Mr. Crotch for the purpose of discovering new Coleoptera, have proved fruitless; considering, however, that nearly one hundred species of *Bathyscia* have already been described from Europe, a large proportion of which are found in France, it is not unreasonable to expect that further additions to our fauna may yet be made; the most curious member of the group found in Europe is *Leptoderus*; it is, however, improbable that this will occur in Britain.

B. Wollastoni is found like other members of the genus under leaves, refuse, &c., but appears especially to affect the old rotten shells of seed potatoes, in which it is found occasionally in large numbers, when the new crop is dug up in the summer.

B. Wollastoni, Jans. Short, oval, convex, reddish-brown, with fine and rather close yellowish pubescence, finely and thickly punctured, the punctuation of the elytra being somewhat asperate; head depressed, with acute lateral angles; antennæ reaching about to base of thorax, thickened gradually towards apex, penultimate joints almost or slightly transverse; thorax transverse, a little broader than elytra, gently and evenly rounded at sides, much contracted in front, posterior angles produced, acute, fitting closely to shoulders of elytra; elytra narrowed behind, gradually rounded at apex, with sutural stria distinct; legs rather long and slender, male with the anterior tarsi 5-jointed,* dilated,

* According to several authors the tibiæ are 4- 5- 5-jointed in both sexes.

female with the anterior tarsi 4-jointed, tibiæ in both sexes, especially the middle ones, moderately spinulose. L. $1\frac{3}{4}$ –2 mm.

Beneath vegetable refuse, rhubarb and lettuce-leaves in gardens, rarely in the nests of humble-bees; common in seed potatoes in some localities in the summer; local, but probably overlooked; first taken by Mr. E. W. Janson near Finchley, in August, 1854; Hammersmith; Staple, Kent (Gorham); Wingham, Kent (Hamlet Clark); Eastry, Kent; 'St. Peter's and Kingsgate, Kent (T. Wood in great numbers).

SPHÆRITINA.

This tribe contains one genus *Sphærites*, which is included by some authors with the *Silphina*, but is perhaps more correctly separated by reason of its truncate elytra, and the fact that the abdomen has only five segments, whereas in all the members of the *Silphina* it consists of six segments.

SPHÆRITES, Duftschmidt.

This genus contains one species, *S. glabratus*, which is common to Northern Europe, Alaska, and Vancouver's Island, and a second, *S. politus*, described from Sitkha, Northern Asia, which may perhaps be a form of the first; *S. glabratus* has an appearance very similar to *Hister*; it is very rare in Britain, and has only occurred in Scotland, and once in the Northumberland district.

S. glabratus, F. Oblong, somewhat ovate, shining black, glabrous, with a more or less distinct metallic reflection; head small, thickly punctured, mandibles strongly developed; antennæ short with a long scape and a solid 3-jointed club; thorax fitting closely to base of elytra, transverse, with sides narrowed slightly in front, posterior angles almost right angles, upper surface very finely and scarcely visibly punctured; scutellum large, triangular; elytra as broad as thorax and long in comparison, sides subparallel, apex truncate, upper surface with fine punctured striæ, interstices almost smooth; legs pitchy, tibiæ spinose externally, tarsi all 5-jointed. L. 6– $6\frac{1}{2}$ mm.

Under bark of dead trees, in decaying fungi, and at oozing sap, also in dung; rare; Scotland, Tweed, Tay, and Dee districts; one specimen has also been taken at Wooler, in the Northumberland district, by Mr. J. Hardy.

SCYDMÆNIDÆ.

This family differs from the *Pselaphidæ* in having the tarsi 5-jointed, and the elytra not or scarcely abbreviated; as a rule they entirely cover the abdomen, but are occasionally, as in *Euthia*, truncate and leave the pygidium exposed; the posterior coxæ are conical and distant; in the tribes represented in our fauna, the maxillary palpi are 4-jointed, with the last joint small and often obsolete; the members of the family are small, shining insects, usually ovate, but sometimes rather slender, of a unicolorous black, dark brown, or reddish colour, more or less clothed

with erect hairs; they occur in moss, under stones, under bark, in ants' nests, &c., and are often found in company with Pselaphidæ. We know comparatively little of the family; a large number of species have been described from almost all parts of the world, but more are perpetually being found in every district which is worked for them; the generic differences are by no means strictly defined; several new genera have recently been formed to include various divisions of the large genus *Scydmanus*, but they must be regarded as only a provisional arrangement towards the final settlement of the genus. The British families may be defined as follows:—

- I. Last joint of maxillary palpi narrow, distinct, subulate; thorax narrower than elytra SCYDMÆNINA
- II. Last joint of maxillary palpi very short and broad, obsolete, obtusely pointed, and rounded in conjunction with the third joint.
 - i. Thorax narrower than elytra; antennæ feebly geniculate with the first joint as long as the two following EUMICRINA.
 - ii. Thorax as broad or nearly as broad as elytra; antennæ straight; first joint not as long as the two following . . . CEPHENIINA.

SCYDMÆNINA.

This tribe contains the old genus *Scydmanus*, which is now divided into several genera on certain characters of the head, thorax, coxæ, &c.; upwards of two hundred species are enumerated in the Munich catalogue, but this number by no means represents the limits of the genus. Our species may be subdivided as follows:—

- I. Head short, without distinct neck, eyes approximate to margins of thorax.
 - i. Thorax strongly margined, with sides nearly straight from base to beyond middle; hind coxæ contiguous . . . NEURAPHES, *Thoms.*
 - ii. Thorax cordiform without distinct margins; hind coxæ moderately separated SCYDMÆNUS, *Latr.*
- II. Head long, divided from thorax by a distinct neck; eyes placed at a considerable distance from margins of thorax . . . EUCONNUS, *Thoms.*

NEURAPHES, Thomson.

This genus contains about sixty European species; it is distinguished from *Scydmanus* by the shape of the thorax and the contiguous hind coxæ; none of our British species are common; the insects that stand in our collections under the name of *S. pumilio* (= *minutus*, Chaud.) appear to me to be nothing more than varieties at the most of *S. Sparshalli*.

- I. Forehead with a strong fovea near eyes; thorax at base with a fine longitudinal keel above scutellum.
 - i. Thorax distinctly punctured N. ELONGATULUS, *Müll.*
 - ii. Thorax not, or scarcely, punctured.
 - 1. Size larger; thorax about as long as broad, strongly narrowed and angled at sides on anterior third N. ANGULATUS, *Müll.*

2. Size smaller; thorax longer than broad with sides rounded and gradually narrowed in front.
- A. Antennæ with penultimate joints feebly transverse; elytra with the four basal impressions almost equally deep, the external ones elongate N. RUBICUNDUS, *Schaum*.
- B. Antennæ with penultimate joints strongly transverse; elytra with external basal impressions small and shallow N. CARINATUS, *Muls*.
- II. Forehead without fovea near eyes; thorax without longitudinal keel before scutellum.
- i. Colour lighter; form more convex; antennæ less thickened towards apex; transverse basal furrow of thorax with two foveæ on each side near margins N. SPARSHALLI, *Denny*.
- ii. Colour darker; form depressed; antennæ more thickened towards apex; transverse basal furrow of thorax with one fovea on each side N. LONGICOLLIS, *Mots.*
(*præteritus*, *Rye*).

N. elongatulus, Müll. Dark pitchy-red or reddish-black, shining, antennæ and legs reddish-testaceous, palpi and tarsi yellow; somewhat immature specimens are lighter; head rather large, a little narrower than thorax; antennæ rather long and stout, gradually thickened to apex, with the penultimate joints distinctly transverse; thorax rather long with the sides rounded in front and almost parallel behind, more or less distinctly punctured, depressed at base, with a fine keel above scutellum, and two foveæ on each side; elytra long oval, much broader than thorax, finely and not thickly punctured, with two rather long foveæ at base, of which the inner one is the broadest and deepest; femora thickened at apex. L. $1\frac{2}{5}$ mm.

In moss, &c.; occasionally by evening sweeping; not uncommon in some districts; London district, generally distributed; Hastings; Gosport; Riddlesdown; Midland districts, in most localities, Bewdley, Sherwood, Repton, Birmingham district, &c.; it appears to become rarer further north; Scotland, rare, Solway and Tay districts. Ireland, Galway (J. J. Walker).

N. angulatus, Müll. (*impressus*, Sahlb. *Wighami*, Denny). In size, colour, and general appearance this species rather closely resembles the preceding, but is very easily distinguished by the shape and sculpture of the thorax, which is about as long as broad, strongly angled on anterior third, abruptly contracted in front, and gradually narrowed towards base in almost a straight line; it is impunctate, and strongly pubescent at sides, especially in front; the antennæ, moreover, have the penultimate joints less transverse than in *N. elongatulus*, the elytra have the sides a little less rounded, and are more finely punctured; the shoulders also are more marked, and the femora are less dilated at apex. L. $1\frac{2}{5}$ – $1\frac{1}{2}$.

In moss, &c.; occasionally by evening sweeping; not uncommon; Lee, Sheerness, Mickleham, Woking, Esher, Shirley, Ashted, Caterham, West Wickham, Tonbridge;

The Holt, Farnham; Sherwood Forest, under bark; Repton Shrubs, near Burton-on-Trent; it is not recorded from the northern counties or from Scotland.

N. rubicundus, Muls. (*Sharpi*, Sauley, *teste*, H. R. W.). Long oval, very slightly depressed, entirely rufous or rufo-testaceous, with the palpi and tarsi yellow; head together with eyes, which are prominent, somewhat narrower than thorax, antennæ rather strongly thickened towards apex, with the three penultimate joints plainly transverse; thorax considerably longer than broad, gradually rounded in front, and margined and narrowed almost in a straight line behind, with the basal foveæ distinct, and a longitudinal keel before the scutellum; elytra long oval, broader than thorax, very sparingly and obsoletely punctured, with two foveæ at the base of each, which are of almost equal depth; legs slender, femora somewhat dilated towards apex. L. $1\frac{1}{2}$ mm.

In moss, &c.; very rare; Shirley (Champion), in a sand-pit; Ripon (Waterhouse); Scarborough; in Dr. Sharp's collection there is a specimen without locality labelled *S. Sharpi*, De Sauley; it is of about the size and colour of *S. Sparshalli*, but answers very well to the description of *S. rubicundus*, of which it appears to be a small example. In the catalogue of Heyden, Reitter and Weise *S. Sharpi* is given as a synonym of *S. rubicundus*.

N. carinatus, Muls. (*glyptocephalus*, Sauley, *teste*, H. R. W.) Very like the preceding, but rather smaller, and as a rule more darkly coloured; it is distinguished by its shorter antennæ, which are more strongly and suddenly thickened at apex, and have the intermediate joints less slender and cylindrical; the keel at the base of the thorax before scutellum is more defined and more prolonged towards the front; and the elytra have the shoulders a little more marked, and the external impressions at their base more feeble than those next the suture. L. $1\frac{1}{5}$ mm.

In moss, &c.; very rare; Shirley (Rye); in Dr. Sharp's collection there is a specimen from Eltham labelled *S. glyptocephalus*, De Sauley, which appears to belong to this species, of which it is quoted as a synonym in the last European catalogue. *S. carinatus* was originally recorded as occurring under stones in company with *Formica brunnea* in the Beaujolais mountains, France.

N. Sparshalli, Denny (*helvolus*, Schaum). Ferruginous or rufo-testaceous, convex, clothed sparingly with yellow pubescence, antennæ and legs reddish-testaceous, palpi and tarsi lighter; head together with eyes, which are large and projecting, only a little narrower than thorax, antennæ moderate, gradually thickened towards apex; thorax sub-quadrate, with sides gently rounded in front, and gradually and slightly narrowed in almost a straight line to base, thickly pubescent at sides, with a transverse furrow at base, but no longitudinal keel above scutellum; at the ends of the furrow are two foveæ of which the outer one is deep and narrow; elytra rather short, broad oval, convex, finely and plainly punctured, with two foveæ at the base of each, and a very plain humeral fold; femora feebly thickened at apex. L. 1 mm.

In moss, &c.; occasionally by evening sweeping; rare; Mickleham, Caterham,

Croydon, Woking, Bromley, Chobham, Wanstead, Esher, Birdbrook, Highgate, Horsell, Lee, Sheerness, Westerham, &c. ; Norfolk ; Acocks Green, near Birmingham ; Repton and Burton-on-Trent ; Scotland, very rare, Tweed and Forth districts.

V. minutus, Chaud. (*Scydmanus pumilio*, Schaum ; *Neuraphes minutus*, Reitter). This variety, which some authors consider a separate species, appears only to differ from type *N. Sparshalli* by its somewhat smaller form, broader head, and plainer basal foveæ of thorax ; it is also said to be usually of a darker colour, and to have more obtusely pointed elytra, but the differences are very slight, and can hardly be considered specific. L. $\frac{4}{5}$ mm.

First taken by Mr. Matthews at Gumley, Leicestershire, and by Dr. Power, at Lee pit, Kent, The Holt near Farnham, and Littlington, Cambridge.

N. longicollis, Mots (*præteritus*, Rye). Fusco-piceous, often with a reddish tinge, with antennæ and legs reddish-testaceous, somewhat depressed, sparingly pubescent, head with eyes a little narrower than thorax, antennæ rather long, plainly thickened to apex, with joints 8–10 transverse ; thorax elongate-quadrate, narrowed in front, and with sides almost straight behind, impunctate, with a transverse furrow at base furnished with one fovea only at each side, and without longitudinal keel before scutellum ; elytra elongate-ovate, sparingly and very obsoletely punctured, with two deep foveæ at the base of each ; legs slender, femora thickened at apex. L. $1-1\frac{1}{4}$ mm.

In moss, &c., generally in company with ants, occasionally by evening sweeping ; rare ; Croydon, Weybridge, Erith, Caterham, Darenth, Snodland, Strood, Norwood, Forest Hill ; Chatham ; Folkestone ; Isle of Wight ; Seaford, Devon.

In colour and general appearance, as Mr. Rye remarks in his description (*Ent. Monthly Mag.* ix. 6), this species very closely resembles a very small specimen of *S. elongatulus*, from which it may be known by its more depressed elytra, and impunctate thorax, and also by the absence of a longitudinal keel on thorax before scutellum.

SCYDMÆNUS, Latreille.

The genus *Scydmanus* proper contains only about twenty-five European species, and apparently is less extensive than either *Neuraphes* or *Euconnus* ; it resembles the former in having the head short and the eyes approximate to the margins of thorax, but may be easily distinguished by the cordiform shape of the latter, and by the moderately separated hind coxæ ; in all our species (with the exception of *S. exilis*) there is no transverse furrow at the base of the thorax, but in its place four more or less distinct round foveæ ; the genus is easily separated from *Euconnus* by the formation of the head, which in the latter genus is long and separated from the thorax by a distinct neck, and also has the eyes placed at a considerable distance from the margins of thorax.

- I. Elytra with two distinct foveæ at the base of each; thorax with four foveæ at base.
- i. Size large (nearly 2 mm.); elytra broad oval, coarsely and diffusely punctured; colour brownish-red . . . S. GODARTI, *Latr.*
 - ii. Size smaller (not exceeding 1½ mm.).
 - 1. Elytra finely and indistinctly punctured; colour black; size larger.
 - A. Form shorter and broader; elytra broad oval; sides of thorax gently rounded S. SCUTELLARIS, *Müll.*
 - B. Form longer and narrower; elytra oblong oval; sides of thorax sharply rounded, almost angled, in front S. COLLARIS, *Müll.*
 - 2. Elytra rather strongly and not closely punctured; size smaller.
 - A. Colour black; elytra narrower, more coarsely and diffusely punctured S. FUSILLUS, *Müll.*
 - B. Colour dark reddish-brown; elytra broader, less coarsely and diffusely punctured S. POWERI, *Fowler.*
- II. Elytra with one distinct dorsal fovea at base of each; thorax without distinct basal foveæ, but with an indistinct transverse basal furrow S. EXILIS, *Er.*

S. Godarti, *Latr.* The largest of our British *Sydmanidæ*; of a short and convex form, colour lighter or darker chestnut-brown or reddish, antennæ and legs red, tarsi testaceous-yellow; antennæ rather long and slender and scarcely thickened towards apex, with the four penultimate joints as long as broad; head a little narrower than thorax; thorax feebly cordiform, about as broad as long at its widest, with the basal foveæ small; elytra much broader than thorax, oval, very convex, plainly punctured, with two rather small foveæ at the base of each, of which the outer one is less distinct; the usual fold at the shoulders is only just indicated. L. $1\frac{4}{5}$ –2 mm.

Male with anterior femora more thickened towards apex, rounded externally.

Under bark, in rotten wood, in company with ants; rarely under decaying leaves; rare; Loughton, Essex; Buddon Wood, Leicestershire, in nests of *Formica rufa*; Sherwood Forest (in rotten wood with ants, also on newly felled timber in the evening); Dunham Park, Manchester, in moss and hepaticæ.

S. scutellaris, *Müll.* Black, shining, very convex, with sparing yellowish pubescence, antennæ and legs reddish-testaceous, femora dark, palpi yellow; head narrower than thorax, eyes large; antennæ rather slender, feebly thickened towards apex, with the two penultimate joints about as long as broad; thorax about as broad as long, feebly cordiform, impunctate, with four foveæ at base; elytra broad, rather short oval, sparingly and finely punctured, with two foveæ at base of each; humeral fold short but distinct. L. $1\frac{2}{5}$ – $1\frac{1}{2}$ mm.

Male with the anterior femora rather strongly inflated and angled externally towards apex.

In haystack and other refuse, moss, decaying sea-weed, &c., also under stones, especially in long grass near the coast; generally distributed and common in the

London district, and the Southern and Midland Counties; rarer further north, and apparently very rare in the Northumberland district; it is not recorded from Scotland.

S. collaris, Müll. Black, shining, very like the preceding in general appearance, but narrower and more elongate, with the thorax longer than broad and less gradually rounded in front, and the elytra long oval and less obtuse at apex; the humeral fold is very short and indistinct; the male anterior femora, moreover, are only gradually dilated, and not angled but rounded externally, and broadest near the middle.

In moss, &c.; generally distributed and common throughout England, and probably Ireland, and not rare in Scotland, Solway, Tweed, Forth, and Dee districts. L. $1\frac{2}{5}$ - $1\frac{1}{2}$ mm.

Immature specimens often occur of this and the preceding species which are entirely rufo-testaceous and cause great confusion; the form and sculpture will, however, serve to distinguish them.

S. pusillus, Müll (*flavicornis*, Mots.). Long oval, convex, smaller than the two preceding species, black, shining, clothed sparingly with rather fine yellow pubescence, antennæ and legs reddish-testaceous, femora usually darker, palpi and tarsi yellow; head narrower than thorax, antennæ moderate, with the two penultimate joints somewhat transverse; thorax convex, feebly cordiform, slightly longer than broad, impunctate, with four foveæ at base of which the inner pair are somewhat larger than the others; elytra long oval, very plainly punctured, with two foveæ at the base of each; humeral fold short and not distinct. L. $1\frac{1}{5}$ - $1\frac{1}{4}$ mm.

Male with the anterior femora gradually dilated, and acutely angled externally at apex.

In moss, flood refuse, &c., especially about river banks; rare; Chatham, Egham (Surrey), Mickleham, Walton-on-Thames, Sydenham, Staines, Tottenham; Hawk-hurst; Glanvilles Wootton; Devonshire; Buddon Wood, Leicestershire (in nests of *Formica rufa*); Durham (in hotbeds at Gilesgate Moor); Scotland, very rare, Solway district.

This species closely resembles in general appearance small specimens of *S. collaris*, which often do duty for it in collections, but apart from its size it may be known by the much plainer punctuation of the elytra, the shape of the basal thoracic foveæ (of which the inner pair are larger than the outer in *S. pusillus*, whereas in *S. collaris* the inner pair are more or less obsolete), and the shape of the anterior femora in the male; all the femora appear to be more dilated at apex than in *S. collaris*.

S. Poweri, Fowler. This species (described by myself in the Entomologist's Monthly Magazine, xx. 247) is closely allied to *S. pusillus*, but may be easily distinguished by its colour which is dark reddish-brown (as in *S. elongatulus*), and by the less coarse and diffuse punctuation

of the elytra; the general form too is broader and the elytra are wider and more convex; the basal foveæ of thorax are somewhat different, the central pair being often rather indistinct; the legs are yellow, with the femora somewhat inflated at apex. L. $1\frac{1}{5}$ mm.

In marshy and damp places; rare; taken at Wimbleton, Birdbrook (Essex), and Seaton, Devonshire, by Dr. Power, who had the specimens separated as distinct in his collection for some time before he requested me to describe it.

S. exilis, Er. (*bicolor*, Denny; *vicinus*, Chaud.; *Stenichnus exilis*, Thoms.). The smallest of our species of *Scydmanus* proper; of much the same form as *S. pusillus* but smaller; rufo-castaneous with the head and thorax usually darker, sometimes black, antennæ and legs rufo-testaceous, tarsi yellow; head with eyes, which are rather large, narrower than thorax, antennæ rather long, gradually thickened to apex; thorax a little longer than broad, feebly cordiform, impunctate, with an indistinct basal furrow, but with the usual foveæ only indicated; elytra long oval, finely and sparingly punctured, with only one distinct fovea at the base of each, the fovea near shoulder being shallow and usually more or less obsolete, humeral fold absent. L. 1 mm.

Male with the anterior femora a little more thickened than in the female.

Under bark; rare; Chatham, Leith Hill, Cobham Park, Hampstead, Loughton; Norwich; New Forest; Netley; Parkhurst Forest, Isle of Wight; Sutton Park and Coleshill, near Birmingham; Bewdley Forest; Hopwas Wood, Tamworth; Cannock Chase; Sherwood Forest (in some numbers); Ripon; Scotland, Highlands, very rare, under bark of dead trees, Clyde and Tay districts.

EUCONNUS, Thomson.

This genus contains about fifty European species; four of these are British, one of which, *E. fimetarius*, is considered by many authors as at most a variety of *E. hirticollis*; the character presented by the antennæ seems however to be specific; *E. denticornis* is rather a large species and is very easily known by the characters of the antennæ in the male, whereas *E. nanus* is the smallest of all our Scydmanidæ and certainly appears to be generically different. The characters of the genus have been pointed out above (p. 76).

I. Antennæ with four-jointed club.

i. Size larger; male with the 8th and 9th joints of antennæ dilated, securiform **E. DENTICORNIS**, Müll.

ii. Size smaller; joints of the antennæ simple in both sexes.

1. Antennæ distinctly shorter and less slender with the joints less elongate; pubescence of elytra closer **E. FIMETARIUS**, Chaud.

2. Antennæ distinctly longer and more slender with the joints more elongate; pubescence of elytra less close **E. HIRTICOLLIS**, Ill.

II. Antennæ with three-jointed club; size very minute . **E. NANUS**, Schaum.

E. denticornis, Müll. (*ruficornis*, Denny). Rather a large species, convex, black or pitchy-black, shining, with thick bristly pubescence at the sides of thorax and on the temples, antennæ and legs ferruginous, femora black or pitchy; head large, nearly as broad as thorax, antennæ rather long and robust; thorax somewhat cylindrical, longer than broad, narrowed in front, impunctate, with two distinct foveæ at base and between them a small fold; elytra oval, convex, almost impunctate, foveolate at base, with a strong humeral fold; femora dilated. L. $1\frac{1}{2}$ – $1\frac{4}{5}$ mm.

Male with the first two joints of the club dilated and denticulate, the first longer than broad, securiform, the second subquadrate and strongly toothed at apex; in the female the three first joints of the club are simple, about as long as broad.

In moss, vegetable refuse, &c.; occasionally by evening sweeping; rare; Mickleham, Esher, Caterham, Dorking, Faversham, Ashford, Darenth, Surbiton, Purley, Cowley, Chattenden; Norfolk; Hollington and Guestling, near Hastings; New Forest; Scarborough.

E. hirticollis, Ill. Of very much the same shape as the preceding, deep black, shining, sparingly pubescent, except on thorax, which is clothed with very thick and long bristly pubescence; antennæ, palpi and legs ferruginous, club of the former and the femora blackish; head small, somewhat orbicular, with a large neck, antennæ long and slender with the joints rather elongate; thorax longer than broad, somewhat cylindrical, narrowed in front, base transversely compressed, with two indistinct foveæ; elytra short oval, impunctate and very sparingly pubescent; legs long, femora dilated at apex. L. $1\frac{1}{3}$ mm.

Marshy places—in wet moss, and at roots of grass; also under fallen leaves in woods; rare; Faversham, Weybridge, Caterham; Horning Fen; Wicken Fen; Tewkesbury; Sutton Park, Birmingham; it is also recorded from the Southern districts (Hastings, Portsmouth, &c.), and from the neighbourhood of Durham, and other localities, but many of the records of its capture evidently apply to the following species, which is by far the commoner of the two.

E. fimetarius, Chaud. (*hirticollis*, var., Reitter, &c.). Very closely resembling the preceding species, but with the penultimate joint of the palpi fuscous, and the hairs on the elytra shorter and less scattered; the chief difference, however, lies in the formation of the antennæ, which are evidently shorter and more thickened towards apex, and have the joints less elongate; according to Thomson the male has the penultimate segment of the abdomen impressed in the middle at apex, and the posterior margin subtruncate. L. $1\frac{1}{3}$ mm.

In haystack and vegetable refuse; rather local; London district, not common, Dorking, Esher, Putney, Bromley, Shirley, Merton, Darenth, Hammersmith; Sheerness; Tonbridge; The Holt, Farnham; Glanvilles Wootton; Repton, Burton-on-Trent; Durham district; Scotland, very rare, Forth district. It appears to be commoner than *E. hirticollis*; its habitat is different, and it may easily be distinguished by the formation of the antennæ; the two species are very often mixed together, but

typical specimens appear to be very distinct; a good many authors, however, consider them to be merely varieties of one species.

E. nanus, Schaum. (*minimus*, Chaud.; *gibbulus*, Mots.). A very minute species, the smallest of the European Scydmaenidæ; of a rather long convex form, clothed with fine and rather thick pubescence, which is thicker and somewhat bristly at the sides of thorax, brownish-red, or pitchy, or reddish-testaceous (the colour of the head and thorax being sometimes darker than that of elytra) with the legs and antennæ yellow; head somewhat round, narrower than thorax, antennæ rather stout, with a three-jointed club, the two penultimate joints transverse; thorax somewhat cylindrical, a little narrower than elytra, impunctate, with four foveæ at base of which the inner pair are large, and the outer small and indistinct; elytra oval and convex, very finely punctured, impressed at base. L. $\frac{1}{2}$ mm. *

Under decaying leaves, &c.; extremely local; I know of no other locality except Scarborough, in the neighbourhood of which place it has been taken in some numbers by Messrs. Lawson and Wilkinson.

EUMICRINA.

The members of this tribe resemble the Scydmaenina in general appearance, but agree with the Cephenniina in the formation of the maxillary palpi; they are rather closely allied to the Mastigina, a tribe which contains some of the largest representatives of the Scydmaenidæ; in fact this tribe is by some authors included under the Eumicrina; the Eumicrina are represented in Britain by one genus containing two species, which differ from one another in several important points, and have in consequence been placed by some authorities in different genera.

EUMICRUS, Castelnau.

This genus contains a considerable number of species which are found in various parts of the world, representatives having been recorded from North and South America, India, Australia, Arabia, &c.; they occur in moss, vegetable refuse, hot-beds, &c., and also in damp wood mould under bark.

- I. Elytra and thorax with more or less distinct basal impressions or foveæ; eyes large; anterior tarsi strongly dilated in male; size larger; colour pitchy-reddish or castaneous. **E. TARSATUS**, Müll.
 II. Elytra without basal impressions, thorax without distinct foveæ; eyes small; anterior tarsi simple in both sexes; size smaller; colour rufo-testaceous **E. RUFUS**, Müll.

E. tarsatus, Müll. Chestnut-brown or pitchy-red, head and thorax often darker, antennæ and legs red; form rather long, convex, narrowed in front; upper surface clothed rather sparingly with yellowish pubescence; head somewhat orbicular, antennæ long with the first joint

cylindrical, as long as the two following, and thicker, joints 9-11 forming a gradual and not very marked club; thorax longer than broad, impunctate, feebly rounded and widened before middle, with four foveæ at base; elytra oval, convex, much broader than thorax, very finely and obsoletely punctured, each with a distinct fovea at base; femora clavate, thickened towards apex; posterior trochanters elongate. L. 2 mm.

Male with intermediate tarsi feebly, and anterior tarsi strongly, dilated.

In haystack and vegetable refuse, cut grass, dung-heaps, under stones, &c.; generally distributed and common throughout the London and southern districts and the midlands; rarer further north; Northumberland and Durham district, rare; Scotland, rare, Solway and Tweed districts.

E. rufus, Müll. (*agilis*, Mots.; *Cholerus rufus*, Thoms.; *Heterognathus rufus*, King). A small convex species, of a rufo-testaceous colour, with rather fine yellowish pubescence; head large, antennæ moderately long, with the last three joints forming a club, the two penultimate ones being about as long as broad; thorax ovate cylindrical, slightly longer than broad, without foveæ at base; elytra short oval, much broader in the middle than thorax, very finely but visibly punctured; femora clavate, strongly thickened towards apex; the metasternum is very long, and the hind legs viewed from above appear to start from the apical portion of the elytra; this is the case, to a somewhat lesser degree, with *E. tarsatus*; the sexual differences appear to be very slight. L. $1\frac{1}{5}$ mm.

Under bark, and in damp wood mould; very rare; two specimens only have occurred in Britain, one taken by Mr. Champion in Richmond Park, Surrey, in March, 1871, and a second which was kindly given me by Mr. E. A. Butler, who captured it in 1882 at Hurst Green, Sussex, a village near Etchingham Station on the S.E. railway; he found it on his little girl's dress, after she had been playing in a field for some time, so that it evidently came out of the grass, and might perhaps be obtained by sweeping in the locality; it is found not rarely in some parts of Europe under bark and in rotten stumps with ants. This species and *E. tarsatus* certainly seem to belong to different genera.

CEPHENNIINA.

The genera belonging to this tribe are very distinct from the rest of the Scydmaenidæ in general appearance by reason of the broad thorax which is about as wide at base as the elytra, so that the insects present a continuous outline; in the genus *Euthia*, moreover, the elytra are truncate and leave the pygidium exposed; the maxillary palpi, as in the Eumicrina, are apparently 3-jointed, the fourth joint being very short broad and obsolete, and rounded in conjunction with the third joint; two of the three European genera are found in Britain.

- | | |
|---|-------------------|
| I. Apex of elytra truncate, pygidium exposed; base of thorax
with five foveæ | EUTHIA, Steph. |
| II. Apex of elytra rounded, pygidium covered; base of thorax
without foveæ | CEPHENNIUM, Müll. |

EUTHIA, Stephens.

This genus contains at present only a few species which are mainly confined to Europe; they are very distinct from the rest of the Scydmaenidæ as may be gathered from the characters above given; they are found in moss, vegetable refuse, hot-beds, &c., and often in ants' nests; four species occur in Britain, all of which are rare, and one or two extremely rare; they may be separated as follows:—

- I. Colour unicolorous black or pitchy-black.
 - i. Club of antennæ less abrupt; elytra broader and more ovate, less plainly punctured *E. SCYDMÆNOIDES*, Steph.
 - ii. Club of antennæ abrupt; elytra narrower and more parallel-sided, very plainly punctured *E. CLAVATA*, Reitter.
- II. Elytra testaceous or reddish-brown.
 - i. Elytra reddish-brown; upper surface very finely and rather closely punctured and pubescent; club of antennæ abrupt; size smaller *E. SCHÄUMI*, Kies.
 - ii. Elytra testaceous; upper surface very finely and sparingly punctured and pubescent; club of antennæ very gradual; size larger *E. PPLICATA*, Gyll.

E. scydmaenoides, Steph. (*linearis*, Muls.; *abbreviatella*, Er.). Elongate, not very convex, pitchy-black, clothed with rather fine and short greyish-yellow pubescence; head much narrower than thorax; antennæ rather stout, reddish with the club often pitchy, club not very abrupt, both the penultimate joints transverse; thorax scarcely broader than long, rather convex and with sides rounded in front, depressed and with sides narrowed behind, not very thickly but plainly punctured, with five foveæ at base; elytra at base scarcely broader than thorax, with sides slightly rounded, broadest about middle, finely but plainly punctured, with the apex truncate; pygidium scarcely visibly punctured; legs slender, testaceous or reddish-testaceous. L. 1-1½ mm.

In moss, haystack and vegetable refuse, &c.; not common; Caterham; Blackheath: Lee pit; The Holt, Farnham; Kegworth; Dover; Devon; Knowle (abundant in hot-beds, Blatch); Repton, Burton-on-Trent; it often occurs on the wing, and is sometimes, apparently, found in company with ants. Stephens first described it from Highgate and Wimbledon.

E. clavata, Reitter. Very closely allied to the preceding, but narrower, with the sides of the elytra more parallel, and usually of a more pitchy-brownish colour; the antennæ are lighter, except the three last joints which are darker, and form a distinctly more abrupt club; the thorax is a little more narrowed in front and behind, so that at its broadest it seems rather more dilated; the antennæ in the female are very elongate, being very nearly one-fourth longer than those of the male, with the club less pronounced, a point which is noticed by Mr. Blatch but not by Herr Reitter in his description. L. 1-1½ mm.

Under bark of oak logs in Sherwood Forest; rare; first taken by Mr. Blatch in

the early spring of 1883, and subsequently by Mr. Blatch and Mr. Horner in the same locality.

E. Schaumi, Kies (*abbreviatella*, Thoms.). Fusco-piceous with the elytra testaceous or brownish-testaceous, antennæ palpi and legs reddish-testaceous; somewhat depressed, with very fine, short, and somewhat thick silky pubescence; head narrower than thorax, eyes large and rather prominent, antennæ long, with distinct three-jointed club; thorax scarcely broader than long, with sides feebly rounded in front before middle, plainly but variably punctured, the punctuation being sometimes as close as that of elytra and sometimes decidedly less close, base depressed and foveate; elytra rather long and parallel-sided, very finely and rather closely punctured; abdomen and pygidium pitchy-brown, apex of latter lighter; legs slender. L. $1\frac{1}{5}$ – $1\frac{2}{5}$ mm.

In hot-beds, under bones, also under poplar-bark, &c.; rare; Felixstowe (Waterhouse); Knowle and Small Heath near Birmingham and Wicken Fen (Blatch); Repton (Garneys); it has been taken near Glasgow, and I have a specimen taken by Mr. Beaumont in Scotland, without any locality attached.

E. plicata, Gyll. Very like the preceding, but larger and more shining, and with the elytra of a bright rufo-castaneous colour; it may moreover be easily distinguished by the very gradual club of the antennæ, and its much more sparing and very fine punctuation; it is the largest of our British species of *Euthia*. L. $1\frac{3}{5}$ mm.

Under bark, in company with ants; also in cut grass, flood refuse, &c., and occasionally by evening sweeping; rare; Shirley, Caterham, Mickleham, Surbiton, Leytonstone, Esher; Whittlesea; Buddon Wood, Leicestershire (in nests of *Formica rufa*); Stretford, near Manchester.

CEPHENNIUM, Müll.

Eleven species only are enumerated in the Munich catalogue as belonging to this genus, but in the last European catalogue about forty species are mentioned from Europe alone, so that in all probability the genus is an extensive one; it differs from *Euthia* in having the apex of elytra rounded and the pygidium covered, and in the sculpture of the base of the thorax; two species have usually been regarded as British, but the second appears merely to be a variety of the first; the members of the genus are found under leaves, in moss, &c., in company with species of *Seydmænus*.

C. thoracicum, Müll. (*Seydmænus thoracicus*, Denny). Pitchy-black or obscurely castaneous, or with the thorax reddish and the elytra pitchy, or entirely reddish, of a short and broad, almost parallel, form, clothed with fine yellowish pubescence; head nearly always ferruginous, small, triangular, antennæ slender, reddish yellow, with the three last joints forming a club, the last being nearly as long as the two preceding; thorax very large and convex, wider in front than elytra, a little contracted at base, scarcely punctured, without basal foveæ; elytra long

oval, very finely and rather thickly punctured, each with a deep fovea in middle of base, apex and also the pygidium reddish. L. 1 mm.

Male with the anterior tibiæ slightly thickened towards apex, and slightly curved before apex; metasternum deeply impressed.

In moss, &c.; not uncommon and rather generally distributed in the London and Southern districts, and it occurs generally in some of the midland districts, but there appears to be no record from further north than Repton, Burton-on-Trent (where it is rare); it does not occur in Scotland.

(**C. intermedium**, Aubé. A single specimen of an insect, named as this species by M. Fairmaire, was taken by the Rev. A. Matthews near Silchester, Hants, in 1859, and described by him in the Zoologist for 1862 (7976); according to Mr. Matthews the species may be known by its dark colour, smaller thorax, rather longer antennæ, and more elongate shape; according to Aubé's description, however, the shape should be shorter, so that M. Fairmaire's determination of the specimen appears to be doubtfully correct; the species appears to be represented in many collections by colour varieties of *C. thoracicum*).

CLAVIGERIDÆ.

The species that form this family are by many authors included as a tribe under the Pselaphidæ, with which they have some points in common; at the same time they differ so widely as a whole from these latter, that it is best to separate them off as a family; they may be distinguished by their long cylindrical head and curiously formed abdomen, of which the front segments are connate, as well as by their general contour; the number of joints in the antennæ varies from two to six, and the palpi are one-jointed and inconspicuous; these points, as a rule, serve to distinguish them from the Pselaphidæ, which generally have the antennæ 11-jointed and the palpi 3- or 4-jointed and long and conspicuous; abnormal species of Pselaphidæ, however, occur, which resemble the Clavigeridæ in these characters; the tarsi are 3-jointed, the first and second joints being very short, and the third long, and terminated by a single claw; many of the species are totally devoid of eyes; they live with ants which, by caressing the tufts of hair that grow on their abdomen, cause the exudation of a fluid; this they swallow greedily, and in return appear to support the Clavigers, which seem to have lost the natural instinct of feeding themselves; as Sir John Lubbock observes (Ants, Bees, and Wasps, Int. Scientific Series, p. 84), the slave-making ant and Claviger and certain other myrmecophilous beetles are the only cases in nature of an animal having lost this instinct. We possess one species only of the family in Britain, which is local but not uncommon where it occurs.

CLAVIGER, Preysslcr.

This genus contains seventeen or eighteen European species and one

or two representatives from India, &c.; the characters given for the family will serve to distinguish our single species, which is totally unlike any other British insect.

C. testaceus, Preyss. (*foveolatus*, Müll.). Entirely testaceous or reddish-testaceous, shining, head and thorax rather thickly pubescent; head long cylindrical, antennæ short, club-shaped, six-jointed, last joint large, eyes wanting; thorax longer than broad, narrowed in front, with a fovea at base; elytra much broader than thorax, widened and deeply impressed towards apex; abdomen, if viewed from above, apparently composed of one segment with a deep longitudinal furrow at base; legs short, tibiæ narrowed at base. L. $2-2\frac{1}{4}$ mm.

Male with the intermediate femora before middle and the intermediate tibiæ before apex armed with a little tooth; abdomen with the sixth ventral segment furnished with a small tubercle at apex.

In nests of *Formica flava* (*Lasius flavus*), beneath flints on chalky hillsides or downs; local, but not uncommon where it occurs; Box Hill; Mickleham; Dorking; Portland; Southdowns (Chanctonbury); Freshwater, Isle of Wight; Seaford, Devon; Clevedon, Somerset; Scotland, very rare, Tweed and Forth districts; Ireland, near Waterford; the species occurs on the continent in company with *Lasius niger* as well as *L. flavus*.

PSELAPHIDÆ.

This family contains a considerable number of genera which are in many points closely allied to the Scydmaenidæ, but differ in having the tarsi 3-jointed and the elytra much abbreviated; in the arrangement followed below two tribes only are adopted, but some authors add two others, *Batrisina* and *Bryaxina*; there is, however, no particular reason why they should be adopted, and it is well not to multiply tribes too much if possible; the two tribes distinguished below are very distinct.

- | | |
|---|-------------|
| I. Posterior coxæ transverse not prominent or contiguous; form never linear | PSELAPHINA. |
| II. Posterior coxæ conical, prominent, contiguous; form usually linear | EUPLECTINA. |

PSELAPHINA.

The genera contained in this tribe are widely distributed throughout the world; as yet, however, we know comparatively little about them, as we may judge from the number of species that have lately been obtained in various countries by collectors who have found time to attend to the minuter groups of Coleoptera; they are easily distinguished from the Euplectina by their wider bottle-shaped form, and from the Scydmaenidæ by their much shorter elytra.

- I. Antennæ inserted on two more or less approximate tubercles; maxillary palpi (in our genera) very long and conspicuous.

- i. Maxillary palpi with the last joint very long, club-shaped PSELAPHUS, *Herbst.*
- ii. Maxillary palpi with the last joint securiform, usually broad.
 - 1. Antennæ with the first joint moderate, very closely approximate at base; abdomen with the first visible dorsal segment longer than the following TYCHUS, *Leach.*
 - 2. Antennæ subgeniculate with the first joint large, less approximate at base; abdomen with the first dorsal segments subequal BYTHINUS, *Leach.*
- II. Antennæ distant, inserted at the sides of the head; maxillary palpi not conspicuously large.
 - i. Tarsi with two unequal claws BATRISUS, *Aube.*
 - ii. Tarsi with a single claw.
 - 1. Thorax with three foveæ at base united by a transverse furrow, elytra of male produced in a short and broad lobe at apex RYBAXIS, *Sauley.*
 - 2. Thorax with three foveæ at base, not united by a furrow; elytra of male simple at apex BRYAXIS, *Leach.*

PSELAPHUS, Herbst.

The genus *Pselaphus* contains, according to the Munich catalogue, twenty-one species, but nearly that number of new European species alone has since been described; representatives occur in North and South America, India and Australia, so that the genus is evidently very widely distributed; its limits, however, are very imperfectly known; the species occur in moss, vegetable refuse, &c., and are among the most elegant of the minuter Coleoptera; they may be distinguished, as a rule, by their large and somewhat triangular abdomen, which is much narrowed in front, long and more or less cylindrical neck, and the very long maxillary palpi; they are found in moss, vegetable refuse, &c.

- I. Thorax narrow, much longer than broad, without impression at base P. HEISEI, *Herbst.*
- II. Thorax broader, only a little longer than broad, with an impression at base P. DRESDENSIS, *Herbst.*

P. Heisei, *Herbst.* (*Herbsti*, *Reichb.*). Bright chestnut or reddish-brown with the apex of the elytra sometimes darker; head long, eyes large, forehead strongly furrowed, with two large yellowish tubercles between eyes; antennæ long, rather strongly thickened towards apex, second joint twice as long as third; thorax long, ovate cylindrical, without furrow at base; elytra narrow in front, strongly widened behind, with long and thick tomentose pubescence at apex; abdomen with the first visible dorsal segment longer than the following taken together, strongly margined; legs red, tarsi usually lighter, elongate, with the tibiæ constricted at base. L. $1\frac{3}{4}$ –2 mm.

In moss, haystack refuse, &c.; generally distributed throughout the greater part of England, as far north as Yorkshire; rare in the northern counties; Scotland, rare, Lowlands, among sphagnum, Forth and Solway districts; Ireland, Dublin, Portishead, Armagh and Galway, and probably generally distributed.

P. dresdrensis, Herbst. Very like the preceding in general appearance but darker, and easily distinguished by the shape of the thorax, which is broader in proportion, and not much longer than broad, and is furnished with a distinct longitudinal semicircular impressed line at base; the second joint of the antennæ is almost equal to the third, and the last joint is ovate and smaller, instead of almost securiform and larger as in *P. Heisei*; the pubescence also at the apex of the elytra is shorter; the two species differ also in the sculpture of the metasternum in the male, but the sexual characters do not appear to be important. L. $1\frac{3}{4}$ –2 mm.

In damp localities, in moss, &c.; extremely rare, and usually occurring singly; The Holt, Farnham, one specimen (Power); Askham Bog, York, where Archdeacon Hey used to take about one specimen yearly from the moss at the side of the stagnant pools; Scotland, very rare, Tweed district. Denny used to take it very sparingly at Woodbastwick and Loddon in Norfolk (Mon. Pselaph. et Scyd. Brit., page 48.)

TYCHUS, Leach.

This genus contains forty or fifty species from various parts of the world; they differ from *Pselaphus* in the formation of the palpi and general shape, and from *Bythinus* in the relative length of the segments of the abdomen; we possess one British species, the insect that has been introduced as *Tychus ibericus* being a variety of *T. niger* with reddish elytra.

T. niger, Payk. Black, with the antennæ and legs reddish testaceous, elytra sometimes chestnut brown or reddish, at all events on disc; head triangular with large and prominent eyes; antennæ stout, rather long, with the first joint about as long as the second, last three joints forming a strong club; maxillary palpi yellow, last joint securiform; thorax somewhat broader than long, convex, with five large punctures at base; elytra much broader than thorax, convex subquadrate, with an entire sutural stria; abdomen with the first visible dorsal segment longer than the following which are gradually narrower, sparingly pubescent with long out-standing setæ; legs long, especially the posterior pair, femora sometimes infuscate. L. $1\frac{1}{2}$ mm.

Male with the 5th joint of the antennæ strongly dilated, about three times as broad as those contiguous to it.

In moss, dead leaves, haystack refuse, &c.; generally distributed and common in the Southern and Midland districts of England, but I cannot find any record from further north than Manchester, and it does not appear to occur in Scotland; Ireland, near Belfast and Armagh.

BYTHINUS, Leach.

In the Munich catalogue forty-seven species only of this genus are enumerated (including those belonging to the genus *Machærites*); in the catalogue of Heyden, Reitter and Weise, more than a hundred species are mentioned from Europe alone; it is evident therefore that our knowledge of it is very limited; species have been described from

America and Australia, so that it is evidently widely distributed; the shape of the maxillary palpi, which are large and conspicuous, differs very much in individual members of the genus, and the characters presented by the second joint of the antennæ in the male are very important.

The genus may be divided into two sub-genera as follows:—

- I. Antennæ with the first joint very long; basal joint of palpi, at least in the female, uneven; eyes of female very small or wanting; elytra impunctate Sub-gen. *MACHÆRITES*, Müller.
- II. Antennæ with the first joint moderate; basal joint of palpi without trace of prominences or teeth; elytra in all our species punctured Sub-gen. *BYTHINUS*, i. sp.

(Sub-Gen. **Machærites**, Müller.)

This sub-genus contains only one British species; fifteen species are enumerated in the last European catalogue, but one or two others have been recently described by M. Fauvel; they are found in caves, and also in ants' nests, under stones, &c.

B. glabratus, Rye. Testaceous-red, very shining, thinly-clothed with long scattered yellowish hairs; head rather narrow and elongate, eyes black, very small; antennæ rather slender, basal joint almost cylindrical, and almost as long as joints 3–8 together; 2nd joint as long as 3 and 4 together, with no perceptible peculiarity of structure, 10th and 11th forming a club; thorax cordate rather straightly narrowed behind, with a large shallow fovea on each side below the middle, reaching the lateral margin and connected across the base of thorax by an impressed curved line; elytra with the sides gradually widened and rounded from the base to the outer posterior angle, impunctate, or at most with a few obsolete traces of punctures; abdomen smooth and shining, legs reddish-testaceous, slender and elongate. L. $1\frac{1}{4}$ – $1\frac{1}{3}$ mm.

Three specimens of this very rare species were taken by Messrs. F. H. and E. A. Waterhouse at the end of the summer of 1865 in a mossy hollow on the chalk on Seaford Downs, in company with *Trichonyx Maerkelii* and a small yellow *Myrmica* (v. Ent. Monthly Mag. vii., p. 33); I captured a single specimen under a stone in company with *T. Maerkelii* at Sandown, Isle of Wight, on April 12th, 1884. There are two specimens in Dr. Sharp's collection from Eccles, near Dumfries, which are doubtfully referred to this species.

(Sub-Gen. **Bythinus**, i. sp.)

This sub-genus has usually been considered to contain five British species, but a sixth, *B. validus*, must be added; the characters of the antennæ and maxillary palpi will serve, as a rule, to distinguish them.

- I. Thorax distinctly punctured.
 - i. Male with the femora simple and the first joint of the antennæ armed with a small dentiform appendage at apex; thorax narrower **B. PUNCTICOLLIS**, Denny.

- ii. Male with the femora incrassate and the first joint of antennæ simple; thorax wider B. VALIDUS, *Aubé*.
- II. Thorax not or scarcely punctured, at all events behind.
 - i. Male with the first joint of the antennæ produced into a small and indistinct tooth on the inner side, second joint simple, cylindrical B. BULBIFER, *Reich*.
 - ii. Male with the first joint of the antennæ cylindrical, second joint dilated.
 - 1. Colour dark chestnut-brown or reddish; maxillary palpi with the last joint very elongate B. CURTISII, *Leach*.
 - 2. Colour usually pitchy-brown or black, sometimes reddish-brown; last joint of maxillary palpi broad, securiform.
 - A. 2nd joint of antennæ in male broader than long, securiform; 1st joint in female one and a half times as long as broad B. SECURIGER, *Reich*.
 - B. 2nd joint of antennæ in male longer than broad, lunulate, 1st joint in female scarcely longer than broad B. BURELLII, *Denny*.

B. puncticollis, Denny (*Arcopagus puncticollis*, Denny). Colour very variable, entirely chestnut-brown, or reddish, or red with elytra pitchy, or red with elytra and abdomen pitchy; head narrower than thorax, triangular, with two large foveæ between eyes; antennæ ferruginous, rather short and thick, palpi pale with the last joint rather long, dilated internally; thorax broader than long (in some specimens about as long as broad), broadest before middle, strongly punctured; elytra and abdomen together short oval, convex, the former longer than together broad, strongly punctured, the latter short; legs testaceous or reddish, tarsi lighter. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Male with the two basal joints of the antennæ thickened, the first armed with a small dentiform appendage on its internal apex, femora simple.

In moss, dead leaves, &c.; local but somewhat widely distributed, and in some localities not uncommon; Loudon district, not common; Shirley Mickleham, Caterham, Croydon; Hastings; Glanvilles Wootton; Devon; Midland counties, generally distributed; common in the Burton-on-Trent district; Lincoln, rather common; Northumberland and Durham districts, not uncommon; Scotland, Lowlands and Highlands, not rare, Solway, Tweed, Forth, Clyde, and Dee districts; Ireland, Armagh.

B. validus, Aubé. Very like the preceding, but distinguished by the characters of the male, which has the first joint of the antennæ slightly shorter and without a dentiform appendage at apex, the femora strongly thickened, and the tibiæ robust, the posterior pair being of equal breadth throughout; the thorax is rather broader in proportion than in the preceding species, and the colour, as a rule, is said to be darker, but this is by no means a reliable character, as it is variable. L. $1\frac{1}{3}$ mm.

Found under the same circumstances as *B. puncticollis*, and apparently widely distributed, and mixed with that species in collections; in Dr. Sharp's collection there

are specimens from Bishop's Wood, and Hampstead, as well as from several Scotch localities (Cramond, Corstorphine Hills, Dalmeney Park, Dabton Loch, banks of Nith, &c.); I have specimens from Bretby Wood near Repton. M. Fauvel (Revue d'Entomologie, vol. v., p. 286) says that he possesses specimens from Scotland, and that it is without doubt widely distributed in France, but confounded with *B. puncticollis*; it is evidently the insect referred to by Denny (l. c. p. 26) as the female of *Arcopagus puncticollis*, of which he says "thighs very thick in the female."

B. bulbifer, Reich. (*Arcopagus bulbifer*, Denny). Black with the antennæ palpi and legs red; head triangular with prominent eyes; antennæ with the second joint cylindrical in both sexes, palpi long, with the last joint securiform, broader than in *B. Curtisii*, but narrower than in *B. securiger* and *B. Burrellii*; thorax shining and finely pubescent, about as long as broad; elytra strongly punctured; abdomen short, about half as long as elytra; legs moderate, femora simple in both sexes. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Male with the anterior tibiæ armed on their interior side with a minute and indistinct tooth before apex, and the first joint of antennæ obsoletely subdentate internally at apex; the difference of the antennæ in the sexes is however very slight.

In marshy places, damp places in woods, &c., in moss and dead leaves; the commonest species of the genus and often abundant where it occurs; it appears to be generally distributed throughout the greater part of the kingdom; immature specimens are often reddish.

B. Curtisii, Denny (*hungaricus*, Reitter). Ferruginous-brown or reddish, with the antennæ, palpi, and legs lighter; head rather long, antennæ robust, palpi with the last joint elongate, dilated internally and securiform, thorax a little broader than long, convex, cordate, widest before middle, base narrowed, with an impressed semicircular line; elytra rather strongly punctured with a somewhat deep sutural stria; abdomen short; legs rather longer in male than in female, femora simple in both sexes. L. $1\frac{2}{5}$ – $1\frac{4}{5}$ mm.

Male with the clypeus armed with a very small horn or prominence, antennæ with the first joint simple, and the second globose with a distinct prominence on its inner side.

In rotten beech bark, moss, dead leaves, &c.; local; London district, rather common; Chatham, Birch Wood, Cobham, Shirley, Ashtead, Mickleham, Caterham, Coombe Wood, Cowley, Amberley, Croydon; Hastings; Glanvilles Wootton; New Forest; Devon; Midland districts, generally distributed; rarer further north; Ripon; Northumberland and Durham districts, scarce; Scotland, rare, Solway district only.

B. securiger, Reich. (*unicornis*, Aubé). Pitchy-brown, sometimes reddish-brown; antennæ and legs lighter; head subtriangular, deeply punctured, antennæ robust, palpi with the last joint large and broad, securiform; thorax somewhat broader than long, convex, obsoletely punctured; elytra thickly punctured, shining, and finely pubescent, with the suture a little elevated and an impressed line on each side; abdomen short, first two joints with the margin reflexed; legs moderate, femora and tibiæ simple in both sexes. L. $1\frac{1}{3}$ mm.

Male with the first joint of the antennæ cylindrical, simple, second joint strongly dilated, broader than long, securiform, with the internal apical angle acute and produced; female with the first joint one and a half times as long as broad, second joint not narrower than first, subquadrate.

In moss, dead leaves, &c.; rare; Horsell, near Woking (Power); Bromley, Kent (E. Saunders); Hastings; Glanvilles Wootton; Isle of Wight; Barmouth; Buddon Wood, Leicestershire; Repton; Scarborough; Northumberland district, Ravensworth, and near Gilsland; Scotland, rare, Solway and Tay districts.

B. Burrellii, Denny (*luniger*, Aubé). Very like the preceding but of a pitchy-black or black colour, with the thorax less dilated before middle and more obsoletely punctured; the palpi much resemble those of the preceding species, but have the last joint a little more rounded at apex; the species may, however, be at once recognized by the characters of the antennæ in the male, the second joint being distinctly longer than broad, and crescent-shaped, with the concave portion of the crescent facing inwards, and both the interior angles acute; in the female the first joint is scarcely longer than the second, subcylindrical, and somewhat globose. L. $1\frac{1}{3}$ - $1\frac{1}{2}$ mm.

In moss, dead leaves, &c.; rare; Faversham, Mickleham, Caterham, Esher, Highgate, Amberley, Birch Wood, Cowley, Bromley, Croydon; Norfolk; Repton; Ripon; Hartlepool; Scotland, rare, Solway and Clyde districts; Denny (l. c. p. 23) records that the species was first discovered in the latter part of April, 1824, near Letheringsett, in Norfolk, by the Rev. J. Burrell, after whom he named it; from the localities above mentioned it is evident that the insect is widely distributed, and this is probably the case with a very large number of our minuter Coleoptera which at present are recorded from only one or two localities; when a species has occurred in the South of England, the Midland districts, and in Scotland, a fair inference may be drawn as to its occurrence in intermediate localities.

BATRISUS, Aubé.

This genus contains at present about a hundred species, which are widely distributed over the world; they differ from *Bryaxis* and its allies in the fact that the tarsi are furnished with two unequal claws, and they have, therefore, been separated off with certain allied genera by some authors as a separate tribe Batrisina; they are among the most elegant of the Pselaphidæ, and most of them are brightly coloured; they seem, in great part at least, to be found in company with ants; there is only one British species, which is usually considered very rare, but sometimes occurs in considerable numbers in certain localities.

B. venustus; Reich. (*piceus*, Muls.). Rather elongate, light chestnut-brown or reddish, with the abdomen pitchy, convex; head rather large as broad as thorax with two deep furrows, rugosely punctured; antennæ rather long, last joint large terminating in a point; palpi with the last joint elongate, somewhat fusiform; thorax scarcely longer than broad, broadest before middle, with lateral furrows which appear to

separate off callose prominences on sides in front, and with fine central furrow, the three furrows terminating in punctures at base, which are situated in a semicircular line; elytra much broader than thorax, convex, broadest behind middle, finely and very obsoletely punctured with an entire sutural stria and a very short dorsal stria, humeral prominences distinct; abdomen about as long as elytra very finely punctured; legs red, femora thickened in middle, tibiæ thinner at base. L. 2 mm.

Male with the last two joints of antennæ larger than in female, the ninth being obliquely truncate at apex, and the intermediate femora with a very minute spinule in middle; the last ventral segment of abdomen also in this sex is foveolate.

In ants' nests, usually in old trees; also in rotten wood-mould of old oak, ash, and beech trees; local and as a rule rare; Ashted, Surrey (Champion); Loughton, Essex; Birch Wood and Purley Oaks (Power); Barham, Suffolk; New Forest; Bagots Park, Staffordshire, and near Gainsborough (Gorham); Sherwood Forest (Blatch); Shrewsbury; Ripon; I have taken it at Sherwood Forest in a nest of *Formica fuliginosa* in an old tree, and at Ulting, near Maldon, Essex, in an old oak stump with *Paromalus*, *Abræus*, &c.; it appears also to occur with *Formica rufa* and *Lasius brunneus*.

RYBAXIS, Sauley.

This genus, which has until recently been included under *Bryaxis*, comprises a considerable number of species which are widely distributed throughout the world; it is distinguished from *Bryaxis* by having the inflexed margin of the elytra longitudinally sulcate, by the sculpture of the thorax, and by the structure of the apex of the elytra in male; in our species the male has the antennæ much longer than in the female; it was therefore described as a separate species by Denny.

R. sanguinea, L. (*longicornis*, ♂ Denny). Black or pitchy-black, shining, palpi testaceous, antennæ and legs reddish or pitchy-red, elytra bright red with suture, base and apex usually more or less darker; head somewhat narrower than thorax with deep furrows, almost impunctate; antennæ long, fifth joint longer than those contiguous to it; thorax somewhat variable in larger and smaller specimens, but usually much broader than head, broadest before middle, with three equal foveæ at base connected by a furrow; elytra as long as together broad with a sutural and dorsal stria; abdomen black and shining, first visible dorsal segment longest, with two impressed lines in centre, the margin a little reflexed, apex obtuse; legs long, slender, and rather compressed, tarsi pale. L. $1\frac{3}{4}$ – $2\frac{1}{2}$ mm.

Male with the antennæ longer, and with the anterior tibiæ armed with a small tooth on their inner-side a little below the middle, and sinuated towards apex.

Marshy places—in flood refuse, at roots of grass, &c.; locally common; Lee, Strood, Sheerness, Snodland, Egham, Claygate; Dagenham, Essex; fen districts of Norfolk and Cambridgeshire, sometimes very abundant; Kingsgate; Folkestone;

Guestling, near Hastings; Portsmouth; Luccombe Chine, Isle of Wight; Devon; not recorded from the Midland or Northern Counties; the only Scotch record "Raehills, Rev. W. Little;" Murray's Cat., is probably erroneous; Ireland, near Belfast.

BRYAXIS, Leach.

This genus in its widest sense includes a large number of species; more than a hundred are enumerated in the Munich catalogue, and a considerable number have since been described; they appear to be generally distributed throughout the world; they are, as a rule, black with bright red elytra, or entirely reddish, but some species are unicolorous pitchy-brown or blackish; they are found, like so many of the others of the group, in moss, at roots of grass, &c., and sometimes are taken abundantly by sweeping; from *Batrisus* they are distinguished (together with *Rybaxis*) by the fact that the tarsi have only a single claw, and from *Bythinus* by the much shorter and less conspicuous maxillary palpi of which the last joint is about as long as the two preceding.

- I. Thorax at base with three equally large and deep foveæ.
- i. Anterior trochanters of male simple; elytra red, thorax and abdomen reddish or pitchy-red; size comparatively large B. WATERHOUSEI, *Rye*.
 - ii. Anterior trochanters of male more or less strongly toothed.
 1. Colour unicolorous pitchy-brown; size comparatively large B. FOSSULATA, *Reich*.
 2. Colour pitchy-black, elytra red or reddish-brown; size smaller.
 - A. Male with first visible segment of abdomen with a tubercle at apex surrounded behind with a semicircular fovea; form broader; abdomen more closely and distinctly punctured B. HELFERI, *Schmidt*.
 - B. Male with first visible segment of abdomen simple; form narrower; abdomen less thickly punctured B. COTUS, *Saulcy*.
 3. Colour entirely red, elytra brighter; male with the apical margin of the first visible dorsal segment dilated at each side and incised in the middle B. HÆMATICA, *Reich*.
- II. Thorax with three foveæ at base of which the middle one is extremely small.
- i. Colour entirely red, elytra brighter; head and thorax thickly punctured; size smaller B. JUNCORUM, *Leach*.
 - ii. Colour black, elytra bright red; head and thorax smooth, very obsoletely punctured; size larger B. IMPRESSA, *Panz*.

B. Waterhousei, *Rye* (*simplex*, *Wat.*). Rather a large and long species, of the size of *R. sanguinea*; lighter or darker pitchy-red or dark brown with a reddish tinge, with the elytra red, usually darker at margins; head subtriangular, rather broad; antennæ and palpi pitchy, last joint of the former ovate; thorax broader than head, much dilated in middle, smooth, with three equally large foveæ at base; elytra taken

together somewhat transverse, widened behind, impunctate; abdomen longer than elytra, with reflexed margins, first visible segment very long, simple in both sexes; legs ferruginous or fusco-testaceous, anterior trochanters simple in both sexes. L. 2 mm.

Male characters very slight, the sex being only distinguished by a small spine at the apex of the intermediate tibiæ.

Salt marshes at roots of grass, under stones, tidal refuse, &c.; also under stones on or near the shore; local, but sometimes not uncommon where it occurs; Rochester, Rainham, Strood, Southend, Sheerness, Whitstable; Rye; Newhaven; Portsmouth; Isle of Wight, Ventnor, Luccombe, Cowes, &c.; Weymouth; it has not occurred further north than the London district.

B. fossulata, Reich. (*Brachygluta fossulata*, Thoms.). This species is easily distinguished from all our others by its colour, which is entirely pitchy-brown or dark chestnut-brown, the elytra being sometimes a little lighter; head narrower than thorax, with large prominent eyes, sub-triangular; antennæ and palpi ferruginous, last joint of former large, oval; thorax shining, smooth, dilated in middle, with three large foveæ of equal size at base; elytra nearly quadrate shorter than abdomen; abdomen with reflexed margin smooth and shining, first visible dorsal segment the largest, simple in both sexes; legs ferruginous. L. 2 mm.

Male with the anterior trochanters with a short tooth, and the anterior and intermediate tibiæ with short apical spurs.

In moss, haystack refuse, &c., and often by sweeping in woods; generally distributed and common in the London, Southern, and Midland districts of England; rarer further north; Northumberland district, banks of the Irthing, rare; Scotland, Lowlands, local in marshes, Solway and Clyde districts; Ireland, Armagh.

V. rufescens, Reitter. This variety is more or less rufescent in colour and appears to be very rare; Denny (l. c. p. 38), records the fact that he has one in his possession: there is also a bright shining black variety (*B. aterrima*, Reitter), but I do not know whether it occurs in Britain.

B. Helfer, Schmidt. Black or pitch-black with the elytra red, darker at margins, antennæ, palpi, and legs pitchy, sometimes almost black; form rather short and broad; head large, together with eyes scarcely narrower than thorax; antennæ rather long, last joint large, oval; thorax slightly broader than long, broadest a little before middle, with three large equal foveæ at base; elytra much broader than thorax, widened towards apex, about as long as together broad, obsoletely punctured. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Male with the first visible dorsal segment with a tubercle in centre of apex, surrounded behind with a semicircular fovea; anterior trochanters armed with long and very sharp spines, intermediate tibiæ with long spurs just before apex on their inner side.

Salt marshes, in tidal refuse, under stones, &c.; local but sometimes in profusion where it occurs; Gravesend, Whitstable, Chatham, Sheerness, Southend, Strood,

Dulwich; Walton-on-Naze; Kingsgate; Bognor, in profusion; Newhaven; Hastings; Shoreham; Portland and neighbourhood, plentiful by sweeping; Glanvilles Wootton; it appears to be confined to the south-eastern and southern coasts.

B. cotus, Sauley (= *B. Lefebvrii*, Sharp's cat. 1st ed. *nec* Aubé). This species very closely resembles the preceding, but is of a somewhat longer and narrower form, and has the abdomen less closely punctured; it may also be known by the fact that the first visible segment of the abdomen is simple in both sexes and not tuberculate at apex in the male; it is very closely allied to *B. Lefebvrii*, and the specimens first taken in Britain were referred to that insect. L. $1\frac{1}{2}$ mm.

On the banks of rivers, very local; Scotland, Solway district, in sandy places by the Nith and Kew; it appears to be peculiar to Scotland.

B. hæmatica, Reich. (*emarginata*, Forst.; *Brachygluta hæmatica*, Thoms). Entirely rufous, with the palpi reddish-testaceous, elytra brighter; head triangular, smooth and shining, frontal foveæ deep; antennæ moderately long, last joint ovate; thorax about as broad as long, smooth and shining, widest before middle, rather gradually narrowed to base, with three large equal basal foveæ; elytra nearly quadrate, scarcely visibly punctured; abdomen as long as elytra, margined, smooth and shining; legs reddish, tarsi paler. L. $1\frac{3}{4}$ –2 mm.

Male with the trochanters and tibiæ simple and the first visible dorsal segment produced in a lobe on each side at apical margin, the space between the lobes being more or less deeply emarginate; this character is variable, the lobes being sometimes rounded, and sometimes rather sharp; occasionally on the upper surface of each lobe there is a more or less deep fovea, and sometimes the emargination between the lobes is bidenticulate: Aubé has named three varieties as *sinuata*, *perforata*, and *bidenticulata*.

Marshy places; in flood refuse, &c.; local, but occasionally abundant; more frequent about the banks of large rivers than elsewhere; Chatham, Barnes, Egham, Staines, Walton-on-Thames; Hastings; Glanvilles Wootton; New Forest; Barnstaple, Devon (recorded as taken in company with *Formica flava* and *Myrmica rubra*); Salford Priors; Tewkesbury; Hartlebury, Worcestershire; Repton; Church Stretton, &c., Cheshire; Stretford, near Manchester, at roots of trees in winter; banks of Mersey; Northumberland district, banks of the Irthing, rare; Scotland, very rare; has only occurred in the Solway district at the estuary of the Nith below New Abbey; Ireland, Galway (Walker).

B. juncorum, Leach. (*Dierobia juncorum*, Thoms.). This insect in colour and general appearance very closely resembles a small specimen of the preceding, but may at once be known by having the central basal fovea of the thorax minute and much smaller than the lateral ones which are large; its general form is shorter and broader in proportion, and the head and thorax, especially the latter, are thickly and distinctly punctured; the elytra and abdomen also are finely punctured, the punctuation being distinctly visible under a high magnifying power; in the male the anterior trochanters are armed with a short spine and the intermediate ones

with a larger spine ; in this sex also the anterior tibiæ are acutely dentate on their inner side before apex, and the intermediate pair are furnished with a spur at apex. L. 1-1½ mm.

In moss, flood refuse, by sweeping, &c. ; generally distributed and common throughout England ; recorded as common in the Northumberland district by Bold ; Scotland, Lowlands, in sphagnum, very local, Tweed and Solway districts ; Ireland, near Dublin and Belfast.

B. impressa, Panz. (*Dierobia impressa*, Thoms.). Black or pitch-black, shining, with the elytra bright red, with suture and margins sometimes darker, palpi testaceous, antennæ and legs pitchy, tibiæ and tarsi lighter than femora ; head and thorax impunctate or almost impunctate, the latter with the central of the three basal foveæ minute ; this character will easily distinguish it from all our other species except *B. juncorum*, from which it may at once be known by its colour ; elytra about as long as together broad, hardly visibly punctured ; abdomen shorter than elytra, margined, the segments becoming gradually narrower towards apex. L. 1½-1⅔ mm.

Male with the intermediate coxæ spinose, trochanters simple, intermediate tibiæ with distinct spurs.

In haystack refuse, moss, refuse on the banks of ponds, &c. ; local, but sometimes abundant where it occurs ; London district, not common, Lee, Woking, Eltham, Strood, Tottenham, Dagenham ; New Forest ; Shirley Warren, Southampton ; The Holt, Farnham ; Coleshill near Birmingham, in abundance ; Needwood Forest, near Burton-on-Trent ; Askham Bog, York ; not recorded from the Northumberland and Durham districts, and very doubtful as Scottish, the only record being "Raehills, Rev. W. Little," Murray's catalogue. I also feel some little doubt as regards the record from Askham Bog.

EUPLECTINA.

This tribe, which forms the second great division of our British Pselaphidæ, contains about fourteen or fifteen European genera of which four are indigenous ; one of these, *Bibloperus*, has usually been classed with *Euplectus* ; they differ from the Pselaphina in having the posterior coxæ conical, prominent, and contiguous, and in their more or less linear form, but this latter character is not so marked in *Trichonyx* as in our other three genera ; the four British genera may be distinguished as follows :—

- I. Tarsi with two unequal claws TRICHONYX, *Chaud.*
- II. Tarsi with a single claw.
 - i. Abdomen with the first visible dorsal segment of abdomen elongate ; last joint of antennæ very large ; form more convex TRIMIUM, *Aubé.*
 - ii. Abdomen with the first visible dorsal segment not longer than second ; last joint of antennæ moderate ; form more depressed.
 - 1. Head distinctly narrower than thorax BIBLOPERUS, *Thoms.*
 - 2. Head not narrower than thorax EUPLECTUS, *Leach.*

TRICHONYX, Chaudoir.

This genus in its widest sense comprises about eight or nine European species, of which two are British. Reitter, however, has formed a new genus, *Amauronyx*, to receive *T. Maerkelii* and three other European species, which differ from *Trichonyx* proper in the relative length of the abdominal segments; both our indigenous species are very rare; they are distinguished from the other members of the tribe Euplectina by the fact that the tarsi have two very unequal claws; the continental genus *Faronus*, which is not represented in Britain, has the tarsi furnished with two equal claws, while in *Euplectus* and its allies the claws are single. The species of *Trichonyx* are found, as a rule, in company with ants.

- I. First visible dorsal segment of abdomen elongate, much longer than the second; form narrower and more linear; elytra obsolete and not closely punctured . . . **T. MAERKELII**, Aubé.
 II. First visible dorsal segment not elongate, only slightly longer than second; form broader and less linear; elytra very closely and finely punctured. **T. SULCICOLLIS**, Reich.

T. Maerkelii, Aubé (*Amauronyx Maerkelii*, Reitter). Elongate, slightly convex, entirely rufo-testaceous or ferruginous, sparingly pubescent; head as broad as thorax, subtriangular, with deep frontal furrows, eyes not large or prominent; antennæ rather long and robust, penultimate joints transverse, last joint large, ovate, subacuminate at apex; thorax longer than broad, dilated in front, broadest before middle, and narrowed to base, impunctate, with a central channel, and three foveæ at base connected by an impressed line; elytra almost double as long as thorax, obsolete punctured, with a deep dorsal stria extending beyond middle of disc; abdomen with the first visible dorsal segment elongate; legs rather long, reddish testaceous. L. 2 mm.

Male with the trochanters of the intermediate legs furnished with a small blunt tooth.

In moss, dead leaves, under stones, &c.; usually in company with ants; rare; Mickleham (Champion); Esher (Power); Seaford, Devon, August, 1865 (Waterhouse), in company with *B. glabratus* and a small yellow *Myrmica*; Guestling near Hastings; Eastbourne (Waterhouse); Sandown, Isle of Wight, April, 1884, where I captured three specimens, in company with ants, under stones (one specimen of *B. glabratus* occurred at the same time); Freshwater (Gorham); Scarborough (Lawson); the late Mr. Garneys captured one specimen by sifting dead leaves in winter, I believe in Suffolk.

T. sulcicollis, Reich. The largest and finest of our indigenous Pselaphidæ; entirely rufescent, moderately shiny, with thick and short yellowish pubescence; head narrower than thorax, eyes not large, moderately prominent, antennæ rather long, all the joints with the exception of the penultimate longer than broad; thorax transverse,

widest before middle, scarcely visibly punctured, with three foveæ at base united by a transverse furrow, elytra much wider at apex than at base, with rather strong reflexed margins, finely and thickly punctured, shoulders prominent, with a deep dorsal stria hardly reaching middle; abdomen with the first visible dorsal segment scarcely longer than second, with strongly reflexed margins, finely but distinctly punctured; legs rather long, reddish-testaceous. L. 3 mm.

Male with the femora and intermediate tibiæ somewhat thickened, the latter with a short strong spur at apex, 6th ventral segment of abdomen emarginate.

Very rare; under bark of old elm stumps in company with ants, Lee, Kent (Douglas and Scott); York (Hutchinson, one specimen); Nettlecomb, Somerset, under oak bark, August, 1866 (Power, one specimen).

TRIMIUM, Aubé.

This genus contains about a dozen European species, and is also represented in India and North America; it much resembles *Euplectus*, but is more convex and less linear, the head and thorax being narrower than the elytra and abdomen; two species have been described as British, but they have since been proved to be the sexes of one insect.

T. brevicorne, Reich. (♀ *brevipenne*, Chaud.; *latipenne*, Tourn.; *Chevrieri*, Tourn.; *Euplectus brevicornis*, Denny, &c.) Elongate, rather convex, varying in colour from reddish-chestnut brown to rufous, very finely pubescent; head hardly as broad as thorax, very finely punctured, with two short converging frontal furrows; antennæ short and robust, with the last joint very large; thorax longer than broad, cordiform, with three small equally deep foveæ at base, which are connected by a fine furrow; elytra plainly broader than thorax, varying in length according to sex, narrowed in front and widened behind, broadest a little behind middle, with a sutural and dorsal stria, the latter being very short; abdomen as broad as apex of elytra, parallel-sided, plainly margined, legs moderately long, lighter or darker reddish-testaceous. L. $1\frac{1}{3}$ mm.

Male usually darker than female, with the thorax and elytra longer, the latter being rather longer taken together than their breadth at apex; the third ventral segment also of the abdomen is slightly foveate on each side and the anal segment flatly impressed.

Female usually lighter with the thorax and elytra shorter, the latter being not quite so long as together broad (*T. brevipenne*, Chaud.).

In moss, dead leaves, &c.; not a rare species in north and middle Europe generally, but extremely local in Britain; Stephens records it as having been taken within the metropolitan district, and in Norfolk, Suffolk and Lincolnshire; the only recent locality that I know of is Scarborough, where it has been taken in some numbers by Messrs. Lawson and Wilkinson.

BIBLOPORUS, Thomson.

This genus, separated from *Euplectus* by Thomson, contains two or three European species, which are distinguished by having the head much narrower than the thorax, and by the fact that the basal foveæ of the thorax are not united by a transverse furrow; the segments of the abdomen are subequal in length; our single species very much resembles *E. nigricans* at first sight, and is found under the same conditions and in the same localities.

B. bicolor, Denny (*glabriculus*, Gyll.). Pitch-black or deep black, shining, with the mouth, antennæ, and legs reddish-testaceous, head plainly narrower than thorax with deep frontal furrows or foveæ; thorax broader than long, with sides much dilated and rounded in front, and much narrowed behind; elytra considerably broader and longer than thorax, rather convex and dilated, with a short but distinct dorsal stria; abdomen with depressions at base of first segment of thorax very shallow. L. $1-1\frac{1}{5}$ mm.

Male with the intermediate femora strongly thickened, and armed with a small sharp spine at base, intermediate tibiæ dilated in the form of a strong triangular tooth, last ventral segment raised; metasternum channelled in both sexes, but more deeply in male.

Under bark of oak, birch, beech, &c.; local; London district, not common, Chatham, Bexley, Brasted, Sevenoaks, Cobham, Loughton, Bearsted, Hampstead, Highgate, Dean Forest; Midland districts, locally abundant (Blatch); Bewdley and Sherwood Forests; Cannock Chase; Sutton Park, Birmingham; Hopwas Wood, Tamworth (very abundant under bark of oak-trees infested by *Rhagium inquisitor*); Scotland, under bark of dead birch, rare, Forth, Tay and Dee districts.

EUPLECTUS, Leach.

This is one of the hardest genera in the whole range of the Coleoptera, and the differences are often so minute that it is impossible to know how many species it really contains; forty-five only are enumerated in the Munich catalogue, which are widely distributed over the surface of the world, but it is certain that the genus is much more extensive than is at present known; there are about thirty European species belonging to the genus *Euplectus* proper; of these eleven are found in Britain; they are easily known by their very long and quite linear shape, and their very minute size; they are found in hot-beds, heaps of cut grass, and other vegetable refuse, and some species occur under bark or in rotten wood; they are very sluggish in their movements, and this, coupled with their small size, causes them often to be passed over by collectors unless they are very carefully searched for; their colour is bright rufous or castaneous, or dark pitchy-black; I have paid considerable attention to this genus, and in company with Mr. Garneys, of Repton, was fortunate enough to find,

in June, 1879, the rare species *E. minutissimus*, Aubé, in large numbers in flood refuse at Repton; this species was then unknown to Britain, and rare on the continent; the collector, however, who has in recent years given most work to the British Euplecti, is Mr. W. G. Blatch, whose arrangement I have in the main followed, and to whose valuable monograph on the genus (published in the Entomologists' Monthly Magazine, for February, 1886) I am much indebted, as I am also to Mr. G. R. Waterhouse's monograph which appeared in the Transactions of the Entomological Society, Vol. I., 3rd Series, Part II.

The species of *Euplectus* are distinguished from *Trichonyx* and the continental genus *Faronus* by the fact that the tarsi have only a single claw; the sexual differences, as a rule, are unimportant, but are very marked in one or two cases.

- I. Abdomen with a more or less sharply defined depressed area in the middle of base of the two first visible dorsal segments; dorsal striæ on elytra distinct, and reaching more or less nearly to middle.
 - i. Colour lighter, red, or rufo-testaceous.
 - 1. Head with a distinct basal fovea; length 2 mm. E. KUNZEI, Aubé.
 - 2. Head without any distinct basal fovea; length less than 2 mm.
 - A. Antennæ longer; size larger; frontal furrows broader E. DUPONTI, Aubé.
 - B. Antennæ shorter; size smaller; frontal furrows narrower and more curved
 - a. Head and thorax more or less strongly punctured throughout; head broader.
 - a* Thorax less narrowed behind; the two large frontal punctures on the head not situated close to side margins E. PUNCTATUS, Muls.
 - b* Thorax more narrowed behind; the two large frontal punctures on the head situated close to the hind margins E. KARSTENI, Reich.
 - b. Head punctured only at sides above eyes; thorax not, or scarcely punctured; head narrower E. SIGNATUS, Reich.
 - ii. Colour darker, pitchy-black, brownish-red, or castaneous.
 - A. Head with a distinct basal fovea E. NANUS, Reich.
 - B. Head without any distinct basal fovea
 - a. Antennæ shorter; head longer in proportion to its width (usual habitat in hot-beds and decaying grass heaps) E. SANGUINEUS, Denny.
 - b. Antennæ longer; head shorter in proportion to its width; (usual habitat under bark and in decaying wood) E. PICEUS, Mots. (nigricans, Chaud.)
- II. Abdomen without any distinct depressed area at the base of the first two visible dorsal segments; dorsal striæ on elytra very short or entirely absent.
 - i. Elytra with short dorsal striæ; colour rufo-testaceous; length $1\frac{1}{2}$ – $1\frac{7}{10}$ mm. E. NUBIGENA, Reitter.

ii. Elytra without dorsal striæ; length not exceeding 1 mm.

1. Colour pitch-brown; form broader; elytra almost impunctate; female with apex of abdomen simple *E. AMBIGUUS*, Reich.
2. Colour rufous or rufo-castaneous; form narrower and more linear; elytra plainly punctured; apex of abdomen in female armed with a long pointed process *E. MINUTISSIMUS*, Aubé.

E. Kunzei, Aubé (*Abeillei*, Saulcy?). The largest of our species; rufo-testaceous, with the elytra sometimes lighter; finely pubescent; head large, broader than thorax, with the sides rounded behind eyes which are small, vertex with a distinct fovea; antennæ moderately long, thorax cordate, about as broad as long, with three foveæ at base, connected by a deep transverse furrow, the central of which is the smallest; elytra together longer than broad, impunctate; abdomen broad and sub-depressed, the two first visible dorsal segments each with a depressed area in the middle of base, the area being bounded on each side by a slender groove, which grooves are not parallel, but diverge towards apex. L. 2 mm.

Male with the 5th ventral segment of abdomen with an oblong impression in middle of base, 6th segment widely emarginate at apex, and bearing on each side a tubercle tufted with long whitish hairs, abdomen with sides clothed with rather long hairs.

In moss, dead leaves, &c.; rare; Esher (Power); Sevenoaks, Caterham, Dorking, Shirley (Champion); Greenhithe, Wandsworth and Hampstead (Waterhouse); Darenth Wood (Power and Waterhouse; Mr. Waterhouse's specimen occurred in the sawdust of a recently felled oak); Bearsted (Gorham); Cobham Park; Birdbrook (Power).

Dr. Sharp possesses two specimens of a *Euplectus* from Mickleham, which were named by M. de Saulcy *E. Abeillei* (apparently a new species, as it is mentioned in the European catalogue as from Britain alone); these specimens must, I think, be referred to *E. Kunzei*.

E. Duponti, Aubé. Rather a large and depressed rufo-testaceous species with the head broad at the sides; the head is rather smaller than in *E. Kunzei*, and is more contracted and rounded behind the eyes, which are a little more prominent; head, thorax, and elytra almost impunctate in male, punctured in female; antennæ longer than in the following species; thorax at broadest somewhat broader than long, with a central channel, and with the three foveæ at base connected by a rudimentary groove; elytra longer than together broad with the dorsal striæ nearly reaching middle; abdomen with depressions at base of first segment feebler than in the preceding species and with the grooves at each side parallel-sided; legs stouter, with all the tibiæ armed with a small spur at apex. L. $1\frac{3}{5}$ mm.

Male more shining than female, with the head only punctured at the

sides, and thorax and elytra almost impunctate; female duller, with the head thickly and plainly, and the thorax and elytra moderately thickly, punctured; in the male the last ventral segment of the abdomen is transversely depressed.

In rotten bark of beech, &c.; very rare; Scarborough (R. Lawson, who first captured the species in Britain); Strood (J. J. Walker in company with *B. bicolor*).

E. punctatus, Muls. Rufo-testaceous, with antennæ and legs lighter; head large, but rather short (being double as broad, including the eyes, as the length from the front margin of forehead to the margin of vertex), thickly punctured, very wide across the eyes, the forehead being strongly transverse, frontal furrows obsolete; thorax scarcely narrower than the head, and more finely punctured, although the punctuation is rather close and distinct; dorsal furrow plain, often reaching the basal fovea; elytra very finely and scarcely visibly punctured, longer than together broad; abdomen narrower than elytra with basal depressions on first segments narrow and feeble. L. $1\frac{2}{5}$ – $1\frac{1}{2}$ mm.

Male with the penultimate ventral segment of abdomen broadly emarginate at apex, and narrow in middle, last segment strongly foveolate; in this sex also the intermediate tibiæ are furnished with a spur at apex; in the female the last ventral segment is feebly foveolate.

In rotten wood under bark; it is also said to occur under dead leaves; rare, and almost entirely confined to the Midlands; Sherwood Forest (in some numbers); Dean and Bewdley Forests; Cannock Chase; Knowle; Salford Priors, Warwickshire; Bretby Wood, near Repton; I also have records from Ashted, Surrey, and from the New Forest.

E. Karsteni, Reich. Very like the preceding, with the same short broad head, and with the head and thorax punctured, the former, however, not so distinctly as in *E. punctatus*; the forehead, however, is less strongly transverse than in the latter species, and has the two large frontal punctures placed close to the side margin, a character which, as Mr. Blatch points out, is apparently peculiar to the species; the thorax is much more strongly narrowed towards base, and the male characters are different; this species is often mixed with *E. signatus* in collections, with which it is often taken in company, but this latter species may easily be distinguished by its longer and narrower head (which is hardly as broad as thorax), and by having the head punctured only at the sides, and the thorax almost impunctate. L. 1 – $1\frac{1}{5}$ mm.

Male with the fourth ventral segment of abdomen foveolate on both sides, and the space between bisinuate; fifth, transversely foveolate; sixth, widely emarginate at apex; anal segment with two or three more or less obsolete foveæ.

In haystack refuse, cut grass, dung-heaps, &c.; it also sometimes occurs under the bark of dead trees; Strood, Caterham, Mickleham, Ashted, Shirley, Wandsworth, Putney, Loughton, Cobham Park, Twickenham, Esher, &c.; Glanvilles Wootton;

Midland Counties, generally distributed, Birmingham district, Sherwood and Bewdley Forests, Repton, Cannock Chase, &c.; Scotland, rare, Forth district only; Ireland, near Dublin; it appears to be widely distributed but never very common.*

E. signatus, Reich. Rufo-testaceous, with the head not broader than the thorax, and longer in proportion than in *E. Karsteni*, from which species it is, however, distinguished by its punctuation, and by having the two large frontal punctures situated at some little distance from the margins; the depressions of the abdomen are deeper; it is most closely allied to *E. sanguineus*, from which it only differs in its colour, its rather smaller size, and in having the lateral thoracic foveæ a little shallower. L. $1-1\frac{1}{5}$ mm.

Male with the penultimate ventral segment foveolate in the middle, and furnished on each side of the fovea with a sharp tubercle; intermediate tibiæ with a small spur at apex.

In moss, haystack and vegetable refuse, cut grass, dung-heaps, &c.; rarely under bark, and in ants' nests; local, but common in some districts; London district, rather common; Hastings, and probably the South Coast generally; Falmouth; Midland districts generally distributed; it used to be very common in my hot-bed at Repton; Mr. Blatch records the occurrence of two specimens under bark in Sherwood Forest; Scotland, rare, in nests of the wood ant, Tweed, Forth, and Moray districts; this and other species are probably much more widely distributed than is at present known, as the *Euplecti* have been systematically neglected by many collectors owing to the difficulty of their determination.

E. nanus, Reich. (*Reichenbachi*, Denny; *Kirbyi*, Denny). Colour rather variable, pitchy-castaneous, or reddish-brown, often with the front parts pitchy and the abdomen reddish, antennæ and legs lighter; occasionally the elytra only are dark and the rest of the body red; pubescence rather long; upper surface finely punctured throughout; head as broad as thorax, with a distinct basal fovea (a character which will separate it from all its near allies), frontal furrows deep, converging, but variable, sometimes taking the form of a **V** and sometimes of a **U**; thorax a little broader than long at its widest; elytra broader than thorax, somewhat longer than together broad, usually with a distinct short stria at base between the dorsal and sutural striæ; basal depressions of first segments of abdomen distinct, their sides very divergent. L. $1\frac{1}{3}-1\frac{1}{2}$ mm.

Male with the penultimate ventral segment with four obsolete foveæ near base, with a larger transverse fovea in the centre, anal segment obsoletely foveolate; intermediate tibiæ with a distinct spur at apex.

In haystack and vegetable refuse; also under bark; local; Shirley, Lee, Esher, Cowley; Glanvilles Wootton; Windsor; Tamworth; Birmingham; Bewdley; Cannock Chase; Sherwood Forest; Northumberland district, common (Bold). According

* Mr. Waterhouse (l. c. p. 6) mentions the capture of an unusually large example of this species near a nest of *Formica fuliginosa*.

to Mr. Waterhouse it is common near London, but Mr. Champion speaks of it as rare in the London district. Mr. Blatch says that he has met with it in some numbers in Sherwood Forest under bark of fallen trees.

E. Kirbyi is only a form of this species, which has been chiefly separated on the ground that the frontal furrows converge strongly, whereas in *E. nanus* they are parallel; there is, however, no real difference between the insects, as the frontal furrows are very variable, and specimens may be found that are intermediate as regards their formation. *E. nanus* is variable both in size, colour, and sculpture.

E. sanguineus, Denny. In structure this species most closely resembles *E. signatus*, and is only distinguished from that species by its black or pitchy-black colour and rather larger size, and by having the lateral basal foveæ of the thorax a little deeper; immature specimens are often found, which cause great confusion, as they are entirely red in colour; in general appearance *E. sanguineus* closely resembles *E. nigricans*, but it may easily be known from this species by its shorter antennæ; the head, moreover, is not so short in proportion to its width; the antennæ and legs are ferruginous or reddish-testaceous. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Male with the penultimate ventral segment furnished with a large deep fovea in the middle, on each side of which there is a minute tubercle.

In haystack and vegetable refuse, dung-heaps, hot-beds, &c.; very rarely under decaying logs or bark; rather common and generally distributed in the London, Southern, and Midland districts; York; Manchester; Withington, Cheshire; Scotland, rare, in decaying hay, Solway district only.

E. piceus, Mots. (*nigricans*, Chaud.; *Dennii*, Wat; *sulcatulus*, Saulcy). Pitchy-black, shining, antennæ, palpi, and legs reddish-testaceous, very rarely pitchy; head as broad as thorax, sparingly and finely punctured on disc, strongly and thickly at the sides, rounded and narrowed behind eyes; antennæ rather long; thorax very feebly punctured, rather broader than long; elytra plainly broader than head and thorax, a little longer than together broad, scarcely punctured, dorsal stria reaching middle; abdomen with basal depressions broad and shallow. L. $1\frac{1}{2}$ – $1\frac{4}{5}$ mm.

Male with the posterior femora thickened, metasternum channelled and bearing a blunt tubercle on each side; fourth ventral segment of abdomen somewhat produced and bisinuate in middle of apical margin; fifth, tuberculate on each side at base; sixth, with a transverse furrow at base, emarginate at apex; in the female the metasternum is feebly channelled.

Under bark and in decaying wood; very rarely in hot-beds; London district, not common, but rather widely distributed; Darenth Wood, St. Mary Cray, Chatham, Hawkhurst, Forest Hill, &c.; Loughton, and Ulting, near Maldon, Essex; The Holt,

Farnham; Parkhurst Forest, Isle of Wight, in nests of *F. rufa*; New Forest; Midland districts, common in many localities, Birmingham (Sutton Park, &c.), Tamworth, Cannock Chase, Bewdley and Sherwood Forests, &c.; it has not, however, been recorded from the northern counties or from Scotland.

E. nubigena, Reitter. Narrow and elongate, rufo-testaceous, shining, almost impunctate, with fine and scanty pubescence, which is longer at the apex of the abdomen than on the rest of the body; head rather large, with two small deep punctures at base, from each of which proceeds a furrow; these unite in front, forming an inverted **U** enclosing a smooth and shining area; antennæ rather long and slender; thorax about as broad as long, rounded in front, much narrowed behind, with three foveæ at base, the lateral ones small, and the central one crescent-shaped, discoidal fovea very small; elytra long, narrowed at base, dorsal striæ deep, but very short; abdomen elongate, with no trace of depressions at base of first segments; legs clear testaceous. L. $1\frac{1}{2}$ – $1\frac{3}{4}$ mm.

Male with the ventral segments of abdomen longitudinally sulcate in middle, anal segment with a longitudinal keel.

Under bark of beech and oak logs; discovered by Mr. Blatch in Sherwood Forest in May, 1884, and again captured by him in September, 1885; it occurs on the Continent in the mountainous parts of Hungary, in the Caucasus, &c.

E. ambiguus, Reich. A small, narrow, somewhat depressed species, pitchy-brown, with the antennæ, palpi, and legs testaceous, clothed with fine grey pubescence; head as broad as thorax with strongly impressed converging furrows, antennæ rather slender; thorax about as long as broad, not strongly narrowed behind, with three deep basal foveæ connected by a fine and rather deep furrow; elytra broader than thorax, much longer than together broad, almost impunctate, with a deep sutural stria, and without dorsal striæ, but with short, more or less elongate, foveæ at base; abdomen parallel, without depressed area at the base of the front segment. L. 1 mm.

Male with a spur at apex of intermediate tibiæ, characters of the abdominal segment unimportant.

Marshy places; at roots of grass, &c.; occasionally in haystacks and other refuse; local, but sometimes not uncommon in some places; Lee, Wimbledon, Eltham, Sheerness, Weybridge, Bromley, Walton-on-Thames; Tewkesbury (in moss stripped from poplar trunks after a flood); Horning Fen and other fen localities in refuse, and also by beating or sweeping reeds in hot weather. Scotland, Lowlands, rare, in moss, Solway district only; it probably occurs in many other localities.

E. minutissimus, Aubé (*Garneysi*, Fowler). Linear, elongate, very narrow, much depressed, castaneous, shining, sparingly clothed with short hairs; head rather large, triangular, obtuse in front, moderately punctured, with two deep foveæ between eyes joined by a longitudinal furrow to two smaller foveæ situated above the epistoma, antennæ robust; thorax small, rounded at base, narrower than the head, with three deep equidistant foveæ at base, connected by a straight line; elytra con-

siderably longer than together broad, parallel-sided, distinctly punctured, with sutural stria and foveæ much as in the preceding species; abdomen long, widely and very deeply margined; legs testaceous, long and slender. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Male with the apical ventral segment marked throughout its length with three lines, of which the central is the deepest; the latter is deeply grooved on each side, and the lateral lines are incurved at apex; the penultimate segment is depressed deeply at apex, the depression corresponding with the depressed portion of the apical segment; the inner side of the intermediate tibiæ is prolonged beyond the articulation of the tarsus, and curved inwardly in the shape of a hook.

Female with the apical segment produced into a long aculeate spine.

This rare species was taken by Mr. Garneys and myself in large numbers in flood refuse from the Trent near Repton in June, 1879; it has not occurred before or since in Britain, and is rare on the continent; it is extremely sluggish, and may very easily be passed over; even with the flood refuse on a dish before me I found it very hard to find, although it was present in numbers; for a more detailed account of the species the student is referred to the *Entomologist's Monthly Magazine*, xvi. pp. 158, 159.

TRICHOPTERYGIDÆ.

This family comprises the smallest known species of all the Coleoptera: owing to their minute size and the difficulty of determining the species they have usually been much neglected; the Monograph, however, of the family published by the Rev. A. Matthews, is most complete, and by the aid of the figures and descriptions there given, many of the difficulties are very much diminished; the chief character of the family lies in the wings, which are very long and narrow, and consist of a horny peduncle from which proceeds a long slip of membrane which is furnished on both sides with very long and thickly set hairs; hence the name of "Trichopterygidæ," or "hair-winged;" the antennæ are long and slender, and usually verticillate-pilose, with the two basal joints large and stout, and the three apical joints forming a more or less distinct club; the maxillary palpi have the penultimate joint much inflated, and the last joint small and more or less acicular: the mandibles are very curious, the outer-side being furnished with transverse ribs like the cogs of a wheel; these are used for mastication, the insect having the power of seizing its prey (which consists of very minute insects), with the sharp points of the mandibles, and then turning these latter inwards until their backs meet, when the clogged processes act upon each other, and first crush and then grind the food between them (Matthews, *Trichopt.* III. p. 43); the elytra are sometimes entire, sometimes truncate, and together with the thorax are comparatively seldom punctured, the sculpture usually taking the form of asperate raised points, as in a rasp; the abdomen is usually composed above of nine segments, the ventral por-

tion consisting of six or seven segments; the legs are moderate, short in some genera, with 3-jointed tarsi, the last joint terminating in two equal claws.

The Trichopterygidæ are known already to comprise a considerable number of genera (twenty-one are enumerated by Mr. Matthews, and others have been described by him), and a large number of species; as, however, fresh representatives are perpetually being found in every quarter of the world in which they are looked for, it is most probable that the genus is one of the most extensive and most widely distributed of all the Coleoptera.

The larvæ of *Trichopteryx*, *Pteryx*, and *Ptinella* (the only genera known in that state) are stated by Mr. Matthews to resemble each other so closely that one description is sufficient to characterize all of them; in his Monograph the larva of *Ptinella* is described on page 50, and figured Pl. I. figs. a. b.; it is slender and elongate, almost moniliform, transparent and crystalline in appearance; the head is large, subtriangular, with prominent eyes; antennæ short, last joint furnished with long setæ; the segments are of about equal breadth, the abdominal ones being all furnished with a strong short seta on each side; last segment large, bearing two cerci terminated by long setæ: legs short, tarsi formed apparently of one joint terminated by a single claw.

The family may be divided naturally into the two following tribes:—

- | | |
|-----------------------------------|------------------|
| I. Elytra truncate | TRICHOPTERYGINA. |
| II. Elytra not truncate | PILILINA. |

TRICHOPTERYGINA.

This tribe contains eight European genera, all of which, except *Astatopteryx* are represented in Britain; some authors still consider *Bæocrara*, Thoms., formed to include *T. variolosa*, to be distinct, but it only differs from *Trichopteryx* in sculpture, and cannot with good reason be separated on that point alone.

In the following tables and descriptions I am much indebted to Mr. Matthews for his kind help, extending over a period of several years, during which I have taken a considerable number of the rarer species belonging to the family; at the same time it must be admitted that no very satisfactory tables can be drawn up, and that in some of the genera, more especially in *Trichopteryx*, it is extremely difficult to determine the more closely allied species from descriptions, and that long practice and comparison with authentic types is the only method by which anything like accuracy can be arrived at in this most difficult group; the difficulties are increased by the fact that the colours, especially of the antennæ, appear to alter to a greater or less extent after death, unless very great care is taken with regard to preserving and setting the insects.

- I. Thorax not contracted or constricted behind.
 - i. Abdomen with seven free ventral segments.

- 1. Thorax moderately dilated; hind coxæ moderately distant; posterior margin of metasternum not produced into points. PTERYX, *Matth.*
- 2. Thorax strongly dilated; hind coxæ widely distant, posterior margin of metasternum produced into two sharp points between the coxæ ACTINOPTERYX, *Matth.*
- ii. Abdomen with six free ventral segments TRICHOPTERYX, *Kirby.*
- II. Thorax constricted behind.
 - i. Elytra short; mesosternum not carinate; intermediate coxæ approximate; colour pale PTINELLA, *Mots.*
 - ii. Elytra long; mesosternum carinate; intermediate coxæ distant; colour dark SMICRUS, *Matth.*
- III. Thorax gradually contracted behind, not constricted.
 - i. Elytra long, posterior coxæ simple MICROPTILIUM, *Matth.*
 - ii. Elytra short, posterior coxæ laminate. NEPHANES, *Thoms.*

PTERYX, Matthews.

This genus comprises one European species which is found rather commonly in many localities under bark and in rotten wood; a few other species have been described from North America.

P. suturalis, Heer. (*mutabilis*, *Matth.*; *bicolor*, *Mots.*). Oval, convex, rather shiny; colour very variable, reddish, or castaneous, or with the elytra reddish and the head and thorax almost black, sometimes with the apex of the elytra alone dark; head rather prominent; thorax transverse, broadest at base, deeply and very closely tuberculate; elytra rather remotely asperate, with the apices strongly rounded; legs and antennæ rather long, yellow. L. $\frac{3}{4}$ - $\frac{4}{5}$ mm.

In rotten wood, under bark, sometimes in moss; not uncommon in some localities, and probably very widely distributed; Surrey; New Forest; Dean Forest; Midland district, general; Lincoln (under bark of dead fir); Scarborough; Scotland, rare, under bark of dead fir; Tay and Moray districts (*Sharp*); Balmuto, Fifeshire (*Power*.)

ACTINOPTERYX, Matthews.

This genus was founded by Mr. Matthews to include the single species *T. fucicola* of *Allibert*; it is distinguished from *Pteryx* by having the thorax strongly dilated, and from *Trichopteryx* by having seven free ventral segments, and from both by the fact that the metasternum is produced into two sharp points between the coxæ; our single species is rather widely distributed on the southern coasts of Europe, and also on the shores of North Africa and the Atlantic islands, but until recently has been considered very rare in Britain.

A. fucicola, *All.* (*mollis*, *Hal.*; *dilatocollis*, *Mots.*; *marinum*, *Mots.*). Fuscous, rather depressed, thickly clothed with short white silky pubescence; head large and broad with prominent eyes; thorax large, strongly

dilated, broadest before base, alutaceous and not tuberculate, posterior angles strongly produced and acute; elytra considerably narrowed behind, scarcely rounded at apex, very closely asperate; legs and antennæ long and slender, clear yellow. L. $\frac{3}{4}-\frac{4}{5}$ mm.

Under seaweed on the coast; first taken by Mr. Haliday in Ireland; it has recently been found in profusion at Kingsgate by Mr. T. Wood, in company with *Actidium coarctatum*, and also at Margate. In the summer of 1886 I found it at Broadstairs, and it has been taken at Weymouth; it is probably more widely distributed on the south-eastern and southern coasts than is at present known, but I have never found it in the Isle of Wight, although I have searched for it.

The species is very easily recognized by its habitat, shape, and thick whitish pubescence.

PTINELLA, Motschulsky.

About a dozen species have been described of this genus from Europe, America, and the Atlantic Islands, and one has comparatively recently been found in New Zealand, so that the range of the genus is probably very extensive; they are easily recognized by their narrow form and short elytra, and as a rule by their very light colour; they appear to live only under bark of dead trees, especially beech, fir, oak, and birch.

- I. Abdomen broader with apex obtuse.
 - i. Thorax scarcely rounded in front, hardly constricted behind, head elongate P. BRITANICA, *Matth.*
 - ii. Thorax plainly rounded in front, constricted behind, head rounded.
 - 1. Elytra broadest at middle.
 - A. Thorax more strongly constricted behind; form narrower P. TESTACEA, *Heer.*
 - B. Thorax less strongly constricted behind; form broader P. DENTICOLLIS, *Fairm.*
 - 2. Elytra broadest at apex P. MARIA, *Matth.*
- II. Abdomen narrower, with apex acuminate.
 - i. Thorax feebly constricted behind; elytra rather long . P. APTERA, *Guer.*
 - ii. Thorax strongly constricted behind.
 - 1. Elytra longer; thorax considerably shorter than head P. TENELLA, *Er.*
 - 2. Elytra very short; thorax hardly shorter than head P. ANGUSTULA, *Gyll.*

P. testacea, Heer. (*Proteus*, *Matth.*; ♀ *limbata*, Heer.). Elongate, rather obtuse, moderately convex, yellow, sparingly clothed with pale hairs; head large, rather elongate, rounded in front, eyes rather variable, antennæ long and slender, pale yellow, with the two basal joints very large; thorax moderate, a little broader, but scarcely longer, than head, broadest before middle, with the sides slightly margined, strongly rounded in front and constricted behind, closely and finely tuberculate, posterior angles very acute and prominent; elytra not dilated behind, widest at middle, rather finely and remotely asperate, apices strongly

rounded, with two more less defined darker bands in the female which meet near base; abdomen elongate, with five segments uncovered, obtuse; legs long, pale yellow. L. $\frac{7}{8}$ -1 mm.

Under bark of dead beech; taken in great abundance by Rev. A. Matthews in Sherwood Forest, and also by Mr. Blatch in Sherwood Forest and Dean Forest, and on Cannock Chase; Mr. Wollaston has also taken it in the Canary Islands.

P. Maria, Matth. Broad, depressed, reddish-yellow, sparingly clothed with short pale hairs; head rather small, a little narrower than thorax, eyes rather variable, antennæ pale yellow, rather short; thorax broad, widest in middle, with the sides margined and rounded, and feebly constricted behind, posterior angles not prominent, finely and closely tuberculate; scutellum small; elytra longer and much broader than head and thorax, dilated behind, broadest at apex, rather deeply and not very closely asperate in irregular transverse rows; abdomen broad and very obtuse with five segments uncovered; legs pale yellow. L. $\frac{7}{8}$ mm.

Very rare; one example taken by Mr. Matthews under bark of dead *Pinus sylvestris* at Bakewell, Derbyshire; it has also once been taken by Mr. Crotch.

This species may be known by its broader form, and by having the thorax feebly constricted behind with the posterior angles nearly right angles, and also by the sculpture of the elytra, which are dilated and broadest behind.

The female has the elytra suffused with darker colour which takes the appearance of two almost parallel bands joined at base.

P. denticollis, Fairm. (♀ *punctipennis*, Fairm.). Depressed, pale yellow, rather thickly clothed with golden hairs; head broad and short, eyes variable, antennæ pale yellow; thorax broad, widest at middle, with sides rounded in front, and moderately constricted behind; posterior angles strongly acute, prominent, moderately strongly tuberculate; scutellum rather large; elytra a little longer than head and thorax, oval, with sides rounded, deeply and very remotely asperate, interstices feebly asperate, apices not strongly rounded; abdomen with five segments uncovered; legs pale yellow. L. $\frac{3}{4}$ mm.

Under dead bark of various trees, especially poplars, mountain ash, willow, &c.; local; Sherwood Forest; Cambridgeshire; Middlesex; Mr. Blatch has taken it in numbers in various places, Yardley, Sutton and Knowle, near Birmingham, Hopwas Wood, Tamworth, Bewdley, Needwood Forest, and Sherwood Forest.

The females have two bands of darker colour on the elytra, which meet behind; these are sometimes indistinct, and the colour is occasionally spread over the whole elytra.

P. britannica, Matth. Elongate oval, rather convex, head and thorax castaneous, elytra rufo-testaceous, rather thickly clothed with short pale hairs; head large, elongate, obtuse in front, eyes small, antennæ rather long, clear yellow; thorax a little longer and broader than head, broadest

at middle, with sides strongly margined, slightly rounded in front and contracted behind, posterior angles nearly right angles, closely and rather deeply tuberculate; scutellum short; elytra rather long, contracted at apex, with sides rounded and margined, very closely and somewhat deeply asperate in transverse rows, apices scarcely rounded; abdomen rufo-testaceous, with five segments uncovered, very obtuse; legs long and stout, yellow; under-side rufo-testaceous. L. $\frac{7}{8}$ mm.

Very rare; one specimen taken by Mr. Matthews running on the back of a slug, *Limax maximus*, near Weston, Oxfordshire, the probable habitat of which was under apple bark; a second has occurred near Vincennes, France.

The specimens that have been taken have a transverse impression at base and a smaller oval one on disc at each side: these impressions are, however, variable in the Trichopterygidæ. The species may be distinguished by the shape of the head and thorax, the long elytra, and also by the sculpture and colour.

P. aptera, Guer. (♀ *Ratisbonensis*, Gyll.; v. ? *pallida*, Er.). Smaller than any of the preceding, elongate, oval, rather depressed, clear yellow, clothed somewhat thickly with rather long pale hairs; head rather large, strongly rounded in front, eyes rather large and prominent, or altogether absent; thorax a little longer and broader than head, broadest at middle, with sides slightly margined, moderately rounded in front, and feebly constricted behind, with posterior angles almost right angles, not prominent, thickly and finely tuberculate; scutellum rather small; elytra oval, longer and broader than head and thorax, deeply and closely asperate in transverse rows, apices strongly rounded; abdomen elongate, with five segments uncovered, acuminate at apex; legs pale yellow. L. $\frac{5}{8}$ – $\frac{3}{4}$ mm.

Under bark of dead trees and in decaying wood; Chatham; Mickleham; Sevenoaks; Cobham; Bearsted; New Forest; Salford Priors; Cannock Chase; Sherwood Forest.

In the females the elytra have two darker bands which meet behind; these, however, are variable and sometimes absent; occasionally the dark colour is spread over the whole elytra.

P. pallidum is distinguished from this species by Erichson by its narrower form, thicker pubescence, less strongly rounded sides of thorax, and less obtuse posterior angles of the same.

P. angustula (♀ *gracilis*, Gyll.). This species somewhat resembles the preceding, but may be easily distinguished by its shorter head and longer thorax, which is strongly constricted behind, and especially by its very short elytra, which leave six segments of the abdomen uncovered; the abdomen is acuminate at apex, and is furnished at the sides with long setæ; the sculpture of the thorax is rather deeper, and of the elytra more remote; in the female there is a single dark band of a darker colour on each elytron. L. $\frac{5}{8}$ – $\frac{3}{4}$ mm.

Under bark of various dead trees, often in company with *P. aptera*, locally common; Sherwood Forest; Sutton near Birmingham; Solihull; Salford Priors; Cannock Chase; Windsor; Wicken Fen.

P. tenella, Er. (? *microscopica*, Waltl.) Elongate, very narrow, pale yellow, clothed with short pale hairs; head large, elongate in front, eyes (at all events in the female) very large, antennæ rather long, pale yellow; thorax very short, much shorter than head, with sides rounded in front, and strongly constricted behind, posterior angles prominent, very acute, extremely finely tuberculate; elytra long and narrow, much longer than head and thorax, with sides scarcely rounded, very finely asperate in remote transverse rows, apices strongly rounded, with a longitudinal band of darker colour in the female: legs rather long, pale yellow. L. $\frac{3}{4}$ mm.

Very rare; one example has been taken by Mrs. Matthews under bark of dead oak in Sherwood Forest; it is very rare on the Continent.

The species may be known by its very short thorax, which is strongly constricted behind, long elytra, and fine sculpture.

TRICHOPTERYX, Kirby.

This genus contains a very large number of species; seventy-four are enumerated by Mr. Matthews in his monograph, but a considerable number have since been described from Central America and other parts of the world, and the genus is so widely distributed that it is probable that only a small fraction of the existing species are at present known, as very few collectors trouble themselves to look for them; they are distinguished by not having the thorax constricted behind and by the fact that the abdomen has six free ventral segments; they are very rapid in their movements and run with a swift jerky motion very different from that of *Ptenidium* and *Ptilium*; there are thirty-nine British species at present known, which in many instances are exceedingly closely allied, and require the greatest care in their determination; they may be roughly divided as follows, but, as above stated, no really satisfactory table can be formed; the colour, for instance, is in many cases a very important point, but immature specimens of the black species are sometimes reddish or brownish; Mr. Matthews and I once found a large number of a brownish-looking *Trichopteryx* in faggots in Sherwood Forest, which we thought at first must be a good species, but they turned out to be very slightly immature *T. fascicularis*; the only way to work the genus is first to separate those that seem at all differently formed by a simple Coddington or Browning's platyscopic lens, and then to compare them carefully with authentic specimens of the species to which they seem to belong under a compound microscope, with a rotating stage, as the asperate sculpture presents a very different appearance in different lights.

The species are chiefly found in hot-beds, haystack refuse, dead leaves,

moss, &c.; a few occur under bark or in rotten wood; a species found under these latter conditions is nearly always a rare one.

- I. Thorax finely margined; sculpture tuberculate.
- i. Thorax evidently broader than elytra.
1. Posterior angles of thorax plainly produced.
- A. Head and thorax black, elytra rufescent T. SARE, *Matth.*
- B. Upper surface entirely castaneous; form rather narrow T. CHAMPIONIS, *Matth.*
- C. Head and thorax black; elytra fusco-piceous.
- a. Elytra shorter; thorax broadest in middle. T. THORACICA, *Wall.*
- b. Elytra longer.
- a*. Thorax distinctly broadest at base.
- a†. Antennæ yellow, longer T. ATOMARIA, *De Geer.*
- b†. Antennæ blackish, shorter T. BREVICORNIS, *Mots.*
- b*. Thorax about as broad at base as in middle T. CONVEXIUSCULA, *Mots.*
- D. Upper surface entirely deep black.
- a. Sides of body with long outstanding setæ T. GRANDICOLLIS, *Mannh.*
- b. Sides of body without outstanding setæ.
- a*. Antennæ and legs pitch-black.
- a†. Posterior angles of thorax much produced and curved T. FRATERCULA, *Matth.*
- b†. Posterior angles of thorax not much produced T. LETITIA, *Matth.*
- b*. Legs lighter or darker yellow.
- a†. Antennæ pitch-black.
- a‡. Antennæ short T. ANTHRACINA, *Matth.*
- b‡. Antennæ long T. ATTENUATA, *Gyll.*
- b†. Antennæ more or less obscurely yellow.
- a‡. Elytra broad, parallel-sided T. LATA, *Mots.*
- b‡. Elytra more or less narrowed towards apex.
- *. Thorax very shiny; elytra dull T. SEMINITENS, *Matth.*
- ** . Thorax not much more shiny than elytra.
- †. Elytra longer; size larger; mouth organs yellow T. FASCICULARIS, *Herbst.*
- ††. Elytra shorter; size smaller; mouth organs pitchy T. CARBONARIA, *Matth.*
2. Posterior angles of thorax not much produced.
- A. Colour griseous-brown: elytra longer than broad, dilated at the middle T. EDITHIA, *Matth.*
- B. Colour fuscous; elytra quadrate, parallel-sided T. FUSCULA, *Matth.*
- ii. Thorax scarcely, or not at all, broader than elytra.
1. Antennæ black or pitchy-black.
- A. Antennæ with eighth joint incrassate T. PICICORNIS, *Mannh.*
- B. Antennæ with eighth joint not incrassate.
- a. Anterior tarsi of male dilated.
- a*. Antennæ longer; elytra oblong, parallel-sided T. LONGICORNIS, *Mannh.*
- b*. Antennæ shorter; elytra somewhat dilated behind, or about middle.

- a†. Elytra shorter, subquadrate, broadest behind middle T. BREVIPENNIS, *Er.*
 b†. Elytra longer, ovate, broadest about middle T. KIRBII, *Matth.*
 b. Anterior tarsi of male not dilated.
 a* Pubescence short.
 a†. Elytra not narrowed behind, oblong or subquadrate.
 a‡. Posterior angles of thorax much produced T. CANTIANA, *Matth.*
 b‡. Posterior angles of thorax not produced T. VOLANS, *Matth.*
 b†. Elytra narrowed behind, oval.
 a†. Thorax more narrowed from base to apex; sculpture less pronounced; antennæ shorter T. BOVINA, *Mots.*
 b†. Thorax scarcely narrowed from base to apex; sculpture more pronounced; antennæ longer T. LONGULA, *Matth.*
 b* Pubescence longer.
 a†. Size larger; elytra moderately long; thorax with rather large tubercles, sides very finely margined; pubescence fuscous T. SERICANS, *Heer.*
 b†. Size smaller; thorax more plainly margined; elytra very short.
 a‡. Thorax with rather large tubercles; elytra deeply asperate, margined; pubescence fuscous T. BREVIS, *Mots.**
 b‡. Thorax with very small tubercles; elytra feebly asperate, not margined; pubescence whitish T. CHEVROLATHI, *All.*
 2. Antennæ yellow, or pitchy-yellow.
 A. Colour entirely castaneous or fusco-castaneous.
 a. Thorax with sides almost straight, strongly tuberculate, head broad T. AMBIGUA, *Matth.*
 b. Thorax with sides distinctly narrowed in front, feebly tuberculate.
 a* Form very convex; head very broad; eyes small; elytra not dilated behind in female T. POWERI, *Matth.*
 b* Form rather depressed; head narrower; eyes large and prominent; elytra strongly dilated behind in female T. DISPAR, *Matth.*
 B. Head and thorax black or pitchy-black; elytra castaneous.
 a. Elytra longer than head and thorax T. GUERINII, *All.*
 b. Elytra not longer than head and thorax T. OBSCÆNA, *Woll.*
 C. Head and thorax black, elytra yellow testaceous; sculpture very faint T. WATERHOUSII, *Matth.*
 D. Head and thorax black, elytra brownish-black.
 a. Head longer; thorax smaller; sculpture distant T. MONTANDONII, *All.*

* This very rare species appears occasionally to have the antennæ yellowish; in my specimen, however, they are decidedly pitchy.

- b. Head shorter; thorax longer; sculpture close T. RIVULARIS, *All.*
- E. Upper surface entirely deep black.
- a. Form broad almost cylindrical; head very broad; thorax large; elytra parallel-sided T. JANSONI, *Matth.**
- b. Form narrower; head less broad; thorax small with sides rounded, narrower than elytra; elytra dilated about middle T. SUFFOCATA, *Hal.*
- II. Thorax coarsely margined; sculpture variolose (*Bæocrara* *Thoms.*) T. VARIOLOSA, *Muls.*

T. Saræ, *Matth.* Short, broad, very strongly convex, shining, clothed with rather thick greyish pubescence; head and thorax black, elytra rufo-castaneous; head large and wide, antennæ slender, with the apical joint much elongate, the two basal joints bright yellow, the rest darker; thorax very large and convex, broader than elytra with minute tubercles placed in regular sinuate rows, interspaces reticulate; elytra rather short, strongly narrowed behind, deeply and very closely asperate; abdomen piceous, moderately exerted; legs short, bright yellow; under-surface castaneous, with a large spot near the apex of the metasternum, and the coxæ, bright yellow; abdomen with terminal segments paler. L. $\frac{7}{8}$ –1 mm.

Two specimens were taken in Nottinghamshire by the Rev. H. Matthews in 1861; the species has not been found since that time.

T. Championis, *Matth.* Narrow, elongate, convex, obscurely castaneous, shining, sparingly clothed with yellow hairs; head rather small, eyes small, not prominent, antennæ long, bright yellow; thorax moderate, broadest at base, with the sides slightly rounded, covered with very small tubercles in indistinct wavy rows, posterior angles much produced; scutellum very large, rather deeply asperate; elytra short, much narrowed behind, about as long as, but slightly narrower than, head and thorax, faintly asperate in transverse wavy rows; abdomen much exerted, with five segments uncovered, terminal segment minutely tridentate; legs moderate, bright yellow. L. $\frac{7}{8}$ mm.

Seven examples were taken many years ago in Wicken Fen near Cambridge by a collector of Lepidoptera, and given by him to Mr. J. T. Harris of Burton-on-Trent.

T. thoracica, *Waltl.* Very short, broad and convex, fuscous black, clothed with rather long greyish hairs; head moderate, antennæ rather robust, yellow; thorax very large and convex, broadest before base, with rather close irregular tubercles, posterior angles strongly produced; scutellum rather short; elytra very short, quadrate, deeply asperate, a little narrowed to apex; abdomen moderately exerted; legs short, clear yellow, with the femora dusky; under-side black, mouth and coxæ flavescens. L. $\frac{5}{8}$ mm.

In moss and flood refuse, chiefly in the latter; rare; Woking, Claygate, Lee;

* This species appears to have the antennæ either yellow or obscurely yellow.

Repton, Burton-on-Trent, Knowle, Needwood, and other Midland localities; Dunham Park, Manchester; Northumberland district; Scotland, Forth and Solway districts.

This species closely resembles *T. atomaria*, and may perhaps be a small race of this latter insect, but is distinguished by its ampler thorax, which is broadest before base, and is furnished with larger and more closely set tubercles, and by its shorter and narrower elytra.

T. atomaria, De G. Somewhat ovate, rather broad, convex, pitchy-black, shining, clothed with rather long yellowish hairs; head large, antennæ rather short, yellow; thorax large, broadest at base, with small remote tubercles, interspaces shining, posterior angles strongly produced; scutellum large; elytra very slightly narrowed to apex in female, strongly in male, rather deeply asperate; legs yellow, with femora dusky; under-side black, mouth, coxæ, and apex of abdomen flavescent. L. $\frac{3}{4}$ – $\frac{4}{5}$ mm.

In moss, haystack refuse, flood refuse, &c.; not uncommon and generally distributed throughout the kingdom.

T. brevicornis, Mots. Very like the preceding species, but distinguished by having the posterior margin of the thorax trisinate, by its longer elytra, which have a more distinct fuscous tinge, and its shorter antennæ, which are nigropiceous; the sculpture also is coarser, and its average size is larger. L. $\frac{7}{8}$ –1 mm.

Several specimens were taken by Mr. T. R. Billups at Canning Town, West Ham Marshes, Essex, on November 29, 1883, by shaking the bottom of a stack of radish seed, but it has not been taken in any other locality in Britain; it is common in the island of Madeira.

T. convexiuscula, Mots. (*convexa*, Matth.). Oval, obtuse, very strongly convex, very shining, fuscous-black, sparingly clothed with short pale hairs; head large, very broad, antennæ slender, rather short, clear yellow; thorax very little dilated behind, about as broad at base as in middle, with little tubercles irregularly arranged in sinuate rows, interspaces very shining, finely reticulate, posterior angles strongly produced; elytra almost quadrate, not narrower than thorax; legs clear yellow; under-surface nigro-piceous, with abdomen lighter, and the mouth, coxæ and posterior margins of metasternum, yellow. L. $\frac{7}{8}$ mm.

Taken by Mr. Matthews in Oxfordshire; it has also occurred in Russia.

T. anthracina, Matth. Subovate, convex, strongly narrowed behind in male, less strongly in female, deep black, very shining, clothed with short grey hairs; head large, prominent, antennæ rather short, pitchy-black; thorax very convex, dilated behind, with transverse sinuate rows of large tubercles, interspaces reticulate, very shining, posterior angles strongly produced; elytra narrower than thorax, rather finely asperate, suture a little raised behind; legs clear yellow; under-side black, with the abdomen lighter and the mouth, apex of metasternum, and coxæ yellow. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

In moss, haystack refuse, &c.; local; London district, rare, Sheerness, Chatham, and Reigate; Hastings; Smallheath, Edgbaston, and Knowle; Repton, near Burton-on-Trent, common in hot-bed in my garden; Sherwood Forest, not uncommon; it is probably widely distributed.

The species may be known by the elytra being strongly attenuated behind in male, the short dark antennæ, and the sculpture of the thorax, which is like that of *T. sericans* but with broader interspaces.

T. fratercula, Matth. Rather short and broad, black, shining, clothed with short yellow hairs; head large, broad in front, eyes large and rather prominent, antennæ rather short, pitchy-black; palpi black; thorax large, very convex, widest before base, upper-surface with minute remote tubercles arranged in distant wavy rows, closely reticulated, or alutaceous, posterior angles broad, much produced, and dilated on their exterior edge, somewhat in the shape of the bill of the Puffin, *Fratercula arctica* (hence the name of the species); scutellum large; elytra short, slightly narrowed behind, narrower than head and thorax, moderately asperate; abdomen considerably exerted; legs rather short, robust, yellow, with the femora dusky; under-surface entirely black. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Three specimens of this species have been taken by Mr. Matthews at Gumley, near Market Harborough, by sweeping.

T. grandicollis, Mannh. Rather broad, convex, black with an æneous reflection, thickly clothed with rather short yellow hairs; head large, eyes not prominent; antennæ moderate, pitchy or pitchy-testaceous; thorax rather large, broadest at middle, with moderate, irregularly arranged, tubercles, and with a large black seta on each side behind middle; elytra rather short, slightly narrowed behind, deeply asperate, furnished at sides with two long setæ, one near the shoulder and another behind middle; legs yellow, under-side black, with the mouth testaceous or piceous, and the coxæ black, margined with yellow. L. $1-1\frac{1}{8}$ mm.

In moss, cow-dung, vegetable refuse, &c.; common and generally distributed in England; it sometimes occurs in great profusion; it appears, however, to be rarer in the north and in Scotland; Ireland, near Dublin, &c.

This species is very easily recognized by the three long outstanding setæ on each side, which are possessed by no other British species.

T. lata, Mots. The largest of our species; broad and subquadrate, convex, black, with a slight æneous reflection, thickly clothed with long yellow hairs; head large and broad, eyes rather prominent, antennæ long, slender, yellow; thorax large, dilated behind, broadest before base, with somewhat large tubercles, arranged in rather sinuate rows, which are almost straight near base, posterior angles broad, produced; scutellum moderate; elytra quadrate, not narrowed behind, longer than head and thorax, deeply and remotely asperate; legs rather long, clear yellow; under-side pitchy-black, mouth and coxæ yellow. L. $1\frac{1}{4}$ – $1\frac{3}{8}$ mm.

In dead leaves, moss, vegetable and flood refuse, hot-beds, at roots of grass, &c.; very common and widely distributed.

The large size, and long antennæ, together with the quadrate elytra and close sculpture of the thorax, will easily distinguish this, perhaps the commonest of our species.

T. cantiana, Matth. This species is very closely allied to the preceding, but differs in having the thorax much less dilated at the sides and base, and by its smaller head; the antennæ, moreover, are rather shorter, more robust and entirely black, and the mouth parts are pitchy-black; the colour is deeper black and the pubescence is shorter. L. $\frac{7}{8}$ –1 mm.

In vegetable refuse, moss, &c.; rare; Tonbridge (Wollaston); Repton, Burton-on-Trent, where I have taken a few specimens in Robins Wood from refuse at the side of a pond.

T. fascicularis, Herbst. Suboval, convex, rather dull black, somewhat sparingly clothed with short pale hairs; head moderate, eyes somewhat prominent, antennæ clear yellow, occasionally obscurely yellow; thorax dilated behind, broadest at base, with small distinct tubercles, arranged in sinuate rows, interstices deeply reticulate, giving the thorax a dull appearance, posterior margin gently sinuate, posterior angles acute, produced; scutellum rather short and broad; elytra longer, and a little narrower than head and thorax, attenuated behind, asperate in thick, transverse sinuate rows; abdomen considerably exerted; legs clear yellow; under-side black, with mouth and coxæ yellow. L. 1–1 $\frac{1}{4}$ mm.

In vegetable and haystack refuse, faggots, dead leaves, ants' nests, &c.; not uncommon and generally distributed.

This species much resembles *T. lata*, but the antennæ are shorter and stouter, and the elytra are more narrowed behind, and the general appearance is duller; the sculpture also of the thorax is different.

T. lætitia, Matth. Very closely allied to the preceding and very likely only a local race; it differs in its conspicuously smaller size, smaller and more depressed thorax, and shorter and pitchy-black antennæ. *T. fascicularis*, however, sometimes has the antennæ darker, and *T. lætitia* occasionally has them lighter, so that the latter character can hardly be depended on. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Robins Wood, Repton, Burton-on-Trent, where I took about forty specimens in rubbish near the side of a pond; Mr. Billups has taken it near London, and Mr. Allen Harker near Gloucester; it is probably widely distributed.

T. seminitens, Matth. Oblong oval, black, thorax very shining, elytra duller, convex, clothed rather sparingly with pale hairs; head large, eyes large and prominent, antennæ slender, rather short, piceous; thorax very convex, much dilated behind, broadest at base, with rather large tubercles, disposed in remote sinuate rows, interspaces very shining, posterior angles broad and much produced; scutellum large and broad;

elytra short, narrowed behind, much shorter and rather narrower than head and thorax, rather deeply asperate in remote sinuate rows; abdomen much exerted; legs rather short, robust, dark yellow; under-side black, with the mouth and coxæ yellow. L. vix 1 mm.

Rare; Snodland (Kent); Sherwood Forest (in faggots); Scotland.

This species is allied to *T. fascicularis*, but differs in the greater convexity of its form, the shining surface and more remote sculpture of the thorax, and shorter pitchy antennæ; from *T. attenuata* it differs in its larger size and much greater convexity, shorter antennæ, and sculpture of thorax.

T. attenuata, Gill. Ovate, much narrowed behind, somewhat depressed, black, sparingly clothed with short pale hairs; head large, eyes prominent, antennæ very long, nigro-piceous; thorax large, very strongly dilated behind, with rather large tubercles, irregularly arranged in thickly set rows, interspaces glabrous, with a large transverse fovea on each side near posterior angles, which are much produced; elytra much attenuated towards apex, deeply and transversely asperate; legs robust, clear yellow; under-side black, with mouth and coxæ yellowish. L. $\frac{3}{4}$ mm.

In flood refuse, &c., very rare; Snodland and Egham, Kent (Champion); Gunley, Leicestershire (Matthews); Sherwood Forest, in faggots (Matthews).

T. volans, Mots. Oblong, rather convex, deep black, thickly clothed with short yellow hairs; head large, rather prominent; antennæ rather short, pitchy; thorax short, not broader than elytra, with moderate tubercles, arranged in strongly sinuate rows, interstices reticulate, posterior angles scarcely produced; elytra rather long, not attenuate behind, deeply and irregularly asperate, with the apices almost straight, and the suture raised behind; abdomen rather much exerted; legs somewhat long, yellow; under-side black, with the mouth, apex of metasternum, last segments of abdomen, and coxæ, yellow; posterior coxæ strongly dilated, marked with a large black spot in middle. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Three specimens were taken about 1876 or 1877 by Mr. Champion at Aviemore, Scotland.

This species somewhat resembles *T. sericans*, but is larger and has much shorter pubescence, and differs also in its longer elytra, and the sculpture of the thorax.

T. sericans, Heer. Rather short and broad, somewhat depressed, obscure black, not very shining, clothed with rather long fuscous hairs; head broad, eyes not prominent; antennæ rather stout, black or pitchy-black; thorax moderate, slightly dilated behind, broadest before base, with rather large tubercles arranged in thick, interrupted rows, posterior angles slightly produced, acute, sides very finely margined; elytra rather short, subquadrate, deeply and closely asperate, margined; legs, obscurely

yellow, under-side pitchy-black, with mouth, coxæ, metasternum, and margins of ventral segments of abdomen obscurely yellow. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

In vegetable refuse, grass heaps, hot-beds, &c. ; rather local, but very abundant in some places ; London district, not common, Lee ; Kingsgate ; Hastings ; Glanvilles Wootton ; Weymouth ; Exeter ; Dean Forest ; Midland districts, not uncommon, Birmingham districts, Repton, &c. ; Wicken Fen ; Cheshire ; Lincolnshire ; Hartlepool ; Northumberland district, rare ; Scotland, Solway, Forth, Tay, and Clyde districts. Ireland, near Dublin.

T. brevis, Mots. In appearance this species very much resembles the preceding, but differs in its smaller size, shorter and broader form, more prominent eyes, shorter elytra, and deeper sculpture, and also in the fact that both the thorax and elytra are distinctly margined. L. $\frac{5}{8}$ – $\frac{3}{4}$ mm.

In hot-beds, &c. ; very rare ; Gumley, in vegetable refuse (Matthews) ; I once took two specimens in my hot-bed at Repton, one of which has four distinct foveolate depressions on the thorax.

The antennæ of this species appear to vary somewhat in colour.

T. bovina, Mots. Oval, convex, deep black, dull, clothed with short, pale, silky hairs ; head moderate ; eyes rather small and prominent ; antennæ short and stout, black or pitchy-black ; thorax short, dilated behind, with small tubercles arranged in sinuate rows, interspaces feebly reticulate, posterior angles acute, scarcely produced ; scutellum large ; elytra rather short, oval, very closely asperate in transverse rows, with apices contracted and rounded ; abdomen rather much exerted ; legs clear yellow ; femora dusky ; under-side pitchy with mouth and coxæ lighter. L. $\frac{5}{8}$ – $\frac{3}{4}$ mm.

In flood refuse, dead leaves, &c., but especially in dry cow-dung ; occasionally taken by evening sweeping ; not uncommon and generally distributed throughout the greater part of England ; it has not, however, been recorded from the extreme north ; Scotland, Forth and Tay districts.

This species is easily distinguished from *T. sericans* by its shape and finer sculpture, and especially by its shorter antennæ.

T. brevipennis, Er. Short and broad, convex, black, thickly clothed with rather long pale hairs ; head large, rather prominent ; eyes prominent ; antennæ long, pitchy, or pitchy-testaceous ; thorax somewhat dilated, broadest before base, with distinct minute tubercles thickly arranged in rows, interspaces reticulate, plainly margined, posterior angles produced, acute ; elytra very short, somewhat dilated behind in male, thickly and deeply asperate in transverse rows, apices broad, strongly rounded ; abdomen rather much exerted, somewhat acuminate ; legs rather long, pitchy or pitchy-testaceous, with the anterior tibiæ, and the first joint of the anterior tarsi, strongly dilated in male ; under-side black with the mouth and apex of abdomen a little lighter, all the coxæ pitchy. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

In moss and refuse in damp places, especially in or near marshes ; local ; Shirley (Sharp) ; Glanvilles Wootton ; Knowle, near Birmingham ; Gumley, Leicestershire ; Scotland, Solway district.

T. Kirbii, Matth. Ovate, very convex, black, clothed with long yellow pubescence; head rather large, elongate, eyes somewhat prominent, antennæ long, piceous, with the basal joints paler; thorax rather longer and wider than head, with the sides dilated and rounded, and rather contracted at base, thickly covered with minute tubercles, interstices deeply reticulate, posterior angles acute and rather more produced than in the allied species, sides margined; at the base of thorax there is an elongate transverse fovea, gradually increasing in width from the scutellum, which it almost reaches, to the hinder angle; scutellum large; elytra ovate, not wider than thorax, with the sides rounded, deeply and irregularly asperate; abdomen considerably exerted, with apical segment deeply tridendate; legs long, yellow, anterior tibiæ dilated in male, all the tarsi with the basal joint dilated in male, the anterior pair with the first joint very short and wide, and the second very large and unequally bifid; under-side black with the mouth and coxæ lighter. L. $\frac{3}{4}$ mm.

Three specimens taken by Mr. Matthews under sedge refuse at Ranworth Fen, Norfolk.

T. longicornis, Mannh. Oblong, parallel, somewhat depressed, black, not very shining, clothed with very short, yellowish pubescence; head large and broad, eyes not prominent, antennæ very long and slender, light pitchy, or sometimes pitchy-testaceous; thorax rather short, quadrate, scarcely dilated behind, very thickly covered with minute tubercles, posterior angles produced, acute, basal margin deeply sinuate; scutellum rather large; elytra rather long, oblong, parallel sided until near apex, finely asperate; legs rather long and stout, yellow; male with the anterior tibiæ dilated, and the first two joints of the anterior and intermediate tarsi dilated, those of the anterior pair more broadly so; under-side black with mouth and coxæ yellow. L. $\frac{3}{4}$ mm.

In hot-beds, &c., rare; Gumley, Market Harboro', &c.

This species may be known by its oblong, parallel form, large broad head, very long and slender antennæ, and the dilated joints of the tarsi in male, as well as by the sculpture.

T. Edithia, Matth. Elongate, oblong, convex, griseous-brown, covered with long silky pale pubescence; head large and wide, eyes not prominent, antennæ very long and slender, bright yellow; thorax with the sides much rounded, widest near the middle, covered with small tubercles irregularly arranged, interspaces shining and deeply reticulate, posterior angles slightly produced; elytra oval, much narrower than the thorax at shoulders, widest at middle, deeply asperate in close wavy rows; legs long, slender, bright yellow. L. $\frac{3}{4}$ mm.

One example only of this distinct species is known; it was taken by Mr. Wollaston near Tonbridge in 1871.

T. longula, Matth. Elongate, rather narrow, convex, somewhat

shining, black, clothed with very short yellow pubescence; head rather small, eyes large, prominent, antennæ moderate, rather stout, pitchy-black; thorax short, broadest at middle, with small tubercles arranged in thick strongly sinuate rows, interspaces shining, deeply reticulate, posterior margin almost straight, angles scarcely produced; scutellum large; elytra oblong, very convex, with the sides almost parallel, thickly, but not deeply, asperate; legs yellow. L. $\frac{7}{8}$ -1 mm.

In hot-beds, vegetable refuse, &c.; rare, but probably much more widely distributed than is at present known; Tonbridge; Gumley, Leicestershire; Knowle; Repton; Lincoln; in both the latter places I have taken it in the hot-bed in my garden; Mr. Champion has also found it in Scotland.

This species is allied to *T. picicornis*, but differs in its shorter and narrower thorax, longer and more slender antennæ, and closer and finer sculpture.

T. picicornis, Mannb. Oblong, convex, black, rather sparingly clothed with yellowish hairs; head large, antennæ moderate, pitchy-black, with the eighth joint somewhat incrassate; thorax scarcely dilated behind, with sides rounded and margined, furnished with moderate tubercles arranged in thick, interrupted, rows, interspaces deeply reticulate, posterior angles moderately produced; scutellum rather small; elytra quadrate, slightly broader behind, with sides almost parallel, moderately strongly asperate; abdomen rather much exerted, apical segment tridentate; legs rather stout, obscurely yellow; basal joints of all the tarsi slightly dilated; under-side black, mouth and coxæ lighter. L. $\frac{3}{4}$ mm.

In rotten wood; rare; Hastings; Knowle; Gumley; Sherwood Forest; Northumberland district, six specimens (Bold); Scotland, Forth and Tay districts (Aviemore, &c.).

T. carbonaria, Matth. This species is allied to *T. picicornis*, but differs from that species in its paler and more slender antennæ, of which the eighth joint is linear and not incrassate, and in the different sculpture of the thorax and elytra, the tubercles on the former being smaller, and the latter being deeply and very closely asperate. L. $\frac{3}{4}$ mm.

A single example was taken in August, 1868, by the Rev. A. Matthews in Thoresby Park, Nottinghamshire, by sweeping under oaks.

T. Jansoni, Matth. Oblong, subcylindrical, subparallel, deep black, clothed very sparingly with short silvery hairs; head short, very broad, antennæ rather long, pitchy-testaceous or yellow; thorax scarcely dilated behind, with sides rather broadly margined, with moderate tubercles, arranged in irregular remote sinuate rows, interspaces very shining, deeply reticulate, posterior angles rather distinctly produced; elytra rather long, parallel-sided until behind middle, and thence rounded to apex, deeply asperate in remote, transversely sinuate, rows; legs moderate, clear yellow; under-side black, with mouth, coxæ, and apex of metasternum, yellow. L. $\frac{7}{8}$ mm.

Very rare; three specimens have been taken by Mr. Matthews, near Gumley, Leicestershire.

T. Montandonii, All. Oblong, convex, shining, black with the elytra fuscous black, rather thickly clothed with long white pubescence; head large, eyes prominent, antennæ long, either entirely yellow or slightly fuscous towards apex; thorax moderate, slightly dilated at base, with moderate tubercles, which are remote and irregularly arranged, interspaces deeply reticulate, posterior margin strongly sinuate, angles a little produced; scutellum large; elytra oblong, almost parallel-sided, not narrowed behind; legs yellow; under-side pitchy-black, with mouth and coxæ yellow, last segments of abdomen lighter. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

In vegetable refuse, hot-beds, &c., and occasionally in ants' nests; local; London district, not common. Tonbridge, Belvedere, Loughton; Hunstanton, Norfolk; Knowle; Repton, Burton-on-Trent; Northumberland district, very rare; Scotland, Forth district; it is probably generally distributed.

The oblong shape, long and slender antennæ, and distant tubercles of thorax will serve to distinguish the species.

T. rivularis, All. Very closely allied to the preceding, but distinguished by its more elongate form and longer thorax, and also by having the elytra somewhat contracted to apex; the sculpture also is different, the tubercles on the thorax being rather small, and arranged more closely and regularly, and the posterior margin of the thorax is straighter. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Mr. Matthews says that this species is not uncommon in England; Birmingham district, &c.; I feel very doubtful as to whether it can really be separated from *T. Montandonii*.

T. Guerinii, All. Oblong, moderately convex, subparallel, head and thorax black, elytra rufo-castaneous, sparingly clothed with short yellow hairs; head large, prominent; eyes small, prominent; antennæ rather long, yellow; thorax moderate, very slightly dilated behind, with small distinct tubercles, arranged in sinuate rows, interspaces reticulate, posterior angles slightly but plainly produced, acute; elytra almost parallel-sided, rather deeply asperate in thickly set, sinuate, rows; legs rather long and slender, yellow, with coxæ and femora pitchy; under-side black, with mouth parts pitchy. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Very rare; in hot-beds, &c.; West Ham (Billups); Gumley; Hunstanton, Norfolk, at which place I took a single specimen in August, 1879.

T. obscœna, Woll. Oblong, elongate, strongly convex, with the head and thorax black and the elytra nigro-castaneous; allied to *T. Guerinii*, but differs from that species by its longer and narrower form, shorter and more obscurely coloured antennæ, which have a less distinct club, shorter and darker elytra, and deeper sculpture. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

This species has once been taken in faggots by Mr. Matthews in Sherwood Forest; it was originally found by Mr. Wollaston in the Canary Islands.

T. fuscula, Matth. Short, quadrate, rather depressed, fuscous, thickly clothed with long pale hairs; head large, prominent; eyes large; antennæ long and slender, clear yellow; thorax short, transverse, dilated behind, with rather large tubercles, arranged in thick, strongly sinuate, rows, interspaces shining and reticulate, sides yellowish, margined, posterior margin sinuate; scutellum large; elytra short, quadrate, deeply asperate, almost parallel-sided; legs clear yellow; under-side nigro-fuscous, with abdomen lighter, mouth and coxæ yellow. L. $\frac{5}{8}$ mm.

In moss; very rare; taken by Mr. Matthews near Gumley.

This species appears somewhat to resemble *T. brevis*, but differs in its smaller thorax, longer and more slender antennæ, and also in sculpture.

T. Waterhousii, Matth. Oblong, subparallel, somewhat depressed, nigro-fuscous with the elytra testaceous, clothed with short pale hairs; head large, eyes not prominent, antennæ moderate, bright yellow, with the apical joints only slightly incrassate; thorax short, scarcely dilated behind, with the sides very slightly rounded, with small distinct tubercles, irregularly arranged in close rows, interstices slightly alutaceous, posterior margin yellow, angles slightly produced; scutellum large, dull black; elytra short, quadrate, slightly dilated towards apex, sides nearly straight, finely asperate; abdomen fuscous, moderately exerted; legs yellow; under-side pitchy, with the metasternum and abdomen paler, mouth and coxæ yellow. L. $\frac{5}{8}$ mm.

Two examples taken in Britain by Mr. Waterhouse; locality unknown.

T. Chevrolatii, All. (*pygmæa*, Er.; *minuta*, Mots.). The smallest species of the genus that we possess; short, oblong, parallel, somewhat depressed, black, rather shining, clothed with rather long whitish pubescence; head large, eyes prominent, antennæ rather long, entirely pitchy, last joint elongate; thorax quadrate, scarcely dilated behind, with small inconspicuous tubercles; scutellum large; elytra short, quadrate, moderately asperate in transverse rows; legs robust, clear yellow, with the basal joints of all the tarsi slightly dilated; under-side nigro-piceous, with the mouth, metasternum, and coxæ yellow. L. $\frac{1}{2}$ – $\frac{5}{8}$ mm.

In vegetable refuse, hot-beds, &c.; probably very often overlooked by reason of its minute size; Shirley; Tonbridge; Gumley, Leicestershire; Edgbaston and Knowle, Birmingham.

This species may easily be recognized by its very small size, oblong and parallel form, quadrate thorax, elongate last joint of antennæ, and very fine sculpture.

T. suffocata, Hal. Oval, rather broad, somewhat depressed, black, clothed with pale pubescence; head rather elongate and prominent, eyes large and prominent, antennæ moderate, clear yellow; thorax small,

narrower than elytra, with small tubercles, arranged in rather thick, transverse, curved rows, interstices not shining, scarcely dilated behind, posterior angles very little produced, somewhat acute, elytra rather short, a little contracted in front and behind, finely asperate, apices rounded; abdomen much exerted, acuminate; legs yellow; under-side entirely black. L. 1 mm.

Very rare; found only by Mr. Haliday, both the larva and perfect insect together, under damp fallen leaves or stones, in the bed of a dried-up brook (Glen-na-Chatta), of the Shournagh River, Cork.

T. dispar, Matth. Rather depressed, castaneous-brown or fuscous, clothed with a silvery pubescence; head moderately large, eyes prominent, antennæ long, dull yellow; thorax short, slightly dilated behind, rather thickly covered with small distinct tubercles placed in curved rows, interstices alutaceous, posterior angles scarcely produced; scutellum rather large; elytra at shoulders narrower than thorax, very much dilated towards apex in female, slightly contracted in male, closely and rather confusedly asperate; abdomen somewhat attenuated and moderately exposed; legs rather long, bright yellow; under-side pitchy-brown with the mouth and coxæ yellow. L. $\frac{3}{4}$ - $\frac{7}{8}$ mm.

In moss, especially in spring; rare; London district (Waterhouse); Devonshire (Wollaston); Gumley, Leicestershire, and Oxfordshire (Matthews); Knowle and Randan Woods (Blatch).

T. ambigua, Matth. Castaneous-brown, oblong, rather broad, very convex, clothed with golden pubescence; head rather large and broad, eyes small, not prominent, antennæ rather slender, obscurely yellow; thorax broadest before base, sides very slightly rounded, with irregularly arranged distinct large tubercles, posterior angles slightly produced; scutellum large; elytra oblong, rather depressed, not narrowed, or even slightly dilated, behind, a little contracted at base, rather deeply and thickly asperate; legs long and robust, clear yellow, tarsi elongate, with basal joints thickened; abdomen moderately exerted, with apex feebly tridentate; under-side castaneous, with the last segments of the body lighter, the coxæ and apex of metasternum yellow. L. $\frac{3}{4}$ - $\frac{7}{8}$ mm.

Under bark, &c.; very rare; Oxfordshire (Matthews); Peckham, under bark of Hornbeam (Billups); it appears to be common in America.

T. Poweri, Matth. (*Chevrieri*, All.). Broad, oblong, very convex, fusco-castaneous, clothed with golden pubescence; head large and broad, eyes not prominent; antennæ rather long, pitchy-testaceous; thorax rather large, slightly dilated behind, with small tubercles thickly arranged in interrupted rows, interstices shining, finely reticulate, posterior angles acute, very little produced; scutellum large; elytra quadrate, somewhat dilated behind, deeply asperate in thick transverse rows, sides margined, apices very broad; legs long and stout, clear yellow, with the femora dusky; under-side pitchy, with the apical segments of the abdomen, the coxæ, and metasternum, yellow. L. $\frac{7}{8}$ -1 mm.

Two specimens taken at Weston, Oxfordshire, by Mr. Matthews, in moss.

T. variolosa, Muls. (*Bæocrara littoralis*, Thoms.). Suboval, shining, convex, nigro-castaneous, or nearly black, sparingly clothed with stout silvery hairs, not tuberculate, but with the whole surface impressed with large punctures, variolose; head large, elongate in front, eyes prominent, antennæ long and rather slender, pitchy-testaceous; thorax short, transverse, with sides strongly margined and rounded in front and behind, posterior angles acute, not produced; scutellum large, deeply punctured; elytra rather short, dilated behind, with the sides rounded and strongly margined, apices broad, almost straight; legs long, clear yellow, femora pitchy; under-side castaneous, mouth and coxæ yellow. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

In moss, dung, &c.; rare; the first British specimen was taken by Mr. Matthews near Gumley, Leicestershire, February, 7th, 1862; subsequently Mr. Matthews found another in the same locality; it has also occurred at Esher, near London; Mr. Wollaston has taken it on Dartmoor, in Devonshire, and Dr. Sharp in the New Forest and in Scotland, in which country he records it as rare in sheep's dung, Tay district (Rannoch).

Thomson separates this species on the ground of the sculpture and strongly margined thorax as a new genus *Bæocrara*; it is true that it presents the only instance of true punctuation in the genus, but the margined thorax is found in other species, and the mouth parts, &c., appear to be identical; I have therefore followed Mr. Matthews in keeping it under *Trichopteryx*.

SMICRUS, Matthews.

This genus contains one European species, which is distinguished from *Microptilium*, which has been included under it, by having the thorax plainly constricted behind, and also by the long ligula, and narrowly laminate posterior coxæ; it is extremely rare in Europe, but rather common in North and South America; it is found in dung-heaps, and also in the sandy banks of streams.

S. flicornis, Matth. (*Micrus*, Matth.). Oblong, subparallel, convex, dull black, very thickly clothed with short yellow hairs; head large, broad, minutely and closely tuberculate, antennæ very long and slender, yellow; thorax transverse, with sides rounded in front, and constricted at base, very closely and minutely tuberculate, posterior margin almost straight, angles acute; scutellum large; elytra rather long, with sides almost parallel, very closely and deeply asperate; abdomen rather long, with five segments exerted; legs long, robust, clear yellow; under-side pitchy-black, with mouth, coxæ, and apex of metasternum clear yellow, apical segment in male broadly and deeply emarginate, with a long process in middle, armed on each side with an elongate sharp spine. L. $\frac{3}{4}$ – $1\frac{1}{8}$ mm.

Very rare; once found by Mr. Matthews in numbers on the banks of the Rye,

Nunnington, Yorkshire, and also at Gumley, flying; I took one specimen at Hunstanton, Norfolk, in August, 1879, on the window of our lodgings, in company with *Z. Guerinii*; they probably came from a stable which was not far off. I have lately found a specimen among some beetles sent me for names by the Rev. C. T. Cruttwell, of Denton, Harleston, Norfolk; it was, I believe, taken near Denton.

MICROPTILIUM, Matthews.

The single European species included in this genus was formerly classed with *Smicrus*, but besides the differences pointed out above, it has longer elytra and fewer segments of the abdomen uncovered, and the maxillæ are differently formed; it is rare on the continent, and only two British examples are known.

M. pulchellum, All. Elongate, rather depressed, pitchy-black, very thickly clothed with short white pubescence; head large, prominent, elongate in front, eyes large and prominent, antennæ very long and slender, clear yellow; thorax small, shorter than head, with sides rounded in front and rather strongly contracted, but not constricted, behind, with base incumbent on shoulders of elytra, closely and rather rugosely tuberculate, with an oval impression on each side near middle; elytra long, dilated behind, rather deeply asperate; legs long, robust, clear yellow; under-side pitchy, with the abdomen lighter, mouth and coxæ clear yellow. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Very rare; two specimens were once taken by Mr. G. R. Waterhouse, but I do not know in what locality.

NEPHANES, Thomson.

This genus contains one European and a few American species; from the other members of the tribe except *Microptilium*, it is distinguished by having the thorax gradually contracted behind, not constricted as in *Smicrus*, or simple as in the other genera; from *Microptilium* it may be known by its much shorter elytra, which leave six segments of the body exposed, the laminate posterior coxæ, and differently shaped maxillæ and ligula.

N. Titan, Newm. (*abbreviatellus*, Heer., Thoms.; *Elachys abbreviatellus*, Matth.). Oblong, subparallel, dark with a castaneous tinge, or almost black, shining, moderately convex, thickly clothed with pale pubescence; head large, elongate in front, eyes large, prominent, antennæ long, robust, yellow; thorax short, not longer than head, broadest behind middle and thence contracted to base, thickly tuberculate; elytra short, oblong, not or scarcely longer than head and thorax, with sides nearly parallel, closely and deeply asperate; legs rather long and stout, clear yellow; under-side castaneous, with mouth, coxæ, posterior margin of metasternum and last segments of abdomen, yellow. L. $\frac{1}{2}$ mm.

In cut grass, vegetable refuse, hot-beds, &c.; locally common; Shirley, Darent

Wood, Putney, Tonbridge ; Kingsgate ; Glanvilles Wootton ; Barnwood, near Gloucester ; Birmingham district ; Northumberland district, very rare ; not recorded from Scotland ; Ireland, near Dublin.

PTILIINA.

This tribe contains seven European genera, all of which, with the exception of *Micridium*, are represented in Britain ; they are, as a rule, much more easy to determine than the Trichopterygina.

- I. Thorax broadest at base ; pygidium covered.
- i. Metasternum not extending to the sides of the body NOSSIDIUM, *Er.*
 - ii. Metasternum reaching the sides of body EURYPTILIUM, *Matth.*
- II. Thorax broadest before base.
- i. Thorax at base extending over the shoulders of the elytra at the sides, sinuate narrowly before base, so that the apical margin is broader than the actual basal margin ACTIDIUM, *Matth.*
 - ii. Thorax fitted to the base of elytra.
 1. Metasternum extending to the sides of the body ; thorax not, or only moderately sulcate.
 - A. Pygidium exposed ; sculpture almost always tuberculate* PTILIUM, *Er.*
 - B. Pygidium covered ; sculpture variolose PTENIDIUM, *Er.*
 - 2 Metasternum not extending to the sides of body ; thorax very deeply sulcate MILLIDIUM, *Mots.*

PTILIUM, Erichson.

Nineteen species of this genus are enumerated by Mr. Matthews in his monograph from Europe and America, but several have since been described ; they are distinguished by having the thorax fitted to the base of the elytra, the pygidium exposed, and also by the generally distinctly tuberculate or asperate sculpture of the thorax, by which they may, as a rule, be separated from the species of *Actidium*, which bear rather a strong resemblance to them in general appearance ; the species are found in moss, hot-beds, dead leaves, &c., or under bark.

- I. Thorax not or obsoletely channelled in middle.
- i. Thorax more or less quadrate, not constricted behind.
 1. Thorax longer than head.
 - A. Thorax dilated behind ; sculpture of elytra finer P. MARGINATUM, *Aubé.*
 - B. Thorax not dilated behind ; sculpture of elytra coarser P. KUNZEI, *Heer.*
 2. Thorax shorter or almost shorter than head.
 - A. Elytra scarcely broader than thorax ; sculpture of thorax fine.
 - a. Form broader ; antennæ thicker P. BREVICOLLE, *Matth.*
 - b. Form narrower ; antennæ more slender P. BUGULOSUM, *All.*

* In *Ptilium Halidaii*, the head and thorax are foveolate-punctate.

- B. Elytra considerably broader than thorax ;
 sculpture of thorax rather coarse *P. SPENCEI*, *All.*
- ii. Thorax constricted behind.
1. Head and thorax tuberculate ; thorax with at
 most a very indistinct impression on each side at
 base *P. CALEDONICUM*, *Sharp.*
2. Head and thorax foveolate-punctate ; thorax
 with deep lateral impressed lines reaching beyond
 middle *P. HALIDAI*, *Matth.*
- II. Thorax plainly channelled in middle.
- i. Thorax with lateral impressed lines, which are
 parallel.
1. Impressed lines of thorax deep ; elytra con-
 siderably dilated, rather coarsely sculptured *P. AFFINE*, *Er.*
2. Impressed lines of thorax shallow ; elytra scarcely
 dilated, finely sculptured *P. INSIGNE*, *Matth.*
- ii. Thorax with lateral impressed lines, which con-
 verge in front *P. CÆSUM*, *Er.*
- iii. Thorax with lateral impressed lines which diverge
 in front.
1. Elytra longer ; head and general form narrower ;
 average size larger *P. EXARATUM*, *All.*
2. Elytra shorter ; head and general form broader ;
 average size smaller *P. MYRMECOPHILUM*, *All.*
- iv. Thorax with lateral impressed lines very obsolete
 or absent *P. FOVEOLATUM*, *All.*

P. Kunzei, Heer. Oblong, rather convex, black, dull, rather thickly clothed with grey pubescence, closely tuberculate ; head large and broad, eyes small, rather prominent, antennæ rather short and stout, pitchy black ; thorax transverse, longer and broader than head, broadest at base, with sides slightly rounded, not channelled ; elytra oval, about one and a half times as long as head and thorax, deeply asperate in oblique rows ; legs pitchy, occasionally yellow ; under-side pitchy, with the abdomen lighter, and the mouth and coxæ yellow. L. $\frac{1}{2}$ mm.

In hot-beds ; locally abundant, and probably widely distributed ; Ashted, Surrey ; Edgbaston and Knowle ; Cheshire ; Manchester ; Scotland, Solway district. Ireland, near Dublin.

P. brevicolle, Matth. Short, oblong, rather depressed, fuscous-black, rather thickly clothed with short dark hairs ; head large, broad, elongate in front, eyes prominent, antennæ very long and stout, yellow ; thorax very short, much shorter than head, as well as head thickly and finely tuberculate ; elytra oblong, rather depressed, nearly parallel-sided, scarcely broader than thorax, very closely covered with rather large tubercles ; abdomen scarcely exerted ; legs long, robust, yellow, tibiæ slightly dilated ; under-side pitchy-black, with mouth and coxæ yellow. L. $\frac{3}{8}$ mm.

Very rare ; one specimen taken near Weston, Oxfordshire, by Rev. A. Matthews.

This very distinct species may easily be known by its extremely small

size, oblong, depressed, form, very large head and short thorax, which is not channelled, and also by its very long antennæ and general sculpture.

P. rugulosum, All. (*fuscum*, Er.). Oblong, convex, rather narrow, fuscous, thickly clothed with pale pubescence, with very deep rugose sculpture, especially on elytra; thorax, very short, not channelled; elytra narrow, not or scarcely broader than head and thorax, antennæ rather long and slender, pale ferruginous, legs testaceous; this species is rather closely allied to *P. Kunzei*, but differs in its narrower form, more rugose sculpture, much shorter thorax, and longer and more slender antennæ. L. $\frac{1}{2}$ mm.

Very rare; Gumley, in moss (Matthews); Scotland, Tay district.

P. Spencei, All. (*angustum*, Er.; *oblongum*, Gyll.). Elongate-oval, rather convex, fuscous-black or black, clothed with rather long greyish hairs; head moderate, eyes prominent, antennæ moderate, more or less pitchy; thorax rather short, transverse, very little broader or wider than head, not channelled, broadest before base, with rather large, remote tubercles, sides and angles strongly rounded; posterior margin slightly reflexed; scutellum small; elytra rather long, oval, broader than thorax, deeply asperate in transverse rows, the asperations not being very close; legs pitchy; under-side pitchy, with mouth, coxæ, and apex of abdomen lighter. L. $\frac{3}{4}$ mm.

In vegetable refuse, moss, &c.; occasionally by evening sweeping; locally common; Esher, Lee, Tonbridge; Hastings; Glanvilles Wootton; Knowle, Repton, Matlock, and other Midland localities; Cheshire; Scotland, Solway and Dee districts; in Bretby Wood, Repton, I once took a large number of Trichopterygidæ under some refuse in a ride; these all proved to be *T. grandicollis* and *P. Spencei*; I do not know whether there is any connection between these insects except similarity of habitat; they are both, probably, generally distributed in England.

P. marginatum, Aubé. Very closely allied to *P. Spencei*, but distinguished by its usually larger size, larger and wider thorax, which is more closely sculptured, and is widest at base, and has the posterior margin rather strongly reflexed; the antennæ also are more lightly coloured, and the sculpture of the whole body is finer. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Rare; taken by Mr. Matthews and Mr. Crotch in the Cambridgeshire and Norfolk Fens, in 1868, and by Mr. Matthews at Forest Hill, Kent, in rotten leaves; also by Mr. Blatch in Sherwood Forest, under bark.

P. caledonicum, Sharp. Elongate-oval, convex, rather shining, colour variable, usually dirty testaceous, but sometimes more or less fuscous, head and thorax darker than elytra; upper surface rather thickly clothed with long pale hairs; head large, eyes large and prominent, antennæ long and very slender, yellow; thorax broader than, and rather narrower than elytra, broadest at middle, with the sides strongly rounded in front, and constricted behind, without channel, but sometimes with an obsolete impression on each side near the base, with rather thickly-set,

moderate-sized tubercles; elytra elongate-oval, broadest at middle, moderately asperate in irregular transverse rows, interstices shining; legs slender, clear yellow; under-side fusco-testaceous. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Found in numbers by Dr. Buchanan White and Dr. Sharp under the bark of a dead Scotch fir at Braemar, Scotland.

In sculpture and pubescence this species is very similar to *P. Spencei*; it is an interesting species, as connecting this latter insect and its allies with the abnormal *P. croaticum*.

P. cæsum, Er. (*latum*, Gyll.). Rather broad, castaneous, sparingly clothed with very short pale pubescence; head rather large and broad; antennæ rather short and stout, clear yellow; thorax larger, longer, and broader than head, with the sides rounded and widened in middle and narrowed behind, alutaceous and not tuberculate, with a central channel and two impressed lines, one on each side, which converge in front, posterior angles almost right angles; elytra rather short, dilated behind, closely and very finely asperate; legs clear yellow; under-side castaneous, with the mouth, coxæ, abdomen, and posterior margin of metasternum yellowish. L. $\frac{5}{8}$ mm.

Very rare; Cambridgeshire, six specimens (Crotch).

P. affine, Er. Considerably larger than the preceding species, and of a darker colour, being fuscous or nigro-fuscous; it is also differently sculptured, the head and thorax being finely and closely tuberculate, and the elytra being more coarsely sculptured; the thorax is widest behind middle, and is furnished with a central channel and a deeply impressed line on each side, all three being parallel; the elytra are more gradually rounded, and are widest about middle, instead of being widest behind as in *P. cæsum*, and the antennæ are pitchy, lighter at base. L. $\frac{7}{8}$ mm.

Very rare; three examples have occurred at Wicken Fen, Cambridgeshire, by sweeping; I have also received two specimens from the South of England; it appears also to be found under dung.

P. exaratum, All. (*canaliculatum*, Er.). Elongate, convex, rather shining, clothed with short greyish silky pubescence, fuscous, very finely and closely tuberculate; head rather small but elongate, much narrower than thorax, antennæ clear yellow, club slightly thickened, last joint elongate; thorax with sides rounded in front and contracted behind, broadest a little before middle, with a central channel, and two indistinctly impressed lateral lines or impressions, which diverge in front; elytra long, oval, more plainly sculptured than head and thorax; abdomen slightly exerted, with the last segments testaceous; legs clear yellow. L. $\frac{5}{8}$ – $\frac{3}{4}$ mm.

In vegetable refuse, hot-beds, &c., also in cow-dung; not uncommon, and probably much more widely distributed than is at present known; Tonbridge and other localities in the South and Midlands (Gumley, Knowle, &c.).

P. myrmecophilum, All. (*inquilinum*, Er.; v. *discoideum*, Vill.).

Allied to the preceding, but easily distinguished by its smaller size, broader form, shorter elytra, and reddish or castaneous colour; the sculpture is exceedingly fine, and the thorax is narrower in proportion to the elytra; the antennæ, also, are rather shorter, and have the last joints more thickened. L. $\frac{5}{8}$ mm.

In nests of *Formica rufa*; locally abundant; Chislehurst, Kent; Scarborough; Scotland, very local, Dec and Moray districts.

P. insigne, Matth. Elongate, rufo-castaneous, clothed with short pale pubescence, rather finely and closely tuberculate; head large, elongate in front, antennæ pale yellow, short and stout, with the two last joints much thickened; thorax short, with sides strongly rounded, and much constricted at base, with a deep central channel and a shallow impressed line on each side, the channel and lines being parallel; elytra rather long, not dilated behind; abdomen plainly exerted, testaceous; legs rather long, slender, pale yellow, tibiæ dilated at apex; under-side entirely testaceous. L. $\frac{5}{8}$ mm.

Very rare; one example has been taken by Mr. Waterhouse in the London district, and Mr. Blatch records it as from "Knowle (?)" in lawn clippings.

This species, like *P. affine*, has the lateral lines on thorax parallel to the central channel, but they are much shallower, and the insect is altogether smaller and narrower, and more finely sculptured, and the thorax is broadest about middle.

P. foveolatum, All. (*excavatum*, Er.; *clandestinum*, Hal.; *minimum*? Herbst.). Elongate, very small, narrow, and slender, rather convex, rufo-castaneous or rufo-testaceous, clothed with short yellow hairs, strongly and closely tuberculate; head large, almost triangular, very much elongate, eyes large, prominent, antennæ rather long, pale yellow; thorax not broader and scarcely longer than head, slightly rounded in front, and constricted behind, with a short central channel and an indistinct impressed line or fovea on each side diverging in front; these impressed lines are sometimes very indistinct; elytra long and linear, parallel-sided until near apex; legs pale yellow, tibiæ slightly dilated at apex; under-side rufo-testaceous. L. $\frac{1}{2}$ – $\frac{5}{8}$ mm.

In dung-heaps, hot-beds, &c.; probably generally distributed; Kingsgate; Midland districts; Northumberland district, rare; I have taken it in the greatest profusion in a hot-bed at Barnwood near Gloucester; when a hot-bed is freshly watered and closed the evaporated steam condenses in large drops on the under-surface of the glass; various species of small beetles, especially Trichopterygidæ, are perpetually flying upwards from the centre of the bed, and these are caught in the drops and may be sometimes taken by the hundred; I obtained all my specimens of *P. foveolatum* in this manner.

P. Halidaii, Matth. Elongate-oval, slender, very convex, shining, bright castaneous, sparingly clothed with very short pale pubescence; head moderate, rather elongate, deeply impressed with foveolate punctures, antennæ rather long, clear yellow; thorax small and short, scarcely

longer or broader than head, deeply foveolate-punctate, with a narrow central channel in front not reaching to middle, and on each side a narrow impressed line converging from base to beyond middle, sides slightly rounded, somewhat constricted behind; scutellum large; elytra rather long, narrow, and transparent, elongate-oval, broadest before middle, closely and rather deeply asperate in transverse rows, somewhat narrowed behind; legs rather long, clear yellow, tibiæ slightly dilated; under-side castaneous, mouth, coxæ, and abdomen lighter. L. $\frac{5}{8}$ mm.

Very rare; a single example was taken by Mr. Matthews under bark of dead oak in Sherwood Forest.

The species is very distinct, and may at once be known by the sculpture of the head and thorax; it partially corresponds to *T. variolosa* in the genus *Trichopteryx*.

MILLIDIUM, Motschulsky.

This genus contains one European and one American species; the former of these is common in hotbeds in many parts of the country; it is very smooth and shining like an elongate *Ptenidium*, and is easily distinguished by the very deep longitudinal furrows on the thorax.

M. trisulcatum, Aubé (*minutissimum*, Gill). Elongate-oval, convex, pitchy-black or deep black, very shining, almost glabrous, very sparingly clothed with extremely short silvery hairs; head moderate, alutaceous, eyes small, scarcely prominent, antennæ rather obscurely yellow; thorax alutaceous, with sides strongly rounded, contracted behind, broadest behind middle, posterior angles acute, with a very deep median furrow and a shorter furrow on each side, diverging in front; scutellum large, broad, triangular, with a deep conical fovea not reaching base, and a smaller oblique fovea on each side; elytra ovate, very shining, extremely finely and remotely punctured, apices lighter; abdomen slightly exerted, rather acute; legs clear yellow; under-side pitchy, with mouth, coxæ, and last segment of abdomen clear yellow. L. $\frac{5}{8}$ mm.

In moss, vegetable refuse, hot-beds, &c.; not uncommon in some localities; it seems to be rare in the London district; Tonbridge; Repton, Burton-on-Trent, common, Knowle, and other Midland localities; Barnwood, Gloucester; it is not recorded from the North or from Scotland; my impression is that it is very widely distributed, but is overlooked on account of its minute size and sluggish movements.

ACTIDIUM, Matthews.

This very distinct genus contains eight species, three from Europe, two from British Columbia, one from the Sandwich Islands, one from Central America, and one from New Zealand; it is probable that many more will be discovered; they are easily distinguished from *Ptilium* by having the abdomen entirely covered by the elytra.

- I. Upper surface pilose, not shining; head and thorax deeply foveolate-punctate A. COARCTATUM, Hal.
 II. Upper surface almost glabrous, shining; head and thorax very finely tuberculate or alutaceous A. CONCOLOR, Sharp.

A. coarctatum, Hal. Linear, elongate, rather convex, dull black, thickly dotted with long silvery hairs; head large, elongate, rounded in front, eyes small, prominent, antennæ rather long, clear yellow; thorax short, transverse, scarcely longer than head, with sides strongly rounded, marked with a large, transverse, reniform impression at base; head and thorax strongly foveolate-punctate; scutellum small; elytra very long, linear, finely but distinctly and closely tuberculate, sutural angles almost right angles; legs rather long and stout, clear yellow, tibiæ strongly dilated; under-side pitchy, with mouth and coxæ yellow. L. $\frac{1}{2}$ – $\frac{5}{8}$ mm.

Under sea-weed and shingle on the coast; also in hot-beds, &c., inland; first taken in Britain on the coast of Ireland by Haliday; Walton-on-Naze (Champion); Kingsgate, in profusion in a heap of decaying sea-weed in company with *Actinopteryx* (T. Wood); I have taken it sparingly in a hot-bed at Barnwood, near Gloucester, for two or three years in succession, in company with *Nephanes Titan* and *Ptilium foveolatum*; this capture is interesting, as confirming Haliday's record of having taken the species in a hot-bed, which was commonly supposed to have been made in error.

This species appears to be distributed throughout the whole of Europe, and the African shore of the Mediterranean Sea.

A. concolor, Sharp (*Ptilium concolor*, Sharp). Linear and elongate, somewhat convex, shining, deep black, clothed with very short silvery hairs, so that the surface appears almost glabrous, alutaceous and scarcely tuberculate; head large and broad, elongate, eyes rather small, not prominent, antennæ rather short and stout, pitchy-testaceous; thorax very short, with sides strongly rounded and margined, and very strongly contracted behind; scutellum small; elytra elongate, linear, not broader than, and almost twice as long as, head and thorax, with sides almost straight, sutural angles obtuse; legs long, pitchy-testaceous, posterior tibiæ strongly dilated, tarsi very short; under-side black, with mouth, coxæ, and apex of abdomen lighter. L. $\frac{5}{8}$ mm.

In damp sand and shingle on the banks of rivers and streams; very rare; first taken by Dr. Sharp and Mr. Crotch on the banks of the Bowmont, at Yetholm, Northumberland, and subsequently by Dr. Sharp in the Solway and Tweed districts of Scotland; it has also been taken by Mr. Waterhouse (to whom I am indebted for my specimen) near Ripon; it often occurs in company with *Thinobius longipennis*, to which it bears a considerable superficial resemblance.

EURYPTILIUM, Matthews.

This genus was formed by Mr. Matthews to include the species described by Gillmeister as *Trichopteryx saxonica*, and usually known as *Ptilium saxonicum*; it is very distinct from *Ptilium* by reason of its broader form, and by having the abdomen entirely covered by the elytra,

as well as by the thorax being broadest at base; the species is very rare on the Continent, as far as it is at present known, but has been taken by Dr. Sharp in some numbers in Scotland among bones and hides.

E. saxonicum, Gill. Oval, convex, fuscous, thickly clothed with pale pubescence; head broad, eyes large, not prominent, antennæ yellow, rather long and slender; thorax large, subquadrate, with sides gently rounded, widest at base, very closely covered with moderate-sized tubercles, posterior angles right angles; scutellum very small; elytra rather long, with sides slightly rounded, completely covering abdomen, deeply asperate, and appearing as if reticulate, apices very broad, sutural angles obtuse; legs yellow, tarsi rather short; under-side fuscous, with the mouth, coxæ, and apex of abdomen lighter. L. $\frac{5}{4}$ – $\frac{7}{8}$ mm.

Under bones and hides; taken in some numbers by Dr. Sharp in the Dee and Solway districts of Scotland.

NOSSIDIUM, Erichson.

This genus contains two European species and one or two from America; from *Euryptilium* it is distinguished by its larger size, and oval and more convex form, and by the structure of the skeleton of the under surface of the body; from all our other allied genera it may be known by having the thorax broadest at base; its oval-convex shape and strong pubescence give it an appearance different from the ordinary Trichopterygidæ, and at first sight it looks as if its affinities were rather towards certain members of the Corylophidæ.

N. pilosellum, Marsh. (*Ferrarii*, Redt.; *v. brunneum*, Marsh.; *v. nitidulum*, Marsh.). Broad and ovate, very strongly convex, castaneous, but variable in colour, the head and thorax being often darker than the elytra, thickly clothed with long yellow pubescence; head short, eyes somewhat prominent, antennæ clear yellow; thorax large, much longer and broader than head, dilated behind, widest at base, with sides slightly rounded, and rather plainly margined, posterior angles acute, not produced, remotely punctured; elytra broadest at shoulders, semi-ovate, deeply punctured, with the interstices rugose, narrowed at apex; legs rather long, clear yellow, anterior tibiæ dilated at apex. L. 1–1 $\frac{1}{4}$ mm.

On rotten stumps or in damp rotten wood; also in fungi, dead leaves, &c.; found rather rarely, but locally abundant; Birch Wood and Claygate (Champion); Darenth (Power); Littleington (Power); Hunstanton, Norfolk (Blatch); Needwood Forest near Burton-on-Trent (Gorham).

PTENIDIUM, Erichson.

This genus contains at present upwards of thirty species from Europe and the Atlantic Islands, and from North and Central America; they

are smooth and shining insects with a harder integument than is found in most of the Trichopterygidæ; the pygidium is always covered, and the sculpture is variolose; eleven species are found in Britain which may be distinguished as follows:—

- I. Head and thorax more or less deeply foveolate-punctate.
 - i. Sculpture of elytra deeper.
 - 1. Form narrower and more elongate; thorax broadest a little before middle; basal foveæ absent (habitat on the coast in seaweed or shingle) P. PUNCTATUM, *Gyll.*
 - 2. Form broader; thorax broadest about middle; basal foveæ well marked P. KRAATZI, *Matth.*
 - ii. Sculpture of elytra feeble; thorax broadest behind middle; basal foveæ absent or very indistinct P. FUSCICORNE, *Er.*
- II. Head and thorax almost smooth and impunctate.
 - i. Thorax with four large foveæ at base.
 - 1. Head without large punctures near eyes; elytra punctured in fine rows P. NITIDUM, *Heer.*
 - 2. Head with three large punctures near each eye; elytra almost impunctate; basal foveæ very large and deep P. LÆVIGATUM, *Gyll.*
 - ii. Thorax with four small foveæ at base, which are in some cases absent.
 - 1. Elytra reddish-castaneous.
 - A. Thorax strongly contracted just at base, forming an angle with the elytra.
 - a. Form very broad and turgid; thorax more narrowed in front; eyes more prominent; elytra rather deeply punctured P. TURGIDUM, *Thoms.*
 - b. Form narrower and less turgid; thorax less narrowed in front; elytra more shallowly punctured P. FORMICETORUM, *Kr.*
 - B. Thorax not contracted at base, forming a continuous outline with elytra, which are much dilated; basal foveæ absent P. GRESSNERI, *Er.*
 - 2. Elytra black.
 - A. Sides of thorax strongly rounded, broadest between middle and base, much more narrowed in front than behind; basal foveæ absent or very minute P. EVANESCENS, *Marsh.*
 - B. Sides of thorax moderately rounded, broadest about middle.
 - a. Form broader, elytra larger, with large and shallow confused punctures P. ATOMAROIDES, *Mots.*
 - b. Form narrower; elytra smaller, with rows of rather small and deep punctures P. WANKOWIEZII, *Matth.*

The species are variable as regards habitat; some are found in hot-beds, dead leaves, &c., or by sweeping; others appear to live solely in ants' nests, while one or two are only found on the seashore in seaweed or shingle, and a few occur under bark and in decaying wood.

P. punctatum, *Gyll.* (*littoralis*, *Mots.*, *alutacea*, *Gill.*). Elongate-oval, rather narrow, deep black, shining, rather sparingly clothed with

silvery hairs, entire upper surface impressed with large deep punctures, which are smaller and more remote on the head, and placed more closely together on the thorax than on the elytra, where they are distinctly arranged in longitudinal rows; head rather small, eyes prominent, antennæ long and slender, pitchy; thorax short, with sides rounded and strongly margined, broadest at middle; scutellum large, with a deep puncture on each side at base; elytra rather narrow, with sides moderately rounded, distinctly margined, apices very obtuse, lighter; legs long and slender, pitchy; under-side glabrous, pitchy, with the mouth, coxæ, and apex of abdomen, lighter. L. $\frac{7}{8}$ mm.

Under seaweed on the sea-coast; sometimes in profusion in warm days in spring, flying and settling on the low rocks and shingle; locally common; Whitstable; Bognor; Kingsgate; Shoreham; Littlehampton; Isle of Wight, Ventnor, in profusion in April; Chesil Beach; Falmouth; Fowey; Plymouth; Starcross; Liverpool district; Northumberland and Durham district; Scotland, Clyde district; Ireland, near Dublin.

P. fuscicorne, Er. (*picipes*, Matth.). Ovate, very convex and shining, black, sparingly clothed with silvery hairs; head large, impressed with two large punctures on each side, eyes large, prominent, antennæ rather long and slender, pitchy; thorax moderate, dilated behind, broadest behind middle, and contracted just before base, with large remote punctures irregularly scattered over disc; scutellum large and very broad, with a large puncture at base; elytra rather short, ovate, remotely and rather feebly punctured, apex lighter; legs long, pitchy, rarely yellow. L. $\frac{7}{8}$ mm.

Marshy places; in moss and at roots of grass; local but not uncommon where it occurs; Lee; Caterham; Eltham; Gumley, Leicestershire; Parkhurst Forest (Isle of Wight), in nests of *F. rufa* (J. J. Walker).

P. nitidum, Heer. (*pusillum*, Er.). The smallest of our species; ovate, strongly convex, deep black, very shining, very sparingly clothed with extremely short silvery hairs; head large, rather prominent, eyes large, prominent, antennæ yellow, with the two apical joints more or less fuscous; thorax moderate, with sides strongly dilated and rounded, broadest a little behind middle, impunctate, with four large foveæ at base, and two small foveæ near anterior margin; scutellum with large punctures; elytra ovate, broadest near shoulders and strongly narrowed to apex which is lighter, finely and remotely punctured in rows; legs long and slender, clear yellow; under-side shining black with coxæ yellow. L. vix $\frac{3}{4}$ mm.

In moss, vegetable refuse, dung-heaps, &c., also by sweeping; common and generally distributed.

The very small size of this species will at once distinguish it from our other commoner species.

P. lævigatum, Gyll. Closely allied to *P. nitidum*, but distinguished by its somewhat greater size, much larger head (which has three large

punctures on each side near eye, arranged triangularly), larger eyes, and less rounded sides of thorax, the basal foveæ of which are larger; the elytra also are more indistinctly punctured and are more narrowed towards apex. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

Very rare; Gumley, Leicestershire (in moss); recorded by Parfitt as very rare in the Exeter districts, and by Murray from Scotland, but these records are very probably erroneous; Ireland (Haliday).

P. evanescens, Marsh (*apicale*, Er.; *terminale*, Hal.). Ovate, rather broad, strongly convex, black, very shining, with the apex of elytra broadly rufo-testaceous, sparingly clothed with rather long silvery hairs; head moderate, eyes rather large, prominent, antennæ long, clear yellow, with the club more or less fuscous; thorax rather short, broadest behind middle, with four obsolete foveæ near base, sometimes scarcely visible, and two near anterior margin, and also a transverse impression near posterior angles, which are obtuse; disc remotely and obsoletely punctured; scutellum moderate, with three punctures at base; elytra ovate, very convex, broadest a little before middle, narrowed to apex, with rows of shallow and rather remote punctures; legs rather long, clear yellow, basal joints of all the tarsi slightly dilated; under-side black, shining, with the coxæ yellow, and the mouth, and sometimes abdomen, lighter. L. 1–1 $\frac{1}{8}$ mm.

In cut grass, vegetable and haystack refuse, hot-beds, &c.; common and generally distributed.

P. atomaroides, Mots. Oblong oval, very convex and shining, sparingly clothed with very short greyish hairs, deep black, with the extreme apex of elytra lighter; head rather small, with four rather large punctures near each eye, eyes moderate, not prominent, antennæ long and slender, clear yellow; thorax small, transverse, broadest near middle, sides slightly rounded, with four obsolete impressions at base, disc feebly punctured; scutellum moderate, with two impressions near middle; elytra large and ample, obtuse-oval, broadest at middle, with rather large, shallow, more or less irregular punctures; legs long and slender, clear yellow, tibiæ slightly dilated at apex. L. 1–1 $\frac{1}{8}$ mm.

In flood refuse, on the banks of rivers, &c.; local but not rare in the London district; Egham, Walton-on-Thames, and Weybridge, Surrey; Staines; Sunbury; Brandon, Suffolk.

This species is easily distinguished from *P. evanescens*, to which it is allied, by its smaller head and thorax, and much longer and broader elytra, as well as by its sculpture.

P. Wankowiezii, Matth. (*intermedium*, Wank.). This species is very closely allied to *P. evanescens*, and hardly requires a separate description; it may be distinguished from that species by its somewhat narrower form, more distinct sculpture, and rather smaller thorax, which has the sides less dilated, and the basal foveæ more distinctly

marked, and it is also less convex on the upper surface; the colour is sometimes lighter. L. $\frac{7}{8}$ –1 mm.

Rare; Gumley, in vegetable refuse; under birch bark, Scarborough (Wilkinson); Maberley, Cheshire (Chappell); Northumberland district (Bold); Scotland, Forth district (Sharp).

This species has been regarded as a variety of *P. evanescens*, but appears to be distinct.

P. Kraatzii, Matth. Ovate, pitchy-black, very shining, very sparingly clothed with extremely short yellow hairs; head moderate, with two or three large punctures near each eye, eyes large and prominent, antennæ long, clear yellow; thorax rather small, broadest at middle, sides evenly and not very strongly rounded, with four plain foveæ at base, the interior pair much smaller than the exterior; head and thorax shallowly punctured; scutellum large, with four impressed punctures at base; elytra dark rufo-piceous, often almost black, ovate, broadest before middle, distinctly punctured in rows, apex lighter; legs clear yellow; under-side rufo-piceous, mouth and coxæ yellow. L. $\frac{3}{4}$ mm.

In nests of *Formica fusca*; rare; first taken by Mr. Foxcroft in Scotland, probably near Rannoch, and subsequently found by myself in refuse taken from ants' nests in Buddon Wood, Leicestershire.

This species differs from *P. formicetorum* by its somewhat smaller size, narrower form, and more distinct sculpture, and also by the usually darker colour of its elytra.

P. formicetorum, Kr. Ovate, rather short, very convex, glabrous and shining, head and thorax black, elytra rufo-piceous, or rufo-castaneous, sparingly clothed with silvery hairs; head moderate, with two foveæ on vertex, eyes rather small, not prominent, antennæ rather short, clear yellow; thorax very smooth and shining, dilated behind, broadest behind middle, with four minute foveæ at base and two very small ones near anterior margin; scutellum moderate, with three small punctures at base; elytra ovate, rather short, very convex, broadest before middle, punctured in rows; legs clear yellow, tarsi slightly dilated; under-side rufo-piceous, with head, coxæ, and abdomen lighter. L. $\frac{3}{4}$ – $\frac{7}{8}$ mm.

In nests of *Formica rufa* and *F. fuliginosa*; local; Chatham, Tilgate, Esher; Guestling, Hastings; Edgbaston; Sutton and Knowle near Birmingham; Withington, Cheshire; Liverpool district; Northumberland district; a small, dark form occurs near Liverpool.

P. turgidum, Thoms. Very broad, turgid, and convex, dark pitchy-red, sparingly clothed with very short silvery hairs; head rather short and prominent, eyes large, strongly prominent, antennæ pale yellow, with the last two joints darker; thorax widened behind, broadest a little before base, with four small foveæ near base and two minute foveæ near anterior margin; scutellum short and broad; elytra rather short

and very broad, distinctly punctured in rows, wings black visible in some specimens beneath elytra; legs long, yellow, tibiæ slightly dilated; under-side rufo-piceous, mouth, coxæ and abdomen lighter. L. $1-1\frac{1}{4}$ mm.

In rotten wood, usually in company with ants; rare; Strood, Kent (Champion); near London, 1862 (Waterhouse); Cobham Park; New Forest (Sharp and Gorham); Scarborough (Wilkinson); Mr. Blatch has also taken it in the New Forest in fungi.

This species may easily be known by its obtuse and turgid shape and the shining pitchy-red colour of the whole body.

P. Gressneri, Er. Entirely oval in shape, with the thorax broadest at base and continuous in outline with the elytra, a point which separates it from our other species, which all have the thorax contracted at base; colour rufous or rufo-piceous; head rather large, eyes small, antennæ long, clear yellow; thorax short, glabrous, without basal foveæ; scutellum short and broad; elytra broad, ovate, broadest before middle, acuminate behind, scarcely punctured; wings black, usually visible underneath the transparent elytra; legs long, slender, clear yellow; under-side rufo-piceous, with head and thorax lighter, last segment of the abdomen, coxæ, and metasternum, yellow. L. $\frac{7}{8}$ -1 mm.

In rotten wood, chiefly in company with *F. fuliginosa*; rare; discovered by Mr. Blatch in June, 1883, in the New Forest in fungi; and subsequently found by Mr. Gorham and Dr. Sharp in the same locality; Mr. Blatch has since taken it in Sherwood Forest under bark.

CORYLOPHIDÆ.

The members of this family are very small, oval or rounded insects, which approach the Trichopterygidæ in having their wings fringed with long hairs; they differ, however, in having the maxillæ unilobed and the tarsi 4-jointed (the third joint being small, and concealed in an emargination of the second joint), and in the fact that the wings are much shorter; the maxillary palpi are also differently formed and are sometimes very curious; the genus *Aphanocephalus*, which appears to be widely distributed in the East of Asia is now rightly separated by Mr. Matthews, and regarded as a family distinct in itself, called Pseudocorylophidæ; the species of this genus have the maxillary palpi apparently 3-lobed, and the tarsi are truly 3-jointed; the wings, moreover, are very differently formed.

The Corylophidæ are universally distributed in the temperate and tropical regions of the world; at present seventeen genera and more than 150 species have been described; the Rev. A. Matthews is at present engaged on a monograph of the group, which, when completed, will be almost as valuable a contribution to our study of the minute Coleoptera as his well-known "*Trichopterygia Illustrata*;" we may, therefore, expect that the number of species will be largely increased.

In the Annals and Magazine of Natural History (February, 1887, p. 116), Mr. Matthews discusses the question of the position of the family; as it is one concerning which there has been, and still is, much doubt, it may be well to quote his words:—"In our present systematic arrangement the true Corylophidæ seem to occupy a very false position. From the peculiar formation of their antennæ, and from their large, elongate, and either free or prominent anterior coxæ, as well as from the general arrangement of the parts of the external skeleton of their underside, it is impossible to overlook their close affinity to the Silphidæ. It therefore appears to me that the most natural arrangement would be to place the Corylophidæ immediately before the Silphidæ. Many genera present an external appearance so like the Anisotomina that it is difficult at first to determine whether they do or do not belong to that tribe. In *Peltinus* and some others the prosternum is reduced to the smallest possible dimensions, as it is in *Agathidium*, and leaves the coxal cavities open on both sides. Thus by placing the Corylophidæ before the Silphidæ, in proximity to the Anisotomina, a much greater harmony of form and anatomy would be attained than by keeping them in their present position or by removing them elsewhere. In the foregoing remarks I refer only to the true Corylophidæ. Those species which I propose to call Pseudocorylophidæ I would retain in the position they now occupy near the Coccinellidæ." There are six European genera contained in the family, of which four are represented in Britain; *Arthrolips*, Woll., and *Moronillus*, Duv. (*Gleosoma*, Woll.) are of more southern distribution.

- | | |
|--|---------------------|
| I. Thorax emarginate at apex; head exposed; antennæ 9-jointed | ORTHOPERUS, Steph. |
| II. Thorax semicircular, with apex rounded; head concealed. | |
| i. Upper surface glabrous; posterior angles of thorax slightly prolonged; antennæ 10-jointed | CORYLOPHUS, Steph. |
| ii. Upper surface pubescent. | |
| 1. Posterior angles of thorax much prolonged; antennæ 10-jointed | SERICODERUS, Steph. |
| 2. Posterior angles of thorax right angles, not prolonged; antennæ 11-jointed | SACIUM, Le Conte. |

ORTHOPERUS, Stephens.

The genus *Orthoperus* is made up of very minute orbicular insects, which, in comparison with the other members of the family, are somewhat depressed; it is distinguished from the other Corylophidæ by its exserted head and emarginate apex of thorax, and also by the long incurved anterior tibiæ, and 9-jointed geniculate antennæ, of which the fifth joint is generally much larger than the sixth. In the last European catalogue nine species are enumerated, of which three only have until recently been supposed to be found in Britain. Mr. Matthews, however, in the Entomologist's Monthly Magazine for 1885, vol. xxii., p. 107,

published a monograph on the British species, in which he described two new species, and brought the number found in Britain up to eight.

The larva and pupa of *Orthoperus brunripes* (*piceus*) are figured by Perris Ann. Fr. 1852, pl. xiv.; the larva is $1\frac{1}{2}$ mm. in length, ovate, and rather broad, narrowed in front and behind; the head is small, of a dirty white colour; the prothorax is large, much narrowed in front, with a large dark divided spot; the rest of the segments are whitish, brownish at the sides; there are no distinct cerci; the whole body is covered with small papillæ and hairs; the pupa is white without any hairs or appendages, and is considerably narrowed in front, and almost parallel-sided behind.

I am indebted to the kindness of Mr. Matthews for the following table of the species:—

- I. Colour black.
 - i. Size large.
 - 1. Form attenuated posteriorly O. KLUKI, Wank.
 - 2. Form oval O. BRUNNIPES, Gyll.
 - ii. Size small; surface elegantly alutaceous* O. MUNDUS, Matth.
- II. Colour castaneous or testaceous.
 - i. Size larger.
 - 1. Surface impunctate, antennæ very long, bright yellow O. CORTICALIS, Redt.
 - 2. Surface of elytra distinctly and closely punctured, antennæ short, piceous O. PUNCTATULUS, Matth.
 - 3. Surface alutaceous, almost impunctate, antennæ long, bright yellow O. ATOMUS, Gyll.
 - ii. Size smaller.
 - 1. Surface alutaceous throughout O. CORIACEUS, Rey.
 - 2. Surface not alutaceous; elytra deeply punctured O. ATOMARIUS, Heer.

O. Kluki, Wank. (*brunnipes*, Brit. Cat.). Black or pitchy-black, short, subovate, with the elytra somewhat attenuate behind; antennæ rather long, with club pitchy; thorax transverse, narrowed in front, continuous in outline with elytra; elytra with apex often lighter, very finely and diffusely punctured; legs piceous. L. $\frac{7}{8}$ –1 mm.

In moss, vegetable refuse, &c.; local, but not uncommon in some places; Putney, Leith Hill, Cobham, Loughton, Sheerness; Burwell Fen; New Forest; Scotland, local, Forth and Dee districts.

O. brunripes, Gyll. (*nec* Brit. Cat.). The species that bears this name in the continental collections differs from *O. Kluki*, as remarked by Mr. Matthews *l. c.* p. 108, in its rather smaller size, perfectly oval form, which is not attenuate behind, paler legs and antennæ, and especially by a distinct row of punctures within the basal margin of the thorax. L. $\frac{7}{8}$ mm.

One British specimen is at present known, which is in Mr. Wilkinson's

* Immature specimens of this species are more or less castaneous.

collection, now in the possession of Mr. Mason, and was probably taken at Scarborough.

O. mundus, Matth. Broad, rounded, slightly depressed, deep black, alutaceous, not shining; head large, eyes very prominent, antennæ rather long, yellow, with the club pitchy-black and the fifth joint longer but not broader than the sixth. Thorax broad, widest at the base, minutely alutaceous, with three faint impressions near the base, margins pale, posterior angles nearly right angles. Elytra widest near middle, rather deeply alutaceous, marked with small equi-distant punctures arranged in striæ, margins pale; apex much rounded and pale; legs short, very slender, anterior tibiæ much incurved; under-side pitchy. L. $\frac{3}{4}$ mm.

This species was found rather commonly by the Rev. A. Matthews and his brothers in a small spot at Weston-on-the-Green, Oxfordshire, but has never been met with in any other locality.

O. corticalis, Redt. This is the largest of the pale castaneous species; it may be known by its broadly oval form, pale castaneous colour, and bright yellow legs and antennæ, of which the fifth joint is scarcely longer than the sixth; the anterior tibiæ are unusually long and much incurved. L. 1 mm.

Two specimens have been taken by the Rev. A. Matthews in Sherwood Forest; it has also occurred at Leith Hill, Surrey.

O. punctatulus, Matth. Oval, moderately convex, shining, castaneous, alutaceous throughout, with the elytra rather closely punctured; head moderate, eyes not prominent, antennæ rather short, ferruginous, with the club black, sixth joint not smaller than the fifth; thorax small, indistinctly punctured, with margins yellow; elytra long, widest near the middle, with apex obtuse; legs rather large, ferruginous. L. $\frac{3}{4}$ mm.

One specimen taken by Mr. Matthews near Gumley, Leicestershire, is the only example known.

O. atomus, Gyll. This species may be distinguished by its short oval and rather convex form, remote and almost invisible punctuation, and large yellow antennæ, of which the fifth joint is much larger than the sixth; legs yellow. L. $\frac{2}{3}$ mm.

In vegetable and haystack refuse, &c., Leith Hill, Surrey, Sheerness, The Holt, Farnham, Weston-super-Mare; Robin's Wood, Repton; Ireland, near Waterford. Mr. Matthews says that it is the most abundant of the British species; it is probably widely distributed, but often overlooked, owing to its minute size; this also is most likely the case with several of the other species.

O. coriaceus, Rey. This species may be known by its small size, oval and rather narrow shape, somewhat bright, though dark, castaneous colour, small head and thorax, large shallow punctures on elytra, robust yellow antennæ, and long slender legs. L. $\frac{5}{8}$ mm.

Found in the London district, but I do not know the locality.

O. atomarius, Heer. The smallest species of the genus; ovate, rather convex, of a pale castaneous or testaceous colour, with the sides and apex of elytra sometimes rather darker; sculpture distinct, although delicate; the colour and minute size will at once distinguish it from all the other species. L. $\frac{1}{2}$ mm.

Found abundantly by Mr. Crotch at Devizes, and in small numbers by Professor Allen Harker at Gloucester; it occurs in cellars, and feeds on the fungus *Zasmidium cellare*. Professor Harker tells me that he once dissected out the œsophagus of one of these insects, and that he found it full of chopped mycelium; it is found in company with *Atomaria nigripennis* and certain species of *Cryptophagus*.

CORYLOPHUS, Stephens.

Only two European species are contained in this genus, both of which are found in Britain; the species are distinguished from *Orthoperus* by having the head concealed, and the thorax semicircular with apex rounded, and from *Sericoderus* and *Sacium* by having the upper surface glabrous; authors differ with regard to the number of joints of the antennæ; some mention them as 10-jointed, others as 9-jointed; as a matter of fact, they appear to be really, if not apparently, 10-jointed.

I. Colour darker; punctuation of elytra distinct . . . C. CASSIDIODES, Marsh.
 II. Colour lighter; punctuation of elytra scarcely visible . C. SUBLÆVIPENNIS, Duv.

C. cassidioides, Marsh. Short oval, moderately convex, more or less narrowed to apex, pitchy-black, with the margins of thorax and more or less of the apical half of the elytra reddish-testaceous; the colour is variable, the thorax being sometimes entirely reddish-testaceous except for a dark spot on disc; head fuscous, plainly visible beneath the transparent anterior margin of thorax, antennæ testaceous; thorax semicircular, with posterior angles acute and somewhat prominent, very finely and diffusely punctured and distinctly alutaceous; elytra very plainly punctured towards base, almost impunctate at apex, distinctly alutaceous; abdomen black, very finely pubescent; legs entirely testaceous. L. $\frac{2}{3}$ mm.

In vegetable refuse, decaying seaweed, at roots of plants, &c.; not uncommon in many localities in the London district and the South of England. Darenth Wood, Reigate, Putney, Gravesend, Sheerness; Birchington; Brighton; Glanvilles Wootton; Isle of Wight; Weymouth; Devon; Swansea; Wicken and Quy Fens, Cambridge; Salford Priors, Evesham; Ireland, Malahide, near Dublin; it has not apparently been found in the North of England or in Scotland.

C. sublævipennis, Duv. Very like the preceding, but easily distinguished by its lighter colour (the thorax being, as a rule, entirely testaceous), shorter form, and less close punctuation, which is more diffuse and much finer on the elytra; the elytra are also less contracted behind. L. $\frac{2}{3}$ mm.

In vegetable refuse, flood refuse, &c.; rare; first described as taken in Britain at Weymouth in the autumn of 1863 by Mr. Crotch and Dr. Sharp; Mr. Matthews,

however, has specimens in his possession taken long before this date. Reigate; Southsea; Gravesend; Herne Bay; Weymouth; Selsea Bill, under stones near shore. I believe that it has been taken in Ireland by Haliday.

SERICODERUS, Stephens.

Two European species are contained in this genus; it may easily be known from *Corylophus* by its pubescent upper surface, and also by its broad, subparallel elytra, which are subtruncate, although rounded, at apex; from *Sacium* it differs in having the posterior angles of the thorax acute and strongly produced.

S. lateralis, Gyll. Rather short, broad, subovate, with the elytra subparallel, very gradually narrowed to apex which is broad and subtruncate; colour testaceous or reddish-testaceous, with the head blackish, very distinctly apparent beneath the transparent anterior margin of thorax; upper surface clothed with long pale pubescence; antennæ 10-jointed; thorax subtransverse, semicircular, with the posterior angles acute and produced, scarcely punctured; elytra considerably convex towards base and gradually depressed towards apex, very finely punctured, broader at base than thorax; legs testaceous. L. $\frac{2}{3}$ mm.

In haystack and vegetable refuse; local; London district, generally distributed and common; Folkestone; Glanvilles Wootton; Cheddar; Repton; Lincoln; Ireland, near Waterford.

SACIUM, Le Conte (*Clypeaster*, Latr.).

This genus is very widely spread over the surface of the globe, and will probably prove to be a very numerous one. Several very interesting species have lately been discovered by Mr. Champion in Central America, and have been described by Mr. Matthews; it is distinguished by its 11-jointed antennæ from all our other Corylophidæ, and may be separated from *Sericoderus*, to which it is most closely allied, by having the posterior angles of the thorax right angles and not produced; eight European species are known, of which one only is found in Britain; only two specimens, however, have hitherto been taken in this country.

S. pusillum, Gyll. Oblong-oval, not strongly convex, rather shining, clothed with thick pale pubescence; colour black with the thorax testaceous with fuscous disc; the colour of the thorax is, however, variable and sometimes is pitchy-black with two spots at apex, and the margins, yellowish-brown; upper surface very finely punctured; thorax not transverse, with the posterior angles right angles, not produced, base slightly produced before scutellum; legs reddish-brown or fuscous. L. $1\frac{1}{2}$ –2 mm.

Under bark; very rare; one specimen was taken many years ago by Mr. Wollaston, but was, I believe, accidentally destroyed, and a second has been recently found on an orange in Birmingham by Mr. W. G. Blatch.

SPHÆRIIDÆ.

This family contains one genus, *Sphærius*, which is closely allied to the Trichopterygidæ on the one hand and the Corylophidæ on the other; the form is very small, round, convex, and glabrous; the maxillæ have only one lobe; the antennæ are 11-jointed with a loose 3-jointed club; the intermediate and posterior coxæ are distant, the tarsi are 3-jointed, and the abdomen is composed of three segments; the wings are fringed with long hairs.

SPHÆRIUS, Waltl. (*Microsporus*, Kol.).

Two species are contained in this genus, *S. acaroides* from Europe, and *S. politus* from California; it will, however, probably prove to be more extensive.*

S. acaroides, Waltl. (*obsidianus*, Kol.). A very minute, round, convex species; black, glabrous, very shining; thorax transverse, much broader at base than apex, with sides very little rounded; elytra broadest in middle; antennæ yellowish in middle; legs pitchy-brown. L. $\frac{2}{5}$ mm.

In marshy places, on mud, or under stones near water; first taken by Rev. A. Matthews at Weston-on-the-Green, Oxfordshire, in 1845, secondly by Rev. H. Matthews at Gumley, Leicestershire in 1855, and subsequently in plenty in Wicken Fen, Cambridgeshire by Mr. Crotch.

PHALACRIDÆ.

This family consists of some five or six genera of ovate or sub-hemispherical convex insects, which are found in flowers or under bark; the species are very shining and scarcely, if at all, pubescent; the head is inserted, with the eyes half hidden; the antennæ are 11-jointed with club 3-jointed; the thorax is truncate at base, margined at sides; the mesosternum, which is very short, is emarginate and receives the prolonged prosternum; the anterior coxal cavities are open behind; † the tarsi are 5-jointed.

- | | |
|--|------------------|
| I. All the tarsi of equal length; tibiæ without distinct apical spurs; last joint of maxillary palpi slender | PHALACRUS, Payk. |
| II. Posterior tarsi longer than the anterior and intermediate pairs; tibiæ with distinct apical spurs; last joint of maxillary palpi oval. | |
| i. Metasternum prolonged beyond intermediate coxæ; elytra with two deeper striæ near suture | OLIBRUS, Er. |
| ii. Metasternum not prolonged beyond intermediate coxæ; elytra with one deeper stria near suture | STILBUS, Seidl. |

* Since I wrote the above Mr. Matthews has informed me that he has eight or ten undescribed species.

† Thomson in error says that they are closed (Skand. Col. i. 65).

PHALACRUS, Paykull.

This genus contains about thirty or forty species which are widely distributed, representatives occurring in North America, Cuba, South America, India, Ceylon, New Caledonia, &c. ; it will probably be found to comprise a much larger number of species than are at present known ; there are about a dozen members of the genus found in Europe, of which five occur in Britain ; these are all shining black insects, bearing a close resemblance to one another, and are mostly taken by sweeping herbage. The species may be divided as follows, but the differences, as will be seen, are mainly comparative, although obvious when the insects are viewed side by side.

I. Form ovate, more or less convex.

i. Size larger ; elytra with scarcely visible traces of punctured striæ ; interstices very finely and closely punctured **P. CORRUSCUS**, *Payk.*

ii. Size smaller ; elytra with moderately distinct although finely punctured striæ ; interstices much less closely punctured.

1. Form rather depressed, not acuminate behind ; punctures of striæ of elytra closer and less distinct.

A. Shorter oval ; punctures of striæ more delicate and of interstices almost obsolete **P. BRISOUTI**, *Rye.*

B. Longer oval ; punctures of striæ and interstices more distinct **P. BRUNNIPES**, *Bris.*

2. Form very convex, subglobose, acuminate behind ; punctures of striæ of elytra less close and more distinct **P. SUBSTRIATUS**, *Gyll.*

II. Form elliptical, upper surface rather depressed ; sculpture of elytra rather distinct **P. CABICIS**, *Sturm.*

P. corruscus, Payk. Oval, broad, convex, shining-black ; head very finely punctured, anterior margin sinuate in male, truncate in female ; antennæ black, long and slender, with a slender but well-marked club ; mandibles often projecting, terminating in a trifid point ; thorax very finely punctured, slightly sinuate on each side near scutellum ; elytra with a distinct sutural stria which is abbreviated in front, and with very fine traces of other striæ, interstices extremely closely and finely punctured ; under-side black, clothed with short greyish hairs ; legs black with the claws reddish-brown, sometimes entirely brownish, intermediate femora terminating in an obtuse tooth at apex, posterior femora rounded at apex ; size variable. L. $1\frac{1}{2}$ –3 mm.

In flowers, by sweeping, &c. ; common and generally distributed throughout the London and southern districts, and rather common in the Midlands ; rarer further north ; Durham district, South Shields ; Scotland, local, Tweed and Solway districts.

V. Humberti, Tourn. This variety differs from the type in the somewhat stronger punctuation of the elytra and in the shape of the

club of the antennæ; it is a small form, being about $1\frac{1}{3}$ – $2\frac{1}{4}$ mm. in length; it was introduced as a new species in Ent. Monthly Mag. ix. 37, but was afterwards abandoned as only a form of *P. corruscus* in Ent. Monthly Mag. xii. 177; it occurs not uncommonly in the London district, Sheerness, Chatham, Caterham, Darenth Wood, Whitstable, &c.

P. Brisouti, Rye. Closely allied to *P. corruscus*, from which it differs in its average smaller size, its rather lighter-coloured fore-legs, tarsi, and antennæ, the club of which is rather broader and not so long, and in its elytra being more obtusely rounded behind, and furnished with more evident, although very fine, punctured striæ, the punctures of the interstices being much less close; the apical joint of the antennæ is conspicuously broader and shorter, and not so acuminate, but slightly flexuous on the inner-side towards the apex. L. $1\frac{1}{2}$ –2 mm.

By sweeping in damp places; rare; Rainham; Lewisham; Gravesend; Sheppy; Deal.

P. brunnipes, Bris. This species appears to be very closely allied to *P. Brisouti* from which it differs in its somewhat longer ovate form, and in the rather more distinct punctured striæ of elytra; it is also more convex; the interstices of the elytra which are confusedly and almost obsoletely punctured in *P. Brisouti* are furnished with an irregular row of punctures which are more feeble than those of the striæ; the species is also allied to *P. substriatus*, but differs in its lighter-coloured antennæ and legs, its more elongate form, the more elongate club of its antennæ, and the more obsolete and more finely punctured striæ of its elytra. L. $1\frac{1}{2}$ –2 mm.

By sweeping on the banks of rivers and on the coast; rare; Lee pit (Rye); Lynton (Sharp); Chatham and Sheerness (Champion and J. J. Walker).

P. substriatus, Gyll. This species is very distinct by reason of its short oval, very convex subglobose form, and plainly punctured striæ of elytra; the elytra are somewhat acuminate behind, and the punctures of the striæ are larger and set rather further apart than in the allied species, and the interstices are extremely finely punctured; the antennæ are blackish, with the club rather distinct and broad, the apical joint being blunt; the under surface is clothed with fine greyish hairs, and the last segment of the abdomen is furnished with blackish setæ; the legs are blackish, rarely brownish, with the claws lighter. L. 2 mm.

By sweeping, &c.; rare; Isle of Wight; New Forest; Hunstanton; Scarborough; Scotland, rare, Lowlands, Tweed and Solway districts.

P. caricis, Sturm. Elliptical, only slightly convex, deep black; antennæ blackish, with the club moderately long but rather stout and distinct, last joint obtuse; thorax short, strongly rounded at sides, base sinuate on each side near scutellum, very finely and obsoletely punctured

towards sides; elytra finely striate, with a rather close and regular row of very fine punctures near each stria, and each interstice furnished with a longitudinal row of punctures which are somewhat obsolete, although hardly smaller than those near striæ; the sutural stria is rather deep behind; under-side with short and thin greyish pubescence; legs dark pitchy-brown; the shape and sculpture will distinguish this from the allied species. Size variable. L. $1\frac{1}{2}$ – $2\frac{1}{4}$ mm.

By sweeping in marshy places, on *Carex*. &c.; local; Norwood; Cowley; Shipley, near Horsham; Brandon, Suffolk; Norwich; Glanvilles Wootton; Devon; Swansea; Horning, Wicken and Burwell Fens; Coleshill and Knowle, near Birmingham; not recorded from further north.

OLIBRUS, Erichson.

This genus, taken in its widest sense, as including *Stilbus*, comprises about fifty species, which are very widely distributed, representatives being found in North and South America, South Africa, Ceylon, &c.; they are usually taken in flowers or at the roots of plants; thirteen species of the genus *Olibrus* proper occur in Europe, of which seven are found in Britain; the genus is distinguished from *Stilbus* by having the metasternum prolonged between the intermediate coxæ, and the posterior femora emarginate and not widened on their inferior margin.

- I. Head and thorax brown; elytra reddish or brownish-yellow, with the suture and outer margin brown . . . O. CORTICALIS, Panz.
- II. Upper surface black or brownish with or without a more or less distinct metallic reflection.
- i. Length 2 – $2\frac{1}{2}$ mm.
1. Antennæ black with basal joints reddish; upper surface black with a metallic green tinge . . . O. ÆNEUS, F.
2. Antennæ yellow or yellowish-red
- A. Colour brownish, gradually lighter towards apex; posterior angles of thorax obtuse . . . O. LIQUIDUS, Er.
- B. Colour deep bronze black; posterior angles of thorax sharp right angles, slightly produced.
- a. Form longer and narrower . . . O. PARTICEPS, Muls.
- b. Form shorter and broader . . . O. HELVETICUS, Tourn.
- ii. Length less than 2 mm.
1. Form broader and more convex; upper surface not lighter towards apex; posterior angles of thorax right angles . . . O. MILLEFOLII, Payk.
2. Form narrower and less convex; upper surface lighter towards apex; posterior angles of thorax obtuse . . . O. PYGMÆUS, Sturm.

O. corticalis, Panz. Oval, convex, shining; elytra testaceous with the suture and margins brown, head and thorax brownish; head very finely and obsoletely punctured; antennæ reddish-yellow; thorax impunctate, rather lighter at sides, posterior margin sinuate near scutellum; elytra with two distinct striæ near suture, and with very feeble traces of other striæ, interstices irregularly and very finely and delicately punc-

tured; legs and under-side reddish-yellow; male with the second joint of the anterior tarsi slightly dilated. L. $2\frac{2}{3}$ –3 mm.

By sweeping, and sometimes by beating; local, but rather common in some places; London district, generally distributed and not uncommon; Hastings; Eastbourne; Isle of Wight; Bournemouth; Glanvilles Wootton; Exeter; Swansea; Huntingdonshire; Sandringham, Norfolk; Northumberland district, rare, Hetton Hall, near Belford; Scotland, very rare, Forth district; Ireland, near Dublin; the species appears to be very rare in the Midland counties, if it occurs at all: I have never met with it, and Mr. Blatch does not mention it in his list.

O. æneus, F. (*multistriatus*, Zett.). Rather long-oval, convex, narrowed behind, black with a greenish-metallic reflection, very shining; head exceedingly finely punctured; antennæ black with the basal joints reddish (a character that will distinguish it from all the other species except *O. millefolii*, which sometimes has the club dark, but is a very much smaller and quite black insect); thorax sparingly and very finely, almost invisibly, punctured, posterior margin sinuate on each side near scutellum; elytra with two distinct striæ near suture, and with the other striæ very fine but moderately distinct for a member of the genus, interstices very finely punctured; under-side pitchy-brown with thin and fine greyish pubescence; legs variable in colour, as a rule pitchy, but occasionally pitchy-reddish or even yellowish; the apex of the elytra is sometimes obscurely pitchy. L. $2-2\frac{1}{4}$ mm.

By sweeping, in flowers, &c.; common and generally distributed in the London district and the south, and not uncommon, although somewhat local, in the Midlands; rarer further north; Northumberland district, local and rare; Scotland, Tweed district. Murray records the species as generally distributed, but Dr. Sharp has only met with it in the Cheviot district, so that Murray is probably in error, especially if we consider the distribution of the insect in England. Ireland, near Dublin and Waterford. It appears to be attached to *Matricaria chamomilla*.

O. liquidus, Er. Oblong-ovate, pitchy-black or browish, more or less gradually lighter towards apex of elytra; head very finely punctured, antennæ and palpi yellow or reddish-yellow; thorax slightly rounded at sides, upper surface very finely punctured, posterior angles obtuse; elytra with the two striæ near suture distinct, and with the other striæ moderately distinct but very fine; interstices finely punctured; legs and under-side reddish-yellow; male with the second joint of the anterior tarsi very slightly enlarged. L. $2-2\frac{1}{2}$ mm.

By sweeping, in flowers, &c.; local; London district, common and generally distributed; Harwich; Dover; New Forest; Bournemouth; Weymouth; Weston-super-Mare; Tenby (common in flowers of *Hieracium* on the cliffs towards Lydstep); Barmouth; not recorded from the Midland districts, the north of England or Scotland.

O. bicolor has until recently been included in the British list, but has been dropped on the ground that the examples so named are merely large specimens of *O. liquidus*; I have, however, a specimen from Dr. Power's collection which in some points agrees very well with the

descriptions of *O. bicolor*; the latter is apparently a larger and more ovate insect and more brightly coloured towards apex of elytra; it is also less convex and less narrowed behind, and has the two sutural striæ deeper than in *O. liquidus*, but the rest of the striæ rather more distinct; in all the other characters except the striation the specimen given me by Dr. Power agrees with this description, in the latter character, however, it agrees with *O. liquidus*; the occurrence of transitional forms makes it probable that the two species are not really distinct. Dr. Power's specimens appear to represent *O. bicolor*, var. *flavicornis* of Waterhouse's catalogue.

O. particeps, Muls. (*affinis*, Brit. Cat., nec Sturm.). Oval, convex, glabrous, upper-side black or pitchy-black, very shining, under-side reddish-testaceous; head short, eyes prominent, mouth parts yellow; antennæ moderately long, testaceous yellow, with the last joint rather long; thorax transverse, narrowed in front, broadly emarginate at apex, subtruncate at base, with the posterior angles sharp right angles, somewhat produced, almost impunctate; elytra oval, slightly rounded at sides, a little narrowed towards apex, very convex, with two striæ near suture well marked, and the other striæ very fine, almost obsolete on disc, interstices obsoletely punctured; legs rather short, yellowish. L. 2-2½ mm.

By sweeping, &c.; rare; Boundstone; Weybridge; Folkestone; Glanvilles Wootton.

This species has always been regarded as *O. affinis* until comparatively recently; that species, however, appears to differ from it slightly in being longer and less metallic; it is, however, very closely related to it; the alteration of name was made by Mr. Rye (Ent. Monthly Mag. ix. 38).

O. helveticus, Tourn. Of this species I know nothing beyond the notice given of it by Mr. Rye (Ent. Monthly Mag. xii. 177); he says that a single example, taken by Mr. Champion at Caterham, in July, 1872, had been returned to him by M. Tourniér with this name, and that its shining black colour and rather evident elytral punctuation distinguish it from all known British species except *O. particeps*, from which its broader and shorter form will suffice to separate it. As the name is given as *O. helveticus*, Tourniér MS., it seems that M. Tourniér described the species on this example, and as the allied species are so closely connected it seems to require further confirmation. In the British catalogue published by Mr. Matthews and myself we omitted the species, but as it is included by Dr. Sharp in his last catalogue, and also in the European catalogue of Heyden, Reitter and Weise, it appears to be best to insert it provisionally, although it may turn out to be only a variety of one of the closely allied species.

O. millefolii, Payk. A small species, oval, very short and strongly convex, subglobose, deep black, very shining; head very finely punctured, antennæ sometimes yellow, sometimes dusky yellowish, with the club and sometimes the first joint brownish, palpi black; thorax impunctate, with the base slightly sinuate on each side near scutellum, posterior angles right angles; elytra with the two striæ near suture well marked, the other striæ very fine and very finely punctured, interstices extremely finely punctured; under-side clothed with thin greyish pubescence; legs sometimes black, but often lighter, and sometimes even yellowish, second joint of anterior tarsi considerably dilated in male. L. $1\frac{1}{3}$ – $1\frac{2}{5}$ mm.

By sweeping; on flowers of *Achillea millefolium*; Claygate, Caterham, Lee, Horsell, Southend; Brandon, Suffolk; Horning Fen; Kingsgate; Devon, Exmouth.

Examples of this species with dark antennæ are very like small specimens of *O. æneus*, but may be distinguished by having no greenish metallic tinge on the elytra, and by the more convex and shorter oval form which is less narrowed behind.

O. pygmæus, Sturm. Elongate-oval, strongly convex, black, shining, usually pitchy towards apex; antennæ yellow or brownish-yellow; palpi brownish-red; thorax as in the preceding species, but with the posterior angles obtuse; elytra with the two striæ near suture distinct, and with traces of other striæ, interstices extremely finely punctured; under-side pitchy-brown, legs reddish-brown; very closely allied to *O. millefolii*, but distinctly more elongate and narrower, with the posterior angles of thorax not right angles, and the elytra pitchy towards apex. L. 1 – $1\frac{1}{3}$ mm.

By sweeping; not common; Darenth Wood, Shirley, Caterham, Ashtead, Woking, Cobham; Weybridge; Ashwicken; Horning Fen; Wickham and Burwell Fens; Cromer; Ipswich.

In L'Abeille, 1885, Clavicornes, p. 13, the localities for *O. ulicis*, Gyll., are given as "Suède, Angleterre;" the species, however, has not been recognized as from England by British Entomologists; it appears to be closely allied to *O. æneus*, but nearly as small as *O. pygmæus*, from which it differs in its less ovate and elongate form, and the more distinct metallic reflection of its elytra; it is smaller, shorter, more convex and less metallic than *O. æneus*.

STILBUS, Seidlitz.

This genus has usually been included under *Olibrus*, but is distinguished by not having the metasternum prolonged beyond the intermediate coxæ, and by the fact that the femora are widened and rounded on their inferior border; there are five European species of which three are found in Britain.

- I. Size larger, less elongate, and more convex; posterior angles of thorax right angles.
- i. Upper surface lighter or darker brown; becoming plainly lighter towards apex; elytra more narrowed towards apex *S. TESTACEUS*, *Panz.*
(*geminus*, Ill.).
- ii. Upper surface brownish-black, obscurely lighter towards apex; elytra scarcely narrowed to apex *S. ATOMARIUS*, *L.*
(*piceus*, Steph.).
- II. Size smaller, more elongate, and less convex; posterior angles of thorax somewhat obtuse; upper surface nearly black; elytra either gradually or suddenly lighter before apex. *S. OBLONGUS*, *Er.*

S. testaceus, *Panz.* (*geminus*, Ill. ; *consimilis*, Marsh). Short oval, convex, darker or lighter brown passing into testaceous towards apex of elytra; head and thorax impunctate, antennæ and mouth parts reddish-yellow; thorax with the basal margin scarcely sinuate near scutellum, posterior angles sharp right angles; elytra with one stria near suture plainly marked, and with very slight traces of other striæ, interstices smooth and shining; under-side reddish-brown, prosternum behind set with long hairs; legs yellowish, tarsi paler, male with the second joint of the anterior tarsi rather distinctly widened. L. 2–2½ mm.

By sweeping, occasionally in haystack refuse, moss, &c.; abundant and generally distributed in the London district and the South, and not uncommon in the Midlands; I do not, however, know of any record further north than Cleethorpes, Lincolnshire; it is not recorded from the Northumberland district or from Scotland.

S. atomarius, *L.* (*piceus*, Steph.). Allied to the preceding but smaller, less convex, and more strongly rounded in front and behind, so that it appears more elongate and parallel-sided; the colour also is different, being blackish-brown, or pitchy-black, gradually passing into pitchy-reddish-brown or obscure pitchy-brown at apex; the elytra are considerably less narrowed behind; the under-side is blackish-brown, with the last segment of abdomen and the legs reddish-brown; the prosternum behind is set with a distinct circle of longer hairs; the elytra have one stria near suture plain and very faint traces of other striæ, the interstices being impunctate; occasionally examples occur with the striæ a little more distinct. L. 1½–2 mm.

By sweeping; rare; Bungay and Ditchingam, Suffolk; West Ditton; Wicken Fen.

S. oblongus, *Er.* Rather smaller than the preceding, less convex and more elongate, and more narrowed in front and behind; colour variable, often very dark pitchy-brown almost black, obscurely lighter towards apex, sometimes suddenly and distinctly testaceous before apex, and occasionally entirely reddish-yellow (these specimens, however, are probably more or less immature); the head is very finely punctured, and the thorax very finely and obsolete punctured, with the hind

margin not visibly sinuate near scutellum, and the posterior angles a little obtuse, and not sharp right angles as in the two preceding species; elytra with one stria near suture well marked, and with other very fine longitudinal striæ, the interstices being each furnished with a regular row of fine punctures, which are scarcely visible except under a high magnifying power; under-side brownish, last segment of abdomen and legs reddish, or reddish-yellow; prosternum without a circle of hairs behind. L. $1\frac{1}{2}$ – $1\frac{3}{4}$ mm.

Marshy places; in the stems of *Typha latifolia*; local but sometimes common where it occurs; Snodland (Kent), Chatham, Gravesend, Sheppy, Dagenham; formerly found at Notting Hill; Birchington and Pegwell Bay; Hastings; Horning Fen.

It is worthy of notice that only four species of Phalacridæ are recorded from Scotland, and these are all local or rare in that country.

COCCINELLIDÆ.

Of all the families of the Coleoptera there is hardly any which is at present in a more unsatisfactory state as regards classification than the Coccinellidæ; many of the recognized genera rest on what appear to be purely specific differences, and these not always very strong ones; a great deal of labour has been spent upon the family by Crotch, Mulsant, and others, and lately Herr Weise in the "Bestimmungs-Tabellen der Europäischen Coleoptera" has given us a most useful monograph of the European species; a complete and thorough revision, however, of all the exotic genera is needed before we can at all attain to a correct idea of the group. Mr. Gorham is at present studying the family and collecting materials, but the genera and species are so numerous that we can hardly expect such a work from one who is so much occupied with other groups. According to the Munich catalogue the family contains 1450 species belonging to 104 genera; since the publication of the catalogue the increase may be roughly estimated at about ten per cent.; of these only about fifty species belonging to fifteen or sixteen genera occur in Britain. With regard to the general distribution of the Coccinellidæ Mr. Gorham writes to me as follows:—"The distribution is very remarkable and different to either of the two groups just mentioned (Endomychidæ and Erotylidæ), being, if I may call it so, more universal, every known part of the globe which supports any insect life having, as far as I can speak, an average number; the genera are *very* badly defined; hence my ideas of geographical genera seem quite upset; *Halyzia*, for instance, has representatives in Europe, North and South America, China, Japan, India, Africa, Australia, and the Pacific Islands; or if again we take the large genus *Epilachna* (containing 223 species), although it has an Eastern and a New World type very different in appearance, yet these cannot be separated generically without the process (which must at last take place) of subdivision into many genera, as there are contingents from

every part of the world, and these not very much differentiated. I think that a careful analysis of the Coccinellidæ would show that they are a northern temperate zone family, the tropical species having rather the appearance of being derived, than of being autochthonous."

The family may be known by the following characters : form convex, semi-globose or more rarely oblong-oval; head usually sunk in thorax which is emarginate in front; species usually glabrous, but in some groups pubescent; on this latter character Mulsant divides the family into two large series, the *Gymnosomides* and the *Trichosomides*; the maxillæ are bilobed, and the maxillary palpi are 4-jointed, with the last joint large and almost always securiform; the antennæ are moderate, short, or very short, inserted at the inner front margin of the eyes, with the base exposed or covered by a lobe of the clypeus; thorax transverse; mesosternum short, metasternum rather large; abdomen usually with five free ventral segments, but occasionally with six or seven; the first segment is the longest, and is usually furnished with more or less distinct curved coxal lines, which are often made use of as generic characters; legs short, more or less retractile, tarsi apparently three-jointed, but in reality four-jointed, the third joint being very minute and concealed in the lobes of the second joint; as a rule, however, they are now considered and spoken of as three-jointed, as is the case with other families which were formerly reckoned under the old group Pseudotrimeræ.

The family may be divided into two series as follows :—

Mandibles with more than two teeth at apex	COCCINELLIDÆ PHYTOPHAGÆ.
Mandibles simple or bifid at apex	COCCINELLIDÆ APHIDIPHAGÆ.

COCCINELLIDÆ PHYTOPHAGÆ.

Of this series, which contains the large genus *Epilachna* and a few other small genera, only one genus and one species are found in Britain; the members of the series are, during all periods of their growth, plant-feeders, and not carnivorous.

SUBCOCCINELLA, Huber (*Lasia*, Mulsant).

This genus contains one species which has been described under various names from different parts of Europe and the Caucasus, and from Algeria; it is very variable as regards colour, no fewer than twenty-three forms being mentioned by Mulsant (*Securipalpes*, pp. 198–205).

S. vigintiquatuorpunctata, L. (*Lasia globosa*, Schneid.). Very convex, almost hemispherical, not very shining, clothed with thick and very distinct greyish pubescence of a reddish or ferruginous colour, with black spots and patches on thorax and elytra, which are very variable, and are sometimes but rarely absent; the upper surface is thickly but distinctly punctured; antennæ reddish-testaceous, moderately long with

somewhat elongate club; thorax short, broadest behind; elytra somewhat raised a little before middle; legs reddish-testaceous. L. $2\frac{1}{2}$ –3 mm.

Sixth ventral segment subtruncate in male, somewhat rounded in female.

By sweeping herbage in woods, lanes, &c.; often found in moss in winter; locally common; Shirley, Mickleham, Chatham, Whitstable, Southend, &c.; Hastings; Glanvilles Wootton; Devon; Swansea; Barmouth; Huntingdonshire; apparently very rare in the Midland counties, and not recorded from the Northumberland and Durham districts; Filey, Yorkshire; Lancaster, on *Arundo phragmites*; Scotland, rare, Solway and Tweed districts.

This insect is found, according to Mulsant, on *Saponaria officinalis*, vetches, lucerne, clovers, and various other plants, and also on certain trees; it gnaws the parenchyma of the leaves, and makes marks on them as with a four-toothed comb as might be expected from the formation of the mandibles; the larva lives on the same plants; it is yellowish, of somewhat elliptical shape, and more or less spinose, with a few dark markings, and with the last segment furnished with a small nipple-like anal appendage.

COCCINELLIDÆ APHIDIPHAGÆ.

The whole of the species belonging to this series are carnivorous, and in all their stages feed as a rule on Aphides; they are, therefore, of the greatest service to the farmer and the gardener; Coccinellidæ are often found in swarms on and about blighted fruit-trees, and many people erroneously assign the blighted appearance of the trees to the beetles, the true state of the case being that the beetles are attracted by the abundant supply of their usual food; in all probability no form of life, if we except perhaps the very lowest forms such as the bacteria, has a greater power of reproducing itself than the aphis; the females are both oviparous and viviparous, and one connection with the male suffices for the production of broods for many generations; the generations succeed one another very rapidly, and Réaumur calculates that one aphis may be the progenitor of the enormous number of 5,904,900,000 individuals during the month or six weeks of her existence; the whole of this interesting question will be found fully discussed in Buckton's Monograph of British Aphides, vol. i., pp. 76, &c.; Professor Huxley (Linn. Trans., vol. xxii., p. 215) makes a curious calculation, which is quoted by Buckton; he shows that, assuming that an aphis weighs as little as $\frac{1}{1000}$ of a grain, and that it requires a man to be very stout to weigh more than two million grains, the tenth brood of Aphides alone, without adding the products of all the generations which precede the tenth, would, if all the members survived the perils to which they are exposed, contain more ponderable substance than five hundred millions of stout men; that is, more than the whole population of China. Aphides largely increase in sultry and cloudy weather; hence has arisen the saying so common in

many parts of the country that the dark clouds are "blight;" if, however, we consider their rate of increase, we shall not be surprised that in a few hours trees, before flourishing, become blighted. Any check on this plague is of course of the greatest service, and the Coccinellidæ play a great part, especially in the larval state, in preserving the balance of nature.

The larvæ of the Coccinellidæ are very common objects; they are broad in front and narrowed behind, and are covered with more or less distinct spines and tubercles; they are variously coloured; that of *C. 7-punctata* is one of the best known; it is about 10 mm. in length, of an ashy-grey or bluish-grey colour, with two yellow spots on the anterior part of the prothoracic segment, and with the external tubercles of the fourth and seventh abdominal segments yellow, the others being black; the pupa is orange coloured, with a double row of black spots; before changing the larva attaches itself to a leaf by its last segment by means of a viscous substance which it secretes; it then bends the anterior portion of the body up towards the apical portion; the tubercles then diminish in size, the hairs fall off, and the skin splits on the back and shrinks in a wrinkled mass to the apex of the body (v. Chapuis et Candeze, *Cat. des Larves des Coléoptères*, p. 291).

I. Anterior coxal cavities closed behind.

i. Clypeus not widened into a lobe at sides, eyes almost free in front, base of antennæ more or less exposed.

1. Antennæ moderately long.

A. Form more elongate and looser; thorax broadest at or before middle.

a. Claws toothed HIPPODAMIA, *Muls.*

b. Claws simple ANISOSICTA, *Dup.*

B. Form less elongate, as a rule more or less hemispherical, thorax broadest at base, or at all events behind middle.

a. Scutellum distinct.

a*. Antennæ with club rather short and compact, with penultimate joints transverse and truncate at apex.

a†. Prosternum convex without carinæ; coxal lines of first abdominal segment semicircular complete ADALIA, *Muls.*

b†. Prosternum depressed between coxæ, usually with two carinæ; coxal lines of first abdominal segment incomplete . . . COCCINELLA, *L.*

b*. Antennæ with club less compact, with the penultimate joints not transverse, or, if transverse, with the apices not truncate, but with projecting angles embracing the succeeding joint.

a†. Sutural margin of elytra sinuate before apex, the situation being furnished with golden setæ; head less sunk in thorax . . . ANATIS, *Muls.*

b†. Sutural margin of elytra straight; head more sunk in thorax.

a‡. Claws slender at base MYZIA, *Muls.*

b‡. Claws broad at base HALYZIA, *Muls.*

b. Scutellum very small, scarcely, if at all, visible MICRASPIS, *Redt.*

2. Antennæ very short, rarely longer than the diameter of the eyes.

- A. Upper surface glabrous HYPERASPIS, Redt.
- B. Upper surface plainly pubescent SCYMNUS, Kug.
- ii. Clypeus at sides extending far in front of the eyes, and covering the base of the antennæ.
 - 1. Upper surface plainly pubescent PLATYNASPIS, Redt.
 - 2. Upper surface glabrous.
 - A. Anterior tibiæ with a tooth on outer margin; labrum scarcely visible CHILOCORUS, Leach.
 - B. Anterior tibiæ without tooth on outer margin; labrum distinct EXOCHOMUS, Redt.
- II. Anterior coxal cavities open behind; upper surface pubescent; punctuation of elytra double.
 - i. Punctuation of elytra irregular; base of thorax bordered; form subhemispherical RHIZOBIUS, Steph.
 - ii. Large punctures of elytra arranged in rows; base of thorax not bordered; form elongate-oval COCCIDULA, Kug.

HIPPODAMIA, Mulsant.

This genus contains about twenty species, which are widely distributed in Europe and North America; one or two are found in Northern Asia; they are, as a rule, of a more oblong and looser form than the greater part of the other Coccinellidæ. *H. variegata* is a very variable species, and some of its varieties appear to be found in Northern Africa, Senegal, and India, as well as in more northern climates.

- I. First joint of tarsi not dilated in male; size larger; elytra orange-yellow, with a common spot at scutellum, and six spots on each black H. TREDECIMPUNCTATA, L.
- II. First joint of anterior and intermediate tarsi dilated in male (*Adonia*, Muls.); size smaller; elytra reddish, with variable black spots on each H. VARIEGATA, Goeze; (*mutabilis*, Scriba).

H. 13-punctata, L. (*tibialis*, Say.). Oblong, rather depressed; head black with front yellow; thorax with sides strongly rounded, black with the anterior and lateral borders yellow, the latter broadly so and usually furnished with a black spot in middle of each; elytra yellow or orange-yellow, with a common spot at base of suture, which is sometimes wanting, and six spots on each black; legs black, with the tibiæ and usually the greater part of the tarsi yellow. L. $4\frac{1}{2}$ –7 mm.

Male with the first joint of the anterior tarsi slightly furrowed longitudinally, and the fifth segment of abdomen emarginate at apex.

Marshy places, on reeds, &c., also in flood refuse; very local, and, as a rule, rare; Battersea (Stephens); Suffolk, in flood refuse, abundant (W. Garneys); Deal; Hastings; near Lancaster on *Arundo phragmites*; Northumberland and Durham districts, Meldon Park, Twizell, and Durham; Scotland, Lowlands, rare, Solway and Forth districts; Ireland, near Belfast and Portmarnock; the species is found throughout Siberia and occurs in North America as *tibialis*, Say.; it is very variable as regards the size of the spots of thorax and elytra.

H. variegata, Goeze (*mutabilis*, Scriba; *Adonia mutabilis*, Mul-

sant). Oval-oblong; head black, with front broadly white, usually with two small black spots; thorax very transverse, with sides strongly rounded, broadest about middle, black, with the anterior and side margins white, and also with a longitudinal white line extending from the front margin to about middle, with a white round spot on each side, posterior margin plainly bordered; elytra reddish, with a common spot at base of suture, and several variable black spots on each black, finely punctured; legs black. L. 3-5½ mm.

Male with the first joint of the anterior tarsi oval and dilated.

By sweeping herbage, &c.; rather local; London district, not uncommon, St. Mary Cray, Highgate, Weybridge, Mickleham, Esher, Woking, &c.; Kingsgate; Margate; Deal; Brighton; Swansea; Blackpool; Liverpool; New Brighton; Filey, Yorkshire; not recorded, apparently, from the northern counties of England or from Scotland; in England it appears not to be found far from the sea, but it occurs over all Europe and as far south as Senegal and Abyssinia, and also in Asia from Siberia to India.

This species is very variable as regards the colour of the elytra; the colour of the thorax, however, is usually constant, the only noticeable variation being the extension of the two white spots into lines meeting the anterior white border.

ANISOSTICTA, Duponchel.

Only two or three species are at present included in this genus, which is closely related to the preceding, and appears only to be distinguished by having the tarsal claws simple and not toothed.

A. novemdecimpunctata, L. Oblong, not very convex, of a yellow or somewhat orange colour with black markings; thorax very transverse, with sides strongly rounded, usually furnished with six black spots, which are sometimes confluent; elytra with a common spot at base of suture and nine spots on each black, moderately strongly punctured; legs testaceous. L. 3-4 mm.

Marshy places, amongst reeds and aquatic plants; local, but common where it occurs; Lee, Gravesend, Forest Hill, Weybridge, Woking, Walton, &c.; Yarmouth; Birchington; Hastings; Brighton; Devon; South Wales; Hertford; Cambridge; Coleshill and Sutton Park near Birmingham; Willington, near Burton-on-Trent; Mabbetley, Cheshire; according to Stephens it has occurred in Scotland, but it is not given in Dr. Sharp's list; the species extends across Asia to North America.

ADALIA, Mulsant.

This genus contains upwards of thirty species, which are very widely distributed; the majority are found in the more northern regions of the world, but species have been described from Chili, Cape of Good Hope, Abyssinia, Madeira, Ceylon, &c.; hitherto our list has contained two species only, but a new one, *A. bothnica*, must now be added.

- I. Thorax with the entire base finely margined; form less convex A. OBLITERATA, L.
- II. Thorax with the base only margined near angles; form more convex.
- i. Claws short, scarcely visibly toothed; form semiglobose; colour yellow and black A. BOTHNICA, Payk.
- ii. Claws long, distinctly toothed; form slightly ovate; colour red and black A. BIPUNCTATA, L.

A. obliterated, L. (*M-nigrum*, Gyll.; *livida*, Muls.). Of a dirty testaceous colour, with the thorax furnished with markings towards base, which usually coalesce and form an **M**; elytra lighter at sides, darker at suture, and usually with two more or less defined dark bands at sides which are often obsolete; legs testaceous; the elytra are occasionally dark brown; the upper surface is not very convex, and somewhat finely punctured, and the thorax is very transverse and widest behind middle. L. $3\frac{1}{2}$ –5 mm.

Male with the fifth ventral segment of abdomen broadly emarginate at apex.

On fir-trees; not uncommon and generally distributed throughout England and probably Ireland; Scotland, not common, Solway, Tweed, Forth and Dee districts.

V. fenestrata, Weise. This very distinct variety is quite black with the apex of the elytra and a few more or less distinct spots at margins, and on disc of the same yellowish or yellowish-red, and the anterior angles of thorax somewhat broadly whitish.

Two specimens were taken by the Rev. Hamlet Clark, on ling, at Northampton, and I have found it in Sherwood Forest.

A. bothnica, Payk. Almost circular, hemispherical, of an orange-yellow colour with black markings, under-side black, legs yellow or dark with tarsi lighter; head black with a broad central spot yellow; thorax yellow with various markings; elytra with suture black and other black markings which differ in various specimens; punctuation fine. L. $3\frac{1}{2}$ –4 mm.

V. crucifera, Weise. In this variety the margins of the elytra are black and two large spots meet the suture at centre of disc, forming a rough figure of a cross; besides these there is a common spot at base of suture, a spot on each elytron reaching base, two on each meeting sides, and two free, one in middle and one towards apex.

The variety only has occurred in Britain, Dr. Power having taken one specimen at Moss Morran, Scotland.

A. bipunctata, L. Oval, convex; thorax black, with more or less broad white borders at sides, or with anterior angles only white, or entirely black, often with a double white spot in middle of base; elytra in the commonest form red, with one large round spot on each, but very variably coloured, in some specimens the red colour prevailing, while

others are almost entirely black with only a reddish spot at base ; punctuation rather fine ; legs and under-side black, the former occasionally lighter ; epimera black. L. 3-4 mm.

On trees, shrubs, herbage, &c. ; common and generally distributed throughout the kingdom.

MYSIA, Mulsant

The "Mysiates" are distinguished by Mulsant from the "Halysiates" by having the last joint of the antennæ truncate, and not obliquely cut off at apex, and terminating in an angle as in the latter group ; the character, however, is not a very plain one, and the genera *Mysia* and *Halysia* are perhaps better separated by the shape of the tarsal claws ; the genus *Mysia* only contains a few species from Northern Asia, and North and Central America, and one from Europe.

M. oblongoguttata, L. Oval, subhemispherical, of a light testaceous-brown or fawn colour ; thorax with broad white borders, and usually furnished with two dark longitudinal markings, which are very variable in breadth and are sometimes absent ; elytra with longitudinal light lines and oblong spots, very finely punctured ; legs testaceous, sometimes partially dark. L. $5\frac{1}{2}$ -7 mm.

Male with the sixth ventral segment of abdomen somewhat excised at apex, female with the fifth ventral segment subsinuate on each side.

On and about firs ; not uncommon but local ; London district, widely distributed. Glanvilles Wootton ; New Forest ; Bournemouth ; Devon ; South Wales ; Midland districts ; Chat Moss ; Norwich ; Manchester ; Filey and Scarborough ; Northumberland district ; Scotland, Highlands and Lowlands, common on fir-trees, Solway, Forth, Tay, Dee and Moray districts ; it is probably not uncommon in Ireland.

ANATIS, Mulsant.

This genus is usually included under *Halysia*, but is distinguished by having the sutural margin of the elytra sinuate before apex, and furnished with golden pile ; the single European species is one of the largest and most conspicuous of the Coccinellidæ.

A. ocellata, L. The largest of our species of Coccinellidæ ; oval, not very convex ; under-side black with a white spot beneath the anterior angles, and with the epimera of the mesosternum white ; head black with white markings ; thorax black with a broad white lateral border, the centre of which is also marked with black, and with two white markings at base ; elytra red with a thin black lateral margin, and with a common spot at scutellum and usually 7-9 others on each black surrounded with yellow, which gives them an ocellate appearance ; the punctuation is fine but distinct ; legs black. L. 6-8 mm.

Male with the sixth ventral segment of abdomen truncate in middle of apex, female with the same segment subsinuate.

On firs; local, but not uncommon; London district, generally distributed; Norwich, Hastings, &c.; Glanvilles Wootton; Southampton; Devon; Coleshill and Sutton Park near Birmingham; Tamworth; Burton-on-Trent; Lincoln; Chat Moss; Filey, Yorks.; Manchester; Northumberland and Durham districts; Scotland local, Tweed, Tay, Dee and Moray districts. Ireland, near Waterford; I have taken both this species and *M. oblongo-guttata* at Filey, Yorks., by sweeping grass on the edge of the cliff, apparently far from any fir-trees.

COCCINELLA, Linné.

This genus contains a large number of species, which are very widely distributed; our six British species belong to the genus *Coccinella* proper; Weise includes in the genus the species classed by Mulsant under *Harmonia*, these being distinguished by having the mesosternum emarginate in front, whereas in *Coccinella* it is simple.

- I. Thorax more or less variegated with white, or with at all events the side margins white; legs pale . . . C. DECEMPUNCTATA, L. (*variabilis*, Ill.)
- II. Thorax black with a triangular white spot at anterior angles; elytra yellow with black markings; legs black C. HIROGLYPHICA, L.
- III. Thorax black with a quadrangular white spot at anterior angles; legs black.
- i. Average length 4-4½ mm.
1. Elytra reddish with a common spot at scutellum and five spots on each black; form more elongate and less convex C. UNDECIMPUNCTATA, L.
2. Elytra red with a common spot at scutellum and two spots on each black; form rounder and more convex C. QUINQUEPUNCTATA, L.
- ii. Average length 6-6½ mm.; elytra red with a common spot at scutellum and three spots on each black.
1. Epimera of mesosternum white, episterna of metasternum entirely black; anterior angles of thorax projecting C. SEPTEMPUNCTATA, L.
2. Epimera of mesosternum and apex of episterna of metasternum white; anterior angles of thorax broadly rounded C. DISTINCTA, Fald. (*labilis*, Muls.)

C. 10-punctata, L. (*variabilis*, Ill.). Almost hemispherical, extremely variable as regards the colour of the upper surface, under-side dark, usually black, legs yellow; the latter character will usually be found of great assistance in determining specimens as the allied species have the legs black; epimera of mesosternum white; the elytra are usually furnished with a transverse raised fold before apex; femora sometimes dusky; punctuation rather fine. L. 3-4 mm.

On low plants, and also on oaks, limes, &c.; common and generally distributed throughout the kingdom.

The varieties of this insect are so numerous that it is impossible to

describe them; most of them are mentioned by Weise, *Coccinellidæ*, pp. 32–35, and by Mulsant, *Sécouripalpes*, pp. 95–108; among the most common are those with the elytra black and furnished with four or five large yellow spots on each, or testaceous with small black spots, or black with one large triangular spot reaching margin, not far from shoulder.

C. hieroglyphica, L. Oval, subglobose; thorax black with the anterior angles whitish in a triangular spot; elytra yellow or reddish-yellow, with a longitudinal black patch at scutellum, another on each side, which is somewhat curved and often reaches from base to centre, and a black spot before apex, which is sometimes joined to the preceding; sometimes all the spots are divided, but some are always more or less oblong; legs and epimera black; punctuation distinct. L. 3–4 mm.

Male with the sixth ventral segment of abdomen impressed with a semicircular fovea.

By sweeping heath, &c., especially beneath fir-trees; local; London district common; Norwich; Hastings and other localities on the South Coast; Swansea; Chat Moss; Newmarket; Sutton Park; Cannock Chase; Northumberland and Durham districts rare; Scotland, Highlands and Lowlands, amongst heather, Solway, Tweed, Forth, Tay, and Dee districts; Ireland, near Waterford.

A black variety of this species occurs, but the *var. fenestrata* of *A. obliterata* appears occasionally to be mistaken for it.

C. 11-punctata, L. Oval, moderately convex; thorax black with the anterior angles white; elytra red with a common spot at suture, and five other spots on each, black; these vary in size, but are fairly constant; some, however, are occasionally very small or even absent; legs black. L. $3\frac{1}{2}$ – $4\frac{1}{2}$ mm.

Male with the sixth ventral segment of abdomen emarginate; female with the sixth ventral segment of abdomen entire.

C. 5-punctata, L. Very convex, almost hemispherical; thorax black with a white spot at the anterior angles which is large and conspicuous on the under-surface; elytra red, with a common spot at base of suture and two spots on each black; occasionally there is also a minute spot at sides between base and middle; punctuation fine and thick; legs black; epimera of mesosternum white. L. $3\frac{1}{2}$ – $4\frac{1}{2}$ mm.

Male with the sixth ventral segment of abdomen impressed with a deep semicircular fovea.

A northern species often found on the borders of streams; Northumberland district, not uncommon; Scotland, local, Solway, Tay, Dee, and Moray districts.

C. 7-punctata, L. Convex, subhemispherical, very finely punctured; thorax black with a large white spot at the anterior angles which is not conspicuous on the under-side; anterior angles bluntly but dis-

tinctly produced; elytra with a common spot at base of suture, and three other spots on each, black; these are variable in size; legs and under-side black, epimera of mesosternum white. L. $5\frac{1}{2}$ – $7\frac{1}{2}$ mm.

Male with the sixth ventral segment of abdomen truncate before apex and furnished with a transverse polished fovea.

On herbage, &c.; very common and generally distributed throughout the kingdom.

C. distincta, Fald. (*labilis*, Muls.; *magnifica*, Redt.). Very like the preceding in general appearance and very easily confused with it; it may, however, be easily distinguished by the shape of the anterior angles of thorax, which are much broader, more rounded, and not nearly so projecting; the apex of the episterna of metasternum as well as the epimera of mesosternum are white, and the sixth ventral segment of the male is not furnished with any impression; in most of the specimens I have seen the black spots on disc are larger, but this does not appear to be a reliable character. L. $5\frac{1}{2}$ – $7\frac{1}{2}$ mm.

Sandy places, by sweeping heath, &c.; very local, but not uncommon where it occurs; Weybridge (in numbers, Power), Esher, Horsell, Farnham; Kingsgate; Whitstable; Herne Bay; Hastings; Lewes, in and about ants' nests; it is only found, apparently, in the London and South-eastern district.

HALYZIA, Mulsant.

This genus, in its widest sense, contains considerably more than a hundred species which are very widely distributed; Mulsant and Crotch have, however, divided it up into nineteen smaller genera, but the differences are so slight that they can hardly be admitted; several of the species are exceedingly variable as regards colour; important distinctions are drawn by Mulsant from the presence or absence and the shape of the plates on the first segment of the abdomen, a character of which he has made considerable use throughout his work on the group; for convenience' sake, however, these have not been here taken into account.

- I. Elytra lighter or darker castaneous-brown or fawn-coloured with yellowish-white spots.
- i. Prosternum with two raised keels; elytra with a narrow side border and with six spots on each H. DUODECIMGUTTATA, *Pod.*
 - ii. Prosternum without keels.
 1. Side margins very broad; size larger; each elytron with eight spots H. SEDECIMGUTTATA, *L.*
 2. Side margins narrow; size smaller.
 - A. Form more convex and rounder; each elytron with seven spots, the two near base being separate and more or less round H. QUATUORDECIMGUTTATA, *L.*
 - B. Form less convex and more elongate; each elytron with nine spots, the two near base being dentate and often confluent H. OCTODECIMGUTTATA, *L.*

- II. Elytra light yellow with black, more or less angular, and often confluent, spots . . . *H. CONGLOBATA, L.*
(*quatuordecimpunctata, L.*)
- III. Elytra of a bright lemon colour with plainly marked, usually round, spots, seldom confluent, as a rule eleven in number on each . *H. VIGINTIDUOPUNCTATA, L.*

H. 12-guttata, Poda. (s.g. *Vibidia*, Muls.). Convex, hemispherical, of a luteous or yellowish-testaceous colour; thorax thickly punctured, with white borders, somewhat transparent in front and at sides; elytra strongly and unevenly punctured with six whitish spots on each, narrowly margined; under-side and legs testaceous or reddish-testaceous. L. 3-4 mm.

Male with the fifth ventral segment broadly emarginate at apex.

On firs, alders and other trees; very rare in Britain; Scotland, "Raehills, Rev. W. Little," Murray's Cat.; Ireland, near Belfast, Haliday; it is possible, however, that there may be some mistake as to these records; the only specimen I have seen was a pinned one in Griesbach's collection, now in the possession of Mr. Mason; the species is common in France and extends through Europe and Siberia to Japan, Stephens records it as taken in some numbers in 1815 and 1816 in Windsor Forest and near Bristol.

H. 16-guttata, L. Oval, subhemispherical, moderately convex, of a luteous or yellowish-testaceous colour; thorax with broad pellucid whitish lateral margins, and the anterior margin also more narrowly pellucid, very finely punctured; elytra less strongly and unevenly punctured than in the preceding species, with broad pellucid margins, luteous with eight whitish spots on each; epimera of metasternum yellowish-white, the colour, however, often fading after death; legs yellowish-testaceous. L. 5-6 mm.

Male with the sixth ventral segment emarginate in a semicircle at apex, and the epipleuræ of the elytra more strongly dilated than in female.

By beating young birches and other trees in hedges and woods; local; London district, not uncommon, Mickleham, Coombe Wood, Esher, Sheerness, Whitstable; Norfolk; Hastings; Glanvilles Wootton; Devon; Swansea; Scotland, rare, on birches, Solway, Forth, Tay, Dee, and Moray districts.

H. 14-guttata, L. (s.g. *Calvia*, Muls.). Hemispherical, of a rufous-brown or castaneous colour, with the metasternum and middle of abdomen black; thorax very thickly and finely punctured with a lunulate whitish side border, the spot at posterior angles being sometimes conspicuous; the anterior margin and median line are usually more or less whitish; elytra closely, unevenly, and distinctly punctured, with seven whitish spots on each (arranged 1, 3, 2, 1), which are, in many cases, slightly ocellate, being often surrounded with a narrow darker border; epimera of mesosternum white; legs brownish or reddish-testaceous. L. 4-5 mm.

Male with the sixth ventral segment subtruncate at apex.

On young alders and hazels, white-thorn hedges, &c. ; generally distributed and rather common throughout the kingdom ; it occurs in Siberia and North America.

H. 18-guttata, L. (s.g. *Myrrha*, Muls.). Oval, moderately convex, of a reddish-brown or castaneous colour with the under-side blackish in middle ; thorax finely punctured, with anterior and side margins and two spots at base whitish ; elytra distinctly punctured, with nine whitish spots on each (arranged 2, 1, 3, 2, 1), the two at base of suture being dentate and usually confluent, and together with the two spots at base of thorax forming a sort of star-shaped figure ; pro- and mesosternum and their side parts whitish ; legs reddish-testaceous. L. $3\frac{1}{2}$ –4 mm.

On firs ; not uncommon in England and Wales, and generally distributed ; Bold records it as common in the Northumberland district, but according to Dr. Sharp it is rare in Scotland in the Solway, Tweed, and Forth districts ; Ireland, near Belfast and Dublin.

H. conglobata, L. (*14-punctata*, L. ; *conglomerata*, Steph. Ill.). Short oval, subhemispherical, under-surface black, with the epimera of the meso- and metasternum yellowish-white, the segments of the abdomen being also marked with the same colour ; thorax very finely punctured, yellow with six black spots which are usually more or less confluent ; elytra distinctly, but not strongly, punctured, yellow with seven quadrangular black spots on each, and the suture, as a rule, also black ; these are extremely variable, and almost always more or less confluent ; in our ordinary form three of these spots join the suture, and the two spots on disc behind middle join the central of these three, the whole forming a rough figure very like a face ; legs yellow, femora partly dark. L. 3–4 mm.

Male with the sixth ventral segment small and linear and subtruncate at apex.

By sweeping herbage and beating hazel, oak and other trees in woods and hedges ; not uncommon in the midland and southern districts of England and in Ireland, but I can find no locality for the species further north than Sherwood Forest.

H. 22-punctata, L. (s.g. *Thea*, Muls.). A very conspicuous little species ; hemispherical ; under-side black with the epimera of the meso- and metasternum and the hinder portion of the episterna of metasternum yellowish ; upper surface of a bright lemon-yellow or sulphur colour, finely and not very closely punctured ; thorax with five black spots which are usually all separate ; elytra with eleven more or less round spots on each, the one at centre of side being very small, often confluent with the one adjacent, and sometimes absent, legs black and yellowish-red or yellowish. L. 2–3 mm.

In hedges, woods, &c. ; found especially on nettles, but also on other plants ; generally distributed and common throughout the greater part of England, but not recorded from Scotland ; Ireland, near Waterford.

MICRASPIS, Redtenbacher.

This genus is distinguished from its allies, as is implied by its name, by the extremely small and almost invisible scutellum; four or five species have been described from Northern Asia, Europe, and Northern Africa.

M. sedecimpunctata, L. (*v.* *12-punctata*, L.). Hemispherical, under-side black with the pleuræ almost wholly whitish-yellow; upper surface very finely and thickly punctured, luteous or yellowish-testaceous, thorax with six black spots, of which the inner four are usually more or less confluent; elytra with eight spots on each, four, usually separate, arranged in a longitudinal row near suture, and others at side of which the central ones are more or less confluent and form a continuous longitudinal irregular patch; legs mostly yellow; according to Mulsant the labrum is black and the anterior and intermediate femora yellow, in male, and the labrum is yellow, and the anterior and intermediate femora mostly black, in female. L. 2-2½ mm.

Marshy places, both inland and on the coast, at roots of grass and by sweeping low plants; local, but very common where it occurs; generally distributed in the London and southern district, but not so often met with further north; Liverpool, not common; Northumberland and Durham district, Twizell and Durham; not recorded from Scotland.

V. Poweri, Weise. This variety has the upper surface or, at all events, the elytra unicolorous black; it has been found in Lee pit near London, rarely, by Dr. Power, in whose collection there is also an intermediate variety.

HYPERASPIS, Redtenbacher.

This genus contains more than two hundred species, of which a large number are found in tropical regions; they are very widely distributed; eight only occur in Europe, of which one is found in Britain; they are rather closely related to *Coccinella* and its allies, but may be distinguished by the formation of the antennæ.

H. reppensis, Herbst. Broad-oval, convex, obtusely rounded at apex, black, shining and glabrous, elytra more distinctly punctured than thorax; lateral margins of thorax and a large spot at apex of each elytron, reddish-yellow; male with the whole head, and the anterior margin of thorax narrowly, yellow or reddish-yellow; the anterior legs are also entirely of the same colour; in the female the head and the anterior femora are black; the light spots at apex of elytra are sometimes small, and occasionally absent, and there is sometimes a small light reddish spot at shoulders. L. 2½-3½ mm.

In moss on chalky hill-sides, under stones and decaying seaweed on the coast, &c.;

occasionally found by sweeping under fir-trees; local, and, as a rule, rather scarce; Esher, Mickleham, Shirley, Box Hill, Chobham, Sheerness; Hastings; Seaford, Sussex; Holm Bush, Brighton; New Forest; Devon; Llyfnant Valley, near Borth, Cardiganshire; Barmouth; Windsor Forest; Bewdley; Staffordshire; Chat Moss; Withington, Cheshire; Scarborough; Scotland, local, amongst moss in plantations of larch and fir, Solway, Forth, Clyde, Tay, Argyle, and Moray districts.

SCYMNUS, Kugelann.

This genus is a very large and extensive one; upwards of two hundred and fifty species have already been described, and it is probable that this is far from representing the total number; they are small, and, as a rule, very inconspicuous insects, and in many cases are difficult to determine; they are distinguished by their plainly pubescent surface and very short antennæ; they are closely related to *Platynaspis*, but the clypeus does not extend in front of the eyes as in that genus; from *Hyperaspis* they may be known by the pubescence of the upper surface; in spite of their small size, as Mulsant remarks, they are devourers of aphides both in the larval and perfect state; the larva both of *Scymnus* and *Platynaspis* is not furnished with rows of spines as is the case with most of the other Coccinellidæ, but is covered with a white substance like minute flocks of wool; Reaumur was the first to observe this, and designated the larvæ as "*Hérissons blancs*" or "*Barbets blancs*;" this substance is easily rubbed off, but the insect has the power of renewing it again within twelve hours (v. Mulsant, *Sécuripalpes*, pp. 211, 212). There are forty-five European species of *Scymnus*, of which fourteen occur in Britain; in determining the species the shape of the post-coxal foveæ and the continuance, interruption, and direction of the raised lines surrounding them are very important characters, but are somewhat hard to observe without removing the posterior legs; I have therefore made as little use of them as possible in the following table; in many of the species the sexes differ considerably in the coloration of the head and thorax.

I. Posterior coxæ not very widely separated.

i. Post-coxal foveæ with raised sides incomplete.

1. Anterior coxæ widely distant; size, as a rule, smaller. (s.g. *Nephus*, Muls.)*

A. Each elytron with two orange-yellow spots

S. PULCHELLUS, *Herbst.*
(*quadrilunulatus*, Ill.)

B. Elytra unicolorous black, or furnished with a longitudinal reddish patch on each

S. REDTENBACHERI, Muls.

2. Anterior coxæ less distant; size, as a rule, larger. (*Scymnus*, i. sp.)*

A. Elytra unicolorous black.

a. Legs dark brown, pitchy

S. NIGRINUS, *Kug.*

* Mulsant separates the genus *Nephus* from *Scymnus* on the relative distance of the "abdominal plates" of the first ventral segment from the side margin.

- b. Legs yellowish-testaceous, base of femora dark S. PYGMÆUS, *Fourc.*
- B. Elytra black, usually with one, occasionally with two, red spots on each . . . S. FRONTALIS, *F.*
- ii. Post-coxal foveæ with raised sides complete, forming a more or less exact semicircle round posterior coxæ.
1. Elytra black, with two common horse-shoe-shaped whitish-yellow lines; legs yellow S. ARCUATUS, *Rossi.*
2. Elytra entirely yellowish-brown or luteous, with margins and suture often more or less broadly blackish.
- A. Femora black; tibiæ and tarsi usually reddish-brown S. SUTURALIS, *Thunb.*
(*discoideus*, *Ill.*)
- B. Legs testaceous, with tarsal claws black S. LIVIDUS, *Bold.*
- C. Legs entirely testaceous or reddish-testaceous S. TESTACEUS, *Muls.*
(*Mulsanti*, *Wat.*)
3. Elytra black, with apex broadly reddish . . S. HÆMORRHOIDALIS, *Herbst.*
4. Elytra entirely black, or with at most the extreme apex lighter.
- A. Head red; thorax with anterior and side margins broadly reddish-yellow in male S. CAPITATUS, *F.*
- B. Head and thorax always black S. ATER, *Kug.*
- II. Posterior coxæ very widely separated; colour black, unicolorous; size very small S. MINIMUS, *Rossi.*

S. pulchellus, *Herbst.* (*4-lunulatus*, *Ill.*; s.g. *Nephus*, *Muls.*). Oval, moderately convex, pubescent, black, with the labrum, antennæ and legs, and four spots on the elytra testaceous or reddish-testaceous; the anterior pair are larger, oblong, and oblique, and situated near shoulders, and the posterior pair, situated before apex, are smaller and slightly lunate; the elytra are less finely and more deeply punctured than thorax; legs yellow, posterior femora often darker. L. $1\frac{1}{2}$ – $1\frac{3}{4}$ mm.

Very rare; the species was introduced by Mr. G. R. Waterhouse in 1863 on two doubtful specimens from Kirby's collection; the only authentic British example appears to be one taken in Kent, which is in Mr. Rye's collection.

S. Redtenbacheri, *Muls.* (s.g. *Nephus*, *Muls.*). A very small species, of an elongate-oval shape, moderately convex, clothed with pale pubescence, black with an oblique band of a reddish or reddish-yellow colour on each elytron; antennæ, mouth-parts and legs entirely testaceous; the femora, however, are occasionally dark; elytra finely but somewhat distinctly punctured; the size and shape of the elytral band is variable. L. 1 – $1\frac{1}{3}$ mm.

A specimen from Mr. Wilkinson's collection, now in the possession of Mr. Mason, was returned to me by M. Brisout in 1882 as this insect, and Mr. Mason subsequently found several others in the same collection

standing under the name of *limbatus*; they are smaller and more elongate than the species standing in our collections as *S. Mulsanti*, Wat., but otherwise are extremely like that insect; they were probably taken in the neighbourhood of Scarborough.

V. unicolor, Weise. This variety has the elytra unicolorous black; it does not appear to have occurred in Britain; according to Mulsant it is the normal form.

S. nigrinus, Kug. (*morio*, Payk.; s.g. *Anisoscymnus*, Crotch). Short oval, convex, not very shining, entirely black with the exception of the antennæ and tarsi which are lighter or darker reddish-brown; pubescence fuscous; thorax very finely, elytra less finely, punctured; elytra obtusely rounded at apex, with shoulders rather strongly marked. L. $1\frac{3}{4}$ –2 mm.

Male with the fifth segment of abdomen somewhat truncate and thickly pubescent, female with the same segment rounded.

On the Scotch fir; very local; London district, not common, Chatham, Birch Wood, Weybridge; Cannock Chase; Repton; Chat Moss; Hykeham, near Lincoln (abundant); Northumberland district, Gosforth and Hetton Hall, near Belford; Scotland, local, Solway, Forth, Tay and Dee districts.

S. pygmæus, Fourc. (*rubromaculatus*, Goeze; *femoralis*, Gyll.; s.g. *Anisoscymnus*, Crotch). Short oval, subhemispherical, plainly pubescent, shining, black, with the labrum antennæ and legs testaceous, femora usually dark at base in female; in the male the head, and the thorax, with the exception of a black patch before scutellum, is reddish-yellow; in the female these parts are entirely black; the elytra are always unicolorous black; the thorax is very transverse and finely punctured, and the elytra are somewhat dilated before middle and thence narrowed to apex, and are less finely punctured than the thorax; the species is closely related to *S. capitatus*, but may at once be known by having the abdomen and pygidium entirely black. L. $1\frac{1}{2}$ – $1\frac{3}{4}$ mm.

Male with the fifth ventral segment of abdomen slightly emarginate at apex, female with the same segment rounded.

Chalky and sandy places, at roots of grass and by sweeping herbage; local; London district, widely distributed and not uncommon; Deal; Dover; Glanvilles Wootton; Devon; Coleshill; Knowle; Scarborough; Hartlepool; not recorded from Scotland.

S. frontalis, F. (s.g. *Anisoscymnus*, Crotch). The largest of the British species; oval, plainly pubescent, moderately convex and rather shining; elytra black with a large round spot on each before middle, which is sometimes variable or divided, but is usually round and distinct; occasionally it is wanting (*V. immaculatus*, Suff.); in the male the head and a spot at the anterior angles of thorax are yellow, in the female the head and thorax are entirely black; elytra very closely and finely punctured; legs yellow, femora more or less dark. L. $2\frac{1}{4}$ – $2\frac{1}{2}$ mm.

At roots of grass, by sweeping herbage, &c.; common and widely distributed in the London and southern districts, and it is also found in the Midlands; there appears, however, to be no record from further north than the neighbourhood of Birmingham.

S. arcuatus, Rossi (s.g. *Pullus*, Muls.). Oval, pubescent; thorax somewhat variable in colour, yellowish-white, at all events at sides, finely punctured; elytra black or brownish, having in common two yellowish-white horseshoe-shaped lines, open towards the front, of which the lower encloses the upper, more distinctly punctured than thorax; under-side black with prosternum and apex of abdomen reddish; legs reddish-yellow. L. $1\frac{1}{5}$ mm.

Very rare; a single specimen was taken by Mr. Wollaston on August 24th, 1872, by brushing very old ivy at Shenton Hall, near Market Bosworth, Leicestershire; he had previously found the species abundant in Madeira.

S. suturalis, Thunb. (*discoideus*, Ill.; s.g. *Pullus*, Muls.). Oval, moderately convex, clothed with somewhat coarse pale pubescence; thorax as a rule pitchy with the sides often lighter, very short, finely punctured; elytra rather strongly and unevenly punctured, of a reddish-brown or reddish-yellow colour, with the suture and the exterior margins more or less broadly dark; often, however, they are almost entirely reddish-brown; femora black, tibiæ and tarsi fuscous, or lighter or darker reddish-brown. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

On the Scotch fir, amongst moss and grass beneath or near firs, &c.; common and generally distributed throughout the greater part of England and Scotland; Ireland, near Belfast, Portmarnock, &c.

V. limbatus, Steph. (*S. limbatus*, Steph.). This variety, which has been regarded by many authors as a separate species, differs from the type in its colour, which is darker; the black colour of the suture and sides is more broadly marked and the reddish-brown colour is reduced to a larger or smaller patch on disc; the legs are pitchy-black; Stephens himself says that it may be a small and dark variety of *S. discoideus*. L. $1\frac{1}{3}$ mm.

Marshy places, at roots of grass and in moss; local; London district, not uncommon, Walton-on-Thames, Horsell, Lee, Hammersmith, Norwood; Hertford; Suffolk; Devon; Wicken Fen; Scarborough; Scotland, local, amongst moss, Solway and Tweed districts; it probably occurs in many other localities.

S. lividus, Bold. I have never seen this species, but, as it rests upon a single specimen, and as the allied species are very variable, it is very possible that it is not distinct; I subjoin Bold's description from the catalogue of the Insects of Northumberland and Durham, p. 109:—

“Suboval, convex, slightly shining, somewhat densely covered with short griseous pubescence, finely and evenly punctured, livid-testaceous, the head and claws black, thorax and suture obscurely fuscous. L. 1 mm. Smaller, more oval, much more finely and evenly punctured

than *S. discoideus*, to small pale examples of which it bears a superficial resemblance.

I have seen only one specimen of this insect, which I took on the sea-banks near Hartley in April, and with which no description known to me fully agrees."*

S. testaceus, Mots. (*Mulsanti*, Wat.; s.g. *Pullus*, Muls.). Oval, moderately convex, yellowish-brown or reddish-yellow; thorax short, strongly narrowed in front, finely punctured, variable in colour, sometimes being dark only before scutellum; elytra with base and suture dark; under-side brownish or black, with the apex of abdomen reddish; elytra somewhat strongly punctured, with rather broad interstices; legs entirely testaceous; our specimens appear to belong chiefly to the *var. scutellaris* of Mulsant, in which the head and thorax are entirely, and the scutellary region, sides and suture are broadly black. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Marshy places, in moss and at roots of grass, beneath decaying seaweed, &c.; local; London district, not uncommon, Caterham, Horsell, Forest Hill, Lee, Chatham, Sheerness, Hampstead, Darenth, Esher, &c.; Folkestone; Pegwell Bay; Hunstanton; Repton; Northumberland and Durham district, on the sea-banks, not uncommon; not recorded from Scotland; Ireland, near Waterford.

This species appears to be closely related to *S. Redtenbacheri*, more so even than *S. suturalis* (*discoideus*), with which Thomson compares *S. Redtenbacheri*; it is, however, broader and less elongate-oval than the last-named species, and has the post-coxal foveæ differently shaped; from *S. suturalis* it may be known by its uniformly testaceous legs, the thicker and finer punctuation of the under-side, and the colour of the elytra which is darker, and has the light portions redder.

S. hæmorrhoidalis, Herbst. (*analis*, Rossi, *nec* F.; s.g. *Pullus*, Muls.). Of a rather short and broad oval form, distinctly pubescent, black, rather shining; head, posterior portion of elytra and apex of abdomen yellowish-red; thorax finely punctured, with the anterior and side margins broadly reddish-yellow in male, in the female with the anterior margin narrowly, and the anterior angles broadly of the same colour; elytra rather strongly and unevenly punctured; legs entirely yellow. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Male with the fifth ventral segment emarginate at apex and thickly pubescent.

By beating hedges, sweeping herbage, &c.; often found in moss; common and generally distributed in the London district and in the south; less common in the Midland districts, and not recorded from any of the northern counties or from Scotland. It has been taken at Douglas, Isle of Man.

* Since writing the above I have received a note from Mr. J. J. Walker, in which he says that in the summer of 1875 he took a specimen at Whitsand Bay, Plymouth, which is apparently referable to this species.

S. capitatus, F. (*rufipes*, Bris.; s.g. *Pullus*, Muls.). Of a rather broader form than the preceding, with the shoulders more strongly marked, and with at most the very extreme apex of elytra lighter; the thorax is more finely punctured, and the elytra are more closely, and evidently less unevenly, punctured; the post-coxal foveæ of the first abdominal segment are more lengthened, and the femora are dusky instead of being entirely testaceous; it somewhat resembles *S. pygmæus*, but that species is more oval, and more narrowed in front and behind, and has the elytra evidently more finely punctured; male with the whole head, the anterior border of thorax narrowly, and the sides broadly, reddish-yellow; female with the head except base of vertex, and the anterior angles of thorax, of the same colour; in the female the femora are darker than in the male. L. $1\frac{1}{2}$ – $1\frac{2}{3}$ mm.

By beating hedges, sweeping herbage, &c.; occasionally found in moss; not uncommon in many localities; Shirley, Forest Hill, Claygate, Lee, Faversham, Weybridge, &c.; Cambridgeshire; Hants; Devon; Swansea; Yardley; Sutton Park; Knowle; Bewdley; Cannock Chase; Repton; Scarborough; Carlisle; not recorded from Scotland.

S. ater, Kug. (s.g. *Pullus*, Muls.). Oval, moderately convex, pubescent, entirely black, rather shining, with the antennæ, tibiæ and tarsi fuscous; thorax with sides not rounded, elytra contracted from anterior third, distinctly punctured; it is about the size of *S. suturalis*, but is a little shorter and more convex, besides being differently coloured; from *S. minimus* it may be known by its more oval form and less widely separated posterior coxæ. L. 1 – $1\frac{1}{3}$ mm.

Sandy places; at roots of grass, &c.; rare; Norwood and Shirley (Power); Deal (Champion); Northumberland and Durham district, sea-banks near Blyth and Hartley, rare (Bold).

S. minimus, Rossi (s.g. *Pullus*, Muls.; *Stethorus minimus*, Weise). Almost hemispherical, convex, shining, black, with the labrum, antennæ, tibiæ and tarsi, and the apex of the anterior femora yellow or brownish-yellow; thorax finely punctured; elytra rather distinctly punctured; posterior coxæ very widely separated, a character that seems to show that Weise is right in placing it in a distinct sub-genus. L. 1 – $1\frac{1}{4}$ mm.

By beating dead hedges, sweeping herbage, &c.; very local; London district, not uncommon; Maidstone, Faversham, Chatham, Cobham, Belvedere, Forest Hill, Shirley, Darenth, Sheerness, Birch Wood, Highgate (on hops), Birdbrook (Essex), Cowley; Hertford; Littleington; Holm Bush, Brighton; apparently almost confined to the London and South-eastern districts; according to Professor Bohemann it occurs on plants belonging to the *Asclepias* family; this is closely related to the *Apocynaceæ* or *Periwinkle* family; it is entirely exotic, but includes the *Stapelias*, *Hoyas*, *Stephanotis*, &c., of our gardens and greenhouses.

PLATYNASPIS, Redtenbacher.

About twenty species belong to this genus; one only occurs in Europe

and the remainder are widely distributed, representatives occurring in Africa, Ceylon, China, India, the Malay Archipelago, &c. ; they are related to *Seymnus* in having the upper surface pubescent, but differ in the formation of the head.

P. luteorubra, Goeze (*villosa*, Fourc.). Subovate, moderately convex, distinctly clothed, especially at sides, with rather long yellowish pubescence ; punctuation fine and close but distinct, more so on elytra than on thorax ; colour black, each elytron with two red spots, the one before middle and the other near apex ; the thorax is usually bordered with yellow or has a triangular patch of yellow on each side, but this is sometimes absent ; in the male the head is usually reddish-yellow and in the female black, but this does not appear to hold good in all cases ; the legs are partly testaceous. L. $2\frac{1}{2}$ – $3\frac{1}{2}$ mm.

Male with the sixth ventral segment of abdomen emarginate at apex, female with the same segment small and broadly rounded at apex.

At roots of grass and by sweeping ; found, more frequently, under bark of firs, willows, &c., especially in winter ; local, but not uncommon in some places ; Barnes, Richmond Park, Esher, Weybridge, Chatham (in profusion under bark of dead standing firs (Champion and Walker)) ; Folkestone ; Deal ; Hastings ; Chesil Beach, Portland ; Shipley ; Hertford ; Swansea ; Sherwood Forest.

CHILOCORUS, Leach.

This genus contains about thirty species, which are very widely distributed, more especially in tropical countries ; two only are found in Europe, both of which occur in Britain ; they may be distinguished by their very convex and gibbose form, and by the strong lobes at the sides of the clypeus ; the legs are strongly retractile, and the insect, if alarmed, gathers itself up on the leaf on which it may be resting, and, if forced to drop, feigns death ; the larvæ are black and have the body furnished with six rows of branched spines ; they feed, according to Mulsant, on gall insects ; the pupa is remarkable for remaining within the split dried larval skin, within which it is plainly visible.

- I. Head black ; each elytron with a large round red spot ;
size larger C. SIMILIS, Rossi
(*renipustulatus*, Scriba).
- II. Head red ; each elytron with a transverse interrupted
band ; size smaller C. BIPUSTULATUS, L.

C. similis, Rossi (*renipustulatus*, Scriba). Hemispherical, very convex, gibbose, with shoulders strongly marked, shining black, with a large rounded and somewhat transverse spot on middle of each orange-red ; abdomen reddish ; legs black ; thorax very finely, elytra finely but rather distinctly, punctured ; the sides of the thorax are occasionally reddish. L. $3\frac{1}{2}$ – $4\frac{1}{2}$ mm.

Male with the fifth ventral segment of abdomen truncate at apex,

sixth conspicuous, female with the fifth segment broadly rounded, and the sixth almost hidden.

In woods, hedges, &c.; occasionally by beating; local; not uncommon in the London and southern districts, but rarer further north; Bristol; Swansea; Oxfordshire; Wicken Fen; Ripon; Liverpool; the only Scotch record is from the Solway district, "Raehills, Rev. W. Little" (Steph. Ill. iv. 374).

C. bipustulatus, L. Much smaller than the preceding and easily distinguished by having a narrow transverse reddish band about the middle of each elytron which is formed of three spots which are usually more or less confluent, but sometimes separate; the head also is red; under-side black with sides and fifth segment of abdomen reddish-yellow; elytra very finely punctured on disc, rather strongly at sides; legs black, with knees red. L. $2\frac{1}{2}$ – $3\frac{1}{2}$ mm.

Sandy places; by sweeping heath, &c.; locally common; London district, common in many localities; Hastings; Southampton; New Forest; Devon; Swansea; Sutton Park; Cannock Chase; Sherwood Forest; York; Chat Moss; Liverpool; not recorded from Northumberland; Scotland, rare, Solway and Forth districts.

EXOCHOMUS, Redtenbacher.

Between twenty and thirty species are contained in this genus; they are less tropical in their distribution than the preceding, although several have been described from Brazil, Cayenne, Madagascar, Cuba, &c.; six occur in Europe, of which two have generally been regarded as British; *E. auritus*, however, appears to be very doubtfully indigenous; the species resemble *Chilocorus* at first sight, but are less convex and not gibbose, and the clypeus is, as a rule, not dilated and lobed at sides; the labrum moreover is distinct, and the anterior tibiae have no tooth on their outer margin.

E. quadripustulatus, L. (*4-verrucatus*, F.). Moderately convex, subhemispherical, black, occasionally brownish or reddish-brown, shining; elytra with a lunulate reddish patch at shoulder and a smaller somewhat transverse patch of the same colour behind middle near suture; thorax much narrower than elytra, very transverse, very finely punctured; elytra with distinct margins, very finely punctured, more distinctly at sides; apex of abdomen yellowish; legs black. L. $3\frac{1}{2}$ – $4\frac{1}{2}$ mm.

Male with the sixth ventral segment of abdomen emarginate at apex, disclosing seventh, female with the same segment broadly rounded.

On white-thorn blossom, broom, low firs, &c.; locally common; London district, generally distributed; Hastings; Glanvilles Wootton; Devon; Barmouth; Coles-hill; Tamworth; Staffordshire; Chat Moss; Scarborough; Manchester; Northumberland and Durham district; Scotland, local, Solway, Tweed, Tay, and Moray districts; it probably occurs in several parts of Ireland.

(*E. auritus*, Scriba; *nigromaculatus*, Goeze. In this species the upper surface is black or bronze-black, with the sides of the thorax and the

legs orange yellow; the elytra are unicolorous, without spots; the abdomen is yellowish towards apex; in the male the front part of the head is yellowish, whereas in the female it is entirely black. L. $3\frac{1}{2}$ –4 mm.

This insect is very doubtfully indigenous as British; it is the *Chilocorus rufipes* of Stephens' Illustrations and the *Ch. hæmorrhoidalis* of his Manual; he says of it, "I have hitherto seen two specimens only of this very distinct species, one of which was captured near Windsor in June, 1816, and the other I obtained from the vicinity of Bristol" (Ill. iv. p. 375).

RHIZOBIUS, Stephens.

This and the succeeding genus are distinguished from all our other Coccinellidæ by having the anterior coxal cavities open behind; there are about twenty species in the genus *Rhizobius*, one of which occurs in Europe, and the rest have been described from Australia, the Cape of Good Hope, and Madeira, &c.; it will probably be found to be a much more extensive genus.

R. litura, F. Elliptical, convex, shining, clothed with distinct pubescence; colour variable, entirely testaceous, or testaceous with an oblique dark marking on each elytron, sometimes entirely pitchy-brown or pitchy-black; thorax rather finely, elytra distinctly, punctured; legs testaceous, more or less dark in the darkly coloured varieties; antennæ rather long and slender, terminating in a distinct club. L. 2– $2\frac{1}{2}$ mm.

At roots of grass, in moss, by general sweeping, &c.; both inland and on the coast; very common throughout the whole of England from Yorkshire southwards; not so common further north; Scotland, rather scarce, Solway and Forth districts; Ireland, near Waterford and Dublin, and probably common.

COCCIDULA, Kugelann (*Cacicula*, Megerle).

Four species are mentioned in the Munich catalogue as belonging to this genus, two from Europe, one from North America, and one from Northern China; they are oblong and somewhat depressed insects, with the anterior coxal cavities open behind.

- I. Elytra unicolorous red C. RUFA, *Herbst.*
 II. Elytra red with black markings C. SCUTELLATA, *Herbst.*

C. rufa, *Herbst.* (*pectoralis*, F.). Oblong, distinctly pubescent, moderately shining, of a rufous or yellowish-red colour; antennæ rather long, reddish-testaceous, with club darker; thorax convex, transverse, with sides rather strongly rounded, finely punctured; elytra broader at base than base of thorax, rather long, somewhat depressed on disc, finely punctured, and furnished besides with larger punctures which are arranged in more or less regular rows; under-side red with breast and base of abdomen black; legs reddish-testaceous. L. $2\frac{1}{2}$ –3 mm.

Male with prosternal lines distinct, female without or with obsolete prosternal lines.

In marshy places, amongst reeds, at roots of grass, &c. ; very common and generally distributed throughout the greater part of England, but not so common in the north ; Scotland, not common, Solway and Forth districts ; Ireland, near Belfast and Portmarnock, and probably common.

C. scutellata, Herbst. Very like the preceding in size, shape, and general appearance, but easily distinguished by the fact that the elytra are marked with a large bluish black patch at scutellum and two others on each, one circular, situated near suture, just behind middle, and another oblong near sides, situated about middle ; sometimes these are confluent ; the post-coxal foveæ of the first ventral segment of abdomen are shorter, and are lunate instead of being semicircular, as in *C. rufa*. L. $2\frac{1}{2}$ –3 mm.

In marshy places, on reeds and by sweeping aquatic plants ; very local ; London district, not uncommon, Esher, Hammersmith, Gravesend, Sheerness ; Birchington (abundant in ditches) ; Pegwell Bay ; Hastings ; Horning Fen ; Repton ; Lincolnshire ; not recorded from the north of England or from Scotland.

ENDOMYCHIDÆ.

This family is a somewhat extensive one ; according to the Munich catalogue it contains about fifty genera and upwards of four hundred species ; the number, however, has since been largely increased through the researches of the Rev. H. S. Gorham and others ; the species are widely distributed over the surface of the globe, but are chiefly found in tropical countries ; in Europe the family is represented by seventeen genera and about sixty species ; of these only four genera, each containing one species, are found in Britain ; one of these, *Alexia*, has, by many authors, been included under the Coccinellidæ ; the following are some of the chief characters of the family : antennæ long, situated on the front, as a rule 11-jointed, the last three joints sometimes, but not always, forming a distinct club ; thorax margined, anterior coxal cavities open behind ; mesosternum short, metasternum rather long ; abdomen with five free segments of which the first is sometimes the longest ; legs much longer, as a rule, than in the Coccinellidæ, tarsi plainly 4-jointed or apparently 3-jointed, the third joint being very small and concealed, as in *Coccinella* ; the species are, to a great extent, fungivorous, but some are phytophagous ; although there are only four British species, yet these represent the three tribes into which the family may naturally be divided, which may be distinguished as follows :—

- | | |
|---|--------------|
| I. Tarsi distinctly 4-jointed | MYCETÆINA. |
| II. Tarsi dilated, apparently 3-jointed, the third joint being very minute and concealed between the lobes of the second joint. | |
| i. Anterior coxæ contiguous, somewhat conical ; prosternum not produced between coxæ | DAPSINA. |
| ii. Anterior coxæ distant, subglobose ; prosternum produced between coxæ | ENDOMYCHINA. |

MYCETÆINA.

This tribe comprises a number of small or very small insects which may be known by having the third joint of the tarsi quite distinct and not concealed; some of the species are oblong or oblong-oval, and some almost hemispherical; by some authors the genus *Myrmecoxenus* is included in the tribe; there are three British genera, which may be divided as follows:—

- I. Form oblong or oblong-oval.
 i. Antennæ 10-jointed; thorax with a strong impressed line on each side extending from base to beyond middle . . . SYMBIOTES, Redt.
 ii. Antennæ 11-jointed; thorax with a curved longitudinal line on each side extending from base to apex . . . MYCETÆA, Steph.
 II. Form rounded, subhemispherical . . . ALEXIA, Steph.

SYMBIOTES, Redtenbacher.

This genus contains about half a dozen species from Europe, the Canary Islands and South America; they bear a superficial resemblance to *Cryptophagus*, but may be easily recognized by the sculpture of the thorax.

S. latus, Redt. (*rubiginosus*, Heer.). Oblong-ovate, broad, ferruginous or reddish-brown with the thorax often lighter, shiny; antennæ rather long, reddish-testaceous, with a distinct three-jointed club, the first joint of which is as broad as the second; head rather small, eyes black; thorax twice as broad as long, about as broad in front as behind, very finely punctured, with a strong longitudinal impression on each side, reaching from base to beyond middle; elytra finely pubescent, with fine punctured striæ, interstices smooth, legs reddish-testaceous. L. $1\frac{1}{2}$ mm.

In rotten stumps, &c.; rare; Richmond Park, Surrey (Champion); Reigate Hill (Saunders); Claygate, in fungus on elm stump (Power); Clifton near Bristol (Gorham); Bungay, Suffolk (Garneys); in May, 1883, I took a series in an old stump at Nocton near Lincoln.

MYCETÆA, Stephens.

This genus contains one European species, and another has been described from the Cape of Good Hope; they are smaller, more oval, and more coarsely punctured than *Symbiotes*, and the thorax is differently sculptured.

M. hirta, Marsh (*subterranea*, F.; *villosa*, Beck.). Oblong-ovate, convex, narrowed towards apex, shining, clothed with pale coarse, somewhat setose, pubescence; colour lighter or darker ferruginous or reddish-brown; head small; antennæ with a distinct three-jointed club, of which the first joint is evidently narrower than the second; thorax

transverse, with sides rounded, sparingly and finely punctured, with a curved line on each side extending from base to apex; elytra with rows of large coarse punctures; legs reddish-testaceous. L. $1-1\frac{1}{4}$ mm.

In haystack refuse, dung-heaps, corn-bins, &c.; often in cellars about beer drippings and in fungi in wine cellars, in company with *Cryptophagus cellaris*, *Atomaria nigripennis*, &c.; generally distributed and common in the London and Southern districts, and widely distributed in the Midlands; not so common further north; Scotland, scarce, Solway, Tweed, and Forth districts. Ireland, near Belfast, Waterford, and Dublin, and probably common. The larvæ occasionally bore into wine corks in cellars, and may cause considerable damage.

ALEXIA, Stephens.

In the Munich catalogue six species are mentioned as belonging to this genus, which have been described from Europe and North and South America; in the catalogue, however, of Heyden, Reitter, and Weise, fifteen species are described from Europe alone, of which eleven and one variety have lately been introduced by Reitter; it is probable, therefore, that the genus will be found to be very extensive; it has, by many authors, been included under the Coccinellidæ, probably on account of its shape, which strongly resembles that of a small *Scymnus*; it is, however, distinct from that family by reason of the formation of the tarsi.

A. pilifera, Müll. (*Sphærosoma quercus*, Steph.). Subglobose, broadest about middle and narrowed in front and behind, of a dark pitchy-black colour, or more or less ferruginous, or reddish, the colour being somewhat variable; upper surface thickly clothed with long, fine, more or less erect pubescence; thorax transverse, much narrowed in front, exceedingly finely and hardly visibly punctured; elytra rather thickly and deeply punctured; legs reddish-testaceous; the antennæ are rather long, reddish-testaceous, terminated by a distinct three-jointed club, the joints of which are of about equal breadth. L. 1 mm.

In faggots, fungi, moss, dead leaves, at roots of grass, &c.; locally common; London district generally distributed; St. Peter's, Kent; Hastings; Devon; Suffolk, on oaks (Stephens); Repton; Lincoln, Langworth Wood, in faggots; Northumberland district, rare, Whittle Dene.

DAPSINA.

This tribe is separated from the Endomychina, chiefly on account of the formation of the prosternum, and the fact that the anterior coxæ are contiguous; the ligula also is smaller and differently shaped; it contains five European genera, of which one only is represented in Britain.

LYCOPERDINA, Latreille.

About fifteen species have been described in this genus, of which five

occur in Europe and the others are found in North America, Ceylon, Japan, South Africa, Northern Asia, &c. ; it is probably much more extensive than is at present known ; our single species is a curious-looking and conspicuous insect ; it lives exclusively in puff balls.

L. bovistæ, F. (*immaculata*, Latr.). Of a dark pitchy-brown or pitchy-black colour, with the base and apex of elytra and the posterior angles of the thorax often lighter ; head rather long, much narrower than thorax, with a strong longitudinal impression on front ; antennæ long, ferruginous, gradually thickened towards apex, without club ; thorax about as long as broad with sides rounded in front and gradually contracted to base, strongly margined, anterior angles prominent, upper surface very finely, scarcely visibly, punctured ; on each side there is a very strong longitudinal depression reaching from base to middle, and there is also a longitudinal depression before scutellum ; elytra convex, broadest about middle, much depressed towards base, and with apex obtusely pointed, extremely finely punctured ; legs pitchy-red, robust ; abdomen composed of five segments. L. 4-4½ mm.

Male with the posterior tibiæ slightly, and the intermediate tibiæ very slightly, curved.

In puff balls (*Lycoperdon bovistæ*) ; very local, but generally in some numbers when found ; Guildford, Mickleham, Esher, Birch Wood, Kimpton, Purley Downs, Rusper ; Shipley near Horsham ; Hastings ; Clifton near Bristol ; it has not been recorded from any locality further north.

ENDOMYCHINA.

The species belonging to this tribe are, as a rule, very pretty and conspicuous, brightly coloured, insects ; they are found either in or about fungi or fungoid growth ; they differ from the preceding tribe in the characters before mentioned.

ENDOMYCHUS, Panzer.

This genus contains about half a dozen species from Europe, India, North America, and Japan ; three of these occur in Europe, of which one is found in Britain.

E. coccineus, L. Oblong or oblong-ovate, slightly convex, shining, glabrous, of a very bright red colour, with the head, a broad longitudinal band on thorax, and two well-marked large round spots on each elytron, black ; the sides of breast also are black or considerably darker than middle ; occasionally the dark band on thorax is indistinct or absent ; head small, antennæ long, black, distinctly thickened towards apex ; thorax transverse, considerably narrower than elytra, with anterior angles strongly projecting, and the sides gradually narrowed in front, disc almost impunctate, sides strongly margined ; on each side of centre

at base there is a curved impression; elytra very finely punctured, broadly rounded at apex; legs black, with tarsi pitchy-red; abdomen composed of six segments. L. 5-5½ mm.

In fungi, and in or near fungoid growth on or under bark of decaying beech, elm, &c.; locally common; Sevenoaks, Lewisham, Mickleham, Esher, Westerham, Sheerness; Hainault Forest; Abbey Wood; Hastings; Dartmoor, Devon; Swansea; Neath; Salford Priors near Evesham; Weston-super-Mare; Ripon; Scarborough; Northumberland and Durham district; Scotland, rare, Tweed, Forth, and Tay districts; it is probably widely distributed from Yorkshire southwards, although apparently very local in many districts.

EROTYLIDÆ.

This is a very extensive family, and contains a much larger number of species than the *Endomychidæ*, which in many respects are closely allied to it; according to the Munich catalogue about eleven hundred species belong to it, comprised in nearly seventy genera, but this number has been since largely increased, through the researches of the Rev. H. S. Gorham and others; with regard to distribution both this and the succeeding family are very poorly represented in temperate climates, and are chiefly characteristic of tropical countries; in Europe only five genera are found, comprising about twenty species; of these, three genera, represented by six species, occur in Britain; the Southern Temperate Hemisphere is more poorly represented in species of both families than the Northern; Australia, for instance, as far as is at present known, contains only two or three species of *Endomychidæ* and four or five *Erotylidæ*, whereas New Zealand contains even less *Erotylidæ* and no *Endomychidæ*; in the computation of the total number of species given above the *Languriidæ*, containing several hundred species, are omitted; these have been, by many authors, included under the *Erotylidæ*; but must, most probably, be regarded as a separate family; the following are some of the chief characters of the *Erotylidæ*: antennæ 11-jointed, inserted at the sides of the forehead, with the last three or four joints forming a distinct club; thorax with side margins distinct, anterior coxal cavities closed behind; * mesosternum moderate, metasternum rather long, abdomen with five free segments which are about equal in length; legs moderately long, tarsi usually 4-jointed, sometimes 5-jointed; the formation of the tarsi, which are at least plainly 4-jointed, will at once separate the *Erotylidæ* from the true *Endomychidæ*, in which the third joint is very small, and concealed between the lobes of the second joint, so that they appear 3-jointed; the addition of the *Mycetæina* to the *Endomychidæ* prevents this distinction from being universal, and it might perhaps be the best plan to separate that tribe, as some authors do, as a distinct family *Mycetæidæ*.

* In the *Languriidæ* the coxal cavities are open behind.

The three British genera may be distinguished as follows :—

- I. Tarsi distinctly 5-jointed DACNE, Latr. (*Engis*, Payk.)
- II. Tarsi apparently 4-jointed (the fourth joint being very small and connate with fifth).
 - i. Thorax margined at base; form oblong . . . TRIPLAX, Payk.
 - ii. Thorax not margined at base; form ovate . . . CYRTOTRIPLAX, Crotch. (*Tritoma*, F.).

DACNE, Latreille (*Engis*, Paykull).

This genus contains rather more than a dozen species from Europe, South Africa, North America, Japan, &c. ; they may be known by their 5-jointed tarsi ; two of these occur in Britain.

- I. Thorax red D. HUMERALIS, F.
- II. Thorax pitchy-black D. RUFIFRONS, F.

The larva of *D. rufifrons* is described and figured by Westwood (*Classif.*, Vol. I., p. 147, Figs. 11, 13); it is narrow, somewhat cylindrical and scaly, with six short legs, and two strong short cerci at the extremity of the body, which is sparingly clothed with scattered hairs, except on head; it is found in boleti in company with the perfect insect.

D. humeralis, F. Oblong, black, shining, with the head, thorax, antennæ, and legs red, and a spot at each shoulder reddish-yellow ; head rather broad, antennæ rather short, with joints 4–8 rounded and transverse, 9–11 forming a distinct club ; thorax broader than long, convex, finely and rather diffusely punctured ; elytra finely punctured in rows ; legs rather stout, tibiæ angularly dilated at apex. L. $2\frac{3}{4}$ –3 mm.

In boleti on beech and elm trees ; rare ; Dulwich ; Westerham and Eastry, Kent ; Sheerness ; Wicken Fen, Cambridge ; Hunstanton, Norfolk ; Suffolk ; Bristol ; Llangollen ; Bretby Wood, near Repton, Burton-on-Trent ; Needwood, Staffordshire.

D. rufifrons, F. Very like the preceding, but easily known by its colour, which is black or pitchy-black, with the head, antennæ, and legs ferruginous, and a more or less distinct spot at shoulder reddish or reddish-yellow ; it is also on the average rather smaller, but there appears to be very little difference of structure or sculpture between the species : immature examples are of a lighter colour, and are sometimes entirely testaceous or reddish-testaceous. L. $2\frac{1}{2}$ – $2\frac{2}{3}$ mm.

In fungoid growth on trees ; locally common ; London and Southern districts, generally distributed ; South Wales ; Cambridgeshire ; Salford Priors ; Bretby Wood, near Repton ; Hunstanton, Norfolk ; Scarborough ; neither of the species appears to occur in the Northern counties of England or in Scotland.

TRIPLAX, Paykull.

Upwards of fifty or sixty species are contained in this genus ; they are widely distributed, but a larger proportion occur in temperate and even cold countries than is usually the case with genera belonging to the family ; thirteen are found in Europe, but six of these are assigned in the catalogue of Heyden, Reitter, and Weise to the genus *Ischyryus*, Lac., which is included by them under *Triplax* ; the genus *Ischyryus*, according

to the Munich catalogue, contains about sixty species, which are entirely confined to North, Central, and South America, and adjacent islands; three species of *Triplax* occur in Britain, which may be distinguished as follows:—

I. Head and abdomen red.

i. Elytra black; size larger *T. RUSSICA*, L.

ii. Elytra metallic, greenish-blue; size smaller *T. ÆNEA*, Schall.

II. Abdomen black; head usually black *T. LACORDAIREI*, Crotch.

T. russica, L. Oblong, very shining, head and thorax bright red, elytra black; head triangular, finely and diffusely punctured, eyes black; antennæ black, rather long, with second joint plainly shorter than third, last three joints forming a distinct club; thorax transverse, sub-rectangular, gradually and slightly narrowed in front, with anterior angles projecting, finely and not closely punctured; elytra long, gradually contracted towards apex, with a distinct callosity at shoulders, finely punctured in rows, interstices feebly punctured; breast usually black; legs red, robust, tibiæ dilated at apex, tarsi with first three joints plainly dilated. L. $4\frac{1}{2}$ –7 mm.

In fungoid growth on trees; occasionally found under bark; local; London district, rather scarce, Darenth, Mickleham, Coombe Wood, Headley Lane; Eastry, Kent; Birdbrook, Essex; New Forest; Devonshire; Bristol; Swansea; Cannock Chase; Notts; Needwood; Repton; Scotland, rare, in fungi, Tay and Moray districts.

T. ænea, Schall. Much smaller than the preceding; head and thorax red, antennæ black; elytra metallic, bluish-green; scutellum red; thorax a little longer in proportion than in *T. russica*, and elytra with the rows of punctures rather stronger; under-side red; legs red, not so robust as in the preceding species. L. $2\frac{3}{4}$ – $4\frac{1}{2}$ mm.

In fungoid growth on holly and other trees; rare; Coombe Wood and Meldon Park (Stephens); New Forest; Needwood; Scarborough; Northumberland district.

T. Lacordairei, Crotch (*ruficollis*, Steph.; *nigriceps*, Lac.). Very closely resembling a minute example of *T. russica*: head as a rule black, but sometimes only slightly dusky at sides; antennæ blackish or pitchy, with base sometimes lighter; thorax bright red, with sides very slightly rounded, transverse, very finely and not closely punctured; elytra black, with regular rows of fine punctures; abdomen black (a character which will at once distinguish the species); legs lighter or darker reddish-testaceous. L. $2\frac{3}{4}$ – $4\frac{1}{2}$ mm.

In fungoid growth on ash and other trees; very local and rare; Windsor (Stephens); Erith (Power); Darenth Wood (Champion); Dulwich, one example (T. Wood).

CYRTOTRIPLAX, Crotch (*Tritoma*, F.).

This genus contains about twenty species which are widely distributed, representatives occurring in North America, Siberia, Japan, Borneo, West

Africa, &c. ; they may be known by their ovate form, and by having the base of the thorax unmarginated, as well as by the very long third joint of the antennæ. The genus *Cyrtotriplax* was separated by Crotch from *Tritoma*, but Horn again joins them on the ground that the differences are insufficient; it is, however, best to adopt the name *Cyrtotriplax*, as *Tritoma* is now applied by many authors to *Mycetophagus*.

The larva of *C. bipustulata* is described and figured by Perris, *Larves des Coléoptères*, p. 570, figs. 570—579; it is 5–6 mm. in length, rather broad, slightly narrowed in front and behind, of a yellowish-white colour, with bands of reddish-brown, scantily clothed with very short hairs, and terminated by two short hooks at the end of the anal segment, which is bifid; the head is narrower than the prothorax, which is the longest of the segments; the antennæ and legs are very short; the larva lives in fungi in company with the perfect insect.

C. bipustulata, F. Ovate, broadest in middle, narrowed in front and behind, black, shining, with a large red spot at shoulders of each elytron, which often nearly meet at suture and enclose a dark space about scutellum: the humeral callosity is often black: sometimes the thorax is red; head moderate, antennæ rather short, red, with distinct black 3-jointed club; thorax transverse, narrowed gradually in front, finely and not closely punctured; elytra at base about as broad as base of thorax and continuing its outline, with regular rows of fine and closely set punctures, interstices very finely punctured; legs black, tarsi reddish, tibiæ dilated at apex, all the coxæ very widely distant. L. 3–4 mm.

In fungoid growth on old trees and rotten stumps; local, and, as a rule, rare; London district, not uncommon in some localities, Darent Wood, Richmond Park, Mickleham, Sanderstead, Coombe Wood, Birch Wood; Epping Forest; The Holt, Farnham; St. Leonards Forest; Glanvilles Wootton; New Forest; Northumberland district, Dilston (G. Wailes); it has not been found in Scotland; it seems strange that there should be no record from any locality between the Thames district and the extreme north of England.

COLYDIIDÆ.

In the Munich catalogue ninety-two genera and three hundred and thirty-nine species are assigned to this family; these, however, have since been considerably increased by the researches of Mr. Lewis, Dr. Sharp, and others; in the European Catalogue of Heyden, Reitter, and Weise (1883), twenty-nine genera, containing about sixty species, are enumerated; in Britain, however, only fifteen species, belonging to ten genera, have hitherto been recorded; to these are added *Murmidius* and *Langelandia*, which appear to belong to this family rather than to the Histeridæ and Lathridiidæ, to which they have, as a rule, been respectively assigned. I have also, following Thomson, included *Myrmecoxenus*. The Colydiidæ may be known from the allied families by the 4-jointed simple tarsi and the fact that the anterior ventral segments are more or less connate; the anterior coxæ are usually small and globular; the anterior coxal cavities are sometimes closed and sometimes open behind; they are found as a rule under bark of trees, in decaying wood, or in

fungi; they appear to be much more characteristic of tropical than of temperate countries, and as only a few outlying fragments of the family are found in Britain, no attempt need be made to discuss their classification; for convenience sake they may be divided into the following tribes; with regard to the characters, different authors make very contradictory statements; as regards the anterior coxal cavities, for example, some speak of them as open behind, while others, referring to the same genera, say distinctly that they are closed behind; the fact seems to be that some genera have them so narrowly closed, that, unless they are carefully examined, they appear to be open; the same confusion also exists with regard to the relative length of the joints of the tarsi. Dr. Horn regards the Colydiina, which contain in our fauna *Colydium* and *Aglenus*, as distinct from the Deretaphrina, containing *Teredus* and *Oxylæmus*; they are, however, not sufficiently distinct to be separated, and I have followed Dr. Sharp in including them all under the Deretaphrina.

- I. Antennæ inserted under a distinct frontal ridge; form more or less elongate or oblong.
 - i. Last joint of labial palpi not acicular.
 - 1. Anterior coxæ slightly separated; posterior coxæ contiguous.
 - A. First ventral segment of abdomen plainly longer than second DERETAPHRINA.
 - B. First ventral segment of abdomen about equal to second SYNCHITINA.
 - 2. All the coxæ distant LANGELANDIINA.
 - ii. Last joint of labial palpi very small, acicular CERYLONINA.
- II. Antennæ inserted on the forehead; form ovate MURMIDIINA.

DERETAPHRINA.

Of this tribe four out of the five known European genera are British, the fifth genus *Aulonium* being found in Central Europe; with the exception of *Aglenus* (which is local in manure-heaps, tan-pits, &c.), they are found under bark or in burrows of wood-boring insects, and are among our very rarest Coleoptera.

- I. Antennæ 11-jointed, club 3-jointed.
 - i. Eyes absent; size smaller; palpi with the last joint oblong-ovate, truncate at apex AGLONUS, *Er.*
 - ii. Eyes present; size larger; palpi with the last joint sub-securiform COLYDIUM, *Gyll.*
- II. Antennæ 11-jointed, club distinctly 2-jointed TEREDUS, *Shuck.*
- III. Antennæ apparently 10-jointed with the club solid, but including the eleventh joint, which is visible at apex OXYLÆMUS, *Er.*

AGLENUS, Erichson.

One European species is contained in this genus, which has been described under different names from Britain, France, Austria, &c.; it is

a small reddish-brown cylindrical insect, and is characterized by the absence of eyes.

A. brunneus, Gyll. Short, cylindrical, ferruginous or reddish-testaceous; head large, almost as broad as thorax, distinctly punctured; antennæ short, 11-jointed, with club 3-jointed; thorax about as long as or a little longer than broad, truncate in front and behind, rather thickly punctured; elytra scarcely longer than head and thorax taken together, somewhat ovate, obsolete punctured behind, more plainly towards base; under-side of all the segments of thorax thickly and deeply punctured; legs short, reddish-testaceous. L. $1\frac{1}{2}$ –2 mm.

In manure-heaps, tan-pits, refuse of corn-bins, old props in cellars, hot-beds, &c.; local; Esher; Ashford, Kent; Cowley; Birdbrook, Essex; Forest Hill; Edgbaston; I believe also that it has occurred in Gloucestershire; it is probably often overlooked.

COLYDIUM, Fabricius.

A few species are included in this genus from North and Central America, Senegal, &c.; two occur in Europe, one of which is among the very rarest of our British insects; it is found only in the New Forest, and appears to be parasitic in the burrows of *Platypus cylindrus*.

C. elongatum, F. Linear, very long and narrow, shining black; antennæ rather short, brownish-red, with a strong 3-jointed club, maxillary palpi with the last joint somewhat securiform; head diffusely and sparingly punctured; thorax much longer than broad, very slightly narrowed towards base, rather sparingly and finely but distinctly punctured, with a strong and deep complete central furrow, and a smaller one on each side, which are somewhat abbreviated in front and behind; elytra with the suture and four lines on each side raised, the latter more strongly than the former, with the interstices somewhat rugose and each furnished with two rows of punctures; legs brownish-red. L. 4–6 mm.

Under bark, and in old trees, in the burrows of wood-feeding beetles; very rare; New Forest (Turner, Champion, &c.).

My single specimen, which is labelled "Turner, 1862," has the head and thorax black and the elytra reddish-brown.

TEREDUS, Shuckhard.

Two European species and one from Ceylon are contained in this genus; one of these is found in Britain; they are distinguished by their long cylindrical form, and the 2-jointed club of the antennæ.

T. nitidus, F. (*cylindricus*, Ol.). Long, narrow, and cylindrical, shining black; antennæ ferruginous; thorax about double as long as broad, as broad in front as elytra, slightly narrowed to base, with all the angles blunt, thickly and finely punctured; elytra parallel, rounded

behind, with very finely punctured striæ, and the interstices furnished with very fine rows of punctures; legs red. L. $3\frac{1}{2}$ –4 mm.

Under bark of oak, &c., and in decaying stumps; very rare; Sherwood Forest. Mr. Blatch has lately taken several specimens in the old locality.

OXYLÆMUS, Erichson.

This genus contains two European species and one from North America; they occur under bark of trees, often in company with ants, and are of very rare occurrence.

- I. Thorax rather closely, although strongly punctured, with four impressions at base, of which the two outer ones reach scarcely one-third of the length of the thorax O. CYLINDRICUS, Panz.
 II. Thorax very coarsely and not thickly punctured, with four impressions at base, of which the two outer ones reach as far as the middle of thorax O. VARIOLOSUS, Duft.

O. cylindricus, Panz. Elongate, cylindrical, shining reddish-brown, thinly clothed with short upright hairs; head sparingly and deeply punctured; antennæ rather short, with solid club; thorax a little narrower than elytra, scarcely narrowed at base, upper surface coarsely and deeply and rather thickly punctured, with two small deep furrows above scutellum, and a longer triangular impression on each side; elytra parallel, with eight rows of punctures, all strong and deep, except those of the seventh row which are fine; legs stout, tibiæ dilated at apex. L. 3 mm.

Under bark of oak; rare; New Forest, Lyndhurst, &c. (E. Sheppard and others).

O. variolosus, Duft. (*cæsus*, Er.) Very like the preceding, but somewhat broader and less cylindrical, with the thorax more sparingly and less thickly punctured, and with the outer basal impression reaching as far as middle; the punctures of the striæ of elytra are all large and deep, and the under-side of the thorax is more strongly punctured. L. 3 mm.

Under bark, by sweeping, &c.; very rare; first taken at Colney Hatch, Middlesex, by Mr. Dossetor in 1850, and afterwards by Mr. Pelerin in 1854 at Charlton, Kent. Dr. Power has captured it at Mickleham and Claygate, and also at Holm Bush, Brighton; it is very rare on the continent, where it was first taken by M. Dufour in a high mountainous district under bark of oak, and afterwards by Herr Gressner in Saxony in company with *Formica fuliginosa*.

SYNCHITINA.

A few small European genera are contained in this tribe, of which six are found in Britain; these may be separated as follows:—

- I. Antennæ very stout without distinct club at apex, but forming a fusiform club almost from base ORTHOCERUS, Latr.
 (Sarrotrium, Ill.)

- II. Antennæ rather slender, terminating in a distinct club made up of either one or two joints.
 - i. Sides of thorax and elytra strongly notched; upper surface very scabrous; form broader; tibiæ without apical spines **ENDOPHLEUS, Er.**
 - ii. Sides of thorax and elytra simple or slightly crenulate; upper surface not scabrous; form narrower; tibiæ with small fine apical spines.
 - 1. Antennæ 11-jointed, club 2-jointed **DITOMA, Ill.**
 - 2. Antennæ 10-jointed, club solid.
 - A. Grooves for the reception of the antennæ wanting **SYNCHITA, Hellw.**
 - B. Grooves for the reception of the antennæ distinct **CICONES, Curt.**
- III. Antennæ rather slender, terminating in a 4-jointed club (species small with facies of a *Cryptophagus*) **MYRMECOXENUS, Chev.**

ORTHO CERUS, Latreille (*Sarrotrium*, Ill.).

This genus contains three European species, and one from Central Asia; the single species found in Britain extends over northern Europe and Siberia; they may be known by the peculiar development of their antennæ.

O. muticus, L. (*clavicornis*, L.; *hirticornis*, De G.). Greyish-black, clothed with very fine whitish pubescence; head large, uneven, subquadrate, with small, prominent eyes; antennæ fusiform, very stout and broad, broadest in middle, joints 4-9 plainly broader than the remainder, pilose and set with long setæ; thorax a little narrower in front than behind, with the posterior angles very blunt, and the anterior angles projecting, with a deep broad longitudinal furrow bounded on each side by an indistinct raised line; elytra with rows of deep, crenulate, punctures, second, fourth, and sixth interstices strongly raised; legs rather short, tarsi setose beneath. L. 4 mm.

Sandy places; at roots of grass, in moss, &c.; not uncommon, but local; Sheerness, Shirley, Esher; Lowestoft; Felixstowe; Deal; Dover; Hastings; Hayling Island; New Forest; Swansea; Leicester; York; Crosby and Hightown near Liverpool; Southport; Northumberland district, near Bamborough Castle; Scotland, maritime, local, Forth district.

ENDOPHLEUS, Erichson.

This genus contains a few species, three of which are found in Europe, and one has lately been described from Japan by Dr. Sharp; as regards this genus, and in fact all the genera of the Colydiidæ, it must be remembered that owing to their retiring habits the species are perpetually passed over, and that consequently many of those genera that are now restricted to some two or three species, may ultimately be found to be very numerous; the genus may be recognized by its broad form, much raised and scabrous surface, and the serrated sides of thorax and elytra.

E. spinulosus, Latr. Oblong, rather broad, reddish-brown, with obscure dark markings, the margins being somewhat lighter, very dull, with short stiff setæ at sides and on the various scabrous prominences with which the upper surface is thickly set; head rather small, sunk in thorax, antennæ not stout, with 2-jointed club, the eleventh joint being also dilated; thorax granulate, with anterior angles projecting and partially encircling head, sides strongly serrate, disc with irregular longitudinal ridge in centre; elytra with rough interrupted ridges and prominences, two near suture being strongly defined at base, margins serrate, but not so strongly as in thorax; legs rather short, ferruginous. L. 4-6 mm.

Under bark and in decaying wood, among the débris of the borings of *Leptura scutellata*; very rare; New Forest; this species was one of Charles Turner's great "finds;" I have the original specimen in my possession labelled "New Forest, March 3, 1862."

DITOMA, Illiger (*Synchitodes*, Crotch).

With the exception of the genera *Tarphius* and *Bothrideres* this genus is one of the most numerous in point of species, and the most widely distributed of the Colydiidæ; species have been recorded from North and South America, Ceylon, New Caledonia, New Zealand, Western Africa, Cuba, &c.; only one has hitherto been found in Europe; it is somewhat local, but not uncommon in Britain.

The larva of *D. crenata* is described and figured by Perris (Ann. Fr., 1853, p. 614, Pl. 18, fig. 110); it is 6 mm. in length, linear and depressed, of a whitish colour, with a reddish tinge on some portions of the body; the head is suborbicular, narrower than the prothorax; the rest of the segments are of about equal breadth, the body being somewhat moniliform; the last segment is darker at apex than the rest, and terminates in two rather long produced points at sides, and two shorter ones within these; the legs and antennæ are very short. The larva is found under bark of oaks and pines devouring the larvæ of species of *Tomicus*.

D. crenata, F. Elongate, parallel-sided, depressed, dull black, with exceedingly fine greyish pubescence, elytra with two larger or smaller reddish patches on each, which sometimes cover all the elytra except a narrow space at suture and in middle; head narrower than thorax, antennæ ferruginous, with 2-jointed club; thorax almost as long as broad, a little narrower at base than elytra, with all the angles obtuse, upper-side rugosely punctured, with two raised lines on each side; elytra parallel, rounded at apex, with rows of regular punctures, alternate interstices slightly raised. L. 3 mm.

Under bark of oak, beech, fir, &c.; local, but not uncommon; Mickleham; Loughton; Hainault; Windsor Forest; The Holt, Farnham; St. Leonards Forest; New Forest; very doubtful as Scottish, Forth district; "Duddingstone and South of Scotland, Ent. Edin.;" if we may judge by the fact that it occurs in no intervening district, this record is almost certainly erroneous; it has never been taken by Dr. Sharp or any other collector in Scotland that I know of.

SYNCHITA, Hellw. (*Ditoma*, H. R. W.).

This genus contains about fifteen species, which are very widely distributed, representatives being recorded from North and South America, Africa, the Antilles, &c.; three occur in Europe, of which two have for some time been regarded as British; Dr. Sharp, however (*Ent. Monthly Mag.* xxii. 44), shows conclusively that we do not possess *S. mediolanensis*, which was introduced with considerable hesitation by Mr. Rye in the *Entomologists' Annual* for 1868, p. 65. All our specimens must therefore be referred to *S. juglandis*, which appears to vary considerably both as regards colour and size.

S. juglandis, F. (v. *obscura*, Redt.). Oblong, fuscous, with the thorax sometimes darker than the elytra, dull; the colour, however, is variable; upper surface rather depressed; antennæ brownish-red, with the club lighter, apparently solid; head much narrower than thorax, thickly and finely rugose; thorax a little narrower than elytra, broader than long, margined, with all the angles blunt, very thickly and rugosely punctured; elytra with regular rows of strong crenulate punctures, and the interstices finely wrinkled; on each row of punctures and on each interstice there is a row of fine grey outstanding setæ; the colour of the elytra is usually fuscous, with a lighter spot at each shoulder, but sometimes it is unicolorous testaceous-brown; legs ferruginous. L. 2-4 $\frac{2}{3}$ mm.

Under bark of deciduous trees, in old stumps, &c.; very rare; New Forest (taken by Turner, and lately in some numbers by Mr. Gorham and Dr. Sharp); Stephens records it from the London district, and Haliday from near Belfast; I believe that Mr. Crotch is said to have taken it at Thetford, near Merton, Surrey.

CICONES, Curtis.

In the Munich catalogue four species only are enumerated under this genus, two from Europe, one from Tahiti, and one from Ceylon; further species, however, have been found in Ceylon, and Dr. Sharp has lately described two from Japan, so that the genus is probably a numerous and widely distributed one; it differs from *Ditoma* by its solid club, and from *Synchita* by having distinct grooves for the reception of the antennæ.

C. variegatus, Hellw. (*carpini*, Curt.). Oblong, rather broad, fuscous, sometimes nearly black, clothed with more or less distinct short yellowish and brownish hairs, elytra irregularly variegated with yellowish bands; antennæ and legs reddish; head much narrower than thorax; thorax about as broad as elytra, rather strongly transverse, anterior angles produced, posterior angles almost right angles; disc uneven; elytra with rows of punctures, which are somewhat irregular between the interstices, alternate interstices slightly raised; legs short. L. 3 mm.

Under bark of beech and hornbeam; rare; Bromley (Kent), Chatham, Mickleham, Loughton, Epping Forest, Westerham, Farnborough; New Forest.

MYRMECOXENUS, Chevrolat.

This genus has given rise to much discussion, and its true position still remains in some doubt; it has the facies of a *Cryptophagus*, and has by some authors been placed near that genus, but the 4-jointed tarsi, more or less connate first segments of abdomen, and the fact that the anterior coxal cavities are closed behind, seem to point to a very different position; it has also been placed among the Lathridiidae and the Mycetophagidae and under the Endomychidae as forming a portion of the Mycetæina; on the whole, however, its most natural position seems to be with the Sychitina, and I have therefore placed it in this tribe, although it is more than possible that further researches may cause it to be very differently located; the genus contains four species, which are chiefly found in Central and Southern Europe.

M. vaporariorum, Guér. Oblong, rather depressed, somewhat shining, ferrugino-testaceous, with the apex of abdomen dark, clothed with very fine pale pubescence, and very closely but somewhat distinctly punctured; head rather large, triangular, eyes black, somewhat prominent; antennæ rather short, testaceous, thickened towards apex, 11-jointed, with a gradual 4-jointed club; thorax slightly transverse, with the sides gradually and slightly rounded in front and narrowed behind; elytra broader than thorax, somewhat widest behind middle, with shoulders well marked, reddish-testaceous with the colour sometimes a little darker at sides, base, and apex; pygidium not quite covered by elytra; legs ferruginous. L. $1\frac{1}{2}$ mm.

In dung-heaps, hot-beds, and vegetable refuse; rare; Carshalton, Surrey (Janson); Dulwich (T. Wood); Weston-super-Mare (Crotch); Edgbaston and Knowle near Birmingham (Blatch); Manchester district; Withington, Cheshire (Chappell).

LANGELANDIINA.

I have adopted this tribe to include the genera *Langelandia*, Aubé, and *Agelandia*, Reitter, which are usually included under the Lathridiidae; Herr Reitter, however, placed them among the Colydiidae on the ground that the tarsi are 4-jointed, and not 3-jointed as they have generally been supposed to be; M. Belon (Annales de la Soc. Linnéenne de Lyon, 1881, p. 199) takes very strong exception to the view adopted by Herr Reitter, and says that neither he himself, nor other entomologists whom he has consulted, have been able to discover more than three joints to the tarsi; I have, however, had some correspondence with M. Belon on the subject, in which he says that since the publication of his work on the Lathridiidae above referred to he has seen an example of

Langelandia (Agelandia) grandis, which undoubtedly has four joints to the tarsi; this species is very closely related to *Langelandia anophthalma*, and cannot be separated far from it; if then this latter species has 3-jointed tarsi, great confusion arises as to the proper classification. M. Belon rather inclines to the plan of classing the Colydiidæ and Lathridiidæ together under one family, so as to include the groups with three joints to the tarsi as well as those with four joints; the only other plan to be adopted (if *Langelandia* has 3-jointed tarsi, which does not seem as yet to be proved with absolute certainty) is to form a separate family Langelandiidæ; as, however, M. Belon observes, it appears "exorbitant de leur donner rang de famille;" if, however, they are not given family rank, I feel certain they must be classed with the Colydiidæ, as they bear a far greater affinity to such genera as *Ditoma* than to any of the Lathridiidæ.

LANGELANDIA, Aubé.

This genus contains four European species, one of which has quite recently been found in Britain; they are characterized by having no eyes, and by the fact that all the coxæ are more or less distant; they are usually found in rotten wood, seed potatoes, &c., buried at some distance underground.

The larva of *L. anophthalma* is described by Perris (Larves des Coléoptères, p. 77); the description, however, does not quite agree with that of a larva taken by Mr. T. Wood in company with the perfect insect, and which I feel certain is the larva of *Langelandia*; Perris describes the larva as linear, but the larva before me is strongly stragulate in the middle of body, and the abdomen is widened behind and terminates in two strong pointed processes; Perris states that the larva is linear, and that the abdominal segments are gradually larger until the sixth, and that the ninth terminates in two moderately curved hooks; the pupa appears to be distinguished by having the large flat head resting on the thoracic region.

L. anophthalma, Aubé. Elongate, subparallel, not convex, of a dull ferruginous colour; head much narrower than thorax, uneven; antennæ short and stout, with distinct 2-jointed club; thorax much longer than broad, widest a little before apex, slightly narrowed to base, anterior angles produced, posterior angles obtuse, lateral margin bordered and more or less strongly crenulated, disc with three more or less distinct longitudinal keels; elytra with the suture and two lines on each raised, the intervals being more or less coarsely punctured in rows; legs ferruginous. L. $2\frac{1}{2}$ – $3\frac{1}{2}$ mm.

This species has only been recently discovered in Britain by Mr. T. Wood, who took it in his garden at St. Peter's, Kent, in decaying seed potatoes underground, and where I had the pleasure of taking it with him last summer (1886); the insect is extremely sluggish in its movements, and might be easily overlooked.

CERYLONINA.

This tribe contains two European genera, *Philothermus* and *Cerylon*,

the former of which has the club plainly 2-jointed, whereas in the latter it is solid; they are small oblong or oval insects, and are distinguished by having the last joint of the palpi small and acicular, and the penultimate joint dilated; all the coxæ are widely separated; the genus *Cerylon* alone occurs in Britain.

CERYLON, Latreille.

About thirty species are contained in this genus, which are widely distributed throughout the world, representatives being found in North and South America, Ceylon, Tahiti, New Caledonia, Madagascar, &c.; nine or ten species are found in Europe, of which four are British; for a description of these the student is referred to a paper by myself in the Entomologists' Monthly Magazine, vol. xxiii. pp. 71-76; the species are small robust insects, and live under bark of decaying trees, logs, &c.; sometimes they are found in ants' nests; the shape of the thorax differs considerably in the two sexes, a point that must be carefully noticed.

The larva of *C. histeroides* is described by Perris (Ann. Fr. 1853, p. 616); it is elongate, somewhat parallel, entirely white with reddish head; head depressed, antennæ 4-jointed, with the last joint as long as all the preceding; prothorax longer than either meso- or metathorax, both of which are longer than the abdominal segments, which are of equal length until the last, which is somewhat developed, and has on the back two papillæ, each furnished with a long hair; it is deeply emarginate behind, and the lobes of the emargination appear to be trifid at apex; tarsi short and stout, 3-jointed; legs ciliate. The larva, according to M. Perris, lives in the galleries of *Hylurgus piniperda*, of which it destroys the larva; it is also found in other trees than pine trees, where it probably destroys the larvæ of other wood-boring beetles.

I. Form broader; upper surface pitchy-brown or nearly black.

i. Antennæ more slender; basal impressions of thorax transverse and rather shallow; thorax somewhat closely punctured

C. HISTEROIDES, F.

ii. Antennæ thicker; basal impressions of thorax longitudinal and deep; thorax strongly and sparingly punctured

C. FAGI, Bris.

II. Form narrower and more parallel; upper surface nearly always ferruginous testaceous.

i. Upper surface slightly convex; sides of thorax almost parallel; basal impressions of thorax distinct; striæ of elytra becoming evanescent towards apex

C. FERRUGINEUM, Steph.

ii. Upper surface much depressed; striæ of elytra reaching apex

C. DEPLANATUM, Gyll.

C. histeroides, F. Dark pitchy-black, ferruginous or reddish-ferruginous in immature examples, not very convex; antennæ ferruginous; thorax thickly and rather strongly punctured, in the male a little shorter than broad, and a little widened and rounded in front, so that its greatest breadth is before middle; in the female it is just as long as broad, very slightly and almost imperceptibly narrowed in front, so that it is broadest at base; elytra slightly dilated and widened at sides, rather depressed,

with distinct striæ, which are plainly punctured, and usually become obsolete near apex; interstices flat, finely punctured in more or less irregular rows, legs reddish or pitchy-red. L. 2-2½ mm.

Under bark of pines, elms, oaks, and many other trees; also in ants' nests; common and generally distributed over the greater part of England and probably Ireland; it is apparently less common further north; Mr. Bold records it as rare from the Northumberland district, and Dr. Sharp says that it is local in Scotland in the Tay and Dee districts. Mr. Blatch has taken a large mahogany-brown coloured variety in great profusion in Buddon Wood, Leicestershire, in nests of *Formica rufa*.

V. longicolle, Reitt. This appears to be a form of Reitter's *v. caucasicum* of *C. histeroides*, which is chiefly distinguished by its longer thorax. In Dr. Sharp's collection there is a specimen answering to my specimen from Herr Reitter, which is labelled as "bought from Turner;" no locality, however, is attached.

C. fagi, Bris. (*forticorne*, Muls.). Broader and more convex than *C. histeroides*, and with the elytra more dilated in front; the antennæ are shorter and stouter, ferruginous, with the first and last joints lighter, and the thorax is evidently more strongly and much more sparingly punctured, especially on disc, and at the base is furnished with larger impressions, which are oblong, and more distinct than in the preceding species; the thorax, moreover, is almost parallel-sided in the male, and evidently narrowed in front in the female; the striæ of the elytra are rather finely punctured, and the interstices, as a rule, are almost smooth. L. 2-2½ mm.

Under bark and in rotten wood, especially of beech; not common; Chatham, Sevenoaks, Cobham Park, Twickenham, St. Mary Cray, Mickleham, Tilgate, Darent; The Holt, Farnham; Dean Forest.

V. excavatum, Fowler. This variety has the basal impressions of thorax continued nearly to the anterior margin, leaving a more or less defined broad raised longitudinal space in middle.

Warlingham, Surrey; three or four specimens have been taken in this locality by Mr. W. T. Saunders; they may possibly be identical with *C. foveolatum*, Baudi, but I have never seen a specimen of this species; it is, moreover, omitted in the last European catalogue, and is unknown to Herr Reitter, who is the chief authority on the European species.

C. ferrugineum, Steph. (*angustatum*, Er.). Rufo-ferruginous, oblong, parallel-sided; smaller and narrower than *C. histeroides*, to immature specimens of which species it bears a considerable resemblance; thorax rather strongly punctured, thickly at sides less thickly on disc, in male a little longer than broad, very slightly widened in front, in female evidently longer than broad, parallel-sided, basal impressions distinct but not large; elytra with sides a little rounded, with rather strong punctured striæ which, at sides, are more or less evanescent towards apex, first interstice next suture with a row of very fine punctures; sutural stria evidently deepened at apex. L. 2-2¼ mm.

Under bark of all kinds of deciduous trees, especially beeches; very local, but occasionally abundant; Chatham; Cobham Park, Kent; New Forest; Dean Forest; Caunock Chase; Sherwood Forest; Withington, Cheshire, in decayed root of lime tree; Scotland, rare, Tay district, Aviemore.

C. deplanatum, Gyll. Closely allied to the preceding, but rather smaller and more depressed, being the flattest of all the European species; in the male the thorax is evidently, although gradually, narrowed towards base, in the female the sides are almost straight, in both sexes it is longer than broad; the basal impressions are very small, and often only indicated by a very narrow fovea at base, which sometimes is almost absent; this point will distinguish it from the preceding, and also from the continental species *C. impressum*, which it much resembles; the striæ of the elytra are moderate and reach apex; the sutural stria is, however, not deeper at apex. L. $1\frac{3}{4}$ –2 mm.

Very rare in Britain; I only know of two or three examples, taken, I believe, by Mr. Gorham in the New Forest; Dr. Sharp's specimens from Scotland, that stand under the name, appear to be only small varieties of *C. ferrugineum*; the species is found rarely in Central Europe, under bark of beech, aspen, poplar, and probably other deciduous trees.

MURMIDIINA.

In some respects this tribe appears to be related to the Histeridæ, but it differs in having the tarsi 4-jointed; unless, therefore, we can raise the tribe to the rank of a family, it seems the best course to class it with the Colydiidæ; it must be admitted, however, that it appears to be a somewhat abnormal member of the family, and that as regards the development of the prosternal lobe it much resembles *Hister* and its allies; its present position must, perhaps, be regarded as merely provisional.

MURMIDIUS, Leach.

This genus contains two species, which are found in Europe and America; one of these occurs very rarely in Britain.

M. ovalis, Beck (*ferrugineus*, Leach). Short oval, rather convex, shining, lighter or darker castaneous; head narrower than thorax; antennæ very short, ferruginous, with a subglobose, apparently one-jointed, club; thorax very slightly narrower at base than elytra, very transverse, obsolete punctured, with two abbreviated striæ on each side, posterior angles right angles; elytra rounded at sides and apex, with rows of rather large punctures, which become evanescent towards apex; legs ferruginous, tibiæ somewhat arcuate. L. 1 mm.

In dead leaves, cut grass &c.; mostly found, however, in old rice, hay, &c.; Madingley Wood, Cambridgeshire, Dec. 1831 (Power); Shirley, near Croydon (Champion); London, in an old truss of hay bought for packing purposes (Janson).

HISTERIDÆ.

This family, according to the Munich catalogue of 1868, contains 60 genera and 1150 species; since that time, however, a large number of species and about 20 genera have been added through the researches of Schmidt, Lewis, and other Coleopterists who have especially studied the group; as a rule the members of the family are conspicuous for their smooth shining appearance, and the total want of pubescence; some few genera, however, have the outer skeleton very opaque and are strongly sulcate; the chief characters of the family are as follows: antennæ short, geniculate, capable of being retracted, club distinct and compact and as a rule received into cavities of the prosternum; thorax closely applied to elytra; prosternum frequently lobed in front; coxal cavities open behind; mesosternum variable in shape, metasternum very large; elytra truncate behind, leaving the pygidium and propygidium uncovered; abdomen with five free ventral segments; legs short, capable of being retracted closely underneath body, tarsi short and slender and in most genera received in grooves on the anterior face of the tibiæ, usually 5-jointed, but in one or two genera the posterior pair are 4-jointed; intermediate and posterior coxæ widely separated.

The greater number of the species are found in dung and carcases, but the Hololeptina, which are remarkable for their flat appearance and prominent head, as well as for the peculiar structure of their mandibles and maxillæ, live under the bark of trees; of these we possess no representatives, but one or two of our genera, as *Paromalus* and *Abraeus*, occur in damp rotten wood, and another, *Teretrius*, appears to be parasitic on certain wood-feeding beetles; one or two species are found exclusively in ants' nests.

The species as a rule are round or oval or more or less oblong, rarely cylindrical, of a unicolorous shining black or brownish colour, sometimes greenish or bluish, and occasionally metallic, with more or less distinct striation on the elytra; sometimes the elytra are marked with bright red spots or patches.

It may perhaps be observed that there is considerable difference among the writers on this family as to its generic classification.

The larvæ of the Histeridæ are distinguished by the absence of ocelli, the softness of their integument, the upper surface of the abdomen being often much wrinkled, the very short legs which in *Hister* are not visible from above, and the broad ninth segment of the abdomen which bears two short, 2-jointed cerci; they are furnished with large and powerful jaws, and are carnivorous and very voracious. Our British genera may be distinguished as follows:—

- I. Upper surface not costate (in the European species).*
 - i. Prosternum lobed in front, covering under-side of head.

* *Hister costatus* from Mexico has the opaque exoskeleton and costate sculpture of *Onthophilus*, but it is at present the only species known that presents this peculiarity.

1. Antennæ inserted in cavities which are anterior, open in front, and more or less completely closed beneath by the lobe of the prosternum, which is strong.
 - A. Club of antennæ oval, pubescent, usually distinctly ringed *HISTER, L.*
 - B. Club of antennæ obconical, without pubescence, solid *HETERIUS, Er.*
 2. Antennæ inserted in cavities at the middle of the inflexed portion of the thorax, near the sides.
 - A. Middle and posterior tibiæ slender; front tibiæ dilated.
 - a. Elytra regularly and strongly striate; body oval; scutellum conspicuous *CARCINOPS, Mars.*
 - b. Elytra with dorsal striæ more or less obsolete; body oblong; scutellum inconspicuous *PAROMALUS, Er.*
 - B. All the tibiæ dilated; body oval *DENDROPHILUS, Leach.*
- ii. Prosternum not lobed in front, truncate.
1. Antennæ inserted under the margin of the forehead; mandibles prominent.
 - A. Anterior tibiæ without distinct spines; upper surface very obsoletely striate at sides *MYRMETES, Marsh.*
 - B. Anterior tibiæ distinctly spined; upper surface striate and more or less punctured.
 - a. Forehead with a distinct impressed stria *SAPRINUS, Er.*
 - b. Forehead without impressed stria *GNATHONCUS, Duv.*
 2. Antennæ inserted on the forehead; mandibles small, not prominent.
 - A. Posterior tibiæ distinctly toothed; form sub-cylindrical *TERETRIUS, Er.*
 - B. Posterior tibiæ not or scarcely toothed; form more or less ovate.
 - a. Thorax with a deep transverse furrow in middle *PLEGADERUS, Er.*
 - b. Thorax without transverse furrow.
 - a*. All the tarsi 5-jointed; elytra without marginal stria; size larger *ABRÆUS, Leach.*
 - b*. Posterior tarsi 4-jointed; elytra with marginal stria, situated on epipleuræ; size smaller *ACRITUS, Lec.*
- II. Upper surface strongly costate; prosternum feebly lobed in front *ONTHOPHILUS, Leach.*

HISTER, Linné.

This extensive genus contains at present about three hundred and twenty species, which are widely distributed throughout the world, both in tropical and temperate regions; about sixty of these species occur in Europe, fifteen of which are found in Britain; two or three of these, however, are doubtfully indigenous; they are found in dung, hot-beds, decaying fungi, or carcasses, and when alarmed, retract their limbs and antennæ and remain motionless.*

* Hence their name, which is the primary Etruscan form of *histrion*, an actor, and was applied to them by Linné in allusion to their feigning death.

The larva of *H. unicolor* is described and figured by Schiödte, De Metamorphosi Eleutheratorum, Part ii. p. 62, Plate i. fig. 1; it is of a dirty-white colour with the corneous parts fuscous and the coriaceous parts yellowish; it is rather broad and almost parallel-sided until the ninth segment of abdomen, which is broad and bears two short cerci composed of two joints; the head is narrower than prothorax, with very powerful mandibles; ocelli wanting; antennæ short; prothorax large, longer than meso- and metathorax together, these two latter being very short; the prothorax is deeply channelled in the centre and at sides; the abdominal segments are contracted at apex and base, and each is furnished with a row of minute scuta in front and behind; legs very short, not or scarcely visible from above.

- I. Thorax coarsely punctured on the under surface of margins; antennal cavities not distinct; size larger; elytra with four more or less distinct red markings often confluent H. QUADRIMACULATUS, *L.*
- II. Thorax with under surface of margins almost impunctate; antennal cavities always well marked; size smaller.
- i. Mesosternum emarginate in front, prosternum rounded at base.
1. Elytra with an outer lateral stria abbreviated behind, and an inner lateral stria abbreviated in front, not meeting; three dorsal striæ, as a rule, entire H. UNICOLOR, *L.*
2. Elytra with a continuous outer marginal stria only; four dorsal striæ, as a rule, entire.
- A. Thorax with two striæ near margins.
- a. Form long oval, subparallel; club of antennæ red; anterior tibiæ with four teeth H. MERDARIUS, *Hoff.*
- b. Form short oval; club of antennæ black-brown; anterior tibiæ with 5-6 teeth.
- a*. Frontal stria in the form of a semicircle, often obsolete in middle; average size larger; epipleuræ not rugosely punctured H. CADAVERINUS, *Hoff.*
- b*. Frontal stria always entire, in the form of a semicircle depressed at vertex into an angle pointing backwards; average size smaller; epipleuræ rugosely punctured H. SUCCICOLA, *Thoms.*
- B. Thorax with one stria only near margins.
- a. Lateral stria on elytra abbreviated behind and usually also in front H. STERCORARIUS, *Hoff.*
- b. Lateral stria on elytra entire.
- a*. Epipleuræ smooth; elytra with a large ill-defined reddish spot on each (rarely absent and sometimes suffused over the whole elytra) H. PURPURASCENS, *Herbst.*
- b*. Epipleuræ punctured; elytra always unicolorous black.
- a†. Sutural stria of elytra almost entire; elytra with a trace of a fifth dorsal stria at base;* teeth of front tibiæ very fine H. MARGINATUS, *Er.*

* In this work the first dorsal stria of elytra is regarded as next the marginal

- b†. Sutural stria of elytra reaching only from about middle to apex; teeth of front tibiæ rather strong.
- a†. Size larger; thorax less strongly narrowed in front; frontal stria more distinctly angled in middle H. NEGLECTUS, *Germ.*
- b†. Size smaller; thorax more strongly narrowed in front; frontal stria less distinctly angled in middle H. CARBONARIUS, *Ill.*
3. Elytra without lateral stria; thorax with two lateral striæ on each side, the outer one being sometimes visible only near anterior angles.
- A. Elytra black with red markings.
- a. Prosternal process emarginate at apex; outer lateral stria of thorax long, scarcely abbreviated (H. QUADRINOTATUS, *Scriba.*)
- b. Prosternal process not emarginate, more or less pointed or rounded; outer lateral stria of thorax abbreviated . . . (H. SINUATUS, *Ill.*)
- B. Elytra entirely black; outer lateral stria of thorax very short, visible at anterior angles H. BISSEXSTRIATUS, *F.*
- ii. Mesosternum truncate in front or slightly rounded, prosternum quite straight; thorax with one lateral stria on each side (sub-gen. *Atholus*, Thoms.)
1. Elytra black; anterior tibiæ with three teeth.
- A. Elytra without marginal subhumeral stria H. 12-STRIATUS, *Sch.*
- B. Elytra with a more or less distinct abbreviated subhumeral stria Var. 14-STRIATUS, *Gyll.*
2. Elytra with a large red spot on each towards apex; anterior tibiæ with four teeth . . . H. BIMACULATUS, *L.*

H. quadrimaculatus, L. Somewhat depressed, oblong or subquadrate, with sides somewhat widened and rounded in middle; black with a large crescent-shaped red spot on each, which is very variable in shape, being often interrupted and forming four patches, and sometimes being absent altogether (*V. æthiops*, Heer); thorax with one entire lateral stria, and a much abbreviated outer stria which is sometimes obsolete; elytra with no sutural stria, but with three entire dorsal striæ and an abbreviated subhumeral stria; pygidium much more thickly punctured than propygidium; anterior tibiæ with three strong teeth. L. 7-11 mm.

stria; by some authors the striæ are counted from the sutural stria, but as the striæ near suture are usually abbreviated and often obsolete, this method of counting gives rise to much confusion.

In moss, dung, carcasses, flood refuse, &c.; often under stones, and sometimes on the wing settling on white objects such as sails or sheets; usually found on or near the coast; London district, not uncommon (Champion); Whitstable, Gravesend, Sheerness, Chatham; Herne Bay; Ramsgate; Deal; Southsea; New Forest; Isle of Wight; as a rule it is decidedly a rare species, but seems at times to be found in abundance; Stephens (Illust. vol. iii. p. 146) quotes a record by Lieut. Davies in Loudon's Magazine as follows: "*Hister 4-maculatus*, of which I had previously taken few specimens, now (1827) covered Southsea Common, so that many were crushed under foot at each step."

H. unicolor, L. Short oval, almost orbicular, entirely black; forehead obsolete impressed, frontal stria entire, sinuate; thorax convex, strongly narrowed in front, with two lateral striæ, of which the internal is almost entire and the external is much abbreviated; elytra with outer lateral stria abbreviated, and three dorsal striæ, as a rule, entire; sutural stria only reaching to about middle; pygidium more closely punctured than propygidium; legs pitchy-black, anterior tibiæ considerably dilated, and armed with three teeth, the apical one of which is bifid. L. 8-10 mm.

In dung, carcasses, at sap of felled trees, &c.; generally distributed and common in the London district and the south; less common further north; Repton; Bewdley; Shrewsbury; Liverpool district; Northumberland district; doubtful as Scottish; Dr. Sharp says that it is recorded by Murray as occasional, and by McGillivray from Aberdeen, but he has never seen a Scottish specimen; Ireland, near Belfast.

H. merdarius, Hoff. Oblong, subparallel, shining black; club of antennæ reddish; frontal stria entire; thorax with two strong entire lateral striæ which have the interval between them plainly punctured as a rule, but not always; elytra with outer marginal stria and the next four dorsal striæ entire, sutural stria abbreviated; pygidium more closely punctured than propygidium; epipleuræ finely punctured; anterior tibiæ with four teeth. L. 6 mm.

In dung, vegetable refuse, &c.; rare; Forest Hill, Battersea Fields, Horsell, Woking; Aylsham; New Forest; Wisbeach; Nottinghamshire; Herefordshire; Foremark, near Repton.

This species may be distinguished from the succeeding by its smaller size, subparallel form, and the denticulation of the anterior tibiæ.

H. cadaverinus, Hoff. (*striola*, Sahlb.). Larger than the preceding, oval, somewhat depressed, shining black, frontal stria semicircular, entire or interrupted; antennæ pitchy-black or brownish; thorax with two lateral striæ on each side which are usually entire; elytra with outer marginal stria and the next four dorsal striæ entire, sutural stria much abbreviated; pygidium a little more closely punctured than propygidium; epipleuræ strongly punctured; anterior tibiæ with five or six teeth which are distinctly sharper than those of the preceding species; posterior tibiæ rather short and broad. L. 6-9 mm.

In dung, carcasses, flood refuse, &c.; generally distributed and common in the London district and the south; less common but generally distributed further north; Scotland, rare, Solway and Moray districts; Ireland, near Belfast and Dublin, and probably widely distributed.

H. succicola, Thoms. Allied to the preceding species, but easily distinguished by the frontal stria which is always entire and biarcuate, and by the prosternal process not being truncate at apex, as well as by having the pygidium more thickly and finely punctured, and the epipleuræ rugosely punctured; the habitat also is usually different. L. $5\frac{1}{2}$ –7 mm.

In carcases, putrid fungi, and at sap of trees; local; Darent Wood, Sevenoaks, Mickleham, Esher, Ashtead, Shirley, Dulwich, Birch Wood; Knowle; Cannock Chase; Bewdley; Sherwood Forest (in carcase); Repton; Northumberland district, not uncommon in fungi; Scotland, common, Lowlands and Highlands, in decaying vegetable matter, Solway and Tay districts, &c.

H. stercorarius, Hoff. Black, shining, rather elongate and parallel-sided; frontal stria entire, semicircular, slightly depressed at vertex; thorax short with one lateral stria which is somewhat remote from margin; elytra rather finely striated, the lateral stria being very short, abbreviated behind, and usually also in front, the next three entire; the sutural stria much abbreviated in front, sides scarcely dilated; pygidium thickly and coarsely punctured, but not quite so coarsely as propygidium; tibiæ much dilated, anterior pair with three or four broad strong teeth. L. 5 mm.

In dung, &c.; rare; Liverpool district; recorded by Stephens as not uncommon in the vicinity of London, and also from Netley, Norfolk, and Swansea; it does not, however, appear to have been taken near London for many years, and Stephens' record may be in error.

The species may be known from the others that have but one lateral stria on thorax by its more parallel form, very short marginal stria of elytra, and the dentation of the anterior tibiæ.

H. purpurascens, Herbst. (*castanipes*, Steph.). Black, shining; oval, not very convex; frontal stria entire; thorax rather short with one strong lateral stria; elytra somewhat dilated in middle, with a large ill-defined reddish or purplish patch on each; the colour is sometimes diffused over the whole elytra, and very rarely the elytra are quite black (*V. niger*, Er.); the marginal and four dorsal striæ are entire, and the sutural stria reaches a little beyond middle; pygidium a little less strongly and thickly punctured than propygidium; anterior tibiæ with five teeth, of which the apical one is bifid. L. $3\frac{1}{2}$ – $4\frac{1}{2}$ mm.

In moss, cut grass, vegetable refuse, bottoms of haystacks, &c.; rather common and generally distributed in the London district; Deal; Whitstable; Swansea; Knowle; Leicestershire; Wicken Fen; Sherwood Forest; Cheshire; Lancashire; Northumberland district, rare; Scotland, Lowlands, rare, in sandy places, Clyde and Moray districts; Ireland, near Belfast and Dublin.

H. marginatus, Er. This species is distinguished from the two following by its smaller size and suborbicular outline, and also by having the marginal stria of the elytra entire and a rudiment of a fifth dorsal

stria at base ; the anterior tibiæ are furnished with six very fine teeth, of which the apical one is bifid. L. $4\frac{1}{2}$ mm.

Under dead leaves, in refuse, &c. ; apparently very rare, although it may be mixed with allied species in collections ; taken, I believe, by Mr. Waterhouse, and I have seen a specimen in Mr. E. Brown's collection, without locality. Guestling, near Hastings (Butler) ; Scotland, very rare, Solway district (Sharp) ; it is very rare in France.

H. neglectus, Germ. Oblong, moderately convex ; forehead even, frontal stria entire ; thorax short with one strong lateral stria situated at some distance from margin ; elytra long with the marginal and first three dorsal striæ entire, the fourth reaching very nearly to base, and the sutural stria not or scarcely reaching middle ; propygidium and pygidium rather closely punctured ; anterior tibiæ with five or six teeth. L. $6-6\frac{1}{2}$ mm.

In moss, carcasses, vegetable and flood refuse, at roots of grass in marshy places, &c. ; not uncommon ; Wimbledon ; Harwich ; Sheerness ; Gravesend ; Whitstable ; Chatham ; Deal ; Netley ; Birmingham district ; Oxford ; Repton ; Cheshire ; Northumberland district, rare ; Scotland, occasionally, Solway, Forth, and Tay districts.

H. carbonarius, Ill. (*nigellatus*, Germ.). More oval, and on the average smaller than the preceding, from which it may be easily distinguished by its rounder and less oblong shape, and by the more slightly angled frontal stria ; the thorax also is more strongly narrowed in front, and the anterior tibiæ are furnished with four or five teeth ; the thorax has one marginal stria only, and the marginal and first three dorsal striæ of elytra are entire, the sutural reaching to about middle. L. $5-5\frac{1}{2}$ mm.

In carcasses, dung, haystack refuse, &c. ; common and generally distributed from the Midlands southwards ; rarer further north ; Scotland, scarce, Solway district ; Ireland, near Belfast, Dublin, Waterford, &c.

(**H. quadrinotatus**, Scriba. Oval, rather convex ; black, shining ; thorax short, strongly narrowed in front, with two lateral striæ, both almost entire ; elytra with a rather small humeral spot, and another oblique patch in middle of disc, red ; these are sometimes confluent ; lateral stria wanting, first two dorsal striæ entire, third nearly entire, fourth and fifth and sutural striæ wanting or very short and obsolete ; propygidium finely punctured, pygidium almost smooth ; anterior tibiæ with three rather obtuse teeth, of which the outer one is bifid. L. 6-8 mm.

Very doubtful as British ; a few specimens exist in our oldest collections ; Stephens (Illust. iii. 147) records it as " also rare ; but found in distant parts of the kingdom." Bristol and near London (Dr. Leach).

(**H. sinuatus**, Ill. (*uncinatus*, Ill.). Oval, not very convex ; black, shining ; thorax with the outer lateral stria abbreviated ; elytra with a longitudinal lunulate spot on each, which is somewhat variable in size, reaching from the base nearly to apex, and bending inwards towards

suture; first three dorsal striæ entire, the fourth, fifth, and sutural striæ very short, obsolete; pygidium and propygidium diffusely punctured; anterior tibiæ with three stout teeth, the apical one bifid. L. 6–8 mm.

In carcasses, &c.; very rare, and doubtfully indigenous; Stephens records it from Dartford Heath, Kent, Devonshire (Kingsbridge, &c.), Swansea, Worcester, and Sandfield, but these localities are probably, in part at least, erroneous, for the species has not occurred in Britain for many years, and very few specimens are extant in old collections.

H. bissexstriatus, F. (*caliginosus*, Steph.). Oval, rather depressed, shining black; thorax with the external marginal stria very short, often only visible at the anterior angles, internal stria entire; elytra somewhat dilated in middle, with the first four dorsal striæ entire, fifth very short, sutural stria reaching to about middle; pygidium rather more closely punctured than propygidium; anterior tarsi with four teeth, of which the apical one is sometimes bifid. L. 4–5 mm.

In dung, flood refuse, &c.; as a rule, uncommon, but occasionally it occurs in profusion; Blackheath; Sheerness (J. J. Walker, in great numbers); Southend; Whitstable; Deal; Netley; Suffolk; the only northern record that I have seen is from Lancaster.

H. 12-striatus, Sch. Oval, not very convex; forehead finely punctured, frontal furrow entire; thorax very finely punctured with one lateral stria; elytra rather short and broad, with the dorsal striæ all entire, the fifth stria joining the sutural stria at base, lateral stria absent; all the striæ of elytra are more or less distinctly crenulated; propygidium diffusely punctured, pygidium scarcely punctured; anterior tibiæ with three teeth, the apical one sometimes bifid. L. 4–4½ mm.

In dung, haystack and vegetable refuse, &c.; rather common and generally distributed in the Midlands and the south; not so common further north; doubtful as Scottish, the only record being "Rachills, Rev. W. Little," Murray's Cat.; Ireland, near Belfast.

The fact of the dorsal striæ being all entire will at once distinguish this species.

V. 14-striatus, Gyll. This variety, which has by some authors been regarded as a separate species, appears only to differ from the type by having a more or less distinct marginal stria on the elytra.

I have only seen one specimen of this insect, which is in Dr. Power's collection, and was taken from a heap of weeds in a garden at Merton, Surrey; it is rather larger than average specimens of the type, and has the sutural and fifth dorsal striæ somewhat interrupted; it is very likely mixed with the type in collections.

H. bimaculatus, L. Oval, rather depressed; antennæ and legs ferruginous; thorax short, finely punctured, foveolate at anterior angles, with a strong lateral stria; elytra shining black with a bright red patch on each towards apex, often taking up half the elytra, and forming

a common space, leaving a large black triangle about scutellum, lateral stria wanting, dorsal striæ crenulate, either all entire, or with sutural stria abbreviated; propygidium diffusely punctured, pygidium almost smooth; anterior tibiæ with four teeth, of which the hindmost is often minute. L. $3\frac{1}{2}$ –4 mm.

In dung, hot-beds, haystack refuse, &c.; rather common and generally distributed from the Midlands southwards; rarer further north; Scotland, rare, Lowlands, Solway, Clyde, and Forth districts; Ireland, near Dublin.

This species and the preceding may be known from all the others by the structure of the metasternum and prosternum.

CARCINOPS, Marseul.

This genus contains about thirty or forty species, of which only three are found in Europe, the remainder occurring in North, Central, and South America, Africa, &c.; they may be known by having the anterior tibiæ only dilated, and by the fact that four or five of the dorsal striæ are entire; this latter character will separate our species from *Gnathoncus*, which they somewhat resemble in size and general appearance.

- I. Size smaller; frontal stria wanting; striæ of elytra very fine C. MINIMA, Aubé.
 II. Size larger; frontal stria entire; striæ of elytra coarse and crenulate C. 14 STRIATA, Steph.

C. minima, Aubé (*corpuscula*, Mars.). Oval, round, rather convex, thickly punctured; shining black or pitch-black; antennæ and legs red; frontal stria wanting; thorax finely bordered, more strongly and thickly punctured at base; elytra raised at suture, with four dorsal striæ entire, fine, the others obsolete; elytra scarcely more feebly punctured than thorax; anterior tibiæ dilated, with three teeth. L. $1-1\frac{1}{2}$ mm.

In haystack and flood refuse, moss, &c.; local; London district, common and generally distributed; Margate; Kingsgate; Bognor; Hurstpierpoint; Hastings; New Forest; Hunstanton; Weymouth (at roots of grass in sandy places); Chesil Beach; Salford Priors (in fungi on ash log); Repton, near Burton-on-Trent. I know of no locality further north, and it has not occurred in Scotland.

C. 14-striata, Steph. (*pumilio*, Er.; *Epierus 14-striatus*, Steph.). Very much larger than the preceding, oblong-ovate, somewhat depressed; shining pitchy-black or brownish; antennæ and legs ferruginous, club of former lighter or darker testaceous; upper surface punctured, the elytra very finely, the thorax more coarsely especially at sides; thorax with marginal stria entire; elytra with all the dorsal striæ entire, strong, and crenulate, sutural stria entire, straight; anterior tibiæ strongly dilated, with two large teeth which are widely separated. L. $2-2\frac{1}{2}$ mm.

In rubbish, carrion, &c.; rare; Battersea Fields (Stephens); Sherwood Forest (Blatch); Scarborough (Lawson); Jarrow and South Shields (Bold).

PAROMALUS, Erichson.

About forty species are contained in this genus, five of which occur in Europe, the rest being found in various quarters of the world; representatives occur in North, Central, and South America, Africa, Java, Borneo, the Philippines, &c.; their habitat is in rotten wood under bark; they may be distinguished by their long oblong or parallel form, and by having the front tibiæ only dilated; in this latter point they resemble *Carcinops*, from which they may at once be known by their shape, and also by the inconspicuous scutellum and the obsolete striæ of elytra.

- I. Form long oval, plainly narrowed in front and behind; male without transverse impressed line at base of pygidium **P. FLAVICORNIS**, *Herbst*.
 II. Form parallel; male with impressed transverse line at base of pygidium **P. PARALLELOPIPEDUS**, *Herbst*.

P. flavicornis, *Herbst*. Elongate-oval, narrowed in front and behind, rather depressed, slightly dilated in middle; shining black, or pitchy-black, finely punctured; antennæ and legs reddish or ferruginous, club of former testaceous-yellow, or bright yellow; thorax finely margined; elytra with traces of striæ at base and near shoulders; pygidium very finely punctured; mesosternum deeply emarginate, bounded by a sinuate stria, the angles of which are blunt; anterior tibiæ dilated, with three or four inconspicuous teeth. L. $1\frac{1}{2}$ –2 mm.

Under bark, in damp decaying wood; local; London district, rather common, Hyde Park, Chatham, Cobham, Greenwich, Richmond Park, Coombe Wood, Wanstead, Sanderstead, &c.; Ulting, Essex (where I have taken it in numbers in company with *Abræus globosus*, &c., in an old oak stump); New Forest; Bristol; Windsor; Colchester; Scarborough; it has not been recorded from the northern counties or from Scotland.

P. parallelopipedus, *Herbst*. Very like the preceding, but distinguished by its more parallel form, and longer elytra, which have the striæ at base and shoulders less marked; in both this and the preceding species the female has the pygidium furnished with two short converging striæ, but in this species the pygidium of the male is impressed with a transverse line at base, which is wanting in *P. flavicornis*; the antennal club as a rule is darker, and the mesosternum is bounded behind by a stria consisting of three arcs, which form sharp angles at their point of junction. L. $1\frac{1}{2}$ – $2\frac{1}{4}$ mm.

Very rare; I have only seen three or four specimens, and the only locality that I know of is "New Forest (Turner)" for Dr. Power's specimen; Mr. Crotch first introduced the species as British; the insect appears to be very imperfectly known, and may be mixed with *P. flavicornis* in some collections.

HETÆRIUS, Erichson.

This genus contains a few species from Europe and North Africa, and

one from North America; they have a peculiar facies, somewhat like that of a large *Acarus*, and are found in company with ants.

H. ferrugineus, Ol. (*sesquicornis*, Preys.; *quadratus*, Kug.; *Marsculi*, Schauf.). Suborbicular, smooth and shining, of a lighter or darker reddish or reddish-testaceous colour; forehead concave; antennæ with solid, obconical, truncate club; thorax short, widened behind, with the sides depressed and furnished with two striæ, and with a deep depression near posterior angles; elytra with projecting shoulders, with the four first dorsal striæ entire, and with four or five rows of long yellow hairs, which are scarcely visible, if viewed from above; legs very large, strongly and angularly dilated in middle, minutely denticulate on their outer side. L. 2-3 mm.

In the nests of *Formica fusca*, *sanguinea*, and *flava*; very rare; Highgate (Jan-son); Weybridge (Power); Croydon (Douglas and Scott).

DENDROPHILUS, Leach.

The species belonging to this genus are distinguished from *Hister* by the formation of the cavities for the reception of the antennæ, and from *Carcinops* and *Paromalus* by having all the tibiæ strongly dilated; the prosternum is broad and rounded behind, and is received into a deep emargination of the mesosternum; the genus only contains about half-a-dozen species from Europe and North America; they occur under bark, in rotten wood, and in ants' nests, and occasionally in dead animals.

- I. Upper surface distinctly punctured, shiny **D. PUNCTATUS**, F.
 II. Upper surface without distinct punctures, dull **D. PYGMÆUS**, L.

D. punctatus, Ill. Oval, suborbicular, convex, black, shining, with the whole upper surface distinctly punctured; antennæ and legs ferruginous; thorax very short, narrowly margined; elytra broader than thorax, with the two first dorsal striæ entire and very marked, the third and fourth abbreviated behind, the sutural stria absent or scarcely indicated; anterior tibiæ finely denticulate. L. $2\frac{1}{2}$ -3 mm.

In dead animals, rotten wood, &c., and also in the nests of *Formica fuliginosa*; not common; Greenwich, Coombe Wood, Mickleham, Richmond Park, Cobham, Hammersmith, Addington, West Wickham; Waltham Cross; Norwich; Northumberland district, Hetton Hall, near Belford (Bold); Scotland, doubtfully indigenous, the only record being "Under bark of trees at Cramond," Murray's Cat. I feel somewhat doubtful regarding Mr. Bold's record.

D. pygmæus, L. (*formicetorum*, Aubé). Easily distinguished from the preceding by its dull appearance and the absence of any distinct punctuation; under a high magnifying power the upper surface appears to be exceedingly finely punctured; the colour is more pitchy, and the antennæ and legs are of a brighter red colour; elytra with very fine but distinct dorsal striæ which are bounded by a slightly elevated line, only

visible if viewed sideways; anterior tibiæ finely and irregularly denticulate. L. 2-3 mm.

In the nests of *Formica rufa*; local; Esher, Forest Hill, Plumstead, Hampstead, Coombe Wood, Hainault Forest; Norfolk; Suffolk; Bristol; Bewdley Forest; Buddon Wood, Leicester; Hopwas Wood, Tamworth; Scotland, very local, Tay and Dee districts.

MYRMETES, Marseul.

This genus contains one European species, which for a long time was associated with *Saprinus*; it is, however, quite distinct from that genus by reason of its narrow tibiæ, of which the anterior pair are very finely and indistinctly spinulose, and by the comparatively dull and impunctate upper surface, and also by the fact that the anterior tibiæ are not provided with grooves for the reception of the tarsi.

M. piceus, Payk. Round, convex, pitchy-brown or ferruginous, smooth, comparatively dull; forehead without stria; thorax short, sometimes lighter at sides; elytra with fine striæ, abbreviated behind, the subhumeral stria alone being almost entire; tibiæ not dilated. L. 2-2½ mm.

In nests of *Formica rufa*; local; Plumstead; Esher; Parkhurst Forest, Isle of Wight; Norwich; Bristol; Buddon Wood; Bewdley Forest; Tamworth; York; Scarborough; Scotland, very local, Dee district.

GNATHONCUS, Duval.

This genus contains about a dozen species from Egypt, North America, Tasmania, &c.; three of these are found in Europe, of which two occur in Britain; there is, however, considerable confusion as to our species; Mr. G. Lewis, who has lately done so much good work on the Histeridæ, and to whom I am indebted for other information regarding the group, writes to me that he has never seen a British example of *G. rotundatus*; all our specimens must therefore be referred to *G. nannetensis*; the second species, *G. punctulatus*, is by some authors considered merely a variety, but it appears to be distinct; the genus is very closely allied to *Saprinus*, under which, indeed, it has been included by many writers; it differs in having the frontal stria wanting, and in the fact that there is a considerable interval between the last two teeth of the anterior tibiæ; the sutural stria is distinct in front and abbreviated behind, and the epipleuræ are furnished with three striæ instead of two as in *Saprinus*.

- | | |
|---|-------------------------------|
| <p>I. Size larger; form more strongly convex and rounded; dorsal striæ of elytra reaching beyond middle, the first almost reaching apex; upper surface more strongly and thickly punctured</p> | <p>G. NANNETENSIS, Mars.</p> |
| <p>II. Size smaller; form less convex and rounded; with more parallel sides; dorsal striæ of elytra ceasing at middle, with the exception of the first which almost reaches apex; upper surface more finely and diffusely punctured</p> | <p>G. PUNCTULATUS, Thoms.</p> |

G. nannetensis, Mars. (*rotundatus*, Brit. Cat., *nec* Kug.). Black, or pitchy-black, shining; frontal stria wanting; thorax entirely covered with diffuse punctures, which are stronger and closer at sides; elytra moderately strongly and thickly punctured except towards base, with an abbreviated marginal stria, and four dorsal striæ which reach beyond middle, the first almost reaching apex in many examples; sutural stria distinct at base; anterior tibiæ not much dilated, with 6-8 teeth. L. $2\frac{1}{2}$ - $3\frac{1}{2}$ mm.

In moss, birds' nests, haystack, flood, and vegetable refuse, dead birds, &c.; local; Lee; Sheerness; Deal; Norfolk; Margate; Hastings; New Forest; Glanvilles Wootton (in stock dove nests inside hollow apple trees in old orchard); Swansea; Cannock Chase; Cleethorpes, Lincolnshire; Manchester; Northumberland district, rare; Scotland, rare, Forth and Clyde districts; Ireland, Portmarnock.

The true *G. rotundatus*, Kug., appears to differ from this species in its subparallel and depressed form, and some writers consider that *G. nannetensis* may be only a variety; the question, however, does not appear at present to be settled.

G. punctulatus, Thoms. Closely allied to the preceding, but distinctly smaller, and less strongly convex and rounded; the antennæ, legs, and hinder part of the elytra are of a lighter colour; the first dorsal stria of the elytra almost reaches apex, and the next three cease at middle; the sutural stria is almost or entirely wanting; the punctuation of the upper surface is more fine and diffuse, and the mesosternum (which in the preceding species is strongly and rather thickly punctured) is very finely and diffusely punctured. L. $1\frac{3}{4}$ - $2\frac{1}{2}$ mm.

Found under the same circumstances as the preceding; rare; near London (Janson); Knowle, near Birmingham (Blatch); Lytham, Lancashire (Chappell); these latter specimens were considered by Mr. Rye to be varieties of *G. rotundatus*; I received a specimen some time ago from Mr. J. J. Walker from Cleethorpes, Lincolnshire.

This species and the preceding appear to vary considerably in size and striation, the character of the presence or absence of the sutural stria being very doubtfully trustworthy; perhaps all the three European species will ultimately be referred to one only.

In the Entomologists' Monthly Magazine, vol. xxiii., p. 16, Mr. Gorham says that *Gnathonci* inhabit pigeons' and other birds' nests, and places such as towers where owls breed, and that it would be worth while, if any one has the opportunity of visiting such places, to bear in mind the probability of our having more than one species of Histeridæ co-existing with the birds.

SAPRINUS, Erichson.

This genus contains about three hundred and sixty or seventy species, and like *Hister* is very widely distributed both in the tropics and in

temperate regions; there are about eighty European species, of which eight only are found in Britain; they closely resemble *Hister* in general appearance, and are chiefly distinguished by the fact that the prosternum is not lobed in front; in our species of *Hister* the elytra are impunctate or almost impunctate behind, whereas all our species of *Saprinus* are more or less distinctly punctured from about middle to apex, and in many cases at the sides also; the *Saprinini* are found in dung or carcasses, and like *Hister* retract their legs and remain motionless at the approach of danger.

- I. Forehead without a raised ridge, separated only by a deep stria from the clypeus; prosternum rather broad and flat.
- i. Disc of thorax impunctate; colour black.
1. Size larger; elytra only punctured towards apex and at margins, punctuation rather diffuse . . . S. NITIDULUS, Payk.
2. Size smaller; elytra closely and rugosely punctured with a smooth space towards base traversed by fourth dorsal stria.
- A. Smooth part of elytra outside dorsal stria extending as far longitudinally as smooth part inside stria; punctuation of elytra close and rugose; sutural stria, as a rule, entire . . . S. ÆNEUS, F.
- B. Smooth part of elytra outside stria small; punctuation of elytra very close and rugose; sutural stria of elytra, as a rule (but by no means always), interrupted S. IMMUNDUS, Gyll.
S. VIRESCENS, Payk.
- ii. Disc of thorax punctured; colour metallic green . . . S. VIRESCENS, Payk.
- II. Thorax separated from clypeus by a slightly raised ridge.
- i. Elytra dull, closely and rugosely punctured, with a common smooth round space towards base not traversed by fourth dorsal stria S. QUADRISTRIATUS, Hoff.
- ii. Elytra punctured towards apex, with no definite smooth space towards base.
1. Thorax plainly punctured at sides.
- A. Anterior tibiæ strongly dilated, with four rather large blunt teeth (a trace of a fifth being sometimes visible); elytra rather finely punctured, the punctuation reaching scarcely to middle S. METALLICUS, Herbst.
- B. Anterior tibiæ slightly dilated, with six rather sharp and distinct teeth; elytra rather strongly punctured, the punctuation reaching beyond middle S. RUGIFRONS, Payk.
2. Thorax impunctate at sides; anterior tibiæ with three large and three small teeth . . . S. MARITIMUS, Steph.

S. nitidulus, Payk. Black, shining; the largest of our species of *Saprinus*, resembling in size and general appearance *Hister carbonarius*; head rather thickly punctured; thorax strongly punctured at sides, disc almost smooth, base with two or three rows of large punctures interrupted above scutellum, anterior margin with two impressions behind eyes; elytra punctured at extreme margins and towards apex, punctua-

tion somewhat diffuse ; striæ punctured ; sutural stria often more or less obsolete and as a rule not joining fourth dorsal stria ; pygidium thickly punctured ; antennæ and legs black, tarsi somewhat reddish, anterior tibiæ with 8-9 teeth. L. 4-5½ mm.

In carcasses, dung, &c. ; generally distributed and common throughout England and Wales, and probably Ireland ; it appears, however, to be local in Scotland, Lowlands, Solway and Forth districts.

S. æneus, F. Black, shining, slightly æneous ; forehead rather thickly punctured ; thorax thickly punctured at sides, and with two or three uninterrupted rows of larger punctures at base, disc smooth ; elytra closely punctured with the sides and shoulders and a common space towards base smooth ; this space is traversed by the fourth dorsal stria, and the part outside the stria reaches as far longitudinally as the part between this and the sutural stria ; striæ punctured ; sutural stria, as a rule, joining fourth dorsal stria ; pygidium thickly punctured ; antennæ and legs black, anterior tibiæ with 8-10 small teeth. L. 3-4 mm.

In carcasses, dung, &c. ; as a rule considered common and generally distributed throughout the greater part of England ; it is, however, local in Scotland, in the Solway, Forth, and Moray districts, and is not common in some localities in England ; at Hunstanton, Norfolk, for instance, where I have found other members of the genus in numbers, I have never taken a specimen of *S. æneus*. Ireland, near Belfast and Dublin.

S. immundus, Gyll. This species bears a considerable resemblance to the preceding, but may easily be distinguished by its darker and less metallic colour, and by the much closer punctuation of the elytra, which covers the whole of their upper surface except the shoulders and a space towards base, which is traversed by the fourth dorsal stria ; the space, however, outside the stria is small, and abbreviated in front and behind by punctuation ; the sutural stria, is said by some authors to be separated, from the fourth dorsal stria, and this is given sometimes as a character, but in this respect the species is very variable, and I have specimens in which the sutural stria on one elytron joins the dorsal stria, and on the other is separated from it ; legs pitchy, anterior tibiæ with 7-8 teeth, which are somewhat larger than in *S. æneus*. L. 3-4 mm.

In dung ; local and usually considered rare ; Deal ; Camber sand-hills, near Hastings, somewhat common ; Wales ; Southport ; Lancaster sands ; Hunstanton, Norfolk, in numbers ; in this latter locality I have found it by far the commonest of the genus ; the species appears to occur mainly on sand-hills near the coast.

S. virescens, Payk. Shining, metallic green ; antennæ black ; forehead, thickly punctured ; thorax distinctly punctured throughout, a point that will at once separate it from all our other species, punctuation more close at sides ; elytra rather strongly punctured over their whole surface except round scutellum, and at shoulders ; dorsal striæ extending a little beyond middle ; pygidium thickly punctured ;

legs black or pitchy-black, with tarsi more or less reddish, anterior tibiæ with 6-7 rather blunt teeth. L. 3-4 mm.

In dung; occasionally in flowers and on watercress, on which latter plant it has been found devouring the larvæ of *Phædon cochleariæ*, to which beetle it bears a superficial resemblance; rare; Caterham, Forest Hill; Darenth; Maidstone; Deal; Folkestone; Sandwich; Sandown, Isle of Wight; Buckden, Hunts; Stephens gives as localities Copenhagen Fields, Battersea, Coombe Wood, Welbeck, sea shore near Marsden, Norwich, Newmarket Heath (dead hares), and Swansea.

S. quadristriatus, Hoff. Oblong, black, sometimes with a dark blue or greenish reflection; thorax closely punctured, posterior portion of disc smooth; elytra very closely punctured, dull, with the shoulders and a common round space towards base smooth and shining; this space is bounded by the fourth dorsal stria which is fine, and there is no trace of any smooth space outside the stria as in *S. immundus*; the other dorsal striæ are obsolete; anterior tibiæ with 6-7 teeth, of which the anterior three or four are the strongest. L. 3-3 $\frac{3}{4}$ mm.

In dung, carcasses, &c.; rare; Barmouth; Liverpool district (common on the sand-hills); Wallasey; Southport; Blackpool; Lancaster sands; Scotland, rare, Forth district (Paisley).

S. metallicus, Herbst. The smallest of our species; short oval, rather convex; of a dark obscure green metallic colour, rarely brown; thorax rugosely punctured, with the posterior part of the disc smooth; elytra with well-marked crenulate striæ, rather finely punctured, the punctuation scarcely reaching to middle; first dorsal stria of elytra almost reaching apex; legs brown or reddish, anterior tibiæ strongly dilated, with four large blunt teeth, sometimes with a trace of a fifth. L. 2 $\frac{3}{4}$ -3 $\frac{1}{4}$ mm.

In dung, carcasses, &c.; confined to sandy places near the coast; rare; Deal; Camber sand-hills, Hastings, not uncommon; Hunstanton, Norfolk.

S. rugifrons, Payk. (*metallicus*, Steph.). Larger than the preceding, of a rather light greenish metallic colour or black; antennæ and legs pitchy-black or brownish; thorax strongly punctured with posterior part of disc smooth; elytra rather strongly punctured, the punctuation reaching beyond middle, anterior tibiæ moderately dilated, with six rather sharp teeth which become gradually stronger to apex and are usually of a lighter colour than the tibiæ; in this and in other species examples occasionally occur in which the teeth are worn almost flat or partially coalesce, and thus cause confusion; fifth dorsal stria of elytra abbreviated. L. 3-4 mm.

In dung, carcasses, &c.; both inland and on the coast; local; Southend; Dovers-court; Harwich; Yarmouth; Deal; Lowestoft; Bristol; Swansea; Barmouth; Hunstanton; New Forest; Sherwood Forest; South Shields.

S. maritimus, Steph. (*sabulosus*, Fairm.). Larger than the preceding, black, occasionally brownish; forehead smooth; thorax

almost impunctate except for an interrupted row of punctures close to base; elytra with very strong punctured striæ, strongly punctured from apex to beyond middle, sides impunctate; pygidium moderately strongly punctured; anterior tibiæ dilated, with three large and two or three smaller teeth. L. $3\frac{1}{2}$ – $4\frac{1}{2}$ mm.

In dung, &c.; widely distributed on the English coast from the Northumberland and Durham district on the East, to Liverpool and Manchester on the West; Stockton-on-Tees; Spurn Point; Hunstanton, Norfolk; Yarmouth; Harwich; Southend; Margate; Hastings; Southsea; Hayling Island; Weymouth; Portland; Plymouth; Penzance; Barmouth; Isle of Man; Liverpool district; it is, however, somewhat local, and is very rare in Scotland, where it has occurred in the Forth district only.

In a note in the Entomologists' Monthly Magazine, vol. xxiii., p. 16, there is a reference made to a specimen of *S. præcox*, which was supposed to have been taken in Oxfordshire by the Rev. A. Matthews, but which requires corroboration as the species appears to inhabit Egypt; the specimen is superficially very like *Gnathoncus punctulatus*, the most evident distinction being a generic one, viz. that in *Gnathoncus* the prosternum in front has its marginal striæ suddenly converging, thus being lanceolate, while in *Saprinus* the same lines gradually meet, so that the ridge of the prosternum is pointed.

TERETRIUS, Erichson.

This genus contains about twenty species, which are very widely distributed, representatives occurring in Egypt, South Africa, Madagascar, Peru, Guatemala, North America, &c.; four species are found in Europe, one of which occurs in Britain; they are remarkable for their cylindrical form, and have the elytra wholly punctured with very short oblique striæ at sides which are sometimes obsolete; they are found in wood, and they appear to be parasitic on certain wood-boring beetles, in the same way that *Colydiium elongatum* is parasitic on *Platypus cylindrus*; our single species is very rare.

T. picipes, F. Pitch-black, or dark pitchy-brown, cylindrical, truncate, entirely covered with distinct, moderately close punctuation; head rather large, forehead convex, without stria or impression; antennæ ferruginous, or reddish-testaceous, inserted on the border of the forehead between the eyes; thorax rather long, with an entire marginal stria; elytra raised at suture, truncate at apex, with a slight impression on each at base, without apparent striæ; pygidium semicircular, much reflexed; prosternum emarginate behind, receiving the mesosternum, which is pointed; anterior tibiæ much dilated at apex, denticulate. L. $1\frac{3}{4}$ – $2\frac{1}{2}$ mm.

Under bark; sometimes found on the wing or on walls; very rare; Forest Hill; Camberwell, Peckham, Shirley; Stephens gives Norwich, Swansea, and Bristol as localities; Mr. S. Stevens took a considerable number in 1878-9 from railings at Upper Norwood, in company with *Tillus unifasciatus* and *Lyctus brunneus*.

PLEGADERUS, Erichson.

This genus contains nine or ten European species, and a few from North and Central America, &c.; one only is found in Britain; they inhabit rotten wood, and are sometimes found in old trees in company with ants; our single species, and the majority of the others, may easily be known by the deep transverse furrow which appears to divide the thorax into two parts.

P. dissectus, Er. Oval, rather depressed, pitch-black, shining, irregularly and diffusely punctured, the punctuation being plainly finer on the thorax than on the elytra; head small, antennæ and legs reddish; thorax rather long, divided into two equal, separately convex portions by a deep transverse furrow, lateral striæ very strong; elytra dilated at shoulders, with two well-marked oblique striæ, suture raised; anterior tibiæ much dilated and spinulose at apex. L. $1-1\frac{1}{2}$ mm.

In old decaying trees and logs; very rare; Hampstead (Waterhouse); New Forest (Blatch); Salford Priors (Blatch); Sherwood Forest (Matthews, Blatch, and others)

ABRÆUS, Leach.

About sixteen or twenty species are comprised in this genus, eight of which are found in Europe, while the remainder are widely distributed, representatives occurring in South Africa, India, Ceylon, &c.; they are distinguished from *Acritus*, which they much resemble in general appearance, by having all the tarsi 5-jointed; they are also, as a rule, of larger size; they are found in rotten wood, or in fungi on old trees and stumps.

- I. Anterior tibiæ angularly dilated in middle, truncate obliquely at apex, and with a small tooth before apex **A. GLOBOSUS**, Hoff.
 II. Anterior tibiæ dilated and rounded, without tooth before apex **A. GRANULUM**, Er.

A. globosus, Hoff. Suborbicular, globose, of a ferruginous brown colour, shining, antennæ and legs pitchy-red, club of former testaceous; head and thorax rather finely and closely punctured, elytra somewhat strongly and sparingly punctured, the latter with a rather distinct oblique dorsal stria; anterior tibiæ strongly dilated and angled in middle, with a small tooth before apex; mesosternum obliquely truncate on both sides in front, produced in middle. L. $1\frac{1}{3}-1\frac{1}{2}$ mm.

In rotten wood of beech, ash, &c.; local but not uncommon; Chatham, Woking, Abbey Wood, Cobham Park, West Wickham, Mickleham (in nests of *Formica fuliginosa*), &c.; Ulting, Essex; Windsor; Salford Priors; Sherwood Forest; Repton; Scarborough; Manchester; not recorded from the extreme northern counties of England; Scotland, very rare, Forth and Dee districts.

A. granulum, Er. Very like the preceding, but distinguished by the closer and stronger punctuation, and by the fact that the anterior

tibiæ are simply rounded and not angled, and have no small tooth before apex; the prosternum and mesosternum are both thickly and strongly punctured; the size also is distinctly smaller. L. 1 mm.]

In rotten wood, &c.; very rare; Walthamstow, Essex (Janson); Cambridge (Crotch); Salford Priors, in rotten ash tree (Blatch).

ACRITUS, Leconte.

This genus contains upwards of forty or fifty species, of which about a dozen occur in Europe; the remainder are found in North and South America, and two or three have been recorded from Asia Minor, Cuba, &c.; one or two species have been separated off under the genus *Aeletes*, Horn, as having no visible scutellum, this part being distinct in the genus *Acritus* proper; the members of the genus have the posterior tarsi 4-jointed; our three British species may be distinguished as follows:—

- I. Form rather long, subquadrangular; upper surface diffusely punctured A PUNCTUM, *Aubé*.
- II. Form oval or suborbicular; punctuation rather close.
 - i. Thorax without a distinct transverse impressed line before scutellum; prosternum shorter, truncate behind; anterior tibiæ scarcely visibly dilated at apex . . . A. MINUTUS, *Herbst*.
 - ii. Thorax with a distinct transverse impressed line before scutellum; prosternum more elongate, slightly emarginate behind; anterior tibiæ slightly dilated at apex . A. NIGRICORNIS, *Hoff*.

A. punctum, *Aubé*. Rather elongate, subquadrangular, of a dark brown or brownish-red colour, upper surface rather finely and diffusely punctured; antennæ and legs lighter or darker red; thorax rather large, with sides almost parallel, without impressed line before base; elytra subparallel with the suture somewhat raised, and a rather well-marked oblique dorsal stria; anterior tibiæ finely denticulate and somewhat dilated towards apex; prosternum emarginate, double as broad in front as behind, mesosternum rounded in front. L. $\frac{3}{4}$ – $1\frac{1}{4}$ mm.

In vegetable refuse, &c., chiefly on the coast; very local; first taken on the Chesil Bank by Mr. Crotch and Dr. Sharp more than twenty years ago, and lately found in numbers by Mr. J. J. Walker in the same locality by digging small holes as traps just above high-water mark on warm sunny afternoons; it has also been taken by Mr. Crotch at Weston-super-Mare, and by Mr. Walker at Hayling Island.

A. minutus, *Herbst*. Oval, suborbicular, not very convex, shining pitch-brown, antennæ brown with the club ferruginous or reddish; forehead smooth, thorax thickly and very finely punctured, considerably narrowed in front, with a transverse line of punctures at base, but without a distinct impressed line before scutellum; elytra finely and closely punctured at base, more sparingly behind, almost smooth at apex, with traces of rudimentary striæ at base; prosternum shorter, truncate behind; anterior tibiæ scarcely visibly dilated. L. $\frac{2}{3}$ –1 mm.

In manure-heaps, vegetable refuse, &c.; common and generally distributed from Yorkshire southwards; rarer further north; somewhat doubtful as Scottish; the *Abræus nigricornis* of Murray's catalogue, recorded from Raehills, is probably this species.

A. nigricornis, Hoff. Smaller than the preceding species, from which it may be known by its finer punctuation, and the more distinctly impressed line before scutellum, but more especially by the subquadrate or pentagonal form of the mesosternum, which has the marginal stria dividing at each anterior angle, and by the more elongate prosternum, which is slightly emarginate behind; the anterior tibiæ also are slightly dilated at apex; the club of the antennæ is variable in colour, and often scarcely differs from that of the preceding species, so that the character often assigned to this species of having dark antennæ, from which, in fact, it takes its name, is quite an untrustworthy one; both species also often present traces of fine striæ on elytra, which some authors affirm to be only present in *A. nigricornis*. L. $\frac{2}{3}$ mm.

In manure-heaps, &c.; Crystal Palace on the windows (Waterhouse); Spridlington, Lincolnshire (Wollaston); Repton, in fungi, very scarce (Garneys); the species appear to be generally confused and mixed in our collections, and it must be admitted that the various published descriptions are in many cases unsatisfactory and even contradictory.

ONTHOPHILUS, Leach.

The total number of species that have been described in this genus is nineteen; four of these are found in Europe, and the remainder are recorded from North America, India, Zanzibar, South Africa, &c.; they are very remarkable for their peculiar sulcate sculpture and dull appearance; the only other known member of the Histeridæ that presents the same sculpture and appearance is *Hister costatus* from Mexico, which has been already alluded to. Mr. George Lewis says with regard to this genus, "The genus *Onthophilus* is a very interesting one, as the chitin of the exoskeleton is exceedingly opaque, and evidently less pure than in the other genera of the Histeridæ; and although some of the species, such as *sulcatus*, are beautifully engraved above, the substructure is, as it were, roughly hewn, and the meso- and metasternal plates, as well as the abdominal segments, are coarsely wrought at the sutures" (Annals and Mag. of Nat. Hist., Sept. 1885): the upper surface is raised in strong keels, and the legs are long and slender; the lobe of the prosternum is present, but is very short, so that the genus can hardly be classed with either the *Hister* or the *Saprinus* group. Our two British species may be separated as follows:—

- | | |
|---|---|
| I. Thorax with five raised keels, the central one double and interrupted, the spaces between them being coarsely punctured; size larger | O. GLOBULOSUS, Ol.
(<i>sulcatus</i> , F.) |
| II. Thorax with six raised keels, the spaces between them being longitudinally rugose; size smaller | O. STRIATUS, F. |

O. globulosus, Ol. (*sulcatus*, F.). Oval, suborbicular; black, slightly shining; head small, antennæ comparatively long and slender, reddish-brown, forehead concave; thorax with a central keel, which is double and interrupted, and two others on each side, abbreviated in front, the interval between them being filled with large coarse punctures; elytra very convex, narrowed at apex, with suture raised, and three strong keels on each, the intervals between these being each filled with five slightly raised lines, of which the central is the most distinct; legs pitchy-brown, rather long and slender; pygidium plainly punctured. L. 3-3½ mm.

In dung, decaying vegetable refuse, &c.; apparently very rare; I have not heard of its having been taken in Britain for many years; Stephens records it from Coombe Wood (Surrey), Nottinghamshire, Norfolk, and Kingsbridge (Devon).

O. striatus, F. Much smaller than the preceding, and easily distinguished by having six distinct raised keels on thorax, the intervals between which are longitudinally wrinkled; the space between the outermost keel and the margin is rugosely punctured; each of the elytra is furnished with three strong raised keels, and three rather smaller ones, so that there appear to be six on each, and the spaces between are filled with small raised lines, and are remotely and coarsely punctured in single rows; pygidium and propygidium with raised lines, closely punctured. L. 1¾-2¼ mm.

In dung, haystack, and vegetable refuse, birds' nests, &c.; common and generally distributed in England and Scotland; Ireland, near Dublin, Waterford, Belfast, &c., and probably common.

MICROPEPLIDÆ.

The position of this family has been much disputed; it has usually been placed at the end of the Staphylinidæ, but seems to present but little affinity to that family; Thomson places it between the Byturidæ and the Dermestidæ, which hardly seems a good position; as a matter of fact the true affinities of the family are by no means known, but the position here assigned to it between *Onthophilus* on the one hand, and the Nitidulidæ on the other (to certain members of which latter family the species bear a considerable resemblance), seems as good a one as can be assigned to it in the present state of our knowledge; the family includes two genera, *Micropeplus* and *Kalissus*, the former of which has the thorax, elytra, and abdomen strongly costate, whereas the latter is smooth and not costate; in both genera the antennæ are apparently 9-jointed and the tarsi 3-jointed, and the anterior coxæ are transverse and not prominent; the second ventral segment is dilated in the middle and separates the hind coxæ.

MICROPEPLUS, Latreille.

This genus contains rather more than twenty species, which are found

in Europe, Northern Asia, Japan, and North America, and one has recently been described from Guatemala; they may at once be distinguished by their short elytra and by the peculiar ribbed appearance of the whole upper surface of the body, and also by their short antennæ which terminate in what appears to be a single-jointed club; it is, however, obsoletely 3-jointed, and therefore the antennæ must be regarded as 11-jointed, and not, as they are by Kraatz and other authors, as 9-jointed; the tarsi are 3-jointed; our species are found in haystack and vegetable refuse, by sweeping, &c., and occasionally in mud in marshy places; Thomson says that they live almost exclusively in mud by the side of lakes and streams, and that he has never taken them in refuse. In the male the seventh ventral segment of hind body is emarginate at apex.

I. Interstices of elytra strongly and coarsely punctured.

i. Elytra with five longitudinal lines on each strongly raised (the outer ones somewhat irregular), suture less strongly raised

M. PORCATUS, Payk.

ii. Elytra with suture and four lines on each strongly raised.

1. Vertex of head with one raised longitudinal line

M. STAPHYLINOIDES, Marsh.

2. Vertex of head with three raised longitudinal lines, converging in front

M. MARGARITÆ, Duv.

II. Interstices of elytra smooth; elytra with suture and three longitudinal lines on each strongly raised

M. TESSERULA, Curt.

M. porcatus, Payk. Black, dull; head small, strongly rugose, with a raised line on vertex; antennæ dark with base reddish, sometimes with club only dark; thorax transverse, with sides angulated, deeply impressed, extremely finely rugose or shagreened, posterior angles sharp; elytra much longer than thorax with five raised lines on each (besides suture), the outer ones irregular, interstices strongly punctured; first four visible segments of abdomen divided into deep squares by longitudinal ribs; legs lighter or darker red with femora pitchy. L. 2 mm.

In haystack and vegetable refuse; local; London district not uncommon, Sevenoaks, Farnham, Mickleham, Birch Wood, Forest Hill, Reigate, Claygate, &c.; Hastings; Glanvilles Wootton; Devonshire; Swansea; Repton; Nottinghamshire; Liverpool; Chat Moss; York; Carlisle; Northumberland district; Scotland, Lowlands, not common, Solway and Forth districts; Ireland, Portmarnock.

M. staphylinoides, Marsh (*obtusus*, Newm.). About the length of *M. porcatus*, but rather narrower, pitchy-brown, often reddish, with the head and middle of thorax and hind body darker; the antennæ and legs are clear testaceous; the vertex of head is furnished with one longitudinal raised line; the elytra have four lines on each besides the suture strongly raised; the first three visible segments of the abdomen are divided into squares by longitudinal ribs, but the central rib is extended at least to the middle of the fourth; in the male the front of the head is toothed. L. 2 mm.

In haystack refuse, moss, fungi, &c. ; occasionally by evening sweeping ; not uncommon and widely distributed throughout the kingdom.

M. margaritæ, Duv. (*fulvus*, Er., var.). Black, brownish-black, or reddish ; very closely allied to the preceding, with which it was for many years mixed in collections, until Mr. Gorham in 1861 pointed out the differences ; its elytra are longer, and it is less parallel-sided ; the vertex of the head is furnished with three raised lines which converge in front, and the apical margin of the forehead is very sharply toothed in male ; the central raised ridge of the abdomen is only continued on the fourth visible segment as an inconspicuous tubercle. L. 2 mm.

Found under the same circumstances as the preceding, and apparently commoner in England ; Scotland, rare, Forth district ; not recorded from Ireland, but it is probably common in that country.

M. tessera, Curt. Very much smaller than the other species, and easily distinguished by the smooth and impunctate interstices of the elytra, which are very finely shagreened ; the antennæ are dark with the base red, and the legs are red ; the elytra have only three raised lines on each besides the suture ; only the first three visible segments of the abdomen are divided by ribs, and the fourth is slightly raised in the centre ; the ribs, however, are not nearly so strongly marked as in the other species. L. $1\frac{1}{4}$ – $1\frac{1}{2}$ mm.

In marshy places, on mud, also by sweeping ; rare ; Fen districts of Cambridgeshire, &c. ; Sherwood Forest (I once took a specimen by evening sweeping in a broad ride far from any water as far as I could see) ; Grange, Lancashire ; Scotland, Lowlands, very rare, Clyde district (Paisley, Morris Young).

NITIDULIDÆ.

This family contains about a hundred genera, some of which comprise a large number of species ; they are widely distributed throughout the world both in temperate and tropical countries ; the position and extent of the family is difficult to determine ; the genera and species vary very much in structure and habitat, and probably several sub-families will eventually be divided off as separate ; there is no doubt that the Nitidulidæ have a connection with the Silphidæ ; on the other hand, however, through *Ips* and *Rhizophagus*, they closely approach the Trogositidæ ; in fact Erichson classed the latter family with the Nitidulidæ, but they are separated off as a distinct family by the different plan of structure of the maxillæ and tarsi. As a whole, perhaps, the Nitidulidæ come in best between the Histeridæ, to which in many ways they bear a close relation, and the Trogositidæ ; and if the aberrant genus *Micropeplus* is to be removed from the Staphylinidæ, as seems necessary, to the neighbourhood of the Nitidulidæ, it cannot be better placed than immediately after the Histeridæ, as a connecting link between *Onthophilus* and the brachypterous genera of the Nitidulidæ. The chief characters

of the family and many details regarding different genera will be found discussed at length in the papers by myself on "The Nitidulidæ of Great Britain" published in the Entomologists' Monthly Magazine, vols. xxi. and xxii.; many of the characters are very variable in the different genera; the antennæ, however, invariably terminate in a club which is usually 3-jointed, but sometimes apparently solid, the eleventh joint being wholly or partially enclosed in the tenth (as in *Rhizophagus*); as a rule the club is strong, round, and compact, but in some genera is rather loose, or occasionally (as in *Cercus*) somewhat elongate and feebly capitate; the anterior coxæ are transverse and cylindrical; the abdomen has five free ventral segments except in a few genera in which a sixth small dorsal segment is present in the males; the legs as a rule are short and stout, and sometimes strongly retractile; the tarsi are 5-jointed in both sexes, except in two or three exotic tribes, and in the *Rhizophagina*, in which they are heteromerous in the male; the fourth joint is very small, and the first three are usually broad, and clothed on the under-side with fine silky hairs.

The family may be divided into the following six tribes:—

- | | |
|--|----------------|
| I. Antennæ 11-jointed, terminated by a 3-jointed club; tarsi with an equal number of joints, similar in both sexes, in the British families always pentamerous. | |
| i. Labrum free, more or less visible. | |
| 1. Maxillæ with two lobes; antennæ with an elongate and feebly capitate club, abdomen with two segments exposed | BRACHYPTERINA. |
| 2. Maxillæ with one lobe; antennæ with a strong, round, compact club | |
| A. Thorax fitting closely to elytra and not covering their base. | |
| a. Abdomen with two segments exposed | CARPOPHILINA. |
| b. Abdomen covered, or only apex of pygidium exposed | NITIDULINA. |
| B. Thorax covering the base of elytra | CYDRAMINA. |
| ii. Labrum connate with the front, suture more or less distinct. | IPINA. |
| II. Antennæ apparently 10-jointed, with the club solid, the eleventh joint being merged in the tenth; tarsi dissimilar in the sexes, heteromerous in the males, 5-jointed in the females . | RHIZOPHAGINA. |

BRACHYPTERINA.

The members of this tribe may be distinguished by their elongate club, bilobed maxillæ, and very short and feeble antennal grooves, which are not visible below the eyes, as well as by the feebly capitate club of the antennæ; it contains a few genera, some of which are further subdivided by different authors; our two British genera may be distinguished as follows:—

- | | |
|---|---------------------------|
| I. Claws plainly toothed at base; male with a distinct extra anal segment | BRACHYPTERUS, <i>Kug.</i> |
| II. Claws not, or hardly, visibly toothed; male with an indistinct extra anal segment | CERCUS, <i>Latr.</i> |

BRACHYPTERUS, Kugelann.

This genus, taken in its widest sense as including *Heterostomus*, Duv., *Brachyleptus*, Mots., and *Brachypterus*, i. sp., contains about thirty or forty species, which are widely distributed throughout the world, representatives occurring in the Atlantic Islands, South Africa, North and Central America, Australia, &c.; seventeen species occur in Europe, of which three are found in Britain; externally they much resemble *Meligethes*, from which they may at once be known by having the last segments of the abdomen exposed and not covered by the elytra.

- I. Size larger; elytra about one-third longer than thorax *B. GRAVIDUS*, Ill.
 II. Size smaller; elytra nearly twice as long as thorax.
 i. Colour leaden black; legs and antennæ pitchy *B. PUBESCENS*, Er.
 ii. Colour reddish-brown; legs and antennæ rufous *B. URTICÆ*, Kug.

B. gravidus, Ill. (*Cateretes pulicarius*, Gyll.; *linariæ*, Steph.; *Heterostomus gravidus* Duv.). Convex, rather broad, of a dull black colour, clothed with brownish grey pubescence, upper surface very closely punctured; antennæ red; thorax almost broader than elytra, with sides rounded and narrowed in front, base bisinuate, posterior angles somewhat projecting; scutellum large, triangular; elytra a third longer than thorax; legs red, intermediate and posterior pairs often blackish. L. $2\frac{2}{3}$ –3 mm.

Local, but not uncommon in many districts; on the common toad-flax, *Linaria vulgaris*; London district, rather common; Chatham, Mickleham, Chobham, Belvedere, Shiere, Reigate; Maidstone; Brandon, Suffolk; Birchington; Dover; Deal; Folkestone; Southampton; Winchester; Portland; Burwell Fen; Twyford, near Repton; Hunstanton; Wallasey, Cheshire; Northumberland district, Hetton Hall, near Belford; not recorded from Scotland.

In the European catalogue of Heyden, Reitter, and Weise, *B. gravidus*, Ill., and *B. linariæ*, Steph., are given as separate species; we certainly do not possess more than one species of the sub-genus *Heterostomus* as British, and Erichson and other authors have always considered them identical.

B. pubescens, Er. (*Cateretes urticæ*, var. *a.*, Ill.; *glaber*, Newm.). Much smaller than the preceding; leaden black, with legs and antennæ pitchy; thorax about as broad as elytra, plainly transverse, truncate in front and behind, rather thickly punctured, posterior angles bluntly rounded; scutellum semicircular, punctured; elytra nearly twice as long as thorax, rather thickly punctured; legs rather long. L. 2 mm.

Generally distributed and common throughout the midland and southern districts of England, but less common further north; Scotland, rare, Solway district; it is found chiefly on nettles.

B. urticæ, Kug. Very like the preceding, but easily distinguished by its reddish-brown colour, and thinner pubescence, which causes it to appear more shiny; the legs and antennæ are rufous; the elytra are

rather longer in proportion to the thorax, and the punctuation is rather stronger. L. 2 mm.

Generally distributed and common on nettles in flower throughout England and Scotland, and probably Ireland; in the midland and southern districts of England, however, it appears to be not quite as abundant as *B. pubescens*.

CERCUS, Latreille.

This genus contains upwards of twenty species, which are found in Europe, Algeria, Siberia, and North America; three occur in Britain, the first two of which differ considerably from the third, and have by some authors been placed under a separate genus, *Anomæocera*, Shuck.; with regard to the small apical dorsal segment, through the supposed absence of which in both sexes this genus is to a great extent separated from the preceding, there seems to be a difference of opinion; Erichson expressly says that the pygidium is simple in both sexes; Thomson says, "segmento anali maris haud conspicuo;" and Dr. Horn says of the *Brachyptera* generally (including *Cercus*), "the males have a small apical dorsal segment;" as a rule it is very difficult to perceive the extra segment, but it appears to be visible in some specimens under a high power when the beetle is held in a certain position.

I. Antennæ long; thorax plainly transverse.

i. Male with the second joint of the antennæ strongly dilated, triangular; elytra reddish-testaceous with the scutellary region and apex dark *C. PEDICULARIUS*, L.

ii. Male with the second joint of the antennæ simple; elytra black with two large testaceous spots on disc. *C. BIPUSTULATUS*, Payk.

II. Antennæ short; thorax nearly as long as broad, gradually contracted from base to apex

C. RUFILABRIS, Latr.

C. pedicularius, L. Moderately convex, clothed with very fine and thin greyish pubescence, reddish-testaceous, with the scutellary region and apex of elytra dark; in somewhat immature specimens the elytra are occasionally entirely reddish-testaceous; antennæ long, second joint in male strongly dilated, triangular; thorax transverse, about as broad at base as elytra, with sides strongly rounded, deeply and rather thickly punctured, posterior angles rounded; elytra about double as long as thorax, rather strongly punctured; breast blackish; legs reddish-testaceous. L. $1\frac{1}{2}$ – $2\frac{1}{2}$ mm.

Marshy places; on *Spiræa ulmaria* (meadow-sweet), *Carex paniculata*, &c.; local but occasionally abundant where it occurs; London district, not common, Greenhithe, Aylsham, &c.; Brandon; Maidstone; Hastings; Isle of Wight, common in a marshy place near Sandown in April on *Carex*; Glanvilles Wootton; Plymouth; Barmouth; Repton; Sutton Park and Solihull near Birmingham; Chat Moss; Northumberland district; Scotland, very rare, Tweed and Forth districts; Ireland, near Dublin.

C. bipustulatus, Payk. Very like the preceding, but not so strongly and rather more thickly punctured; elytra black, with two large testaceous spots on disc; colour, however, very variable, sometimes

entirely reddish-testaceous; in doubtful cases the species may be distinguished by the simple second joint of the antennæ of the male; single female specimens of the two species are sometimes difficult to determine. L. $1\frac{1}{2}$ – $2\frac{1}{2}$ mm.

Marshy places; on *Spiræa ulmaria*, *Epilobium*, *Carex paniculata*, &c.; it has also occurred in *Cossus* burrows in Sherwood Forest; local but occasionally abundant where it occurs; London district, rather common, Snodland (Kent), Coombe Wood, Aylsham, &c.; Amberley; Maidstone; Wingham, near Sandwich; Glanvilles Wootton; Devon; Wicken Fen, Cambridge; Solihull, Knowle, Leamington, Repton and other midland localities; Nocton, near Lincoln; Withington, Cheshire; Manchester; Scarborough; Northumberland district; Scotland, recorded by Murray as "occasional," but Dr. Sharp says that he does not know of its occurrence.

C. rufilabris, Latr. Smaller than average specimens of either of the two preceding, more elongate and less convex, clothed with very thin and fine pubescence; colour very variable, varying from almost black with mouth parts red, to entirely reddish-testaceous; head small, finely and very thickly punctured, antennæ short, very much shorter than in the preceding species; thorax almost as long as broad at base where it is almost as broad as elytra, narrowed from base to apex, deeply and rather thickly punctured, with all the angles bluntly rounded; elytra thickly and strongly punctured; legs and mouth parts always red. L. $1\frac{3}{4}$ –2 mm.

Marshy places, on various plants, often on reeds and rushes; common and generally distributed in the London district, and the southern and midland districts of England; rarer further north, and not recorded from Scotland.

Between the Brachypterina and the Carpophilina come several important genera which are not represented in Europe, and occur almost solely in the tropics; among these may be mentioned *Colastus*, *Brachyepplus*, and *Conotelus*, each of which contains a larger number of species, and the curious genera *Calonecrus*, *Cillæus*, *Ithyphenes*, and *Orthogramma*.

CARPOPHILINA.

The members of this tribe are distinguished from the Brachypterina by their compact club, unilobed maxillæ, and the very evident grooves for the reception of the antennæ; they are chiefly confined to the single genus *Carpophilus*.

CARPOPHILUS, Leach.

This genus comprises about a hundred species, which are widely distributed throughout the world, but occur chiefly in tropical countries; only seven species occur in Europe, and several of these are probably introduced; three have been found in Britain.

The larva of *C. hemipterus* is described by Perris, *Larves des Coléoptères*, p. 45; it very closely resembles that of *Ips quadripunctata*, of which he gives a full description (p. 43), and chiefly differs in being rather more curved, and in having the last abdominal segment slightly different.

- I. Elytra spotted with yellow.
 i. Thorax narrowed in front and widened behind; elytra scarcely longer than thorax C. HEMIPTERUS, L.
 ii. Thorax narrowed in front and behind; elytra twice as long as thorax C. SEXPUSTULATUS, F.
 II. Elytra without spots C. MUTILATUS, Er.

C. hemipterus, L. (*flexuosus*, Payk.; *pictus*, Heer). Rather stoutly built, short and convex, with rather thick pubescence, black or pitchy-black, somewhat dull, elytra with a yellow spot at shoulder, and another at apex which sometimes wholly, sometimes partially, covers their apical half; head small, thickly punctured; thorax narrowed in front, as broad at base as elytra, thickly punctured, with all the angles rounded; scutellum rather large, punctured; elytra scarcely longer than thorax, thickly, and in the middle almost rugosely, punctured; legs red. L. $2\frac{1}{2}$ –3 mm.

In sugar, preserved figs and other dried fruits, grain, and other provisions; a cosmopolitan species that has been spread by commerce over a great portion of the world; it has occurred in many of our large towns; Dr. Power, however, informed me that Turner once brought him four specimens alive, which he had taken with *Engis humeralis* in *Cossus* burrows in Dulwich Wood; Dr. Power had himself taken *Silvanus*, *Trogosita*, and other species usually considered as introduced and not indigenous, under bark in the open country, but believed that all of them had probably wandered from some other locality.

(**C. sexpustulatus**, F. (*abbreviatus*, Panz.). Long and flat, narrow, rather shiny, very sparingly pubescent; colour reddish-brown; elytra parallel-sided, with two plain impressions on each, and three yellowish spots, one at shoulder, which is often obscure, a more distinct one in middle, and a third at apex, usually obscure, sometimes almost invisible; the thorax is a little narrower than the elytra, and is rounded at the sides and narrowed in front and behind, so that it appears to be sub-orbicular; the antennæ are reddish-brown with blackish club, and the legs are red. L. 2–3 mm.

In dried fruits, &c.; only two or three British examples are known, and these are undoubtedly importations.

C. mutilatus, Er. (*hemipterus*, F., *nec* L.). Considerably narrower in proportion than *C. hemipterus*, L., but broader than *C. sexpustulatus*; thorax quadrate, hardly broader at base than at apex, sides very slightly rounded; elytra not much longer than thorax; head reddish, thorax and abdomen darker, pitchy-red, or blackish; elytra rufescent, without spots, apical angles and region round scutellum more or less broadly darker; legs red. L. $2-2\frac{1}{2}$ mm.

Taken in considerable numbers by the late Mr. T. R. Hardy at the bottom of old wheat-stacks in the neighbourhood of Manchester, and also sparingly, as he informed me, in *Cossus* burrows in Sherwood Forest; in Dr. Power's collection are two specimens which were found in corn which had probably been imported.

NITIDULINA.

This tribe contains the majority of the European genera and species which belong to the family, two of the genera, *Eपुरæa* and *Meligethes*, being of considerable extent in point of numbers; its members are distinguished from those of the preceding tribe by having the abdomen entirely or almost entirely covered by the elytra, and from the Cychramina, to which they bear a close relation, by having the thorax fitting closely to the base of the elytra and not covering it. With the exception of *Stelidota*, *Ipidia*, and *Xenostrogylus*, all the European genera are represented in Britain.

- I. Prosternum depressed behind anterior coxæ, not produced.
- i. Antennal grooves convergent, the convergence varying in degree.
1. All the tarsi more or less dilated; disc of thorax without impressions.
- A. Labrum bilobed; abdomen of male with an extra dorsal segment.
- a. Thorax widely margined.
- a*. Posterior legs approaching one another . . . EPUREA, *Er.*
- b*. Posterior legs considerably separated . . . OMOSIPHORA, *Reitter.*
- b. Thorax with hardly perceptible margins . . . MICRURULA,* *Reitter.*
- B. Labrum only feebly emarginate; abdomen of male without extra segment NITIDULA, *F.*
2. Tarsi not dilated; disc of thorax with impressions . . . SORONIA, *Er.*
- ii. Antennal grooves parallel, or nearly so.
1. First joint of antennæ very strongly dilated; mandibles bifid at apex AMPHOTIS, *Er.*
2. First joint of antennæ moderately thickened; mandibles not bifid, but with a strong tooth about a third from apex OMOSITA, *Er.*
- II. Prosternum produced behind.
- i. Head without, or with very indistinct, antennal grooves; tarsi dilated.
1. All the tibiæ simple PRIA, *Kirby.*
2. Front tibiæ simple; hinder pairs of tibiæ furnished with spines THALYCEA, *Er.*
- ii. Head with distinct antennal grooves.
1. Tarsi not dilated; front tibiæ simple, produced into a strong point externally at apex POCADIUS, *Er.*
2. Tarsi all dilated; front tibiæ more or less strongly and very variably toothed externally MELIGETHES, *Kirby.*

EPUREA, Erichson.

This genus comprises about seventy species, which are widely distributed; the majority occur in cold and temperate regions, but representatives have been recorded from Madagascar and South Africa, Ceylon, Tahiti, Chili, Java, &c.; more than thirty are found in Europe, of which

* Previously *Micruria*; cf. Wiener, Ent. Zeitung, iii. 209 (August, 1881)

sixteen occur in Britain; many of the species are difficult to determine; some of them are very distinct, so much so that they have been held to form separate genera; two of these, *Omosiphora* and *Microrula*, have been adopted above, and with almost as much reason a third might be introduced—*Dadopora*, Thoms.—to include *E. decemguttata* and *E. diffusa*; other species, however, come exceedingly close to one another, and it is almost impossible to distinguish them except by comparing them with authentic types; the table, therefore, given below must be regarded as merely provisional; all the species are more or less testaceous or reddish in colour, and the males have a distinct extra abdominal segment; in size and colour the same species is often very variable, and this occasions much confusion; the members of the genus live under bark, at flowing sap, and in flowers, and to a certain extent they may be separated by their habitat; this point, however, must not be pressed too far, as the flower-frequenting species (e.g. *E. florea*) are occasionally found at sap.

The larva of *E. obsoleta* is described and figured by Perris, Ann. Fr. 1862, 184, t. 5, ff., 525-533, and by Bouché, Naturg. des Insekt, p. 188; it does not call for much remark, being linear and somewhat depressed with a roundish head and short 4-jointed antennæ; the last abdominal segment bears two diverging corneous cerci.

- | | |
|--|---------------------|
| I. Tibiæ widely dilated at apex; intermediate coxæ almost contiguous; hind femora in male either furnished with a blunt tooth or thickened. (<i>Dadopora</i> , Thoms.) | |
| i. Size larger (3½-4 mm.); spots on elytra usually well marked | E. DECEMGUTTATA, F. |
| ii. Size smaller (2½ mm.); spots on elytra more or less confluent | E. DIFFUSA, Bris. |
| II. Tibiæ at most slightly dilated at apex, intermediate pair often sinuate in male; intermediate coxæ moderately separate; all the femora simple in both sexes. (<i>Epuræa</i> , i. sp.) | |
| i. Upper- and under-sides entirely testaceous or rufo-testaceous, unicolorous; disc of thorax not darker than the margins. (Occasionally these species have a dark spot or two towards the apex of the elytra, but this is usually deceptive, being caused by the folding of the wings against the semi-transparent elytra.) | |
| 1. Species more or less oval and convex; anterior margin of thorax strongly emarginate. | |
| A. Antennæ with the last joint broader than the penultimate | E. ÆSTIVA, L. |
| B. Antennæ with the last joint narrower than the penultimate. | |
| a. Size smaller (3 mm.); punctuation stronger | E. MELINA, Er. |
| b. Size larger (4 mm.); punctuation less strong | E. SILACEA, Er. |
| 2. Species strongly oblong; anterior margin of thorax almost straight or only feebly emarginate. | |
| A. Punctuation extremely fine, almost obsolete | E. OBLONGA, Herbst. |
| B. Punctuation distinct. | |
| a. Club of antennæ dark; form more elongate | E. LONGULA, Er. |
| b. Club of antennæ concolorous; form shorter | E. FLOREA, Er. |

- ii. Upper-side spotted or flecked with black, darker portions often ill defined; sometimes the whole surface is of a dark red unicolorous colour, with disc of thorax darker than the margins; under-side more or less dark.
1. Sides of thorax gradually becoming wider for two-thirds or more of their length from apex, thence contracted to base.
- A. Thorax with a more or less distinct angular sinuation at point of contraction to base.
- a. Last joint of antennæ as broad as, or very slightly narrower than, the two preceding.
- a*. Margins of thorax broader; club of antennæ concolorous; average size larger *E. DELETA, Er.*
- b*. Margins of thorax narrower; club of antennæ more or less infusate; average size smaller *E. IMMUNDA, Er.*
- b. Last joint of antennæ distinctly narrower than the two preceding.
- a*. Colour darker; margins of thorax and elytra broader; intermediate tibiæ of male simple *E. PARVULA, Sturm.*
- b*. Colour lighter; margins of thorax and elytra narrower; intermediate tibiæ of male sinuate *E. OBSOLETA, F.*
- B. Thorax with sides evenly rounded, without a trace of angular sinuation at point of contraction to base *E. VARIEGATA, Herbst.*
2. Sides of thorax strongly rounded in front and not contracted behind *E. NEGLECTA, Sturm.*
3. Sides of thorax almost parallel or at most very slightly contracted in a straight line towards base.
- A. Size larger; club of antennæ concolorous; thorax a little broader at base than at apex *E. PUSILLA, Er.*
- B. Size smaller; club of antennæ infusate; thorax a little narrower at base than at apex *E. ANGUSTULA, Er.*

E. decemguttata, F. Rather a large species, which is easily known by its colour and thick legs; oblong-ovate, only slightly convex, not very thickly punctured, thinly pubescent; head reddish-yellow with forehead darker, antennæ yellow, thorax with light margins, disc more or less broadly dark; elytra dark with the margins and five spots on each testaceous, three on the margin, a long one at base, and one behind the middle; under-side entirely testaceous; legs reddish; the elytral spots are usually distinct, but occasionally are somewhat confluent. L. $3\frac{1}{2}$ –4 mm.

Male with the posterior tibiæ excised at apex, and the posterior femora armed with a blunt tooth or projection.

Found at sap of oaks, &c., but is usually connected with the burrows of *Cossus ligniperda*; rare; Shirley, Coombe Wood, Addington, Birdbrook, Tonbridge; Hastings; New Forest; Swansea; Dunham Park, near Manchester.

E. diffusa, Bris. (fuscicollis, Steph.). Very like the preceding, but

much smaller, with the spots on the elytra not nearly so well marked, and sometimes so confluent that the elytra appear to be almost entirely testaceous; the elytra are somewhat more acuminate at the extremity than is the case with the preceding species, but this is not a marked character; in the male the posterior tibiæ and femora are rarely more than thickened. L. $2\frac{1}{2}$ mm.

At the exuding sap of *Cossus*-infected trees; rare; Addington and Shirley; Solihull, near Birmingham (Blatch); Dunham Park, near Manchester, in company with the preceding species (J. Chappell); Stretford, near Manchester, flying over a wood-yard (A. Reston); Scotland, very rare, "a single specimen found in fungus, on an oak stump at Eccles," Solway district (Sharp).

It is probable that this species is only a small variety of *E. decemguttata*, as intermediate specimens occur which have the tibiæ and femora of the male not quite simple, and which vary both as to colour and size; the *var. minor*, *elytris immaculatis* of Waterhouse's catalogue must be referred to this species, the example being entirely testaceous with dark thorax; the question will be found fully discussed by myself in Ent. Monthly Mag. xxi. 93, 94.

***E. æstiva*, L.** Ovate, lighter or darker reddish-testaceous or ferruginous, rather thickly and finely, but distinctly, punctured, with thin and fine pubescence; antennæ unicolorous reddish-testaceous, with the last joint of the club large, always broader than the penultimate; thorax with distinct, but not broad, margins, sides rounded and somewhat narrowed towards apex, anterior margin broadly emarginate, posterior angles right angles; elytra moderately convex; legs reddish-testaceous, with all the tibiæ simple in both sexes. L. 2-3 mm.

In flowers, especially in hawthorn blossom in spring; very common and generally distributed throughout the kingdom. Mr. J. Chappell informs me that he has found the larvæ plentifully in a nest of *Bombus lucorum*, which he put into a tin, and from them reared a large number of the perfect insect in the following spring.

There is often a dark roundish spot on each elytron in this species; this is, however, mostly deceptive, and is caused by the folding of the wings, as above mentioned, underneath the elytra; the specimens in which the spot is marked appear to be the *v. bisignata*, Sturm.

***E. melina*, Er.** Very closely allied to the preceding, but easily distinguished by its much stronger and less close punctuation, and the black or dark club of the antennæ, the last joint of which is narrower than the penultimate, and not broader, as in *E. æstiva*; in many specimens the last joint only of the antennæ is fuscous; the species is on an average larger than the preceding and of a darker colour. Erichson says of *E. melina* that the "legs in both sexes are simple." Thomson says that the "male has the intermediate tibiæ sinuate." I have examined a number of specimens, and Dr. Power kindly examined his series for me, and all these have the intermediate tibiæ simple; this is only one out of several points on which authorities are found at variance in this genus. L. 3 mm.

By beating shallows, hawthorn blossom, &c., and by sweeping herbage; not uncommon in some localities, but much rarer than the preceding species. London district, generally distributed, Chatham, Darenth Wood, Wimbledon, Caterham, Mickleham, Claygate, Shirley, Dulwich; Amberley; Holm Bash, Brighton; Hastings; Tewkesbury; Bewdley; Yardley and Knowle, near Birmingham; Bretby, near Repton; Barmouth; Northumberland district, very rare; Scotland, rare, Solway district; Ireland, near Waterford.

E. silacea, Er. Larger and less convex than either of the two preceding species, with much wider and stronger margins to the thorax; of a bright reddish-testaceous or luteous colour, unicolorous; sides of thorax narrowed in front, contracted and almost sinuate before posterior angles; punctuation not so strong as in *E. melina*, but stronger than in *E. æstiva*; antennæ with the last joint very slightly narrower than the penultimate; apex of elytra truncate; legs reddish-testaceous. L. 2 mm.

Male with the intermediate tibiæ sinuate.

Very rare; Mr. Champion has taken it at Aviemore, Tay district, at sap of birch (Thomson considers it as exclusively attached to flowers); it has also occurred at Braemar, and in a rotten birch stump at the foot of Cross Craig, near Camachgouran, Rannoch; it is recorded in McNab's Dublin list as from near Dublin, but this is probably in error, as very large specimens of *E. æstiva* have sometimes been mistaken for this species.

E. oblonga, Herbst. Oblong, depressed, testaceous, extremely finely punctured, clothed with fine yellowish-grey pubescence; antennæ of the same colour as the rest of the body with club darker, last joint distinctly narrower than the penultimate; thorax with the anterior margin almost straight, side margins very distinct especially in front, sides scarcely narrowed towards apex, posterior angles very marked; elytra more than double as long as thorax, truncate at apex; legs testaceous. L. $2\frac{2}{3}$ –3 mm.

Male with the intermediate tibiæ slightly sinuate.

Under bark and at sap of fir and pine, and apparently confined to these trees; rare; Shirley, Surrey (Rye), Sutton, Stourport and Bewdley (Blatch); Dunham Park, Manchester (Chappell); Northumberland district, Yetholm (Crotch); Scotland, very rare, under bark of Scotch fir, Tweed and Dee districts (Sharp and Champion); Ireland, near Dublin.

E. longula, Er. Very like the preceding, but distinguished by its stronger punctuation and the darker, almost black, club of its antennæ; from *E. florea* it may be known by having the anterior margin of the thorax distinctly, although slightly, emarginate, by its longer and narrower form, by the side border of the thorax being broader, and by the dark club of the antennæ; in the male the anterior tibiæ are slightly sinuate. L. $2\frac{1}{4}$ –3 mm.

On umbelliferous flowers; occasionally at sap; rare; Esher, Mickleham, Tilgate Forest; Addington, in *Cossus* burrows; Nettlecomb, Somerset; Tewkesbury; Sherwood Forest; Northumberland district, Gosforth; not recorded from Scotland.

E. florea, Er. More ovate and shorter in form than the two preceding, and, as a rule, of a darker reddish colour; at first sight it much resembles small specimens of *E. æstiva*, from which it may at once be known by the straight or almost straight anterior margin of the thorax; the antennæ are reddish-testaceous, unicolorous, with the last joint of the club scarcely narrower than the two preceding; the thorax has the sides narrowly bordered, and the posterior angles somewhat projecting in a slight tooth; the elytra are truncate at apex. L. 2–2½ mm.

Male with the intermediate tibiæ sinuate.

Under bark, at sap, in flowers, &c.; often by sweeping; local, but common in some districts. London district, common; generally distributed also in the southern and midland counties, but rarer further north; Chat Moss, on Umbelliferæ; Liverpool; Northumberland district, rare. Scotland, not common, chiefly on flowers of the mountain ash, Solway, Dee, and Moray districts; Ireland, near Waterford.

E. deleta, Er. Testaceous or luteous, with the suture and apex of elytra usually dark, the dark colour at apex often enclosing two spots; the colour, however, and also the size is very variable, and unicolorous specimens occasionally occur; these may be known by the shape of the thorax, which has the sides almost obliquely cut off from apex to within a third of base, and from thence contracted with a strong sinuation; antennæ unicolorous with the last joint only very slightly narrower than penultimate; thorax plainly emarginate at apex, with sides broadly margined, rather finely and thickly punctured; elytra with broad margins; breast usually darker, sometimes blackish; legs pale testaceous. L. 1½–3 mm.

Intermediate tibiæ simple in both sexes.

In fungi, at sap of felled trees, under bark, &c.; occasionally by sweeping; common and generally distributed throughout the greater part of England; Scotland, local, Forth and probably other districts; Ireland, near Waterford, and probably widely distributed.

E. immunda, Er. (*terminalis*, Mann.). Oval, depressed, reddish-testaceous or luteous, with the club of the antennæ dark and the sides of the elytra more or less infuscate; the antennæ have the last three joints of equal breadth; the thorax is emarginate at apex, narrowly margined, thickly and finely punctured, sometimes dusky on disc; the elytra are rather depressed, slightly rounded at apex, strongly margined, with thick and fine punctuation, which is rather stronger at base; breast and abdomen brownish, apex of latter yellowish; legs yellow or reddish. L. 3 mm.

Male with the intermediate tibiæ sinuate.

At sap of birch; very rare; Scarborough (Wilkinson and Lawson); Scotland, Tay and Moray districts, Aviemore and Invercannich (Champion).

This species is very little known, and others are perpetually made to do duty for it in collections; it is perhaps best distinguished superficially by the colour; in the specimens I have seen the apex of the elytra and the sides, for the greater part of their length, are suffused

with dark colour, and the space of the elytra enclosed within is testaceous, but this does not appear to be always the case; the thorax is contracted with a sinuation towards base, and is as broad as the elytra without the margins, which cause it to appear narrower than the elytra. From *E. deleta*, which it approaches in some points, it may be distinguished by its colour and the darker club of its antennæ; from *E. obsoleta*, with which it is most often confounded, it may be separated by its broader form, and by having the last joint of the antennæ about as broad as the penultimate, whereas in *E. obsoleta* it is distinctly narrower; the thorax also is slightly more contracted at base than in the latter species.

E. parvula, Sturm (*rufomarginata*, Steph.). A very dark species, often almost black with the margins of thorax and elytra only ferruginous; antennæ ferruginous with club brownish, last joint much narrower than the two penultimate; sides of thorax almost as in *E. deleta*, except that they are slightly waved and uneven, which is a peculiar characteristic of this species; before the base of thorax there is a strong sinuation; in some respects it comes close to *E. obsoleta*, but may easily be distinguished from that species by its more flat shining appearance and dark colour, and by the more pronounced margins of the thorax and elytra, as well as by the shape of the thorax, and the fact that the intermediate tibiæ of the male are simple and not sinuate. L. $2\frac{1}{2}$ –3 mm.

In faggots; also occasionally under bark of Scotch fir; very local; Darenth Wood, faggot stacks (Champion); Wiltshire; Hereford; Sherwood Forest; I have taken it commonly by beating faggots in Langworth Wood, near Lincoln, where I have also found a small variety in faggots of a species of *Tilia* (called "bass" by the country people); Scarborough; Stretford near Manchester, flying over old wood-yard (Reston); Northumberland district; Scotland, rare, Aviemore.

E. obsoleta, F. This is one of the most difficult species of the genus to determine; variable both in size, colour, and to a certain extent in structure of thorax, and in consequence often confounded with other species; the elytra are, as a rule, obscurely marked with dark patches, but occasionally the whole insect is of a reddish colour, and may in that case be easily confounded with other species, such as *E. florea*; from the latter insect small unicolorous examples of *E. obsoleta* may be distinguished by the plain emargination of the anterior margin of the thorax, and by the club of the antennæ which is dark and has the last joint much narrower than the two preceding; from *E. pusilla*, which it in some cases rather closely resembles, the species may be known by the emargination of the anterior margin of thorax being much less pronounced, by its truncate elytra, more rounded sides and narrower margins of thorax, and by the dark club of its antennæ; from other allied species, such as *E. parvula*, it may be separated by the sinuate intermediate tibiæ of the male. L. $1\frac{1}{2}$ –3 mm.

At sap, under bark, in fungi, &c.; generally distributed and common throughout the greater part of England and Scotland, and probably Ireland.

E. variegata, Herbst. A very distinct species of a dark rust-red colour, with transverse evenly rounded thorax, which is strongly contracted at base, the base being much narrower than the base of elytra; the sides show no trace of sinuation, and the anterior margin is rather strongly emarginate; the antennæ are ferruginous with the club concolorous, and the three last joints are of equal breadth; each elytron has a strong blackish spot in the centre, and a smaller and more obscure one at apex; the punctuation of the upper surface is distinct, and rather strong; legs red. L. $2\frac{2}{3}$ –3 mm.

Intermediate tibiæ simple in both sexes.

At the exuding sap of oaks, in fungi, &c.; very rare; Surrey; Scarborough; Scotland, Highlands, Tay district (Aviemore).

E. neglecta, Sturm. One of the most distinct species of the genus; like *E. parvula* in colour, dark, with the head, margins of thorax and elytra, antennæ and legs ferruginous; punctuation of upper surface strong, almost rugose; antennæ concolorous with the middle joint of the club somewhat broader than either of the other two; the species may easily be known by its very narrow thorax, which is twice as broad as long, rounded in front and not contracted at base, which is fully as broad as the base of elytra; the elytra are narrowed towards apex. L. $2\frac{2}{3}$ mm.

Intermediate tibiæ simple in both sexes.

At sap of freshly cut trees, also by beating faggot stacks in woods; very rare; Darenth Wood (Champion); West Wickham, Kent (Janson); The Holt, Farnham (Power); in Mr. Rye's collection there is an example taken many years ago, and obtained by him from Mr. G. R. Waterhouse.

E. pusilla, Er. A long and rather narrow species, oblong, with sides subparallel; ferruginous, with the disc of thorax generally darker, and with more or less cloudy dark markings usually present on elytra; pale examples, however, are very common; punctuation thick, moderately distinct; antennæ unicolorous, with the last joint narrower than the penultimate; thorax about a third shorter than broad, with the anterior margin very strongly emarginate, and the anterior angles in consequence very prominent, sides almost parallel; elytra rather long, with the apex rounded. L. 3 mm.

Male with all the tibiæ slightly curved, and the intermediate pair strongly sinuate and widened at apex.

Under bark and at sap of various trees, especially firs; common and generally distributed throughout the kingdom.

E. angustula, Er. An elongate, linear, and parallel species, which may easily be known by its narrow, oblong form, long almost parallel-sided, subquadrate thorax, and dark rufous, sometimes almost black colour. I have only seen one entirely testaceous example, and this was evidently immature; the species is most closely allied to

E. pusilla, from small examples of which it may be distinguished by having the club of the antennæ, or at least the second and third joints of the club blackish, and also by the fact that the thorax is a little wider in front than behind, the sides slightly converging to base in almost straight lines; in *E. pusilla*, as in almost all the other species of *Epuræa*, the posterior margin is wider than the anterior. L. $2-2\frac{1}{2}$ mm.

Under bark of beech, fir, holly, &c.; very rare; occasionally by sweeping; Shiere, near Dorking (Capron); Scarborough (Wilkinson and Lawson); Sutton Park, near Birmingham (Blatch); Chat Moss (Reston); Dunham Park, Manchester (Chappell); Eastham, near Liverpool (Ellis); Scotland, very rare, Highlands, Tay district, in the burrows of *Xyloterus lineatus* in Scotch fir.

OMOSIPHORA, Reitter.

This genus contains three European species, which are distinguished from *Epuræa* by their long legs, the posterior of which are rather widely separated, and by their different contour; one of these only is found in Britain, and until quite recently has been classed in our catalogues under *Epuræa*.

O. limbata, F. Rather short and broad, ovate, disc of thorax and elytra convex, margins broad; upper surface thickly punctured; head dark with the mouth parts ferruginous, antennæ ferruginous with club usually darker, last joint narrower than the preceding; thorax about twice as broad as long, contracted at base, dilated in middle, anterior margin broadly emarginate, dark with the broad explanate margins red; elytra broadest in middle, coloured as thorax, or more usually with base or basal half as well as margins red; legs long, reddish-testaceous, tibiæ simple in both sexes. L. $2\frac{1}{2}$ mm.

In fungi, &c.; not uncommon and sometimes plentiful, but local; London district, not uncommon, Chatham, Dartford, Sheerness, Walton-on-Thames, Shiere, Horsell, Dulwich, Burnham Beeches, &c.; Glanvilles Wootton; Devon; Stourport; Hunstanton; Repton, Burton-on-Trent (in old cabbage stump); Nocton, near Lincoln; Northumberland district, very local; Scotland, very rare, Solway district, found in flood refuse at Kelton, below Dumfries, by Mr. Lennon. According to Erichson this species is taken at sap, and also under fallen leaves in sunny places in early spring.

MICRURULA, Reitter.

This genus was formed for the reception of *Epuræa melanocephala*, Marsh; the thorax has no separate side border, which gives the species the appearance of a *Meligethes* rather than an *Epuræa*, and besides this, its entirely different contour and certain differences in the mouth organs, especially the mandibles, seem to justify its separation as a distinct genus.

M. melanocephala, Marsh. Ovate, rather short and broad,

convex, thickly punctured, clothed with not very fine and rather thick pubescence; colour variable, but usually testaceous, with the thorax dark and the antennæ and legs reddish; antennæ unicolorous with the three joints of the club of equal breadth; thorax rather long, gradually contracted from base to apex, much narrower in front than behind, base as wide as base of elytra; elytra rather convex, narrowly margined; legs rather short and stout, the same in both sexes, intermediate tibiæ with a row of very fine spines on their outer side. L. $2\frac{1}{2}$ mm.

By beating and sweeping flowers and trees in blossom in early summer; local; London district, rather common, Caterham, Mickleham, Shirley, Sevenoaks, St. Mary Cray, Shiere, Birch Wood, Purley Down, Loughton, &c.; Amberley; Dover; Glanvilles Wootton; Salford Priors, near Evesham; Gumley, Leicestershire; Foremark near Repton, Burton-on-Trent (wild cherry blossom); not recorded from any of the northern counties of England, but probably occurs rarely; Scotland, very rare, Forth and Moray districts.

The colour of this species is very variable; some specimens are entirely testaceous; this rather common variety is the *Nitidula affinis* of Stephens; a much rarer variety, the *N. brunnea* of Heer, is entirely black or fuscous, with the mouth parts, antennæ, and legs testaceous; of this variety I have only seen two British examples, which are in Mr. Wilkinson's collection, now in the possession of Mr. Mason.

NITIDULA, Fabricius.

About thirty species are at present comprised in this genus, which are very widely distributed, as representatives occur in Europe, Siberia, and North America, and also in North and South Africa, Ceylon, Peru, and Brazil, and in the Australian region in New Zealand and New Caledonia; there are five European species, of which four are found in Britain; these may be distinguished as follows:—

I. Thorax entirely black.

i. Elytra with yellow or reddish spots; thorax with anterior margin straight.

1. Size larger; elytra black, with one well-defined reddish-yellow spot on each N. BIPUSTULATA, L.

2. Size smaller; elytra dark, with four irregular reddish spots on each, which are often confluent and form bands N. QUADRIPISTULATA, F.

ii. Elytra without spots; thorax with anterior margin distinctly emarginate N. RUFIPES, L.

II. Thorax with margin broadly yellow N. FLEXUOSA, F.

N. bipustulata, L. Moderately convex, of a dull black colour, each elytron with one well-defined large reddish-yellow spot on each, placed a little behind the middle; head very thickly punctured, antennæ entirely black or dark red with black club; thorax as broad behind as elytra, with anterior margin straight or almost straight, rather more narrowed in front in the female than in the male; the punctuation also

is finer in the latter sex than in the former; elytra very finely and somewhat rugosely punctured; legs red; occasionally the margins of the thorax and elytra are reddish-brown, and sometimes the whole body-colour is brownish. L. $3-4\frac{1}{2}$ mm.

Under dead birds and animals, old bones, &c.; common and generally distributed throughout the kingdom.

N. quadripustulata, F. (*carnaria*, Schall.). This species at first sight resembles in size and colouring some species of *Epuræa*; the head and thorax are dull black, and the elytra dull black or brownish with four irregular light spots, which are often confluent and form bands; the antennæ are reddish with dark club; thorax as broad as elytra, scarcely narrowed in front, finely but distinctly punctured, with anterior margin straight; legs red or ferruginous. L. $2-2\frac{1}{2}$ mm.

In carcasses of birds and animals, under bones, &c.; not common; Darent, Blackheath, Shirley, Weybridge, Wimbledon, Sheerness, Chatham, Whitstable; Coombe Wood; Hastings; Devon; Hunstanton, Norfolk.

N. rufipes, L. (*obscura*, F.). Entirely dull black, with very fine, almost invisible punctuation; antennæ red with black club; thorax a little more narrowed in front in the female than in the male, about as broad as elytra, with anterior margin emarginate; elytra very finely punctured, but a little less closely than thorax; legs red. L. $2\frac{1}{4}-4\frac{1}{2}$ mm.

Found under the same circumstances as the two preceding species; rare; Darent Wood (found in some numbers by Dr. Power); Esher, Sheerness, Chatham, Gravesend, Ashted; Stephens gives as localities, Norfolk, Suffolk, Devonshire, Netley, Glanvilles Wootton, and Swansea.

There seems to be no good reason why the preference should be given to Fabricius' name for this species, as is now generally the case, as the insects in the Linnæan collection standing under *Silpha rufipes* are our *Nitidula rufipes*; it is certainly true that the description given by Linnæus does not accord with them, yet neither does it agree with *Meligethes rufipes*, which his insect is generally supposed to have been.

(**N. flexuosa**, F. (*flavomaculata*, Rossi)). Head black, thorax black with margins broadly yellow, elytra black with two very variable spots on each, one at base, and one in middle close to suture; the four spots are often confluent, and enclose a dark space round scutellum; the upper surface is very finely punctured, and is a little more shining than in the other species; antennæ rather long, yellowish with dark club; thorax scarcely narrowed in front in male, distinctly narrowed in female, with anterior margin somewhat emarginate; legs yellow or reddish-yellow. L. $3-4\frac{2}{3}$ mm.

Very rare, and doubtfully indigenous; Scarborough (Lawson); sands at South Shields (Bold); in all probability imported with hides or bones; Mr. Bold himself regarded his specimens as probable introductions.

The species of *Nitidula* vary very much in size, as may be seen from the lengths above given.

SORONIA, Erichson.

This genus at present contains only about half-a-dozen species, three of which occur in Europe, and the others have been described from North America, South Africa, and the Australian region; the genus, therefore, is widely distributed, and will probably prove to be much more extensive than is at present known.

The species of *Soronia* and *Omosita* are readily distinguished from all our other Nitidulidæ by having the disc of the thorax distinctly impressed or wrinkled; slight traces of impressions are visible in many specimens of *Epurwa parvula*, *Amphotis*, &c., but these are apparently abnormal, and very different from the impressions on the thorax in the two first-named genera; the two British species of *Soronia* resemble each other so closely and vary so much in size that it is sometimes hard to distinguish them.

The larva of *S. grisea* is described by Perris (*Larves des Coléoptères*, p. 26), and is described and figured by Westwood, who quotes from Curtis (*Classification I.*, 141, fig. 11); it is somewhat depressed, of a dirty white colour, with six scaly legs; the extremity of the body is furnished with four small horny conical appendages curved upwards; each segment is also beset with several short stiff hairs, and the lateral margins of the abdominal segments are furnished with a small fleshy and somewhat conical protuberance; on the under-side of the extremity of the body is an appendage which is used as a proleg.

- I. Form broader and more convex; punctuation closer;
average size larger *S. PUNCTATISSIMA*, *Ill.*
II. Form narrower and less convex; punctuation less
close; average size smaller *S. GRISEA*, *L.*

***S. punctatissima*, Ill.** Somewhat convex, ferruginous or reddish-brown with the thorax and elytra variegated with black or dark brown and yellowish or reddish spots; margins of thorax and elytra broad; punctuation of upper surface close; elytra with four or five raised lines on each which are sometimes more or less obsolete; under-side reddish or reddish-brown, legs reddish. L. $3\frac{1}{3}$ – $5\frac{1}{2}$ mm.

At exuding sap; usually found in or near burrows of *Cossus ligniperda*; very local; Shirley and Esher in birch (Power); Darenth, Chatham, Coombe Wood, Addington, Norwood, Belvedere, Shiere; Hastings; Isle of Wight; Dean Forest; Repton; Scarborough; Liverpool district; Dunham Park, Manchester, in oaks and alders (Chappell); Stretford, in old cherry trees (Reston); Northumberland district; Scotland, local, Tweed, Tay, Dee, and Moray districts.

***S. grisea*, L.** Smaller on the average than the preceding species, and also narrower and less convex, and more sparingly and less closely punctured; in the preceding species the black markings on the elytra a little behind the middle are interrupted by a wavy yellowish band; this yellowish band or fascia is succeeded by a dark band, which is inter-

rupted at the suture, a space near the suture remaining testaceous; in *S. grisea* these markings are just the same, but the hinder dark band is not interrupted, and, as a rule, covers the whole sutural space; in the latter species the anterior tibiæ are quite simple in both sexes; in *S. punctatissima* they are slightly curved in the male. L. 3-4 $\frac{2}{3}$ mm.

Widely distributed and rather common throughout the London, Southern, and Midland districts; rarer further north; not so often associated with *Cossus* as the preceding; Notting Hill, in willows not infested by *Cossus* (Power); Stretford, Manchester, under bark of old apple trees (Reston); common in and near *Cossus* burrows in the above-mentioned districts; I have beaten it from hawthorn blossom near the banks of the Trent at Repton, and in Bretby Wood near the same place; Scotland, scarce, Solway, Forth, and Moray districts; Ireland, near Dublin, and probably widely distributed.

AMPHOTIS, Erichson.

About half-a-dozen species are comprised in this genus, three of which occur in Europe, and the others are found respectively in Syria, North America, and Cayenne; the genus may be at once distinguished, apart from differences in the mouth organs, by the very broad and smooth margins of the thorax and elytra, and the very greatly enlarged first joint of the antennæ, which, when viewed from above, gives the forehead the appearance of being strongly lobed; the second joint is inserted beneath the lobe formed by the first, which slightly overlaps it, and not at the end of the first joint, as is the case with *Omosita* and other genera, which have the first joint thickened.

A. marginata, Er. Convex, with very broad and distinct margins to thorax and elytra; head and thorax ferruginous; elytra dark, with some lighter markings, and with five distinct raised longitudinal lines on each; margins of thorax and elytra of a uniform red colour; punctuation of thorax fine and close, of elytra stronger and more diffuse; legs rather stout, red. L. 4-5 mm.

In chinks and crevices of beech and other trees near the runs of *Formica fuliginosa*; rare; Birch Wood, Chobham, Reigate, Coombe Wood, Tilgate Forest, Mickleham, Horsell, Maidstone; apparently not found except in or near the London district.

OMOSITA, Erichson.

This genus contains about half-a-dozen species from Europe, North America, and Abyssinia; all the three European species occur in Britain, and may be distinguished as follows:—

- I. Length 4 $\frac{1}{2}$ mm.; thorax ferruginous; elytra strongly margined **O. DEPRESSA, L.**
- II. Length 2-3 mm.; thorax dark, with margins somewhat lighter; elytra very slightly margined.
 - i. Thorax strongly rounded and contracted in front; elytra dark with scattered reddish-yellow markings **O. COLON, L.**

- ii. Thorax slightly contracted in front; elytra with a common luteous spot reaching from base to beyond middle *O. DISCOIDEA*, *F.*

***O. depressa*, L.** Entirely of a rust-red colour, except the head, scutellum, centre of thorax, and a few scattered spots on elytra, which are darker; head thickly and somewhat rugosely punctured, antennæ with the first joint thickened, club compact; thorax thickly and finely punctured, with two impressions on disc behind middle, and a strong longitudinal furrow on each side, posterior margin very distinctly bisinuate; elytra very finely, almost invisibly punctured, with strong margins; legs ferruginous. L. $4\frac{1}{2}$ mm.

In dry carcasses, also under bones, and at sap; rare in the south, rather common in the north; Ashted, Surrey; Hastings; Netley; Glanvilles Wootton; Llangollen; North Derbyshire; Sherwood Forest; Lancaster sands; Northumberland district; Scotland, locally common, Lowlands and Highlands, Solway, Forth, Tay, Dee, Moray, and probably other districts; Ireland, Kilruddery near Dublin, near Belfast, &c.

***O. colon*, L.** This and the next species are at once distinguished from the preceding by their much smaller size, different colouring, less close punctuation, more oblong form, and much narrower margins of elytra; in fact *O. depressa* might for several reasons be made a separate genus. *O. colon* may be separated from *O. discoidea* by its colour, which is dark, with the margins of the thorax somewhat lighter; the elytra have each a rather small but distinct spot behind middle, reaching to suture, and a few other smaller light spots towards base; the thorax is strongly rounded and contracted in front, so that the anterior margin is considerably narrower than the posterior, and the base shows very slight traces of sinuation. L. 2–3 mm.

In dry carcasses, haystack refuse, under old bones, &c.; common and generally distributed throughout the kingdom.

***O. discoidea*, F.** Very like the preceding, but distinguished by not having the thorax much contracted in front, so that the anterior margin is nearly as broad as the posterior, and by the elytra having a common luteous or light yellowish spot reaching from base to beyond middle and from suture nearly to side margin; the posterior margin of thorax shows hardly a trace of sinuation. L. 2–3 mm.

Found under the same circumstances as the preceding; common and generally distributed throughout the greater part of England, but less common further north; Scotland, scarce, Solway and probably other districts; Ireland, near Belfast and Dublin, and probably widely distributed.

THALYCRA, Erichson.

Only two species are contained in this genus, one of which occurs in Europe and the other in the Australian region; our single species is very rare in Britain, and has only been taken in *Cossus* trees or by

sweeping; according to Erichson its probable habitat is underground, as the structure of the legs seems to indicate, and he is of opinion that it comes out on hot summer evenings on grass and low vegetation; the species somewhat resembles externally *Cychramus fungicola*, but may easily be known by its compact club, and by the fact that the thorax fits closely to the elytra and does not cover their base.

T. sericea, Sturm. (*fervida*, Ol.; *Strongylus fervidus*, Steph.). Bright rust-red, shining, ovate, moderately convex, clothed with short silky pubescence; apex of elytra sometimes darker; antennæ red, with dark club which is very round and compact, first joint enlarged, almost semicircular; thorax fully as broad at base as elytra, rounded at sides and narrowed in front, anterior margin emarginate, posterior margin feebly bisinuate, posterior angles almost right angles but somewhat blunt, upper surface strongly punctured; elytra strongly punctured at base, more feebly at apex; elytra and thorax closely fringed with short white hairs; legs red, anterior tibiæ simple, posterior pairs armed with spines on their external margins. L. 3-4 mm.

At the exuding sap of *Cossus*-infected trees; occasionally by evening sweeping; rare; Birch Wood, Shirley, Ripley, Esher, Surbiton, Mickleham, Loughton, Bromley, Tilgate Forest; Eythorne; Balcombe (Sussex); Bournemouth; Knowle, near Birmingham; Scotland, very rare, Moray district; it is the same as the *Strongylus fervidus* of Stephens, and according to him occurs in fungi.

POCADIUS, Erichson.

This genus contains eight or nine species, two of which are found in Europe, and the others have been described from North, Central, and South America, India, and Ceylon; the species bear a sort of superficial resemblance to *Thalycra* and *Cychramus*, but may be distinguished from the first by the regular rows of punctures on the elytra, which are separated by regular rows of yellow hairs, and from the latter by the compact round club of the antennæ (the club in *Cychramus* being elongate), and the fact that the anterior tibiæ are produced into a strong point at apex.

P. ferrugineus, F. Oval, convex, shining, of a reddish-brown colour, apex of elytra sometimes darker; antennæ very short, light red, with dark club, which is very compact; thorax very short in comparison with elytra, narrowed in front, posterior angles sharp, with narrow, though distinct, margins, rather diffusely and obscurely punctured; elytra with punctuation and pubescence as above described; legs light red, with all the tibiæ produced into a point at apex. L. 3-4 mm.

In decaying fungi, especially *Lycoperdons*; local but rather widely distributed in the London, Southern, and Midland districts; rarer further north; Northumberland district, rare; Scotland, rare, Tweed, Forth, and Moray districts.

PRIA, Kirby.

This genus at first sight closely resembles *Meligethes*, but is distinguished by the oblong club of its antennæ, by the thorax having a lateral stria close to the margin, and by the simple front tibiæ; it contains about half-a-dozen species, two of which are found in Europe, and the others have been described from South Africa and Madagascar, India and Japan; the single British species is very widely distributed in Europe from England to the Caucasus district.

P. dulcamaræ, Scop. (*breviuscula*, Kol.). Moderately convex, of a dark olive-testaceous colour, with suture of elytra, scutellum, and the greater part of the under-side darker; upper surface rather thickly clothed with fine and short greyish pubescence; punctuation of thorax fine, of elytra almost invisible; posterior angles of thorax right angles; legs yellow, anterior tibiæ simple; under a high power, however, slight traces of teeth are visible on the anterior tibiæ, and the posterior pairs are seen to be clothed with very short hairs on their margins; antennæ yellowish with club darker; in the male they are rather longer than in the female, and the eighth joint in the former sex is enlarged laterally, so that the club appears to be 4-jointed in the male, and 3-jointed in the female; Stephens, deceived by this, considered them to belong to separate genera, the female being his *Meligethes dulcamaræ*, and the male his *Pria truncatella*. L. 2 mm.

On flowers of *Solanum dulcamara*; very local; London district rather common and generally distributed; Eastbourne; Hastings; Brixham, Devon; Salford Priors, Evesham; Bewdley; Knowle, near Birmingham; I know of no record from further north.

MELIGETHES, Kirby.

In the Munich catalogue one hundred and nineteen species are enumerated as belonging to this genus; so many European species have, however, been since described by Reitter, Brisout, &c., that the number found in Europe alone is now about one hundred and ten, and upwards of two hundred have been in all discovered; these are almost entirely confined to temperate and cold climates; very few occur in tropical countries; a small number have been found in South Africa, and one or two are known from Ceylon, Persia, Madeira, &c.; thirty-four species occur in Britain, many of which at first sight closely resemble one another, so much so that the genus is often regarded as one of the most difficult in our fauna; the punctuation, however, and general sculpture, and especially the denticulation of the anterior tibiæ afford such good characters for the determination of species in so many cases, that they are really easier to separate than many belonging to genera of much less extent; a high magnifying power, however, is necessary, and in some cases the differences are so comparative that the species cannot be

determined with accuracy unless they are compared with authentic types; the genus as a whole is marked by the denticulate anterior tibiæ, taken in conjunction with the produced prosternum; in my notes on the genus (Ent. Monthly Mag. xxi. p. 213—217) I have at some length discussed the chief characters on which distinctions between species have been founded, and have especially pointed out that Reitter's character depending on the straightness or emargination of the anterior margin of the forehead, although useful in some cases, is practically very inconvenient, and as regards our fauna is virtually useless. As the species are very numerous, and in many points closely resemble one another, it will perhaps be of advantage to enumerate some of the chief characters to avoid repetition:—General form subquadrate, or more or less ovate; upper surface with more or less distinct greyish or dark pubescence; head small, triangular; mandibles short, rather broad, but sharp, furnished with one or two small inconspicuous teeth near apex; antennæ short, with the first joint considerably thickened, terminating in a compact round three-jointed club; antennal furrows on the under-side of the head well marked, straight and parallel; thorax always transverse, sometimes very strongly (as in *M. picipes*), at other times slightly (as in *M. nanus*), finely margined at sides, about as broad at base as elytra; abdomen with the first free segment as long as the three following, which are of equal length; fifth segment longer, with two rounded impressions; last segment of abdomen and metasternum furnished, especially in male, with varying depressions, keels, or prominences, which often afford very useful characters. In size the species range from 1 mm. to 3½ mm.; as a rule they are about 2 mm. in length. The colour is usually black, sometimes very shiny, sometimes dull or leaden; several species have a bluish or greenish (occasionally a bronze or purple) metallic lustre; none, however, of the British species are red or testaceous (like the continental *M. fuscus*), except a variety of *M. rufipes*, which is of a dark ferruginous colour; a mahogany-coloured tinge is sometimes present on the purple varieties of *M. ceneus*. Next to the denticulation of the anterior tibiæ the degree of punctuation and cross striation or reticulation between the punctures appears to afford the best determining character; sometimes the latter takes the form of very fine alutaceous network covering the whole of the body, sometimes of coarse transverse scratches; occasionally it is confined to the elytra, and is absent on the thorax; and in one of our species (*M. murinus*) it is peculiar to the scutellum; in some cases only very slight traces are visible, which are often so feeble that the interstices are, for purposes of subdivision, conveniently regarded as quite smooth. In all cases a compound microscope with at least a one-inch objective is required for the examination of this character.

Reitter in his "Revision der Europäischen Meligethes-Arten" (a work indispensable to any student of the genus) divides the genus *Meligethes* into three sub-genera, as follows:—*Meligethes*, containing the bulk of the

species, distinguished by having simple claws not toothed at the base; *Odontogethes*, which has the claws broader and strongly toothed at the base, containing the single European species *O. hebes*, Er. (*M. olivaceus*, Sturm); and *Acanthogethes*, which has the claws as in the preceding genus, but has the forehead deeply excised in a semicircle, and the anterior tibiæ strongly toothed, whereas in *O. hebes* the anterior tibiæ are very finely toothed, as in *M. rufipes*, &c., and the anterior margin of the forehead is straight; this sub-genus contains our *M. solidus*, Kug., *M. brevis*, Sturm (*pictus*, Rye), and three other species.

The species of the genus *Meligethes* occur on flowers; they seem to be especially attached to *Cruciferae*, *Labiatae*, and *Compositae*, and to the genus *Potentilla* of the *Rosaceae*; they are, however, found on many other plants.

The British species may be divided as follows: in all cases, however, a careful comparison of the detailed descriptions is necessary:—

I. Tarsal claws simple. (*Meligethes*, i. sp.)

i. Anterior tibiæ very finely toothed, rather more distinctly towards apex.

1. Colour black, with at most very slight traces of metallic lustre.

A. Legs light.

a. Species large, black, oval, or broad oblong; punctuation and cross striation of elytra forming wavy lines; club of antennæ dark.

a*. Sides of thorax considerably contracted towards apex; thorax very finely and indistinctly punctured

M. RUFIPES, Gyll.

b*. Sides of thorax only slightly contracted towards apex; punctuation of thorax fine but distinct

M. LUMBARIS, Sturm.

b. Species smaller, rather narrow-oblong; punctuation and cross striation of elytra not forming wavy lines; antennæ entirely light

M. FULVIPES, Bris.

B. Legs dark; at most anterior tibiæ somewhat lighter.

a. Elytra unevenly and rugosely punctured with strong transverse striation between punctures; length under 2 mm.

M. SUBRUGOSUS, Gyll.

b. Elytra evenly punctured with cross reticulation between punctures; length at least 2 mm.

a*. Punctuation weak; cross reticulation between punctures delicate, present on both thorax and elytra

M. CORACINUS, Sturm.

b*. Punctuation rather strong; cross reticulation between punctures rather coarse and uneven, present on elytra only

M. CORVINUS, Er.

2. Colour greenish or greenish-blue, sometimes purple, with strong metallic lustre.

A. Punctuation close, and comparatively weak

M. ÆNEUS, F.

B. Punctuation more diffuse, and rather strong

M. VIRIDESCENS, F.

ii. Anterior tibiæ very finely toothed from a little below base to beyond middle, with two or more conspicuously stronger teeth at or close to apex.

1. Upper surface without cross striation or reticulation between punctures.
 - A. Black, or with dark brown reflection, very shining; punctuation strong, and not very close, especially on elytra.
 - a. Anterior margin of forehead emarginate.
 - a*. Body long-oval; punctuation of elytra plainly stronger than that of thorax.
 - a†. Punctuation of elytra less diffuse; metasternum of male with a tubercular prominence on each side of middle . . . M. DIFFICILIS, *Heer.*
 - b†. Punctuation of elytra more diffuse; metasternum of male simple . . . M. KUNZEI, *Er.*
 - b*. Body short-oval; punctuation of elytra not much stronger than that of thorax . . M. MOROSUS, *Er.*
 - b. Anterior margin of forehead straight.
 - a*. Body short-oval; colour shining black.
 - a†. Punctuation not much stronger on elytra than on thorax . . . M. MEMNONIUS, *Er.*
 - b†. Punctuation much stronger on elytra than on thorax . . . M. OCHROPUS, *Sturm.*
 - b*. Body long-oval; shining, with dark brown reflection . . . M. BRUNNICORNIS, *Sturm.*
 - B. Black, moderately shining; punctuation close and fine, almost the same on elytra as on thorax.
 - a. Male with the last abdominal segment simple . M. VIDUATUS, *Sturm.*
 - b. Male with the last abdominal segment furnished with a large smooth tubercle at apex . M. PEDICULARIUS, *Sturm.*
2. Upper surface with cross striation or reticulation between punctures; black, as a rule rather dull.
 - A. Cross striation present on elytra only; anterior tibiæ with two stronger teeth at apex, not separated by smaller teeth . . . M. BIDENS, *Bris.*
 - B. Cross striation or reticulation present on the whole of the upper-side.
 - a. Thorax at base wider than elytra; anterior tibiæ with two to five stronger teeth at apex, of which two or three are usually larger than the rest; none, however, are very conspicuous, and they are very often almost obsolete . . . M. UMBROSUS, *Sturm.*
 - b. Thorax at base at most as wide as elytra; anterior tibiæ with three or four conspicuously stronger teeth at apex, the last but one being usually the largest.
 - a*. Punctuation closer and weaker; upper surface dull . . . M. INCANUS, *Sturm.*
 - b*. Punctuation stronger; upper surface shining . . . M. OVATUS, *Sturm.*
- iii. Anterior tibiæ without conspicuously stronger teeth at apex; as a rule, evenly and finely, although distinctly, toothed for the greater part of their length, but often presenting irregularities, particularly as regards breadth of teeth.
 1. Thorax entirely smooth between punctures; elytra

- with interstices smooth, or at most showing very faint traces of cross striation; forehead with anterior margin straight; colour black or leaden black.
- A. Anterior tarsi of male strongly dilated; thorax only a quarter broader than long, at least as broad as elytra M. FLAVIPES, *Sturm*.
- B. Anterior tarsi of male not or very slightly dilated; thorax twice as broad as long, narrower than the base of elytra M. PICIPES, *Sturm*.
2. Thorax and elytra with fine but very distinct cross reticulation between punctures; forehead with anterior margin emarginate; colour leaden black . . . M. ROTUNDICOLLIS, *Bris*.
3. Thorax quite smooth between punctures; elytra with fine, though distinct, cross reticulation; forehead with anterior margin straight; body with strong purple metallic reflection M. SYMPHYTI, *Heer*.
- iv. Anterior tibiæ serrate or pectinate for at least two-thirds from apex; teeth often irregular, but always distinct and more or less strong.
1. Upper surface very scantily pubescent, entirely smooth between punctures; legs lighter or darker brown; anterior tibiæ serrate.
- A. Anterior tibiæ dilated from above middle; thorax nearly as long as broad M. NANUS, *Er*.
- B. Anterior tibiæ not dilated from above middle; thorax short, much broader than long M. SERRIPES, *Gyll*.
2. Upper surface very thickly pubescent, thorax and elytra smooth between punctures, scutellum only with strong cross striation; legs black; anterior tibiæ more or less pectinate M. MURINUS, *Er*.
- v. Anterior tibiæ very finely toothed, but with two or three distinct, though small, outstanding teeth, situated at some distance from one another, and separated by two or more smaller teeth.
1. Upper surface shining black, with slight traces of cross striation between punctures; anterior tibiæ with two outstanding teeth; legs black, anterior tibiæ pitchy M. LUGUBRIS, *Sturm*.
2. Upper surface dull black, with plain cross reticulation; anterior tibiæ with two outstanding teeth; legs dark, anterior pair dark red.
- A. Forehead straight; anterior tarsi of male very strongly dilated M. OBSCURUS, *Er*.
- B. Forehead emarginate; anterior tarsi of male not strongly dilated.
- a. Male with a small transverse keel on the last abdominal segment M. ERYTHROPUS, *Gyll*.
- b. Male with a very strong transverse keel on the last abdominal segment, divided by a broad semicircular excision into two divisions, each ending in a strong sharp tooth M. BIDENTATUS, *Bris*.
3. Upper surface shining black, with very slight traces of cross striation; anterior tibiæ with three short outstanding teeth, separated from one another by one or two smaller teeth; legs dark, anterior tibiæ occasionally lighter M. EXILIS, *Sturm*.

II. Tarsal claws toothed at base. (*Acanthogethes*, Reitter.)

- i. Thorax and elytra rather coarsely punctured; upper surface shining, usually with a red spot on each elytron; anterior tarsi of male not dilated; interstices smooth *M. BREVIS*, Sturm.
- ii. Thorax and elytra finely punctured; upper surface dull, unicolorous; anterior tarsi of male strongly dilated; interstices with plain cross striation *M. SOLIDUS*, Kug.

M. rufipes, Gyll. Broad, somewhat ovate, moderately convex, black, rather dull; the largest of our species; easily distinguished from all the others (except *M. lumbaris*) by its size, taken in conjunction with its red legs; smaller specimens closely resemble *M. lumbaris* (which is the *var. b* of *M. rufipes* of Gyllenhal, Ins. Suec. i. 235), but may be separated by the shape and the finer punctuation of the thorax; the first joint of the antennæ in *M. rufipes* is light, in *M. lumbaris* more or less dark, and in the former species the margins of the thorax are broader and of a reddish colour, whereas, in the latter, they are narrower and darker; the latter distinctions, however, although as a rule they hold good, are not always constant, and are apt to be misleading; the anterior tibiæ in *M. rufipes* are sublinear, and very finely denticulate or crenulate. L. $2\frac{1}{2}$ – $3\frac{1}{2}$ mm.

On flowers, especially hawthorn bloom in spring; found also on *Ranunculaceæ*, *Rubi*, *Allium*, &c.; very common and generally distributed in England and Wales as far north as Yorkshire, but rarer further north. Northumberland district, "apparently rare" (Bold); Scotland, occasional; Dr. Sharp (Scottish Nat. iii. 373) says, "This species is perhaps not uncommon, but no localities are recorded for it."

There is a reddish variety of this species which has been taken at Hainault Forest (Power), and Highgate (Newbery); one of Dr. Power's specimens has the thorax and one elytron of the normal colour, with a slight greenish metallic tinge, and the other elytron of the colour of the variety.

M. lumbaris, Sturm (*rufipes*, *var.*, Gyll. *et auct.*). Considerably smaller than the average specimens of the preceding, rather shorter, narrower, and more oblong, with the thorax more distinctly punctured than elytra, first joint of antennæ usually dark, and legs considerably stouter and of a darker colour. L. $2\frac{1}{2}$ –3 mm.

On *Umbellifera*, broom, nettles, hawthorn, and other flowers; local, but not uncommon in many localities; London district, rather generally distributed; Bearstead Kent, on roses, particularly garden ones (Gorham); Southgate; Loughton; Southampton, on *Pulicaria dysenterica* (Newbery); Knowle; Repton; Chat Moss; Northumberland and Durham district, local; Scotland, rare, Solway district.

M. fulvipes, Bris. (*rubripes*, Muls.). Oblong-ovate, black, occasionally with a leaden reflection, with short grey pubescence; upper surface very finely punctured, with distinct cross reticulation between the punctures; legs and antennæ light red or reddish-yellow, occasionally

rather darker; anterior tibiæ with very fine, almost imperceptible, teeth, which are slightly stronger at apex. L. $2-2\frac{1}{4}$ mm.

In marshy places on *Umbelliferæ*, *Genistæ*, and *Cruciferæ*; not common; Darenth Wood, Dagenham, Strood, Southend; Hastings; North Devon; Barmouth; Askham Bog; not recorded from the extreme northern counties of England or from Scotland.

The very plain cross reticulation between the punctures is a valuable character for this species; rubbed examples, at first sight, resemble *M. picipes*, but the longer shape and the very finely toothed anterior tibiæ will at once distinguish them.

M. subrugosus, Gyll. A small species, ovate, rather convex, shining black; antennæ entirely black; head and thorax thickly and finely punctured, the latter about a third broader than long, elytra rugosely punctured, with strong transverse striation, especially towards base; the front tibiæ are very finely crenulate, as in *M. corvinus*, and are rather lighter than the rest, but all the legs are more or less pitchy-black or pitchy-brown. L. $1\frac{3}{5}$ mm.

Only one British specimen of this species is known; this was taken by Dr. Sharp many years ago on the banks of the Water of Ken, Galloway, Solway district; the insect occurs in many parts of Europe, not uncommonly in some localities; in Germany it is widely distributed, but rare; it will probably be found in Britain in some numbers.

The peculiar rugose and wavy sculpture, which is nearest to, but quite distinct from, the sculpture of *M. rufipes*, is the chief characteristic of this remarkable insect, which in some points resembles at first sight *M. serripes*. *M. substrigosus*, Er., is a variety of this species of not quite so deep black a colour, less convex, with finer cross striation, and with lighter legs and antennæ, according to Erichson; Brisout, however, says that they are darker than the type form.

M. coracinus, Sturm. Oblong-oval, black, rather dull, occasionally with a very slight greenish or bronze reflection; punctuation of elytra and thorax close and fine, with very fine cross reticulation between punctures; antennæ black with the two first joints reddish-brown; thorax rather variable in shape in the sexes; legs pitchy, anterior tibiæ rather lighter, very finely denticulate, rather more distinctly towards apex; intermediate and posterior tibiæ straight or almost straight for two-thirds from base, and from thence sharply and obliquely cut off to apex. L. 2 mm.

Not rare on the Continent, according to Brisout, on flowers of *Galium* and *Prunus spinosa*; very rare in Britain; Hampstead (Waterhouse); Darenth Wood (Rye); Mr. Blatch records it from Wicken Fen, Hunstanton, and Weymouth, in horned poppy and other flowers; dark examples of *M. æneus* are often placed under this name in collections, and I have had several sent to me as this species; mistakes seem to arise from the fact that *M. coracinus* is said to have a greenish reflection; it is, however, as a rule, so very slight, that for all practical purposes the insect may be considered as black.

M. corvinus, Er. Ovate, shining black, convex; punctuation of elytra and thorax rather strong; interstices of elytra filled with rather indistinct and coarse cross reticulation, of thorax nearly smooth; legs and antennæ black, tibiæ somewhat thickened towards apex; anterior tibiæ very finely crenulated, crenulations obtuse and hardly perceptible even under a considerable magnifying power. L. $2\frac{2}{3}$ mm.

On *Labiata*; very rare; Mickleham (Power); on *Agraphis nutans* and *Melampyrum pratense*; Caterham, a few examples (Champion).

M. æneus, F. (*brassicæ*, Scop.). Oblong or oblong-ovate, shining, greenish or greenish-bronze, with rather thick and fine greyish pubescence; antennæ pitchy or blackish, with the first joint dark brown and the second reddish-brown; thorax half as broad again as long; punctuation of upper surface rather close, with fine cross reticulation between punctures; legs pitchy, anterior tibiæ lighter, very finely serrated. L. $1\frac{1}{2}$ – $2\frac{1}{2}$ mm.

V. cæruleus (*M. cæruleus*, Steph.). Of a blue or purple colour, with the elytra sometimes brownish; pubescence very scanty.

On various flowers, especially *Crucifera* and *Ranunculaceæ*; very common and generally distributed throughout the kingdom; the variety occurs with the type, but is rather rare.

This species is very variable, and often gives rise to mistakes. M. Brisout says concerning it (Synopse du genre Meligethes, p. 10), "In the South of Europe, in Algeria, and in Syria it usually occurs with greyer and rather longer pubescence; the posterior angles of the thorax are, as a rule, right angles, but it is not uncommon to meet with examples in Algeria and in Spain which have these angles obtuse or even rounded." These remarks are worth quoting, as showing the difficulties that the genus occasionally presents, even in usually constant characters, and as tending to prove that several of the species which are now on slight differences regarded as distinct may very likely be merely varieties or races of some other species.

M. viridescens, F. (*virescens*, Thoms.). Rather long, oval, shining, greenish-blue, sometimes entirely green, rarely blackish; antennæ red with club darker; legs red, anterior tibiæ very finely serrated; punctuation rather strong, with fine cross reticulation between punctures, which is plainer on thorax than on elytra; the species may be known from *M. æneus*, with which it is often found in company, by its more elongate and oval shape, lighter legs, and stronger punctuation. L. 2–3 mm.

On *Crucifera*, *Ranunculaceæ*, and other flowers; very common and generally distributed throughout the kingdom.

M. difficilis, Heer. Of rather long oval or oblong oval form, deep black, very shining, usually with a very slight greenish reflection; antennæ reddish-brown, with the first two joints lighter; punctuation

distinct, that of elytra strong, evidently stronger than on thorax; anterior legs yellow or reddish-yellow, posterior pairs slightly darker, with outside margins of tibiæ usually dark brown, rounded; anterior tibiæ furnished at apex with three or four rather conspicuous sharp teeth; male with metasternum strongly depressed, with a tubercular prominence on each side of the depression about the middle; the female presents the same characters in a less degree. L. $1\frac{1}{2}$ – $2\frac{1}{2}$ mm.

Locally common on *Labiata*, especially *Lamium album* and *Stachys sylvatica*; it also is found on *Symphytum officinale*, &c.; London district, generally distributed; Amberley; Hartlebury; Repton; Llangollen; Staffordshire; Cheshire; Lincoln; Manchester district; not recorded from the extreme northern counties of England or from Scotland.

M. Kunzei, Er. Very like the preceding, but larger with the anterior tibiæ less strongly toothed, the punctuation of the elytra rather more diffuse, and the first three joints lighter red, instead of two only; the colour is black and never shows a trace of the greenish reflection which is often so noticeable in *M. difficilis*; the pubescence, which is very scanty, is whitish instead of blackish, as in the latter species; the metasternum of the male, which is furnished with two conspicuous tubercles in *M. difficilis*, is in this species simple. L. $2\frac{1}{2}$ mm.

On *Lamium album*, *Stachys sylvatica*, *Agraphis nutans*, *Melampyrum pratense*, and *Mercurialis perennis*; rare; Chatham, Reigate, Mickleham, Caterham, Shirley, Horsell, Easington; Llangollen; Repton; Cheshire; Manchester district.

This species is by many authors considered a variety of the preceding; if, however, we are to keep *M. viduatus* and *pedicularius*, and other species as distinct, we cannot but regard *M. Kunzei* as distinct also, if we have regard merely to the male characters.

M. morosus, Er. A very difficult species, concerning which there seems to be considerable doubt; it comes very close to *M. memnonius*, from which it is said to be distinguished by having the anterior margin of the forehead emarginate, and the punctuation not quite so strong, and also by having the first and second joints of the antennæ reddish, instead of the second only; this character, however, cannot be depended on, as is plain from Mr. G. R. Waterhouse's notes (Ent. Ann. 1874, 61), taken at the time he examined Erichson's collection at Berlin, in which he says, "*Morosus* and *memnonius* very much alike and difficult to distinguish; *morosus*, however, has rather a shorter form, and the antennæ are pale throughout, whilst in *memnonius* they are dusky at base and apex." As regards the emargination of the forehead, on the strength of which Reitter places the two species in separate divisions, this author himself allows that it is slight in *M. morosus*, and as *M. memnonius* has the anterior margin not always quite straight, a confusion might easily arise. L. 2 mm.

On *Caltha palustris* and *Labiata*; rare; I have several specimens from Repton

which have been determined for me on the Continent as this species, and there appear to be several others in Mr. Rye's and Dr. Power's collections; I should certainly refer them all to the next species, or, following M. Brisout, include *M. memnonius* under *M. morosus*.

M. memnonius, Er. This and the preceding species at first sight resemble small *M. difficilis*, but their form is short oval, and the punctuation is closer and less strong, although plainly stronger than that of *M. particularius*; the elytra, moreover, are not much more strongly punctured than the thorax; from *M. ochropus* they may be known by the closer punctuation and darker antennæ and legs; the anterior tibiæ, as in all the species of this section, are very finely toothed from a little below base to beyond middle, and are furnished with two or more conspicuously larger and stronger teeth at or close to apex. L. $1\frac{2}{3}$ – $2\frac{1}{4}$ mm.

On *Lamium album*, *Stachys sylvatica*, *Galeopsis unicolor*, *Caltha palustris*, &c; local; London district, not uncommon and generally distributed; Dover; Worthing; Hunstanton; Repton; Chat Moss; it is probably more widely distributed, but I know of no localities further north.

M. ochropus, Sturm. Broad and short, oval, convex, strongly and diffusely punctured; deep black, shining; antennæ of a light reddish colour, first two joints yellow; punctuation of elytra very diffuse and strong, much stronger than that of thorax, which is, however, distinct and rather deep; legs, as a rule, yellow, occasionally darker, anterior tibiæ with three or four sharp teeth at apex, which are not so strongly developed as in *M. difficilis*; male with a smooth shining tubercle on the last abdominal segment; one of the chief characters of this species lies in the outer margin of the posterior tibiæ, which is not rounded, but dilated in almost a straight line until the lower third, where it is suddenly and obliquely contracted. L. $1\frac{1}{2}$ – $2\frac{1}{2}$ mm.

On *Labiata*; rare; Caterham, Claygate, Woking; Rusper near Horsham and Eastry, on *Stachys sylvatica* (Gorham); New Forest.

This species was first recorded as British by Bold from the Northumberland district, but his specimen was really *M. brunnicornis*, as was also Crotch's *ochropus* according to Rye (Ent. Monthly Mag. vi. 282).

M. brunnicornis, Sturm. About the size and shape of *M. difficilis*, but distinguished by its rather closer punctuation, lighter antennæ and legs, and the brown reflection of both thorax and elytra, the former of which usually has light margins; the anterior margin of the forehead is, for all practical purposes, straight, and is a very useful character by which to separate dark specimens of this species from immature *M. difficilis*, in which it is evidently emarginate; it also resembles *M. ochropus*, but is narrower, flatter, and more finely punctured than that species, besides being differently coloured; the plain grey pubescence, also, which is especially noticeable in fresh specimens, is a good distinguishing character; the male has a small shining tubercle at the ex-

tremity of the last segment of the abdomen, which is wanting in *M. difficilis*. L. $1\frac{1}{2}$ – $2\frac{1}{2}$ mm.

On *Labiatae*, especially *Lamium album* and *Stachys sylvatica*; rather widely distributed and not uncommon in the London and Southern districts; rarer further north; Tewkesbury; Liverpool; Northumberland district, rare; not recorded from Scotland.

M. viduatus, Sturm (*melanarius*, Först.). Rather broad oval, with close and comparatively fine punctuation, which gives the insect a rather dull appearance as compared with the five preceding species; black, moderately shining; pubescence blackish; antennæ dark brown with the first two joints red; thorax punctured much as elytra, somewhat narrowed in front, with the side border slightly raised; hinder pairs of legs dark brown, with the tibiæ somewhat obliquely cut off towards apex, front legs lighter; anterior tibiæ with two or three conspicuously stronger teeth at apex; male with the last abdominal segment simple. L. 2 – $2\frac{1}{2}$ mm.

On *Labiatae*, especially *Salvia pratensis*, *Galeopsis tetrahit*, and *Mentha aquatica* (according to Brisout); local and usually considered rare; Caterham; Wicken Fen; Mablethorpe, Lincolnshire; Chat Moss (on *Galeopsis tetrahit*, var. *versicolor* (Chappell)); Manchester district; it occurs commonly in Langworth Wood near Lincoln, on *Ajuga reptans*, and by general sweeping, and I have also taken it on strawberry flowers in my garden at Lincoln; Scotland, Solway district, Thornhill, not uncommon.

M. pedicularius, Gyll. (*tenebrosus*, Först.). Very like the preceding, but less convex, of somewhat larger and blunter form, with finer punctuation; the thorax has somewhat more parallel sides, and the side border is very slightly raised; the hinder pair of legs are said to have the tibiæ rounded on the outside, and not obliquely cut off as in *M. viduatus*, and the larger teeth at the apex of the anterior tibiæ are weaker. The male has a large smooth tubercle at the extremity of the last abdominal segment, behind which there is an inclined, smooth, shining space. L. 2 – $2\frac{1}{4}$ mm.

On *Labiatae*, especially *Lamium album* and *Salvia pratensis*; local; London district, not uncommon, Darenth Wood, Chatham, Caterham, Mickleham, Dorking; New Forest; Wicken Fen; Glanvilles Wootton; Exmouth; Dawlish; Bewdley; Lincoln (common on *Ajuga reptans* and strawberry flowers); Northumberland district, very rare; not recorded from Scotland; Ireland, near Waterford.

I have very carefully studied these two species, and have come to the conclusion that, except on the male characters, it is impossible to separate them; the male characters themselves are not always constant, so that it is quite possible that they may be identical; Reitter, in a letter to me on the subject, says "*M. pedicularius* and *viduatus* are hardly different;" the relative punctuation, size of teeth of anterior tibiæ, &c., are quite useless characters, as they are very variable in different specimens.

M. bidens, Bris. Rather like *M. pedicularius*, but smaller than

that species, narrower, less convex, less shining, and more finely punctured; antennæ brownish, with the first two joints red; thorax nearly double as broad as long, with the sides nearly parallel, without cross striation between punctures; elytra with weak cross striation, which is more evident at the base; legs dark brown with the anterior tibiæ ferruginous; the species is very easily distinguished by the two conspicuous teeth (not separated by smaller teeth) at the extreme apex of the anterior tibiæ, which are widened towards apex. The male has the anterior tarsi rather strongly dilated, and the metasternum with a rather wide and deep impression. L. $1\frac{2}{3}$ –2 mm.

Local; on *Teucrium scorodonia*; not uncommon in some places in the London district, Birch Wood, Mickleham, Caterham, Chatham; Amberley; Littlington; Kingsdown, on *Scabiosa succisa*; Dover; according to Brisout it occurs near Paris on *Trifolium medium*.

M. umbrosus, Sturm. One of our largest species, in size equalling average specimens of *M. lumbaris*; short and broad, convex, with very thick and fine punctuation, which gives it a dull appearance; pubescence close, usually grey, sometimes blackish; upper surface of both thorax and elytra reticulate between punctures; thorax about a third broader than long, wider at base than elytra; antennæ black with the two first joints brownish-red; anterior legs reddish-brown with tibiæ lighter, posterior pairs pitchy; anterior tibiæ with several more prominent teeth towards apex, which, however, are not so conspicuous as in some of the allied species, and sometimes are very weak or almost obliterated. The male has a small prominence on the metasternum between the posterior coxæ, and a little transverse keel at the extremity of the last abdominal segment; this character, however, is very variable in different specimens; this sex also has the anterior tarsi strongly dilated. L. $2\frac{1}{4}$ –3 mm.

On *Labiata*, *Genista*, wild *Cistus*, *Helianthemum vulgare*, and *Hieracium*; very local, and as a rule rare; London district, not uncommon, Caterham, Mickleham, Chatham, Darenth Wood, Brasted, Sevenoaks, Shiere, Rusper, Bearstead, &c.; New Forest; Tenby (one specimen at Lydstep, Aug. 1885); Scotland, Solway district.

M. maurus, Sturm, which has been wrongly considered a British species—all its supposed exponents being *M. ovatus*, Sturm—comes very close to *M. umbrosus*; in fact, it is very hard to distinguish them, as in punctuation, denticulation of anterior tibiæ, &c., they are exceedingly alike; *M. maurus*, however, is rather larger than *M. umbrosus*, with very slightly stronger punctuation and weaker pubescence, and with the posterior margin of the thorax not broader than the base of elytra; the thorax is narrower with its sides more parallel; the teeth of the anterior tibiæ are rather stronger; the metasternum of male is impressed, and has two small tubercles on the front of the impression, and the last segment of the abdomen is furnished with a small smooth tubercle. L. $2\frac{3}{4}$ – $3\frac{1}{4}$ mm.

The species is common in France on *Salvia* and *Mentha*, and may very likely be found in Britain.

M. incanus, Sturm. Dull black, of about the size of *M. umbrosus*, of exactly oval outline, thickly and finely punctured, with fine cross striation between the punctures, and clothed with fine and distinct greyish-brown pubescence; antennæ black or brownish, with the first two joints lighter; thorax a fourth broader than long, narrowed in front, about as broad at base as elytra; legs pitchy, anterior tibiæ reddish-brown, dilated towards apex, with three or four rather strong irregular teeth near apex, of which the last but one is usually the most prominent; male with the metasternum broadly impressed. L. $2\frac{1}{2}$ – $2\frac{3}{4}$ mm.

Only a single specimen is known as British, which was taken by Mr. G. R. Waterhouse in Darent Wood, in July, 1859, on *Echium vulgare*; it also occurs on *Solanum dulcamara* and species of *Nepeta*; it is rather closely allied to *M. ovatus*, but is more closely punctured and duller, and the pubescence is lighter.

M. ovatus, Sturm (*fuliginosus*, Er., ♀). Oval, convex, shining black, rather thickly clothed with fine blackish pubescence; antennæ black with the first three joints red; thorax about a fourth broader than long, narrowed in front, about as broad at base as base of elytra; punctuation of upper surface close, but stronger than in the three preceding species; legs stout, dark ferruginous or pitchy, anterior tibiæ strongly dilated with three or four large teeth at apex which are very variable; male with a strong tubercle at the extremity of the last segment of abdomen, and with the anterior tarsi conspicuously dilated; according to Brisout, this species may easily be distinguished from its allies by the form of the extremity of the elytra, the posterior margin of each being slightly sinuate, with the sutural angle a little prolonged and rounded, but this character in many cases appears not to be very evident. L. 2– $2\frac{1}{4}$ mm.

On *Labiata*; local; London district, not uncommon and generally distributed; Suffolk; Amberley; Nettlecomb, Somerset; Lee (North Devon); Chat Moss, on flowers of *Galeopsis*; banks of Bollin, Cheshire; not recorded from the midland or northern counties of England or from Scotland.

M. flavipes, Sturm (*flavicornis*, Mill.). Black, rather shining, more or less oblong, somewhat thickly and finely punctured, with rather thick and fine greyish pubescence; antennæ yellow or yellow-red; thorax at base quite as broad as elytra, only a quarter broader than long; legs brownish-yellow, anterior pair lighter; anterior tibiæ armed with fine teeth, which become gradually larger towards apex, and are variable in different specimens; in fact these teeth are so much stronger in some specimens that the species might perhaps with some reason be referred to the preceding group; on the whole, however, it is best placed here; the anterior tarsi of the male are strongly dilated. L. $1\frac{1}{2}$ –2 mm.

On *Labiata*, *Umbellifera*, *Ballota nigra*, *Melilotum*, *Cirsium lanceolatum*, &c.; locally common; London district, common and generally distributed; Whitstable; Deal; Eastbourne; Glanvilles Wootton; Lancaster, on broom; Northumberland district.

M. picipes, Sturm. Short oval, rather convex, black, with a

leaden reflection, clothed with thick grey pubescence, rather deeply and thickly punctured; antennæ yellow-brown, with the first joints lighter; thorax twice as broad as long, narrower at base than base of elytra; legs reddish, anterior pair lighter; anterior tibiæ finely but rather unevenly and irregularly toothed, the teeth being in some instances fine and sharp, in others broader and blunter, the right and left tibiæ being occasionally different, and showing both these characteristics in the same insect; both sexes have a small excavation at the extremity of the last abdominal segment. L. $1\frac{1}{4}$ –2 mm.

On various kinds of flowers and blossom; common and generally distributed throughout England and Wales; Scotland, not uncommon, Solway, Forth, and probably other districts; Ireland, near Waterford, and probably general.

M. rotundicollis, Bris. Short oval, rather convex, leaden black; antennæ light; thorax about half as broad again as long, broadest about the middle; punctuation of thorax and elytra close, with fine but distinct cross reticulation between punctures; in the two preceding species the thorax is entirely smooth between punctures, and the elytra are either smooth or show very faint traces of cross reticulation; legs reddish-yellow, anterior tibiæ finely denticulate. This species at first sight closely resembles *M. picipes*, and is often confounded with it; it is, however, readily distinguished from it by the rounder and somewhat dilated sides of thorax, emarginate forehead, closer punctuation, and also by the plain cross reticulation between the punctures of the thorax and elytra, and the finer denticulation of the anterior tibiæ. L. $1\frac{2}{3}$ mm.

On *Genista* and *Trifolium medium* (according to Brisout); Mickleham and Caterham (Champion); Highgate, Horsell, and Littleington (Power); Brighton.

M. symphyti, Heer. Oval, convex, short in comparison with its breadth, smooth and shining, with scarcely visible scanty dark pubescence; colour violet or greenish-blue; antennæ light, except club, which is somewhat darker; thorax a third broader than long, more closely and deeply punctured than elytra, interstices quite smooth; elytra rather strongly and somewhat diffusely punctured, with plain cross reticulation between punctures; legs yellowish or reddish-yellow, anterior tibiæ finely, sharply, and evenly denticulate; male with a deep longitudinal impression on the hinder half of the metasternum, with a tubercle on each side, and a smaller one in the middle of the posterior margin. L. $2\frac{2}{3}$ mm.

On *Symphytum officinale*, but by no means confined to this plant; in fact, more of our British specimens have been taken on *Agraphis nutans*, and it has occurred on *Taraxacum*; rare; Mickleham, Caterham, St. Mary Cray (Champion); Chatham; Darent Wood; Shiere (Capron); Henley (Power); Amberley (Walker); Bowdon, Manchester, on *Galeobdolon luteum* (Chappell); Studley Royal, Ripon (Waterhouse).

M. nanus, Er. (*marrubii*, Bris.). Oblong-ovate, not very convex,

deep black, shining, with scanty pubescence; antennæ, as a rule, reddish or reddish-yellow, but sometimes darker; thorax longer than in any other of our species, almost as long as broad; punctuation rather strong, especially of elytra; legs varying in colour from yellowish to dark brown; anterior tibiæ strongly dilated for at least two-thirds from apex, and furnished with strong irregular teeth, of which four or five at base, apex, and in the middle, are especially conspicuous. L. $1\frac{1}{2}$ –2 mm.

On *Marrubium vulgare*, *Erysimum alliaria*, and *Salix aurita*; very rare in Britain; Putney, one specimen with dark legs and antennæ (Rye); Horsell, one specimen with light legs and antennæ (Power); Mickleham.

This species is allied to *M. serripes*, but may be distinguished from it by its much longer thorax, stronger and less close punctuation, and also by the stronger and more irregular denticulation of the anterior tibiæ, which are more dilated than in *M. serripes*.

M. serripes, Gyll. (*quadridens*, Först.). Oblong-oval, rather flat, shining black, occasionally with a leaden reflection, which is chiefly seen in fresh specimens, and is caused by the fine ashy-grey pubescence with which the insect is clothed; antennæ and legs pitchy or reddish-brown; thorax half as broad again as long, about as broad behind as elytra, rather plainly sinuate at base; punctuation distinct, about the same on thorax as elytra; anterior tibiæ armed with a row of short, strong, sharp teeth from a little below base to apex; these are usually regular and even, but occasionally are variable, and sometimes abnormal specimens occur with six or seven teeth on one side and three or four larger ones on the other; metasternum of male with a distinct channel behind. L. $1\frac{1}{3}$ – $1\frac{3}{4}$ mm.

On *Echium vulgare*, *Salvia pratensis*, *Saponaria officinalis*, &c.; not common; Darent Wood, Faversham, Mickleham, Esher, Caterham, Dorking, Shiere, Hampstead, Chaldon (Surrey); Brandon, Suffolk; Eastbourne; Glauvilles Wootton; Cromer, Norfolk; Holy Island.

This is rather a variable species, and may sometimes be confused with small rubbed examples of *M. flavipes* or *M. picipes*; it may, however, be distinguished from both by its narrower form, and the invariably stronger denticulation of its anterior tibiæ.

M. murinus, Er. (*seniculus*, Er., ♀). Oblong, not very convex, black, clothed with thick greyish or whitish pubescence; antennæ black, with the second joint, and sometimes the next one or two, reddish-brown; thorax one-third broader than long, rather thickly and finely punctured; elytra rather less thickly punctured than thorax; cross striation between punctures only present on scutellum; legs black, with tarsi somewhat lighter; anterior tibiæ armed with a row of regular comb-like teeth from a little below base to apex; male with the last abdominal segment furnished with a very small and narrow triangular indentation. L. $1\frac{2}{3}$ – $2\frac{1}{3}$ mm.

On *Cynoglossum* and *Echium vulgare*; locally abundant, especially on and near the coast in the south-eastern and southern districts; it is, however, rarer further

north, and seldom occurs inland; Caterham and Mickleham (Champion); Esher; Dorking; Repton (W. Garneys); Northumberland and Durham district, rare; Scotland, local, Forth district.

V. planiusculus, Er. This variety of *M. murinus*, which is considered a separate species by Erichson, is characterized by having the anterior tibiæ more regularly and less sharply toothed, and the entire base of the antennæ red; some of the teeth in the type form almost invariably point downwards towards apex, while in *M. planiusculus* they stand out at right angles to the tibiæ, and are smaller and blunter; the colour of the base of the antennæ is not a very reliable character.

There is a specimen in Dr. Power's collection, taken at Birch Wood in 1865, that agrees well with types of this variety sent to me by Reitter.

M. lugubris, Sturm. Oval, rather convex, deep shining black, closely and finely punctured with the punctuation of elytra somewhat plainer; on both thorax and elytra there are slight traces of cross striation between the punctures, which are plainer on sides of thorax; pubescence scanty, greyish; antennæ pitchy-brown with second joint reddish, and the club black; thorax about one-third broader than long, somewhat contracted in front; legs black, anterior tibiæ pitchy-brown with two short outstanding teeth separated by two or more small teeth; forehead excised with a small sharp projection in the centre of the emargination; metasternum of male depressed behind with a strong longitudinal cariniform projection on the front of the depression; last abdominal segment of male with a little raised keel before its extremity, and behind this a smooth depressed space; anterior tarsi of male strongly dilated.

There is a small variety of this species, which, according to Brisout, has less strong and deep punctuation, and in which the keel on the last abdominal segment of the male is often deeply divided so as to present the appearance of two sharp tubercles placed side by side. L. $1\frac{1}{4}$ –2 mm.

V. gagathinus, Er. This species of Erichson's is evidently nothing more than a variety of *M. lugubris*; it is larger and more convex, with darker pubescence, and has the anterior tibiæ more finely denticulate, but is not really specifically distinct. L. $2\frac{1}{2}$ mm.

On *Thymus serpyllum*, *Mentha*, *Helianthemum*, *Origanum*, &c.; occasionally in moss, in winter; very local; London district, not uncommon, Mickleham, Caterham, Shirley, Claygate, Coombe Wood, Esher, Bearstead, Buckland Hill, Chertsey, Chatham, Sheerness, Maidstone, &c.; Kingsdown; Amberley; it is apparently only found in the south-eastern counties.

M. obscurus, Er. (*distinctus*, W. C., *nec* Sturm; *palmatus*, Er., ♂). Rather broader and more oblong than *M. erythropus*, which it much resembles; dull black, leaden, with distinct cross reticulation between punctures; punctuation thick and close; pubescence thick, greyish or

brownish; antennæ black, with the first or first two joints brown-red; thorax about a third broader than long; front legs brown, posterior pairs black, anterior tibiæ armed with two short prominent teeth, separated by two or more smaller teeth. The male has the anterior tarsi extraordinarily developed, and often lighter in colour; it is the *M. palmatus* of Erichson, and for a long time has stood under that name in British collections. L. $1\frac{1}{2}$ –2 mm.

On *Mentha aquatica*, *Cynoglossum officinale*, *Teucrium scorodonia*, *Linaria vulgaris*, *Helianthemum vulgare*, &c.; locally common; London district, rather common and generally distributed; Amberley; Southsea; Hastings; Niton, Isle of Wight; Clevedon, Somerset (abundant, Sept. 1886); Llangollen; Central Wales, Devil's Bridge, Llanfihangel, Borth, &c.; I know of no record from the midland counties; Northumberland and Durham district, rare; Scotland, rare, Forth district.

The *M. distinctus* of Waterhouse's and other British catalogues must be referred to this species; the true *M. distinctus*, Sturm, has not been found in Britain; it appears to be very closely allied to *M. obscurus*, but differs in having the anterior margin of the forehead emarginate, and in the fact that it has no cross reticulation between the punctures of the upper side.

M. erythropus, Gyll. (*carinulatus*, Först.). A small species, variable in size; rather long oval, leaden black; punctuation thick and fine; pubescence grey, fine and rather dense; upper surface with distinct cross reticulation between punctures; antennæ brown-red, sometimes rather dark, sometimes quite light; thorax about a third broader than long; legs lighter or darker red or ferruginous, hinder pairs often pitchy, anterior tibiæ armed with two short prominent teeth separated by smaller teeth; male with a small transverse keel on the last abdominal segment; the species is closely allied to the preceding, but may be easily known by its smaller and more oval form, emarginate forehead, lighter antennæ, and the male characters; some specimens are very small. L. $1-1\frac{3}{5}$ mm.

On *Helianthemum vulgare*, *Galeobdolon luteum*, &c.; according to Brisout it occurs on *Papilionaceæ*; I have found it abundantly on *Potentilla tormentilla*; local; London district, not uncommon, Mickleham, Caterham, Shirley, Croydon, Dulwich, Chertsey, Chatham, Sheppy, Darent, Shiere, Guildford, Highgate, Easry, Bearstead, &c.; St. Leonards; Hastings; Glanvilles Wootton; Exeter and Instow (Devon); Repton; Lincoln, common in Langworth Wood, and sparingly on strawberry flowers in my garden; Chat Moss; Manchester district; Northumberland and Durham district; Scotland, local, Forth and Clyde districts; Ireland, near Waterford.

M. bidentatus, Bris. Oval, rather broad and convex; leaden black, with ashy pubescence; legs blackish with anterior tibiæ ferruginous; anterior tibiæ with two short prominent teeth separated by two or more smaller teeth; very closely allied to *M. erythropus*, but separated by its broader and more convex form, rather closer punctuation, thicker

tibiæ, and the fact that the male has the last abdominal segment furnished with a very strong transverse keel, which is divided by a broad semicircular excision into two divisions, each ending in a strong sharp tooth. L. $1\frac{2}{5}$ –2 mm.

Very rare; the species was introduced as British on two specimens in Mr. Crotch's collection; these I have not seen, and cannot tell whether either of them was a male; both the other two known specimens are females, one in Mr. Rye's collection, and the other taken by Mr. Champion at Caterham, of which he says himself that it is "apparently referable to this species;" as, except on the male characters, the species is hardly distinct from *M. erythropus*, it appears to require further confirmation, although it probably occurs in Britain, and may be found mixed with *M. erythropus* in collections.

M. exilis, Sturm (*nigrita*, Luc.). Ovate, rather convex, shining black, closely punctured, with very slight traces of cross striation between punctures; pubescence very fine; antennæ dark brown with black club; forehead emarginate with a very small tooth in the centre of emargination; thorax rather long, only a quarter broader than long; legs very dark, black or almost black, with the anterior tibiæ pitchy; anterior tibiæ with three short but distinct outstanding teeth, one above and one below the middle, and a third at apex, separated by smaller teeth. Male with a small curved keel on the apex of the last abdominal segment. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Rare; Mr. Waterhouse once took a specimen in the court-yard of the British Museum; Whitsand Bay, near Plymouth (J. J. Walker); Braunton Burrows, near Instow, N. Devon, on *Echium vulgare* (Mason); Tenby, S. Wales, where I found it rather commonly at the end of August or beginning of September, 1885, at Lydstep, Penally Burrows, &c., always on *Hieracium*; Barmouth on *Thrinicia hirta* (Lesser Hawkbit) (Wollaston); Isle of Man (R. P. Murray); Scotland, very rare, Solway district, Galloway (Sharp); according to Brisout it is found on *Papilionaceæ*. It is one of our smallest and most distinct species.

M. brevis, Sturm (*Acanthogethes brevis*, Reitter). Short, rather broad, black, with a rather leaden reflection; antennæ red, club sometimes rather darker; forehead strongly emarginate; thorax about half as broad again as long, strongly rounded in front, slightly broader at base than base of elytra, with strong punctuation; elytra unicolorous, not so strongly punctured as thorax; upper surface of both thorax and elytra without cross reticulation between punctures; legs red, sometimes quite light, sometimes darker; anterior tibiæ armed with regular distinct teeth for at least two-thirds from apex, the centre ones being usually the most prominent. L. $1\frac{2}{3}$ –2 mm.

V. mutabilis, Rosenh. (*M. pictus*, Rye). Rather larger; elytra with a red spot on each, variable in extent. L. 2– $2\frac{1}{4}$ mm.

On *Helianthemum vulgare*; has only occurred in Britain at Scarborough, where it has been taken in some numbers by Messrs. Lawson and Wilkinson, and at Hartlepool, where it has recently been taken by Mr. Gardner; the type form is rare; out of a series of forty examples that I have examined, only one or two show no trace of a spot; one of these, a small specimen in Dr. Power's collection, is a good

example of the type form. The species is said also to be found on flowers of *Centaurea calcitrapa* (the Star Thistle), a plant which is found occasionally in some of the southern counties of England, but is uncommon.

M. solidus, Sturm. Rather a large species; short oval, convex, black, rather dull, unicolorous, closely and finely punctured, with plain cross striation between the punctures; antennæ short, black, with basal joints reddish; forehead strongly emarginate; thorax about a third broader than long, with sides slightly rounded, a little broader at base than base of elytra; elytra punctured as thorax; legs stout, reddish or pitchy-brown, anterior tibiæ with three or four strong serrate or pectinate teeth at apex. L. $2\frac{2}{3}$ mm.

On *Helianthemum vulgare*, chiefly in chalky places; local, but not uncommon where it occurs; Caterham, Mickleham, Kenley, Esher, Darenth, Birch Wood, Bearstead, Shiere, Chatham, Dartford, Faversham, &c.; Amberley; Riddlesdown; Hastings; apparently it is confined to the south-eastern counties; according to Brisout it occurs on *Genista* and *Lotus*.

This species is in size and shape very like *M. umbrosus*, but is of a deeper black colour and more convex, and the anterior tarsi are differently denticulate; the tarsal claws also are toothed at base.

CYCHRAMINA.

The species of this tribe are chiefly distinguished from the preceding by the fact that the thorax covers the base of the elytra instead of simply fitting closely to it, and by the more elongate and less compact club; all the species are round or oval and convex; the elytra cover nearly the whole of the abdomen, at most part of the pygidium being exposed, and the prosternum is more or less prolonged at apex; there are several genera which belong to the tribe or are closely allied to it, among them *Camptodes* (containing about fifty species, chiefly from Central and South America), *Strongylus*, *Lasiodactylus*, &c.; only one genus, however, is represented in Britain.

CYCHRAMUS, Kugelann.

This genus contains half-a-dozen species, four of which are found in Europe, one in Algeria, and one in North America; two occur in Britain; these may easily be known by the wide thorax (which overlaps but does not fit the base of the elytra), prominent eyes, loose dark 3-jointed club of antennæ, simple tibiæ, and almost semicircular mentum.

- I. Colour luteous or testaceous; pubescence thick and fine;
punctuation closer C. LUTEUS, F.
- II. Colour light ferruginous; pubescence more scanty and
coarser; punctuation more diffuse and stronger C. FUNGICOLA, Heer.

C. luteus, F. Oval, almost round, convex, thickly and finely

punctured, clothed with thick and fine yellowish pubescence; colour testaceous or luteous without darker markings; antennæ with blackish club; thorax behind about as broad as elytra, with sides strongly rounded; elytra with very narrow side margins; legs testaceous. L. 3-4 mm.

On flowers of white thorn in spring; also in decaying fungi; rather common and generally distributed in the London and Southern districts; very common in the Midlands; rarer further north; Northumberland district, rare; Scotland, in fungi, Solway, Clyde, and probably other districts; Ireland, near Dublin, and probably widely distributed.

C. fungicola, Heer. Of a somewhat light ferruginous colour, with a darker shade on each side of the elytra, which is more or less ill-defined, and sometimes disappears altogether; pubescence longer and more scanty and punctuation more diffuse and stronger than in *C. luteus*; it is also slightly longer in form, and rather more convex and shining than the latter species. L. 3-4 mm.

In fungi, especially in autumn; occasionally by sweeping; not uncommon and generally distributed throughout England and Wales; Northumberland district, common in fungi in woods; Scotland, Solway and Moray, and probably other districts; it is most likely widely distributed in Ireland.

IPINA.

As we approach the end of the Nitidulidæ, we come upon certain tribes whose position seems somewhat doubtful, but which afford an easy transition from one family to the next; such tribes are the Ipina and Rhizophagina, which lead into the Trogositidæ. Of the Ipina there are three British genera—*Cryptarcha*, *Ips*, and *Pityophagus*; the latter of these three has usually been classed with *Ips*, but is now rightly separated from it. Some authors insert the Cybocephalina between the Cychramina and Ipina, but the 4-jointed tarsi and contractile body of *Cybocephalus* point to a very different position. The Ipina are characterized by having the labrum hidden, instead of free and visible as in the preceding families; the antennæ are 11-jointed, with a somewhat loose 3-jointed club; the prosternum is strongly produced, more so in *Cryptarcha* than in *Ips*; the mentum is very narrow, usually oblong or trapezoidal; the mandibles in *Ips*, especially in some exotic species (e.g. *Ips Japonica*), are very large and strong; in *Cryptarcha* they are slender and sickle-shaped; the labial palpi are short in *Cryptarcha*, longer and less stout in *Ips*; the maxillary palpi are somewhat slender; the membranous paraglossæ in *Ips* are very conspicuous; the British genera may be distinguished as follows:—

I. Anterior coxal cavities open behind.

- i. Thorax overlapping base of elytra; elytra entirely covering abdomen; body oval, upper surface pubescent. **CRYPTARCHA**, Shuck.

- ii. Thorax not overlapping base of elytra; pygidium exposed; body elongate, upper surface glabrous *IPS, F.*
 II. Anterior coxal cavities narrowly closed behind; other characters as in *Ips* *PITYOPHAGUS, Shuck.*

CRYPTARCHA, Shuckard.

This genus contains about twenty species, of which five occur in Europe; the others have been described from Ceylon, Western Africa, and North, Central, and South America (two of the latter having been found in Chili); our two British species are very distinct; this is not, however, the case with some of the exotic species (e.g. *C. camptodoides* and *C. thalyroides*), which, as their names imply, bear a close superficial resemblance to other divisions of the Nitidulidæ.

- I. Size larger; form broad oval; thorax dark, except extreme margins of sides; club of antennæ dark *C. STRIGATA, F.*
 II. Size smaller; form long oval; thorax with margins broadly testaceous; antennæ entirely reddish or reddish-brown *C. IMPERIALIS, F.*

C. strigata, F. (*lateralis*, Sahlb.). Of rather broad oval form, convex, thickly punctured, clothed with very fine pubescence, and with very fine outstanding setæ at the sides of elytra; colour dark, fuscous, with the mouth, sides of thorax, and margins of elytra reddish, and two irregularly formed dentate bands on elytra yellowish or reddish-yellow; antennæ brownish-red with club dark; thorax large, fully as broad at base as base of elytra, base sinuate, not margined; legs red. L. 3-5½ mm.

At sap and under bark of oaks, &c., very often in connection with the burrows of *Cossus ligniperda*; not common; Richmond Park, Coombe Wood, Shirley, Clandon Common (Surrey), Westerham (Kent), Belvedere, Cobham Park; Hastings; New Forest; Southampton; Dean Forest; Knowle, near Birmingham; Colchester; Barmouth, in fungi; Bretby Wood, near Repton, by sweeping; Dunham Park, Manchester.

C. imperialis, F. Of more elongate form, and not so convex as the preceding species, and considerably smaller; prevailing colour reddish-testaceous; vertex of head, disc of thorax, and two or three very irregular bands on elytra, dark; antennæ and legs red-brown; it also differs from *C. strigata* in having the outstanding setæ on the sides of elytra much more distinct. L. 3-4 mm.

Taken under the same circumstances as and often in company with the preceding, but rarer; Clandon Common, Coombe Wood, and Cobham Park; Hastings; Glanvilles Wootton; New Forest; Southampton; Knowle; Dunham Park, Manchester.

IPS, Fabricius.

This genus, in its widest sense, contains about thirty species, which are very widely distributed, but chiefly occur in the Northern Hemi-

sphere and in temperate or cold climates ; representatives, however, have been described from South Africa, Mexico, and Chili ; the species are rather conspicuous insects, and are usually variegated with large reddish or yellow spots on the elytra ; they are found at sap or under bark.

The larva of *Ips quadripunctata* is described by Perris, *Larves des Coléoptères*, p. 43 ; it is almost linear, very little narrowed at the two extremities, of a yellowish-white colour, somewhat coriaceous, with scarcely any pubescence ; the ninth segment of the abdomen bears two short corneous cerci and a very short anal appendage ; the larva is very probably parasitic on *Hylurgus*.

I. Body oblong, more or less convex ; forehead smooth between antennæ.

i. Each elytron with two yellow spots, the one at base formed of three confluent spots, the other behind middle formed of two confluent spots, which are occasionally separated

I. QUADRIGUTTATA, *F.*

ii. Each elytron with two simple round or oval reddish spots

I. QUADRIPUNCTATA, *Herbst.*

II. Body elongate, flat, parallel-sided ; forehead with more or less distinct furrows between antennæ

I. QUADRIPUSTULATA, *L.*

I. quadriguttata, F. Oblong, shining black, rather convex, elytra coloured as above described ; occasionally the whole five spots are separate : this variety is the *Nitidula 10-guttata*, Oliv. ; head large, finely and sparingly punctured ; antennæ reddish, with dark club ; thorax transverse, feebly narrowed in front, rather diffusely punctured ; elytra with punctuation a little closer than on disc of thorax, apex entirely rounded in males, pointed at suture in females ; the elytra show very weak traces of longitudinal striæ ; legs pitch-black with tarsi reddish. L. 3-5 mm.

At sap ; and under bark of oak and other trees ; occasionally in fungi ; local, but not uncommon in several districts ; New Forest ; Dean Forest ; Devon ; Buddon Wood, Leicester ; Needwood, Burton-on-Trent ; Sherwood Forest ; Ripon ; Manchester ; Northumberland district, rare ; not recorded from Scotland ; the species appears to be chiefly attached to the oak.

I. quadripunctata, Herbst. Larger, more convex, and more strongly punctured than the preceding, and easily distinguished by the two simple orange-red spots on each elytron ; the apex of the elytra is entirely rounded in both sexes ; in the males, as a rule, the head is large, and the thorax somewhat broader than the elytra, so that the whole body appears sometimes to be gradually narrowed from the front parts to the apex of elytra. L. 4-6 mm.

At sap and under bark of oak, fir, birch, and other trees ; locally common ; Weybridge, Caterham, Walton-on-Thames, Mickleham, Sunbury, &c. ; New Forest ; Dean Forest ; Needwood ; Repton ; Chat Moss ; Knutsford ; Manchester, under oak chips, where the trees have been recently cut down ; Northumberland district, not uncommon ; Scotland, scarce, Solway, Tweed, Clyde, Tay, and Dee districts.

I. quadripustulata, L. Elongate, flat, parallel-sided, shining

black ; each elytron with two orange-red spots, the one at base irregular, the other behind middle simple, round or nearly round ; punctuation diffuse, closer on thorax than on elytra ; elytra with traces of striæ ; apex of elytra rounded in males, produced at suture in females ; antennæ pitchy, club darker, narrower than in the preceding species and not quite so compact ; legs pitch-black, with tarsi lighter ; size very variable. L. 3-6½ mm.

Under bark and at sap of firs and other trees ; common in Scotland under bark of Scotch fir both Lowlands and Highlands, Solway, Clyde, Tweed, Tay, Dee, and Moray districts, and probably general. Northumberland district, not rare ; it is apparently very rare further south, but has been recorded, perhaps in some cases in error, from Leicester, Hertford, Windsor, Dover, Hastings, Devon, &c.

PITYOPHAGUS, Shuckard.

This genus has been separated from *Ips* on the ground that the anterior coxal cavities are narrowly closed behind and not open ; it also differs in its narrow cylindrical form ; three European species are contained in the genus, of which one is found in Britain.

The larva of *P. ferrugineus* is described and figured by Perris, Ann. Fr., 1853, p. 596, pl. 18, fig. 77-83 ; it is 8-9 mm. in length, linear and rather depressed, with the head rather large, almost subquadrate, nearly as broad as thorax ; the prevailing colour is whitish with the thorax sometimes reddish, and the last abdominal segment is ferruginous ; the abdomen terminates in two short corneous cerci and a very small anal appendage : this larva is parasitic on *Hylesinus*, *Hylastes*, and *Hylobius* ; the perfect insect lays its eggs in the borings made by these beetles, and the larva when hatched apparently feeds upon the larvæ of its hosts ; the pupa is white, with a few hairs on vertex, and sides of thorax and abdomen.

P. ferrugineus, F. Elongate, convex, cylindrical, as a rule entirely ferruginous, with head darker, but occasionally the apex of elytra is dark ; head very thickly and rather strongly punctured ; thorax longer than broad, very slightly narrowed behind, thickly and strongly punctured ; elytra moderately thickly punctured, more closely at apex, with punctures almost arranged in rows ; apices truncate, with outer angles rounded ; legs rather stout, with tibiæ dilated towards apex. L. 4-5 mm.

Under bark and at sap of freshly cut firs ; very local ; Shirley, Esher, Weybridge, Woking ; New Forest ; Bournemouth, plentiful (Kemp-Welch) ; Northumberland and Durham district, common ; Scotland, under bark of Scotch fir, not uncommon, Solway, Tweed, Tay, Dee, and Moray districts ; it most probably occurs in many intervening districts, but I know of no Midland records for the species.

RHIZOPHAGINA.

The position of this tribe is one of considerable difficulty, and it is almost certain that it will eventually have to be raised to the position of a family ; perhaps a further study of the exotic allied genera and species (of which several yet remain undescribed) is necessary before this

is finally done, but at present the tribe certainly does not agree with the Nitidulidæ by reason of the heteromerous tarsi of the male, nor with the Trogositidæ, because its members have the fourth tarsal joint the smallest, whereas the Trogositidæ have the first joint the smallest; the antennæ also present a great point of difference, consisting to all intents and purposes of ten joints, with a solid club; after careful examination of a specimen soaked for a long time in caustic potash and mounted in Canada balsam, I cannot discover any real suture in the club, and however far we may, like Erichson, Thomson, and others, consider the ridges, which are apparent externally, as representing the obsolete eleventh joint of the antennæ, yet the club is really 1-jointed and solid; besides the extensive genus *Rhizophagus*, only three or four small exotic genera (*Europs*, *Mimema*, and *Crine*) are contained in the tribe, but the number will in all probability be considerably increased; several forms yet remain to be worked out in the extensive series of Nitidulidæ collected by Mr. Champion in Central America; one or two of these allied genera have the club distinctly 2-jointed.

RHIZOPHAGUS, Herbst.

Upwards of forty species are comprised in this genus, which are almost entirely confined to temperate and cold climates; two or three have been described from Tahiti, Cuba, Ceylon, &c.; they are elongate, more or less depressed insects, and are found under bark and at sap; there are sixteen European species, of which ten are found in Britain.

The larva of *R. depressus* is described and figured by Perris, Ann. Fr., 1853, p. 599, pl. 18, fig. 84—92; it is 6 mm. in length, rather depressed, and almost linear, except that the head is narrower than the prothorax; the head and prothorax are reddish, the base of the latter being whitish, and all the succeeding segments, except the last, are reddish for their basal half, and whitish for their apical half; the head is long, almost elliptical, with two long impressions; the prothorax is much longer than the meso- or metathorax, and is rounded and narrowed in front; the last segment is entirely ferruginous, and is furnished on its upper surface with two distinct tubercles; this segment behind is divided into two lobes, each of which terminates in three strong teeth; on the under-side is a small anal appendage, which is used, as in other allied species, for progression; this larva preys upon the larvæ of *Hylesinus*, and probably other wood-boring beetles. The larvæ of many of the Nitidulidæ and other families which frequent trees are of very great benefit to the forester; for, as M. Perris remarks, they are of great service in keeping within bounds the multiplication of some of the insects that are most destructive to various forest trees.

The pupa of *Rhizophagus depressus* is rather long and narrow, of a white colour, and furnished on vertex and at sides with long silky hairs; it does not, however, present any striking peculiarity.

Other larvæ of various species of *Rhizophagus* have been discovered, but they do not differ much from the one first described, except as regards the arrangement of the teeth at the end of the lobes of the last abdominal segment.

- I. Antennæ with club truncate *R. CRIBRATUS*, Gyll.
 II. Antennæ with club rounded at apex.

- i. Colour testaceous or ferruginous, sometimes with indications of a darker shade on disc of thorax and elytra.
1. Punctuation of thorax close and fine *R. DEPRESSUS*, *F.*
 2. Punctuation of thorax more or less coarse, but varying in degree.
 - A. Elytra depressed.
 - a. Striæ on elytra finely punctured; average length 3 mm. *R. PERFORATUS*, *Er.*
 - b. Striæ on elytra coarsely punctured; average length 4 mm. *R. PARALLELOCOLLIS*, *Er.*
 - B. Elytra convex, cylindrical *R. FERRUGINEUS*, *Payk.*
- ii. Prevailing colour pitchy or blackish; base and apex of elytra to a greater or less extent light.
1. Last segment of abdomen with a plain impression in both sexes, terminated on each side by a small prominence *R. NITIDULUS*, *F.*
 2. Last segment of abdomen simple *R. DISPAR*, *Gyll.*
- iii. Elytra black or brownish-black, with a plainly defined yellow spot on each a little before apex *R. BIPUSTULATUS*, *F.*
- iv. Colour unicolorous black *R. POLITUS*, *Hellw.*
- v. Elytra blue or bluish-green; head, thorax, and scutellum shining black *R. CÆRULEIPENNIS*, *Sahlb.*

R. cribratus, *Gyll.* Of a dark ferruginous colour, depressed, rather shining; head rather shorter than in most of the other species, thickly and strongly punctured, antennæ with the club truncate, a character which will at once distinguish the species; thorax about as long as broad, gradually narrowed behind, very coarsely and diffusely punctured; elytra somewhat widened in the middle with rows of strong punctures; under-side of head and sides of body strongly punctured. L. $3\frac{1}{2}$ mm.

Under bark and at roots of trees, especially oaks; not common; Weybridge, Esher, Richmond Park, Reigate, Tilgate Forest, Birch Wood, Dulwich, New Forest; Mount Edgecumbe, Plymouth (Wollaston); Knowle; Robin's Wood, Repton; Sherwood Forest; Studley Park, Ripon, in fungus (Waterhouse); Scarborough; Stretford; on decayed roots of lime trees, Withington Common, near Manchester (Chappell); Hartlepool; Northumberland district, rare, Houshel and Hartford Bridge; Scotland, very rare, Solway district; it is not recorded in Dr. Sharp's list, but I have lately received a specimen taken by Mr. W. D. R. Douglas at Orchardton near Castle Douglas under fir bark; Ireland, Galway, locally common, and Westport (co. Mayo) (J. J. Walker).

R. depressus, *F.* Light rust-red, with suture of elytra usually darker; body depressed; head of male large, about as broad as thorax, of female narrower; thorax longer than broad, widest in front, thickly and very finely punctured; elytra with very finely punctured striæ, first interstice with a row of widely separated fine punctures (which is found also in other species), second interstice widened and irregularly punctured at base. L. 2-4 mm.

Under bark of oak, fir, &c.; somewhat local, but not uncommon, and apparently generally distributed throughout the greater part of the kingdom.

R. perforatus, *Er.* Of a light rust-red or testaceous colour with the

disc of thorax sometimes darker; thorax longer than broad, widest in front, very slightly contracted behind, with anterior angles very plainly marked, with coarse and diffuse punctuation; club of antennæ oval; elytra depressed, parallel to middle and thence gradually narrowed, with rather weak and comparatively finely punctured striæ; the species may be easily distinguished from *R. depressus*, which at first sight it much resembles, by the much coarser punctuation of the thorax, and from *R. parallelocollis* and *R. ferrugineus* by its average smaller size, and the more finely and less closely punctured striæ of elytra; the thorax, moreover, is not quite as closely punctured on disc as in these two species. L. 3 mm.

Under bark, at sap, &c.; not common; Chatham, Sheerness, Darent, Mickleham, Shirley, Esher, Farnham, Purley, &c.; Ipswich; St. Peter's, Kent (in decaying potatoes, one specimen, T. Wood); Hastings; Weymouth; New Forest; Portland; Devon; Salford Priors; Bewdley; Sutton Park, Birmingham; Church Stretton; Buddon Wood, Leicestershire; Sherwood Forest; Scotland, rare, amongst old wood, Solway district only; Ireland, Galway (J. J. Walker).

R. parallelocollis, Er. Larger on the average than the preceding, and as a rule of a darker ferruginous colour, with the disc of thorax and hinder half of elytra very often clouded with blackish-brown; head nearly as broad as thorax; thorax longer than broad, widest in front, very slightly narrowed behind, coarsely punctured; elytra depressed, especially in the middle, with rather strong plainly punctured striæ; the species most closely resembles *R. ferrugineus*, from which it may be known by its more depressed form and larger head; occasionally specimens are found which are coloured almost like *R. dispar*; the latter species, however, is less depressed and narrower, and has the thorax evidently longer and less coarsely punctured. L. 3-4 mm.

Under bark, at sap, in fungi, &c.; local; Darent Wood, Mickleham, Forest Hill, Esher, Shirley, Chatham; Regent's Park, in a tree infested by *Cossus*; Dean Forest; Sherwood Forest; the late Archdeacon Hey once found it in numbers in a cemetery near York in a fungus (*Copris comatus*) in company with *Atomaria fimetarii*; Northumberland and Durham district, not rare, on the walls and tombstones of graveyards; Scotland, rare, Solway district. It has lately been recorded as abundant in France in coffins in graveyards, buried at some depth below the ground.

R. ferrugineus, Payk. Rather dark ferruginous, unicolorous; head small, considerably narrower than thorax; thorax longer than broad, scarcely narrowed behind, very strongly punctured; elytra convex, cylindrical, with strong and strongly punctured striæ; under-side deeply punctured, especially at sides; the species may be known by its somewhat narrow head, and convex cylindrical elytra, which are evidently more strongly striated and punctured than in the allied species. L. $3\frac{1}{2}$ - $4\frac{1}{2}$ mm.

Under bark and at sap of freshly cut firs, &c.; somewhat local, but widely distributed throughout England; Scotland, common, Solway, Tay, Dee, Moray, and probably other districts; Ireland, near Dublin; it also occurs under bark of oak near the burrows of *Cossus ligniperda*.

R. nitidulus, F. Elongate, subcylindrical, head and thorax

brownish-red with disc of latter darker, elytra brownish-red or blackish with extreme side margins, apex, and basal fourth part red, the colour, however, being somewhat variable in extent; head large, especially in male, eyes prominent; thorax considerably longer than broad, more so in the male than the female, plainly punctured on disc, more finely at sides; elytra with distinctly and regularly punctured striæ, sutural stria deeply impressed behind middle; antennæ and legs ferruginous; last segment of abdomen with a distinct impression, terminated on each side by a small raised prominence. L. $2\frac{2}{3}$ – $4\frac{2}{3}$ mm.

Under bark, at sap, &c.; rare; Sutton Park, Birmingham; Hopwas Wood, Tamworth; Cannock Chase; Needwood; Matlock; Sherwood Forest; Scotland, Rannoch (Power and Champion). Mr. W. G. Blatch has been more successful in finding this rare insect than any other British entomologist.*

R. dispar, Gyll. Closely resembling the preceding species in colour, but smaller, and rather flatter, and with the colour rather more variable; head large, especially in male, eyes prominent; thorax evidently longer than broad, more so in the male than in the female, finely punctured at sides, more plainly on disc; elytra with plainly punctured striæ, sutural stria strongly deepened, especially behind; antennæ and legs ferruginous; last segment of abdomen simple in both sexes; size as in the preceding species very variable. L. 2–4 mm.

Not uncommon at sappy bark of pines, poplars, &c., in the Midlands and North of England, and in Scotland and Ireland; it does not, however, apparently occur in the London district or the South; in Scotland it is sometimes found in profusion under the bark of conifers; it is occasionally found in fungi on decayed trees.

R. bipustulatus, F. (*longicollis*, Gyll., ♀). Rather flat, pitchy-black or brownish-black, with a plainly defined yellowish-red spot on each elytron a little before apex; the shoulders also are often slightly reddish; head in both sexes somewhat narrower than thorax, thickly and somewhat finely punctured; thorax not much longer than broad, with sides and anterior and posterior angles slightly rounded, distinctly and not very closely punctured; elytra with plainly and regularly punctured striæ, sutural stria deepened behind; antennæ and legs ferruginous; size and colour very variable. L. 2 – $3\frac{1}{2}$ mm.

Under bark, at sap, &c.; common and generally distributed throughout the kingdom.

This species varies very much in colour, some specimens being light pitchy-brown, and others testaceous; the former may easily be distinguished, as the two spots on the elytra are always distinct, if the ground colour is at all darker; pale immature examples, however, may sometimes be confused with *R. perforatus*, but the rounded sides and angles of thorax, which is also more closely and less strongly punctured, and the more plainly punctured striæ of elytra will serve to distinguish them.

* Mr. Horner and Mr. Blatch have recently taken a species allied to *R. nitidulus* in Sherwood Forest, which appears to be undescribed.

R. politus, Hellw. Oblong, rather broad and flat; colour unicolorous black, shining; head rather large, strongly impressed, finely punctured, the punctuation being diffuse in front and close behind; thorax subquadrate, as long as broad, diffusely and finely punctured, with a space between centre and base smooth; elytra with plainly punctured striæ, which become evanescent towards sides and apex; antennæ and legs ferruginous. L. 3-4 mm.

Under bark of pines, and occasionally other trees; rare; Lee, Kent, one specimen by sweeping (Douglas); New Forest (Champion); Tintern and Rooke, Monmouthshire; Hartlebury, Bewdley, and Salford Priors (Blatch); Sherwood Forest (Blatch and Gorham); Stretford, near Manchester (Hardy and Reston); Scotland, Avicmore (Champion).

R. cœruleipennis, Sahlb. (*æneus*, Richt.; *cœruleus*, Waltl.). Rather short and broad; head shining black, narrower than thorax, somewhat finely punctured, antennæ reddish with black club; thorax black, not longer than broad, narrower than elytra, with anterior and posterior angles rounded, rather finely and thickly punctured; elytra blue or bluish-green, metallic, with fine punctured striæ, sutural stria deepened behind; legs ferruginous with femora brownish; under-side lighter or darker reddish-brown. L. 3 mm.

One of the rarest of our British beetles; three specimens have occurred in or near the Lover's Walk at Matlock, Derbyshire; they were taken by Mr. Matthews, Mr. Garneys, and Mr. Crotch; the specimen obtained by the last-named gentleman flew from his beard on to the window after he had returned to the hotel; one specimen has also been recorded as taken by Mr. Taylor at Crosby, near Liverpool.

TROGOSITIDÆ.

In the Munich catalogue nineteen genera and one hundred and forty-four species are enumerated as belonging to this family, and these have since been added to; only seven genera represented by fourteen species are found in Europe, and three genera containing one species each in Britain; we need not, therefore, discuss at any length the position of the family, which has by many authors been included under the Nitidulidæ; Lacordaire, however, appears to be right in separating them from this latter family on the ground of the structure of the maxillæ and tarsi; in the Nitidulidæ these latter are usually 5-jointed, with the fourth joint very small; in the Trogositidæ they are 5-jointed, with the first joint very short, the second to the fourth moderate, and the last joint very long.

Our three genera belong to two very distinct tribes, which may be distinguished as follows:—

- I. Form elongate without flattened margins TROGOSITINA.
- II. Form oval or rounded, very convex, with distinct flattened margins PELTINA.

TROGOSITINA.

This tribe contains two British genera; the species are elongate, but differ very much in appearance, *Tenebrioides* being rather broad and flat, and *Nemosoma* very long and narrow and cylindrical; they are characterized by having the clypeus trisinate or emarginate in front, and by having the anterior coxæ entirely enclosed; the antennæ in our species are 11-jointed, and the last three joints form a more or less distinct club.

- I. Form very narrow and cylindrical; eyes rounded NEMOSOMA, Latr.
 II. Form elongate-oblong; eyes transverse TENEBRIOIDES, Pill.

NEMOSOMA, Latreille.

This genus contains a few species which are found in Europe and North America; they occur in wood, and appear to be parasitic on species of *Hylesinus*, &c.

The larva of *N. elongatum* is fully described by Erichson (Naturgesichte der Ins. Deutsch. iii. 239), and is also described and figured by Westwood (Classif. i. 146, fig. 12, 2); it is closely allied to that of *Tenebrioides*, but is longer, thinner, and more cylindrical, with less long and less numerous hairs; according to Westwood this larva has a very quick motion when excited, and when touched throws itself into various attitudes like a small *Staphylinus*; unless excited its movements are slow like the imago; the head is flat, and in walking it is constantly in motion from side to side, or upwards and downwards; the larva by means of an anal proleg is able to move backwards or forwards.

N. elongatum, L. Shining black, with the basal third (or occasionally half) of elytra and a patch before apex of the same reddish-testaceous; this patch varies in size, and is sometimes obsolete; form very narrow, elongate, cylindrical, parallel-sided; head as long as thorax, with rather long distinct punctures, and a deep frontal furrow, antennæ reddish-testaceous with distinct 3-jointed club; thorax much longer than broad, slightly narrowed behind, finely and diffusely punctured; elytra two and a half times as long as thorax, finely punctured almost in rows, with a fine impressed line near suture; legs reddish-testaceous. L. 4 mm.

Under bark in company with *Hylesinus vittatus*, on which it is parasitic—especially in old palings; of very rare occurrence, but sometimes locally common; Darenth Wood (Stephens); Sydenham (Ingall and Westwood, 1833; Power, 1852); Cheshire, Whatcote, and Compton Wynniet (Power); Warwickshire; Beeston, Notts (Sidebotham).

TENEBRIOIDES, Piller.

About fifty species are contained in this genus, which are widely distributed, occurring in both tropical and temperate regions; of those at present known a very large proportion appears to come from North America; one species only is found in Europe, which has been dis-

tributed by commerce over a great portion of the world; it has usually been referred to *Trogosita*, Ol., but as the type of Olivier's genus appears to be *Tennochila cœrulea*, the latter insect is now referred to *Trogosita*, and the name *Tenebrioides* is substituted for the old genus *Trogosita*.

The larva of *T. mauritanicus* is fully described by Erichson (Naturgesichte der Ins. Deutsch. iii., p. 243), and is also described and figured by Westwood, Classif. i. 147; it is rather long and cylindrical, narrowed towards the head, and furnished with long setæ at sides; the head is small, pitchy, with short antennæ; the prothorax has a rather broad dark scutum (which appears sometimes at all events to be divided), and the meso- and metathorax are both furnished with two small pitchy scuta, one on each side; the last abdominal segment is pitchy, and bears two rather strong conical spines; the general colour is dirty white.

This larva feeds upon stored grain, and sometimes does a very serious amount of damage in granaries; it also attacks bread, nuts, and almonds, and sometimes is found in dead trees; according to Curtis it is very destructive in the South of France (where it is called "*Cadelle*"), as it eats the outside of the grain, and passing from one to another injures more than it consumes.

T. mauritanicus, L. (*caraboides*, F.). Black or pitchy-black, sometimes pitchy-red, oblong, depressed; head narrower than thorax, rather sparingly and strongly punctured; antennæ with a 3-jointed, but not very strongly marked, club; thorax transverse, narrowed behind, strongly margined, anterior angles considerably projecting, posterior angles right angles forming a tooth, disc more sparingly, sides rather more thickly, punctured; scutellum impunctate; elytra with sides slightly rounded, with distinct striæ, which are rather obsoletely punctured, interstices finely punctured and irregularly striated transversely; legs ferruginous. L. 6-10 mm.

In warehouses, bakers' shops, granaries, &c.; not uncommon and generally distributed throughout the kingdom; an imported species.

PELTINA.

The insects belonging to this tribe are oval or round and very convex, with a flattened margin; in our single genus *Thymalus* and also in *Peltis* the anterior coxal cavities are open behind; *T. limbatus* closely resembles a *Cassida* in general appearance, and at first sight appears to be as different from *Nemosoma* as any insect could well be.

THYMALUS, Latreille.

This genus contains one species from North America, and one which is somewhat widely distributed in Europe.

The larva of *T. limbatus* is described and figured by Chapuis and Candèze (Les Larves des Coléoptères, p. 77, pl. ii., fig. 6); it is rather broad and stout, 9-10 mm.

in length, whitish with the scutum of prothorax (which is almost entire) and the last segment of abdomen blackish-brown; the upper surface is very uneven, and the sides are furnished with setæ; the greatest breadth is at the sixth or seventh segment of abdomen; the antennæ are 4-jointed, exceedingly short, and the legs are not visible from above; the last abdominal segment terminates in two short stout cerci; the larva lives under bark, and transforms itself into a pupa about April; it does not appear to be certain whether it is carnivorous or not.

T. limbatus, F. Oblong-orbicular, upper surface dark metallic reddish-bronze, very shining, with flat explanate margins which are clear red, under-side reddish-brown; the whole upper-side is clothed with thick upright yellowish hairs; head small, antennæ rather slender with strongly marked 3-jointed club; thorax almost semicircular, upper surface thickly and distinctly punctured; elytra very convex, with shoulders rather plainly marked, punctured very coarsely in not very regular rows, interstices very finely punctured; legs red. L. $5\frac{1}{2}$ –6 mm.

Under bark; very local and as a rule not common; Westerham, Kent (Stephens); Hastings (Bennett); New Forest (not uncommon, both in standing dead trees and in fallen branches); Wales (Dillwyn); Dean Forest; Cannock Chase; Sherwood Forest; Leeds district; Northumberland district, very rare, Ravensworth (Hardy).

MONOTOMIDÆ.

This family has been regarded by some authors as a tribe of the Lathridiidæ or of the Cucujidæ; it appears, however, to be the best plan to regard it as distinct, as both in the formation of the antennæ and in other characters it presents considerable points of difference from either of these families; the species are elongate, more or less depressed, usually dull, with the thorax crenulate at the sides, and the elytra not covering the pygidium; the antennæ are inserted under the sides of the front, and are 10-jointed, or obsoletely 11-jointed, with the club solid or obsoletely biarticulate; the head is large, and the mandibles short and robust; the anterior coxal cavities are broadly closed behind; the abdomen is composed of five free ventral segments, of which the first and fifth are longer; as in some of the Nitidulidæ the males have a small extra dorsal segment; the tarsi are 3-jointed, the third joint being elongate, and the first two being clothed beneath with long hairs; the claws are simple.

The family contains a few genera, the chief of which is *Monotoma*; the species are small and, as a rule, obscure-looking insects, and are found among rubbish, under bark, in ants' nests, &c.

MONOTOMA, Herbst.

This genus contains about thirty or forty species, which are chiefly confined to the northern and temperate regions of the Old and New Worlds; species have, however, been described from the Canary Islands,

Ceylon, &c. ; they are small, elongate insects, as a rule dull with scabrous sculpture, and may further be recognized by their more or less quadrate thorax, of which the anterior angles are more or less callose or prominent ; there are nine British species, which are all very distinct, but the differences are in many cases comparative, and hard to express in words ; they are very slow in their movements, and occur for the most part in vegetable refuse, hot-beds, &c. ; two of them, however, are found exclusively in ants' nests.

- I. Upper surface more or less coarsely scabrous.
 - i. Colour, at least of head and thorax, more or less pitchy-black or pitchy-brown.
 - 1. Head oblong, not much narrowed before eyes, which are small ; habitat in ants' nests. (*Gyrocecis*, Thoms.)
 - A. Thorax much longer than broad *M. CONICICOLLIS*, *Aubé*.
 - B. Thorax not much longer than broad *M. FORMICETORUM*, *Thoms.*
 - 2. Head triangular, much narrowed in front of eyes, which are larger ; habitat in vegetable refuse, &c. (*Monotoma*, i. sp.)
 - A. Sculpture of upper surface very coarse ; thorax considerably narrowed in front ; elytra short, almost ovate ; impressions on forehead not marked *M. SPINICOLLIS*, *Aubé*.
 - B. Sculpture of upper surface coarse ; thorax quadrate with sides straight and parallel ; elytra longer and more parallel ; impressions on forehead not marked *M. BREVICOLLIS*, *Aubé*.
 - C. Sculpture of upper surface coarse or moderately coarse ; thorax subquadrate with sides slightly but evidently contracted in front ; elytra variable, elongate-ovate ; impressions on forehead very strongly marked *M. PICIPES*, *Herbst.*
 - D. Sculpture of upper surface moderate ; thorax subquadrate with sides straight and parallel ; elytra elongate, parallel, scarcely wider than thorax ; impressions on forehead absent *M. QUADRICOLLIS*, *Aubé*.
 - ii. Colour rufous ; form parallel ; thorax quadrate with sides parallel ; forehead with strong impressions *M. RUFA*, *Redt.*
- II. Head and thorax finely scabrous, elytra scarcely scabrous ; head oblong, colour rufous *M. SUB-4-FOVEOLATA*, *Wat.*
- III. Upper surface shining, not scabrous ; form small and linear ; colour dark *M. LONGICOLLIS*, *Gyll.*

M. conicicollis, *Aubé* (*angusticollis*, auct. ; *Gyrocecis angusticollis*, Thoms.). Elongate, dull pitchy-brown or fuscous, upper surface, especially of head and thorax, very scabrous ; head large, elongate, sub-oblong, with forehead not foveolate, eyes small ; antennæ ferruginous ; thorax much longer than broad, narrowed in front, conical, with the anterior angles projecting in a lobe, and the sides strongly serrate, with two distinct foveæ towards base ; elytra with rugose striæ, and with the

interstices furnished with rows of short setæ; pygidium exposed; legs rather short, ferruginous. L. 2-2½ mm.

Male with the thorax more narrowed in front and the anterior angles more strongly produced, and with all the tibiæ curved and produced into a spine at apex.

In nests of *Formica rufa*; local, but not uncommon where it occurs; Esher; Plumstead; Chatham; Tilgate Forest; Hastings; Parkhurst Forest, Isle of Wight; Glanvilles Wootton; Devon; Bewdley Forest; Buddon Wood, Leicestershire; York; Scarborough; not recorded from the extreme northern counties of England; Scotland, rare, Dee and Moray districts.

M. formicetorum, Thoms. (*angusticollis*, auct.; *Gyrocecis formicetorum*, Thoms.). Very like the preceding, but at once distinguished by its shorter thorax which is much less narrowed in front, and by its shorter and proportionally broader head and larger and more prominent eyes; the elytra also are broader, especially at apex; the tibiæ are not curved, and do not terminate in a spine in the male. L. 2-2½ mm.

In nests of *Formica rufa*, and sometimes in company with the preceding; it is, however, more local and less common; Hampstead; Esher; Plumstead; Chatham; Tilgate Forest; Hastings; Parkhurst Forest, Isle of Wight; Buddon Wood, Leicestershire; York; it does not occur, apparently, in the extreme northern counties of England, or in Scotland.

As the name *angusticollis*, Gyll., has been applied by different authors to both species, and Gyllenhal's description (Ins. Suec. iv., p. 634) will fit either insect, it seems best for convenience sake to drop it altogether; in all probability Gyllenhal described the two species as one; the *M. angusticollis*, Gyll., of Sharp's catalogue must be referred to *M. conicicollis*, but the *M. angusticollis*, Gyll., of the catalogue of Heyden, Reitter, and Weise, is Thomson's *M. formicetorum*.

M. spinicollis, Aubé (*spinigera*, Chaud.). Pitchy-black, elytra usually somewhat lighter, with reddish shoulders; head large, triangular, rather strongly narrowed before eyes which are prominent; antennæ moderately long, ferruginous; thorax not much longer than broad, with sides rounded and somewhat dilated behind and evidently narrowed in front, anterior angles sharply produced, strongly sculptured, the sculpture being composed of large round variolose impressions with more or less raised intervals, disc with two depressions towards base; elytra short and broad, somewhat ovate, rather shining, with very coarse but rather shallow rugose sculpture; legs ferruginous. L. 2 mm.

Male with the anterior tibiæ rather strongly curved and feebly emarginate towards apex, terminating in a short and not very evident spine.

In cut grass, hot-beds, haystack refuse, &c.; not common; Ealing, Wimbledon, Forest Hill, Darenth Wood, Chatham, Cowley, Maidstone, Croydon, Peckham, Shirley, Bishops Wood; Kingsgate; Glanvilles Wootton; Edgbaston; Knowle; Repton, near Burton-on-Trent.

The sculpture of this species will easily separate it from all the others.

M. brevicollis, Aubé. Of much the same colour as the preceding, but much duller, and with the front parts more scabrous; it is, moreover, easily distinguished by its shape which is more parallel, the elytra being narrower in proportion to the thorax, and much less ovate; their sculpture, too, is less coarse and more distinct, consisting of regular rows of asperate punctures; the species, however, is best known by the shape of the thorax which is almost quadrate with the sides quite or almost parallel, and the anterior angles only slightly and bluntly produced, the posterior ones being also evidently produced and callose; the male characters are much as in the preceding. L. $1\frac{3}{4}$ -2 mm.

In haystack refuse, cut grass, &c.; rare; Gravesend, Shoerness, Claygate, Forest Hill, Darenth Wood, Maidstone, Peckham, Shirley; Cheddar, Somerset; Repton; Wallasey, Cheshire.

M. picipes, Herbst. Pitchy-black, or brown, sometimes with elytra reddish; as a rule it is a little more shining than *M. brevicollis*, but duller than *M. spinicollis*; from the former of these species it may moreover be distinguished by its proportionally longer, narrower, and less quadrate thorax, of which the anterior angles are more produced, while from the latter it may be separated by having the thorax less contracted in front, with the anterior angles less sharply produced, as well as by its narrower elytra and less coarse sculpture; from both these species, and also from *M. quadricollis*, it may be known by the very pronounced foveæ or impressions on the forehead. L. $1\frac{1}{2}$ -2 mm.

In the male the anterior tibiæ are slightly sinuate and curved at apex on their interior margin.

In haystack and other refuse; occasionally by sweeping; generally distributed and common throughout the Southern and Midland districts of England, but rarer further north; Scotland, scarce, Solway, Forth, and probably other districts; Ireland, Dublin and Waterford.

M. quadricollis, Aubé. Blackish or reddish-brown, with elytra sometimes lighter than thorax; smaller and narrower on the average than the preceding species, and somewhat linear and parallel-sided; head and thorax closely sculptured, the former without impressions on forehead, the latter subquadrate, with sides straight and almost parallel, anterior angles bluntly prominent, posterior angles scarcely prominent, sides hardly visibly crenulate; elytra only slightly broader than thorax, rather long, with rows of asperate punctures. L. $1\frac{1}{2}$ mm.

Male with the anterior tibiæ sinuate before apex.

In haystack refuse, dung-heaps, &c.; not uncommon; London district, generally distributed; St. Peter's, Kent; Hastings; Cheddar, Somerset; Wicken Fen; Edgbaston; Knowle; Repton; not recorded from further north than Derbyshire: Murray records it from near Edinburgh and Glasgow, but Dr. Sharp doubts whether the determination is correct; it is probably much more widely distributed than is generally supposed, and it often appears to be confused with *M. picipes* by collectors, from which it may at once be known by its even forehead, which is without the depressions so distinct in this latter species.

M. rufa, Redt. (*quadrimpressa*, Mots.; ? *quadrifoveolata*, Aubé). Entirely rufous, elongate, subparallel; head triangular, strongly narrowed in front of eyes which are large and prominent, forehead with distinct impressions; thorax longer than broad, with sides parallel, rather closely sculptured, anterior and posterior angles moderately prominent, with four foveæ on disc, of which the anterior pair are often indistinct or absent; elytra rather long with rows of rather indistinct asperate punctures, interstices with very regular rows of pale setæ; anterior tibiæ of male only slightly sinuate before apex, and terminating in a very small tooth. L. $1\frac{1}{2}$ -2 mm.

In haystack refuse, cut grass, &c.; occasionally in gardens, granaries, &c.; local, but sometimes abundant where it occurs; Ealing; Lee; Hampstead Heath; Cowley; Sheerness; Peckham; Eltham; South Shields, very rare (Bold).

M. sub-4-foveolata, Wat. (*quadrifoveolata*, Aubé, *sec.* Brit. Cat.). In colour this species resembles the preceding, but may at once be known by the shape of the head which is oblong, and scarcely contracted before the eyes which are much smaller and less prominent; the thorax is broader and more quadrate, and the four impressions or foveæ are more distinct and are often confluent, forming two broad longitudinal furrows on the disc; the sculpture of head, thorax, and elytra is finer, and the elytra are smoother and less dull; the antennæ also are shorter, and the side border of the thorax is less marked. L. $1\frac{1}{2}$ -2 mm.

In haystack refuse, cut grass, &c.; sometimes in granaries; rare; first taken in Hainault Forest by Mr. E. W. Janson; Sheerness (Walker); Peckham (Marsh); Wimbledon; Scarborough (R. Lawson); Scotland, Dollar (Syme, Dr. Power).

This species forms a connecting link between the two first species of the genus and the remaining species, and makes it evident that Thomson's genus *Gyrocecis* cannot stand as separate; there is great confusion regarding the nomenclature of this and the preceding species in the works of various authors.

M. longicollis, Gyll. (*flavipes*, Kunze). Pitchy-black or brown, shining, elongate and linear; head large, finely punctured, without evident depressions; thorax considerably longer than broad, shield-shaped, finely sculptured, with two distinct elongate foveæ at base, anterior angles moderately prominent, posterior angles rounded; elytra finely and simply punctured in rows, finely pubescent; antennæ and legs testaceous or reddish-testaceous. L. $1\frac{1}{2}$ mm.

Male with the anterior tibiæ slightly curved.

In haystack refuse, hot-beds, &c.; occasionally by sweeping; local; London district, not common, Sheerness, Caterham, Shirley, Dulwich; St. Peter's, Kent; Hastings; Glanvilles Wootton; Cheddar; Barnwood, Gloucester; Knowle; Sutton Park; Repton; Mabblerley, Cheshire; Scarborough; York; Northumberland district; Scotland, rare, Solway district.

The small size, shining appearance, and simple sculpture will at once distinguish this species from all the others.

LATHRIDIIDÆ.

This family contains a large number of small and obscure insects, which are found in various situations, but, as a rule, in various kinds of vegetable refuse, moss, fungi, faggots, bark, &c. ; the constitution of the family has given rise to much dispute ; the genera *Langelandia*, *Dasycerus*, *Holopamecus*, and *Anommatus*, which have been by some authors included in the family, are by others referred to other groups, and the question as regards their true position is to a certain extent still undecided ; others again include *Myrmecoxenus* and *Hypocoprus*, both of which seem to be connected with the family by their external facies, but on a closer examination seem to agree more naturally with other families ; the student who may wish to study this most interesting family more deeply is referred to the writings of Herr Reitter, and more especially to the valuable monograph on the " Famille des Lathridiens " by M. Belon, to whose courtesy I am much indebted, and whose arrangement of the tribes I have, after some consideration, followed ; the genus concerning which I feel most doubt is *Anommatus*, which the Rev. A. Matthews, after studying the external skeleton, refers to the Colydiidæ ; Mr. Matthews also refers *Holopamecus* to the Mycetophagidæ, and in the catalogue published by us in 1883 these genera will be found occupying these respective positions ; as, however, we study these obscure families, we cannot help being struck with the impossibility of locating certain synthetic genera with any feeling of certainty, and the true positions of several will probably be found eventually to be very different from those now assigned to them, as connecting forms are discovered in various parts of the world ; at the same time it is a much better course to place them provisionally than simply, as some writers have done, to separate them off as " genera incertæ sedis " in a sort of appendix.

The species belonging to the family are widely distributed throughout the world, and some are almost cosmopolitan ; when once introduced they seem to have the power of spreading very fast and very widely ; thus *Lathridius nodifer*, which some forty years ago was very rare, has become one of our commonest insects, and has spread to the most remote districts.

The following are the chief characters of the family :—Form usually more or less oval, with the head and thorax narrower than elytra, but sometimes parallel or even filiform ; head varying in shape but usually rather large in proportion, antennæ 8–11-jointed, terminating in a more or less distinct club, mandibles not strongly developed, maxillæ with two lobes, maxillary palpi 4-jointed, with the last joint large ; anterior coxæ conical and prominent, with the coxal cavities closed behind ; elytra covering abdomen ; tarsi 3-jointed, with the last joint elongate, terminating in two simple claws.

The larvæ of the Lathridiidae are elongate-oval or more or less elliptical, of a dirty-whitish colour, with the body clothed with more or less thick and variously shaped

hairs; they are composed of twelve segments, of which the thoracic segments are larger than the rest, and terminate in a short anal appendage which serves to facilitate progression; the antennæ and legs are short; the larvæ and pupæ of *Lathridius minutus* and *Corticaria pubescens* are described and figured by Perris (Ann. Fr., 1852, p. 574, 581, Plate xiv.); the larvæ closely resemble one another, but the pubescence is much shorter in the latter; the pupa of *Lathridius minutus* is very peculiar by reason of the shape of the hairs with which it is clothed, which are abruptly clavate at apex and pin-shaped; the larvæ probably feed on cryptogamic substances, the excrement and skin of various insects, &c.

- I. Anterior coxæ more or less separated by the prosternum (or where the prosternum is interrupted between the coxæ,* with the club of antennæ consisting of only two joints).
- i. Forehead even, without sculpture, or at most finely punctured; clypeus situated on the same level with the forehead, from which it is separated by a simple stria MEROPHYSINA.
- ii. Forehead uneven, more or less strongly and rugosely sculptured, often channelled in the middle; clypeus separated from the forehead by a transverse depression, and usually situated on a lower level LATHRIDIINA.
- II. Anterior coxæ contiguous; club of antennæ composed of three or four joints. CORTICARINA.

MEROPHYSINA.

This tribe contains several genera, of which two only, *Holoparamecus* and *Anommatus*, are represented in our fauna; from the *Corticarina* they are distinguished by having the anterior coxæ separated by the prosternum, and from the *Lathridiina* by the sculpture and form of the head which is almost smooth, and has the clypeus level with the forehead, and only separated from it by a simple suture; our two genera may be separated as follows:—

- I. Eyes distinct; elytra oval without striæ or at most with a sutural stria HOLOPARAMECUS, Curtis.
- II. Eyes wanting; elytra parallel-sided with rows of strong punctures; form linear, subcylindrical . . . ANOMMATUS, Wesmæll.

HOLOPARAMECUS, Curtis.

This genus contains some twenty-five or thirty species, which are found in various parts of the world, both in tropical and temperate regions; there is, however, considerable question as to the distinctness of some of them, and several appear to have been described under different names, as is perhaps natural, seeing that they occur very often in flour, and therefore, like so many of the corn and flour beetles, become gradually cosmopolitan. Up to January, 1883, it was supposed that we only possessed one species as British out of the eight or nine European species, but in the *Entomologist* for that month (page 2) Mr. Sidney Olliff described two more as indigenous, viz. *H. singularis* which he

* This is to a certain extent the case with the genus *Cartodere*.

regards as distinct from *H. depressus*, and *H. caularum*; *H. depressus*, however, is so very variable that the species split off from it by various writers must be taken with great caution, and I have therefore preferred to follow the catalogue of Heyden, Reitter, and Weise in regarding them as synonymous. *H. caularum* is, of course, very distinct, and is probably our commonest British species. Mr. Olliff is, however, wrong in assigning it to the sub-genus *Calyptobium* of Villa. In *Calyptobium* the antennæ are 9-jointed in the male and 10-jointed in the female, and not 11-jointed in both sexes as stated in the Entomologist; *H. depressus* is, therefore, a *Calyptobium*, and *H. caularum* a true *Holoparamecus*, as it is rightly regarded in the last European catalogue.

- I. Antennæ 11-jointed in both sexes (s.g. *Holoparamecus*, i. sp.; *Tomyrium*, Reitter) *H. CAULARUM*, Aubé.
- II. Antennæ 9-jointed in male, 10-jointed in female (s.g. *Calyptobium*, Villa) *H. DEPRESSUS*, Curt.

H. caularum, Aubé (*obtusicornis*, Mots.). Entirely testaceous, except eyes, which are black, shining, very finely and sparingly pubescent, and very finely punctured; head moderately large, rounded in front, eyes somewhat convex; antennæ 11-jointed with a well-marked 2-jointed club, first and second joints rather large, 3-8 subglobose, ninth transversely globose; thorax cordiform, a little longer than, or about as long as, broad, with sides strongly rounded in front and strongly constricted behind, with four foveæ at base, of which the two central ones are usually confluent, and often form a transverse line which is deeply impressed in the centre; elytra oblong-oval, very finely and irregularly punctured. L. $1\frac{1}{3}$ mm.

In hot-beds and decaying vegetable matter; Withington, Cheshire, in dung-heaps (J. Chappell); Manchester district; Mr. Olliff records a single example as taken by Mr. Oliver Janson in July, 1869, "crawling on a whitened wall, at the base of which was a quantity of decaying vegetable matter;" he does not, however, give the locality; Mr. Chappell has found a considerable number of dead specimens of the species, and has distributed several of them, with his usual liberality, under the name of *H. depressus*.

H. depressus, Curt. (*singularis*, Beck; *Villa*, Aubé; *populi*, Mots.; *longipennis*, Mots.). This species in general appearance very closely resembles the preceding, but may easily be distinguished by the fact that in the male the antennæ are 9-jointed and in the female 10-jointed; the thorax is shorter and proportionately broader and less constricted behind, and usually has a fovea on disc, and the elytra are rather more coarsely punctured and slightly broader with the sides straighter; besides the difference in the number of the joints of the antennæ, the female differs from the male in being a little larger, more elongate and depressed, with the eyes less convex, and the impressions at the base of the thorax deeper. L. $1-1\frac{2}{3}$ mm.

In flour, &c.; also occasionally on the wing, and rarely in hot-beds, &c.; it is a

cosmopolitan species, but is very rare in British collections; London district; Norfolk; Newcastle; Sunderland; and one or two other localities; the insect described by Mr. Olliff as *H. singularis*, Beck, is said by him to differ from *H. depressus* in having the thorax only slightly narrowed and not constricted behind, in the shape of the basal impressions, and in the absence of the discal fovea, and especially in the minuteness of the eyes; the last character is the only important one, but like the other characters, it appears to be somewhat variable, and to be partly sexual; the single specimen known as British was taken by Mr. Olliff at Holmwood, Surrey, under a piece of wood placed upon the remains of a hot-bed.

It is possible that the Newcastle and Sunderland specimens may belong, like those from the Manchester and Liverpool districts, to *H. caularum*, and not to *H. depressus*; I have not, however, had an opportunity of examining any of them.

ANOMMATUS, Wesmaël.

This genus has usually been classed with the Lathridiidae by reason of its 3-jointed tarsi and other minor points, but it corresponds almost entirely as regards its external skeleton with the Colydiidae, and at all events must be considered as a very strong connecting link between the two families; the members of the genus are usually subterranean in their habits, and are remarkable for the absence of eyes; there are seven or eight European species.

A. 12-striatus, Wesm. (*obsoletus*, Steph.; *terricola*, Wesm.). Oblong, linear and parallel-sided, somewhat convex, ferruginous or reddish-testaceous; head narrower than thorax, sparingly but distinctly punctured; antennæ rather stout, apparently 10-jointed, with the tenth joint forming a solid club which is almost as long as the four preceding joints together; thorax large, quadrate, longer than broad, with the angles blunt, strongly and coarsely punctured; elytra scarcely twice as long as thorax, rounded at apex and entirely covering abdomen, each with six rows of rather strong punctures, which become feebler towards sides; abdomen with five segments, the first being as long as the two following; femora robust, tarsi 3-jointed with the third joint considerably longer than the first two together. L. $1\frac{1}{3}$ – $1\frac{3}{4}$ mm.

In decaying wood and rotting seed potatoes underground; also under stones half buried in damp places; occasionally in vegetable and haystack refuse, dung-heaps, &c.; rare; British Museum, several under stones at back of building (Waterhouse); Merton, Surrey (Janson); Sheerness (Walker); Kingsgate and St. Peter's, Kent (T. Wood); Esher (Power); Shirley Warren, Southampton, in puff-ball and under board (Gorham); Gumley, Market Harborough (Matthews); Hertford; Hull; Northumberland district, near Morpeth; Ireland, Rochestown near Dublin; it has not, apparently, been found in Scotland.

LATHRIDIINA.

This tribe, according to the catalogue of Heyden, Reitter, and Weise,

contains eight genera ; of these, however, *Agelandia*, Reitter, cannot be retained, and together with *Langelandia* must be either placed with the Colydiidæ or formed into a new family ; the tribe, as far as our fauna is concerned, consists of the old genus *Lathridius*, which has, however, been divided by Thomson into five genera ; of these four are here retained.

- I. Thorax with two fine longitudinal keels on disc.
 - i. Club of antennæ not abrupt ; eyes nearly touching anterior angles of thorax ; temples very small . . . LATHRIDIVS, *Herbst.*
 - ii. Club of antennæ abrupt ; eyes considerably removed from anterior angles of thorax ; temples large . . . CONINOMVS, *Thoms.*
- II. Thorax without longitudinal keels on disc.
 - i. Upper surface more or less convex ; head shorter with the eyes large and the antennæ situated at a little distance from them . . . ENICMVS, *Thoms.*
 - ii. Upper surface depressed, elongate ; head longer, at least as long as broad with the eyes small and the antennæ inserted at a considerable distance from them. CARTODERE, *Thoms.*

The genus *Lathridius*, taken in its widest sense, as including the above genera, contains over one hundred and thirty species, the majority of which are found in Europe, Northern Asia, and North America ; the genus, however, is widely distributed, species occurring in Ceylon, India, Cape of Good Hope, Havannah, the Australian region, &c. ; some of them are almost cosmopolitan, as they occur in substances that are articles of commerce ; the Lathridii are very variable in several points of structure, and hence considerable confusion has arisen, as may be known from the number of synonymous species recorded.

LATHRIDIVS, Herbst.

The species of *Lathridius* proper are distinguished from the other genera with the exception of *Coninomus* by the fine longitudinal keels on the disc of the thorax, and from this as well as from the others by the very narrow width of the thorax in comparison with that of the elytra ; there are two British species, *L. lardarius* and *L. angulatus*. *L. angusticollis*, which has been usually reputed to be a rather common British species, appears not to be indigenous ; until recently only one or two British specimens of *L. angulatus* have been recorded ; this has been evidently owing to the fact that all our specimens in collections have stood undoubtedly as *angusticollis* ; Mr. Crotch and one or two other collectors have sent doubtful specimens of this insect to continental authorities who have returned them as *angulatus*, and they have therefore been recorded as different from the series they were taken from, although really they were the same, and all ought to have been referred to *angulatus*.

- I. Elytra glabrous, much contracted and prolonged in a point behind ; size larger L. LARDARIUS, *De G.*

II. Elytra furnished with distinct rows of fine raised setæ, not much contracted and prolonged behind; size smaller *L. ANGULATUS*, *Mannh.*

L. lardarius, De G. (*pini*, Mots.; *dilatocollis*, Mots.). Reddish-testaceous, shining, glabrous, eyes black; antennæ testaceous, slender, with a gradual and not abrupt club; head rugosely punctured with a distinct longitudinal furrow, about as broad, with the eyes, as thorax; thorax a little longer than broad, with two longitudinal keels on disc, anterior angles produced in a moderate lobe, sides sinuate, posterior angles marked, punctuation rugose and uneven; elytra convex, oval, strongly pointed and produced behind, much broader at base than thorax, shoulders strongly marked, disc raised about middle, with strong punctured striæ which become feebler towards apex; legs reddish-testaceous. L. 2-3 mm.

Male with the tibiæ curved, the anterior ones being much more strongly curved and finely denticulate on their inner side before their extremity which is furnished with a distinct tooth.

In hot-beds, vegetable refuse, moss, &c.; often by sweeping; generally distributed and common throughout England, but apparently becoming scarcer towards the north; Scotland, local, Forth district; Ireland, near Dublin, &c.

L. angulatus, Humm. (*angusticollis*, Thoms. et Britt. auct., nec Humm.; *undulatus*, Mots.). Ferruginous brown, rather shining, considerably smaller than the preceding species, which in some points it resembles; head and thorax rugosely punctured, the former with a distinct longitudinal furrow, the latter very narrow, longer than broad, with the margins irregular and the anterior angles lobed; elytra oval, convex, with very strongly punctured striæ and rows of short, fine, erect setæ; legs ferruginous. L. 2 mm.

Male with the anterior tibiæ slightly curved.

In moss, flood and vegetable refuse, &c.; often by beating dead hedges and by sweeping; local; London district, common and generally distributed; Darenth Wood, Chatham, Esher, Caterham, Croydon, Mickleham, Woking, Sheerness, &c.; Eastbourne; Hastings; Midland district, rare, Repton and one or two other localities; not found further north or in Scotland; Ireland, near Belfast. This species appears to be distributed throughout Europe and the Caucasus region, and to be the commonest species in Germany, Austria, and Hungary.

(***L. angusticollis***, Humm., nec Thoms. This species is at once distinguished from the preceding by the absence of the rows of short erect setæ on the elytra; it appears to be intermediate between *L. lardarius* and *L. angulatus*; it is smaller than the first, and has the elytra obtusely rounded at apex, and besides is of a darker colour; besides the absence of the elytral setæ, it may be distinguished from the latter by its more robust form, and by having the thorax shorter, more even, and more visibly narrowed behind. L. 2 mm.

I know of no British specimen of this insect, and it cannot, I think,

be regarded as indigenous; the confusion between this and the preceding species is by no means confined to British authors and collectors. M. Belon (l. c., p. 120) mentions that *L. angulatus* "est ordinairement envoyée sous le nom d'*angusticollis*, et est ainsi étiquetée dans la plupart des collections.")

CONINOMUS, Thomson.

The species belonging to this genus are smaller and narrower insects than those contained in the preceding genus, from which they are further distinguished by the more abrupt club of antennæ and larger temples, and by having the thorax strongly incised at the sides behind middle; from the following genera they are separated by the raised keels on the thorax; there are three British species, of which one is probably nothing more than a variety.

- | | |
|---|------------------------------|
| I. Club of antennæ very abrupt, 3-jointed; elytra tuberculate towards apex | C. NODIFER, <i>Westw.</i> |
| II. Club of antennæ very abrupt, 2-jointed; elytra with the alternate interstices more or less raised, but not tuberculate. | |
| i. Anterior coxæ separate; alternate interstices of elytra only slightly raised in ridges | C. CONSTRICTUS, <i>Humm.</i> |
| ii. Anterior coxæ contiguous; alternate interstices of elytra plainly raised in ridges | C. CABINATUS, <i>Gyll.</i> |

C. nodifer, *Westw.* Somewhat elongate, black or pitchy-brown, occasionally ferruginous, a little shining, not pubescent; head nearly as broad as thorax; antennæ ferruginous with 3-jointed club; thorax longer than broad together with head rugosely sculptured, with dorsal keels well marked, anterior angles rounded, sides strongly incised behind middle; elytra elongate oval, strongly impressed before and at middle, with somewhat obsoletely punctured striæ, alternate interstices raised in keels, with the third from suture raised in a strong tubercle behind middle, and the fifth raised at apex; legs lighter or darker ferruginous, tarsi lighter. L. 2 mm.

Male with the posterior tibiæ dilated and deeply emarginate on their inside border towards extremity.

In vegetable refuse, moss, woodstacks, faggots, &c.; common and generally distributed throughout England; Scotland, Tweed, Forth, and Solway districts; Ireland, near Waterford: this species used to be considered rare, but has gradually become more and more common of late years; in some localities it swarms; it appears to be cosmopolitan, and to be identical with *L. antipodum* described by White from New Zealand in 1846 (*Voy. Ereb. Terr.*, p. 18).

C. constrictus, *Humm.* Somewhat elongate, slightly convex, glabrous, shining, of a clear testaceous brown colour; head oblong, narrower than thorax, rugosely punctured; antennæ testaceous, rather slender, with 2-jointed club; thorax about as long as broad, rugosely punctured, anterior angles rounded, deeply incised behind

middle, dorsal keels not strong; elytra elongate oval with deeply punctured striæ, alternate interstices feebly raised, hardly costiform; anterior coxæ separated by the prosternal process; legs testaceous. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Male with the anterior tibiæ slightly curved.

Under bark, &c.; a doubtful species; Mr. Rye has a single specimen without locality, and I have a record from Burton; Mr. Blatch records it from Knowle near Birmingham (on a damp wall), and Wicken Fen (sedge refuse); the next species, however, varies very considerably, and in all probability the two species are synonymous.

C. carinatus, Gyll. This species is very closely allied to the preceding and, allowing for the variation of the species generally, it can only be regarded as distinct on the ground of the anterior coxæ being contiguous, the prosternal process being reduced to a very fine keel; it differs also in having the thoracic keels less marked, and the intervals of the elytra more strongly raised; the general form is a little narrower, and the colour as a rule is darker; several of these points, however, are very variable, and it would almost appear to be best with Reitter and others to consider this species a variety of *C. constrictus*. In the catalogue of Heyden, Reitter, and Weise it is not even regarded as a variety. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Under bark, in moss, dead leaves, &c.; rare; Shirley, Esher, Caterham, Mickleham, Sydenham; Tilgate Forest; Birdbrook; Wicken Fen; Littleington, Cambridge; Glauvilles Wootton; Spridlington near Lincoln (taken on the outer walls of a newly erected house by Mr. Wollaston).

ENICMUS, Thoms.

This genus contains at present six British species; *E. consimilis*, however, cannot be retained; they differ from those belonging to the preceding genera by having no raised ridges on thorax, and from *Cartodere* by their shorter head and less elongate and more convex form.

- | | |
|--|-------------------------------------|
| I. Prosternum not raised in a keel between the anterior coxæ; elytra glabrous, rather short oval, with somewhat strong punctured striæ (s.g. <i>Conithassa</i> , Thoms.) | E. MINUTUS , L. |
| II. Prosternum raised in a keel between the anterior coxæ. (<i>Enicmus</i> , i. sp.) | |
| i. Antennæ slender with the club not very abrupt, reaching beyond middle of thorax. | |
| 1. Thorax as a rule square or very nearly as long as broad, never cordiform; colour reddish-testaceous; punctured striæ of elytra rather strong | E. TRANSVERSUS , Ol. |
| 2. Thorax as a rule more or less strongly transverse;* punctured striæ of elytra fine. | |
| A. Upper surface black; thorax with sides very slightly contracted behind | E. RUGOSUS , <i>Herbst</i> . |

* There is an extreme variety of *E. rugosus* which has the thorax subquadrate; this may, however, be separated by the fine sculpture of the elytra.

- B. Upper surface ferruginous or reddish-testaceous; thorax with sides strongly contracted behind E. TESTACEUS, *Steph.*
- ii. Antennæ short with the club very abrupt, hardly reaching the middle of thorax; upper surface dull black, somewhat elongate; elytra with fine punctured striæ E. BREVICORNIS, *Mannh.*
(*carbonarius*, *Mannh.*)

E. minutus, L. An extremely variable species, somewhat convex, smooth, dull, black or pitch-brown; head narrower than eyes, rugosely and coarsely punctured, with a more or less distinct longitudinal furrow; antennæ rather slender, with somewhat gradual club, ferruginous; thorax very variable both as to size and shape, anterior angles more or less dilated, sides slightly crenulate, subparallel or slightly sinuate, rugosely punctured, with one or two longitudinal furrows on disc and a transverse impression at base; elytra oval, rather produced at shoulders, with margins raised, punctured striæ rather strong; legs ferruginous. L. $1\frac{1}{4}$ – $2\frac{1}{4}$ mm.

In haystack and other refuse, moss, dung-heaps, woodstacks, &c.; common and generally distributed throughout the kingdom.

This species is so extremely variable that it is perpetually giving rise to confusion; the following special varieties may be mentioned:—

- Var. a.* Entirely of a ferrugino-testaceous colour; this is often probably the result of immaturity.
- Var. b.* Sides of thorax subparallel, anterior angles not advanced in a lobe; thorax subquadrate.
- Var. c.* Thorax subcordiform, about as broad as long or slightly oblong. (*L. assimilis*, *Mannh.*)
- Var. d.* Thorax rather strongly transverse, with the anterior angles scarcely produced. (*L. anthracinus*, *Mannh.*)

This is not an uncommon variety, and is larger than the type, and usually of a deeper black colour.

Var. e. Size very small. (*Permidius minutissimus*, *Mots.*)

I have seen one or two specimens of this variety from the London district; no two insects belonging to the same genus could well look less alike than this and the preceding variety.

(*E. consimilis*, *Mannh.* (*Conithassa consimilis*, *Thoms.*)). This species is allied to *E. minutus*, but the anterior angles are never advanced in lobes or dilated, and the thorax has only one furrow, and this almost obsolete, on disc; the elytra are narrower, not very strongly striated and punctured, and the interstices are rather broad, smooth and flat, and never raised. L. 2 mm.

Introduced as British by Mr. Crotch on the authority of two specimens in the Rev. A. Matthews' collection taken, I believe, in Sherwood Forest; Mr. Matthews has kindly given me one of these, and it is certainly nothing more than *E. brevicornis* (*carbonarius*) with the thorax a little less contracted behind than in the ordinary form of that species; the species, therefore, must, for the present, at all events, be erased from our lists.)

E. transversus, Ol. Ferruginous or brownish-testaceous, with the head sometimes darker, rather elongate, glabrous, somewhat shining; head rugosely punctured with distinct longitudinal furrow, eyes prominent; antennæ testaceous, moderate; thorax rather depressed, subquadrate, or slightly transverse, narrower than elytra, with the anterior angles rounded and not dilated in lobes, rugosely punctured, with a more or less distinct longitudinal dorsal furrow, which is sometimes divided into two, and a rather strong transverse impression before base; elytra with rather strongly punctured striæ, interstices smooth and even; legs testaceous. L. $1\frac{3}{4}$ –2 mm.

Male with the anterior tibiæ curved.

In moss, haystack refuse, dung-heaps, &c.; common and generally distributed throughout the kingdom.

E. rugosus, Herbst. Comparatively short and broad, slightly convex, glabrous, dull black, elytra a little more shining than the front parts; head broader than long, narrowed in front, rugosely punctured; eyes very large and prominent; antennæ and mouth parts reddish-testaceous, the former not stout; thorax evidently transverse, rugosely punctured, with sides rounded in front and slightly contracted behind, finely channelled on centre of disc, and with a transverse impression behind; elytra obsolete striated and punctured, appearing almost smooth except under a high power; interstices broad and even; legs ferruginous. L. $1\frac{1}{3}$ – $1\frac{2}{5}$ mm.

In rotten wood, fungi, &c.; very rare; Loughton, Essex; Sherwood, in rotten wood and frass shaken from old bark (where it has been taken by the Rev. A. Matthews and myself in company with *Euplecti*, *Trichopterygidæ*, &c.); Salford Priors (fungus on ash, Blatch); Cannock Chase (fungus on oak, Blatch); Aviemore, Dee district, Scotland, in fungus on alder (Sharp).

The name of this species is very misleading, as it is about the smoothest species of the genus.

E. testaceus, Steph. (*cordaticollis*, Aubé). Of a reddish or brownish-testaceous colour, rather broad and convex, glabrous and somewhat dull; head broader than long, narrowed in front, coarsely and rugosely punctured, with an obsolete central channel; antennæ testaceous, slender, with gradual club, eyes very large and prominent; thorax very transverse, cordiform, with sides strongly rounded in front and narrowed behind, anterior angles produced but very broad and blunt, upper surface rugosely and coarsely punctured, with a more or less distinct central impression on disc and a transverse impression at base; elytra rather broad oval, with margins somewhat explanate, punctured striæ distinct but not strong at base, obsolete towards apex; legs testaceous. L. $1\frac{1}{2}$ –2 mm.

In powdery fungus on decaying beech, birch, fir, and hornbeam; as a rule rare, but occasionally locally plentiful; Esher, Darenth, The Holt, Farnham (Power); Esher, Peckham, and Ashtead (Champion); Chatham (Walker); Forest Hill; Cobham

Park ; Nunhead ; Dulwich, very common in powdery fungus on birch (T. Wood) ; Stretford (on the wing, Reston) ; Sherwood Forest (Blatch).

E. brevicornis, Mannh. (*carbonarius*, Mannh.). Elongate, sub-depressed, dull black, glabrous ; head and thorax rugosely punctured, the former with an obsolete central channel or fovea, the latter with the usual central and basal impressions, sides rounded in front and more or less strongly contracted behind, anterior angles rounded and not marked ; antennæ very short with abrupt even club of which the second joint is transverse, ferruginous-red ; elytra rather long and narrow, with two oblique impressions before base, striæ fine and finely punctured, interstices flat, broad, and even, dull, alutaceous ; legs ferruginous. L. $1\frac{1}{2}$ -2 mm.

Under bark ; rare ; New Forest, first taken by Charles Turner, and subsequently by other collectors ; Mr. Blatch has also taken it on Cannock Chase under birch bark.

The short antennæ and dull-black elongate elytra with their oblique impressions and fine punctuation will at once distinguish this species ; *E. rugosus* is of the same colour, and is found under much the same conditions, but it has longer antennæ, and its elytra are less elongate, and more convex, with more obsolete punctuation and without oblique impressions.

CARTODERE, Thoms.

This genus contains four British species ; they are minute insects with elongate head and thorax, and long parallel or subparallel elytra which are more or less strongly sculptured ; the antennæ are inserted at some distance from the eyes, which are small ; one of our species is exceedingly abundant, but two are very rare, and perhaps are importations.

- I. Anterior half of thorax without central fovea ; club of antennæ 3-jointed.
 - i. Head and thorax red, elytra black or brownish-black ; upper surface sometimes unicolorous ; elytra with seven or eight rows of punctures on each **C. RUFICOLLIS**, Marsh.
 - ii. Colour, as a rule, uniform, testaceous or ferruginous, very rarely coloured like *C. ruficollis* ; elytra with only six rows of very strong punctures on each **C. ELONGATA**, Curt.
 - iii. Colour uniform testaceous ; form very narrow ; elytra with seven or eight rows of punctures on each **C. FILIFORMIS**, Gyll.
- II. Thorax with a broad round fovea on its anterior half ; club of antennæ 2-jointed **C. FILUM**, Aubé.

C. ruficollis, Marsh. (*collaris*, Mannh. ; *nanula*, Mannh.). Elongate, slightly convex, glabrous, head and thorax red, elytra black or brownish, upper surface sometimes unicolorous reddish ; head longer than broad with obsolete rugose punctuation, eyes small ; antennæ rather long and slender, testaceous ; thorax oblong, widest in front, narrowed behind,

strongly incised behind middle, with a transverse basal impression, rugosely but finely sculptured; elytra suboval, elongate, with seven or eight strong punctured striæ, the punctures being somewhat irregular and the interstices crenulate; legs testaceous. L. 1 mm.

In haystack and other refuse, fungi, &c.; common and often occurring in profusion in the Midland and Southern districts; also recorded from Scarborough and Manchester, but from no locality further north in England, nor from Scotland. Ireland, near Belfast.

The ferruginous-red variety of this insect with brownish edge to the elytra is the *L. exilis* of Mannerheim.

C. elongata, Curt. Ferruginous or testaceous with the elytra rarely darker; easily distinguished from the preceding species by the more distinct rugose sculpture of the head and thorax, and the more depressed and parallel-sided elytra, each of which is furnished with six rows of very strong punctures, which leave hardly any visible interstices; legs testaceous; the form of the thorax is variable, sometimes being more sometimes less cordiform and narrowed before base, sometimes plainly and sometimes scarcely visibly bordered; it differs also considerably in length. L. $1\frac{1}{3}$ – $1\frac{3}{5}$ mm.

In vegetable refuse, fungi, manure-heaps, &c.; not common; Ashted, Mickleham, Horsell, Shirley, Darent Wood, Greenwich, Gravesend, Bearstead, Bishops Wood; The Holt, Farnham; Dulwich (under faggot bark); Birdbrook, Essex; Hastings; New Forest; Glanvilles Wootton; Bewdley; Knowle; Sherwood Forest; not recorded from the northern counties of England, or from Scotland or Ireland.

C. filiformis, Gyll. Elongate, linear, depressed, glabrous, entirely testaceous; head rather long, trapezoidal, coarsely and rugosely sculptured; eyes small; antennæ testaceous with rather gradual 3-jointed club; thorax transverse or about as long as broad, subcordiform, with broad lateral margin, more or less rugosely punctured, without fovea on anterior half, base with a rather strong transverse impression; elytra long, about as broad as thorax, parallel-sided, with seven or eight rather strong punctured striæ on each; the punctures, however, are much less strong than in the preceding species; legs testaceous. L. $1\frac{1}{5}$ mm.

In fungi, &c.; very rare; Exeter; the first specimens found in England are recorded in Parfitt's Devonshire Catalogue as "bred in a fungus shut up in a box in Coaver garden, Jan. 20, 1856." Scotland, very rare, Clyde district; this is the *L. elongatus* of Murray's Catalogue which was found by Mr. M. Young "devouring an old Greek author" in Paisley.

C. filum, Aubé. At first sight this species almost exactly resembles the preceding, but it is at once distinguished by the round fovea on the anterior half of the thorax and the more slender antennæ which have the club 2-jointed and not 3-jointed as in *C. filiformis*; it is also a little larger on the average than this species, and has the thorax more strongly narrowed behind and the anterior angles a little more dilated. L. $1\frac{1}{3}$ mm.

Very rare ; it appears to be chiefly confined to herbaria, although it occasionally occurs in fungi in other countries. Burton-on-Trent (Mr. Mason's herbarium, in some small numbers); Scotland, Edinburgh (found by Professor McNab in the herbarium of the Royal Botanic Gardens).

CORTICARINA.

The members of this tribe are distinguished from the Lathridiina by having the anterior coxæ contiguous and not more or less separated by the prolongation of the prosternum ; the thorax is, as a rule, finely crenulate or denticulate at the sides, and the upper surface is almost always pubescent ; the tribe contains several genera, of which the most curious and distinct is *Dasycerus* (which is by some authors now excluded from the family) ; this genus may at once be known by its very long capillary and verticillate-pilose antennæ, and strongly angular thorax ; no species of this genus has yet been found in Britain, but it is quite possible that *D. sulcatus*, like *Langelandia*, may yet be found in some of the southern counties of England. Two British genera are included in the tribe, of which one, *Melanophthalma*, has only comparatively recently been considered as distinct, and it has lately been further subdivided by Herr Reitter ; the species may be known as a rule by the distinct fovea at the base of the thorax ; some of them are extremely variable, like the species of *Lathridius*, and in consequence great confusion has arisen, as may be seen by glancing over a synonymous list of the genera, some species having six, eight, or even ten synonyms or named varieties assigned to them ; the members of the tribe are, as a rule, found in moss, vegetable refuse, &c.

- I. Thorax with sides more or less strongly crenulate, with a small round fovea before base ; abdomen with five segments visible in female, six in male ; form oblong, more or less elongate **CORTICARIA, Marsh.**
- II. Thorax with sides scarcely, if at all, crenulate, with a large transverse impression or fovea at base ; abdomen with six segments visible in both sexes ; form short, more or less ovate **MELANOPHTHALMA, Mots.**

The genus *Corticaria*, in its widest sense, comprises about two hundred and fifty species, but many of these must probably be united with others ; they are chiefly found in Europe, Northern and Central Asia, and North America, but species occur in Brazil, Ceylon, India, South Africa, Australia, New Zealand, &c., and the genus is probably distributed over the greater part of the world.

CORTICARIA, Marsham.

Besides the differences above mentioned, this genus differs from *Melanophthalma* in having the metasternum longitudinally impressed, and the club of its 11-jointed antennæ more abrupt ; the abdomen has

five segments visible in the female, and in the male there is a small additional sixth segment, visible beneath; the form is oblong, sometimes cylindrical, sometimes elongate and depressed; the thorax is always more or less distinctly crenulate at the sides; there are thirty-three European species, of which eight are at present recognized as British; in all probability, however, we possess two or three more in collections, but the question is not yet settled, owing to the great variation of some species in colour, and also in structure and sculpture.

- I. Elytra without regular rows of punctures or marked interstices; abdomen with the fifth ventral segment deeply foveate in both sexes.
- i. Thorax at its greatest breadth distinctly narrower than elytra; all the joints of the club of the antennæ evidently longer than broad; size larger C. PUBESCENS, *Gyll.*
 - ii. Thorax at its greatest breadth as broad or nearly as broad as elytra; first two joints of the club of the antennæ about as long as broad C. CRENULATA, *Gyll.*
- II. Elytra with regular rows of punctures, and more or less distinctly marked interstices; abdomen with the fifth ventral segment not or not deeply foveate.
- i. Elytra with rather long and upright pubescence, disposed in even rows, and plainly longer on the alternate interstices; elytra elongate-oval C. FULVA, *Com.*
 - ii. Elytra with fine even recumbent pubescence with rows of short hairs sometimes intermingled, which, however, are never longer on the alternate interstices.
 1. Form elongate, cylindrical, or parallel-sided, elytra as broad as thorax.
 - A. Upper surface convex; eyes very prominent; elytra with rows of coarse punctures C. UMBILICATA, *Beck* (*cylindrica*, *Mannh.*).
 - B. Upper surface depressed; eyes not strongly prominent; elytra with rows of fine punctures C. ELONGATA, *Gyll.*
 2. Elytra depressed and parallel-sided much broader than thorax, which is cordiform; punctures of interstices of elytra as large as those of striæ C. OBSCURA, *Bris.*
 3. Elytra convex, oblong-oval; thorax more or less cordiform.
 - A. Elytra with punctured striæ continued to apex.
 - a. Elytra with rather broad smooth interstices furnished with distinct series of minute punctures; size larger C. DENTICULATA, *Gyll.*
 - b. Elytra with rather narrow interstices which are somewhat wrinkled, and are furnished with indistinct rows of smaller punctures; size smaller C. SERRATA, *Payk.*
 - B. Elytra with punctured striæ evanescent behind middle C. FENESTRALIS, *L.*

C. pubescens, *Gyll.* (*punctulata*, *Marsh.*). The largest of the British species; colour very variable, head and thorax usually fusco-ferruginous, elytra pitchy with shoulders more or less broadly paler

pubescence pale, distinct; sometimes the whole upper surface is pitchy or testaceous; head and thorax rather strongly and diffusely punctured, interspaces alutaceous; antennæ testaceous, club with joints elongate; thorax rather short, subcordiform, sometimes appearing almost orbicular, with sides strongly crenulated; elytra always wider than thorax, ample, with closely packed irregular rows of punctures and no marked interstices; legs testaceous or reddish testaceous. L. $2\frac{1}{2}$ -3 mm.

Male with the first joint of the anterior tarsi dilated, oblong, provided on each side with long and fine setose hairs.

In haystack and flood refuse, decaying sea-weed, moss, &c.; not uncommon and generally distributed throughout England; Scotland, Forth district, common amongst hay and straw, and probably widely spread in other localities; Ireland, Waterford and Dublin, and probably common.

C. crenulata, Gyll. Nigro-piceous, or brownish-testaceous, with the shoulders more or less broadly lighter in the darker specimens; pubescence yellowish; in sculpture this species much resembles the preceding, but is very easily distinguished by its more orbicular thorax and by having the elytra and thorax of about equal or nearly equal breadth, so that the general form is more parallel, and also by the shape of the club of the antennæ, which has the first two joints about as long as broad; it is also a smaller species. L. $2-2\frac{1}{4}$ mm.

Male with the femora thickened, the anterior and intermediate tibiæ somewhat produced internally towards apex, and externally obliquely truncate, and the first joint of the anterior tarsi dilated.

In decaying sea-weed, haystack refuse, moss, &c.; generally distributed throughout England, but commoner on the coast than inland, and rarer further north; Scotland, local, maritime, Tweed, Forth, and Dee districts; its distribution is probably the same in Ireland.

C. denticulata, Gyll. In colour, size, and form, this species almost exactly resembles the preceding; the thorax, however, is rather more narrowed behind, and the crenulations at the sides are less distinct; the elytra have the shoulders more gently rounded and the apex more obtusely rounded; the abdomen has the fifth ventral segment not deeply foveate; the chief distinguishing character, however, lies in the sculpture of the elytra, which are furnished with regular deeply punctured striæ, divided by narrow but distinct interstices, some of which are feebly carinate towards base; they are also furnished with distinct rows of minute punctures; the male differences are much the same as in *C. crenulata*, except that the anterior and intermediate tibiæ are more angularly produced internally. L. $2-2\frac{1}{4}$ mm.

In decaying sea-weed, moss, vegetable refuse, &c.; local; London district, common; Deal; Hastings; Horning Fen; Cambridge; Wicken Fen; Dorchester; Birmingham district; Repton; Sherwood; Liverpool; Manchester; Northumberland and Durham district; Scotland, scarce, Solway, Tweed, and Forth districts.

C. serrata, Payk. (*laticollis*, Mannh.). Smaller than any of the

preceding species, colour variable, usually fusco-ferruginous, upper surface clothed with fine greyish pubescence; head not much narrower than thorax, eyes large and prominent; antennæ rather short, testaceous, with the first two joints of the club scarcely longer than broad; thorax a little broader than long, with the sides rounded and more strongly and acutely denticulate than in the allied species, narrowed towards base, posterior angles with a strong crenulation; elytra oblong-ovate, only a little broader than thorax at the broadest part, with regular rows of punctures, and moderately distinct interstices which are not carinate, and are somewhat wrinkled, and furnished with rows of smaller punctures; abdomen with fifth ventral segment not deeply foveate; legs rufo-testaceous. L. $1\frac{1}{2}$ mm.

Male with the anterior tibiæ very slightly sinuate internally towards apex, and the first joint of the anterior tarsi a little dilated.

In haystack and other refuse, under bark, &c.; also in ants' nests; not common; Chatham, Esher, Forest Hill, Peckham, Cowley; Weybridge (in nest of *Formica rufa*); Horsell (in nest of *F. fuliginosa*); Loughton; Hainault Forest; Horning Fen; Cambridge; Repton; Northumberland district; Scotland, rare, Solway and Tay districts.

The small size, and transverse thorax which has the sides strongly crenulated, together with the sculpture of the elytra, will separate this species from all its allies; it most closely, perhaps, resembles *C. crenulata*, but that species has the thorax longer and more regularly rounded, longer antennæ, less regularly punctured elytra, and the femora of the male incrassate.

C. umbilicata, Beck (*cylindrica*, Mannh.; *borealis*, Woll.). Ferruginous or ferrugino-testaceous, clothed with rather short and distinct pubescence; head large, eyes large and very prominent; thorax suborbicular, about as broad as elytra, with sides evidently crenulate; elytra long, parallel and cylindrical, with regular and distinct punctured striæ, interstices almost impunctate; the suture and sides of the elytra are sometimes more or less infusate. L. $1\frac{3}{4}$ –2 mm.

In moss, &c.; occasionally by sweeping; very local, and as a rule scarce; Strood, Kent, taken in abundance by Mr. Champion and Mr. Walker; Wimbledon; Shooter's Hill; Chattenden Roughs; New Forest; Northumberland and Durham district, not rare, sea-banks; Scotland, very rare, Aberdeen (Professor Traill).

C. fulva, Com. (*hirtella*, Thoms.; *flavescens*, Thoms.). Rather elongate, about as large as *C. crenulata*, but rather narrower than that species, with the thorax cordiform, and the elytra with the shoulders more gently rounded and the apex less acuminate; colour entirely testaceous, excepting the eyes, which are black; these latter are less prominent than in most of the other species; the elytra are elongate-ovate, evidently broader than the thorax, with the sculpture consisting of rows of large and shallow punctures, which are rather confused and

somewhat rugose; in the male the anterior tibiæ appear to be gently bisinuate within and truncate externally at apex. L. $1\frac{3}{4}$ –2 mm.

In vegetable refuse, &c.; local, but probably more generally distributed than is at present known; London district; Cowley (in cow-house); Kent; South Coast; Liverpool; Manchester; Northumberland and Durham district.

I have given the description of this insect, but there is considerable doubt and difficulty regarding the species and its allies, and it is probable that we have two or three at least of the European species standing under the name of *C. fulva* in our collections. Continental specimens of *C. fulva*, which have been kindly sent me by M. Brisout, have the thorax distinctly more transverse and less narrowed behind than is the case with many of our English specimens; I have specimens from Dr. Power that agree with these, but a series in Dr. Sharp's collection standing doubtfully under *C. fulva* have the thorax about as long as broad and more narrowed behind; in this respect they agree with *C. impressa*, but the sculpture of the elytra is that of *C. fulva*, to the description of which species they answer better than the continental specimens before alluded to.

I have before me two specimens from Mr. Matthews' collection which have been returned to me by M. Brisout as new species near *linearis*; one of these appears to be distinct, but is broken and rather discoloured, and the other appears to me only a small and rather abnormal variety of *C. fulva*; the thorax of many species of the Lathridiidæ is very variable, and any person who felt so inclined might easily describe five or six new species on this and other differences out of any large series of *Corticaria*.

C. obscura, Bris. (*depressa*, Thoms.). "This species is allied to *C. serrata*, but differs in being rather larger, of flatter and less oval build, larger antennal club, laterally less rounded thorax (of which the denticulations are finer behind, and the punctuation is not quite so close), and less evidently pubescent but more finely punctured elytra,—the interstitial rows and the striæ themselves being equally delicate, and so close that the surface seems to be very delicately transversely sub-strigose" (Rye, Ent. Mo. Mag. vii. 274); the elytra, moreover, appear to be rather depressed and parallel-sided; the colour is usually pitchy-black, but appears to be variable. L. $1\frac{1}{2}$ –2 mm.

Under dry bark; Richmond Park (Rye and Champion); Esher (Power).

There is some doubt regarding this species, which Dr. Sharp omits from his last catalogue.

C. elongata, Humm. Sublinear, depressed, testaceous, clothed with thick pale pubescence, which is rather longer and arranged in rows on the elytra; head much narrower than thorax, forehead rather convex; eyes black, prominent; thorax evidently transverse, about as broad as

elytra, with sides very slightly narrowed behind; elytra parallel-sided, with apex rounded, with distinct punctured striæ, each interstice furnished with a row of small hairs, and a series of minute punctures; in some specimens the disc of the thorax has an impression on each side; in the male the anterior and middle tibiæ are slightly bent inward at apex. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

In haystack refuse, moss, &c.; often by sweeping; generally distributed and common throughout the greater part of England; Scotland, not common, Forth and Solway districts; Ireland, near Belfast and Waterford, and probably common.

C. fenestralis, L. (*rufula*, Zett.; *Lathridius ferrugineus*, Marsh.). Oblong, rather depressed, shining, with very short pubescence, of a dark chestnut-brown colour with the head black; thorax transverse, obtusely quadrangular, only a little narrower than elytra, finely punctured, with the sides only slightly narrowed towards base and obsoletely crenulate; elytra rather broader behind than in front, with fine punctured striæ and very minute rows of punctures on interstices; legs ferruginous; male characters as in the preceding. L. $1\frac{3}{4}$ mm.

In vegetable refuse, moss, &c.; occasionally by sweeping; not common, and scarce where it occurs, often being found singly; Chatham, Sevenoaks, Darenth Wood, Weybridge, Ashted, Horsell, Shirley, Croydon, Caterham, Esher, Crystal Palace (in corridors); Soham and Wicken Fen, Cambridge; Glanvilles Wootton; Manchester district; Scotland, rare, Solway and Dee districts; Ireland, near Dublin.

The rather broad form (which is something like that of *M. gibbosa*), chestnut-brown colour, delicate sculpture, and rather shining appearance will serve to distinguish this very distinct species from its allies. Other species besides those above described have been on different occasions erroneously introduced as British, and have afterwards been dropped; considerable confusion has also been caused by the descriptions of certain species described in Stephens' Illustrations not answering to the insects standing under the name in his collection; the species, as observed above, are so variable in different characters that it would require a very careful examination of all the series in our collections, and a close comparison with the continental types before the question of the British species could be considered as settled; it is probable that we possess *C. linearis*, and perhaps Dr. Sharp's series standing under *fulva* should be referred to *C. longicollis* (a species that he inserts with a ? in his last catalogue), as except for their size, which should be rather smaller, they agree very well with the description of that species; they were mostly taken by Mr. Shepherd from an old carpet in his house in Fleet Street, and may perhaps be an importation; three or four specimens were found in old wood in Newcastle Street, and one came from Mr. Crotch without locality.

MELANOPHTHALMA, Motschulsky.

This genus has been further subdivided into two sub-genera as below

given; it contains about ten European species, two or three of which are extremely variable; four British species have hitherto been recognized, but I have lately found a fifth in Dr. Sharp's collection; the club of the antennæ is less abrupt than in *Corticaria*, and the metasternum is not, or scarcely, impressed longitudinally; the form, too, is shorter and more oval.

- I. Thorax much narrower than elytra, with sides feebly rounded, and the posterior angles not produced in a tooth. (Sub-gen. *Melanophthalma*, i. sp.)
 - i. Size smaller; thorax narrow, almost as long as broad; elytra short oval, with sculpture well marked towards base M. GIBBOSA, *Herbst.*
 - ii. Size larger; thorax always broader than long; elytra oblong-oval, with sculpture shallow, and not marked M. TRANSVERSALIS, v. WOLLASTONI, *Wat.*
- II. Thorax not much narrower than elytra, with sides rather strongly rounded, and the posterior angles produced in the form of a small tooth. (Sub-gen. *Corticarina*, Reitter.) *
 - i. Thorax not much broader than long; sculpture of elytra strong; alternate interstices of elytra raised, especially near suture M. SIMILATA, *Gyll.*
 - ii. Thorax strongly transverse; sculpture of elytra much finer; alternate interstices of elytra not, or scarcely, raised.
 - 1. Colour dark, fuscous; elytra evidently broader in middle than thorax; size larger M. FUSCULA, *Mannh.*
 - 2. Colour more or less reddish or ferruginous; elytra at broadest not much wider than thorax; size smaller M. FULVIFRS, *Com.* (*curta*, Woll.)

M. gibbosa, *Herbst.* (*impressa*, *Marsh.*). Fuscous, slightly shining, clothed with rather thick pale pubescence, antennæ and legs testaceous, club of former fuscous; head nearly as broad as thorax, with eyes very prominent; thorax narrow in proportion to elytra, about as long as broad, broadest a little before middle, with sides gradually contracted behind, distinctly punctured, with a curved fovea behind extending almost to the lateral margins; elytra rather short oval, with the humeral angles well marked, with evident rows of punctured striæ, and the interstices furnished with series of very fine punctures, and slightly rugose transversely. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

Male with the anterior tibiæ sinuate and furnished on the inside with a small tooth a little before apex; anterior tarsi with the first joint dilated, and the trochanters produced in a tooth.

In moss, haystack refuse, &c.; common and generally distributed throughout the kingdom.

* Some authors prefer to assign the name *Corticarina* to the whole genus, and to drop Motschulsky's name on the ground that his genus included several species of *Corticaria* proper, and is ill-defined.

M. transversalis, v. Wollastoni, Wat. *M. transversalis* differs from the preceding in being larger, with the thorax a little broader, and less closely punctured, and with the fovea behind usually divided into two; the punctured striæ of the elytra are also finer, and the interstices broader and less raised; it is a very variable insect, no less than seven named varieties being mentioned in the European catalogue: the variety which we possess appears only to differ from the type in being rather larger and darker. L. $1\frac{1}{2}$ –2 mm.

In haystack refuse, moss, &c., and in and among rushes on sand-hills near the sea; very local; Mablethorpe, Lincolnshire, in which place it was first taken by Mr. Wollaston, and again found by myself in abundance in August, 1881; Sheerness, Darenth Wood; Chatham; Southend; Kingsgate; Weymouth; Devonshire.

M. fuscula, Humm. (*Corticarina fuscula*, Reitter). Very like *M. gibbosa*, but at once distinguished by the shape of the thorax, which is broad and not much narrower than the elytra, and has the sides strongly rounded, and the posterior angles armed with a minute tooth, and so more prominent; the colour is fuscous as in *M. gibbosa*, but is somewhat variable; the thorax is strongly transverse, finely punctured, and marked at base with a transverse fovea; the elytra are not very strongly sculptured, and the interstices are narrow, and not, or scarcely, raised. L. $1\frac{2}{5}$ mm.

In moss, vegetable refuse, &c.; not so abundant as *M. gibbosa*, but common and generally distributed throughout the kingdom.

M. similata, Gyll. Very like the preceding, but easily distinguished by the shape of the thorax, which is nearly as long as broad, and usually has three foveæ at base, of which the lateral ones are more or less obsolete; the sculpture of the elytra is much stronger, and the alternate interstices are raised and somewhat carinate, especially near suture; the colour of the type form is more or less ferruginous, but the insect varies both in this point and in size. L. $1\frac{1}{2}$ – $1\frac{3}{4}$ mm.

Apparently very rare; in Dr. Sharp's collection there is a specimen of the type form without locality, and another of the larger dark variety from Braemar; there is also a specimen in Dr. Power's collection from Shirley, which appears to belong to this species, but has not the characters so well marked as in Dr. Sharp's specimens.

M. fulvipes, Com. (*fuscipennis*, Mots.; *curta*, Woll.). Entirely ferruginous-red or reddish-brown, sometimes reddish-testaceous, with the elytra darker, antennæ and legs testaceous, club of former as a rule not, or only slightly, darker; thorax transverse, with a more or less obsolete fovea at base; elytra not much wider than thorax, short oval or oval; size smaller than in the preceding species. L. 1 – $1\frac{1}{4}$ mm.

In decaying sea-weed, at roots of grass, &c., in sandy places on the coast; local, but common where it occurs; Rainham, Sheerness, Chatham, Whitstable, Southend; Margate, Kingsgate, and Kent coast generally; Hastings, Brighton, Weymouth,

Isle of Wight, &c ; it does not, however, occur further north than the London district, as far as is at present known.

Our British form is the *v. meridionalis*, Reitter; we do not appear to possess the type form, which is pitch-black, and on an average larger.

CUCUJIDÆ.

As in the case of the Colydiidæ, so also in the case of this family, we only possess a few fragmentary genera containing altogether some sixteen or seventeen species, and several of these are cosmopolitan insects which have been introduced by commerce; we need not, therefore, discuss their classification; in the Munich catalogue thirty-eight genera and about two hundred species are enumerated, but these have since been considerably increased; by Duval and other authors the Monotomidæ are included under this family, but their 3-jointed tarsi seem to place them in closer proximity with the Lathridiidæ.

The following are some of the chief characters of the family:—
 Antennæ inserted at the margin of the front, 11-jointed, sometimes long and slender, sometimes with the apical joints forming an indistinct club; anterior coxal cavities open behind in the Cucujina and Hyliotina, closed in the Silvanina, Hypocoprina, and Psammœchina; anterior coxæ small; tarsi 5-jointed in both sexes, or with the posterior tarsi occasionally 4-jointed in the males.

The species live mostly under bark, but some are found in grain, rice, sugar, &c., and thus have been distributed by commerce.

This family may be divided into the following tribes:—

- I. Anterior coxal cavities open behind.
 - i. First joint of antennæ not strongly elongate; tarsi of male 5-5-4-jointed, of female all 5-jointed CUCUJINA.
 - ii. First joint of antennæ strongly elongate; all the tarsi 5-jointed in both sexes HYLIOTINA.
- II. Anterior coxal cavities closed behind.
 - i. First joint of tarsi short; point of prosternum very narrow between anterior coxæ.
 - 1. Antennæ gradually thickened towards apex, without distinct club; elytra punctate-striate; last joint of maxillary palpi large PSAMMŒCHINA.
 - 2. Antennæ with 3-jointed club; elytra not punctate-striate; punctuation obsolete; last joint of maxillary palpi small HYPOCOPRINA.
 - ii. Fourth joint of tarsi very small; point of prosternum rather broad between anterior coxæ SILVANINA.

CUCUJINA.

This will probably be found to be a very extensive and widely spread tribe; there are five European genera, of which two are found in Britain; *Læmophlæus* is cosmopolitan.

- I. Thorax with margins dentate, without longitudinal lines on each side of disc *PEDIACUS*, *Shuck.*
 II. Thorax with margins simple, with at least one longitudinal impressed line on each side of disc *LÆMOPHLÆUS*, *Er.*

PEDIACUS, Shuckard.

This genus contains a few species from North America, the Canary Islands, &c.; three are found in Europe, two of which occur very rarely in Britain; they live under bark.

The larva of *P. dermestoides* is described and figured by Perris, Ann. Fr., 1862, p. 190, pl. 5, fig. 535; it is 6 mm. long, reddish, very depressed, with long setæ at the sides; the head is much broader than long, slightly broader than thorax, which is longer than meso- and metathorax, and the first seven segments of abdomen are not very different in length and breadth, and are narrowed in front and behind; the eighth segment is very long, as long as the three preceding together, with sides nearly straight in front, and dilated behind into a small tubercle on each side; the ninth segment is long, much narrowed in middle, and terminated in a divergent fork; this larva has been found by Perris parasitic on the larvæ of *Tomicus stenographus*.

- I. Thorax plainly transverse, with posterior angles forming a very distinct sharp tooth *P. DERMESTOIDES*, *F.*
 II. Thorax about as long as broad, with posterior angles forming a very small blunt tooth *P. DEPRESSUS*, *Herbst.*

P. dermestoides, F. Reddish-brown, somewhat shiny; head short, triangular, with eyes very prominent, antennæ rather stout, with 3-jointed club, and with the seventh joint much broader than the eighth; thorax a little narrower than elytra, transverse, usually dark brown or blackish with the edges lighter, rather thickly punctured, with depressions on disc, sides with three or four indistinct teeth, posterior angles forming a rather sharp tooth; elytra parallel, flat, depressed on each side of suture, very finely and obsoletely punctured; legs reddish-testaceous. L. 3-4 mm.

Under bark and in chinks of freshly cut oak, beech, and hornbeam; very rare; Chatham (Walker); Loughton, Essex, and Cobham (Power); Hainault Forest; New Forest; Sherwood.

P. depressus, Herbst. This species resembles the preceding in general appearance, but is narrower, and is easily distinguished by its longer thorax, of which the lateral teeth are more pronounced, and the posterior angles only form a small blunt tooth; the colour is lighter, and the general appearance is more shiny; the antennæ are longer with the third joint plainly longer in proportion, and the legs are stouter; the colour is reddish-testaceous, and the thorax is not darker as is the rule with the preceding species. L. 3-4 mm.

Under bark of oaks, &c.; rare; Knutsford Park and Stretford near Manchester (Hardy), out of chinks of very rotten oak, in a yellowish, minute fungus, like mould; Dunham Park, Manchester, in *Cossus* burrows (Chappell); Stretford, on the wing

(Reston); it has also been taken by Mr. Wollaston sparingly, among British stores, on board a yacht at Dartmouth.

LÆMOPHLEUS, Erichson.

This genus contains more than fifty species, which are very widely distributed; it is, however, impossible to discuss their distribution with any certainty, as some of them are almost cosmopolitan, and are carried from one part of the world to another in grain, &c.; thus *L. pusillus* is described under various names from England, France, Brazil, Surinam, &c.; many, however, are found under bark, where their larvæ appear to be parasitic on species of *Tomicus*, *Hylesinus*, &c.

Westwood (Classific. i. 149) describes the larva of *Læmophlæus ater* (*Cucujus Spartii*) as long, narrow, and subdepressed, of a fleshy consistence and white colour, except the head and terminal joint of the body, which are a yellowish-brown; the thoracic segments are semi-transparent, so as to show the motion of the base of the legs from above; when disturbed, it slightly elevates the extremity of the body, which is terminated by two short but rigid incurved hooks.

Perris (Ann. Fr. p. 618, pl. 19, 122) describes and figures the larva of *L. Dufouri*, which has a narrow orbicular head and the abdomen ventricose, or rather fusiform, being broadest in middle and narrowed in front and behind; the eighth segment is long and narrow, and the ninth short and terminated in two rather strong short hooks; according to this author the larva of *L. ater* preys on the larvæ of *Hylesinus rhododactylus*, and that of *L. clematidis* on the larvæ of *Tomicus bispinus*.

- I. Forehead with a fine longitudinal line, trisinate in front; each elytron with a black spot L. BIMACULATUS, Payk.
- II. Forehead without longitudinal line, truncate in front; upper surface ferruginous, rarely black.
 - i. Thorax with two longitudinal lines on each side L. DUPLICATUS, Walll.
 - ii. Thorax with one longitudinal line on each side.
 - 1. Posterior angles of thorax right angles or acute.
 - A. Antennæ of male as long as body; thorax not rounded at sides L. PUSILLUS, Schön.
 - B. Antennæ of male a little more than half as long as body; thorax rounded before middle L. FERRUGINEUS, Steph.
 - 2. Posterior angles of thorax obtuse.
 - A. Elytra together about twice as long as broad, or less, unevenly striated; colour black, rarely dark ferruginous L. ATER, Ol.
 - B. Elytra together more than double as long as broad, evenly striated, colour ferruginous L. CLEMATIDIS, Er.

L. bimaculatus, Payk. (*unifasciatus*, Latr.). Depressed, very shiny, bright reddish-testaceous, with a large black spot on each behind middle, which nearly meet at suture; head large, thickly punctured, with a fine longitudinal line in middle, antennæ very long and slender; thorax a little shorter than broad, narrowed behind, posterior angles almost

right angles, rather thickly and finely punctured, with one stria on each side; elytra finely and obsoletely striate, interstices finely punctured; legs reddish-testaceous. L. $1\frac{1}{3}$ – $2\frac{1}{2}$ mm.

Male with the head larger and the thorax more strongly narrowed behind.

Under bark of oak, beech, and hornbeam; rare; Richmond Park (W. J. Saunders); Gore Court, near Bearsted (Gorham); Wimbleton Park (Rye); Loughton, Essex; Hainault Forest, under bark of hornbeam (Douglas); Bromley, Kent (under oak); New Forest.

L. duplicatus, Waltl. A small narrow species, reddish-testaceous; head finely punctured, antennæ rather stout; thorax as long as broad, not much narrowed behind, posterior angles almost right angles, exceedingly finely punctured, with two impressed lines on each side; elytra almost parallel-sided, feebly striated and punctured. L. $1\frac{1}{3}$ – $1\frac{2}{5}$ mm.

Male with the head as broad as thorax, antennæ longer, thorax more strongly narrowed behind, and apex of elytra truncate; in the female the head is narrower than the thorax, the antennæ are shorter, the thorax less strongly narrowed behind, and the apex of elytra rounded; these differences are found in other species.

Under bark of beech, oak, &c.; local and usually uncommon; Maidstone, Chatham, Farnborough, Coombe Wood, Balcombe, Esher, Bromley, Horsell, Mickleham, Highgate; New Forest; Holm Bush, near Brighton; at Bromley and Esher it has occurred in large numbers.

L. pusillus, Schön. (*longicornis*, Mannh.). Rather larger on the average than the preceding species, and distinguished from it by having only one impressed line on each side of the thorax, and by the fact that the antennæ of the male are almost as long as the whole body; the elytra also are more plainly striated, and the general form is broader. L. $1\frac{1}{2}$ – $1\frac{3}{4}$ mm.

In granaries; imported with corn; found by Mr. Fitch at Maldon, Essex, and lately (1888) by Mr. C. G. Hall near Dover.

L. ferrugineus, Steph. (*testaceus*, Payk., *nec* Fabr.). Reddish-testaceous, shining, parallel-sided, with more evident pubescence than in the preceding species; head very finely and rather diffusely punctured, antennæ with the eighth joint shorter than the seventh; thorax about as long as broad, narrowed behind, posterior angles almost right angles, upper surface very finely and not very thickly punctured, with one very fine impressed line on each side; elytra parallel, rounded at apex, in both sexes covering the whole abdomen, with fine striæ, interstices irregularly punctured, the fourth raised in rather a strong keel; legs reddish-testaceous, femora broad. L. 2 mm.

Male with the head broader, the antennæ longer, and the thorax more strongly narrowed behind; the outer side of the mandibles also at base is produced into a tooth.

In haystack refuse, rarely under bark, also in granaries; perhaps introduced; common in many localities; London district; Hertford; Cambridge; Chat Moss; Norwich; Birmingham district; Northumberland and Durham district; it has occurred in London itself, and also in Tilgate Forest, &c.

L. ater, Ol. (*Cucujus Spartii*, Curtis). Very closely related to the preceding, black or dark ferruginous, depressed, parallel-sided, finely pubescent, antennæ and legs pitchy-red or red; thorax as long as broad, narrowed behind, very finely punctured, with one impressed line on each side; elytra closely and obsoletely striated, with the alternate interstices somewhat raised, sides carinate. L. $2\frac{1}{2}$ mm.

Male with the head very large, the thorax more strongly narrowed behind, and the outer side of the mandibles produced into a tooth at base; there appears only to be a slight difference in the length of the antennæ in the sexes.

In dead stems of broom (*Spartium scoparium*), &c.; rare; Darent Wood; Coombe Wood; Wiltshire (under decayed elm-bark); Birmingham district, Small-heath, &c. (Blatch).

L. clematidis, Er. Elongate, narrow, parallel-sided, ferruginous, with exceedingly fine and short pubescence; head and thorax thickly and rugosely punctured, antennæ stout, rather short; thorax as broad as elytra, rather longer than broad, gradually narrowed behind, with a fine impressed line on each side; elytra very long, more than double as long as broad, thickly, evenly, and rather deeply striated; legs reddish-testaceous. L. $2\frac{3}{4}$ –3 mm.

Male with the head larger than in the female.

In dead stems of *Clematis vitalba* (Travellers' Joy); rare; Gravesend (Janson); Dartford (Champion); Henley (Power).

HYLIOTINA.

This tribe only contains two European genera, which are both very widely distributed in other parts of the world; in Europe they are each represented by one species, which are both found in Britain, although very rarely.

- I. Thorax longer than broad, not serrate at sides . . . DENDROPHAGUS, Schön.
 II. Thorax broader than long, serrate at sides . . . BRONTES, F.

DENDROPHAGUS, Schönherr.

This genus contains about a dozen species, which are very widely distributed, representatives being found in Northern Asia and North America (Alaska and the Lake Superior district), as well as in Tasmania, New Zealand, and the Philippine Islands; the genus in its larval state seems to be much more closely related to *Brontes* than in the perfect condition.

The larva of *D. crenatus* is described by Dr. Buchanan White (Ent. Monthly Mag. viii. 196), and the description is discussed and criticized by M. Perris (Larves des Coléoptères, p. 60); it is of a pale yellowish-white colour, elongate, depressed, and parallel, with rather long antennæ (which are 4-jointed according to Perris, and 3-jointed according to White),* and long and slender legs which are terminated by a single claw; ocelli five; mandibles tridentate at apex; prothorax quadrate, somewhat transverse; last segment bearing two long cerci, anal appendage rather long and narrow. L. 9-10 mm.

This larva is very active, and is said by Dr. White to feed on the inner layer of the bark of dead trees of the Scotch fir and larch; it is, however, probably carnivorous, like so many other of the larvæ of the Colydiidæ and Cucujidæ.

D. crenatus, Payk. Elongate, very flat, black, pitchy-black, or brownish, very shining; head large, uneven, diffusely punctured, eyes large and prominent; antennæ long, brownish-red, with the first joint elongate, second shorter than third, apical joints not thickened; thorax a little longer than broad, with sides sinuate, coarsely punctured, with two shallow longitudinal depressions in middle; elytra parallel-sided, very flat, with fine striæ, which are thickly and deeply punctured, each puncture bearing a short fine hair; legs brown-red or ferruginous, femora thickened; in the male the antennæ are rather longer than in the female. L. 6-7 mm.

Under bark of firs and larches; very local; Scotland, Tay, Dee, and Moray districts (Rannoch, Braemar, Aviemore, &c.); the beetle appears, towards evening, to come out from its hiding-place; Rye, at all events, records the capture of a specimen "coursing rapidly, towards evening, over a bare fir-log."

BRONTES, Fabricius (*Hyllota*, Latreille).

About twenty species are recorded as belonging to this genus; they are widely distributed, being recorded from North and South America, Java, Ceylon, the Australian region, &c.; one only is found in Europe; it is widely distributed over the central and northern portions of the Continent; it is closely allied to *Dendrophagus*, but is easily distinguished by its dull appearance and the serrate sides of the thorax, which is much shorter.

The larva of *B. planatus* is described and figured by Perris (Ann. Fr., 1853, p. 621, pl. 19, fig. 127); it so closely resembles that of *Dendrophagus* that it hardly needs a separate description; it is rather smaller, and has the cerci shorter; the pupa is much narrowed behind, and has the sides of the abdominal segments furnished with setigerous prominences; the larva is active, and appears to be carnivorous, and to prey on the larvæ of *Tomicus*, and on Poduræ, Acari, &c.

B. planatus, L. Elongate, very much depressed, dull black, sometimes brownish, thinly clothed with very short fine greyish hairs, which

* Dr. White appears to have overlooked the basal joint, which is inconspicuous.

are arranged in rows on the elytra; head thickly and somewhat rugosely punctured, with somewhat prominent eyes, antennæ as long as the whole body, ferruginous, first joint very long, often lighter than the rest, second shorter than third; thorax transverse, narrowed behind, with the sides serrate, rugosely punctured, with two indistinct shallow longitudinal furrows; elytra with shallow striæ, which are feebly punctured, fifth interstice strongly raised in a keel; legs ferruginous or reddish-testaceous; in the males the antennæ are rather longer than in the female. L. 5 mm.

Under bark of dead beech-trees; very rare; several specimens taken by Mr. Rye from a standing tree near Putney; Blackheath (Douglas).

V. pallens, F. (*B. pallens*, F.). This variety is yellowish-testaceous; it was taken by Mr. Rye at Putney with the type form.

PSAMMŒCHINA.

This tribe contains two European genera, which are each represented by one species; one of these is widely distributed in Europe; the first joint of the tarsi is short, the third long, bilobed; the antennæ are gradually thickened towards apex, and have the first joint elongate; the anterior coxæ are contiguous, and their cavities are broadly closed behind, and the prosternal process is very narrow.

PSAMMŒCHUS, Latreille.

This genus contains three or four species from Europe, Ceylon, and the Island of Mauritius; they are found among vegetable refuse in damp places.

P. bipunctatus, F. Testaceous, with the head black, except vertex which is reddish, thorax often reddish, elytra with the suture behind and a spot on each black; under-side mostly black or dark brown; head thickly and strongly punctured, antennæ rather long, yellow, with the two or three penultimate joints blackish or brownish; thorax half as broad as elytra, transverse, evenly and not strongly rounded at sides, distinctly punctured; elytra with strong punctured striæ and broad interstices in each of which is a row of very fine punctures; legs clear yellow. L. $2\frac{1}{2}$ mm.

Marshy places, at roots of grass and in refuse; not uncommon, but local, and not found in the North of England or in Scotland; Lee, Strood, Higham, Hammersmith Marshes, Bearsted, Wickham, Southend; Birchington; Folkestone; Hastings; Cowes; Winchester; Southampton; Devonshire; Wicken Fen and Soham; Coles-hill and Sutton near Birmingham (abundant in the former place at the sides of a pond).

The *v. Boudieri* has the head red and the antennæ entirely yellow;

I am not aware if it occurs in England, but immature specimens of *P. bipunctatus* seem to come near it.

HYPOCOPRINA.

The position of this tribe has always been a source of great discussion, ever since the genus *Hypocoprus* was first discovered; the majority of authors have referred it to the Cryptophagidæ, to which it certainly is somewhat closely related; Thomson (Skand. Col. x. 353) regards it as intermediate between *Monotoma* and *Myrmecoxenus*; Dr. Horn (Classification of the Coleoptera of North America, p. 140) places it as a tribe of the Mycetophagidæ; on the whole, however, the position assigned to it by Reitter between the *Psammæchina* and *Silvanina*, appears to be the most natural, and I have, therefore, although with some reserve, adopted it.

HYPOCOPRUS, Motschulsky.

This genus comprises two or three species from Europe and Madeira; our single species is very rare, and has not been found for many years.

H. latridioides, Mots. Elongate and linear, upper surface rather depressed, slightly shining, with very fine and scarcely visible pubescence, pitchy-black with the antennæ and legs ferruginous; head rather large, subtriangular; antennæ rather long, inserted at some distance before eyes, 11-jointed, with the last three joints thicker, forming a club; thorax longer than broad, subquadrate, with the sides not crenulate; elytra obsolete punctured, without striæ, broadly rounded at apex; anterior coxæ not widely separated, all the tarsi 5-jointed. L. 1-1½ mm.

Very rare; under cow-dung in a sandy field at Brandon, Suffolk; taken sparingly by Mr. Crotch; it appears to be very scarce on the Continent. Thomson compares this puzzling species to *Monotoma longicollis*, to which insect it bears a superficial resemblance; Rye says that it may be superficially described as a black specimen of *Lissodema 4-guttata*, of the size of *Lathridius ruficollis*.

SILVANINA.

Six genera belonging to this tribe are found in Europe, three of which are represented in Britain; several of the species are cosmopolitan; the anterior coxal cavities are broadly closed behind, and the tarsi are 5-jointed in both sexes, and have the fourth joint very small.

- | | |
|---|--------------------|
| I. Club of antennæ 4-jointed | NAUSIBIUS, Redt. |
| II. Club of antennæ 3-jointed. | |
| i. Joints of club of antennæ of equal breadth | SILVANUS, Latr. |
| ii. Central joint of club of antennæ broader than the other two | CATHARTUS, Reiche. |

NAUSIBIUS, Redtenbacher.

One or two species only are included in this genus ; they differ from *Silvanus* by the somewhat indistinctly 4-jointed club of the antennæ ; Westwood (Classific. i. 153) says that the larva of our species may often be found dead in sugar, and observed floating in tea or coffee ; it is elongate, depressed, and glabrous, with the central abdominal segments rather broader and the terminal segment entire.

N. dentatus, Marsh. Fuscous-brown, elongate, subparallel, depressed, rather dull, clothed with very fine yellowish pubescence ; head subtriangular, eyes large and prominent, placed close to thorax, antennæ short and stout with somewhat indistinct 4-jointed club ; thorax subquadrate, slightly narrowed behind, very little longer than broad, scarcely narrower than elytra, with sides furnished with six rather blunt distinct teeth ; elytra almost three times as long as thorax, with fine punctate striæ, alternate interstices, especially the external ones, somewhat raised. L. 3 mm.

In sugar, &c. ; an introduced species ; London and other towns in different parts of the kingdom ; not uncommon.

SILVANUS, Latreille.

This genus contains between twenty and thirty species, which are widely distributed, but as in the case of *Læmophloeus* their original distribution cannot be known with any certainty, as several of them are almost cosmopolitan, having been carried from one quarter to another by commerce ; the same holds good also with regard to *Cathartus* and *Nausibius* ; the habits of these genera are, however, somewhat of a problem, as occasionally (as also is found in the case of *Carpophilus*) species supposed to have been imported are found by sweeping or under bark under circumstances that seem to prove them to be indigenous.

The larva of *Silvanus unidentatus* is described and figured by Perris, Ann. Fr., 1853, p. 627, pl. 19, fig. 138 ; it is of a whitish colour with the head and thorax darker, and calls for no particular description, being linear and subparallel with the head transverse ; the ninth segment of abdomen is small and narrow, and bears no cerci ; the larva is rather active ; the pupa has the last segment of abdomen narrow and terminated by two short cerci ; Westwood (Classific. i. 153, fig. 13, 10, 11) figures the larva and pupa of *S. surinamensis* ; the larva is rather stout and broad, and the pupa has the margins of the abdomen and thorax armed with short thick points.

- I. Cheeks large, and projecting behind eyes, which are removed to a distance from thorax ; sides of thorax serrate, anterior angles not or scarcely more produced than the preceding denticulations S. SURINAMENSIS, L.
- II. Cheeks behind eyes slightly projecting in a very small tooth, eyes close to thorax ; sides of thorax not serrate, anterior angles much produced and projecting.
 - i. Slightly shiny ; thorax longer than broad ; anterior angles produced in a short point S. UNIDENTATUS, Ol.

- i. Dull; thorax much longer than broad; anterior angles produced in a very strong sharp point.
1. Elytra depressed, about as broad as thorax, antennæ shorter and stouter *S. BIDENTATUS*, F.
 2. Elytra convex, distinctly broader than thorax, antennæ longer and more slender *S. SIMILIS*, Er.

S. surinamensis, L. (*frumentarius*, F.; *sexdentatus*, F.). Narrow, almost parallel-sided, depressed, fuscous brown, rather thickly clothed with fine greyish-yellow pubescence; head a little narrower than thorax, rather large, narrowed in front of antennæ, very thickly and deeply punctured; antennæ rather stout; thorax slightly narrower than elytra, longer than broad, serrate at sides, with three distinct raised keels, very thickly punctured; the anterior angles project in a more or less strong point, which is however not, or not much, more pronounced than the preceding denticulations; elytra rounded at apex, with regular punctured striæ, alternate interstices elevated; legs ferruginous. L. 3 mm.

In sugar, dried figs, rice, &c.; an introduced and cosmopolitan species; London, Dublin, and other towns, not uncommon; it is, however, occasionally found at a distance from habitations. Mr. Bold remarks that in warm seasons it becomes so numerous in many grocers' shops in Newcastle as to be a nuisance, rendering unsightly the sugar and dried fruits among which it lives and breeds. Professor Westwood says that he has specimens from Yorkshire, Epping Forest, and Scotland, taken under bark of trees.

S. unidentatus, F. Rather shining, reddish-yellow or brownish-red, with very short and fine yellowish pubescence; head triangular narrowed before eyes, antennæ with a plainer club than in the preceding species; thorax a little longer than broad, anterior angles produced in a distinct but not very elongate point, with sides not serrate and narrowed behind, together with head very thickly punctured, posterior angles denticulate; elytra with very close punctured striæ, interstices very narrow; legs ferruginous. L. $2\frac{2}{3}$ mm.

Under bark of beech, oak, hornbeam, &c.; local, but often common where it occurs; London district, widely distributed; New Forest; Exeter; Stretford, near Manchester (flying); not recorded from Scotland or Ireland; the localities known for this species seem to show that it has been introduced, and has to a certain extent naturalized itself.

S. bidentatus, F. (*laricis*, Chevr.). Very like the preceding, but larger and evidently duller; the anterior angles of thorax are produced into a longer, sharper, and evidently more distinct tooth; the thorax is longer and narrower, and has two shallow longitudinal grooves; the joints of the antennæ are longer and the club is more marked, and the tibiæ are less dilated at apex. L. 3 mm.

Under bark; very rare; Dunham Park, Manchester, under bark of a large branch of oak which had been broken off in a gale (Chappell); Newcastle, very rare (Bold); Paisley, one specimen under fir bark (Morris Young).

S. similis, Er. (*fagi*, Guer.). Allied to *S. unidentatus*, but easily

distinguished by having the elytra much broader in proportion to the thorax, which has the anterior angles more strongly and distinctly produced, and the posterior angles not denticulate; the elytra also are slightly ovate; the colour is usually reddish-brown, but occasionally the disc of the elytra is darker. L. $2\frac{2}{3}$ mm.

In dead branches of the Scotch fir; first taken by Dr. Power near Esher, and afterwards in numbers by Mr. Champion, who says "there can be no mistaking the habits of this species here—its only recorded British locality—although it has been stated to occur in sugar." Dr. Power appears also to have found the species at Cobham Park.

CATHARTUS, Reiche.

Four species belonging to this genus are mentioned in the last European catalogue, three of which are regarded as doubtful; the fourth also, *C. advena*, must be considered an importation, although, like *S. surinamensis*, it has been found at some distance from habitations; it has usually been classed with *Silvanus*, but is smaller and very different in appearance, and has the central joint of the club of antennæ larger than the others.

C. advena, Waltl. More convex, less parallel, and smaller than either of our other species belonging to the Silvanina; reddish-testaceous or brownish-red, rather shiny, clothed with fine short yellowish pubescence; head subtriangular, very finely punctured, antennæ moderately long with the first joint of club much smaller than second, and the second larger than the apical joint; thorax transversely subquadrate, with sides almost straight, very finely punctured, anterior angles forming a small blunt tooth, posterior angles right angles; elytra long oval, with fine punctured striæ, which become obsolete towards apex; legs ferruginous or testaceous; the insect bears a very strong resemblance to certain species of *Cryptophagus*. L. 2 mm.

In rice, &c.; very rarely found out of doors; an introduced species; London, not uncommon; I have also received it from Scotland; Mr. Waterhouse has found three specimens at Wandsworth under cut grass.

BYTURIDÆ.

The position of this family has been, and still is, much disputed. Erichson classed it with the Melyridæ, Stephens with the Engidæ, Du Val with the Telmatophilidæ, Kiesenwetter with the Nitidulidæ, and Redtenbacher and Lacordaire with the Dermestidæ; others again place it under the Mycetophagidæ, from which it appears to be separated by the number of tarsal joints, the closed anterior coxal cavities, and the toothed claws; the 5-jointed tarsi, of which the second and third joints are lobed beneath, seem to bring it into close connection with the Telmatophilina; as, however, Professor Westwood observes (Classif. Ins. vol. i. p. 142), in its habit of frequenting flowers, and in the bilobed form of the third and minute size of the fourth joints of the tarsi, it

approaches the Nitidulidæ; it is here provisionally placed near the Telmatophilina.

The larva of *B. tomentosus* sometimes does great damage to the blossom and fruit of the raspberry; it is cylindrical, depressed in front, with the head brown and the scuta brownish; the abdomen is terminated by two short brown cerci and a cylindrical tubercle which is retractile, and is employed as a proleg; the pupa is very pilose (Thoms. Skand. Col. iv. 192).

BYTURUS, Latreille.

Four or five species are contained in this genus, which appear to be confined to Europe and North America; our two British species are closely allied, and have been classed together by some authors; they appear, however, to be quite distinct; they cannot be separated by colour, as both species present two distinct forms, the one fuscous with grey pubescence which has a slight greenish tinge, and the other luteous with yellowish pubescence.

- I. Eyes very large; pubescence coarser; elytra rather more strongly punctured; average size larger *B. sambuci*, Scop.
 II. Eyes moderate; pubescence finer; elytra less strongly punctured; average size smaller *B. tomentosus*, F.

B. sambuci, Scop. (*æstivus*, Thoms.; *tomentosus*, Gyll.). Oblong, rather convex, of a more or less obscure luteous colour with yellow pubescence, or fuscous with greyish pubescence which has a slight greenish tinge; head closely punctured, eyes very large, antennæ red, short, with 3-jointed club; thorax very transverse, thickly punctured, with sides rounded in front, strongly depressed towards posterior angles, side margins explanate; elytra long in proportion to thorax, closely but distinctly punctured; legs red or reddish-testaceous, posterior tibiæ very finely spinulose. L. 3-4 mm.

Male with the anterior tibiæ feebly sinuate on their inner margin, and somewhat dilated towards apex.

By sweeping flowers, &c.; somewhat local, but rather common in many localities; London district, Caterham, Mickleham, Shirley, Snodland, Chatham, Darent Wood, Westerham, Bearsted, Dulwich, &c.; Hastings; Knowle; Bewdley; Llangollen; Stretford, near Manchester; Liverpool district on *Salix pentandria* and *Caltha palustris*; Northumberland district, not common.

B. tomentosus, F. (*ochraceus*, Scriba). Very like the preceding, but on the average smaller and proportionally shorter, with the thorax not so transverse, and less strongly impressed towards posterior angles; the margins also of the thorax are less explanate; the elytra are more finely punctured, and the pubescence is finer; the eyes, moreover, are smaller, and the posterior tibiæ are scarcely spinulose; in the male the anterior tibiæ are slightly sinuate internally, as in the preceding species. L. 3 mm.

By sweeping flowers; especially common on raspberry blossoms; it also occurs on the mountain ash and many Ranunculaceæ, and other flowers; common and generally distributed throughout the greater part of the kingdom.

CRYPTOPHAGIDÆ.

This family contains between twenty and thirty genera, which are very widely distributed, but appear, as far as is at present known, to be much more characteristic of cold and temperate than of tropical countries; they are, as a rule, very small and obscure insects, and may be known by the following characters:—Antennæ inserted a little before or between the eyes, distant or approximate, 11-jointed, terminating in a 3-jointed, very rarely, 2-jointed club, thorax with the sides margined or denticulate; elytra covering abdomen; abdomen composed of five free segments, of which the first is the largest; anterior coxal cavities open behind (except in the *Diphyllina*); all the coxæ more or less distant, the anterior pairs transverse and oval, and the posterior pairs more widely distant, semi-cylindrical; upper surface more or less setose or pubescent, sometimes very strongly so; tarsi 5-jointed, in some genera heteromerous in the males.

- I. Anterior coxal cavities closed behind; antennæ with a 3- or 2-jointed club **DIPHYLLINA.**
- II. Anterior coxal cavities open behind; antennæ with a 3-jointed club (except in *Cænoscelis*, where it is apparently 2-jointed).
 - i. Tarsi 5-jointed, apparently 4-jointed, the fourth joint being very small and obsolete, second and third joints lobed **TELMATOPHILINA.**
 - ii. Tarsi distinctly 5-jointed in both sexes, or heteromerous in the male; second and third joints not lobed.
 - 1. Antennæ inserted at the sides of the forehead, broadly distant at base; thorax with the sides usually denticulate; upper surface more or less setose **CRYPTOPHAGINA.**
 - 2. Antennæ inserted on the forehead between the eyes, approximate at base; thorax with the sides not denticulate; upper surface not setose **ATOMARIINA.**

DIPHYLLINA.

This tribe has by most authors been placed under the Mycetophagidæ, but appears to bear a far closer relation to the Telmatophilina, which it resembles in the fact that its members have the tarsi 5-jointed (the fourth joint being very small), and more or less lobed beneath; it differs from the Telmatophilina in having the elytra furnished with distinct punctured striæ, and the anterior coxal cavities closed behind; the three first joints of the tarsi are feebly lobed beneath, and the first joint is shorter than the second, whereas in the allied tribe the third joint is strongly lobed, and the second feebly lobed, the first being as long as the second, and not lobed; the tribe contains two or three genera, of which *Marginus*, Leconte, is now merged with *Diplocælus*.

- I. Club of antennæ 2-jointed **DIPHYLLUS, Steph.**
- II. Club of antennæ 3-jointed **DIPLOCÆLUS, Guer.**

DIPHYLLUS, Stephens.

This genus contains only two species, which are found in Europe and the Atlantic Islands: the larva of *D. lunatus* is described and figured by Perris, Ann. Fr., 1851, p. 42, t. 2, III. f. 10-16; it much resembles that of *Triphyllus punctatus*, but is more linear, being almost parallel-sided, and scarcely wider in the middle; it is 6 mm. in length, of a whitish colour, with the head and part of the thorax reddish; the anal segment is rounded at apex; it has been met with in the fungus *Sphæria concentrica*, Pers.

D. lunatus, F. Oblong-ovate, slightly shining, black or fuscous black, with thick fuscous pubescence; elytra with a common lunate band of greyish-white pubescence, which is very conspicuous; head strongly punctured, antennæ rather short, ferruginous, with a very distinct 2-jointed club; thorax not strongly transverse, finely crenulate at sides, strongly punctured, with a distinct raised line near margin, and another straighter one inside it; elytra subparallel, with distinct punctured striæ; legs red. L. $2\frac{1}{2}$ -3 mm.

In the black fungus and under bark of old ash-trees; local, and, as a rule, rare; Chatham, Sheerness, Coombe Wood; Netley; Isle of Wight; Plymouth; Fowey; Leigh Woods, Bristol; Salford Priors, Evesham; Grimsby.

DIPLOCÆLUS, Guérin.

This genus contains four or five species from Europe and North America, one being found in Cuba; it is distinguished from *Diphyllus*, which it much resembles in general appearance, by the 3-jointed club of the antennæ; our single species is very rare in Britain, and has only occurred in the New Forest.

D. fagi, Guer. Oblong-ovate, of longer and narrower form than *Diphyllus*, clothed with yellowish-grey pubescence; head considerably narrowed before eyes, thickly punctured, antennæ short, ferruginous with 3-jointed club; thorax transverse, distinctly punctured, with margins slightly crenulate, and with two raised lines before margins, the inner one of which is rather indistinct; the head and thorax vary somewhat in colour, but are usually ferruginous-red; elytra dark, with base and shoulders, and occasionally apex, more or less broadly ferruginous, rather long, parallel-sided, with distinct punctured striæ; legs red. L. $2\frac{1}{2}$ -3 mm.

Under bark, &c.; very rare; New Forest; taken in some numbers by C. Turner, who first captured it in the autumn of 1867.

TELMATOPHILINA.

The members of this tribe are small and obscure insects; the single

European genus has much the same facies as *Cryptophagus*, but Dr. Horn remarks that the American genus *Loberus* "resembles, at first sight, a small Halticine of the genus *Crepidodera*;" the 5-jointed, but apparently 4-jointed, tarsi, of which the fourth joint is very small and obsolete, and the lobed second and third joints of the same will serve to distinguish the tribe from its allies; the Diphyllina are by some authors associated with the tribe, but appear to be very distinct by reason of their closed anterior coxal cavities and general sculpture.

TELMATOPHILUS, Heer.

This genus contains about ten or a dozen species, eight of which are European, and one or two are found in North America; they resemble *Cryptophagus* in general appearance, but are as a rule dark-coloured; they occur chiefly in stems of water plants, such as *Sparganium*, *Typha*, &c.

- | | |
|--|-----------------------|
| I. Elytra testaceous or brownish-yellow with dark markings | T. SPARGANII, Ahr. |
| II. Elytra unicolorous, usually black, occasionally pitchy. | |
| i. Thorax not or scarcely transverse; sides sinuate before base; posterior angles right angles. | |
| 1. Sides of thorax gradually and not strongly rounded; legs red; size larger | T. CARICIS, Ol. |
| 2. Sides of thorax strongly rounded in front, and plainly narrowed and sinuate behind; femora usually black; size smaller | T. SCHÖNHERRI, Gyll. |
| ii. Thorax distinctly transverse. | |
| 1. Thorax about a third broader than long; sides rounded to base; posterior angles obtuse | T. TYPHÆ, Fall. |
| 2. Thorax twice as broad as long; sides almost straight, or very slightly sinuate before base; posterior angles right angles | T. BREVICOLLIS, Aubé. |

T. sparganii, Ahr. Oblong, moderately convex, clothed with thick yellowish pubescence; head and thorax pitchy, the latter often reddish; elytra testaceous or brownish-testaceous, with the suture and scutellary region, and a broad patch behind middle extending more or less along the side margins to apex, black; antennæ testaceous, rather slender, with a well-marked 3-jointed club, of which the central joint is the broadest; eyes rather prominent; thorax about as long as broad, with sides rounded and crenulate, sinuate just before posterior angles which are right angles, closely but distinctly punctured; elytra long, very gradually narrowed to apex, finely punctured; legs testaceous. L. 2-2½ mm.

In stems of *Sparganium*, *Typha*, &c.; rare; Horning Fen (Sharp and Crotch) Pegwell Bay, in the last week in May (Sharp and Saunders); Cobham, Surrey (Stephens); Hythe; Sandwich. In Dr. Sharp's collection there is a specimen from Pegwell Bay which has the upper surface pitchy, with a broad testaceous band extending along suture from near base to apex.

T. caricis, Ol. (*obscurus*, F.). Oblong, slightly convex, black or fuscous black, clothed with very thick light pubescence which gives the insect a greyish appearance; antennæ reddish-testaceous; eyes rather prominent; thorax about as long as broad with sides finely crenulate, gradually rounded, sinuate just before base, posterior angles right angles, punctuation close but distinct; elytra long, subparallel, closely but distinctly punctured at base, more finely towards apex; legs and last segment of abdomen reddish-testaceous; in the male the knees and tarsi are fuscous, the posterior femora are much thickened, the posterior tarsi are dilated before middle, and the last ventral segment of abdomen is furnished with an impressed fovea. L. 2–2½ mm.

In stems of *Typha*, &c.; frequently taken by sweeping in marshy places; common and generally distributed in the London, Southern, and Midland districts; rarer further north; Manchester; Liverpool; Scarborough; not recorded from Northumberland or any of the extreme northern counties; Scotland, Lowlands, in marshes, Solway and Forth districts.

T. typhæ, Fall. Very like the preceding, but much smaller, with the thorax evidently (although not very strongly) transverse, and the sides rounded distinctly to the posterior angles which are obtuse but plain (Thomson in his description says “angulis posticis acutiusculis”); the margins of thorax are distinctly crenulate and somewhat explanate, with a distinct line before the widened portion; the elytra are much more finely punctured than thorax; antennæ and legs reddish-testaceous, femora of latter at most slightly darker. L. 1½–1¾ mm.

In stems of *Typha*; occasionally in flood refuse and by sweeping; local, but sometimes abundant where it occurs; Mickleham, Woking, Sheerness, Chatham; Hythe; Ashburnham; Swansea (in flowers of *Caltha palustris*); North Wales; Cromer; Cambridgeshire; Coleshill; Sutton Park, Birmingham; Droitwich; Scarborough; Manchester; Scotland, Lowlands, in marshes, Tweed district.

T. Schönherri, Gyll. On an average rather smaller than *T. typhæ*, which species it very closely resembles; it is, however, easily distinguished by the shape of the thorax, which is about as long as broad, strongly rounded in front and narrowed and sinuate behind, with the posterior angles right angles; the sides also are scarcely perceptibly crenulate, and are not explanate at sides; the antennæ (as a rule) and the legs are more darkly coloured, the femora being almost always black or pitchy-black. L. 1⅓–1½ mm.

In stems of *Typha*, &c.; often in company with the preceding species; very local; Sheerness (not uncommon); Deal; Horning Fen; Droitwich; Cheshire (on *Sparanium*); not recorded from the northern counties of England or from Scotland.

T. brevicollis, Aubé. Oblong, convex, clothed with thick and rather long pale pubescence, of the same colour as *T. caricis*, or occasionally entirely pitchy-brown; the legs are sometimes entirely reddish-testaceous, but sometimes the femora are infuscate; the species is at once distinguished by the shape of its thorax, which is twice as broad

as long, with the sides strongly rounded in front, and dilated in the middle where it is broadest, and from thence almost straight in an oblique line, or very slightly sinuate, to posterior angles which are right angles; the elytra are considerably more finely punctured than the thorax; in size this species comes between *T. caricis* and *T. typhae*. L. 2 mm.

In stems of *Typha*, &c.; rare; Sheerness; Birchington, near Margate; Pegwell Bay; Sandwich; Hythe; New Forest; Weston-super-Mare (where Mr. Crotch took the two first specimens captured in Britain).

CRYPTOPHAGINA.

This tribe contains a large number of species, but the arrangement of the genera, which are few in number, is perhaps hardly established with certainty. I have followed Thomson in adopting *Micrambe* and *Henoticus* as distinct from *Cryptophagus* and *Paramecosoma* respectively; the species are as a rule more or less oblong, usually of a reddish-brown or ferruginous colour, with the sides of the thorax, or at all events the anterior angles, very often denticulate; the upper surface is strongly pubescent, and more or less setose; our genera may be distinguished as follows:—

- | | |
|---|-----------------------|
| I. Mesosternum deeply emarginate and foveate, receiving the process of the prosternum; sides of thorax not denticulate; size larger | ANTHEROPHAGUS, Latr. |
| II. Mesosternum not foveate for the reception of the prosternal process, which is shorter; sides of thorax almost always denticulate; size smaller. | |
| i. Tarsi with the penultimate joint equal to the preceding; posterior tarsi of male 4-jointed | CRYPTOPHAGUS, Herbst. |
| ii. Tarsi with the penultimate joint abruptly shorter and narrower than those preceding. | |
| 1. Thorax with the sides denticulate. | |
| A. All the tarsi 5-jointed in both sexes; anterior angles of thorax callosely reflexed | MICRAMBE, Thoms. |
| B. Male with the posterior tarsi 4-jointed; anterior angles of thorax not callosely reflexed | HENOTICUS, Thoms. |
| 2. Thorax with the sides not denticulate; all the tarsi 5-jointed in both sexes | PARAMECOSOMA, Curt. |

ANTHEROPHAGUS, Latreille.

This genus contains about half-a-dozen species from Europe and North America, and one from Northern Asia; they resemble very large Cryptophagi; they appear to be usually associated with various species of Bombi or humble-bees, but are often found in flowers and by sweeping and beating herbage and undergrowth; the names of our species are somewhat misleading, *A. pallens* being by far the darkest coloured of the three; the posterior tarsi in the male are 4-jointed.

- I. Upper surface clothed with very fine and not very evident pale pubescence.
- i. Colour light yellowish-testaceous; anterior tibiæ not produced externally at apex; length 4-4½ mm. *A. NIGRICORNIS*, *F.*
 - ii. Colour lighter or darker ferruginous; anterior tibiæ produced into a moderate tooth externally at apex; length 3-3½ mm. *A. PALLENS*, *Gyll.*
- II. Upper surface clothed with long tomentose pubescence, which is especially long and distinct on the head; anterior tibiæ produced into a strong tooth externally at apex; length 3½-4 mm. *A. SILACEUS*, *Herbst.*

***A. nigricornis*, F.** (*silaceus*, Gyll. and Steph. Ill., *nec* Herbst.).

Oblong, rather depressed, of a light yellowish-testaceous colour, sometimes very slightly reddish, clothed with very fine yellowish pubescence; head thickly and finely punctured; antennæ varying according to sex; thorax much broader than long, rectangular, very finely punctured, nearly as broad at base as elytra; elytra very finely punctured with traces of longitudinal striae. L. 4-4½ mm.

The forehead is deeply excised in the male, slightly sinuate in female; in the latter sex the antennæ are comparatively slender and unicolorous reddish-testaceous; in the former they are very thick and stout, ferruginous or dark with basal and apical joints lighter; the tibiæ in the male are broadly black at apex, in the female at most slightly darkened; the anterior tarsi of the male have the first three joints somewhat dilated.

On flowers, and by sweeping herbage, &c.; occasionally found in and about the nests of *Bombi*; not uncommon; London district, generally distributed; Brandon, Suffolk; Hastings; Glanvilles Wootton; New Forest; Midland districts, Bromsgrove, Bewdley, Repton, &c.; Chat Moss; Scarborough; Manchester district, general in humble-bees' nests, and also in flowers of *Digitalis*; Northumberland district, common (Mr. Bold records that he once captured a *Bombus* with a specimen firmly fixed by the mandibles to one of its hind legs); Scotland, in flowers, rare, Lowlands, Clyde and Forth districts; Ireland, near Belfast.

***A. pallens*, Gyll.** Smaller than the preceding, and of a deeper red colour, usually more or less ferruginous; the thorax has the sides a little rounded in front, and the head and thorax are more distinctly, although very closely, punctured; the anterior tibiæ are by most authors said not to be produced in a tooth externally, but this is incorrect, as they are certainly slightly produced, although not nearly as strongly so as in *A. silaceus*; the sexual differences are much as in the preceding species, except that the male is larger in proportion than the female, and the tibiæ are scarcely darkened at apex. L. 3-3½ mm.

In and about the nests of *Bombi*; also by sweeping; local and as a rule not common; Weybridge, Caterham, Claygate, Lee, Darenth Wood, Birdbrook, Forest Hill, West Wickham; Burnham Beeches; Kingsgate; Birchington; Folkestone; Dover; Glanvilles Wootton; Parkhurst Forest, Isle of Wight; New Forest; Southampton; Devonshire; Littleington; Solihull, near Birmingham; Repton,

Robin's Wood; Chat Moss; Stretford, near Manchester; Northumberland district, generally distributed but nowhere common, Wallington, &c.; Scotland, rare, Solway, Tweed, and Forth districts; Ireland, near Dublin (Power).

A. silaceus, Herbst., *nec* Gyll. This species most closely resembles *A. nigricornis*, but is rather smaller, and is at once distinguished from it by the very long tomentose pubescence, which is especially marked on the head, and also by having the anterior tibiæ produced into a strong tooth at apex; the anterior angles of the thorax also are somewhat callose, and the tibiæ of the male are, apparently, less fuscous at apex; the male characters appear to be much the same; from *A. pallens* it may be distinguished by its lighter colour, larger size, much more marked pubescence, and the stronger tooth at apex of anterior tibiæ. L. $3\frac{1}{2}$ –4 mm.

By sweeping; probably also associated with *Bombi*; rare; Darenth Wood, Reigate, Hornsey, Caterham, Chatham, Gravesend; Ashwicken; Deal; Folkestone; Bourne-mouth; Plymouth, Whitsand Bay (J. J. Walker); Coleshill; Bromsgrove; Hunstanton; Oxfordshire; not recorded from the northern counties of England or from Scotland or Ireland; the *A. silaceus* of Murray's catalogue must without doubt be referred to *A. nigricornis*.

CRYPTOPHAGUS, Herbst.

This genus comprises about a hundred species, which chiefly occur in the temperate regions of the Old World, more than half of them being found in Europe; the genus is, however, widely distributed, and will probably be found to consist of a much larger number of species than it does at present, as representatives have been found in South Africa, New Zealand, and other localities; the members of the genus have the posterior tarsi 4-jointed in the male; they are small insignificant-looking insects, usually of a reddish-brown colour, and are exceedingly closely allied, so that it is very hard to determine them except by comparison with authentic types; they are found in all sorts of localities, such as rubbish-heaps, hot-beds, cellars, and outhouses, in moss, fungi, &c.; many of our species are very common, but some are exceedingly rare, and it is hardly settled yet how many we really possess; the tables given below may to a certain extent be found useful, but must be regarded as merely provisional, and must not be relied upon apart from the separate descriptions; the species may roughly be divided into the following sections:—

- I. Thorax with the sides crenulate, furnished with a distinct tooth in or about middle.
 - i. Antennæ with the first joint of club nearly as broad as the following ones.
 1. Upper surface strongly and not closely punctured, with more or less distinct outstanding setæ; thorax with four smooth prominences, two at sides of disc and two at base.

Section I. *C. lycoperdi*, *setulosus*, *Schmidti*, *pilosus*, *punctipennis*,
ruficornis.

2. Upper surface moderately strongly punctured; thorax with the callose prominences on disc small, but usually distinct; size large; elytra often darker than thorax.

Section II. *C. populi*.

3. Upper surface more or less finely punctured; thorax with the callose prominences on disc more or less obsolete.
 A. Thorax with a distinct basal fold before scutellum, the transverse impression being deep; elytra without outstanding setæ.

Section III. - *C. saginatus, scanicus, badius, umbratus*

- B. Thorax with the basal fold before scutellum absent or obsolete, the transverse impression not being deep.
 a. Elytra not setose in rows.

Section IV. *C. validus, dentatus, cylindrus, distinguendus, acutangulus, fumatus.*

- b. Elytra setose in rows.

Section V. *C. cellaris, affinis.*

- ii. Antennæ with the first joint of club much narrower than the succeeding joints.

Section VI. *C. pubescens.*

- II. Thorax with the sides almost even, with a blunt lateral tooth on anterior third, anterior angles scarcely callose.

Section VII. *C. bicolor.*

SECTION I.

The six species belonging to this section are distinguished by their strong punctuation and the distinct callose prominences on thorax; in some of them the upper surface is very distinctly setose; in the males the anterior tarsi are usually more or less dilated.

- I. Anterior tibiæ produced externally in a distinct tooth; upper surface strongly setose *C. LYCOPERDI, Herbst.*
 II. Anterior tibiæ not produced in a tooth externally.
 i. Anterior angles of thorax callose, but not produced in a tooth, margins rather broad; upper surface strongly setose.
 1. Size smaller; punctuation of elytra almost in rows; lateral tooth of thorax distinct *C. SETULOSUS, Sturm.*
 2. Size larger; punctuation of elytra confused; lateral tooth of thorax scarcely visible *C. SCHMIDTII, Sturm.*
 ii. Anterior angles of thorax produced in a more or less distinct tooth, margins fine; upper surface not so strongly setose.

1. Upper surface unicolorous reddish-brown.
 - A. Elytra less oval, pubescence shorter, punctuation closer C. PILOSUS, Gyll.
 - B. Elytra more oval, pubescence longer, punctuation coarser and not so close, especially at base C. PUNCTIPENNIS, Bris.
2. Thorax reddish, elytra black with apex and shoulders obscurely lighter, or whole upper surface black C. RUFICORNIS, Steph.

C. lycoperdi, Herbst. One of the largest British species; oblong, convex, of a rather dark ferruginous colour, with coarse pubescence, and with rows of outstanding setæ on elytra; antennæ thick with narrow club; head and thorax strongly and deeply punctured, the latter transverse, with anterior angles callose and produced behind in a minute sharp tooth, sides with a sharp tooth just before middle, margins wide, disc with four callosities, transverse impression at base deep; elytra less thickly and strongly punctured than thorax, the punctures becoming feebler towards apex; legs ferruginous, anterior tibiæ produced externally in a distinct tooth. L. 2-3 mm.

In Lycoperdons, local but generally distributed throughout the Southern and Midland counties; rarer further north, and apparently not found in the northern counties of England or in Scotland; Ireland, near Waterford.

This and the two following species are distinguished by their coarse pubescence and the long setæ or bristles set in even rows on the elytra.

C. Schmidtii, Sturm. This species is compared with *C. lycoperdi* by Erichson, but is much more closely allied to *C. setulosus*, from which it may be distinguished by its rather larger size and less broad build, the less transverse subapical joints of the club of the antennæ, the lesser development of the callosity of the anterior angles and the lateral tooth, and also by the more confused punctuation of the elytra; the elytra are more contracted behind and less parallel-sided than in *C. lycoperdi*, from which species it is easily distinguished by not having the anterior tibiæ produced into a tooth externally; in the formation of the thorax it resembles *C. saginatus*, but that species is smaller and much more finely punctured and pubescent. L. $2\frac{2}{3}$ -3 mm.

In stack refuse; very rare; Mr. Champion took a single specimen at Wicken Fen in August, 1870, and another specimen a short time afterwards in the same locality; Mr. E. W. Janson had taken the same species some years before, probably at Whittlesea.

C. setulosus, Sturm. Oblong-oval, convex, of a lighter colour than *C. lycoperdi*, and easily distinguished from that species by the anterior tibiæ being simple at apex; antennæ rather stout with the joints of the club not contiguous, the penultimate joints being very transverse; head and thorax deeply and strongly, but thickly, punctured; thorax very transverse with anterior angles callose but not produced in a tooth behind, sides with a small tooth about middle, margins

wide, disc with four callosities, base with a distinct longitudinal fold before scutellum; elytra narrowed towards apex, strongly punctured, the punctuation having a tendency to form rows; legs ferruginous-testaceous. L. $2\frac{2}{3}$ mm.

In fungi, haystack and vegetable refuse, &c.; it also occurs in the nests of humblebees (*Bombus lucorum*, &c.), and is sometimes taken by evening sweeping; local; Esher, Claygate, Forest Hill, Caterham, Sheerness, Chatham, Mickleham, Faversham; Deal; Folkestone; Devonshire; Soham, Cambridgeshire; Yardley, Solihull, and Knowle near Birmingham; Chat Moss; Manchester; Northumberland and Durham district, common; Scotland, common, Lowlands and Highlands; Dr. Sharp (Scot. Nat. iv. 36) says that the *C. lycoperdi* of Murray's catalogue is no doubt this species.

C. pilosus, Gyll. Smaller than either of the preceding, oblong, and not very convex, with the elytra not contracted towards apex as in *C. setulosus*, but shaped rather as in *C. lycoperdi*; from both these species it may be distinguished by its finer punctuation and less coarsely pubescent elytra; the club of the antennæ has the joints more contiguous than in the former, and the anterior angles of the thorax are produced in a more or less distinct tooth behind; it bears a close superficial resemblance to *C. saginatus*, but is much more strongly punctured, and has the lateral tooth of the thorax situated in the middle and not distinctly before the middle as in that species. L. $2-2\frac{1}{2}$ mm.

In haystack refuse, cut grass, &c., very often in hot-beds; common and generally distributed throughout England and Scotland; Ireland, Waterford, &c., and probably common; this species has been considered rare, but according to my experience it is one of the commonest of the genus.

C. punctipennis, Bris. Very closely allied to the preceding, of which it has by some authorities been considered a variety; it may, however, be known by its more oval elytra, of which the pubescence is longer, and the punctuation coarser and not so close, especially at base. L. $2-2\frac{1}{2}$ mm.

In straw-sheds, among refuse, &c., also in haystack refuse, cut grass, &c.; occasionally in cellars; local; Forest Hill, Richmond, Darent, Chatham, Wandsworth, Sheerness, and other localities in the London district; Sheppy; Cambridge Fens; Soham; Knowle; Liverpool; Bidston, near Manchester; Scotland, rare, Lowlands, Forth district, Braid Hills, Edinburgh (Sharp).

C. ruficornis, Steph. A rather long and parallel-sided species, bearing superficially a somewhat strong resemblance to *C. scanicus*, dark specimens of which are sometimes confounded with it; head and thorax pitchy-red, elytra black with shoulders and apex reddish, antennæ red; the colour, however, is variable, being sometimes entirely or almost entirely black with the antennæ dark pitchy, and occasionally the elytra are dark pitchy-red; the head is usually lighter than the thorax; thorax not very transverse, somewhat subquadrate, with the anterior angles callose and denticulate, and with a more or less distinct tooth about the middle of sides, disc with rather plain callosities; elytra

deeply and rather strongly punctured, with the punctures disposed in lines, especially near suture; the punctuation of head and thorax is rather coarse; legs pale ferruginous or reddish-testaceous. L. $2-2\frac{1}{4}$ mm.

Rare; Strood, in black fungus growing on old ash-trees (Champion); Cobham Park; Chertsey, under bark (Blatch); Chat Moss, in fungus on birch trees (Chappell); Ockbrook, near Derby, in fungus on ash trees (Gorham); Mount Edgecumbe, Devon (Wollaston); Stretford, near Manchester, flying (A. Reston).

From *C. scanicus* this species may easily be distinguished by its narrower form, stronger punctuation, and less transverse and more parallel-sided thorax, the anterior angles of which are more plainly denticulate.

SECTION II.

This section, as here constituted, comprises the single species *C. populi*, which is by some authorities classed with the species contained in Section III., by others with those contained in Section IV., whereas others apparently consider it to be related to *C. lycoperdi* and its allies; the best plan therefore appears to be to place it under a separate section; it is exceedingly variable both as regards size and colour; the larger and darker specimens are very distinct, but some of the smaller and lighter specimens are very apt to be mistaken for other species.

C. populi, Payk. Rather elongate and parallel-sided, somewhat depressed, ferruginous or pitchy-red, with the elytra sometimes almost black on disc, clothed with rather thick and distinct yellow pubescence; thorax moderately transverse, with the anterior angles strongly reflexed, somewhat cup-shaped, more or less distinctly denticulate behind, sides nearly parallel to about middle, where they are produced in a distinct tooth, and thence plainly narrowed to apex, disc with callosities small but evident, basal depression plain with a more or less obsolete fold before scutellum; the head and thorax are rather strongly punctured, and the antennæ are somewhat short and stout with a narrow club; elytra moderately strongly punctured at base, the punctuation becoming obsolete towards apex, in typical specimens dark with the base and lateral margins lighter; legs ferruginous or reddish-testaceous; size very variable. L. $2\frac{1}{4}-3\frac{1}{2}$ mm.

Male with the tibiæ dilated, the posterior tibiæ curved, and the anterior tarsi dilated.

In hard fungus on trees, in rotten wood, by sweeping, &c.; also in and about the burrows of bees' nests, especially of *Colletes Daviesiana*; local and usually rare, and apparently confined to the London and South-eastern districts; Mickleham, Ripley, Esher, Sydenham, Farnham; Margate; Stephens records it from Norwich; in the Ent. Monthly Mag. vol. xii. p. 107, Mr. Champion records the capture of this species in abundance at Farnham, in and about the burrows of *Colletes Daviesiana*.

The lighter form of this species with the elytra entirely ferruginous

appears to be the *C. grandis* of Kraatz, which has been before now introduced into our lists as a distinct species.

SECTION III.

The four species contained in this section are distinguished by having a longitudinal fold at base of thorax before scutellum, the transverse impression being deep; the elytra are not setose, and the pubescence and punctuation are fine, both being more marked in *C. badius* than in the other three species.

- I. Anterior angles of thorax scarcely reflexed, forming no distinct tooth behind; upper surface very convex; form almost ovate; punctuation of elytra very fine *C. SAGINATUS*, Sturm.
- II. Anterior angles of thorax scarcely reflexed, forming a blunt tooth behind; punctuation of elytra less fine.
- i. Thorax subquadrate with sides almost parallel, usually darker than elytra *C. UMBRATUS*, Er.
- ii. Thorax rather strongly transverse, distinctly widened in middle, and thence contracted to base, usually lighter than elytra *C. SCANICUS*, L.
- III. Anterior angles of thorax broadly reflexed and produced behind into a more or less distinct sharp tooth; punctuation of elytra moderately strong *C. BADIUS*, Sturm.

C. saginatus, Sturm. Subovate, convex, entirely ferruginous or reddish-testaceous, rather thickly clothed with short depressed pubescence; head and thorax thickly and rather deeply punctured; antennæ with a moderate club; thorax transverse, with the anterior angles callose but scarcely reflexed, and with a distinct tooth at sides before middle, from which the sides are gently contracted to base; elytra finely punctured; legs ferruginous or reddish-testaceous. L. 2-2½ mm.

Male with the anterior tibiæ scarcely dilated, and the anterior tarsi slightly widened.

In haystack and vegetable refuse, fungi, &c.; occasionally found in birds' nests; it often occurs in warehouses; not uncommon and generally distributed throughout England; Scotland, rare, Forth and Tay districts; it is probably general in Ireland.

This species rather closely resembles light specimens of *C. scanicus*, but may be distinguished by its more ovate and convex form, the less distinctly callose and reflexed anterior angles of thorax, and the fact that the lateral tooth is situated before the middle; in some respects it is related to *C. pilosus*; its differences from that species have been above referred to.

C. umbratus, Er. Oblong, slightly convex, shining, with short fine pubescence, nigro-fuscous at least on the under-side; the colour of the upper-side is somewhat variable, but the thorax is usually distinctly darker than the elytra; thorax not very transverse, subquadrate, with the anterior angles scarcely reflexed and produced in a blunt angle

behind, and the lateral tooth situated in the middle of the sides; elytra finely and thickly and rather regularly punctured, the punctures becoming feebler at apex; legs ferruginous. L. $1\frac{1}{2}$ mm.

Male with the anterior tarsi dilated, anterior tibiæ not dilated.

In haystack refuse, &c., rare; Plumstead; St. Peter's, Kent; Yardley and Sutton, near Birmingham; Northumberland district; Scotland, scarce, Forth, Tay, and Solway districts.

This species may be distinguished from its allies by having at least the under-side, and usually the greater part of the upper-side dark; the thorax sometimes is black or almost black; it may also be known by its less transverse and subquadrate thorax, the lateral tooth of which is situated in the middle of sides which are not contracted to base, and by having the third joint of the antennæ not longer than the second; in this point it is related to *C. distinguendus*, to which it bears a strong superficial resemblance; it may, however, be distinguished from dark forms of that species by its shorter and more convex form, somewhat stronger punctuation, and the more parallel-sided thorax, which has the posterior angles more sharply right-angled.

C. scanicus, L. Oblong oval, not convex, thickly clothed with short depressed yellowish-grey pubescence; head, thorax, and antennæ ferruginous, elytra black or fuscous-black with the shoulders more or less broadly rufous, the rufous colour sometimes extending some way from base towards apex; head very thickly punctured, thorax thickly and rather deeply punctured, with the sides rounded and rather strongly contracted behind the lateral tooth which is situated in the middle; anterior angles strongly callose and produced into a blunt tooth behind; elytra rather finely but very distinctly punctured, the punctuation becoming obsolete towards apex; legs ferruginous. L. $2-2\frac{1}{4}$ mm.

Male with the anterior tarsi slightly dilated.

In haystack and other vegetable refuse; often found in houses; common and generally distributed throughout the kingdom.

V. patruelis, Sturm. This variety is entirely ferruginous or reddish-testaceous; it gives rise to considerable confusion, as it closely resembles some of the allied species from which the type form is at once distinguished by its colour; it may be distinguished by the shape of the thorax, and by having the lateral tooth situated in the centre of the sides; the sides of the thorax also are more distinctly crenulate; the punctuation is stronger than in *C. saginatus*, which species it most closely resembles.

Found under the same conditions and in company with the type, but much rarer.

A variety also occurs in which the elytra are rufous with the suture and external margin nigro-fuscous.

The anterior angles of the thorax in this species appear to vary some-

what in different specimens; this may explain the discrepancy between the descriptions of Erichson and Thomson, the former of whom says that they are produced in a blunt tooth behind, whereas the latter expressly says, "angulis anticis posticè haud dentatis."

C. badius, Sturm. Oblong, somewhat broad, slightly convex, ferruginous or rufous, clothed with rather thick and short pale pubescence; head very thickly punctured, thorax thickly and deeply punctured; thorax not strongly transverse with the anterior angles strongly reflexed and produced behind in rather a sharp tooth, lateral tooth situated in middle of sides, which are from thence rather strongly contracted to base, margins well marked, basal impression and fold above scutellum distinct; elytra of a long oval shape, moderately strongly and very distinctly punctured towards base, more finely at apex; legs ferruginous, anterior tibiæ and tarsi of male scarcely widened. L. 2-2 $\frac{2}{3}$ mm.

In haystack and vegetable refuse, flood rubbish, cut grass, &c.; one of the less common species. London district, generally distributed, Putney, Forest Hill, Dulwich, Crystal Palace (in the glass corridors of which many species of *Cryptophagus* occur at times freely), Darenth, Lee, Gravesend, Loughton; Sheerness; Folkestone; Hastings; Glanvilles Wootton; Isle of Wight; Knowle; Salford Priors; Montgomery; Northumberland district, rare; not recorded from Scotland or Ireland.

This species bears a somewhat close resemblance to *C. pilosus*, from which it may be distinguished by its finer punctuation and the more silky pubescence of the elytra; the shape of the anterior angles of the thorax, as well as its more distinct punctuation, will separate it from *C. saginatus*, and its proportionally shorter and broader form from *C. dentatus* and its allies.

SECTION IV.

The species belonging to this section are distinguished by having the transverse impression at the base of the thorax shallow and the basal fold before scutellum absent or obsolete; these characters, however, are in some cases more or less comparative, and the fact that there appear to be no other more satisfactory ones serves to show the difficulty of dividing the genus into practically workable sections.

- I. Anterior angles callosely reflexed but not distinctly toothed behind.
- i. Size larger and broader; posterior angles of thorax obtuse; lateral teeth situated in middle of sides **C. VALIDUS, Kr.**
 - ii. Size smaller and narrower; posterior angles of thorax right angles.
 1. Elytra shorter in proportion to thorax; form less cylindrical; lateral teeth of thorax distinct, situated before middle of sides **C. DENTATUS, Herbst.**
 2. Elytra longer in proportion to thorax; form very cylindrical; lateral teeth of thorax situated a little behind middle of sides **C. CYLINDRUS, Kies.**

- II. Anterior angles of thorax with the callosity taking the form of a bluntly projecting tooth; lateral teeth of thorax situated a little behind middle of sides *C. DISTINGUENDUS*, Sturm.
- III. Anterior angles of thorax very prominent and produced behind in a large strong tooth; lateral teeth of thorax situated in middle of sides.
- i. Thorax strongly transverse; tooth of anterior angles hooked *C. ACUTANGULUS*, Gyll.
- ii. Thorax subquadrate; tooth of anterior angles pointed *C. FUMATUS*, Gyll.

C. validus, Kr. This species very closely resembles a large example of the var. *patruelis* of *C. scanicus*; the thorax, however, is more rounded behind the middle, and has the anterior callosity less defined, and the elytra are longer, more parallel, more finely punctured, and more densely clothed with golden pubescence; from *C. saginatus* it may be known by having the lateral teeth situated in the middle of sides instead of before middle; the thorax is distinctly and rather deeply punctured, and the anterior angles are narrowly reflexed, the callosities not being marked and not terminating in a tooth behind; the elytra are closely and finely punctured; the colour is entirely ferruginous or rufous, and the fine and close golden pubescence gives it a yellowish appearance; it is one of our larger species. L. $2\frac{2}{3}$ –3 mm.

In refuse, decaying herbage, &c.; sometimes in warehouses; very rare; Edgbaston and Handsworth (Blatch); Scarborough (Lawson); Southampton (Gorham); Newcastle and South Shields (Bold). The specimens introduced by Mr. Rye (Ent. Monthly Mag. vi. 257) as *C. fumatus* were afterwards referred by him to this species (Ent. Monthly Mag. vii. 9).

C. dentatus, Herbst. (*pallidus*, Sturm). Elongate, somewhat parallel-sided, smaller and narrower than *C. scanicus*, lighter or darker ferruginous or rufous, thickly and not very finely pubescent; head very thickly punctured, antennæ with the third joint a little longer than second; thorax thickly punctured, subquadrate, with the anterior angles not strongly callose and the lateral teeth situated plainly before middle of sides; elytra finely but not very thickly punctured, the punctuation near suture being almost in rows, and becoming finer towards apex; legs ferruginous, male with the anterior tibiæ and tarsi scarcely dilated; size very variable. L. $1\frac{1}{3}$ –2 mm.

In haystack and other refuse, under bark, &c.; common and generally distributed throughout the kingdom.

This very common and variable species often gives rise to much difficulty; it may, however, be distinguished by its parallel form and the small development of the callosities of the anterior angles of thorax, as well as by having the lateral teeth distinctly situated before the middle of the sides; in this latter point it resembles *C. saginatus*, but it may easily be distinguished from that species by its subquadrate and almost parallel-sided thorax and quite different shape.

C. cylindrus, Kies. (*parallelus*, Bris.). Allied to the preceding species, but readily distinguished by its narrower and very cylindrical form and longer elytra, which are much more closely and finely punctured; the lateral teeth of thorax, moreover, are situated a little behind the middle of side instead of evidently before middle as in *C. dentatus*; it is one of the most distinct of our species. L. $1\frac{1}{2}$ mm.

Under bark of Scotch fir; rare; Scotland, Highlands, Tay and Dee districts, Rannoch, Braemar, Aviemore, &c.

C. distinguendus, Sturm. A small and rather broad species, somewhat variable in colour, being either rufous or occasionally brownish, thickly clothed with fine pale pubescence; antennæ with the third joint equal to the second; thorax not very transverse with the anterior angles not or scarcely visibly callosely reflexed, but projecting in the form of a blunt tooth, lateral teeth situated a little behind middle of sides, thickly and finely punctured; elytra oval rather convex but depressed on disc, very thickly and finely punctured, the punctuation being occasionally slightly rugose in parts; legs ferruginous, male with the anterior tibiæ and tarsi slightly dilated. L. $1-1\frac{1}{3}$ mm.

In haystack and vegetable refuse, fungi, &c.; not uncommon, but apparently somewhat local; Sheerness, Lee, Maidstone, Shirley near Croydon, Dulwich; Soham, Cambridgeshire; Hastings; Edgbaston, Sutton and Knowle, Birmingham district; Scarborough; Northumberland district, scarce but rather widely distributed; not recorded from Scotland or Ireland.

The shape of the anterior angles of thorax, and the relative length of the second and third joints of the antennæ, as well as the very fine punctuation, will serve to distinguish this species from most of the others; it is very closely allied to *C. umbratus*, and may very easily be mistaken for that species; the punctuation, however, is evidently finer, and the base of the thorax is not furnished with a fold before scutellum, which is very distinct in *C. umbratus*; according to Thomson the thorax is shorter than this latter species, but this hardly appears to be correct.

C. acutangulus, Gyll. (*Waterhousei*, Rye). Elongate, rather depressed, parallel-sided; fusco-testaceous or rufous with the head and thorax occasionally darker; head and thorax very thickly punctured; thorax narrower than elytra, very transverse, with the anterior angles strongly reflexed and produced in a large hook-shaped tooth, lateral tooth situated in middle of sides which are narrowed towards base; elytra very long in proportion to thorax, thickly and finely punctured, with a fine sutural stria behind, thickly covered with short and fine pubescence; legs ferruginous, anterior tarsi of male scarcely dilated. L. $2-2\frac{1}{2}$ mm.

In haystack and vegetable refuse, in fungi, &c.; not uncommon, but apparently somewhat local, and becoming rare towards the north; London district, generally

distributed; Hastings; Deal; Devonshire; Midland districts, Knowle, Edgbaston, Repton, &c.; Liverpool and Manchester districts; Northumberland and Durham district rather rare, Newcastle, Durham, &c.; Scotland rare, Forth district only.

The shape of the anterior angles of thorax will at once separate this very distinct species from all our other Cryptophagi.

C. fumatus, Gyll. Elongate, slightly convex, testaceous, clothed with fine depressed yellow pubescence; thorax quadrate, narrower than the elytra, closely punctured, with the anterior angles strongly reflexed, somewhat cyathiform or cup-shaped, and produced behind in a tooth, lateral teeth of thorax situated in middle of sides; elytra closely and finely punctured, the punctuation becoming obsolete behind; the antennæ have the third joint half as long again as second, a point that will distinguish the species from many of its allies; legs rufo-testaceous, male with the anterior tibiæ dilated towards apex, and the anterior tarsi widened. L. $2\frac{1}{2}$ –3 mm.

Very rare; a pair were taken by Mr. Bold near Newcastle, and recorded by him in Ent. Monthly Mag. vii. 35; it has subsequently been taken by Mr. Blatch in fungi at Salford Priors, and by Mr. Gorham in a cellar at Shipley near Horsham, and I have records from Cowfold near Horsham and from Deal; as mentioned above, the insects first introduced as this species by Mr. Rye proved to be *O. validus*, and it is probable that confusion has arisen in some collections owing to this mistake.

This species is most closely allied to *C. validus* in size, form of elytra, and colour of pubescence, but may be easily distinguished from it by the quadrate thorax and much more strongly developed teeth of the anterior angles of the thorax, which are somewhat suggestive of those of *C. acutangulus*, but are not hooked as in that species; the shape of the anterior angles of thorax, the form of the elytra, and the short golden pubescence of these latter which is not arranged in rows, will serve to separate it from *C. cellaris*; as Erichson remarks, in shape it much resembles one of the larger species of *Corticaria*.

The *C. fumatus* of Stephens' Illustrations, Mand. iii. 76, appears to be only *C. dentatus*.

SECTION V.

The two species comprised in this section are distinguished by having the elytra setose in rows; this character is very plainly observable in newly emerged and fresh specimens; both species are rather common and generally distributed.

- | | |
|--|--------------------|
| I. Upper surface somewhat depressed; size larger; third joint of antennæ much longer than second | C. CELLARIS, Scop. |
| II. Upper surface convex; size smaller; third joint of antennæ scarcely longer than second | C. AFFINIS, Sturm. |

C. cellaris, Scop. (*crenatus*, Herbst. and Sturm). Somewhat elongate, ferruginous or rufo-testaceous, finely punctured, clothed with

thick depressed greyish pubescence, elytra with long setose pubescence arranged in distinct rows; thorax not strongly transverse, with the anterior angles callose, produced into a very blunt angle behind, which is often hardly apparent, lateral teeth distinct situated in the middle of sides, which are more or less plainly narrowed from middle to base; elytra rather long, subparallel, but widened a little in middle, thickly and finely punctured, the punctuation becoming finer towards apex; legs ferruginous, or testaceous, anterior tibiæ and tarsi of male slightly dilated. L. $2-2\frac{2}{3}$ mm.

In haystack and flood refuse; also found in cellars in refuse, fungi, &c.; occasionally taken in birds' nests; common and generally distributed throughout the kingdom.

This species is of about the same build and size as *C. acutangulus*, but is at once distinguished from that species by the shape of the anterior angles of the thorax; from large specimens of *C. dentatus* it may be separated by the more distinct callosity of the anterior angles of thorax, and by having the lateral teeth situated in middle of sides instead of before middle.

C. affinis, Sturm. Oblong oval, convex, clothed with rather long greyish pubescence, ferruginous or rufo-testaceous with the thorax occasionally darker than the elytra; antennæ with the third joint scarcely longer than second; thorax very thickly punctured, transverse, with the anterior angles callose, reflexed, and terminating behind in a blunt and not very distinct tooth, lateral teeth situated in middle of sides, which are rather plainly narrowed behind; elytra closely but distinctly and rather strongly punctured, with pale pubescence and rows of setose pubescence which are more or less distinctly marked; legs ferruginous or testaceous, with the anterior tibiæ and tarsi slightly dilated in male. L. $1\frac{1}{4}-1\frac{1}{2}$ mm.

In haystack and vegetable refuse, fungi, &c.; rather common and widely distributed throughout England; recorded by Bold as not uncommon in the North-umberland and Durham district, but it appears to be rare in Scotland, and has only been found hitherto in the Solway district. Mr. J. J. Walker has taken it at Cromer in company with *Formica fuliginosa*.

This species most closely resembles *C. scanicus* v. *patruelis*, but may be distinguished by the setæ on the elytra which are very evident under a high magnifying power, and also by having the anterior angles of thorax more plainly reflexed; the thorax also is more deeply punctured. The rows of setæ on the elytra are often very indistinct in rubbed specimens, but even in these the difference of the pubescence may very easily be seen if they are examined under a compound microscope. If specimens of *C. affinis* and *C. scanicus* v. *patruelis* be placed together under a two-inch objective in a good light, there will be no need to compare them in any other way except by pubescence; under an ordinary lens they look very much alike.

SECTION VI.

The single species belonging to this section is easily known by having the first joint of the club of the antennæ very narrow, so that the club appears 2-jointed; the second joint is very transverse, about as broad as the last, which is, however, nearly three times as long as this the penultimate joint; it is a rare species in most localities.

C. pubescens, Sturm (*lapponicus*, Gyll.). Oblong oval, slightly convex, rather broad, ferruginous, very closely, but rather distinctly punctured, clothed with short and thick depressed yellow pubescence; antennæ as above described; thorax almost double as broad as long, almost as broad at base as base of elytra, anterior angles not very distinctly callose but very narrowly reflexed, sides with a very small and often obsolete tooth in middle of sides; elytra subparallel, closely punctured, the punctuation being stronger towards base and finer and slightly rugose towards apex; legs ferruginous or testaceous, tibiæ somewhat widened towards apex in both sexes, anterior tarsi very feebly dilated in male. L. 2-2½ mm.

In moss, haystack refuse, and occasionally by sweeping herbage; as a rule uncommon; London district rather widely distributed, Mickleham, Caterham, Esher, Birch Wood, Forest Hill, Chatham, Sevenoaks, Birdbrook; St. Leonards; Bristol; Tewkesbury; Bewdley Forest; Sherwood Forest; Knowle; Smallheath, Birmingham; Repton; Scarborough; Liverpool; Manchester; Northumberland district, very rare, on a withered fungus at Gosforth; Scotland, Aviemore (Champion); Balmuto, Fifeshire (Power). This species has occurred on the Continent in nests of *Vespa vulgaris* and *Bombus terrestris*.

SECTION VII.

This section contains one species, which is easily known by the even sides of its subquadrate thorax, by the antennæ being inserted further in front of the eyes than in the other species, and by the second joint of the antennæ being thicker and a little longer than third; the colour is variable, being sometimes entirely ferruginous or rufo-testaceous, while sometimes the thorax is much darker than the elytra or almost black.

C. bicolor, Sturm (*crenatus*, Gyll. and Thoms.; *scutellatus*, Newm.). Oblong, slightly convex, clothed with fine and short pale pubescence, colour as above described; thorax subquadrate with anterior angles scarcely callose, sides almost even; elytra broader than thorax, finely but distinctly punctured; legs ferruginous or testaceous, anterior tibiæ and tarsi slightly widened in male; the eyes are smaller and more prominent in this than in the other species; the size is variable. L. $\frac{7}{8}$ -1½ mm.

In haystack and vegetable refuse, not uncommon, but rather local; Sheerness;

Forest Hill; Sheppy; Soham, Cambridgeshire; Hastings; Devonshire; Sutton and Knowle, Birmingham; Northumberland district, rare, Long Benton, on walls of an outhouse; Scotland, rare, Lowlands, Solway district; Ireland, near Waterford.

The two following species require confirmation as British, as they rest only on one or two specimens, which may very probably have been importations.

(*C. fuscicornis*, Sturm. Allied to *C. dentatus*, but rather smaller and more cylindrical, with much more strongly and widely punctured elytra, and with the anterior angles of the thorax strongly prominent and terminating behind in a sharp tooth; the lateral tooth is situated at the middle of the sides, which are more narrowed behind it and less strongly crenulated than in *C. dentatus*. L. $1\frac{1}{2}$ mm.

A single specimen has been taken by Dr. Sharp in the London district, on which Mr. Rye introduced the species, remarking at the same time that Erichson's description does not quite agree with the specimen taken, which has very long pubescence; Erichson especially says that the pubescence of *C. fuscicornis* is short; Mr. Bold records one example from the Northumberland district as confirmed by Rye and Kraatz. The *C. fuscicornis* of Mr. Crotch's catalogue was afterwards withdrawn by him, his example being only an extreme variety of *C. dentatus*.

(*C. subfumatus*, Kr. This species resembles *C. validus*, being nearly as large, but narrower, especially at the thorax, the anterior callosities of which are more distinctly prominent. L. $2\frac{3}{4}$ mm.

A single specimen has been taken by Mr. G. C. Champion in the London district, and was recorded in 1876 (Ent. Monthly Mag. xii. 178); it has not, however, occurred since.

MICRAMBE, Thomson.

This genus was founded by Thomson to include Erichson's *Paramecosoma abietis* and *pilosula*; the latter of these (Skand. Col. x. 66) he positively identifies with the *Cryptophagus vini* of Erichson (Insect. Deutsch. iii. 369); the male of this latter common British species appears to have the posterior tarsi 5-jointed and therefore must be separated from *Cryptophagus*, and Thomson's identification would seem to be correct, as he says that he has examined Erichson's examples; the genus appears to be very closely allied to *Paramecosoma*, and mainly to differ in the denticulation of the sides of the thorax. In the catalogue of Heyden, Reitter, and Weise both species are included under *Cryptophagus*; the question, therefore, seems still to be considered somewhat doubtful; the two species below described are exceedingly closely allied, and *M. abietis* has been before introduced as British on examples of *M. vini*; a specimen returned to me not long ago from the Continent as the former species must undoubtedly be referred to the latter.

- I. Size smaller, pubescence longer and thicker, anterior angles of thorax produced into a tooth behind *M. VINI*, Panz.
 II. Size larger, pubescence shorter and less thick, anterior angles of thorax not produced into a tooth behind *M. ABIETIS*, Payk.

M. vini, Panz. (*Paramecosoma pilosula*, Er.; *Cryptophagus vini*, Er. et auct.). Reddish-testaceous or light ferruginous, slightly convex, clothed with rather long and thick pale pubescence; antennæ rather long; head triangular, eyes black, prominent; thorax in front almost as broad as elytra but considerably narrowed behind, strongly transverse, anterior angles callosely reflexed and produced in a more or less evident tooth behind, sides finely serrate, posterior angles blunt, punctuation thick and deep; elytra more or less oval, thickly but rather coarsely and deeply punctured, the punctures becoming much finer towards apex; legs slender, testaceous. L. $1\frac{1}{3}$ mm.

On flowers of gorse, broom, &c.; occasionally, but not often, in vegetable refuse; very abundant and widely distributed throughout the kingdom.

• **M. abietis**, Payk. Closely allied to the preceding, but distinguished by its rather larger size, shorter and less thick pubescence, and the fact that the anterior angles of the thorax are less dilated and not produced into a tooth behind; the elytra also are more finely and closely punctured. L. $1\frac{1}{2}$ mm.

On pine trees; Mickleham (W. G. Blatch); Guildford (E. Capron); the habitat of this species appears to be different from that of the preceding, but, unless I am mistaken, I have found *M. vini* on low-growing firs.

HENOTICUS, Thomson.

This genus was founded by Thomson for the reception of the insect known as *Cryptophagus serratus*, or better as *Paramecosoma serrata*; from the latter genus it differs by having the posterior tarsi of the male 4-jointed instead of 5-jointed; and from the former by having the penultimate joint of the tarsi abruptly shorter and narrower than the preceding instead of equal to it as in *Cryptophagus*; in this respect it resembles *Micrambe*, from which, however, it differs in not having the anterior angles of the thorax callosely reflexed; it is one of our rarest British species.

H. serratus, Gyll. (*Cryptophagus serratus*, Gyll.; *Paramecosoma serrata*, auct.). Oblong, nigro-piceous, rather shining, clothed with long and rather coarse pubescence; antennæ moderately long, ferruginous, with well-marked club; thorax a little narrower at base than elytra, transverse, feebly rounded at sides, anterior angles not callosely reflexed, posterior angles right angles, deeply and rather coarsely punctured, less closely on disc than on sides, side margins strongly and evenly serrate; elytra subparallel, with sides slightly rounded, rather coarsely

punctured; legs ferruginous; the elytra are usually obscurely brownish towards apex; the female appears to be rather broader than the male, which has the sides of the elytra less rounded. L. 2 mm.

On the male blossoms of the willow, &c.; very rare; London district, Forest Hill, one example found by Mr. Marsh crawling on a wall; Northumberland district, in a wood near Washington, very rare (Bold); Scotland, Tay district, Rannoch, very rare (Sharp).

PARAMECOSOMA, Curtis.

This genus, as constituted in the Munich catalogue, is made up of the three genera *Paramecosoma*, *Micrambe*, and *Henoticus*; in its strict sense it appears only to contain four or five species from Europe and North America; it is distinguished from *Cryptophagus* and *Henoticus* by having all the tarsi of the male 5-jointed, and from *Micrambe* by having the sides of the thorax not denticulate; our single species is not uncommon in some localities in England, but appears to be much commoner in Scotland.

P. melanocephalum, Herbst. Oblong, slightly convex, clothed with rather fine pale pubescence, brownish or brownish-testaceous, often almost reddish-testaceous, with the head and thorax black; antennæ long and rather slender, reddish; thorax much narrower at base than elytra, a third broader than long, anterior angles simple, side margins well marked, not denticulate, but with two projections in middle, very thickly and rather deeply punctured; elytra rather long, distinctly punctured almost in rows, the punctuation becoming obsolete towards apex; legs slender, reddish-testaceous. L. $1\frac{1}{2}$ mm.

On willows; also in flood refuse; local; London district, rare, Chatham, Walton-on-Thames; Glanvilles Wootton; Welshpool; Cromer (in company with *Formica fuliginosa*); Solihull; Salford Priors; Repton (not uncommon in flood refuse); Liverpool and Manchester districts; Northumberland district, Hartford Bridge, Briar Dene, and on the Irthing (in tufts of grass left on the bushes by floods); Scotland, in flood refuse on the banks of rivers, abundant as far north as the Moray district and probably general.

This species may be easily known by its colour, which is very bright when it is alive.

ATOMARIINA.

This tribe, like the preceding, contains a considerable number of species, but the genera have not been defined with certainty. *Cenoscelis*, Thoms., seems without doubt to be distinct, but the characters assigned for *Anchicera*, Thoms., appear to be scarcely sufficient to warrant its separation as a distinct genus; the species are easily distinguished from the Cryptophagina by the position of the antennæ, which are situated on the forehead between the eyes, and are approximate; the sides of the thorax are more or less distinctly margined, but are never denticulate,

and the upper surface is more or less sparsely pubescent and not setose; the tarsi are 5-jointed in both sexes, except in *Cænoscelis*.

- | | |
|--|---------------------------|
| I. Posterior tarsi of male 4-jointed; form elongate; club of antennæ apparently 2-jointed | CÆNOSCELIS, <i>Thoms.</i> |
| II. All the tarsi in both sexes 5-jointed; form oblong or oval; club of antennæ distinctly 3-jointed. | |
| i. Form oblong or oval; antennæ with the middle joints alternately longer and shorter; upper surface more or less distinctly punctured and pubescent | ATOMARIA, <i>Steph.</i> |
| ii. Form oval or almost circular; antennæ with joints 6-9 subequal; upper surface almost smooth, scarcely punctured or pubescent | EPHISTEMUS, <i>Westw.</i> |

CÆNOSCELIS, Thomson.

This genus contains one or two species which were divided off from *Atomaria* by Thomson; they are distinguished by the 2-jointed club of the antennæ, and the plainly marked side-edges of thorax, and also by having the tibiæ, especially the anterior ones, considerably dilated towards apex ("nästan spadlika," "almost spade-like," Thoms. Skand. Col. v. 267); our single species is rare, although it is widely distributed, and probably occurs in many other localities than those that have been recorded.

C. ferruginea, Sahlb. (*pallida*, Woll.). Elongate, parallel-sided, entirely testaceous, except eyes which are black, clothed with thick pale pubescence, punctuation very fine; head triangular, antennæ stout with an apparently 2-jointed club; thorax subquadrate with sides only slightly rounded, side margins strong, basal margin produced before scutellum, basal depression deep and terminated by a longitudinal stria on each side; elytra rather depressed, with long pubescence set in rows, more finely punctured than thorax; legs testaceous, tibiæ widened towards apex. L. $1\frac{1}{2}$ mm.

By sweeping at twilight; also in flood refuse, &c.; occasionally taken in the runs of *Formica fuliginosa*; rare; Chatham, Caterham, Claygate, Mickleham, Birdbrook; Yarmouth; Fulbourn, near Cambridge; Cotswold Hills, Gloucestershire; Scarborough.

ATOMARIA, Stephens.

This genus comprises a large number of very minute insects which vary much both in form and colour, and have been divided by Thomson and others into two genera and several sections; about seventy species are enumerated in the Munich catalogue, but others have since been added; they occur chiefly in Europe and Northern Asia, but a few species have been found in Madeira and the Canary Islands, and one at least has been recorded from the Cape of Good Hope; they live in moss, vegetable refuse, fungi, &c.; some of the species are very hard to distinguish, and many of them require a careful comparison with type specimens before they can be determined with any degree of certainty.

Thomson divides the genus as follows :—

- Antennæ less distant from one another than from the eyes, with the fourth, sixth, and eighth joints less than those contiguous to them, and the first larger than the second ; body oblong, less convex, with the thorax not or scarcely transverse. ATOMARIA, *i. sp.*
- Antennæ more distant from one another than from eyes ; body short, with the thorax gibbous in front, transverse. ANCHICERA, *Thoms.*

The character, however, afforded by the relative distance of the antennæ from one another and from eyes is very unsatisfactory, and practically useless, as any student will find who tries to separate species by it ; it appears, therefore, to be the best course to abandon it altogether, and to separate the species primarily by their general form, which varies from the elongate shape of *Cryptophagus* to the almost orbicular form of *Ephistemus* ; for further particulars concerning the genus the student is referred to Mr. T. Vernon Wollaston's excellent revision, published in the Transactions of the Ent. Society of London, vol. iv. N. S. part iii. 1857.

The species may be divided for convenience sake into the following three sections :—

- I. Form elongate, parallel-sided, more or less depressed ; thorax not or only slightly transverse.
- II. Form oblong, shorter, more or less parallel-sided, moderately depressed ; thorax transverse, with posterior margin not raised in middle.
- III. Form short, more or less convex, sometimes ovate ; thorax as a rule very transverse but sometimes only moderately so, generally more or less gibbose in front, with posterior margin more or less raised in middle.

SECTION I.

The species belonging to this section are distinguished by their elongate, parallel, and generally subcylindrical form, which is however, as a rule, somewhat depressed on the upper surface ; the greater part of them are uncommon, but one or two (e.g. *A. linearis*) are occasionally met with in such profusion as to have been recorded as injurious to crops.

- I. Antennæ with the last joint narrower than the penultimate ; size larger. *A. FIMETARII, Herbst.*
- II. Antennæ with the last joint about as broad as penultimate ; size smaller.
 - i. Thorax as broad or nearly as broad at base as base of elytra.
 1. Colour entirely yellowish-testaceous ; posterior angles of thorax right angles ; antennæ long and stout *A. DILUTA, Er.*
 2. Colour lighter or darker ferruginous, reddish-brown, pitchy, or fuscous, apex of elytra usually lighter than base ; posterior angles of thorax blunt or rounded.

- A. Transverse basal impression of thorax without a fold at each side.
 - a. Antennæ very short and stout; elytra dark, lighter towards apex, the colour not being well defined, and sometimes obscurely marked A. FUMATA, Er.
 - b. Antennæ longer and less stout.
 - a*. Form shorter; elytra shorter in proportion to thorax; antennæ moderately long and stout.
 - a†. Elytra with a well-defined light spot before apex; punctuation of thorax close and strong A. BARANI, Bris.
 - b†. Elytra usually lighter at apex, sometimes almost entirely yellowish-brown, but without well-defined light spot.
 - a‡. Punctuation of thorax coarser and more diffuse A. NIGRIVENTRIS, Steph.
 - b‡. Punctuation of thorax close and fine A. WOLLASTONI, Sharp.
 - b*. Form narrower; elytra longer in proportion to thorax; antennæ elongate and slender.
 - a†. Thorax as long as broad, with punctuation very close and deep; form quite linear and parallel A. LINEARIS, Steph.
 - b†. Thorax slightly transverse, with punctuation less close and finer; form less linear. A. ELONGATULA, Er.*
 - B. Transverse basal impression of thorax deep, with a small raised fold at each side A. UMBRINA, Er.
- ii. Thorax considerably narrower at base than base of elytra.
 - A. Size large; colour dark; elytra convex A. LONGICORNIS, Thoms.
 - B. Size small; colour testaceous or reddish-yellow, sometimes brownish; elytra rather flat. A. BADIA, Er.

A. diluta, Er. Entirely testaceous, rather depressed, with fine and somewhat sparing pubescence; antennæ rather long and stout; thorax almost as long as broad, feebly rounded at sides, posterior angles right angles, rather diffusely and finely punctured; elytra elongate, sparingly and very finely punctured; in general appearance this species almost exactly resembles *C. ferruginea*, but may at once be known by the 3-jointed club of antennæ, the shape of the tibiæ, and the finer and more sparing punctuation and shorter pubescence. L. $1\frac{1}{2}$ mm.

Very rare; Scotland, Tweed and Forth districts, Edinburgh, Falkirk, &c.

A. fimetarii, Herbst. Oblong, subcylindrical, pitchy-red or fuscous,

* The thorax of *A. elongatula* appears to vary somewhat in breadth in proportion to the elytra; some specimens might be classed with *A. longicornis* and *A. badia* in this respect; and it must, therefore, be regarded as forming a transition towards them.

with the thorax usually darker than the elytra which are often brownish-red, clothed with fine pubescence; antennæ ferruginous, stout, closely approximate at base, with the first joint much developed and distinctly curved on the outer side, last joint plainly narrower than penultimate; thorax convex as long as broad, moderately rounded at sides, distinctly punctured, base evenly margined, all the angles blunt or rounded; elytra parallel-sided, somewhat depressed on disc, distinctly but not strongly punctured; legs testaceous or reddish-brown. L. 2 mm.

In moss, and in flood and vegetable refuse; rare; Dulwich, Carshalton; Repton; Scarborough; Flamborough; it has been taken in abundance in York Cemetery by the late Archdeacon Hey in a fungus, *Coprinus comatus*, a species usually found in burying-grounds.

The large size, subcylindrical form, and convex thorax will easily distinguish this species.

A. fumata, Er. (*umbrina*, Gyll., nec Er.). Elongate-oblong, rather convex, shining, with somewhat coarse and scanty pubescence, fuscous-black or brownish-red, lighter towards apex of elytra; antennæ very short and stout, ferruginous, with fifth and seventh joints transverse; thorax scarcely transverse with sides slightly rounded, convex, rather deeply and thickly punctured, base evenly and strongly margined; elytra evidently more coarsely, although not more deeply, punctured than thorax; legs reddish-brown or reddish. L. $1\frac{1}{2}$ mm.

By evening sweeping under fir trees; also under bark of birch, &c.; rare; Mickleham (Champion); Caterham; Bold records it from Gosforth and Gibside, Northumberland district, as inhabiting a small yellow fungus which grows on decaying stumps, and as not rare; it is not, however, quite clear whether he is referring to this species or to *A. fimetariï*; in fact, the latter seems most probable.

The species is easily distinguished from all the others by its short stout antennæ; it somewhat resembles *A. Barani*, but is differently coloured and much less closely punctured.

A. Barani, Bris. Somewhat variable in colour, but usually dark pitchy-brown or black with a distinct spot before apex; light specimens, however, occur with the suture and apex of elytra only darker, and intermediate forms are found with a spot at the shoulder and an oblique livid stain near the apex; the doubtful forms may be distinguished from the allied species by the close and at the same time strong punctuation of the thorax; the antennæ are moderately long, ferruginous; the thorax is slightly transverse with the sides feebly rounded, convex; the elytra are evidently more depressed than in *A. fumata*, and are coarsely punctured, the punctures being more diffuse and larger than those of thorax; legs testaceous. L. $1\frac{1}{2}$ mm.

At roots of grass, in flood refuse, &c.; only found in marshy places; Eltham (Sharp); Lee (Champion); Notting Hill, on edges of a pond (Power); it is not uncommon where it occurs, but is very local.

A. nigriventris, Steph. (*nana*, Er.). Convex, subcylindrical, shining, with somewhat coarse pubescence, fuscous with shoulders and apex of elytra lighter, or with thorax black and elytra entirely or almost entirely reddish-brown; antennæ rather stout, ferruginous; thorax not very transverse, with sides slightly rounded, diffusely and deeply punctured, base strongly margined, basal depression not bounded by longitudinal folds; elytra convex, sparingly and rather strongly punctured; legs ferruginous. L. $1\frac{1}{3}$ mm.

In haystack and other vegetable refuse; generally distributed throughout England; common in the London district; somewhat less common further north; Scotland, not common, Solway and Forth districts; Ireland (Haliday).

A. umbrina, Er. (*fuscicollis*, Mannh.; *plicicollis*, Mäkl.). Closely allied to the preceding, but distinguished by the structure of the thorax, which has the basal depression furnished with a raised longitudinal fold or ridge at each side; the sides and posterior angles are also more evidently margined; the basal folds are sometimes very obscure, but the species may apart from them be distinguished from *A. nigriventris* by its usually slightly larger size, and less deeply punctured surface; legs reddish-yellow. L. $1\frac{1}{2}$ mm.

In moss, dead leaves, vegetable refuse, &c.; occasionally found in sand-pits; not uncommon in some places, but local; London district, generally distributed; Glauvilles Wootton; Holm Bush, Brighton; Gloucestershire; Market Bosworth, Leicestershire; Cransley, Northamptonshire; Birmingham district; Repton; Mablethorpe, Lincolnshire; Chat Moss; Northumberland district, very rare; Scotland, not common, Solway, Tweed, Clyde, Forth, and Tay districts; Ireland, near Dublin, &c.

A. Wollastoni, Sharp. At first sight this species bears a very close resemblance to the two preceding; it may, however, be at once known from them by the very much finer and closer punctuation of the thorax, and the shorter and more delicate pubescence; in this latter respect it somewhat resembles *A. elongatula*, but is less elongate, and has the antennæ shorter and stouter; from *A. fumata* it is distinguished by its finer punctuation, more delicate pubescence, and longer and thinner antennæ; it appears to be a good and distinct species L. $1\frac{1}{2}$ mm.

Very rare; Scotland, Forth district; found by Dr. Sharp on the banks of a small loch near Edinburgh.

A. linearis, Steph. Elongate, narrow and linear, parallel-sided, depressed, reddish or reddish-brown, closely and finely but distinctly punctured, and clothed with very short and not very thick greyish pubescence; antennæ and legs ferruginous; thorax as long as broad, quadrate, as broad as elytra, with the base finely and evenly margined; the punctuation of elytra is a little less close than that of thorax; the species may at once be known by its very narrow and parallel form, in conjunction with the fine posterior margin of its quadrate thorax. L. $1\frac{1}{3}$ mm.

In moss, haystack refuse, &c.; common and generally distributed in the London district and the south, and occurring not uncommonly in the midland districts; it becomes, however, rarer further north, and I can find no record from any place north of the Manchester district; Haliday records it from Ireland, but it has not yet been found in Scotland. It is occasionally very abundant, and has been recorded by Mr. Fitch as doing damage to mangold-wurzel.

A. elongatula, Er. Elongate, but not so parallel-sided as the preceding species; in some specimens the base of thorax is markedly narrower than the base of elytra, so that it might almost be classed with *A. longicornis* and *A. badia*; colour fuscous-reddish or brownish-red with the thorax usually darker; antennæ red or ferruginous, long and comparatively slender; thorax nearly as long as broad, with the sides moderately rounded, finely and rather closely punctured, base evenly and finely margined; elytra rather convex, evidently but rather irregularly and not deeply punctured; legs ferruginous. L. $1\frac{1}{2}$ mm.

In refuse, &c.; rare; Highgate Wood, Dulwich, Mickleham; Coombe Wood; Hastings; Wiltshire; Gloucestershire; Whittlesea Mere; Cornwall; Northamptonshire; Lincoln; Bridlington and Scarborough, Yorkshire; Scotland, very rare, Forth and Clyde districts; Ireland, co. Cork, near Kanturk.

I have a somewhat doubtful Scotch example of this species with dark thorax and testaceous elytra.

A. longicornis, Thoms. A rather large dark species, black or pitchy-black, with the extreme apex of elytra and shoulders occasionally lighter; oblong, convex, rather shining, somewhat cylindrical, clothed with rather fine greyish pubescence; antennæ rather long, ferruginous or red with club darker, or almost black; thorax scarcely transverse, evidently narrower at base than elytra, very thickly but distinctly punctured, sides slightly rounded, base evenly margined; elytra much less closely punctured than thorax, punctuation distinct and somewhat irregular, shoulders well marked; legs ferruginous, femora and sometimes part of tibiæ pitchy. L. nearly 2 mm.

Very rare; a single specimen was taken in 1866 by Mr. Crotch near Beaulieu, Inverness-shire, and another by Dr. Sharp near Eccles, Dumfries, on May 22nd, 1876; it has also occurred at Paisley.

This species rather resembles a *Corticaria* than an *Atomaria*; it is about the size of *A. fimetarii*, but has longer antennæ and a less ample thorax; in the structure of its antennæ it resembles *A. elongatula*, but its elytra are more convex and rather more strongly punctured, and its colour is different.

A. badia, Er. (*alpina*, Heer.). Oblong, depressed, rufo-ferruginous with thorax darker, sometimes entirely testaceous, clothed with fine ashy pubescence; antennæ moderate, ferruginous or testaceous, rather thick, club narrow; thorax much narrower at base than base of elytra, almost as long as broad, very finely and thickly but distinctly punctured, base evenly margined with a plain longitudinal depression;

elytra almost parallel-sided with sides slightly rounded, rather finely punctured, but less closely than thorax; legs lighter or darker testaceous or reddish. L. $1\frac{1}{2}$ – $1\frac{3}{5}$ mm.

Usually found on Scotch fir, especially in the dead branches; occasionally by sweeping; rare; Esher (Champion); Gravesend (Power); Dover (Hall); Deau Forest (Blatch); Scotland, rare, Highlands, Dee district, Braemar.

This species is perhaps most closely allied to *A. elongatula*, but is of a lighter colour (nearly all the specimens I have seen are more or less testaceous), and has broader and more strongly punctured elytra; the thorax, too, is narrower in proportion to the elytra, and has the basal depression much more marked.

SECTION II.

The two species contained in this section are distinguished from the preceding by their rather shorter form, and by having the antennæ somewhat more removed from one another at their insertion; from the following section they may be separated by their somewhat more depressed and less convex form and more obtuse posterior angles of thorax; from most of the species that follow they differ in not having the margin of the thorax raised in the middle.

- I. Antennæ and legs black or pitchy-black *A. FUSCIPES*, Gyll.
 II. Antennæ reddish, legs reddish or reddish-brown *A. PELTATA*, Kr.

A. fuscipes, Gyll. (*concolor*, Maerk). Oblong, rather shining, clothed with fine and short greyish pubescence, entirely black (with the apex of elytra sometimes obscurely brownish); antennæ moderate, black; thorax transverse, with basal and apical margins equal in breadth, sides rather strongly rounded, transverse basal impression continued almost to sides, basal margin not raised, finely and closely punctured; elytra depressed on disc, with sides almost parallel, finely punctured; legs black or pitchy-black. L. 1 – $1\frac{1}{3}$ mm.

In haystack refuse, manure-heaps, &c.; also in heaps of sea-weed near the coast; often by sweeping; generally distributed throughout England and Scotland, but apparently much rarer in the counties that do not border on the sea; in fact, it hardly appears to be recorded from more than one or two Midland localities. Mr. Haliday records it from Ireland. Mr. Wollaston mentions that he has brushed it "in immense profusion" from off the grass at the edges of the cliffs at Bridlington and Flamborough in Yorkshire.

The totally black colour of this insect, the legs and antennæ also being black or pitchy-black, will at once distinguish it from all its allies.

A. peltata, Kr. Oblong, moderately shining, black or pitchy-black with the elytra fading off towards apex into a more or less bright chestnut colour, pubescence grey, fine and rather close; antennæ ferruginous; thorax transverse with sides strongly rounded and much dilated in middle, base truncate, with a strong transverse depression, finely mar-

gined; punctuation of thorax fine and very close, much closer than that of elytra; elytra long in proportion to thorax, with the sides slightly rounded and somewhat strongly narrowed at apex, shoulders well marked usually obscurely testaceous or brownish, punctuation distinct but not close; legs dark ferruginous, base of tibiæ and tarsi lighter, sometimes almost entirely reddish. L. $1\frac{1}{3}$ mm.

In vegetable and haystack refuse; rare; Hampstead, Mickleham, Caterham, Forest Hill, Sheerness, Chatham, Strood, Birdbrook; Suffolk; Folkestone; Leicestershire; Spridlington and South Ferriby, Lincolnshire; Manchester district; not recorded from Northumberland; Scotland, very rare, Clyde district, Paisley (Morris Young).

The oblong depressed shape, well-marked colour, and the shape of the thorax, which is strongly dilated in the middle, will serve to distinguish this species.

SECTION III.

This section contains the largest number of species, and it is very hard to find any satisfactory characters by which to divide them; some of them are very closely allied, and require great care in their discrimination; they are distinguished by having the posterior angles nearly right angles, by the transverse basal impression being stronger in the middle, and by the basal margin being almost always more or less strongly raised in the centre; the form is more oval and convex than in either of the preceding sections, and the elytra are usually more or less strongly dilated at sides. I believe that a useful character might be found in this and the preceding sections in the presence or absence of cross reticulation between the punctures of thorax and elytra; this is of very great importance in the genus *Meligethes*, and is certainly present in some of the species of *Atomaria*, although from the small size of the insect it requires a very high magnifying power to distinguish it. I have not been able to find time to work the question out, but some future student of the group may perhaps be able to do so.

I. Thorax truncate at base.

i. Anterior angles of thorax more or less acute and prominent.

1. Thorax bright red, elytra black or pitchy-black; upper surface very shining, scantily pubescent.

A. Thorax with a deep depression at base not bounded by a longitudinal fold on each side A. NIGRIPENNIS, *Payk.*

B. Thorax with depression at base scarcely visible; form shorter and broader A. DIVISA, *Rye.*

C. Thorax with a deep depression at base bounded by a fold on each side. A. MUNDA, *Er.*

2. Upper surface lighter or darker brown or reddish-brown.

A. Size larger; thorax not very transverse; punctuation and pubescence more diffuse A. IMPRESSA, *Er.*

- B. Size smaller; thorax very transverse; punctuation and pubescence close A. FUSCATA, *Sch.*
- ii. Anterior angles of thorax not prominent.
 - 1. Thorax moderately transverse, very convex; upper surface, as a rule, entirely deep black, with at most apex of elytra obscurely lighter A. ATRA, *Herbst.*
 - 2. Thorax strongly transverse; upper surface variable in colour, but never entirely deep black.
 - A. Length not exceeding 1 mm.; colour very variable, but with thorax usually testaceous A. PUSILLA, *Payk.*
 - B. Length exceeding 1 mm.
 - a. Colour nearly always testaceous; thorax rarely darker than elytra.
 - a*. Punctuation finer; form narrower and less convex A. ATRICAPILLA, *Steph.*
 - b*. Punctuation deeper; form broader and more convex A. BEROLINENSIS, *Kr.*
 - b. Elytra with base dark and apex more or less broadly testaceous, the colour not being sharply defined; punctuation of thorax very close, coarser and deeper.
 - a*. Thorax black; form more oblong; antennæ longer A. BASALIS, *Er.*
 - b*. Thorax red; form more ovate and wider; antennæ shorter A. RHENANA, *Kr.*
 - C. Elytra with basal half dark and apical half yellowish-testaceous, the colour being very sharply defined; punctuation of thorax close but less deep A. MESOMELAS, *Herbst.*
 - D. Elytra black with a large common light spot reaching across middle of elytra; punctuation of thorax not so close A. GUTTA, *Steph.*
- II. Thorax bisinuate at base.
 - i. Size larger, very convex; upper surface entirely black A. GIBBULA, *Er. (Hislopi, Woll.)*
 - ii. Size smaller; apex of elytra reddish or brownish-red.
 - 1. Form convex, evidently narrowed in front and behind A. APICALIS, *Er.*
 - 2. Form oblong-oval.
 - A. Colour dark with apex of elytra lighter.
 - a. Size larger; upper surface more distinctly punctured A. ANALIS, *Er.*
 - b. Size smaller; upper surface less distinctly punctured A. RUFICORNIS, *Marsh.*
 - B. Colour rufo-piceous or brownish-red with shoulders and apical region of elytra more or less broadly and clearly rufescent A. VERSICOLOR, *Er.*

A. nigripennis, *Payk.* Subovate, very scantily pubescent, shining, head and thorax bright red, elytra black; antennæ moderately long and stout, red; thorax not very strongly transverse with sides almost angularly rounded in middle, narrowed in front, anterior angles very acute and prominent, sparingly and very finely punctured, basal trans-

verse impression rather deep without a fold on each side; elytra rather strongly widened before middle, sparingly and finely punctured, black with extreme apex and shoulders obscurely yellowish-brown; legs testaceous. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

In haystack refuse, &c.; also in fungus in cellars; very local and not common; London district, rare, Forest Hill; Knowle; Birmingham; Gloucester, taken in some numbers by Professor Allen Harker in fungus in a wine cellar in company with *Cryptophagus* and *Orthoperus atomus*; Burton-on-Trent; Stretford, near Manchester; Northumberland district; Scotland, rare, "Dalmeny Woods, near Edinburgh," Murray's Cat.

A. divisa, Rye. This species somewhat closely resembles *A. nigripennis* at first sight, but is very distinct from it; the general form is shorter and more oblong, and much less narrowed in front; the antennæ are shorter; the thorax is longer with the sides more parallel and more evenly rounded, with the transverse basal depression scarcely visible; the punctuation, especially of elytra, is distinctly stronger, and the femora are darker; the same characters will also distinguish it from *A. munda*; it is most closely allied to *A. rubricollis*, Bris., from which it differs in its much shorter build, the much stronger punctuation of its elytra, which are less contracted behind, its black scutellum, almost quadrate thorax, and darker femora. L. $1\frac{1}{3}$ mm.

This species rests on a single specimen in Mr. Rye's collection, locality unknown; it is certainly very distinct from all our other species.

A. munda, Er. Closely allied to *A. nigripennis*, but with the elytra usually not so deeply coloured, sometimes almost reddish; it is also longer and not so broad in form; the thorax is more closely punctured, and has the sides very slightly less straight before base; the transverse impression at base is bounded by a fold on each side; the elytra are a little more plainly punctured and the breast is darker. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

In haystack refuse, rubbish-heaps, cow-houses, cellars, &c.; local; London district, local but common, Sheerness, Lee, Egham, Forest Hill, Esher, Croydon, Cowley, Ealing; Staines; Knowle; Scarborough; Stretford, near Manchester (by sweeping); Lancaster; Northumberland district, very rare, Gosforth and Cullercoates; not recorded from Scotland; Ireland, near Waterford (Power).

The thorax of this species appears sometimes to be somewhat darkened; this is chiefly, however, the case with old specimens that have not been set when fresh; the general colour, however, is certainly not so bright as in *A. nigripennis*.

A. impressa, Er. One of our larger species; oblong-oval, not very convex, shining, of a lighter or darker fuscous-brown colour, thorax usually darker, upper surface clothed with fine and scanty ashy pubescence; antennæ rather long, reddish or reddish-brown; thorax only slightly transverse, narrowed in front, very feebly rounded at sides, base

with a strong transverse depression bounded by a fold on each side posterior angles right angles, sparingly and finely but distinctly punctured; elytra plainly and moderately strongly punctured at base, punctuation evanescent towards apex, dark, with shoulders and apex lighter; legs reddish. L. 2 mm.

In haystack refuse; rare; Lee, Kent, one specimen (Sharp); Scarborough (R. Lawson); Stretford, near Manchester, under refuse, banks of Mersey (Chappell); Northumberland district, rare, Banks of Irthing (Bold).

A. fuscata, Sch. Oblong-oval, not very convex, varying in colour from dark pitchy-brown, almost black, to brownish-testaceous, clothed with rather fine greyish pubescence; antennæ moderately long and stout, ferruginous or reddish-brown; thorax very transverse, with sides gently rounded, thickly and distinctly punctured, transverse basal impression rather deep, basal margin raised in middle, posterior angles almost right angles; elytra not so closely punctured as thorax; legs lighter or darker brownish or testaceous. L. $1\frac{1}{3}$ mm.

In haystack refuse, manure-heaps, &c.; rather common and generally distributed throughout England; Scotland common, Solway, Forth, and Clyde districts; Ireland, Killarney and near Waterford, and probably generally distributed.

Owing to the great variation in colour this is often rather a puzzling species; dark specimens somewhat resemble *A. atra*, but that species may be distinguished by its broader and longer and much more convex thorax as well as by its deeper punctuation; light examples are very like ordinary specimens of *A. berlinensis*, but that species has the elytra shorter and more convex, and the sides of the thorax less rounded and less dilated about middle; the punctuation also of the thorax is not quite so close and strong; it is sometimes confounded with *A. apicalis*, which, however, is quite differently shaped (being much more narrowed in front and behind), and has the elytra more sparingly and strongly punctured and pubescent.

A. atra, Herbst. Oval, convex, deep black, shining, clothed with short and fine greyish pubescence, which is rather scanty; antennæ moderately long, reddish-testaceous with club usually darker, comparatively widely separated at insertion; thorax not very transverse, narrowed in front, but with sides very slightly rounded, almost straight, behind, strongly convex, depressed at base, rather coarsely and deeply punctured; elytra broadest before middle, rather plainly punctured towards base, obsolete towards apex, apex usually reddish-brown; legs testaceous or brownish-testaceous, femora darker. L. $1\frac{1}{3}$ mm.

Damp places, by sweeping, &c.; rare; Hammersmith Marshes (one specimen, Waterhouse); Leigh, Kent (one specimen taken by Miss Shepherd on banks of Medway); Mickleham; Cowley; The Holt, Farnham (Power); Hastings; Stoke Wood, Devon, old fungi (this record may be in error); Slapton Ley, Devon, and Withington, Gloucestershire (Wollaston); Loch Gelly, Scotland (Power); Ireland (Haliday).

A. pusilla, Payk. A very small species, which may at once be known by its minute size; oblong-oval, subdepressed, very finely and closely punctured, clothed with short and fine pale pubescence; colour very variable, the elytra presenting all shades from black or dark fuscous with extreme apex testaceous to entirely testaceous; the thorax, however, is more or less rufous and usually reddish-testaceous; antennæ moderately long and stout; thorax transverse, plainly rounded at sides, basal margin raised before scutellum, transverse basal impression not deep; elytra feebly widened in middle, subparallel, obsoletely punctured; breast and usually the whole of the abdomen brownish; legs testaceous or clear yellow. L. $\frac{4}{5}$ –1 mm.

In moss, haystack refuse, &c.; occasionally by evening sweeping; not uncommon, and widely distributed throughout England; Scotland, not common, Lowlands, Solway, Tweed, and Forth districts; Ireland, Dublin and co. Cork, and probably generally distributed.

This species, from the variety in its colour, has been separated into several so-called "species;" it represents the following species of Stephens' Ill. Brit. Ent. pp. 64, 65, 66:—*A. fulvicollis*, *thoracica*, *evanesens*, *phæogaster*, *basella*, and *castanea*.

A. atricapilla, Steph. (*nigriceps*, Er.) Oblong-ovate, entirely testaceous with the scutellary region and vertex of head usually obscurely darker; the abdomen also is, as a rule, dark, but the insect is somewhat variable in this respect; the breast is always black or fuscous; antennæ moderately long, testaceous; thorax transverse, rather deeply and distinctly punctured, with the basal margin gently raised, sides rounded; elytra slightly widened in middle, with punctuation fine towards base, obsolete towards apex; legs testaceous. L. $1\frac{1}{3}$ mm.

In haystack and vegetable refuse generally; common and generally distributed throughout the kingdom.

A. berolinensis, Kr. Oblong-ovate, somewhat deeply punctured, with the elytra and thorax separately and rather strongly convex, so that the line of separation between them is strongly marked if viewed sideways; the colour of normal specimens is rufo-testaceous with the head, thorax, scutellary region and outer margin of elytra, especially towards shoulders, more or less infuscate; the species is, however, more usually rufo-testaceous with the darker markings scarcely pronounced, and is sometimes entirely testaceous; these latter specimens bear a close resemblance at first sight to *A. atricapilla*, but the larger, broader, and more convex form, deeper punctuation, and squarer and more largely developed thorax will easily distinguish them. L. $1\frac{1}{2}$ mm.

In haystack and vegetable refuse, &c.; local; London district, rather common, Shirley, Twickenham, West Wickham, Lee, Sevenoaks, Sheerness, Tonbridge; Hastings; Gosport; The Holt, Farnham; Gloucestershire; Tintern, near Monmouth; Knowle; Northamptonshire; Repton; Flamborough and Scarborough, Yorkshire;

Manchester district; Northumberland district, common; Scotland, local, Solway, Forth, and Clyde districts.

In the last European catalogue this species is given as a variety of *A. atricapilla*.

A. basalis, Er. (*nitidula*, Heer). Ovate, convex, clothed with fine ashy pubescence, black with the elytra more or less rufo-testaceous towards apex, the colour not being sharply defined; antennæ moderately long, reddish-testaceous, club narrow; thorax somewhat narrower at base than elytra, half as broad again as long, feebly rounded at sides, broadest before middle, very closely and rather deeply punctured, depressed at base, basal margin raised in middle; elytra broadest before middle, closely and rather strongly punctured; under-side black; legs testaceous, femora more or less brownish. L. $1\frac{1}{2}$ mm.

In vegetable refuse, &c.; also by sweeping in marshy places, especially in and near osier-beds; local; London district, not common, Shirley near Croydon, Darenth, Hammersmith; Aylsham; Woodbastwick; Hastings; Wicken Fen; Birmingham district; Stratford-on-Avon; Repton, common by sweeping in a marshy place near an osier-bed in company with *Crepidodera Modeeri*; Burton-on-Trent; not recorded from the northern counties; Scotland, very rare, Forth district, Edinburgh.

A. rhenana, Kr. (*v. rhenana*, Cat. H. R. W.). Closely allied to the preceding, but broader and more convex, with the thorax rufous and the testaceous colour of elytra reaching further towards base; the antennæ are rather shorter and stouter; the thorax has the sides more strongly rounded and almost angularly dilated about middle, and the elytra are considerably broader and more widened before middle. L. $1\frac{1}{2}$ mm.

Very rare; one specimen in Mr. Rye's collection labelled Great Yarmouth; one specimen in Dr. Sharp's collection from a marsh between Shoreham and Lancing; eight specimens, also in Dr. Sharp's collection, from Brighton; Mr. T. Wood has taken ten specimens at Bognor; it has also been recorded from Wicken Fen; it appears chiefly to be found on or near the coast.

There appears to be some little doubt whether this insect is the true *A. rhenana* of Kraatz; if not, it is probably a new species; it certainly appears to be distinct from *A. basalis*.

A. mesomelas, Herbst. (*dimidiata*, Marsh). Very like *A. basalis*, but more oblong, with the thorax rather narrower in proportion to elytra and not so closely punctured; it may as a rule be at once distinguished from all the other species by its colour, the elytra being black, with the apical half bright yellow testaceous, the colour being sharply defined; the thorax is sometimes rufous, but is usually black; the colour, however, is variable, and is sometimes almost entirely dark; the species may be distinguished by the rather strong alutaceous sculpture or cross striation of the intervals between the punctures at base of thorax, especially towards the sides. L. $1\frac{1}{3}$ mm.

Marshy places; in flood refuse, at roots of grass, &c.; local, but often abundant

where it occurs; Putney, Egham, Sheerness, Chatham, Lee, Eltham, Dagenham; Staines; Arundel; Hastings; Devonshire; Tenby, South Wales; Gloucestershire; Norfolk, Huntingdonshire, and Cambridgeshire Fens; Midland districts; Yorkshire; Maberley, Cheshire (in decayed *Equisetum*); Northumberland district, local, on rough herbage on the bed of Gosforth Lake; Scotland, local, Forth district; Ireland (Haliday).

A. gutta, Steph. Ovate, convex, black, shining, clothed with fine and sparing greyish pubescence, black, with a large common reddish spot reaching across elytra about the middle; sometimes the apex also is lighter; antennæ moderately long, reddish with apex darker, or ferruginous, club narrow; thorax very transverse and convex with sides strongly rounded, moderately thickly and plainly punctured, basal depression strong; elytra rather broad, plainly punctured; the punctuation, however, of both thorax and elytra is not so thick or strong as in either of the three preceding species; legs testaceous. L. $1\frac{1}{3}$ mm.

In marshy places, in flood and vegetable refuse; local, but sometimes occurring in profusion; Tottenham, Sheerness, Chatham, Egham, Walton, Maidstone, Reigate, Rochester; Birchington, near Margate; Hastings; Weymouth; Topsham, North Devon, under sea-weed, rare; Wicken Fen and other fen districts, very abundant in some localities; Ely; Coleshill and Knowle, near Birmingham; Salford Priors; not recorded from the mid-northern or northern counties, or from Scotland.

The colour will at once separate this species from all others; it appears to vary considerably in continental specimens, but to be very constant in the English examples.

A. gibbula, Er. (*Hislopi*, Woll.). One of our largest species; oblong ovate, male apparently rather narrower than female, convex, very shining, nearly glabrous (being very sparingly clothed with short greyish pubescence), entirely deep black, occasionally obscurely brownish towards apex of elytra; antennæ rather stout, ferruginous; thorax large, exceedingly convex, with a deep transverse depression behind, basal edge bisinuate and not margined, sides slightly rounded, finely and not closely punctured; elytra convex, rather more finely and sparingly punctured than thorax, the punctures, however, being larger, broadest about middle and narrowed behind; legs ferruginous, base of femora darker. L. 2 mm.

Beneath dung of grouse, &c.; local and rare, but occurring in small colonies where found; first taken by Mr. Hislop in Perthshire; Scarborough (R. Lawson); Scotland, very local, Clyde, Tay, and Dee districts.

A. apicalis, Er. This species is variable as to size and to a certain degree as to colour, and often gives rise to considerable confusion; it may, however, be known by its shape which is short, oval and convex, but much narrowed both in front and behind; the punctuation also is stronger than in some of the allied species, but it is somewhat variable in this respect; in the case of a pair taken *in cop* and sent me by Mr. Douglas, the male is evidently more strongly punctured than the female;

the colour is nigro-fuscous or deep-brown with the apex of elytra lighter, the colour extending more or less towards base; antennæ red; thorax transverse, very closely but distinctly and rather deeply punctured; elytra broader than thorax, dilated in middle, with distinct and rather diffuse punctuation; legs testaceous. L. $1\frac{1}{5}$ – $1\frac{1}{3}$ mm.

In haystack and other refuse, hot-beds, &c.; somewhat local, but rather common and generally distributed throughout the southern and midland districts of England; Yorkshire; Manchester district; Bold records it as common in the Northumberland district, but it is rare in Scotland, and has only occurred hitherto in the Moray district; Ireland, near Waterford.

From *A. fuscata*, which perhaps it is most often confounded with, this species may be distinguished by its shape, the less rounded sides and bisinuate base of thorax, and the somewhat stronger punctuation.

A. analis, Er. (*testacea*, Steph.). Oblong-oval, slightly convex, clothed with fine greyish pubescence, black with the apex of elytra rather brightly reddish-testaceous, the colour in mature specimens not extending beyond posterior third; antennæ ferruginous or brownish-red; thorax not strongly transverse, with sides feebly rounded, rather strongly and distinctly punctured, basal impression deep; elytra elliptical, with punctuation somewhat variable, according to sex, but, as a rule, rather strong and distinct; legs brownish with the tarsi and base of tibiæ, and sometimes the whole tibiæ, testaceous. L. $1\frac{3}{5}$ mm.

In haystack refuse, manure-heaps, &c.; rather common and generally distributed throughout England, although somewhat local; Scotland, local, Forth, Clyde, and Dee districts.

A. ruficornis, Marsh. (*terminata*, Com.). In colour and general appearance this species very closely resembles the preceding, but it is considerably smaller, and has the elytra less distinctly punctured and the shoulders more rounded; the antennæ also are shorter and more robust, and the thorax is rather more plainly produced posteriorly in front of the scutellum; the colour of the antennæ and legs is also, as a rule, lighter. L. $1\frac{1}{5}$ – $1\frac{1}{3}$ mm.

In the midland and southern districts of England this species is exceedingly common in manure-heaps, haystack refuse, dead birds, &c.; it appears, however, to be rarer further north, and is not recorded from the Northumberland and Durham district (the specimens from the locality supposed to belong to this species having been proved by Mr. Bold not to belong to the genus *Atomaria* at all); Scotland, rare, Solway, Tweed, Forth, and Clyde districts; Ireland, near Waterford; it is probably distributed over the whole kingdom, except perhaps the extreme north of Scotland.

A. versicolor, Er. (*ornata*, Heer). Oval, somewhat oblong, convex, shining, clothed with fine and rather sparing ashy pubescence, colour rufo-piceous, or rich brownish-red with the shoulders and apical region of the elytra more or less broadly and clearly rufous or rufo-testaceous, thorax usually darker; antennæ red, thorax not very transverse with sides slightly rounded, plainly bisinuate at base, diffusely and distinctly

punctured; elytra convex, plainly and diffusely punctured at base, obsolete towards apex; legs reddish-testaceous. L. $1\frac{3}{5}$ mm.

In dung, especially of sheep; rare; Mickleham, Shooter's Hill, Birdbrook, Dulwich; Arundel; Launceston, Cornwall; Barmouth; Gloucester; Cotswold Hills, Gloucestershire, in some numbers; Leicestershire; Repton; South Ferriby and Spridlington, Lincolnshire; Scarborough; Scotland, rare, Solway and Clyde districts.

This species is sometimes confused with *A. apicalis*, but is larger, less ovate, and less narrowed in front and behind; it is also brighter and less pubescent, and as a rule more lightly coloured, and the thorax is a little more rounded at sides.

EPHISTEMUS, Westwood.

This genus comprises about half-a-dozen species from Europe, North America, and the Canary Islands; they are very minute, almost orbicular, insects, and are so closely allied that, although their number is so small, it is almost impossible to separate some of them satisfactorily, as may be seen from the list of synonyms given in the Munich and other catalogues; they occur in vegetable refuse, moss, at the bottoms of haystacks, in hot-beds, &c.; the best position of the genus appears to be after *Atomaria*; some authors, however, have placed them near the Anisotomidæ or Byrrhidæ; in form they most closely resemble *Orthoperus*; three species are probably British, but the question of the third species appears to be by no means settled, and I have therefore only given two in the accompanying table and added the third as a variety.

- I. L. $1\frac{1}{2}$ – $1\frac{2}{3}$ mm.; form oval, longer; punctuation of elytra very diffuse and fine, but distinct. E. GLOBOSUS, *Waltl.*
 II. L. $1\frac{1}{3}$ mm.; form globose, very broad oval, almost orbicular; punctuation of elytra scarcely visible. . . . E. GYRINOIDES, *Marsh.*

E. globosus, *Waltl.* (*nigriclavis*, *Steph.*; *palustris*, *Woll.*). Oval, globose, comparatively elongate, pitchy or pitchy-red, almost glabrous, shining; antennæ moderately long, red, with distinct 3-jointed club; mouth parts testaceous; thorax transverse, much narrowed in front, forming an almost, if not quite, continuous outline with elytra, finely and very diffusely punctured, posterior angles projecting; elytra gradually narrowed from middle to apex, with very fine and scattered but rather distinct punctures, interstices very feebly alutaceous under a high magnifying power; legs reddish-testaceous. L. $1\frac{2}{3}$ mm.

In haystack and other refuse, under bark, in dung, &c.; rare; Wimbledon, Claygate, Lee, Cowley, Charlton, Mickleham, Hammersmith; Holm Bush, Brighton; Buddon Wood, Leicestershire (under bark); Repton; Scarborough; Cheshire; Manchester; Northumberland district, very rare, Long Benton; Scotland, rare, in dung, Solway and Clyde districts.

E. gyrynoides, *Marsh.* (*ovulum*, *Er.*). Broad oval, almost orbicular, narrowed gradually in front and behind, pitchy-red, often almost black

with the apex of elytra obscurely brownish, almost glabrous, shining; antennæ testaceous or reddish-testaceous; mouth parts testaceous; thorax shorter than in the preceding species, posterior margin sinuate at each side near posterior angles which are projecting, very finely and diffusely punctured; elytra broader than in *E. globosus*, and more indistinctly punctured, the punctures being hardly visible even under a high magnifying power; legs testaceous. L. $1\frac{1}{3}$ mm.

In haystack refuse, moss, &c.; common and generally distributed throughout the kingdom, but not so abundant in Scotland as in the midland and southern parts of England.

V. ? globulus, Payk., *vere*. According to Mr. Crotch the true *E. globulus* of Paykull is a smaller insect, and has the thorax simply emarginate in front instead of bisinuate, and is somewhat differently shaped; there appears to be considerable doubt as to this species or variety, and very little is known about it as British.

In the catalogue of Heyden, Reitter, and Weise, *E. globulus* and *gyrinoides* are given as synonymous; Mr. Champion records *E. globulus* from Sheerness, and I have records also from Darenth and Stretford, Manchester; the specimens standing under this species in Dr. Power's and other older collections must all be referred to *E. gyrinoides*.

V. dimidiatus, Sturm (*confinis*, Steph.). This variety has the basal half of the elytra reddish-testaceous or brownish-red; it appears to be about as common as the type.

V. dubia, Fowler. In Dr. Sharp's collection there are a number of very small specimens of an *Ephistemus* (length $\frac{7}{8}$ –1 mm.); as regards size they agree with Erichson's description of *E. exiguus*, which appears to be the only other European species now recognized as distinct except *E. globosus* and *E. gyrinoides (globulus)*; they do not, however, agree with Erichson's description in one or two points (e.g. the hind angles of the thorax which are produced, and the colour of the club of the antennæ which is light testaceous like the rest of the joints, and not pitchy), and cannot well be referred to *E. exiguus*; they differ, however, from *E. gyrinoides* in their much smaller size, rather longer form, and the slightly more distinct scattered punctures of elytra; it appears the best course, therefore, to treat them at present as a variety of *E. gyrinoides*. Dr. Sharp had separated them from that species, but had attached no name to them.

SCAPHIDIIDÆ.

The position of this family has given rise to great differences of opinion among various authors, and it can hardly yet be said to be settled; it is usually placed near the Scydmenidæ and Trichopterygidæ; Thomson places it near the Nitidulidæ, Heyden, Reitter, and Weise between the Corylophidæ and Phalacridæ, and Horn between the Sphæriidæ and Phalacridæ, while in the Munich catalogue it is placed between the

Trichopterygidæ and Histeridæ ; in all probability none of these situations are correct, and Mr. Matthews is most likely right in the position that he assigns to it in our catalogue of British Coleoptera, p. 27 ; after carefully working out the anatomy of this and allied families of the Clavicornia, he came to the conclusion embodied in the paragraph at the bottom of page 4 of the Catalogue :—"Of all the Clavicorn series, however, the Scaphidiidæ are the most difficult to deal with ; their skeleton is very peculiar, and very diverse from the normal type ; the formation of the anterior coxal cavities is almost unique, one half being formed by the prosternum, and the other half by the mesosternum ; in Ephistemus alone, as far as we have yet discovered, a somewhat analogous formation exists, and for that reason we propose to place the Scaphidiidæ between the Cryptophagidæ (ending with Ephistemus) and the Mycetophagidæ ;" * the other chief characteristics of the family are as follows :—Form more or less boat-shaped, strongly contracted in front and behind, elytra truncate not covering abdomen ; antennæ 10 or 11-jointed, with the last five or six joints often forming a distinct club, sometimes very slender and capillary ; thorax margined at sides, sinuate at base, with posterior angles acute embracing shoulders ; elytra with a sutural and marginal stria ; metasternum very large ; legs slender, tarsi 5-jointed ; abdomen composed of six free segments, of which the first is very large, and the last not always visible ; posterior coxæ widely distant.

The family contains about fifty or sixty species, which are contained in nine or ten genera ; these are widely distributed in the Old and New Worlds in both tropical and temperate regions ; five genera, represented by ten species, occur in Europe, of which two genera and four species are found in England ; these two genera may be distinguished as follows :—

- | | |
|--|---------------------------|
| I. Scutellum conspicuous ; eyes emarginate ; antennæ not capillary | SCAPHIDIUM, <i>Ol.</i> |
| II. Scutellum hidden by base of thorax ; eyes complete ; antennæ very slender, capillary | SCAPHISOMA, <i>Leach.</i> |

SCAPHIDIUM, Olivier.

This genus contains about thirty species, of which one only occurs in Europe ; the others are found in North and South America, India, Ceylon, Madagascar, &c. ; they occur in fungi and rotten wood, and are in many cases very conspicuous and brightly coloured insects.

S. quadrimaculatum, *Ol.* Oval, narrowed in front and behind, black, shining, glabrous, with each elytron marked with two large red or orange-red spots, one at shoulder and the other before apex ; head produced in front, antennæ rather long, reddish, with a distinct 5-jointed club ; thorax at base scarcely, if at all, transverse, gradually narrowed from base to apex, distinctly and not closely punctured, with an inter-

* See, however, foot-note on page 7 of this volume, where it is shown that this opinion may have to be modified.

rupted row of strong punctures at base ; scutellum conspicuous ; elytra with the sutural stria strongly punctured and continued along base, the rest of the upper surface moderately and not regularly punctured ; abdomen partially exposed, strongly pointed ; legs long, black, with tarsi pitchy. L. 5-6 mm.

Male with the metasternum impressed in middle, and with the seventh ventral segment of abdomen conspicuous.

At the damp bottoms of wood-stacks, under logs, in fungoid growth, rotten stumps, &c. ; not uncommon in the London and Southern districts ; it is also found in the Midlands at Gloucester, Bewdley, Cannock Chase, and Sherwood Forest, &c. ; Yorkshire ; Northumberland district, Gibside ; not recorded from Scotland.

SCAPHISOMA, Leach.

This genus contains about twenty small and inconspicuous species, several of which are very closely allied to one another ; they are chiefly found in Europe and the adjacent countries, and in North America, but a few have been described from Ceylon, South Africa, &c. ; they may be easily recognized by their long and slender capillary antennæ, and by having the scutellum hidden by the base of the thorax.

- I. Antennæ with eighth joint very small, barely a third as large as the ninth joint S. AGARICINUM, L.
- II. Antennæ with eighth joint at least half as large as the ninth joint.
 - i. Form broader ; elytra less thickly punctured ; seventh joint of antennæ wider than apical joints S. BOLETI, Panz.
 - ii. Form narrower ; elytra more thickly punctured ; seventh joint of antennæ not wider than apical joints S. ASSIMILE, Er.

S. agaricinum, L. Ovate, narrowed in front and behind, black or pitchy-black, colour lighter in immature specimens, shining ; head produced, antennæ testaceous, very slender and capillary with a feebly marked 5-jointed club, first two joints thickened, eighth joint very small, eyes not emarginate ; thorax rounded and narrowed from base to apex, anterior angles not produced, base with no larger impressions as in *Scaphidium* ; scutellum hidden ; elytra rather distinctly but not closely punctured, usually lighter at apical margin, which is broadly truncate ; legs long and slender, reddish-testaceous, tarsi elongate. L. 2 mm.

In fungi, rotten wood, &c. ; not uncommon and widely distributed in the London district, and in fact from the Midlands southwards ; Lincoln, common in Riseholme Park ; Northumberland district ; not recorded from Scotland.

S. boleti, Panz. Very like the preceding, but of a lighter colour, and distinguished by having the eighth joint of the antennæ distinctly larger, and the antennæ themselves brownish with lighter base ; the thorax, moreover, is shorter and more contracted in front than in *S. agaricinum*, and the elytra rather wider in the middle, with the sutural striæ more evident and the punctuation coarser and not quite so close ;

the elytra become gradually pitchy-red towards apex, but this character can hardly be relied on, as immature specimens of the former species are often more or less light. L. 2 mm.

In fungi, rotten wood, &c.; not common; Hyde Park, Caterham, Mickleham, Snodland, Birch Wood, Bishops Wood, Whitstable; Sussex; New Forest; Nettlecomb (Somerset); Salford Priors; Hunstanton; Needwood; Scotland, very rare, Solway district, "Dumfriesshire, Rev. W. Little," Murray's Cat.

S. assimile, Er. This species resembles *S. agaricinum* in size and shape, but differs in having its elytra more thickly punctured, and pitchy-black with the apical half and lateral margins reddish-brown; the eighth joint of the antennæ is scarcely shorter and very little thinner than the ninth, and the seventh, ninth, tenth, and eleventh joints are equal, and narrower and more attenuate than in that species; from *S. boleti* it may be known by its narrower build, longer thorax, darker colour, and much more thickly punctured elytra, which have the sutural striæ more distinct, and the suture itself broadly keeled; also by the seventh joint of its antennæ not being wider than the rest. L. 2 mm.

Introduced by Mr. Rye (Ent. Monthly Mag. ii. 140) on a single specimen taken at Coombe Wood; he says of it, "My insect exhibits all the characters, except the narrowness, as compared with *S. boleti*, but I think it can hardly fail to be the true *assimile*" (Ent. Ann. 1866, 77).

MYCETOPHAGIDÆ.

This family, according to the Munich catalogue, contains fifteen genera and sixty-four species; as there constituted, however, it contains the *Diphyllina* and *Mycetæina*, which are now removed from it by most authors; several new genera have been added by Reitter, who has changed the name *Mycetophagus* to *Tritoma*, and therefore calls the family Tritomidæ; some authors include the Byturidæ under the family, but they are separated by their 5-jointed tarsi, besides other characters. The species of the Mycetophagidæ, as here constituted, are distinguished by having the tarsi 4-jointed, with the anterior tarsi 3-jointed in the male; the anterior coxal cavities are open; they are more or less plainly pubescent, and sometimes are very brightly coloured; they are found in fungi or under bark, and one or two occur in rubbish at the bottom of haystacks, in granaries, &c.

- I. Elytra with distinct punctured striæ or rows of punctures.
- i. Thorax without basal furrows; eyes round (appearance like a *Cryptophagus*) ΤΥΡΗÆΑ, *Curtis*.
 - ii. Thorax with a basal furrow on each side; eyes transverse* MYCETOPHAGUS, *Hellw*.

* This character applies to all our species, but in the case of one or two foreign species appears not to be reliable.

- II. Elytra confusedly punctured, without traces of striæ.
 i. Eyes transverse; punctuation of elytra strong; sides of thorax finely crenulate **TRIPHYLLUS, Latr.**
 ii. Eyes round; punctuation of elytra fine; sides of thorax not crenulate **LITARGUS, Er.**

TYPHÆA, Curtis.

This genus comprises about half-a-dozen species from Europe, Ceylon, and Cuba; our single species, *T. fumata*, is very widely spread over the Northern Hemisphere, and has been distributed by commerce, as it occurs in granary refuse, &c.; the larva is described by Perris, *Larves des Coléoptères*, p. 89; it is very like those of the other *Mycetophagidæ*, and scarcely requires a separate description, except that it is more lightly coloured, being almost white.

T. fumata, L. Oblong-oval, rather depressed, with sides subparallel, ferruginous or yellowish-red, with very distinct yellowish pubescence; head finely punctured, eyes black, antennæ with distinct 3-jointed club; thorax as broad behind as elytra, somewhat narrowed in front, thickly and finely punctured, posterior angles almost right angles, scutellum quadrangular; elytra with fine punctured striæ, the interstices being either finely punctured or slightly cross-striated, and each furnished with a distinct row of long yellowish hairs; legs coloured as body. L. $2\frac{1}{2}$ – $2\frac{2}{3}$ mm.

In haystack and granary refuse, by sweeping, &c.; common and widely distributed throughout the greater part of England; local in Scotland, Solway and Clyde districts; Ireland, near Dublin and Waterford, and probably common.

TRIPHYLLUS, Latreille.

This genus contains four or five species from Europe and North America; they resemble *Mycetophagus*, but differ in their distinct antennal club, and the confused punctuation of the elytra. Reitter separates *T. suturalis* and *T. colchicus* as a separate genus *Pseudotriphyllus*; the species are found in fungi.

- I. Thorax with a distinct basal fovea on each side; length $2\frac{1}{4}$ – $2\frac{2}{3}$ mm. (*Pseudotriphyllus*, Reitt.) **T. SUTURALIS, F.**
 II. Thorax without basal foveæ; length 4 mm. (*Triphyllus*, i. sp.) **T. PUNCTATUS, F.**

T. suturalis, F. Long-oval, clothed with fine, but distinct, greyish pubescence; colour somewhat variable, usually pitchy with the margins of thorax and a greater or less portion of the elytra testaceous or reddish-testaceous; head distinctly punctured, clypeus strongly marked, antennæ moderate, ferruginous, with distinct 3-jointed club; thorax somewhat narrower at base than elytra, broader than long, side margins finely crenulate, all the angles blunt, upper surface distinctly and not

very closely punctured, base with a distinct fovea on each side ; elytra strongly punctured in front, more finely behind. L. $2\frac{1}{4}$ – $2\frac{2}{3}$ mm.

In fungi on old trees ; local ; London district, not common, Esher, Sheerness ; Wicken Fen ; Salford Priors ; Repton ; Sherwood Forest ; Ripon ; Scarborough ; Dunham Park, Manchester ; Northumberland district, Wallington, &c., recorded by Bold as common in fungi ; the Scotch record, however, is " Tweed district only, very rare."

T. punctatus, F. Very like the preceding in general shape, but twice as large and more coarsely punctured and pubescent ; the colour also is brighter, as a rule, and the elytra are pitchy with the base rather sharply testaceous, and with a testaceous patch before the apex of each ; the thorax has no basal foveæ, and the prosternum in the female, which in the preceding species has a fovea on its front margin, is in this species simple ; the club of the antennæ, also, is more gradual. L. 4 mm.

In fungi on old stumps of trees ; common in the London district and the South, and rather common in the Midlands, but rarer further north, and not recorded from the extreme northern counties of England or from Scotland. Scarborough and Dunham Park, Manchester, seem the most northerly localities from which it has been recorded.

LITARGUS, Erichson.

This genus contains about a dozen species, which are widely distributed over the surface of the world, species being recorded from Madeira and the Canary Islands, North America, Peru, &c. ; there are two European species, of which one is found very locally in Britain.

The larva of *L. bifasciatus* is described and figured by Perris, *Larves des Coléoptères*, p. 84, Pl. ii. fig. 65 ; it is $3\frac{1}{2}$ mm. in length, linear, rather depressed ; head suborbicular, black with a central whitish line, antennæ very short, 4-jointed ; thoracic segments brownish-black, the prothorax larger than the following with a fine central whitish line ; abdominal segments each with a broad band of brownish-black, last segment small, bearing two small cerci, segments furnished with long setæ at sides ; under-side pale ; this larva is found under bark of various trees, usually in or about the burrows of *Scolytus*, but apparently feeding on fungoid growth.

L. bifasciatus, F. (*lunatus*, F. ; *signatus*, Panz.). Elongate oval, rather depressed, clothed with fine recumbent pubescence, upper surface finely punctured ; colour black ; with the hinder part of the margins of thorax and two waved bands on elytra, together with a spot before apex of latter, yellow ; the markings are somewhat variable ; the thorax behind is fully as broad as elytra, transverse, narrowed in front, basal margin bisinuate, posterior angles very distinct, projecting ; on each side at base is a longitudinal impression ; elytra rather long, with sides subparallel ; under-side finely pubescent ; legs reddish-yellow. L. 3 mm.

Under bark of beech and other trees ; local ; Chatham ; Maidstone ; Westerham ; Woodford ; New Forest ; Isle of Wight ; Bristol : I have taken one specimen under bark of elder at Lincoln, which is considerably further north than any hitherto recorded locality.

MYCETOPHAGUS, Hellwig (*Tritoma*, Reitt., *nec auct*).

This genus contains between twenty and thirty species, which appear to be confined to Europe and North America, although representatives probably inhabit Asia; they are found in fungi or under loose bark of old trees feeding on fungoid growths; they are in most cases rather conspicuous insects, owing to the fact that the elytra are usually variegated with orange or yellow spots.

The larva of *Mycetophagus piceus* is described by Perris, *Larves des Coléoptères*, p. 87; it very closely resembles that of *Litargus bifasciatus*, but differs in being twice as large, with five instead of four ocelli on each side, and in the fact that the darker colour is reddish instead of blackish; the larva of *M. quadripustulatus* is larger and darker than that of *M. piceus*, but otherwise agrees exactly with it; these larvæ are found in the same situations as the perfect insects.

- I. Thorax with the sides not crenulate, more or less strongly narrowed in front, antennæ gradually thickened to apex.
 - i. Last joint of the antennæ as long as the two preceding together.
 - 1. Antennæ with joints 8-10 only a little broader than long, obconical; size larger; elytra black with two well-defined reddish-yellow spots on each *M. QUADRIPUSTULATUS*, L.
 - 2. Antennæ with joints 8-10 strongly transverse; size smaller; elytra pitchy with two more or less waved bands, and one or two patches on each yellowish *M. PICEUS*, F.
 - ii. Last joint of the antennæ only a little longer than the preceding; upper surface black, elytra with small scattered yellow markings; thorax with a distinct impression before scutellum *M. ATOMARIUS*, F.
- II. Thorax almost rectangular or feebly narrowed in front, with sides hardly crenulate; elytra brownish or blackish with two or three rather well-defined spots on each yellowish; antennæ with four apical joints larger.
 - i. Last joint of antennæ as broad as and much longer than penultimate; upper surface very finely pubescent *M. POPULI*, F.
 - ii. Last joint of antennæ narrower and scarcely longer than penultimate; upper surface strongly pubescent *M. QUADRIGUTTATUS*, Müll.
- III. Thorax with the sides crenulate, and evenly, although not strongly, rounded, and narrowed in front and behind.
 - i. Thorax brown, closely punctured; elytra with confused yellowish markings *M. MULTIPUNCTATUS*, Hellw.
 - ii. Thorax red, diffusely punctured; elytra with two well-defined large yellow spots on each *M. FULVICOLLIS*, F.

M. quadripustulatus, L. Of long elliptical form, rather depressed, finely pubescent, black, with the head ferruginous, and two well-defined spots on each elytron reddish-yellow; these are sometimes

variable in size, and occasionally those before apex are very small or even absent; sometimes the spots are entirely wanting, but I have never seen a British specimen of this variety; antennæ gradually thickened to apex, with the last joint long and pointed, joints 1-6 red, 7-10 dark, last joint more or less brightly yellow; thorax transverse, as broad behind as elytra, strongly narrowed in front, base sinuate, posterior angles projecting, upper surface distinctly and rather thickly punctured, base with a deep fovea on each side; elytra with punctured striæ, interstices finely punctured; under-side and legs reddish. L. 5-6 mm.

In fungi on old stumps of trees, under loose bark, &c.; local, but common in some districts; London district, common and generally distributed; Wicken Fen; Glanvilles Wootton; Netley; Exeter; Swansea; Newnham, Gloucestershire; Salford Priors; Hunstanton, Norfolk; Repton; Sherwood Forest; Scarborough; Ripon; not recorded from any English district north of Yorkshire, and mentioned by Dr. Sharp as very rare in Scotland, without any locality being given.

M. piceus, F. Oblong, ferruginous or pitchy-red, with the head and elytra usually darker than thorax, under-side bright brownish-red; the elytra are furnished with more or less variable waved spots and markings, of which two fasciæ towards base, which often meet at suture, appear to be the largest and most constant. Erichson (*Naturgesichte der Insect. Deutsch.* -iii. 408) mentions eight distinct varieties of coloration; antennæ ferruginous, penultimate joints often darker; thorax shaped much as in the preceding species, but with the sides rather more rounded towards the front, upper surface thickly punctured; elytra with fine punctured striæ, which become obsolete towards apex, interstices finely punctured; pubescence as in the other species light on the light spots and darker on the dark spots; legs testaceous yellow. L. 4-4½ mm.

In fungi on old trees, &c.; not common; Forest Hill, Surrey; Lee, Kent; Norfolk; Suffolk; Hastings; New Forest; Bristol; Swansea; Shrewsbury; Needwood; Sherwood Forest; Manchester district; not recorded from the Northumberland and Durham district or from Scotland.

M. atomarius, F. This species is easily distinguished from any of the others by its deep black colour and the small yellow patches on elytra, and also by the plain longitudinal impression on thorax before scutellum; it is of long elliptical form, finely pubescent; head distinctly punctured, antennæ reddish-brown, penultimate joints usually darker, last joint lighter at apex; thorax as broad behind as elytra, closely and strongly punctured, hind margin bisinuate, posterior angles well marked, projecting; elytra with a small transverse waved band behind middle, some larger patches towards base, and many small dashes and markings, yellow; disc somewhat depressed, striæ rather well marked and distinctly punctured, interstices finely punctured; under-side blackish or brownish; legs brownish-red, femora darker. L. 3½-4½ mm.

Under loose bark of beech, &c.; locally common; Chatham, Brasted, Sevenoaks,

Mickleham, Sanderstead, Westerham, Farnborough; Netley; New Forest; Bristol; Ripon.

M. populi, F. Oblong, depressed, finely pubescent, head reddish or ferruginous, eyes black, thorax ferruginous, elytra pitchy or pitchy-red with a broad fascia at base, another behind middle, and a patch before apex of each yellowish or reddish-yellow; antennæ with the last four joints distinctly broader; thorax very transverse, feebly narrowed in front, very finely and thickly punctured; elytra long in proportion to thorax, with sides subparallel, striæ plain and distinctly punctured, but becoming obsolete towards apex, interstices very finely and thickly punctured; legs reddish-testaceous. L. 4 mm.

Under bark of old stumps, in wet decaying wood, &c.; rare; London district, Epping, &c.; Harleston, Norfolk (in profusion in old elm stump); I have taken several specimens in an old stump at Nocton near Lincoln in company with *Symbiotes latus* and *Cis bidentatus*.

M. quadriguttatus, Müll. Shorter and proportionally broader than the preceding, with the thorax longer and the elytra shorter in proportion, blackish-brown or blackish, with two distinct yellow patches on each elytron; the pubescence is also much thicker and arranged in distinct rows on the elytra, and the general form is more convex; head thickly and rugosely punctured, antennæ rather short, ferruginous, with the last four joints plainly broader; thorax only slightly rounded in front, thickly and rugosely punctured; elytra with fine punctured striæ, interstices finely rugose; under-side very thickly punctured, finely pubescent, reddish-brown with apex lighter; legs reddish-yellow. L. 3-3½ mm.

In the fungoid growth at the bottom of hay and clover stacks, in granary refuse, &c.; rare; Dartford, Sheerness, and Ashford, Kent; Roehampton, Surrey (one crawling on a fence (Champion)); Shipley, near Horsham; Darenth Wood (in pea refuse); Portsmouth; Bickleigh, near Plymouth: a considerable number of specimens were taken a few years ago at Ashford, Kent, by Mr. T. H. Hart.

M. multipunctatus, Hellw. Oblong, elongate, head and thorax pitchy, margins of latter reddish, elytra pitchy with a large number of confused testaceous markings, which sometimes leave only a small portion of the elytra darker; head rather large, very thickly punctured, antennæ longer in male than in female, ferruginous, with the penultimate joints sometimes darker, last five joints plainly broader; thorax short with sides crenulate and evenly rounded and narrowed in front and behind, upper surface very thickly punctured; elytra with rather strong punctured striæ, which become obsolete towards apex, interstices finely and rugosely punctured; under-side usually reddish-brown, with breast darker; legs red. L. 3¾-4¼ mm.

Under loose bark, in fungi on old trees, &c.; locally common; Putney, Coombe Wood, Sheerness, Darenth Wood, Birdbrook, Hainault, near Sandwich (abundant, Gorham); Netley; Devon; Bristol; Swansea; Wicken; Norfolk; Salford Priors;

Repton; Ripon; Northumberland district, "a fine series from 'corky fungus' on alder, near Wooler, in September by Mr. J. Hardy" (Bold).

M. fulvicollis, F. Elongate, narrow, almost parallel-sided, with long pubescence; head black with mouth parts red, thickly and strongly punctured, antennæ rather long, reddish-yellow with the penultimate joints brownish, last five joints plainly broader; thorax red, narrower than elytra, with sides evenly rounded and narrowed in front and behind, strongly and diffusely punctured; elytra pitchy with two fasciæ on each, and a spot near margin between them, yellowish, striæ rather strong and coarsely punctured, feebler towards apex, interstices smooth; prosternum red, meso- and metasternum and abdomen black, legs reddish or yellowish-red. L. 4 mm.

A single specimen was taken by Mr. J. Ray Hardy, in June 1865, in a fungus near the saw-mill at Dall, Rannoch, Perthshire: it is curious that this should be the only Scotch specimen of *Mycetophagus* for which a locality is recorded.

DERMESTIDÆ.

This family, according to the Munich catalogue, contains nineteen genera and about two hundred species; the Byturidæ, however, which are included by Gemminger and Harold under the family, are now divided off by most authors, and a considerable number of species contained in several new genera (*Perimegatoma*, *Acolpus*, *Axinocerus*, &c.) have since been added; the members of the family are very widely distributed, although they appear to be rather characteristic of temperate than of tropical countries; a considerable number of species are almost cosmopolitan in their range, as might be expected from their habits; the following are some of the chief characteristics of the family:—Head variable in size, deflexed, furnished, except in *Dermestes*, with a frontal ocellus; mentum quadrate, usually corneous, ligula simple; antennæ inserted in front of the eyes, usually 11-jointed, but variable, terminating in a distinct 3-jointed club; thorax short, excavated beneath for the reception of the antennæ except in *Attagenus* and *Trinodes*; mesosternum prominent, metasternum short; elytra covering abdomen, not striate, except faintly in certain species of *Dermestes*; abdomen with five free ventral segments; anterior coxal cavities open behind; legs short, somewhat contractile, tibiæ with distinct stout spurs; tarsi 5-jointed, pubescent, with the fifth joint always long, and joints 1–4 as a rule short and equal, the first, however, being occasionally longer; claws simple.

The members of the family are oblong-ovate or small oval insects, and the greater part of them frequent furs and hides, and dried animal remains generally, also articles of food such as bacon, cheese, &c.; some, however, appear to be found only on flowers; even these, in the

larval state, are in many cases (e.g. certain species of *Anthrenus*) destructive to animal substances; certain species belonging to the family are the bane of the natural history collector, and commit great ravages in collections; the perfect insects appear to be comparatively harmless, the destruction being done by the larvæ; as Professor Westwood observes regarding them (Classific. i. p. 156), "they appear only to be destined to continue their species; they are very timid; their movements are slow and very irregular, and are suspended on the slightest danger, the insects admirably counterfeiting death;" it is obvious, however, that by their very presence they do a certain amount of indirect, if not direct, damage: with regard to natural history collections it is easy enough to prevent the ravages of *Attagenus*, *Anthrenus*, &c., by carefully going over the specimens and using a plentiful supply of carbolic acid and benzine, but with regard to the ravages of *Dermestes* and other genera in fur and hide warehouses, the case is very different; Professor Westwood mentions the fact that on one occasion *Dermestes vulpinus* had been found so injurious in the large skin warehouses of London, that a reward of 20,000*l.* was offered for an available remedy, without, however, any being discovered, and further that an entire cargo of cork had also been destroyed by the same insect; occasionally the walls of hide-stores are alive with *Dermestes* and *Corynetes*; the only remedy appears to be to keep the houses as clean as possible, and to sweep up and destroy as many of the perfect insects as can be conveniently got at; this will to a certain extent prevent their multiplication, but there appears to be no really efficient remedy applicable that would not be likely to damage the hides; if the rooms and houses could be thoroughly emptied, scoured, and whitewashed every year, much might be done, but this is hardly practicable in most cases, and hide-stores like granaries are allowed to go on uncleansed from year to year until they simply teem with insect and other pests.

The larvæ of the Dermestidæ are in many cases such familiar insects that they are better known to students of Coleoptera than those of many other families; their hairy upper surface and generally more or less dark colour gives them a closer resemblance to the larvæ of the Lepidoptera than is the case with most of the Coleopterous larvæ; their chief characteristics are as follows:—Head small, rounded and corneous, convex in front; ocelli usually six on each side; antennæ very short, 4 jointed; labrum visible, projecting; mandibles short and stout, simple with apex blunt; body covered with a thin skin, sometimes coriaceous, sometimes scaly, more or less thickly covered with hairs; legs short, tarsal claws single. When the larva is about to undergo its transformation to the pupal state, the skin splits down the back and serves to envelope the pupa, which throws off the long hairs on the posterior segments, but retains those on the front parts of the body (*v.* Chapuis et Candèze, *Larves des Coléoptères*, pp. 97, 98).

In *Dermestes* the terminal segment of the larva is furnished with two short corneous cerci, and the anal appendage is used for progression; in *Attagenus*, *Tiresias*, and *Anthrenus* the terminal segment is simple, and the anal appendage is not used for progression, and the extremity

of the body is furnished with a more or less elongate tuft of hairs, which is sometimes as long as, or longer than, the whole abdomen.

In the European catalogue the *Dermestidæ* are represented by nine genera, containing about eighty species; of these five genera, containing sixteen species, occur in Britain; the genera may be distinguished as follows:—

- I. Head without frontal ocellus; prosternum without process behind anterior coxæ *DERMESTES, L.*
- II. Head with a distinct frontal ocellus; prosternum with process behind anterior coxæ.
 - i. Form oblong; posterior coxæ contiguous.
 - 1. Mesosternum narrow; intermediate coxæ not widely separated.
 - A. First joint of tarsi shorter than second; prosternum not lobed in front *ATTAGENUS, Latr.*
 - B. First joint of tarsi twice as long as second; prosternum lobed in front *MEGATOMA, Herbst.*
 - 2. Mesosternum rather broad; intermediate coxæ widely separated *TIRESIAS, Steph.*
 - ii. Form short, round or very short oval; posterior coxæ not contiguous.
 - 1. Body squamose; head with deep antennal grooves beneath *ANTHRENUS, Geoff.*
 - 2. Body covered with upright bristly hairs; head without antennal grooves *TRINODES, Latr.*

DERMESTES, Linné.

This genus contains more than fifty species, which are widely distributed, occurring in cold climates like Siberia and tropical countries such as Brazil; several, as has been remarked before, are cosmopolitan, having been carried from one part of the world to another in articles of commerce; although the larvæ commit great ravages and do a vast amount of injury, yet it must be remembered that, like the maggot of the common flesh-fly, they are in reality scavengers, and remove a great deal of animal matter that would otherwise be deleterious to life; they are certainly the oldest larvæ known, a large number of them having been discovered in the interior of Egyptian mummies under circumstances that seem to show that they had found their way into the body previous to embalment (*v.* Westwood, *Classific.* i. 157, note).

The larvæ of several species of *Dermestes* have been described and figured by various authors; that of *D. undulatus* will be found on Plate iii. fig. 1 of Chapuis et Candèze, *Larves des Coléoptères*, and Westwood has figured that of *D. lardarius*, *l.c.* p. 156, Plate 14, f. 9; the body is elongate and gradually narrowed towards the tip, and terminates in two short corneous cerci and a conical anal appendage; the upper surface is very hairy, the hairs under a high magnifying power appearing branched; the colour is brownish, or reddish-brown. Twenty-two species of *Dermestes* are found in Europe, of which five occur in Britain.

- I. Elytra produced into a spine at apical sutural angles; upper surface black with scanty greyish pubescence *D. VULPINUS, F.*
- II. Elytra simple at apex.
- i. Upper surface of elytra without broad light band.
1. Upper surface of elytra black with scanty greyish pubescence *D. FRISCHII, Kug.*
2. Upper surface of elytra distinctly and evenly mottled with grey pubescence.
- A. Pubescence of thorax and base of elytra chiefly grey; antennæ dark with black club *D. MURINUS, L.*
- B. Pubescence of thorax and base of elytra chiefly yellowish or brownish-yellow; antennæ reddish with club darker *D. UNDULATUS, Brahm.*
- ii. Upper surface of elytra with a common broad dentate light band extending from base nearly to middle *D. LARDARIUS, L.*

D. vulpinus, F. Oblong, unicolorous black, moderately shiny, elytra clothed with sparing greyish pubescence; head thickly and rather coarsely punctured, densely pubescent; antennæ red or pitchy-red; thorax rather long, considerably narrowed towards front, thickly and rather strongly punctured, clothed with strong whitish-grey pubescence at sides and usually in front, central portion almost bare; scutellum thickly covered with orange-yellow hairs; elytra black, thickly punctured, with apical sutural angles mucronate; legs covered with brownish hairs; under-side clothed with long and thick white pubescence with a row of black spots at each side near margins, last segment black with two white longitudinal patches; male with a bunch of brownish bristles on fourth segment of abdomen. L. 6-9 mm.

In hides, furs, natural history specimens, &c.; very common in many localities, especially in and about large towns; London district, common; Lowestoft; Devon; Scarborough; Wallasey; Manchester; Northumberland and Durham district; it has not yet been recorded from Scotland, but probably occurs in Edinburgh, Glasgow, &c.

D. Frischii, Kug. Very closely allied to the preceding, but easily distinguished by having the elytra simple at apex, and by the fact that the white pubescence of the sides of thorax is interrupted at base so that the thorax has a black spot at each hinder angle; the dark central space, moreover, on the last segment of the abdomen is terminal only, and not produced as in *D. vulpinus*; the male has the fourth segment of the abdomen furnished with a bunch of brownish bristles. L. 6-8½ mm.

In dead animals, &c.; rare; Forest Hill (Champion); Greenwich (West); Deal (Champion); New Forest (first taken in Britain in this locality by Mr. W. Farren in 1860 under a dead horse); Scarborough; Scotland, very rare, Forth district (Sharp).

D. murinus, L. Oblong, black, clothed with fine black and

greyish pubescence ; head thickly and rather coarsely punctured, densely pubescent, antennæ dark, with club black or pitchy-black ; thorax convex, strongly narrowed in front, transverse, mottled with black and grey pubescence, and with four spots of yellowish pubescence, two at apex and two behind middle, which are not very distinct except in fresh specimens ; scutellum thickly clothed with yellowish hairs ; elytra black, covered with mottled and marmorate black and grey pubescence, the latter more dense at base ; legs brown, femora ringed with white near base ; under-side clothed with long whitish-yellow pubescence, abdomen with a row of black spots on each side, last segment black, marked with three white spots at base ; male with a tuft of bristles on both third and fourth segments of abdomen. L. 7-8 mm.

In dead birds, moles, &c. ; common and rather generally distributed in the London and southern districts, and not uncommon in the Midlands, but rarer further north ; York, Liverpool, Northumberland and Durham district, &c. ; Scotland, very scarce, Forth district only.

D. undulatus, Brahm. (*tessellatus*, W. C., nec F.). Closely allied to the preceding, but on the average smaller, and easily distinguished by the yellowish or yellowish-brown pubescence of the head, thorax, and base of elytra, and the reddish or pitchy-red antennæ ; the under-side is thickly clothed with whitish pubescence, but the last segment is furnished with two white spots at base instead of three as in *D. murinus* ; in shape the two species much resemble one another except that the thorax is longer in *D. undulatus*. L. 6-7 mm.

In dead birds, fish, &c. ; usually found on the coast ; local ; Whitstable, Sheerness, Southend, Folkestone, Dover, Deal, Hastings, Shoreham, Brighton, Devon, Swansea ; it does not occur in the north of England or in Scotland.

D. lardarius, L. Oblong, subcylindrical, black or pitchy, clothed with short and sparing recumbent pubescence, elytra with a broad light dentate band, extending from base nearly to middle, composed of thick yellowish-grey pubescence, with three dark spots arranged transversely on each elytron ; head moderately coarsely but closely punctured, antennæ pitchy or pitchy-red ; thorax with sides rounded behind and narrowed in front, very thickly punctured, black, with small spots of yellowish pubescence, lateral margins visible from above ; in all our other species they are not visible from above ; scutellum black ; elytra finely and thickly punctured with traces of striæ towards apex ; under-side black with fine and not thick yellowish pubescence, without spots ; legs black with yellowish-brown pubescence ; male with the third and fourth segments of abdomen with a tuft of bristles on each ; size variable. L. 6-12 mm.

In hides, bacon, natural history specimens, dead animals, &c. ; more local than is generally supposed, but far too common ; it is rarer out of doors than in houses, warehouses, &c. ; it appears to be generally distributed throughout England and Wales, and probably Ireland, but Sharp records it as rare in Scotland in the Tweed, Forth, Clyde, and Dee districts.

ATTAGENUS, Latreille.

This genus contains about fifty species, of which about half are found in Europe; the remainder are widely distributed, representatives occurring in Abyssinia, Ceylon, Cape of Good Hope, North and South America, &c.

The larva of *A. pellio* has been described and figured by several authors; it is rather long and cylindrical, broad in front and considerably narrowed to apex, which is furnished with a long tuft of hairs; the rest of the upper surface is also more or less hairy; the colour is brown or reddish-brown above and paler below; the motions of this larva are irregular, and it proceeds by fits and starts, a peculiarity well expressed by the French word "saccadé."

There are three species reputed as British; one is very common, but the other two are doubtfully indigenous; as, however, they are usually included in our catalogues, I have not excluded them.

- | | |
|---|---|
| I. Elytra black or pitchy with a distinct white spot in middle of each near suture | A. PELLIO, L. |
| II. Elytra unicolorous black or pitchy | A. MEGATOMA, F. |
| III. Elytra fuscous black with three transverse flexuous bands interrupted at suture, a patch at apex, and a minute round spot on each side of scutellum, whitish | A. TRIFASCIATUS, F.
(<i>verbasci</i> , auct.) |

A. pellio, L. Oblong-oval, rather convex, black, clothed with short brownish pubescence; head rather strongly punctured, ocellus distinct, antennæ short, red, with dark club; thorax transverse, narrowed from base to apex, closely but distinctly punctured, with a spot of white pubescence in centre of base and at each of the posterior angles; elytra black with a very distinct spot of dense white pubescence on either side of suture about middle; under-side black, covered with yellowish-grey pubescence; legs black with tarsi ferruginous, sometimes entirely red. L. 4-5 mm.

Male with joints 9-10 of the antennæ very small, last joint very long, nearly as long as the rest of the antenna; female with joints 9-10 together about equal to the last joint.

In skins, furs, natural history collections, &c.; usually in houses; occasionally in hen-coops, pigeon-cotes, &c.; common and generally distributed throughout the greater part of England, but apparently, like all the Dermestidæ, rarer in the north; Scotland, rare, Forth district only; Ireland, near Dublin.

(**A. megatoma**, F. (*piceus*, Ol.)). This insect appears to be allied to the preceding, but, according to Mr. Wollaston, who has taken the only British example known, "its average smaller size, narrower shape, unspotted surface, and (in the male) the very long apical joint of the antennæ, at once separate it from the common *A. pellio*"; as a matter of fact, however, the last joint of the antennæ appears to be longer in proportion in *A. pellio*, but the other characters will easily distinguish it; the legs are red. L. 3-4½ mm.

A single specimen was taken by Mr. Wollaston in July, 1868, in Finsbury Circus, London; it occurs in almost all parts of Europe, and in Syria, North America, the West Indies, Madeira, the Canary Islands, &c.; its habits are the same as those of *A. pellio*; as the species is almost certain to be again found in Britain, it is perhaps as well to retain it; at the same time it is an undoubted importation, although not more so than many other received species.

(**A. trifasciatus**, F (*verbasci*, auct.). Ovate, pitchy-fuscous, or fuscous black, very finely punctured, pubescent; thorax with the posterior margin clothed with a dense greyish or yellowish-white pubescence, which is interrupted at scutellum; elytra with three waved striæ of pale greyish pubescence, interrupted at suture, and also a patch of the same at apex, and two minute spots, one on each side of scutellum; under-side pitchy with yellowish pubescence; legs testaceous with tarsi brownish-red. L. 3-4 mm.

Very rare; in skins of birds, &c., especially in houses; Edinburgh (Leach); near Chelsea (Leach); the species is a very doubtful one.

MEGATOMA, Herbst.

This genus contains about half-a-dozen species from Europe, Siberia, and Tasmania; it is probably of much wider extent than is at present known; it is closely allied to *Attagenus*, from which it may be known by the structure of the tarsi, and by having the prosternum lobed in front; it is closely allied to the comparatively recently formed genus *Perimegatoma*, Horn, which only differs in having the antennal fossæ absent; the larvæ of *Megatoma* are sometimes found upon old palings, under bark, &c., and appear to be to a certain extent parasitic: according to Curtis they eat holes in and apparently feed upon the chrysalides of Noctuæ (*v.* Westwood, *Classific. i.* 156).

M. undata, Er. Oblong, black, elytra rather depressed, not very shining, very closely, thickly, and distinctly punctured, sparingly covered with greyish pubescence; head much narrower than thorax, antennæ black; thorax much narrowed in front, transverse, with a spot of white pubescence at each posterior angle, and another before scutellum; scutellum black; elytra not as closely punctured as thorax, with two wavy bands of white pubescence on each, of which the front one is interrupted at suture; legs black with tarsi pitchy; size very variable. L. $3\frac{1}{2}$ -6 mm.

Male with the club very elongate, the last joint being conical and much longer than the two preceding together; female with the club small and the last joint not elongate.

In skins, furs, &c.; often on old palings, under bark, and in flowers; local, and, as a rule, not common; London; London district, Forest Hill, Lee, Esher, Darent, Enfield, Addington, Dulwich, Lewisham, &c.; Hainault Forest; New Forest; Swansea; Burton-on-Trent; Cannock Chase; Buddon Wood, Leicester; Sherwood

Forest; York; Dunham Park, Manchester; not recorded from the extreme northern counties of England or from Scotland.

TIRESIAS, Stephens (*Ctesias*, Steph. Ill.).

This genus contains one European species, which is distinguished from *Megatoma* by the broader mesosternum, the more widely separated intermediate coxæ, the longer first joint of the tarsi, and the serrate club of the antennæ in male.

The larva of *T. serra* is very peculiar; it is figured by Westwood (Classific. p. 156, fig. 14, 18) and by Chapuis et Candèze (Larves des Coléoptères, Pl. iii. fig. 2); it is ferruginous and clothed with long brown hairs, and is broad in front and narrowed behind, and terminated by a long tail of hairs as in *Attagenus*; the chief peculiarity lies, however, in the tufts of hairs that are arranged closely on the last four segments of the abdomen, which the larva has the power of raising at will; these give the apex of the body a fan-like appearance, with the long tuft of hairs at apex projecting in the middle; the larva of *Megatoma* appears to resemble that of *Tiresias*, and the larvæ of the *Anthreni* are also furnished with the same tufts of hairs at sides.

The larva of *Tiresias* is found much more commonly than the perfect insect in localities where the latter occurs; it lives under bark of elm, willow, oak, &c., and may easily be reared.

T. serra, F. Subovate, rather broad, moderately convex, but with the elytra somewhat depressed on disc, black, shining, immature specimens being pitchy-brown; head much narrower than thorax, eyes prominent, antennæ reddish; thorax transverse, slightly reddish at sides, much narrowed in front, strongly sinuate and produced in middle at base, with disc very finely and diffusely punctured, the punctuation being more evident at sides; elytra closely and finely, although distinctly and somewhat asperately, punctured; legs lighter or darker reddish-testaceous with the femora fuscous. L. $3\frac{1}{2}$ – $5\frac{1}{2}$ mm.

Male with the club of antennæ very large, plainly serrate, female with the club smaller, not very strongly marked, cylindrical.

Under loose dry bark of elm, oak, willow, &c.; local and not common; Forest Hill, Putney, Croydon, Norwood, Richmond Park, Claygate, Enfield, Sheerness, Greenwich, &c.; New Forest; Devon; Norfolk; Evesham; Montgomery; Ripon; Dunham Park, Manchester; not recorded from the extreme northern counties of England, or from Scotland or Ireland, but it probably occurs in the latter country.

ANTHRENUS, Geoffroy.

This genus contains between thirty and forty species, which are very widely distributed, some being almost cosmopolitan, as they are exceedingly destructive to all zoological collections, and are therefore carried from one part of the world to the other in the specimens and boxes; the four North American species, for instance, are all represented in Britain: the *Anthreni* are small round or broadly ovate insects, of a dark colour, but covered with more or less variegated scales; the head

is furnished with very strong antennal grooves, and the legs are strongly retractile; the insects, therefore, are able to stow away their limbs and antennæ entirely beneath the body, and thus escape notice, as in their motionless condition they closely resemble seeds; the joints of the antennæ are variable in number, a difference that ought certainly to be generic; the species are, however, so closely allied, and are so very distinct from all the others that are in any way related to them, that it would perhaps be inconvenient to separate them, and I have merely adopted Mulsant's genera as sub-genera.

The larva of *Anthrenus musæorum* is figured by Westwood (Classific., vol. i. p. 156, fig. 14, 20); it much resembles that of *Tiresias*, being furnished with the long tuft of hairs at apex, and the tufts on each side of the apical segments of abdomen. Westwood says that these hairs are of great service to the larva, enabling it to glide between the fingers when handled, as though covered with oil, and that the hairs forming the terminal brushes are very interesting microscopical objects, being individually formed of a series of minute conical pieces placed in succession, the base being very slender, and the extremity of each hair forming a large oblong knob placed on a slender footstalk; the larva does not form a cocoon, but its skin serves as a case for the pupa. The British species may be divided into three sub-genera as follows:—

- I. Antennæ 11-jointed; club 3-jointed s.g. ANTHRENUS, *i. sp.*
- II. Antennæ 8-jointed; club 2-jointed s.g. FLORILINUS, *Muls.*
- III. Antennæ 5-jointed; club consisting of a single very long joint s.g. HELOCERUS, *Muls.*

(Sub-Gen. **Anthrenus**, *i. sp.*)

This sub-genus contains eight European species, of which three are found in Britain; *A. pimpinellæ* is, perhaps, somewhat doubtful, but the same may be said about many other probably introduced species.

- I. Tibiæ and tarsi red or brownish-red.
 - i. Upper surface clothed with black scales, with sides of thorax and three bands on elytra white, suture red . . . A. SCROPHULARIÆ, *L.*
 - ii. Upper surface clothed with black scales, varied with yellowish scales, especially at base and apex of elytra, the latter with a broad band in front between centre and base white A. PIMPINELLÆ, *F.*
- II. Legs black, tarsi usually brownish; upper surface clothed chiefly with luteous scales, with spots at base of thorax and three more or less distinct bands on elytra white A. VARIUS, *F.*

(**A. scrophulariæ**, *L.* Ovate, moderately convex, clothed with different-coloured scales, which are in this species very large and triangular; head coarsely punctured, eyes emarginate, antennæ black, 11-jointed, terminated by a 3-jointed club, which is as long as all the rest of the joints united; thorax black on disc, sides and more or less of base white with a few yellowish scales intermixed, coarsely punctured, very strongly narrowed in front; elytra black, with three more or less interrupted bands white and the suture red or orange-red; under-side black, covered

with white and yellowish scales, first abdominal segment with two bare hollows to receive the posterior femora; legs more or less red, femora dark, clothed sparingly with white and yellow scales. L. $2\frac{1}{4}$ – $3\frac{1}{2}$ mm.

In natural history specimens, &c.; also on flowers; rare; London district (Stephens) South of England, "eating carpets" (Chappell); Glanvilles Wootton (Dale); Edinburgh (Stephens).

This species is variable in colour, and there are five named varieties in the European catalogue; it is, however, so rarely found in Britain that I do not know whether any of these occur with us.

A. pimpinellæ, F. This species is somewhat closely allied to the preceding, but is shorter, and on the average smaller; it may be known by its coloration, the prevailing colour of the scales being yellow instead of white and the suture not being red; it is, however, chiefly distinguished from both the allied species by having a broad white band on the elytra between the base and centre; from *A. varius* it may also be known by its reddish tibiæ and tarsi. L. $2\frac{1}{4}$ – $3\frac{1}{3}$ mm.

On flowers, &c.; very rare in Britain; recorded by Stephens from London, and somewhat doubtfully from Suffolk and Devonshire, and I believe that it has been taken once or twice by other collectors. Erichson records it as not rare in Germany on *Umbellifera* (Doldenblüthen).

A. varius, F. (*verbasci*, L.). This species is of the same shape as *A. scrophulariæ*, but is much smaller; it is black, almost entirely covered when fresh with yellow scales, with the posterior angles of thorax, and a patch at base before scutellum, and three more or less distinct waved bands on each elytron white, the apical one often taking the form of a patch; the eyes are entire, prominent; the punctuation of the whole upper surface is rather coarse, and the scales are long and narrow; under-side clothed with fine, long, yellowish-grey scales, first abdominal segment with a bare hollow on each side to receive the posterior femora; legs black, tarsi often brownish, femora covered with whitish scales. L. 2– $2\frac{1}{2}$ mm.

In natural history specimens; also on flowers; not common; London district, Lee, Cowley, &c.; Dover; Glanvilles Wootton; Devonshire, Exeter (on flowers of Portugal laurel); Swansea; York. Scotland, very rare, Tweed and Forth districts.

(Sub-Gen. **Florilinus**, Mulsant.)

This genus contains three European species; they are easily distinguished by the structure of the antennæ, which are 8-jointed with 2-jointed club, by the somewhat distant posterior coxæ, and also by the fact that the first abdominal segment has no bare hollows for the reception of the posterior femora.

A. musæorum, L. Somewhat depressed, black, with black and yellowish-white small triangular scales; antennæ reddish, with club

black or brownish; head and sides of thorax clothed with whitish scales, those on vertex of the former being brownish; eyes prominent, entire; elytra sparingly covered with brown and whitish scales, with three irregular bands and humeral spot whitish; under-side with ashy scales; legs brownish or ferruginous, femora clothed with whitish scales. L. 2-2½ mm.

In natural history specimens; also in flowers; local but rather common, and generally distributed throughout the greater part of England, but rarer further north; doubtful as Scottish, the only record being "Jedburgh, Rev. W. Little, Murray's Cat.;" it is probably widely distributed in Ireland.

(Sub-Gen. **Helocerus**, Mulsant.)

One European species is contained in this genus, which is easily recognized by the structure of the antennæ; these are 5-jointed, with a long single-jointed club, which is three times as long as all the other joints united.

A. claviger, Er. (*fuscus*, Latr.). Black, very sparingly clothed with rather large, triangular, yellowish scales; eyes prominent, entire, antennæ with first two joints large and globular, 3-4 very small, 5th forming a long club, which is larger in the males than in the females; thorax with yellowish scales at sides; elytra with three equally separated, more or less indistinct wavy bands of yellowish scales; under-side black, sparingly covered with ashy scales; legs red. L. 1½-3 mm.

On flowers, &c.; local; London district, rather common and generally distributed; St. Peter's, Kent; Ditchingham; Hampshire; Tewkesbury; Bristol; Birmingham district; Manchester district; on *Umbellifera*.

TRINODES, Latreille.

This genus contains four or five species from Europe, Ceylon, and South Africa; they are distinguished by being clothed with very long upright hairs without any scales, and by the absence of antennal grooves; the larva bears a close relation to that of *Anthrenus*; it is found feeding in spiders' webs, &c.

T. hirtus, F. Ovate, rather depressed, shining black, thickly clothed on the upper side with long upright setose brownish hairs, a character which will at once distinguish the species; head obsoletely punctured, antennæ reddish-yellow, 11-jointed, with a not very compact 3-jointed club; thorax narrower than elytra, strongly narrowed in front, with base deeply bisinuate, obsoletely punctured; elytra plainly punctured, with shoulders well marked; under-side sparingly clothed with thin recumbent hairs; legs reddish-testaceous. L. 1½-2 mm.

Under loose dry bark; rare; Richmond Park, Surrey (Power); Windsor (on oak), Stephens; Exeter.

BYRRHIDÆ.

This family contains about twenty genera, and a hundred and fifty species; they are widely distributed both in tropical and temperate countries, and a certain number are found as far north as Alaska and Siberia; they are oval, convex insects, with the head retracted in all the genera, except *Nosodendron*, and the antennæ usually 11-jointed, rarely 10-jointed, the last joints forming a more or less elongate club in all our genera; labrum distinct; anterior coxal cavities open behind; prosternum somewhat prolonged behind; mesosternum small, metasternum short and broad; elytra covering abdomen; abdomen with five segments, the first three being sometimes connate; legs short and stout, strongly retractile, tibiæ dilated, and usually altogether or in part sulcate externally for the reception of the tarsi; tarsi 5-jointed, with the last joint elongate, heteromerous in *Aspidiphorus* (*Conipora*): with regard to the latter genus I have followed Mr. Matthews in placing it with the Byrrhidæ, rather than together with *Sphindus* in a separate family Sphindidæ, as is done by Reitter and others, as the formation of the external skeleton seems certainly to prove its alliance with the present family; at the same time its position can hardly be said to be quite settled, and it does not quite agree with the Byrrhidæ in all the characters above mentioned; Thomson regards it as a separate family which he calls Coniporida; many authors place the genus together with *Sphindus* under the Bostrychidæ. *Limnichus* is also regarded by some authors as belonging to a separate family Limnichidæ. Great confusion is now caused by some of the continental authors, who apply the name Byrrhidæ to *Anobium* (*Byrrhus*, Geoff.) and its allies, and alter the name of Byrrhidæ as it at present stands to Cistelidæ; in the catalogue of Heyden, Reitter, and Weise there seems to be a *reductio ad absurdum*, as on page 90 *Byrrhus* is retained as the generic name of *B. pilula* and its allies under the Cistelidæ, whereas the Byrrhidæ on page 122 do not contain a genus *Byrrhus* at all.

The larvæ of the Byrrhidæ, as typified by *B. pilula*, are fleshy, and may be recognized by the large size of the prothorax, and of the last two segments of the abdomen; the head is corneous, with two ocelli on each side, and the antennæ are very short 3- or 2-jointed; the prothorax is as long as the two following segments united, and is covered with a hard corneous scutum; the abdominal segments are nine in number, the ninth being furnished with two appendages which are used for progression; the meso- and metathorax and the first seven abdominal segments are membranous, and the last two are harder, very large, and deflexed; the legs are moderate in length, with very short tarsi terminated by a simple claw; the larva of *B. pilula* is figured by Westwood (Classific. i. 175, fig. 17, 17), and also by Chapuis et Candèze (l. c., Pl. iii. f. 4); it is found in the ground under turf, or crawling on the surface; it is about three-quarters of an inch long.

(The genus *Nosodendron*, represented by the single European genus *N. fasciculare*, used to be included in all our British lists, on the authority of specimens taken by Leach in Devonshire, and Hope at Southend, Essex; it is figured by Curtis (British Entomology, fig. 246); from the

rest of the *Byrrhidæ* it is distinguished by having the head prominent and not retractile, and by the very large mentum which in great measure covers the mouth parts; the insect is subovate and convex, black and rather shining, with the head and thorax rather minutely but not very thickly punctured; the elytra are deeply and closely punctured, and are each furnished with five rows of yellowish bunches of setæ; the anterior legs only are retractile; the length of the insect is 4 mm.; it occurs under bark and at exuding sap of trees, especially elms and alders; the larva is very peculiar, being broad in front and much narrowed to apex, with the head and prothorax very large, and being furnished at the sides of the segments (except prothorax) with setigerous tubercles or papillæ; the colour of the upper surface is dark brown. The genus contains four or five species from Europe, Ceylon, and North America, which are often considered as a separate tribe of the *Byrrhidæ* distinguished by the name *Nosodendrina*.)

Seven genera belonging to the family and about sixty species are found in Europe; of these five genera and eleven species occur in Britain; this is, however, exclusive of *Limnichus* and *Aspidiphorus*, which are now included. The genera may be divided as follows:—

I. Antennæ 11-jointed.

- i. Antennæ with distinct 3-jointed club; upper surface with strong upright setæ *SYNCALYPTA*, *Dillwyn*.
- ii. Antennæ with joints 7–11 gradually thicker; upper surface without strong upright setæ.
 - 1. Upper surface not metallic; abdomen with the first ventral segment furnished with distinct foveæ for the reception of the posterior legs; all the tarsi retractile *BYRRHUS*, *L.*
 - 2. Upper surface metallic; abdomen with the first ventral segment not furnished with foveæ for the reception of the posterior legs.
 - A. Anterior tarsi only retractile.
 - a. Elytra with striæ complete to apex *CYTILUS*, *Er.*
 - b. Elytra without striæ *MORYCHUS*, *Er.*
 - B. None of the tarsi retractile; elytra with sutural stria complete, dorsal striæ ceasing before middle *SIMPLOCARIA*, *Marsh.*

II. Antennæ 10-jointed.

- i. Tarsi heteromerous; abdomen with five free ventral segments *ASPIDIPHORUS*, *Latr.*
- ii. Tarsi 5-jointed; abdomen with five ventral segments, the first three being connate *LIMNICHUS*, *Latr.*

SYNCALYPTA, *Dillwyn*.

About twenty species are contained in this genus, of which eight are found in Europe, and the remainder have been described from North America, the Atlantic Islands, Burmah, &c.; they are very small black insects, more or less thickly clothed with strong upright setæ; our three British species may be separated as follows:—

- I. Thorax rather thickly and finely punctured.
- i. Size smaller; elytra with one deep marginal stria complete; erect setæ shorter S. SPINOSA, Rossi.
- ii. Size larger; elytra with two deep marginal striae complete; erect setæ longer S. SETIGERA, Ill.
- II. Thorax coarsely punctured S. HIRSUTA, Sharp.

S. spinosa, Rossi (*arenaria*, Sturm). Subglobose, narrowed in front and behind, strongly convex, black, dull, without scales, but with stout upright whitish bristles on the upper surface, which are more thickly placed at the apex of the elytra; antennæ reddish-brown; forehead with two diverging furrows; thorax thickly and finely punctured, very transverse; elytra with rows of rather large punctures which become feebler behind, with one deep marginal stria complete; under-side coarsely punctured; legs black or pitchy-black. L. $1\frac{1}{3}$ mm.

In chalky places, at roots of grass, in moss, &c.; local, but often in abundance where it occurs; London district, widely distributed, Chatham, Mickleham, Caterham, Warlingham, Cuxton, Higham, Faversham; Folkestone; Hastings; Portsmouth; Norfolk; Suffolk; Swansea.

S. setigera, Ill. Larger than the preceding, strongly convex, black, the upper-side more or less distinctly clothed with scales, variegated with white, with long black erect somewhat clavate setæ, which are placed more thickly at the apex of the elytra; thorax rather thickly and finely punctured, much narrowed in front; elytra striate, with two deep marginal striae complete; under-side and legs thickly punctured, the latter usually reddish-brown. L. $2\frac{1}{2}$ mm.

At roots of grass, in moss, &c.; according to Dr. Sharp, the true *S. setigera* has only occurred in Scotland, where it is found very rarely in the Solway district at Caerlaverock, near the mouth of the Nith; the specimens standing under the name in our collections must be referred to the succeeding species.

S. hirsuta, Sharp. Closely allied to the preceding, but with much more coarsely punctured thorax, lighter-coloured antennæ and legs, lighter-coloured, longer, thinner and less clubbed setæ, and the depressed scale-like hairs on the thorax much longer; the depressed scales on the elytra also appear to be much less numerous and distinct than in *setigera*, and not variegated as in that species; as a rule, however, these are more or less rubbed off in most specimens of both insects, unless they are captured when quite fresh. L. $2\frac{1}{2}$ mm.

Chalky places, at roots of grass and plants, in moss, &c.; local, but occasionally abundant; Mickleham, Chatham, Sheerness (in profusion, J. J. Walker), Farborough; Deal; Hastings; Seaford, Devon, at roots of *Plantago*; Norfolk; Suffolk; Hereford; Swansea.

BYRRHUS, Linné.*

This genus contains about forty species, of which nearly twenty occur

* According to Reitter (Bestimmungs Tabellen IV. Cistelidæ, &c., p. 6) this genus is synonymous with *Cistela*, Geoffroy.

in Europe; no species appear to be found in tropical countries, although representatives occur as far north as Greenland, and as far south as the Straits of Magellan; they are round, very convex insects, and have very strongly retractile legs, so that they can contract themselves into a ball, and thus avoid the attacks of their enemies.

For the following table I am chiefly indebted to Reitter, and it will be found easy to distinguish the species with its help; the first two or three species are exceedingly variable in colour; in fact, no less than thirteen named varieties of *B. fasciatus* and six of *B. pilula* are mentioned in the last European catalogue: I have regarded *B. Dennyi* as a variety of the last mentioned species, as it is evidently too closely allied to it to be regarded as distinct; in fact, Stephens himself (Ill. iii. 136) says that "it may only be a variety of the foregoing," and he certainly cannot be accused of too much synthesis; the species of *Byrrhus* soon get rubbed, and fresh specimens have a very different appearance to those that have been out for some time.

- | | |
|---|--|
| I. Elytra with the pubescence usually sericeous or tomentose, without distinct rows of raised setæ; furrows to receive legs less deep; length 6–10 mm. (<i>Byrrhus</i> , i. sp.) | |
| i. Length 7–10 mm.; form longer or shorter oval, with sides of elytra subparallel, broadest at or behind middle; forehead much more finely punctured than clypeus. | |
| 1. Under-side clothed with very thin greyish pubescence; anal segment in both sexes with three impressions . . . | <i>B. PILULA</i> , L.
(v. <i>Dennyi</i> , Steph.) |
| 2. Under-side clothed with moderately thick yellowish pubescence; anal segment in both sexes without impressions . . . | <i>B. FASCIATUS</i> , F. |
| ii. Length 6–6½ mm.; form short and broad oval, with sides of elytra rounded and widened, broadest before middle; forehead and clypeus equally punctured | <i>B. DORSALIS</i> , F. |
| II. Elytra with more or less distinct rows of raised setæ; furrows to receive legs, especially the hinder pair, very deep; length not exceeding 4 mm. (<i>Curimus</i> , Er.) | <i>B. MURINUS</i> , Ill. |

***B. pilula*, L.** Oblong oval, black, clothed with tomentose and somewhat sericeous pubescence, which is very variable in colour and distribution; head large, finely punctured, clypeus strongly punctured, antennæ blackish with joints 2–4 reddish, last joint of maxillary palpi oval, truncate; thorax finely punctured, as in the other species, much narrowed in front; elytra with very fine punctured striæ, interstices flat; legs pitchy-black, pitchy-red, or reddish; under-side thickly punctured, rather scantily pubescent, anal segment with three impressions; the pubescence on the upper surface is usually brown, that on the scutellum being mostly black, and the elytra have the alternate interstices furnished with interrupted bands of black velvety pubescence, the spaces between being often more or less golden; when the specimens are at all rubbed, as they usually are, the character of the pubescence is entirely altered. L. 7–10 mm.

At roots of grass and plants, in moss, on roads, &c.; common and generally distributed throughout the kingdom.

V. Dennyi, Steph. Stephens' description of this variety, which he regards as a separate species, is as follows:—"Oblong-ovate; black, clothed with a pale golden pubescence; thorax with two large round black spots in front, and two irregular angulated ones behind; elytra with four longitudinal interrupted black stripes, and a broad sinuated, abbreviated, black transverse fascia in the middle of the back; the margin dusky; body beneath dull black; legs and antennæ dull pitchy-black; slightly variable, the markings being less evident in some examples than in others;" apparently, however, the name has been applied to other varieties of *B. pilula*, in which the alternate interstices are covered with somewhat golden pubescence, and the black markings are scarcely evident; according to Erichson the anterior tibiæ are gradually dilated to apex, and the maxillary palpi have the last joint subsecuriform: if these differences were very marked, they would seem to indicate that *B. Dennyi* was distinct, but such does not appear to be the case, and taking into consideration the extreme variability of *B. pilula* and *B. fasciatus*, it seems best with Reitter and others to regard it as a variety of the former species.

Sandy and chalky places; in moss, at roots of *Teucrium scorodonia*, &c.; rare; Chobham and Tonbridge Wells (Saunders); Kewley and Caterham, Surrey (Champion); Hampstead Heath, Shirley, Cowley, Reigate and Box Hill, St. Leonards and Littleington (Power); Hampstead Heath and Barham (Stephens).

B. fasciatus, F. Of rather shorter ovate or obovate form than the preceding, black, clothed with pubescence which is extremely variable; head rather large, antennæ black with joints 2-4 brown, last joint of maxillary palpi only slightly thickened, somewhat acuminate; thorax very finely and thickly punctured; elytra with fine punctured striæ, interstices flat; under-side thickly punctured and rather closely pubescent, anal segment without impressions; legs pitchy-black or pitchy-red, gradually dilated to apex. L. 6-8 mm.

In the European catalogue no less than thirteen varieties of this insect are enumerated; as a rule the upper surface is covered with brownish pubescence, that on scutellum being mostly black, and the elytra are furnished with black interrupted lines on the alternate interstices, and with a broad common waved band of greyish, yellowish or even almost reddish pubescence on the centre of disc; the general pubescence is, however, often fuscous and sometimes almost black, and the variegating pubescence may be whitish, greyish or yellowish or reddish-golden; occasionally there is a more or less distinct band on thorax; the elytral band may be entirely absent, or sometimes simply takes the form of two narrow more or less interrupted lines, which are sometimes represented by a few spots; a considerable number of the forms appear to occur in Britain.

In sandy places; somewhat local but not uncommon and generally distributed from Devonshire to the Sutherland district of Scotland; it occurs on the coast as well as on the summits of lofty hills.

B. dorsalis, F. (*pustulatus*, F.). Smaller than the preceding, broad oval, elytra widest before middle, black, clothed with pubescence which varies in colour much as in *B. fasciatus*, but not so much in arrangement, the broad fascia on elytra being usually, but not always, distinct; the thorax is usually furnished with a more or less distinct greyish or reddish-yellow curved band; head very thickly punctured, antennæ black with joints 2-4 brown, last joint somewhat pointed, maxillary palpi with last joint oval and truncate; thorax thickly and finely punctured, somewhat rugosely at sides; elytra with very fine punctured striæ, interstices flat; legs pitchy, anterior tibiæ subparallel. L. 6-6½ mm.

Under stones, at roots of grass, &c., usually in sandy places; rather widely distributed, but not common; Shirley, Hampstead Heath, Plumstead, Cowley, Belvedere, West Wickham, Betchworth; Suffolk; Coombe Wood; Dover; Hastings; Swansea; Barmouth; Malvern Hills; Cannock Chase; Derbyshire; Northumberland and Durham district; Scotland, rare, Forth, Tay, Dee, and Moray districts; Ireland, Newcastle, co. Down.

B. murinus, F. (s.g. *Curimus*, teste Reitter nec Er.; s.g. *Porcinolus*, Muls.). Very short oval, narrowed in front and behind, strongly convex, upper-side clothed with very short recumbent fuscous scale-like hairs, and also with short clavate setæ which are more or less distinctly arranged in rows; head somewhat rugosely punctured, antennæ black, reddish-brown at base; thorax short, rounded behind, and strongly narrowed in front; scutellum black; elytra very finely striated with the interstices on the elytra uneven, alternately broader and narrower; the narrower ones slightly raised, with more deep black interrupted velvety pubescence, disc with two wavy whitish lines of pubescence which are often interrupted, and sometimes scarcely traceable; legs black or brownish. L. 3½-4 mm.

At roots of heath, in moss, &c., in sandy places; rare; Plumstead, Esher, Cobham, Chobham, Oxsholt, &c.; Norfolk; Glanvilles Wootton; Cannock Chase.

CYTILUS, Erichson.*

This genus contains two or three species from Northern Asia, North America, and Europe; our single species is very widely distributed in the northern and central parts of Europe, and in North America; it closely resembles a small *Byrrhus*, but may be known by its more or less metallic appearance, the absence of foveæ on the first ventral segment of hind body, and the free intermediate and posterior tarsi.

* According to the catalogue of Heyden, Reitter, and Weise, this genus is synonymous with *Cistela*, Geoffroy.

C. varius, F. (*sericeus*, Forst.; *pulchellus*, Heer.). Short oval, very convex, of a dark bronze or greenish metallic colour, clothed with short pubescence; head thickly and deeply punctured, with rather thin black pubescence variegated with yellow and sometimes with white; thorax thickly punctured, much narrowed in front, with pubescence much as on head; elytra finely striated, usually greenish, with the alternate interstices more shining and variegated with velvety-black; the first, third, and fifth interstices are usually more or less golden; under-side and legs black, frosted with short whitish pubescence. L. 4-5 mm.

Damp places, in moss, at roots of grass, &c.; somewhat local but not uncommon and generally distributed throughout England and Wales; Scotland, common, Solway, Forth, Clyde, Tay, Dee, and Moray districts; Ireland, Galway, Donegal, Portmarnock, &c., and probably common.

MORYCHUS, Erichson (*Pedilophorus*, Steffahny).

About a dozen species are contained in this genus, one of which has been recorded from South Africa, but the remainder have occurred in Europe, Northern and Central Asia, and North America; they may be distinguished from *Cytillus* by their free mandibles and the absence of elytral striæ; our single species may be easily recognized by its elongate oval, somewhat oblong, form, and the long and thick white pubescence on the scutellum.

M. æneus, F. Oblong-ovate, more elongate than any other British member of the family, convex, shining metallic bronze or greenish-bronze; antennæ black; head large, rather closely covered with whitish pubescence; thorax convex, narrowed in front, distinctly punctured, rather thinly pubescent; scutellum thickly covered with long white hairs; elytra somewhat strongly punctured, rather thickly pubescent at sides, more sparingly on disc; under-side thickly punctured, clothed with thick greyish pubescence; legs pitchy-black or pitchy-brown. L. 4-4½ mm.

In sandy barren places on the banks of streams and on the coast; local and chiefly found in the north of England and in Scotland; sometimes very abundant where it occurs; Northumberland and Durham district, rare, Langleyford, and on the banks of the Irthing; Holy Island; Scotland, local, Solway, Forth, Clyde, Tay, Argyle, Dee, and probably other districts; Ireland, Galway.

SIMPLOCARIA, Marsham.

This genus comprises a few species, the greater number of which occur in Europe, and two or three in Northern Asia and North America; together with *Morychus* (*Pedilophorus*) and *Amphicyrta* they form Lr. Horn's tribe the *Amphicyrtina*, which is distinguished from the *Byrrhina* by having the epistoma short, but distinct, and coriaceous, whereas in the last-named tribe there is no distinct epistoma; the species of *Simplocaria* are small, oval, convex insects, and may be known by having

the tarsi all free, and the fact that all the striæ of the elytra, with the exception of the sutural one, cease before middle.

The larva of *S. semistriata* resembles in shape that of *B. pilula*, except that the penultimate segment is not enlarged; it is about 5 mm. in length, of a pale greenish-yellow colour with the exception of the head which is brown; Chapuis and Candèze record its capture in the frass accumulated in an old willow trunk, where it probably was feeding on decomposed vegetable matter.

S. semistriata, F. Ovate, narrowed in front and behind, black with bronze reflection, elytra yellowish-brown at apex, upper surface moderately thickly clothed with somewhat erect greyish pubescence; antennæ rather long, reddish or brownish red; thorax convex, finely and not very closely punctured, much narrowed in front; elytra with the sutural stria entire, and with the other striæ distinct towards base, but ceasing before middle, interstices rather thickly and finely punctured; legs red. L. $2\frac{1}{2}$ – $2\frac{2}{3}$ mm.

Under stones, in flood refuse, by sweeping, &c.; usually in damp places; common and generally distributed throughout the kingdom.

LIMNICKUS, Latreille.

This genus comprises between twenty and thirty species, of which nine are found in Europe, and the rest are widely distributed, representatives occurring in North America, Cape Verd Islands, Ceylon, &c.; although usually classed with the Byrrhidæ, to which it is evidently closely related, yet it must be admitted that its position is doubtful, and that its 10-jointed antennæ and habits seem to show that Reitter and others may be right in placing it together with *Pelochares* and *Bothriophorus* in a separate family; as far as position goes it is, however, just as well placed here as it is between the Sphæridiidæ and Parnidæ, where it is inserted by Reitter; the species are minute, oval, convex insects, and at first sight somewhat closely resemble the small species of *Syncalyptra*.

L. pygmæus, Sturm (*sericeus*, Steph.). Oval, convex, narrowed in front and behind, black, rather shining, upper surface clothed with exceedingly short brownish-grey or grey pubescence; head and thorax exceedingly finely and thickly punctured, antennæ red, 10-jointed, with the three last joints forming a distinct club, forehead separated from clypeus by a distinct suture; thorax narrowed towards apex, with the posterior angles somewhat acute; scutellum small, triangular; elytra finely and diffusely punctured; under-side thickly and finely punctured and pubescent; legs red; in immature specimens the upper surface is sometimes brown and the under surface reddish-brown. L. $1\frac{1}{4}$ – $1\frac{1}{3}$ mm.

Sandy and chalky places, in moss, &c.; usually at the sides of watercourses or in damp places, and apparently somewhat subaquatic in its habits; rare; Higham, Kent; Sheppy; Southend; Deal; Lyme Regis; Isle of Wight, Luccombe Chine, &c.; Seaton, Devon; Wicken and Barwell Fens. Stephens records it from Stockton, but there are several places of this name.

ASPIDIOPHORUS, Latreille (*Conipora*, Thomson, &c.).

The position of this genus has been referred to above (p 365); it contains two species, as far as is at present known, both of which are found in Europe; the following are its chief characters: clypeus large, distinct; antennæ 10-jointed; head with antennal furrows; eyes entire; thorax finely margined, fitting closely to base of elytra; tarsi heteromerous, with the first joint obsolete, much shorter than tibiæ; form convex, somewhat orbicular, shining and sparingly pubescent; size very small.

A. orbiculatus, Gyll. (*striatopunctatus*, Lap.). Subglobose, obovate, shining black, very sparingly pubescent, almost glabrous; head large, minutely punctured, eyes prominent, antennæ red with club black, rather long, with the basal joint very large, and the club elongate and cylindrical, 3-jointed; thorax short, narrowed in front, finely punctured; elytra broader than thorax, very convex, with rather strong rows of punctures; under-side shining pitchy-black, breast deeply punctured; legs long and rather slender, reddish-testaceous. L. 1-1 $\frac{1}{4}$ mm.

In powdery fungus on fir stumps, in moss, &c.; rare; Esher (Power and Rye), Chatham, Caterham, Bishops Wood, Darenth, Faversham, Reigate, Crohamhurst, Epping Forest, Southgate; Hastings; New Forest; Isle of Wight; Teignmouth (Wollaston); Plymouth (J. J. Walker); Whatcote; Dunham Park, Manchester.

GEORYSSIDÆ.

This family contains the single genus *Georyssus*, which is closely allied to the genus *Elmis*, but differs from it in its very short and distinctly clavate antennæ and the short 4-jointed tarsi; the head is large and deflexed, and the antennæ are inserted under the sides of the front, and are 9-jointed, with the first and second joints thick and the last three forming an oval club; the thorax fits closely to the elytra; scutellum inconspicuous; anterior coxæ prominent, flattened at tip and forming two plates which conceal the prosternum; intermediate and posterior coxæ distant; elytra entire, very roughly sculptured; abdomen composed of five segments, of which the first is very large, and the last three free.

The *Georyssi* are found at the margins of streams, or in wet and muddy places at the foot of cliffs, &c.; occasionally they occur under stones in running streams; they cover themselves with a thick coating of mud and sand, which entirely conceals them until they move, when they look like animated grains of earth; Westwood (Classific. i. p. 119) appears to think that this happens rarely and is not the natural economy of the insect, but this hardly seems to be the case, and any one who has watched them can scarcely doubt but that the muddy coating is intended for concealment and protection; according to Wesmael the species are always found on the surface of the ground, as their bodies are entirely glabrous, and consequently unable to retain a coating of air when immersed in water.

GEORYSSUS, Latreille.

About twenty species have been described as belonging to this genus;

the greater part of these inhabit the Mediterranean region, but one or two have been described from Tropical Asia, and also from North America and Australia; several of Motschulsky's species recorded in the Munich catalogue appear now to be considered identical with *G. pygmæus*.

G. pygmæus, F. (*crenulatus*, Rossi). Short, convex, subglobose, shining black, glabrous; head large, granulate, antennæ short, pitchy with base reddish; thorax narrower than elytra, almost as long as broad, very convex, narrowed in front, smooth behind, but strongly granulate in front, with a central furrow which is abbreviated behind; elytra with a tubercle at shoulder, and with rows of very coarse punctures; under-side granulate, with the first segment of abdomen comparatively smooth; legs black, tarsi short. L. $1\frac{1}{2}$ – $1\frac{3}{5}$ mm.

On the banks of streams, in damp places under cliffs, in fens, &c.; local; London district (Stephens); Norfolk; Suffolk; Quy Fen and Wicken Fen; Isle of Wight; Swanage; Lyme Regis; Swansea; banks of Bollin, Cheshire; Bewdley; Ripon; Bridlington; Scarborough; Crosby, Liverpool; Manchester district, general; Northumberland district, common; Scotland, local, Solway and Forth districts.

PARNIDÆ.

As a rule this family is regarded as comprising both *Parnus* and *Elmis* and their respective allies, as well as *Psephenus* and *Lara*, which in several points differ from both, but at the same time form connecting links without which it would be hardly possible to avoid following Thomson and others in considering the Parnidæ and Elmidæ as separate families; the following are the chief characteristics of the family: head usually retractile, mandibles small, antennæ variable either filiform and moderately long as in *Elmis*, or very short with the second joint dilated and ear-shaped, as in *Parnus*; anterior coxal cavities open behind; prosternum prolonged behind the coxæ; anterior coxæ variable; legs slender usually long, tarsi 5-jointed, joints 1–4 equal, short, fifth very long, claws strong; abdomen with five ventral segments in the European genera; the family contains nineteen genera and one hundred and eleven species, according to the Munich catalogue, but this number has been considerably increased by the researches of Mr. Champion and others; the species are widely distributed, but seem most abundant in Central America and countries adjacent; twelve genera occur in Europe, represented by about fifty species; of these five genera and fourteen or fifteen species are found in Britain; these fall naturally under the following tribes:—

- | | |
|---|----------|
| I. Antennæ, as a rule, filiform, more or less elongate,* with the second joint not dilated; anterior coxæ rounded, without trochantin . . . | ELMINA. |
| II. Antennæ very short, irregular, with the second joint dilated; anterior coxæ transverse, with trochantin | PARNINA. |

* In *Macronychus* the antennæ are very short.

ELMINA.

The members of this tribe are shorter and more ovate than the Parnina, and their legs are, as a rule, longer in proportion ; the longer and regularly formed antennæ, and the absence of a trochantin to the anterior coxæ, will also distinguish them ; the species belonging to our genera are aquatic in their habits, and are found adhering to stones or logs lying at the bottom of running water ; their movements are very slow ; they cannot swim, but they are enabled to cling to the stones to which they are attached with great tenacity by means of their very powerful tarsi and tarsal claws, thus, as Westwood observes, offering an admirable instance of adaptive creation in the provision made for those insects destined to live in violent running water, where, in fact, ordinary insect motions, whether swimming or walking, would be completely paralyzed ; the larva of *Elmis* has been described by Erichson (*Naturgesichte der Insect. Deutsch.* iii. 524), and figured by Westwood (*Classific.* i. 113, fig. 7, 16, 17), and Chapuis and Candèze (*Plate iii.*, fig. 7) ; in outline it somewhat resembles a peg-top, being very broad in front and strongly narrowed behind, the apex being acuminate ; the head is very small and sunk in thorax ; the antennæ are very short, and the legs are concealed beneath the body ; the thoracic segments are larger than any of the abdominal segments, the sides of which are incised and overlap one another in membranous lobes ; the whole form is shield-shaped, being somewhat convex above and hollow beneath ; Erichson thinks that the shape serves to enable the insect to form a chamber for the storage of atmospheric air on its under-side, but it would seem more probable that it acts as a sort of sucker, and enables it to cling closely to the stones to which it is attached.

With few exceptions most of the genera of the tribe are found in Europe ; Mulsant and Reitter divide the genus *Elmis* into four separate genera, *Elmis*, *Riolus*, *Latelmis*, and *Esolus*, all of which are found in Britain, as well as the genera *Limnius* and *Macronychus* ; the latter genus has only been taken in one locality, and it is most probable that *Stenelmis* at least will be at some future period established as British.

- I. Antennæ 11-jointed, moderately long.
 - i. Scutellum rather small, oblong or linear ; thorax not incised at base before scutellum **ELMIS, Latr.**
 - ii. Scutellum rather large, somewhat rounded ; thorax incised before scutellum **LIMNIUS, Müll.**
- II. Antennæ 6-jointed, very short **MACRONYCHUS, Müll.**

ELMIS, Latreille.

This genus contains about fifty species, of which about one-half are European ; fifteen have been described from North America, a few from Australia, and two from Chili and Peru, in which regions probably a

much larger number will be discovered ; six species occur in Britain, which may be distinguished as follows :—

- I. Thorax impressed at base, with a lateral line on each side parallel to margin, reaching from base to apex (*Elmis*, i. sp.) *E. ÆNEUS*, Müll.
- II. Thorax not impressed at base.
 - i. Thorax with a lateral line on each side parallel to margin.
 1. Length 3 mm. ; elytra behind middle wider than thorax ; lateral lines of thorax somewhat converging in front (*Latelmis*, Reitter) *E. VOLKMARI*, Panz.
 2. L. 1 mm. ; elytra and thorax forming a parallel-sided oblong ; lateral lines of thorax parallel (*Esolus*, Muls.) *E. PARALLELOPIPEDUS*, Müll.
 - ii. Thorax without lateral lines.
 1. Thorax finely punctured but not rugose ; elytra with second and fourth interstices slightly raised ; antennæ, as a rule, darker, at least at apex. (*Riolus*, Muls.)
 - A. Length 2 mm. ; elytra longer in proportion to thorax ; colour darker *E. SUBVIOLACEUS*, Müll.
 - B. Length $1\frac{1}{3}$ – $1\frac{1}{2}$ mm. ; elytra shorter in proportion to thorax ; colour lighter *E. CUPREUS*, Müll.
 2. Thorax finely rugose ; elytra with second and fourth interstices quite even ; antennæ red, not darker at apex *E. NITENS*, Müll.

E. æneus, Müll. Black, moderately shining, with the elytra of a dark bronze metallic colour, clothed with very short and fine greyish pubescence ; head exceedingly finely punctured, antennæ brown with base red ; thorax narrower than elytra, as long as broad, gradually a little narrowed in front, upper surface divided into three portions by lateral lines on each side of disc parallel to sides, and with a transverse impression at base ; elytra convex, sharply narrowed behind, with strongly punctured striæ, fourth and sixth interstices somewhat raised ; legs pitchy-brown, tarsi reddish. L. 2 mm.

In running water, clinging to stones, &c. ; somewhat local, but by no means uncommon ; generally distributed in the London district and the South ; not so common perhaps in the Midlands, but widely distributed ; Yorkshire ; Manchester and Northumberland districts ; Scotland, Solway, Tweed, Forth, and Moray districts, and probably general ; it is most likely as common in Ireland.

E. Volkmar, Panz. (*Latelmis Volkmar*, Reitter). By far the largest and broadest of our species, and easily recognized by its size ; oblong, black, with a very slight, often almost imperceptible bronze reflection ; head finely rugose, antennæ of a bright reddish colour at base, darker towards apex ; thorax about as long as broad, finely punctured, slightly narrowed in front, with the engraved lateral lines slightly converging towards apex, and with no impression at base ; elytra rather long, rather broader at base than thorax, somewhat widened behind

middle, with distinctly punctured striæ, which are stronger at sides than on disc; under-side black, usually with apex of abdomen reddish-brown; legs very robust, brown, with the tarsi reddish. L. 3-3 $\frac{1}{4}$ mm.

In running water; local; London district, not common, Mickleham (River Mole), Putney, Ripley, Hatfield, Woking, Tilgate; Maidstone; Norfolk; Hastings; Swansea; Bewdley; Repton and Burton-on-Trent; Ripon; Scarborough; Manchester district; Northumberland and Durham district; Scotland, not scarce, Solway, Tweed, Clyde, Forth, Tay, Dee, and Moray districts; Ireland, near Waterford (Power).

E. parallelopipedus, Müll. (*Esolus parallelopipedus*, Mulsant). A small, narrow, oblong, rather depressed and parallel-sided species, black or pitchy-black, shining; antennæ clear reddish-testaceous; thorax about as broad at base as elytra, parallel-sided, scarcely narrowed in front, very finely punctured, with the engraved lines almost parallel and not converging in front; elytra parallel with the striæ scarcely marked, but with the punctures rather strong towards base and becoming feebler towards apex, with sixth interstice raised; under-side dark reddish-brown, legs reddish or reddish-brown with femora darker. L. 1 mm.

In running streams; local and not common in England as far north as Northumberland, and in Wales; Devonshire, Exmouth and Exeter; Llangollen (River Dee); Repton; Scarborough; Manchester district; Northumberland district, not uncommon, Rivers Tyne, Irthing, Wansbeck, &c. (taken by Dr. Power in some numbers in the latter streams); Scotland, not uncommon, Solway, Tweed, Clyde, Forth, Tay, Dee, and Moray districts; Ireland, near Waterford (Power).

E. subviolaceus, Müll. (*Riolus subviolaceus*, Mulsant). This species in general appearance much resembles *E. æneus*, being of about the same size and colour; it is, however, at once distinguished by the absence of engraved lines at sides of the thorax; antennæ brown with reddish base; thorax narrower than elytra, fully as long as broad, very finely punctured, with a small oblique impression on each side behind middle, and an indistinct transverse impression on each side before middle, which is often obsolete; elytra narrowed behind with very strongly punctured striæ, second, fourth, and sixth interstices somewhat raised; legs pitchy black or dark brown, claws bright red; the general colour is, as a rule, darker than in *E. æneus*, and sometimes slightly violaceous. L. 2 mm.

In running streams, waterfalls, &c.; local, but common where it occurs; Ventnor, Isle of Wight, in abundance under stones at the foot of a small waterfall to the west of the town; Llangollen, River Dee; Repton; Ripon; Northumberland district, Whittle Dene, River Wansbeck; Scotland, local, Solway and Forth districts.

E. cupreus, Müll. (*Riolus cupreus*, Mulsant). Smaller than the preceding, æneous, rather shining; antennæ reddish-testaceous, as a rule darker towards apex; thorax narrower than elytra, a little shorter than broad, very slightly narrowed in front, finely punctured but not rugose, with an oblique impression on each side close behind middle, and another before posterior angles; elytra oval and convex, rather short and

broad, with very strongly punctured striæ, and with the second and fourth interstices slightly raised, the sixth being carinate; under-side black or reddish-brown; legs pitchy-brown with tarsi lighter. L. $1\frac{1}{6}$ – $1\frac{1}{3}$ mm.

In running streams; rare in England as far north as Northumberland, and in Wales; Ripley, Surrey (Champion); Woking; Bungay, Suffolk (W. Garneys); Drayton; Scarborough; Manchester district; Hartlepool; Northumberland district, local, Tyne, Irthing, Ouseburn, and Wansbeck; Scotland, local, Solway and Forth and probably Tweed and Clyde districts.

E. nitens, Müll. (*orichalceus*, Gyll.; *Riolus nitens*, Mulsant). Very like the preceding, and easily confounded with it; it is, however, slightly larger, and has the antennæ always of a unicolorous red colour, and the thorax very finely and rugosely punctured and dull, with the disc almost even; the second and fourth interstices are quite even, and the sixth is finely carinate; this is, however, not a very distinct character, as the second and fourth interstices in *E. cupreus* are very slightly and often almost imperceptibly raised; the general shape of the elytra in *E. nitens* appears to be rather larger, less oval, and more depressed on disc than in *E. cupreus*. L. $1\frac{1}{3}$ – $1\frac{2}{3}$ mm.

In running streams; rare as a rule, but it has occurred rather plentifully to Dr. Power in the Wansbeck, Northumberland, where it has also been taken in the Tyne, near Close House, &c.; Stephens mentions it from near London, and it has also been recorded from Drayton, Hampshire, Glanvilles Wootton, Exmouth, Bewdley, and Lancaster (River Lune); Scotland, very rare, Forth district, taken by Mr. Hislop near Falkirk.

LIMNIUS, Müller.

According to the Munich catalogue only half-a-dozen species belong to this genus, of which three are found in Europe, two in North America, and one in Australia; several, however, have since been described by Sharp and Fairmaire, and there are now nine species in the European list alone, so that it is probable the numbers of the genus will be largely increased; the species differ from *Elmis* in having the scutellum large and somewhat rounded, and in the fact that the thorax is incised before scutellum; hitherto there has been some confusion as to our species, but Dr. Sharp has lately determined the specimens taken by Dr. Power at Woking to be *L. rivularis*, Rosenh.

- | | |
|--|------------------------|
| I. Striæ of elytra rather strongly punctured; central interstices of elytra more strongly rugose. | |
| i. Size larger; thorax duller; general form broader. | L. TUBERCULATUS, Müll. |
| ii. Size smaller; thorax more shiny; general form narrower | L. RIVULARIS, Rosenh. |
| II. Striæ of elytra finely punctured; central interstices of elytra more finely and closely rugose | L. TROGLODYTES, Gyll. |

L. tuberculatus, Müll. (*Dargelasi*, Latr.). Oblong-ovate, convex, brassy black or brownish-bronze, elytra often lighter; head thickly and finely pubescent, antennæ red; thorax almost as broad as elytra, rather

shorter than broad, gradually narrowed in front, with the disc very finely punctured, and impressed at sides with strong engraved lateral lines which are curved near base and slightly converge in front; elytra almost three times as long as thorax, a little dilated behind middle and depressed on disc before middle, and raised before base into two broad and blunt more or less distinct prominences, which are often not very apparent, striæ strongly punctured, interstices rather flat and finely punctured in rows; at the sides are two carinate lines, the first of which continues the line on thorax; legs fuscous-reddish, tarsi lighter. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

In running water, found under the same conditions as *Elmis*; somewhat local, but rather common and widely distributed throughout the kingdom.

L. rivularis, Rosenh. Smaller than the preceding, and more parallel-sided, with the disc of the elytra much more even; the disc of the thorax is more closely punctured and duller, and the lateral engraved lines are more parallel, although the usual distinction that they are straight and parallel to the sides does not hold good always, as in some of Dr. Power's specimens they are distinctly flexuose at base; the striæ of the elytra also are finer, although the punctures are quite as strongly marked; in most of the specimens I have seen the thorax is longer and less transverse than in *L. tuberculatus*; the legs are fuscous-red or pitchy-red with the tarsi lighter. L. 1 mm.

In running water; local; Woking (taken in abundance by Dr. Power); Northumberland district, Rothley Lakes (Power); it has also been taken recently by Mr. T. Wood at Birchington, near Margate. Dr. Sharp has remarked that, although not uncommon in Southern Europe, it has not previously been found further north than Central France.

L. troglodytes, Gyll. Broader than the preceding, but otherwise much resembling it in general shape; it is a little narrower and more parallel-sided than *L. tuberculatus*; the sides of the thorax are more parallel and less rounded in front than in either of our other two species, and the elytra have the striæ evidently less strongly punctured, and the central interstices more closely and finely punctured; the raised lines on the thorax are almost straight and parallel to the sides. L. $1\frac{1}{3}$ – $1\frac{1}{2}$ mm.

In running water; rare; it has only been taken apparently at Slapton Ley, Devon, by Mr. Wollaston and one or two other collectors.

MACRONYCHUS, Müller.

This genus contains two species, one of which is found in North America, and the other in Central and Southern Europe; *M. quadrifidus* very closely resembles a large *Elmis*, but may easily be recognized by the tubercles on the head and thorax, the very long legs, and very short antennæ; although long looked for, it was not found until August 1864 by my friend Mr. J. T. Harris in the Dove near its confluence with the Trent, about two miles from Burton-on-Trent; it has

subsequently been taken in numbers by Mr. Harris, Mr. E. Brown, and Mr. W. Garneys, and sparingly by Mr. Blatch and myself; no other British locality is known, but there must be many others, as an aquatic insect is not likely to occur in a single stream in the centre of England and in no other.

The larva of *M. quadrituberculatus* is described and figured by Perris, Ann. Fr. 1863, p. 621, t. 14, fig. 1—15; it is of an obscure dirty-grey colour above with a badly limited lighter band on each side of the central line, under-side pale; upper surface rough; form elongate, a little broader in front than behind, gradually narrowed to apex; head small, much narrower than thorax; antennæ short; prothorax very large, nearly as long as the next three segments together, meso- and metathorax and the first eight abdominal segments of about equal length, ninth abdominal segment elongate, narrowed to apex, which is emarginate and furnished with long setæ; legs moderately long, terminating in a single stout claw.

***M. quadrituberculatus*, Müll.** Elongate, narrow, black, sometimes very faintly metallic, front margin of thorax reddish; under-side and legs pitchy; head rather long; forehead very thickly and rugosely punctured; thorax somewhat narrower than elytra, longer than broad, narrower in front, finely margined at sides, very finely punctured, with two distinct tubercles at base; elytra with distinctly punctured striæ which become gradually weaker towards apex, second interstice on each side near base raised into a strong longitudinal tubercle which is furnished with a distinct crest of thick upright setæ; the interstices are more or less setose; legs very long, tarsi curved and furnished with strong claws. L. $2\frac{1}{2}$ –3 mm.

On submerged logs and stumps; has only occurred in one locality in Britain, viz. the River Dove near its confluence with the Trent between Willington near Repton and Burton-on-Trent.

PARNINA.

Under this tribe Dr. Horn includes the *Larina*, in which case the character of the short antennæ above given will not hold good except for our native species, as the antennæ in *Lara* are long and slender; the latter genus, however, must, apparently, be separated from *Parnus* and its allies; the two British species *Parnus* and *Potaminus* are rather long, oblong, subcylindrical insects, with long slender legs, and with the antennæ scarcely apparent when the insect is viewed from above; the upper surface is thickly clothed with yellowish or greyish or sometimes fuscous pubescence; they may be distinguished as follows:—

- | | |
|--|-------------------|
| I. Intermediate coxæ separate; thorax without impressed lines at sides | POTAMINUS, Sturm. |
| II. Intermediate coxæ contiguous; thorax with impressed lines at sides | PARNUS, F. |

POTAMINUS, Sturm (*Dryops*, Leach, nec Olivier).

This genus contains one species from Europe, one from Java, and

several from North America; the New World species are remarkable for being covered with stony incrustations; they closely resemble Parnus, but may be known superficially by their longer legs and the absence of engraved lateral thoracic lines; our single species is a very scarce insect, and most of the specimens in our collections have been taken in the Dove in the same locality as *Macronychus*.

P. substriatus, Müll. (*Dryops Dumerilii*, Latr. et auct.). Of the same shape as *Parnus prolifericornis*, but a little more convex, dark reddish-brown, with the head and thorax darker, sometimes pitchy-brown or almost pitchy-black, the thorax being lighter at margins; the whole surface, especially of the elytra, is covered with very thick yellowish, almost golden pubescence, which is often less evident on thorax; antennæ very short; thorax a little narrower than elytra, broader than long, with sides only slightly rounded and rather strongly margined, very thickly and finely punctured, anterior angles produced; scutellum rather large; elytra convex, with distinct finely punctured striæ, interstices somewhat raised; under-side red-brown; legs long, reddish, with femora darker. L. 4-5 mm.

Under clods submerged at the sides of streams, and under submerged stones, but not apparently under stumps or logs; rare; River Dove, near Burton-on-Trent; Scarborough; banks of Wandle near Garrat Green and in Yorkshire (Stephens).

PARNUS, Fabricius (*Dryops*, Olivier nec Leach).

This genus contains sixteen species, of which all are found in the Mediterranean region except one which has been recorded from Brazil; other species, however, exist in Tropical America which have not been described; according to the *Biologia Centrali-Americana*, the New World species all have the second joint of the antennæ much less developed than is the case with the European species, and the club consists distinctly of nine joints, whereas in the Old World species only seven or eight can be distinguished; this character, however, cannot be regarded as generic, as the point still appears to be disputed, some authors considering our species to have the antennæ 11-jointed.

- | | |
|---|--|
| I. Elytra very finely punctured, with scarcely any traces of striæ; pubescence yellowish-grey | P. PROLIFERICORNIS, F. |
| II. Elytra more or less strongly and distinctly punctured. | |
| i. Elytra with traces of striæ at base only; pubescence dark | P. AURICULATUS, Panz. |
| ii. Elytra with striæ complete and distinct; pubescence greyish | P. ALGIRICUS, Lucas
(<i>striatellus</i> , Fairm.). |
| iii. Elytra without trace of striæ; pubescence golden-yellow | P. NITIDULUS, Heer. |

P. prolifericornis, F. Elongate, subcylindrical, very finely punctured fuscous black, thickly clothed with short erect, yellowish-grey

pubescence ; antennæ placed very closely together, the space of the forehead between them somewhat laterally compressed and raised ; thorax a little narrower than elytra, scarcely transverse, with sides rather strongly rounded behind and narrowed in front, side margins distinct thickly edged with whitish hairs ; elytra very finely punctured, sometimes with traces of striæ and larger punctures ; antennæ and legs reddish or pitchy-red ; in some varieties the body is clothed with white pubescence, in others the antennæ and legs are testaceous ; occasionally the thorax is bifoveolate. L. $4\frac{1}{2}$ –5 mm.

At the sides of ponds, also in damp places under stones ; generally distributed and common throughout the kingdom.

P. auriculatus, Panz. Rather broader, shorter, and more oblong than the preceding, and at once distinguished by its much darker appearance, the upper surface being black and clothed with fuscous pubescence and long black hairs ; the elytra are rather strongly punctured, especially towards base, where they also present distinct traces of striæ ; the antennæ are less approximate, of a dark brown colour with yellowish-brown club ; the forehead is more even in front, and the legs are much darker, being black or dark pitchy-brown with the tarsi reddish-brown. L. 4– $4\frac{1}{2}$ mm.

At the sides of ponds, under stones in damp places, &c. ; not quite so common as the preceding, but apparently quite as widely distributed throughout the kingdom.

P. algericus, Lucas (*striatellus*, Fairm.). Much smaller on the average than either of the preceding ; elongate and subcylindrical, fuscous black, clothed with greyish pubescence ; in form it resembles *P. prolifericornis*, but may at once be known from all our other species by the strong and distinctly punctured striæ which are continued to apex ; the legs are black or fuscous black with the tarsi sometimes lighter. L. 3 – $3\frac{3}{4}$ mm.

Pond sides, in damp places, &c. ; very local ; taken by Mr. Champion at Chobham, and by Dr. Power at Chobham, Woking, Wimbledon, Boundstone, Horning Fen, and St. Faith's, Norwich ; in one or two of these localities it has occurred very freely.

P. nitidulus, Heer. This species appears to resemble *P. auriculatus* in form, but it is somewhat smaller and narrower, and may be distinguished by the character of its pubescence, which is golden yellow with an intermixture of upright black hairs ; the antennæ, moreover, are reddish-brown and the legs red ; the species may also be known by the lesser convexity of its thorax, and the want of any trace of striæ on the elytra. L. $3\frac{1}{2}$ –4 mm.

Very rare ; one specimen has been taken by Dr. Sharp at Aberlady, Forth district, Scotland.

(*P. lutulentus*, Er. This species has found its way into some of our lists, but does not appear to rest on sufficient authority; it is oblong and somewhat depressed, black, clothed with very thick yellowish pubescence intermingled with short grey hairs, and may be recognized by the rows of punctured striæ on the elytra, which are feeble but regular, and traceable to apex; the species is much larger than *P. algericus*, the striation is weaker, and the pubescence is yellower. L. 4-4½ mm.)

HETEROCERIDÆ.

This family consists of a single genus, *Heterocerus*; its true position is somewhat doubtful, as it does not appear to bear a very marked affinity to any particular family; in their amphibious and subaquatic habits the species resemble the Parnidæ, and in their densely pubescent surface, very short antennæ, and general shape are not unlike certain species of *Parnus*, although they differ entirely from them on a closer examination; perhaps, however, taking all things into consideration, it is best to place them near the Parnidæ, and, as an aberrant family, they may be with advantage placed at the end of the Clavicorn series; the following are the chief characteristics of the family: head large, front prominent, antennæ short, inserted above the base of the mandibles near the inner margin of the eyes, 11-jointed, with the two first joints large, and the remainder forming an oblong serrate club; eyes half hidden by the thorax; thorax transverse, with the sides at most margined only behind, free at base, and not fitting closely to elytra, with all the angles rounded; anterior coxal cavities open behind; mesosternum very short, metasternum moderate; elytra covering abdomen; abdomen composed of five segments, of which the last two are free and the others connate; legs fossorial, tibiæ dilated and armed with spines, tarsi short, 5-jointed, according to some authors 4-jointed, the first joint being very minute (and so, often overlooked), capable of being folded back upon the tibiæ when these are used for digging; anterior coxæ transverse with distinct trochantin, posterior coxæ nearly contiguous at base; on each side of the first segment of the abdomen is an elevated curved line reaching the posterior margin; this elevated line is finely striate transversely, and according to Dr. Horn is a stridulating organ, the hind legs by friction against it producing quite a distinct sound.

The larva of *Heterocerus* is figured by Westwood (Classific. i. p. 113, fig. 7, 5); it is quite as anomalous as the perfect insect, and most resembles an inverted teetotum; the head is large, with strong toothed mandibles, behind which the eyes, which are small, are situated; the three thoracic segments are abnormally large, nearly twice as broad as the head, and very transverse; the abdominal segments are nine in number, and very much narrower than the thoracic segments, the last being longer than the rest; they are slightly narrowed towards apex, and are subcylindrical; the body is strongly setose, and the legs are stout and strong, and armed with a single claw; the larva occurs in the same situations as the perfect insect.

HETERO CERUS, Fabricius.

This genus contains about seventy or eighty species, which are chiefly confined to the northern hemisphere and to temperate and cold climates; only two or three are known from South America, and a few have been described from Cuba, India, and Ceylon; the majority, however, inhabit North America, Northern Asia, and Europe; the number of European species is no less than thirty-four, or upwards of half of the whole number described; of these eight have been discovered in Britain, although it must be admitted that one or two have been considered as somewhat doubtfully indigenous; the Heteroceri as a whole are very similar in form and colour, and require great care in their determination; they are oblong insects, of more or less ovate form, thickly clothed with short silky pubescence, which is often mixed with long hairs, and with the elytra usually variegated with yellowish or reddish bands or spots which are more or less irregular; the punctuation is very fine; one of the chief points of distinction is the presence or absence of a margin at the posterior angles of thorax, which is not very easy in many cases to determine with certainty; the species live in galleries which they excavate in soft mud near pools or small lakes or on the margins of muddy streams; the ramifications of these galleries are very conspicuous, and the insects may easily be detected by their means; not more than one, or two (probably male and female) beetles are found in one burrow; when disturbed they run from their galleries and take flight; they walk slowly with the anterior parts of the body considerably elevated; some authorities, as Westwood observes, have supposed the habits of the species to be carnivorous, but this does not appear to have been proved.

- I. Posterior angles of thorax not margined; length $3\frac{1}{2}$ - $5\frac{1}{2}$ mm.
- i. Elytra with transverse yellowish band behind middle not interrupted.
1. Male with a transverse tubercle on middle of clypeus; antennæ with first two joints yellow, club sometimes darker; legs mostly yellow (H. FOSSOR, *Kies.*)
(*rectus*, *Wat.*)
2. Male with clypeus simple; antennæ with first two joints brownish-yellow, club brown; legs mostly black, anterior femora yellow H. FEMORALIS, *Kies.*
- ii. Elytra with transverse yellowish band behind middle interrupted; legs reddish-yellow (H. ARENARIUS, *Kies.*)
- II. Posterior angles of thorax distinctly margined; length 3-5 mm.
- i. Upper surface clothed with upright, somewhat woolly, blackish-brown pubescence, intermingled with short greyish hairs, which are thicker on the head and sides of thorax.
1. Form broader and more oval, somewhat depressed; general colour darker H. OBSOLETUS, *Curt.*

- 2. Form narrower and less oval, rather convex; general colour lighter H. MARGINATUS, F.
- ii. Upper surface clothed with fine and short pubescence, not intermingled with hairs of another character.
 - 1. Size larger, pubescence lighter H. LÆVIGATUS, Panz.
 - 2. Size smaller, pubescence darker H. FUSCULUS, Kies.
- III. Posterior angles of thorax very finely bordered; elytra usually reddish with obsolete markings; size very small, length 2-2½ mm. H. SERICANS, Kies.

(**H. fossor**, Kies. (*rectus*, Wat.). Oblong, rather convex, thickly clothed with short pale pubescence, which is thicker and yellowish on the head and front part of thorax; antennæ yellow with club sometimes darker; thorax as broad as elytra, thickly and finely punctured, black, with the anterior angles and sometimes the whole sides yellow, posterior angles not margined; elytra closely and finely punctured with the epipleuræ, a spot at base, two bands one before and one behind middle, and spots at apex, yellow; legs yellow with the base of the tibiæ and in male also the base and apex of femora blackish. L. 4½-5½ mm.

Male with the clypeus furnished with a transverse raised tubercle, and the mandibles elongate.

Very rare, and somewhat doubtfully indigenous; Mr. Waterhouse described his *H. rectus*, which appears to be identical with *H. fossor*, on ten specimens from North Wales, supposed to have been taken by the Rev. F. W. Hope, and it has been doubtfully recorded from Weymouth and Deal.)

H. femoralis, Kies. (*flexuosus*, Steph.). Oblong, black, clothed with griseous pubescence, which is whiter and thicker on the head and sides of thorax, and on the elytra is mixed with longer hairs; thorax very transverse, broader than elytra in male, as broad as elytra in female, with the posterior angles not margined, and the anterior angles and rarely the sides yellow; elytra unevenly and finely punctured, with markings much as in the preceding species; legs black, anterior femora yellowish-testaceous. L. 3½-4½ mm.

Male with the clypeus simple, and with the head and thorax larger than in female.

Banks of ponds and ditches; not common; Sheerness; Gravesend; Deal; Hastings; Brighton; Weymouth; Exmouth; Wales (Hamlet Clark); Hunstanton; Cleethorpes, Lincolnshire; Manchester; Preston Marsh, Lancashire; Lancaster; Scotland, local, Solway and Forth districts; Ireland, Baldoyle: the species appears to be chiefly maritime.

Closely allied to the preceding, from which it differs in the character of its punctuation and pubescence, its darker colour, and the tubercle on the clypeus of the male; the colour of the legs is a misleading character, as in immature specimens they are quite light.

(**H. arenarius**, Kies. This species appears to be very closely allied to the preceding, and to be chiefly distinguished by being of a browner

colour and by having the transverse yellowish waved band on the elytra behind middle interrupted, its apical portion forming a rhombus-shaped spot; the antennæ and legs are red-yellow; the elytra are unevenly punctured as in *H. arenarius*; - as above remarked, the colour distinctions in this genus appear to be of little value; immature specimens of *H. femoralis* are brown, and have the legs entirely or almost entirely testaceous. L. 4 mm.

Recorded by Haliday from Ireland, and introduced by Mr. Crotch in his British catalogue; the latter author, however, afterwards came to the conclusion that the Irish specimens did not differ substantially from *H. femoralis*; Mr. W. G. Blatch records it from Weymouth, Chesil Beach, otherwise I should have omitted it.*)

H. obsoletus, Curt. Rather broad and depressed, subovate, black, clothed with upright, somewhat woolly, blackish-brown pubescence, intermingled with short greyish hairs which are thicker on the head and sides of thorax; antennæ brown; thorax as broad behind as elytra, narrowed in front, thickly and finely punctured, with a reddish-brown spot at anterior angles, posterior angles sharply margined; elytra finely but distinctly punctured, with irregular yellowish spots and patches; legs black (except in immature specimens), tarsi pitchy-red; ridge on first abdominal segment quite smooth in both sexes. L. 4-5 mm.

Male with the head larger and the mandibles elongate.

Banks of brackish ditches; occasionally in tidal refuse and decaying sea-weed; local; London district, not uncommon, Gravesend, Sheerness, Chatham; Pegwell Bay; Swansea; Cleethorpes, Lincolnshire (Chappell).

The broad oblong form and usually dark colour will separate this from all our other species.

H. marginatus, F. Oblong oval, somewhat convex, black, clothed with fine erect fuscous pubescence, intermingled with short greyish hairs which are thicker at sides of thorax; antennæ brown with the first joint yellow; thorax somewhat narrower than elytra, contracted in front, very finely punctured, distinctly margined at posterior angles, with the side margins and anterior angles often, but not always, yellowish; elytra finely punctured, rather more shining and less pubescent than in *H. lævigatus*, with irregular yellowish bands and spots; legs brown, femora before apex reddish, tarsi brown-red; ridge on first abdominal segment with a notch in front. L. $3\frac{1}{2}$ -4 mm.

Sexual differences not apparent.

Banks of ponds and ditches; local, but not uncommon, especially near the coast, in England and Wales; Lee, Mickleham, Forest Hill, Sydenham, Maidstone, Hanwell,

* Since I wrote the above, Mr. Blatch has informed me that after carefully re-examining his specimens he has come to the conclusion that they are probably a variety of *H. femoralis*; it appears, therefore, doubtful whether the species (if it be a true species) is found in Britain.

Cowley, Sheerness, Whitstable, Gravesend; Dover; Hastings; St. Leonards Forest; Glanvilles Wootton; Swansea; Aberystwith; Salford Priors; Bewdley; Tewkesbury; banks of Bollin, Cheshire; Scarborough; Liverpool; Northumberland district; Scotland, rare, in salt marshes, Solway, Tweed, and Forth districts.

H. lævigatus, Panz. (*fenestratus*, Thunb.; *H. marginatus*, var. b. Gyll.). Very like the preceding, but distinguished by the character of its pubescence, which is thick, fine, short, and silky, and not intermingled with hairs of another character; the posterior angles of the thorax are not so distinctly margined, and the clypeus in the male is armed with two short spines; this sex is also distinguished by its longer form, larger head and elongate mandibles, and by having the thorax as broad as the elytra; the ridge on the first abdominal segment is finely notched in front in both sexes; the elytra in this species have a more powdery and lighter appearance than in *H. marginatus*, and the yellow markings are not nearly as distinct in most specimens. L. 3-4 mm.

Banks of ponds and ditches; local, and apparently not found further north than the midland counties; London district, rather common, Lee, Penge, Wandsworth, Darenth Wood, Dulwich, Cowley, Gravesend; Norfolk; Suffolk; Hastings; Glanvilles Wootton; Southsea; Weymouth; Bewdley, Worcestershire (Blatch).

H. fuscus, Kies. Oblong, moderately convex, but with disc of elytra depressed, black, clothed with fine, short, even, brownish or brownish-grey pubescence, without any intermixture of longer hairs; antennæ brown, first joint sometimes brownish-yellow; thorax at base about as broad as elytra, rather strongly narrowed in front, very finely punctured, posterior angles sharply margined, anterior angles often yellowish; elytra finely, but rather distinctly sculptured, with distinct and well-marked yellow spots and patches; epipleuræ fuscous black; legs black or pitchy-black with tarsi and sometimes femora lighter; ridge on first abdominal segment quite smooth in female, finely notched in male. L. 3 mm.

On mud near ponds and ditches; extremely local; I know of no other locality except Luccombe Chine, Ventnor, Isle of Wight, where it occurs in numbers on mud at some little distance above the shore beneath the cliffs; all Dr. Power's specimens are labelled Isle of Wight, and probably come from this locality, where I have taken it with Dr. Sharp and Mr. Gorham.

The species rather closely resembles *H. lævigatus*, but may be known by its small size and comparatively stronger punctuation.

H. sericans, Kies. Oblong, black, or more often reddish-black, sometimes ferruginous, clothed with short whitish silky pubescence; smaller and narrower than any of our other species; head rather large, antennæ yellow; thorax usually darker than elytra, sometimes reddish with disk darker, about as broad as elytra, narrowed in front, very finely and thickly punctured, posterior angles finely margined; the central longitudinal line is usually red or reddish; elytra thickly and

finely punctured, of a reddish-brown colour, with the suture and three bands abbreviated externally, brownish or pitchy; very often, however, the elytra are fuscous red with the markings obsolete; legs reddish-yellow, posterior femora brownish at base. L. 2–2½ mm.

Male with the mandibles elongate.

Banks of brackish ditches; very local and, as a rule, not common; Gravesend; Sheerness; Southend; Pegwell Bay; Hastings; Cowes; Southampton; Lymington; Weymouth; Weston-super-Mare; Aberystwith; Morecambe Bay; Heysham, near Manchester; Northumberland district, very rare, Camboise (John Scott); Scotland, very local, in salt marshes, Solway district, abundant in one spot near the mouth of the Nith, Dumfries.

The small size, narrow cylindrical shape, and reddish colour will at once distinguish this from all our other species.

(***Octhebius auriculatus***, Rey. This species, which has been comparatively recently described by M. Rey, has been taken in numbers by Mr. Champion and Mr. Walker in the Isle of Sheppey; it is extremely closely allied to *O. bicolon* and *O. rufimarginatus*, especially the latter, from which it chiefly differs in being duller and less coarsely sculptured, and appears to form a connecting link between them: I feel some doubt as to its being really a distinct species. *Vide* Vol. I. p. 246.)

Just as the last sheets of this Volume were returned for press, I received from the Rev. A. Matthews a copy of a paper on "New Genera and Species of Trichopterygidæ" just published by him in the *Annals and Magazine of Natural History* for March, 1889; as two new British species are included in this paper, I am very glad to have the opportunity of appending their descriptions:—

Trichopteryx angusta, Matth. Elongate, very narrow, convex, shining, black, sparingly clothed with fulvous hairs; head large, eyes moderate; thorax small, broader than head, broadest at base, indistinctly tuberculate, shining, with the basal margin almost straight, and the posterior angles produced and very sharp; elytra fuscous, very short, shorter and narrower than the head and thorax, broadest at shoulders, rather strongly asperate; apex obtuse; abdomen elongate, with five segments uncovered, black, obtuse at apex, entire; legs clear yellow, antennæ obscurely yellow. L. $\frac{4}{5}$ mm.

Three specimens found by Mr. Matthews in Leicestershire.

This species may be distinguished from others by its intermediate size, long and narrow form, very short elytra, and long abdomen.

Ptilium incognitum, Matth. Elongate-ovate, pitchy-black, very convex, finely and closely tuberculate, sparingly clothed with short silvery hairs, lines on thorax parallel; head small, elongate in front, eyes not prominent; thorax moderate, very slightly broader than head, broadest

behind middle, strongly constricted towards base, very distinctly impressed with three parallel lines on disc, posterior angles prominent and acute, anterior angles strongly deflexed; elytra ovate, very convex, twice as long as and much broader than head and thorax, broadest behind middle, strongly attenuated at shoulders, finely and closely tuberculate, and furnished besides here and there with larger tubercles, apex obtuse, lighter; pygidium very obtuse; legs rather long, clear yellow; antennæ long, pitchy, lighter at base. L. 1 mm.

Mr. Matthews says that the species appears to be very rare, that he has found it in Wicken Fen, Cambridgeshire, and that he has met with it in two continental collections, in both of which it was labelled "*Pt. affine*;" and he adds, "This large and very distinct species has, owing to the parallel lines on its thorax, been confounded with *Pt. affine*, Er., but with the exception of the thoracic lines, differs entirely from that species in size, form, colour, and sculpture."

(Mr. E. A. Waterhouse (Ent. Monthly Mag. xxv. 133) records the following species from the neighbourhood of Sandwich:—*Ocypus pedator*, Grav.; *Thalycra sericea*, Sturm; *Agaricophagus cephalotes*, Schmidt; *Scydmaenus* (*Neuraphes*) *angulatus*, Müll.; *elongatulus*, Müll.; and *præteritus*, Rye (*longicollis*, Mots.); and also the very rare *Anisotoma picea*, Ill.; *Synchita juglandis* has occurred in St. Leonard's Forest; this record was omitted on p. 191; it is possible after all that we may have more than one species of *Synchita* in Britain, but the question requires to be more fully worked out.)

INDEX.

	PAGE		PAGE		PAGE
<i>Ablattaria</i> , Reitt.	52	<i>nigripenne</i> , Kug.	15	<i>macropus</i> , Rye	32
<i>Abraeus</i> , Leach	214	<i>piceum</i> , Er.	17	<i>nigrita</i> , Schmidt	33
<i>globosus</i> , Hoff.	214	<i>polonicum</i> , Wank.	17	<i>obesa</i> , Schmidt	29
<i>granulum</i> , Er.	214	<i>rhinoceros</i> , Sharp	19	<i>oblonga</i> , Er.	27
<i>Acanthogethes</i> , Reitt.	257	<i>rotundatum</i> , Gyll.	18	<i>ornata</i> , Fairm.	31
<i>Aclypea</i> , Reitt.	49	<i>seminulum</i> , L.	16	<i>ovalis</i> , Schmidt	30
<i>Acritus</i> , Lec.	215	<i>staphylæum</i> , Gyll.	19	<i>pallens</i> , Sturm	35
<i>minutus</i> , Herbst.	215	<i>varians</i> , Beck	17	<i>v. pallescens</i> , Schmidt	29
<i>nigricornis</i> , Hoff.	216	<i>Aglenus</i> , Er.	186	<i>parvula</i> , Sahlb.	36
<i>punctum</i> , Aubé	216	<i>brunneus</i> , Gyll.	187	<i>picea</i> , Ill.	27
<i>Actidium</i> , Matth.	134	<i>Alexia</i> , Steph.	180	<i>punctulata</i> , Gyll.	31
<i>coarctatum</i> , Hal.	135	<i>pilifera</i> , Müll.	180	<i>rubiginosa</i> , Schmidt	32
<i>concolor</i> , Sharp	135	<i>Amauroonyx</i> , Reitt.	98	<i>rugosa</i> , Steph.	36
<i>Actinopteryx</i> , Matth.	109	<i>Amphicyllis</i> , Er.	19	<i>scita</i> , Er.	30
<i>dilatocollis</i> , Mots.	109	<i>v. ferrugineum</i> , <i>Sturm</i>	20	<i>silesiaca</i> , Kr.	33
<i>fucicola</i> , All.	109	<i>globus</i> , F.	20	<i>similata</i> , Rye	29
<i>marinum</i> , Mots.	109	<i>Amphotis</i> , Er.	237	<i>triepkei</i> , Schmidt	34
<i>mollis</i> , Hal.	109	<i>marginata</i> , Er.	237	<i>Anisotomina</i>	13
<i>Adalia</i> , Muls.	160	<i>Anatis</i> , Muls.	162	<i>Anommatus</i> , Wesm.	278
<i>bipunctata</i> , L.	161	<i>ocellata</i> , L.	162	<i>12-striatus</i> , Wesm.	278
<i>bothnica</i> , Payk.	161	<i>Anchicera</i> , Thoms.	330	<i>obsoletus</i> , Steph.	278
<i>v. crucifera</i> , Weise	161	<i>Anisoscymnus</i> , Crotch	171	<i>terricola</i> , Wesm.	278
<i>v. fenestrata</i> , Weise	161	<i>Anisosticta</i> , Dup.	160	<i>Antherophagus</i> , Latr.	311
<i>livida</i> , Muls.	161	<i>novemdecimpuncta-</i> <i>ta</i> , L.	160	<i>nigricornis</i> , F.	312
<i>M-nigrum</i> , Gyll.	161	<i>Anisotoma</i> , Ill.	23	<i>pallens</i> , Gyll.	312
<i>obliterata</i> , L.	161	<i>badia</i> , Sturm	29	<i>silaceus</i> , Herbst.	313
<i>Adelops</i> , auct.	71	<i>v. bicolor</i> , Schmidt	28	<i>silaceus</i> , Gyll.	312
<i>Adonia</i> , Muls.	159	<i>brunnea</i> , Sturm	30	<i>Anthrenus</i> , Geoff.	361
<i>Agaricophagus</i> , <i>Schmidt</i>	38	<i>calcarata</i> , Er.	31	<i>claviger</i> , Er.	364
<i>cephalotes</i> , Schmidt	38	<i>ciliaris</i> , Schmidt	37	<i>fuscus</i> , Latr.	364
<i>conformis</i> , Er.	38	<i>cinnamomea</i> , Panz.	26	<i>musæorum</i> , L.	363
<i>Agathidium</i> , Ill.	14	<i>clavicornis</i> , Rye	31	<i>pimpinellæ</i> , F.	363
<i>atrum</i> , Payk.	16	<i>curta</i> , Fairm.	34	<i>scrophulariæ</i> , L.	362
<i>clypeatum</i> , Sharp	17	<i>curvipes</i> , Schmidt	32	<i>varius</i> , F.	363
<i>confusum</i> , Bris.	17	<i>dubia</i> , Kug.	28	<i>verbasci</i> , L.	363
<i>convexum</i> , Sharp	18	<i>furva</i> , Er.	37	<i>Arcopagus</i> , Denny	90
<i>globosum</i> , Muls.	18	<i>grandis</i> , Fairm.	27	<i>Asbolus</i> , Voet.	45
<i>lævigatum</i> , Er.	16	<i>litura</i> , Steph.	31	<i>Aspidiphorus</i> , Latr.	373
<i>mandibulare</i> , W. C.	17	<i>v. longipes</i> , Schmidt	29	<i>orbiculatus</i> , Gyll.	373
<i>marginatum</i> , Sturm	17	<i>lunicollis</i> , Rye	34	<i>striatopunctatus</i> , Lap.	373
<i>nigrinum</i> , Sturm	19			<i>Atomaria</i> , Steph.	329

	PAGE		PAGE		PAGE
<i>analis</i> , Er.	343	<i>Baeocrara</i> , Thoms.	127	<i>ochraceus</i> , Scriba	306
<i>apicalis</i> , Er.	342	<i>Bathyscia</i> , Schiödte	71	<i>sambuci</i> , Scop.	306
<i>atra</i> , Herbst.	339	<i>Wollastoni</i> , Jans.	71	<i>tomentosus</i> , F.	306
<i>atricapilla</i> , Steph.	340	<i>Batrissus</i> , Aubé	92		
<i>badia</i> , Er.	334	<i>piceus</i> , Muls.	92	<i>Cacicula</i> , Meg.	177
<i>Barani</i> , Bris.	332	<i>venustus</i> , Reich.	92	<i>Cænoscelis</i> , Thoms.	329
<i>basalis</i> , Er.	341	<i>Bibloporus</i> , Thoms.	100	<i>ferruginea</i> , Sahlb.	329
<i>basella</i> , Steph.	340	<i>bicolor</i> , Denny	100	<i>pallida</i> , Woll.	329
<i>berolinensis</i> , Er.	340	<i>glabriculus</i> , Gyll.	100	<i>Calvia</i> , Muls.	166
<i>castanea</i> , Steph.	340	<i>Blitophaga</i> , Reitt.	50	<i>Calyptobium</i> , Villa	277
<i>concolor</i> , Maerk.	335	<i>Brachygluta</i> , Thoms.	95	<i>Calyptomerus</i> , Redt.	11
<i>diluta</i> , Er.	331	<i>Brachypterina</i>	220	<i>cephalotes</i> , Dej.	11
<i>dimidiata</i> , Marsh.	341	<i>Brachypterus</i> , Kug.	221	<i>dubius</i> , Marsh.	11
<i>divisa</i> , Rye.	338	<i>glaber</i> , Newm.	221	<i>enshamensis</i> , Steph.	11
<i>elongatula</i> , Er.	334	<i>gravidus</i> , Ill.	221	<i>Carcinops</i> , Mars.	205
<i>evanescens</i> , Steph.	340	<i>linariæ</i> , Steph.	221	<i>corpuscula</i> , Mars.	205
<i>fimetarii</i> , Herbst.	331	<i>pubescens</i> , Er.	221	<i>minima</i> , Aubé	205
<i>fulvicollis</i> , Steph.	340	<i>publicarius</i> , Gyll.	221	<i>pumilio</i> , Er.	205
<i>fumata</i> , Er.	332	<i>urticæ</i> , Kug.	221	<i>14-striata</i> , Steph.	205
<i>fuscata</i> , Sch.	339	<i>Brontes</i> , F.	300	<i>Carpophilina</i>	223
<i>fuscicollis</i> , Mannh.	333	<i>v. pallens</i> , F.	301	<i>Carpophilus</i> , Leach	223
<i>fuscipes</i> , Gyll.	335	<i>planatus</i> , L.	300	<i>abbreviatus</i> , Panz.	224
<i>gibbula</i> , Er.	342	<i>Bryaxis</i> , Leach	94	<i>flexuosus</i> , Payk.	224
<i>gutta</i> , Steph.	342	<i>cotus</i> , Saulcy	96	<i>hemipterus</i> , L.	224
<i>Hislopi</i> , Woll.	342	<i>emarginata</i> , Forst.	96	<i>hemipterus</i> , F.	224
<i>impressa</i> , Er.	338	<i>fossulata</i> , Reich.	95	<i>mutilatus</i> , Er.	224
<i>linearis</i> , Steph.	333	<i>hæmatica</i> , Reich.	96	<i>Cartodere</i> , Thoms.	285
<i>longicornis</i> , Thoms.	334	<i>Helperi</i> , Schmidt.	95	<i>collaris</i> , Mannh.	285
<i>mesomelas</i> , Herbst.	341	<i>impressa</i> , Thoms.	97	<i>elongata</i> , Curt.	286
<i>munda</i> , Er.	338	<i>juncorum</i> , Leach.	96	<i>exilis</i> , Mannh.	286
<i>nana</i> , Er.	333	<i>Lefebvriei</i> , Brit. Cat.	96	<i>filiformis</i> , Gyll.	286
<i>nigriceps</i> , Er.	340	<i>v. rufescens</i> , Reitt.	95	<i>filum</i> , Aubé.	286
<i>nigripennis</i> , Payk.	337	<i>sanguinea</i> , L.	93	<i>nanula</i> , Mannh.	285
<i>nigriventris</i> , Steph.	333	<i>simplex</i> , Wat.	94	<i>ruficollis</i> , Marsh.	285
<i>nitidula</i> , Heer	341	<i>Waterhousei</i> , Rye	94	<i>Cateretes</i> , Gyll.	221
<i>ornata</i> , Heer	343	<i>Byrrhidæ</i>	7, 365	<i>Cathartus</i> , Reiche	305
<i>peltata</i> , Kr.	335	<i>Byrrhus</i> , L.	367	<i>advena</i> , Walzl.	305
<i>phæogaster</i> , Steph.	340	<i>v. Dennyi</i> , Steph.	369	<i>Catops</i> , Payk.	65
<i>plicicollis</i> , Mäkl.	333	<i>dorsalis</i> , F.	370	<i>sericeus</i> , F.	65
<i>pusilla</i> , Payk.	340	<i>fasciatus</i> , F.	369	<i>truncatus</i> , Gyll.	65
<i>rhenana</i> , Kr.	341	<i>murinus</i> , F.	370	<i>varicornis</i> , Rosenh.	65
<i>ruficornis</i> , Marsh.	343	<i>pilula</i> , L.	368	<i>Cephenniina</i>	82
<i>terminata</i> , Com.	343	<i>pustulatus</i> , F.	370	<i>Cephennium</i> , Müll.	84
<i>testacea</i> , Steph.	343	<i>Bythinus</i> , Leach	88	<i>intermedium</i> , Aubé	85
<i>thoracica</i> , Steph.	340	<i>bulbifer</i> , Reich.	91	<i>thoracicum</i> , Müll.	84
<i>umbrina</i> , Er.	333	<i>Burrellii</i> , Denny	92	<i>Cercus</i> , Latr.	222
<i>umbrina</i> , Gyll.	332	<i>Curtisii</i> , Denny	91	<i>bipustulatus</i> , Payk.	222
<i>versicolor</i> , Er.	343	<i>glabratus</i> , Rye	89	<i>pedicularius</i> , L.	222
<i>Wollastoni</i> , Sharp	333	<i>hungaricus</i> , Reitt.	91	<i>rufilabris</i> , Latr.	223
<i>Atomariina</i>	329	<i>luniger</i> , Aubé	92	<i>Cerylonina</i>	193
<i>Attagenus</i> , Latr.	359	<i>puncticollis</i> , Denny	90	<i>Cerylon</i> , Latr.	194
<i>megatoma</i> , F.	359	<i>securiger</i> , Reich.	91	<i>angustatum</i> , Er.	195
<i>pellio</i> , L.	359	<i>unicornis</i> , Aubé	91	<i>deplanatum</i> , Gyll.	196
<i>piceus</i> , Ol.	359	<i>validus</i> , Aubé	90	<i>v. excavatum</i> , Fowler	195
<i>trifasciatus</i> , F.	360	<i>Byturidæ</i>	6, 305	<i>fagi</i> , Bris.	195
<i>verbasci</i> , auct.	360	<i>Byturus</i> , Latr.	306	<i>ferrugineum</i> , Steph.	195
		<i>æstivus</i> , Thoms.	306	<i>forticorne</i> , Muls.	195

	PAGE		PAGE		PAGE
histeroides, <i>F.</i>	194	Coccidula, <i>Kug.</i>	177	<i>cylindrica</i> , <i>Mannh.</i>	290
v. <i>longicolle</i> , <i>Reitt.</i>	195	<i>pectoralis</i> , <i>F.</i>	177	<i>denticulata</i> , <i>Gyll.</i>	289
Chilocorus, <i>Leach</i>	175	<i>rufa</i> , <i>Herbst.</i>	177	<i>depressa</i> , <i>Thoms.</i>	291
<i>bipustulatus</i> , <i>L.</i>	176	<i>scutellata</i> , <i>Herbst.</i>	178	<i>elongata</i> , <i>Humm.</i>	291
<i>renipustulatus</i> , <i>Scriba</i>	175	Coccinella, <i>L.</i>	163	<i>fenestralis</i> , <i>L.</i>	292
<i>similis</i> , <i>Rossi</i>	175	10-punctata, <i>L.</i>	163	<i>ferrugineus</i> , <i>Marsh.</i>	292
<i>Cholerus</i> , <i>Thoms.</i>	82	<i>distincta</i> , <i>Fald.</i>	165	<i>flavescens</i> , <i>Thoms.</i>	290
<i>Choleva</i> , <i>Latr.</i>	54	<i>hieroglyphica</i> , <i>L.</i>	164	<i>fulva</i> , <i>Com.</i>	290
<i>affinis</i> , <i>Steph.</i>	62	<i>labilis</i> , <i>Muls.</i>	165	<i>hirtella</i> , <i>Thoms.</i>	290
<i>agilis</i> , <i>Ill.</i>	57	<i>magnifica</i> , <i>Redt.</i>	165	<i>laticollis</i> , <i>Mannh.</i>	289
<i>agilis</i> , <i>F.</i>	64	5-punctata, <i>L.</i>	164	<i>linearis</i> , <i>Payk.</i>	291, 292
<i>angustata</i> , <i>F.</i>	56	7-punctata, <i>L.</i>	164	<i>longicollis</i> , <i>Zett.</i>	292
<i>anisotomoides</i> , <i>Spence</i>	58	11-punctata, <i>L.</i>	164	<i>obscura</i> , <i>Bris.</i>	291
<i>caliginosus</i> , <i>Steph.</i>	60	<i>variabilis</i> , <i>Ill.</i>	163	<i>pubescens</i> , <i>Gyll.</i>	288
<i>chrysoloides</i> , <i>Panz.</i>	60	Coccinellidæ	4, 155	<i>punctulata</i> , <i>Marsh.</i>	288
<i>cisteloides</i> , <i>Frökl.</i>	56	Coccinellidæ Aphidi- phagæ	157	<i>rufula</i> , <i>Zett.</i>	292
<i>colonoides</i> , <i>Kr.</i>	65	Coccinellidæ Phyto- phagæ	156	<i>serrata</i> , <i>Payk.</i>	289
<i>coracina</i> , <i>Kell.</i>	61	<i>Colenis</i> , <i>Er.</i>	37	<i>umbilicata</i> , <i>Beck.</i>	290
<i>flavicornis</i> , <i>Thoms.</i> (?)	60	<i>aciculata</i> , <i>F.</i>	37	<i>Corticarina</i>	287
<i>fumata</i> , <i>Spence</i>	64	<i>dentipes</i> , <i>Gyll.</i>	37	<i>Corticarina</i> , <i>Reitt.</i>	294
<i>fumatus</i> , <i>Er.</i>	64	<i>immunda</i> , <i>Sturm.</i>	37	Corylophidæ	3, 141
<i>fusca</i> , <i>Panz.</i>	60	<i>Colon</i> , <i>Herbst.</i>	66	<i>Corylophus</i> , <i>Steph.</i>	145
<i>grandicollis</i> , <i>Er.</i>	62	<i>angulare</i> , <i>Er.</i>	68	<i>cassidioides</i> , <i>Marsh.</i>	145
<i>intermedia</i> , <i>Kr.</i>	56	<i>appendiculatum</i> , <i>Sahlb.</i>	70	<i>sublævipennis</i> , <i>Duv.</i>	145
<i>Kirbyi</i> , <i>Spence</i>	63	v. <i>Barnevillei</i> , <i>Kr.</i>	69	<i>Cryptarcha</i> , <i>Shuck.</i>	260
<i>longipennis</i> , <i>Chaud.</i>	61	<i>brunneum</i> , <i>Latr.</i>	69	<i>imperialis</i> , <i>F.</i>	260
<i>longula</i> , <i>Kell.</i>	61	<i>calcaratum</i> , <i>Er.</i>	70	<i>lateralis</i> , <i>Sahlb.</i>	260
<i>morio</i> , <i>F.</i>	61	<i>denticulatum</i> , <i>Kr.</i>	70	<i>strigata</i> , <i>F.</i>	260
<i>nigricans</i> , <i>Spence</i>	60	<i>dentipes</i> , <i>Sahlb.</i>	69	Cryptophagidæ	6, 307
<i>nigrita</i> , <i>Er.</i>	62	<i>dentipes</i> , <i>Er.</i>	67	<i>Cryptophagina</i>	311
<i>pilicornis</i> , <i>Thoms.</i>	61	<i>fusculum</i> , <i>Er.</i>	67	<i>Cryptophagus</i> , <i>Herbst.</i>	313
<i>præcox</i> , <i>Er.</i>	58	<i>latum</i> , <i>Kr.</i>	71	<i>acutangulus</i> , <i>Gyll.</i>	322
<i>rotundicollis</i> , <i>Kell.</i>	63	<i>microps</i> , <i>Czwal.</i>	68	<i>affinis</i> , <i>Sturm.</i>	324
<i>sericeus</i> , <i>F.</i>	65	<i>puncticolle</i> , <i>Kr.</i>	67	<i>badius</i> , <i>Sturm.</i>	320
<i>soror</i> , <i>Newm.</i>	60	<i>pygmæum</i> , <i>Er.</i>	70	<i>bicolor</i> , <i>Sturm.</i>	325
<i>spadicea</i> , <i>Sturm.</i>	57	<i>rufescens</i> , <i>Kr.</i>	68	<i>cellaris</i> , <i>Scop.</i>	323
<i>Sturmi</i> , <i>Bris.</i>	56	<i>serripes</i> , <i>Sahlb.</i>	67	<i>crenatus</i> , <i>Gyll.</i>	325
<i>tristis</i> , <i>Panz.</i>	63	<i>simplex</i> , <i>Thoms.</i>	67	<i>crenatus</i> , <i>Herbst.</i>	323
<i>varicornis</i> , <i>Rosenh.</i>	65	<i>spinipes</i> , <i>Hal.</i>	69	<i>cylindrus</i> , <i>Kies.</i>	322
<i>velox</i> , <i>Spence</i>	58	<i>viennense</i> , <i>Herbst.</i>	66	<i>dentatus</i> , <i>Herbst.</i>	321
<i>Watsoni</i> , <i>Spence</i>	64	v. <i>Zebei</i> , <i>Kr.</i>	69	<i>distinguendus</i> , <i>Sturm.</i>	322
Cholevina	53	Colydiidæ	4, 185	<i>fumatus</i> , <i>Gyll.</i>	323
Cicones, <i>Curt.</i>	191	<i>Colydium</i> , <i>F.</i>	187	<i>fuscicornis</i> , <i>Sturm.</i>	326
<i>carpini</i> , <i>Curt.</i>	191	<i>elongatum</i> , <i>F.</i>	187	<i>lapponicus</i> , <i>Gyll.</i>	325
<i>variegatus</i> , <i>Hellw.</i>	191	<i>Comazus</i> , <i>Fairm.</i>	11	<i>lycoperdi</i> , <i>Herbst.</i>	315
Clambina	10	<i>Coninomus</i> , <i>Thoms.</i>	281	<i>pallidus</i> , <i>Sturm.</i>	321
Clambus, <i>Fisch.</i>	11	<i>carinatus</i> , <i>Gyll.</i>	282	<i>parallelus</i> , <i>Bris.</i>	322
<i>armadillo</i> , <i>De G.</i>	12	<i>constrictus</i> , <i>Humm.</i>	281	v. <i>patruelis</i> , <i>Sturm.</i>	319
<i>minutus</i> , <i>Sturm.</i>	12	<i>nodifer</i> , <i>Westw.</i>	281	<i>pilosus</i> , <i>Gyll.</i>	316
<i>pubescens</i> , <i>Redt.</i>	12	<i>Conipora</i> , <i>Thoms.</i>	373	<i>populi</i> , <i>Payk.</i>	317
Clavicornia	1	<i>Conithassa</i> , <i>Thoms.</i>	283	<i>pubescens</i> , <i>Sturm.</i>	325
Clavigeridæ	2, 85	<i>Corticaria</i> , <i>Marsh.</i>	287	<i>punctipennis</i> , <i>Bris.</i>	316
<i>Claviger</i> , <i>Preyss.</i>	85	<i>borealis</i> , <i>Woll.</i>	290	<i>ruficornis</i> , <i>Steph.</i>	316
<i>foveolatus</i> , <i>Müll.</i>	86	<i>crenulata</i> , <i>Gyll.</i>	289	<i>saginus</i> , <i>Sturm.</i>	318
<i>testaceus</i> , <i>Preyss.</i>	86			<i>scanicus</i> , <i>L.</i>	319
<i>Clypeaster</i> , <i>Latr.</i>	146			<i>Schmidtii</i> , <i>Sturm.</i>	315

	PAGE		PAGE		PAGE
<i>scutellatus</i> , Newm.	325	<i>Elachys</i> , Matth.	128	<i>obsoleta</i> , F.	231
<i>setulosus</i> , Sturm	315	<i>Elmina</i>	375	<i>parvula</i> , Sturm	231
<i>subfumatus</i> , Kr.	326	<i>Elmis</i> , Latr.	375	<i>pusilla</i> , Er.	232
<i>umbratus</i> , Er.	318	<i>æneus</i> , Müll.	376	<i>rufomarginata</i> , Steph.	231
<i>validus</i> , Kr.	321	<i>cupreus</i> , Müll.	377	<i>silacea</i> , Er.	229
<i>Waterhousei</i> , Rye	322	<i>nitens</i> , Müll.	378	<i>terminalis</i> , Mannh.	230
<i>Ctesias</i> , Steph.	361	<i>orichalceus</i> , Gyll.	378	<i>variegata</i> , Herbst.	232
Cucujidæ	6, 295	<i>parallelopipedus</i> ,		Erotylidæ	4, 182
Cucujina	295	Müll.	377	<i>Esolus</i> , Muls.	377
<i>Cucujus</i> , F.	299	<i>subviolaceus</i> , Müll.	377	<i>Euconnus</i> , Thoms.	79
<i>Curimus</i> , Er.	370	Volkmar, Panz.	376	<i>denticornis</i> , Müll.	80
Cychramina	258	Endomychidæ	4, 178	<i>fimetarius</i> , Chaud.	80
Cychramus, Kug.	258	Endomychina	181	<i>gibbulus</i> , Mots.	81
<i>fungicola</i> , Heer	259	Endomychus, Panz.	181	<i>hirticollis</i> , Ill.	80
<i>luteus</i> , F.	258	<i>coccineus</i> , L.	181	<i>minimus</i> , Chaud.	81
Cyrtotriplax, Crotch	184	Endophlœus, F.	189	<i>nanus</i> , Schaum	81
<i>bipustulata</i> , F.	185	<i>spinulosus</i> , Latr.	190	<i>ruficornis</i> , Denny	80
Cyrtusa, Er.	22	Engis, Payk.	183	Eumicrina	81
<i>minuta</i> , Ahr.	23	Enicmus, Thoms.	282	<i>agilis</i> , Mots.	82
<i>pauxilla</i> , Schmidt	23	<i>anthracinus</i> , Mannh.	283	<i>rufus</i> , Müll.	82
Cytilus, Er.	370	<i>assimilis</i> , Mannh.	283	<i>tarsatus</i> , Müll.	81
<i>pulchellus</i> , Heer	371	<i>brevicornis</i> , Mannh.	285	Euplectina	97
<i>sericeus</i> , Forst.	371	<i>carbonarius</i> , Mannh.	285	Euplectus, Leach	100
<i>varius</i> , F.	371	<i>consimilis</i> , Mannh.	283	<i>Abeillei</i> , Saulcy (?)	102
Dacne, Latr.	183	<i>cordaticollis</i> , Aubé	284	<i>ambiguus</i> , Reich.	106
<i>humeralis</i> , F.	183	<i>minutissimus</i> , Mots.	283	<i>Dennti</i> , Wat.	105
<i>rufifrons</i> , F.	183	<i>minutus</i> , L.	283	<i>Daponti</i> , Aubé	102
Dapsina	180	<i>rugosus</i> , Herbst.	284	<i>Gurneysi</i> , Fowler	106
Dendrophagus, Schönh.	299	<i>testaceus</i> , Steph.	284	<i>Karsteni</i> , Reich.	103
<i>crenatus</i> , Payk.	300	<i>transversus</i> , Ol.	284	<i>Kirbyi</i> , Denny	104
Dendrophilus, Leach	207	Ephistemus, Westw.	344	<i>Kunzei</i> , Aubé	102
<i>formicetorum</i> , Aubé	207	<i>confinis</i> , Steph.	345	<i>minutissimus</i> , Aubé	106
<i>punctatus</i> , F.	207	<i>v. dimidiatus</i> , Sturm	345	<i>nanus</i> , Reich.	104
<i>pygmæus</i> , L.	207	<i>v. dubia</i> , Fowler	345	<i>nigricans</i> , Chaud.	105
<i>Dendroxena</i> , Mots.	49	<i>globosus</i> , Walth.	344	<i>nubigena</i> , Reitt.	106
<i>Deretaphrina</i>	186	<i>v. globulus</i> , Payk.	345	<i>piceus</i> , Mots.	105
<i>Dermestes</i> , L.	356	<i>gyrinoides</i> , Marsh.	344	<i>punctatus</i> , Muls.	103
<i>Frischii</i> , Kug.	357	<i>nigriclavis</i> , Steph.	344	<i>Reichenbachi</i> , Denny	104
<i>lardarius</i> , L.	358	<i>ovulum</i> , Er.	344	<i>sanguineus</i> , Denny	105
<i>murinus</i> , L.	357	<i>palustris</i> , Woll.	344	<i>signatus</i> , Reich.	104
<i>tessellatus</i> , W. C.	358	<i>Epierus</i> , Steph.	205	<i>sulcatulus</i> , Saulcy	105
<i>undulatus</i> , Brahm.	358	<i>Epuræa</i> , Er.	225	<i>Euryptilium</i> , Matth.	135
<i>vulpinus</i> , F.	357	<i>æstiva</i> , L.	228	<i>saxonicum</i> , Gill.	136
Dermestidæ	7, 354	<i>angustula</i> , Er.	232	<i>Euthia</i> , Steph.	83
<i>Dierobia</i> , Thoms.	96	<i>decemguttata</i> , F.	227	<i>abbreviatella</i> , Er.	83
Diphyllina	307	<i>deleta</i> , Er.	230	<i>abbreviatella</i> , Thoms.	84
Diphyllus, Steph.	308	<i>diffusa</i> , Bris.	227	<i>clavata</i> , Reitt.	83
<i>lunatus</i> , F.	308	<i>florea</i> , Er.	230	<i>linearis</i> , Muls.	83
Diplocœlus, Guér.	308	<i>fuscicollis</i> , Steph.	227	<i>plicata</i> , Gyll.	84
<i>fagi</i> , Guér.	308	<i>immunda</i> , Er.	230	<i>Schaumi</i> , Kies.	84
<i>Ditoma</i> , Ill.	190	<i>limbata</i> , F.	233	<i>scydmaenoides</i> , Steph.	83
<i>crenata</i> , F.	190	<i>longula</i> , Er.	229	<i>Exochomus</i> , Redt.	176
<i>Ditoma</i> , H. R. W.	191	<i>melanocephala</i> ,		<i>auritus</i> , Scriba	176
<i>Dryops</i> , Leach	380	Marsh.	233	<i>nigromaculatus</i> , Goeze	176
<i>Dumerilii</i> , Latr.	381	<i>melina</i> , Er.	228	<i>quadripustulatus</i> , L.	176
		<i>neglecta</i> , Sturm	232	<i>4-verrucatus</i> , F.	176
		<i>oblonga</i> , Herbst.	229		

	PAGE		PAGE		PAGE
<i>Florilinus</i> , Muls.	363	12-striatus, Sch.	204	<i>unifasciatus</i> , Latr.	297
Georyssidæ	8, 373	marginatus, Er.	202	Langelandia, Aubé	193
Georyssus, Latr.	373	merdarius, Hoff.	201	anophthalma, Aubé	193
<i>crenulatus</i> , Rossi	374	neglectus, Germ.	203	Langelandiina	192
<i>pygmæus</i> , F.	374	<i>nigellatus</i> , Germ.	203	Lasia, Muls.	156
Gnathoncus, Duv.	208	purpurascens, Herbst.	202	Latelmis, Muls.	376
<i>nannetensis</i> , Mars.	209	quadrimaculatus,		Lathridiidæ	6, 275
<i>punctulatus</i> , Thoms.	209	<i>Gyll.</i>	200	Lathridiina	278
<i>rotundatus</i> , Brit. Cat.	209	<i>quadrinotatus</i> , Scriba	203	Lathridius, Herbst.	279
<i>Gyrocecis</i> , Thoms.	271	<i>v. 14-striatus</i> , Gyll.	204	<i>angulatus</i> , Humm.	280
Halyzia, Muls.	165	<i>sinuatus</i> , Ill.	203	<i>angusticollis</i> , Humm.	280
<i>conglobata</i> , L.	167	<i>stercorarius</i> , Hoff.	202	<i>angusticollis</i> , Thoms.	280
<i>conglomerata</i> , Steph.	167	<i>striola</i> , Sahlb.	201	<i>dilatocollis</i> , Mots.	280
<i>12-guttata</i> , Poda.	166	<i>succicola</i> , Thoms.	202	<i>lardarius</i> , De G.	280
<i>18-guttata</i> , L.	167	<i>uncinatus</i> , Ill.	203	<i>pini</i> , Mots.	280
<i>14-guttata</i> , L.	166	<i>unicolor</i> , L.	201	Leptinidæ	2, 9
<i>14-punctata</i> , L.	167	Holopamecus, Curt.	276	Leptinus, Müll.	9
<i>16-guttata</i> , L.	166	<i>caularum</i> , Aubé	277	<i>testaceus</i> , Müll.	9
<i>22-punctata</i> , L.	167	<i>depressus</i> , Curt.	277	Limnichus, Latr.	372
<i>Helocerus</i> , Muls.	364	<i>longipennis</i> , Mots.	277	<i>pygmæus</i> , Sturm	372
Henoticus, Thoms.	327	<i>obtusicornis</i> , Mots.	277	<i>sericeus</i> , Steph.	372
<i>serratus</i> , Gyll.	327	<i>populi</i> , Mots.	277	Limnius, Müll.	378
Heterius, Er.	206	<i>singularis</i> , Beck	277	<i>Dargelasi</i> , Latr.	378
<i>ferrugineus</i> , Ol.	207	<i>Villæ</i> , Aubé	277	<i>rivularis</i> , Rosenh.	379
<i>Marseuli</i> , Schauf.	207	Hyduobius, Schmidt	39	<i>troglydotes</i> , Gyll.	379
<i>quadratus</i> , Kug.	207	<i>Perrisi</i> , Fairm.	39	<i>tuberculatus</i> , Müll.	378
<i>sesquicornis</i> , Preys.	207	<i>punctatissimus</i> ,		Liodes, Latr.	20
Heteroceridæ	8, 383	<i>Steph.</i>	40	<i>castanea</i> , Herbst.	21
Heterocerus, F.	384	<i>punctatus</i> , Sturm	40	<i>glabra</i> , Kug.	21
<i>arenarius</i> , Kies.	385	<i>strigosus</i> , Schmidt	41	<i>humeralis</i> , Kug.	21
<i>femoralis</i> , Kies.	385	Hydrophilidæ	2	<i>orbicularis</i> , Herbst.	22
<i>fenestratus</i> , Thunb.	387	<i>Hyliota</i> , Latr.	300	Litargus, Er.	350
<i>fleurossus</i> , Steph.	385	Hyliotina	299	<i>bifasciatus</i> , F.	350
<i>fossor</i> , Kies.	385	Hyperaspis, Redt.	168	<i>lunatus</i> , F.	350
<i>fuscus</i> , Kies.	387	<i>reppensis</i> , Herbst.	168	<i>signatus</i> , Panz.	350
<i>lævigatus</i> , Panz.	387	Hypocoprina	302	Lycoperdina, Latr.	180
<i>marginatus</i> , F.	386	Hypocoprus, Mots.	302	<i>bovistæ</i> , F.	181
<i>obsoletus</i> , Curt.	386	<i>latridioides</i> , Mots.	302	<i>immaculata</i> , Latr.	181
<i>rectus</i> , Wat.	385	Ipina	259	<i>Machærites</i> , Müll.	89
<i>sericans</i> , Kies.	387	Ips, F.	260	Macronychus, Müll.	379
<i>Heterognathus</i> , Klug.	82	<i>quadriguttata</i> , F.	261	<i>quadrituberculatus</i> ,	
<i>Heterostomus</i> , Duv.	221	<i>quadripunctata</i> ,		<i>Müll.</i>	380
Hippodamia, Muls.	159	<i>Herbst.</i>	261	Megatoma, Herbst.	360
<i>mutabilis</i> , Scriba	159	<i>quadripustulata</i> , L.	261	<i>undata</i> , Er.	360
<i>tibialis</i> , Say.	159	<i>ferruginea</i> , F.	262	Melanophthalma, Mots.	292
<i>13-punctata</i> , L.	159	Læmophloeus, Er.	297	<i>curta</i> , Woll.	294
<i>variegata</i> , Goeze	159	<i>ater</i> , Ol.	299	<i>fulvipes</i> , Com.	294
Histeridæ	5, 197	<i>bimaculatus</i> , Payk.	297	<i>fuscipennis</i> , Mots.	294
Hister, L.	198	<i>clematidis</i> , Er.	299	<i>fuscus</i> , Humm.	294
<i>bimaculatus</i> , L.	204	<i>duplicatus</i> , Waltl.	298	<i>gibbosa</i> , Herbst.	293
<i>bissextriatus</i> , F.	204	<i>ferrugineus</i> , Steph.	298	<i>impressa</i> , Marsh.	293
<i>cadaverinus</i> , Hoff.	201	<i>longicornis</i> , Mannh.	298	<i>v. meridionalis</i> , Reitt.	295
<i>caliginosus</i> , Steph.	204	<i>pusillus</i> , Schönh.	298	<i>similata</i> , Gyll.	294
<i>carbonarius</i> , Gyll.	203	<i>Spartii</i> , Curt.	299	<i>transversalis</i> , Gyll.	294
<i>castanipes</i> , Steph.	202	<i>testaceus</i> , Payk.	298	<i>v. Wollastoni</i> , Wat.	294
				Meligethes, Kirby	240

	PAGE		PAGE		PAGE
<i>æneus</i> , <i>F.</i>	247	<i>vini</i> , <i>Panz.</i>	327	<i>pöpuli</i> , <i>F.</i>	353
<i>bidens</i> , <i>Bris.</i>	250	<i>Micraspis</i> , <i>Redt.</i>	168	<i>quadriguttatus</i> , <i>Müll.</i>	353
<i>bidentatus</i> , <i>Bris.</i>	256	<i>v. 12-punctata</i> , <i>L.</i>	168	<i>quadripustulatus</i> , <i>L.</i>	351
<i>brassicæ</i> , <i>Scop.</i>	247	<i>sedecimpunctata</i> , <i>L.</i>	168	<i>Mylæchus</i> , <i>Latr.</i>	67
<i>brevis</i> , <i>Sturm</i>	257	<i>Micropeplidæ</i>	5, 217	<i>Myrmecoxenus</i> , <i>Chevr.</i>	192
<i>brunicornis</i> , <i>Sturm</i>	249	<i>Micropeplus</i> , <i>Latr.</i>	217	<i>vaporariorum</i> , <i>Guér.</i>	192
<i>carinulatus</i> , <i>Forst.</i>	256	<i>fulvus</i> , <i>Er.</i>	219	<i>Myrmetes</i> , <i>Mars.</i>	208
<i>v. cœruleus</i> , <i>Steph.</i>	247	<i>margaritæ</i> , <i>Duv.</i>	219	<i>piceus</i> , <i>Payk.</i>	208
<i>coracinus</i> , <i>Sturm.</i>	246	<i>obtusus</i> , <i>Newm.</i>	218	<i>Myrrha</i> , <i>Muls.</i>	167
<i>corvinus</i> , <i>Er.</i>	247	<i>porcatus</i> , <i>Payk.</i>	218	<i>Mysia</i> , <i>Muls.</i>	162
<i>difficilis</i> , <i>Heer</i>	247	<i>staphylinoides</i> ,		<i>oblongoguttata</i> , <i>L.</i>	162
<i>distinctus</i> , <i>W. C.</i>	255	<i>Marsh.</i>	218	<i>Nargus</i> , <i>Thoms.</i>	57
<i>erythropus</i> , <i>Gyll.</i>	256	<i>tesserula</i> , <i>Curt.</i>	219	<i>Nausibius</i> , <i>Redt.</i>	303
<i>exilis</i> , <i>Sturm</i>	257	<i>Microptilium</i> , <i>Matth.</i>	128	<i>dentatus</i> , <i>Marsh.</i>	303
<i>flavicornis</i> , <i>Müll.</i>	252	<i>pulchellum</i> , <i>All.</i>	128	<i>Necrodes</i> , <i>Wilkin</i>	45
<i>flavipes</i> , <i>Sturm.</i>	252	<i>Microspor</i> , <i>Kol.</i>	147	<i>littoralis</i> , <i>L.</i>	45
<i>fuliginosus</i> , <i>Er.</i>	252	<i>Micrurula</i> , <i>Reitt.</i>	233	<i>Necrophorus</i> , <i>F.</i>	42
<i>fulvipes</i> , <i>Bris.</i>	245	<i>melanocephala</i> ,		<i>fossor</i> , <i>Er.</i>	44
<i>v. gagathinus</i> , <i>Er.</i>	255	<i>Marsh.</i>	233	<i>v. gallicus</i> , <i>Duv.</i>	45
<i>incanus</i> , <i>Sturm</i>	252	<i>Micrus</i> , <i>Matth.</i>	127	<i>germanicus</i> , <i>L.</i>	43
<i>Kunzei</i> , <i>Er.</i>	248	<i>Millidium</i> , <i>Mots.</i>	134	<i>humator</i> , <i>F.</i>	43
<i>lugubris</i> , <i>Sturm</i>	255	<i>minutissimum</i> , <i>Gill.</i>	134	<i>interruptus</i> , <i>Steph.</i>	44
<i>lumaris</i> , <i>Sturm</i>	245	<i>trisolcatum</i> , <i>Aubé</i>	134	<i>investigator</i> , <i>Zett.</i>	44
<i>marrubii</i> , <i>Bris.</i>	253	<i>Monotoma</i> , <i>Herbst.</i>	270	<i>v. microcephalus</i> ,	
<i>maurus</i> , <i>Sturm</i>	251	<i>angusticollis</i> , <i>auct.</i> 271, 272		<i>Thoms.</i>	44
<i>melanarius</i> , <i>Forst.</i>	250	<i>brevicollis</i> , <i>Aubé</i>	273	<i>mortuorum</i> , <i>F.</i>	43
<i>memnonius</i> , <i>Er.</i>	249	<i>conicicollis</i> , <i>Aubé</i>	271	<i>ruspator</i> , <i>Er.</i>	44
<i>morosus</i> , <i>Er.</i>	248	<i>flavipes</i> , <i>Kunze</i>	274	<i>vespillo</i> , <i>L.</i>	45
<i>murinus</i> , <i>Er.</i>	254	<i>formicetorum</i> , <i>Thoms.</i>	272	<i>vestigator</i> , <i>Hersch.</i>	44
<i>v. mutabilis</i> , <i>Rosenh.</i>	257	<i>longicollis</i> , <i>Gyll.</i>	274	<i>Nemadus</i> , <i>Thoms.</i>	64
<i>nanus</i> , <i>Er.</i>	253	<i>picipes</i> , <i>Herbst.</i>	273	<i>Nemosoma</i> , <i>Latr.</i>	268
<i>nigrita</i> , <i>Luc.</i>	257	<i>quadricollis</i> , <i>Aubé</i>	273	<i>elongatum</i> , <i>L.</i>	268
<i>obscurus</i> , <i>Er.</i>	255	<i>quadrioveola</i> , <i>Aubé</i>	274	<i>Nephanes</i> , <i>Thoms.</i>	128
<i>ochropus</i> , <i>Sturm</i>	249	<i>quadrimpressa</i> , <i>Mots.</i>	274	<i>abbreviatellus</i> , <i>Heer</i>	128
<i>ovatus</i> , <i>Sturm</i>	252	<i>rufa</i> , <i>Redt.</i>	274	<i>Titan</i> , <i>Newm.</i>	128
<i>palmatus</i> , <i>Er.</i>	255	<i>spinicollis</i> , <i>Aubé</i>	272	<i>Nephus</i> , <i>Muls.</i>	170
<i>pedicularius</i> , <i>Gyll.</i>	250	<i>spinigera</i> , <i>Chaud.</i>	272	<i>Neuraphes</i> , <i>Thoms.</i>	73
<i>picipes</i> , <i>Sturm</i>	252	<i>sub-4-foveolata</i> , <i>Wat.</i>	274	<i>angulatus</i> , <i>Müll.</i>	74
<i>pictus</i> , <i>Rye</i>	257	<i>Monotomidæ</i>	5, 270	<i>carinatus</i> , <i>Muls.</i>	75
<i>v. planiusculus</i> , <i>Er.</i>	255	<i>Morychus</i> , <i>Er.</i>	371	<i>elongatulus</i> , <i>Müll.</i>	74
<i>quadridens</i> , <i>Forst.</i>	254	<i>æneus</i> , <i>F.</i>	371	<i>glyptocephalus</i> , <i>Saulcy</i>	75
<i>rotundicollis</i> , <i>Bris.</i>	253	<i>Murmidiina</i>	196	<i>helvolus</i> , <i>Schaum</i>	75
<i>rubripes</i> , <i>Muls.</i>	245	<i>Murmidius</i> , <i>Leach</i>	196	<i>impressus</i> , <i>Sahlb.</i>	74
<i>rufipes</i> , <i>Gyll.</i>	245	<i>ferrugineus</i> , <i>Leach</i>	196	<i>longicollis</i> , <i>Mots.</i>	76
<i>seniculus</i> , <i>Er.</i>	254	<i>ovalis</i> , <i>Beck</i>	196	<i>v. minutus</i> , <i>Chaud.</i>	76
<i>serripes</i> , <i>Gyll.</i>	254	<i>Mycetæa</i> , <i>Steph.</i>	179	<i>præteritus</i> , <i>Rye</i>	76
<i>solidus</i> , <i>Sturm</i>	258	<i>hirta</i> , <i>Marsh.</i>	179	<i>pumilio</i> , <i>Schaum</i>	76
<i>subrugosus</i> , <i>Gyll.</i>	246	<i>subterranea</i> , <i>F.</i>	179	<i>rubicundus</i> , <i>Muls.</i>	75
<i>symphyti</i> , <i>Heer</i>	253	<i>villosa</i> , <i>Beck</i>	179	<i>Sharpi</i> , <i>Saulcy</i>	75
<i>tenebrosus</i> , <i>Forst.</i>	250	<i>Mycetæina</i>	179	<i>Sparshalli</i> , <i>Denny</i>	75
<i>umbrosus</i> , <i>Sturm</i>	251	<i>Mycetophagidæ</i>	7, 348	<i>Wighami</i> , <i>Denny</i>	74
<i>viduatus</i> , <i>Sturm</i>	250	<i>Mycetophagus</i> , <i>Hellw.</i>	351	<i>Nitidula</i> , <i>F.</i>	234
<i>virescens</i> , <i>Thoms.</i>	247	<i>atomarius</i> , <i>F.</i>	352	<i>bipustulata</i> , <i>L.</i>	234
<i>viridescens</i> , <i>F.</i>	247	<i>fulvicollis</i> , <i>F.</i>	354	<i>carnaria</i> , <i>Schall.</i>	235
<i>Merophysina</i>	276	<i>multipunctatus</i> ,		<i>flavomaculata</i> , <i>Rossi</i>	235
<i>Micrambe</i> , <i>Thoms.</i>	326	<i>Hellw.</i>	353	<i>flexuosa</i> , <i>F.</i>	235
<i>abietis</i> , <i>Payk.</i>	327	<i>piceus</i> , <i>F.</i>	352		

	PAGE		PAGE		PAGE
<i>obscura</i> , F.	235	<i>melanocephalum</i> ,		<i>Herbsti</i> , Reich.	87
<i>quadripustulata</i> , F.	235	<i>Herbst.</i>	328	<i>Pseudopelta</i> , Reitt.	50
<i>rufipes</i> , L.	235	<i>pilosula</i> , Er.	327	<i>Ptenidium</i> , Er.	136
Nitidulidæ	5, 219	<i>serrata</i> , auct.	327	<i>alutacea</i> , Gyll.	137
Nitidulina	225	<i>Parasilpha</i> , Reitt.	48	<i>apicale</i> , Er.	139
<i>Nosodendron</i> , Latr.	365	Parnidæ	8, 374	<i>atomaroides</i> , Mots.	139
<i>fasciculare</i> , Ol.	365	Parnina	380	<i>evanescens</i> , Marsh.	139
<i>Nossidium</i> , Er.	136	<i>Parnus</i> , F.	381	<i>formicetorum</i> , Kr.	140
<i>v. brunneum</i> , Marsh.	136	<i>algericus</i> , Luc.	382	<i>fuscicorne</i> , Er.	138
<i>Ferrarii</i> , Redt.	136	<i>auriculatus</i> , Panz.	382	<i>Gressneri</i> , Er.	141
<i>nitidulum</i> , Marsh.	136	<i>lutulentus</i> , Er.	383	<i>intermedium</i> , Wank.	139
<i>pilosellum</i> , Marsh.	136	<i>nitidulus</i> , Heer	382	<i>Kraatzii</i> , Matth.	140
		<i>prolificicornis</i> , F.	381	<i>lævigatum</i> , Gyll.	138
<i>Oethebius</i> , Leach	388	<i>striatellus</i> , Fairm.	382	<i>littoralis</i> , Mots.	137
<i>auriculatus</i> , Rey	388	<i>Paromalus</i> , Er.	206	<i>nitidum</i> , Heer	138
<i>Olibrus</i> , Er.	150	<i>flavicornis</i> , Herbst.	206	<i>picipes</i> , Matth.	138
<i>æneus</i> , F.	151	<i>parallelopipedus</i> ,		<i>punctatum</i> , Gyll.	137
<i>affinis</i> , Brit. Cat.	152	<i>Herbst.</i>	206	<i>pusillum</i> , Er.	138
<i>bicolor</i> , F.	151	<i>Pediacus</i> , Shuck.	296	<i>terminale</i> , Hal.	139
<i>corticalis</i> , Panz.	150	<i>depressus</i> , Herbst.	296	<i>turgidum</i> , Thoms.	140
<i>helveticus</i> , Tourn.	152	<i>dermestoides</i> , F.	296	<i>Wankowiezii</i> , Matth.	139
<i>liquidus</i> , Er.	151	<i>Pedilophorus</i> , Steph.	371	<i>Pteryx</i> , Matth.	109
<i>millefolii</i> , Payk.	153	<i>Peltina</i>	269	<i>bicolor</i> , Mots.	109
<i>multistriatus</i> , Zett.	151	<i>Peltis</i> , Reitt.	53	<i>mutabilis</i> , Matth.	109
<i>particeps</i> , Muls.	152	<i>Permidius</i> , Mots.	283	<i>suturalis</i> , Heer	109
<i>pygmæus</i> , Sturm	153	<i>Phalacridæ</i>	3, 147	<i>Ptiliina</i>	129
<i>ulicis</i> , Gyll.	153	<i>Phalacrus</i> , Payk.	148	<i>Ptilium</i> , Er.	129
<i>Omosiphora</i> , Reitt.	233	<i>Brisouti</i> , Rye	149	<i>affine</i> , Er.	132
<i>limbata</i> , F.	233	<i>brunnipes</i> , Bris.	149	<i>angustatum</i> , Er.	131
<i>Omosita</i> , Er.	237	<i>caricus</i> , Sturm	149	<i>brevicolle</i> , Matth.	130
<i>colon</i> , L.	238	<i>corruscus</i> , Payk.	148	<i>cæsum</i> , Er.	132
<i>depressa</i> , L.	238	<i>v. Humberti</i> , Tourn.	148	<i>caledonicum</i> , Sharp	131
<i>discoidea</i> , F.	238	<i>substriatus</i> , Gyll.	149	<i>canaliculatum</i> , Er.	132
<i>Onthophilus</i> , Leach	216	<i>Phosphuga</i> , Leach	53	<i>clandestinum</i> , Hal.	133
<i>globulosus</i> , Ol.	217	<i>Pityophagus</i> , Shuck.	262	<i>v. discoideum</i> , Vill.	132
<i>striatus</i> , F.	217	<i>ferrugineus</i> , F.	262	<i>exaratum</i> , All.	132
<i>sulcatus</i> , F.	217	<i>Platynaspis</i> , Redt.	174	<i>excavatum</i> , Er.	133
<i>Orthocerus</i> , Latr.	189	<i>luteorubra</i> , Goeze	175	<i>foveolatum</i> , All.	133
<i>clavicornis</i> , L.	189	<i>villosa</i> , Fourc.	175	<i>fuscum</i> , Er.	131
<i>hirticornis</i> , De G.	189	<i>Plegaderus</i> , Er.	214	<i>Halidaii</i> , Matth.	133
<i>muticus</i> , L.	189	<i>dissectus</i> , Er.	214	<i>incognitum</i> , Matth.	388
<i>Orthoperus</i> , Steph.	142	<i>Pocadius</i> , Er.	239	<i>inquilinum</i> , Er.	132
<i>atomarius</i> , Heer	145	<i>ferrugineus</i> , F.	239	<i>insigne</i> , Matth.	133
<i>atomus</i> , Gyll.	144	<i>Porcinolus</i> , Muls.	370	<i>Kunzei</i> , Heer	130
<i>brannipes</i> , Gyll.	143	<i>Potaminus</i> , Sturm	380	<i>latum</i> , Gyll.	132
<i>coriaceus</i> , Rey	144	<i>substriatus</i> , Müll.	381	<i>marginatum</i> , Aubé	131
<i>corticalis</i> , Redt.	144	<i>Pria</i> , Kirby	240	<i>minimum</i> (?), Herbst.	133
<i>Kluki</i> , Wank.	143	<i>breviuscula</i> , Kol.	240	<i>myrmecophilum</i> , All.	132
<i>mundus</i> , Matth.	144	<i>dulcamaræ</i> , Scop.	240	<i>oblongum</i> , Gyll.	131
<i>punctatulus</i> , Matth.	144	<i>Psammœchina</i>	301	<i>rugulosum</i> , All.	131
<i>Oxylæmus</i> , Er.	188	<i>Psammœchus</i> , Latr.	301	<i>Spencei</i> , All.	131
<i>cæsus</i> , Er.	188	<i>bipunctatus</i> , F.	301	<i>Ptinella</i> , Mots.	110
<i>cylindricus</i> , Panz.	188	<i>Pselaphidæ</i>	2, 86	<i>angustula</i> , Gill.	112
<i>variolosus</i> , Duft.	188	<i>Pselaphina</i>	86	<i>aptera</i> , Guér.	112
		<i>Pselaphus</i> , Herbst.	87	<i>britannica</i> , Matth.	111
<i>Paramecosoma</i> , Curt.	328	<i>dresdensis</i> , Herbst.	88	<i>denticollis</i> , Fairm.	111
		<i>Heisei</i> , Herbst.	87	<i>gracilis</i> , Gyll.	112

	PAGE		PAGE		PAGE
<i>limbata</i> , Heer . . .	110	<i>Scydmænus</i> , Latr. . .	76	<i>undata</i> , Müll.	50
<i>Maria</i> , Matth. . . .	111	<i>bicolor</i> , Denny . . .	79	Silphidæ	2, 9
<i>microscopica</i> , Waltl. .	113	<i>collaris</i> , Müll. . . .	78	Silphina	41
<i>v. pallida</i> , Er. . . .	112	<i>exilis</i> , Er.	79	Silvanina	302
<i>Proteus</i> , Matth. . . .	110	<i>flavicornis</i> , Mots. . .	78	Silvanus, Latr.	303
<i>punctipennis</i> , Fairm. .	111	<i>Godarti</i> , Latr. . . .	77	<i>bidentatus</i> , F.	304
<i>Ratisbonensis</i> , Gyll. .	112	<i>Poweri</i> , Fowler . . .	78	<i>fagi</i> , Guér.	304
<i>tenella</i> , Er.	113	<i>pusillus</i> , Müll. . . .	78	<i>frumentarius</i> , F. . . .	304
<i>testacea</i> , Heer	110	<i>scutellaris</i> , Müll. . .	77	<i>laricis</i> , Chev.	304
<i>Ptomaphagus</i> , Hellw. .	58	<i>thoracicus</i> , Denny . .	84	<i>sexdentatus</i> , F.	304
<i>Pullus</i> , Muls.	172	<i>vicinus</i> , Chaud. . . .	79	<i>similis</i> , Er.	304
<i>Rhizobius</i> , Steph. . . .	177	<i>Scymnus</i> , Kug.	169	<i>surinamensis</i> , L. . . .	304
<i>litura</i> , F.	177	<i> analis</i> , Rossi	173	<i>unidentatus</i> , F.	304
<i>Rhizophagina</i>	262	<i>arcuatus</i> , Rossi . . .	172	<i>Simplocaria</i> , Marsh. . .	371
<i>Rhizophagus</i> , Herbst. .	263	<i>ater</i> , Kug.	174	<i>semistriata</i> , F.	372
<i>æneus</i> , Richt.	267	<i>capitatus</i> , F.	174	<i>Smicrus</i> , Matth.	127
<i>bipustulatus</i> , F. . . .	266	<i>discoideus</i> , Ill. . . .	172	<i>filicornis</i> , Matth.	127
<i>cæruleipennis</i> , Sahlb. .	267	<i>femorialis</i> , Gyll. . .	171	<i>Soronia</i> , Er.	236
<i>cæruleus</i> , Waltl. . . .	267	<i>frontalis</i> , F.	171	<i>grisea</i> , L.	236
<i>cribratus</i> , Gyll. . . .	264	<i>hæmorrhoidalis</i> , Herbst.	173	<i>punctatissima</i> , L. . . .	236
<i>depressus</i> , F.	264	<i>v. limbatus</i> , Steph. . .	172	<i>Sphæriidæ</i>	3, 147
<i>dispar</i> , Gyll.	266	<i>lividus</i> , Bold	172	<i>Sphæritina</i>	72
<i>ferrugineus</i> , Payk. . .	265	<i> minimus</i> , Rossi	174	<i>Sphærites</i> , Duft.	72
<i>longicollis</i> , Gyll. . . .	266	<i> morio</i> , Payk.	171	<i>glabratus</i> , F.	72
<i>nitidulus</i> , F.	265	<i>Mulsanti</i> , Wat.	173	<i>Sphærius</i> , Waltl.	147
<i>parallelocollis</i> , Er. . .	265	<i>nigrinus</i> , Kug.	171	<i>acaroides</i> , Waltl.	147
<i>perforatus</i> , Er.	264	<i>pulchellus</i> , Herbst. . .	170	<i>obsidianus</i> , Kol.	147
<i>politus</i> , Hellw.	267	<i>pygmæus</i> , Fourc. . . .	171	<i>Sphærosoma</i> , Steph. . .	180
<i>Riolus</i> , Muls.	377	<i>4-lunulatus</i> , Ill. . . .	170	<i>quercus</i> , Steph.	180
<i>Rybaxis</i> , Saulcy	93	<i>Redtenbacheri</i> , Muls. .	170	<i>Staphylinidæ</i>	3
<i>longicornis</i> , Denny . . .	93	<i>rubromaculatus</i> , Goezel	171	<i>Stenichnus</i> , Thoms. . .	79
<i>sanguinea</i> , L.	93	<i>rufipes</i> , Bris.	174	<i>Stethorus</i> , Weise	174
<i>Sacium</i> , Lec.	146	<i>suturalis</i> , Thunb. . . .	172	<i>Stilbus</i> , Seidl.	153
<i>pusillum</i> , Gyll.	146	<i>testaceus</i> , Mots.	173	<i>atomarius</i> , L.	154
<i>Saprinus</i> , Er.	209	<i>v. unicolor</i> , Weise . . .	171	<i>consimilis</i> , Marsh. . . .	154
<i>æneus</i> , F.	211	<i>Sericoderus</i> , Steph. . .	146	<i>geminus</i> , Ill.	154
<i>immundus</i> , Gyll.	211	<i>lateralis</i> , Gyll.	146	<i>oblongus</i> , Er.	154
<i>maritimus</i> , Steph. . . .	212	<i>Silpha</i> , L.	46	<i>piceus</i> , Steph.	154
<i>metallicus</i> , Herbst. . . .	212	<i>alpina</i> , Germ.	48	<i>testaceus</i> , Panz.	154
<i>metallicus</i> , Steph. . . .	212	<i>atrata</i> , L.	53	<i>Strongylus</i> , Steph.	239
<i>nitidulus</i> , Payk.	210	<i>v. brunnea</i> , Herbst. . .	53	<i>Subcoccinella</i> , Huber . .	156
<i>quadristriatus</i> , Hoff. .	212	<i>dispar</i> , Herbst.	52	<i>globosa</i> , Schneid.	156
<i>rugifrons</i> , Payk.	212	<i>lævigata</i> , F.	52	<i>24-punctata</i> , L.	156
<i>sabulosus</i> , Fairm. . . .	212	<i>nigrita</i> , Creutz.	48	<i>Symbiotes</i> , Redt.	179
<i>virescens</i> , Payk.	211	<i>obscura</i> , L.	48	<i>latus</i> , Redt.	179
<i>Sarrotrium</i> , Ill.	189	<i>opaca</i> , L.	50	<i>rubiginosus</i> , Heer	179
<i>Scaphidiidæ</i>	7, 345	<i>polita</i> , Sulz.	52	<i>Syncalypta</i> , Dillw.	366
<i>Scaphidium</i> , Ol.	346	<i>quadrupunctata</i> , L. . .	49	<i>arenaria</i> , Sturm	367
<i>quadrinaculatum</i> , Ol. .	346	<i>reticulata</i> , L.	50	<i>hirsuta</i> , Sharp	367
<i>Scaphisoma</i> , Leach . . .	347	<i>rugosa</i> , L.	51	<i>setigera</i> , Ill.	367
<i>agaricinum</i> , L.	347	<i>sinuata</i> , F.	51	<i>spinosa</i> , Rossi	367
<i>assimile</i> , Er.	348	<i>v. subrotundata</i> , Steph.	53	<i>Synchita</i> , Hellw.	191
<i>boleti</i> , Panz.	347	<i>thoracica</i> , L.	51	<i>juglandis</i> , F.	191
<i>Scydmænidæ</i>	2, 72	<i>tristis</i> , Ill.	48	<i>mediolanensis</i> , Villa . .	191
<i>Scydmænina</i>	73	<i>tyrolensis</i> , var. Laich. .	48	<i>v. obscura</i> , Redt.	191
				<i>Synchitina</i>	188
				<i>Synchitodes</i> , Crotch . . .	190

	PAGE		PAGE		PAGE
Telmatophilina . . .	308	anthracina, Matth. . .	117	semitens, Matth. . .	119
Telmatophilus, Heer . .	309	atomaria, De G. . .	117	sericans, Heer. . .	120
brevicollis, Aubé . . .	310	attenuata, Gill. . .	120	suffocata, Hal. . .	125
caricis, Ol. . .	310	bovina, Mots. . .	121	thoracica, Waltl. . .	116
obscurus, F. . .	310	brevicornis, Mots. . .	117	variolosa, Muls. . .	127
Schönherri, Gyll. . .	310	brevipennis, Er. . .	121	volans, Mots. . .	120
sparganii, Ahr. . .	309	brevis, Mots. . .	121	Waterhousii, Matth. . .	125
typhæ, Fall. . .	310	cantiana, Matth. . .	119	Trimium, Aubé . . .	99
Tenebrioides, Pill. . .	268	carbonaria, Matth. . .	123	brevicorne, Reich. . .	99
caraboides, F. . .	269	Championis, Matth. . .	116	brevipenne, Chaud. . .	99
mauritanicus, L. . .	269	Chevrieri, All. . .	126	Chevrieri, Tourn. . .	99
Teredus, Shuck. . .	187	Chevrolatii, All. . .	125	latipenne, Tourn. . .	99
cylindricus, Ol. . .	187	convexa, Matth. . .	117	Trinodes, Latr. . .	364
nitidus, F. . .	187	convexiuscula, Mots. . .	117	hirtus, F. . .	364
Teretrius, Er. . .	213	dispar, Matth. . .	126	Triphyllus, Latr. . .	349
picipes, F. . .	213	Edithia, Matth. . .	122	punctatus, F. . .	350
Thalycra, Er. . .	238	fascicularis, Herbst. . .	119	suturalis, F. . .	349
fervida, Ol. . .	239	fratercula, Matth. . .	118	Triplax, Payk. . .	183
sericea, Sturm . . .	239	fuscula, Matth. . .	125	ænea, Schall. . .	184
Thanatophilus, Leach . .	50	grandicollis, Mannh. . .	118	Lacordairei, Crotch . .	184
Thea, Muls. . .	167	Guérinii, All. . .	124	nigriceps, Lac. . .	184
Thymalus, Latr. . .	269	Jansoni, Matth. . .	123	ruficollis, Steph. . .	184
limbatus, F. . .	270	Kirbii, Matth. . .	122	russica, L. . .	184
Tiresias, Steph. . .	361	lætitia, Matth. . .	119	Tritoma, F. . .	184
serra, F. . .	361	lata, Mots. . .	118	Tritoma, Reitt. . .	351
Tomyrium, Reitt. . .	277	littoralis, Thoms. . .	127	Trogositidæ . . .	5, 267
Triarthron, Maerk. . .	41	longicornis, Mannh. . .	122	Trogositina . . .	268
Maerkeli, Schmidt . .	41	longula, Matth. . .	122	Tychus, Leach . . .	88
Trichonyx, Chaud. . .	98	minuta, Mots. . .	125	ibericus, Mots. . .	88
Maerkelii, Aubé . . .	98	Montandonii, All. . .	124	niger, Payk. . .	88
sulcicollis, Reich. . .	98	obsœna, Woll. . .	124	Typhæa, Curt. . .	349
Trichopterygidæ . . .	3 107	picicornis, Mannh. . .	123	fumata, L. . .	349
Trichopterygina . . .	108	Poweri, Matth. . .	126	Vibidia, Muls. . .	166
Trichopteryx, Kirby . .	113	pygmæa, Er. . .	125	Xylodrepa, Thoms. . .	49
ambigua, Matth. . .	126	rivularis, All. . .	124		
angusta, Matth. . .	388	Saræ, Matth. . .	116		

LONDON
PRINTED BY GILBERT AND RIVINGTON, LIMITED,
ST. JOHN'S HOUSE, CLERKENWELL ROAD.

PLATE LXXI.

- FIG. 1. *Leptinus testaceus*, Müll.
2. *Calyptomerus dubius*, Marsh.
3. *Clambus pubescens*, Redt.
4. *Agathidium nigripenne*, Kug.
5. ,, *atrum*, Payk.
6. ,, *seminulum*, L.
7. ,, *varians*, Beck.
8. ,, *rhinoceros*, Sharp.
9. *Amphicyllis globus*, F.
10. ,, ,, *v. ferrugineum*, Sturm.
11. *Liodes humeralis*, Kug.
11a. ,, ,, *antenna*.
12. ,, *glabra*, Kug.
13. ,, *castanea*, Herbst.



R. Morgan, del et lith

Vincent Brooks Day & Son Imp

L. Reeve & Co London

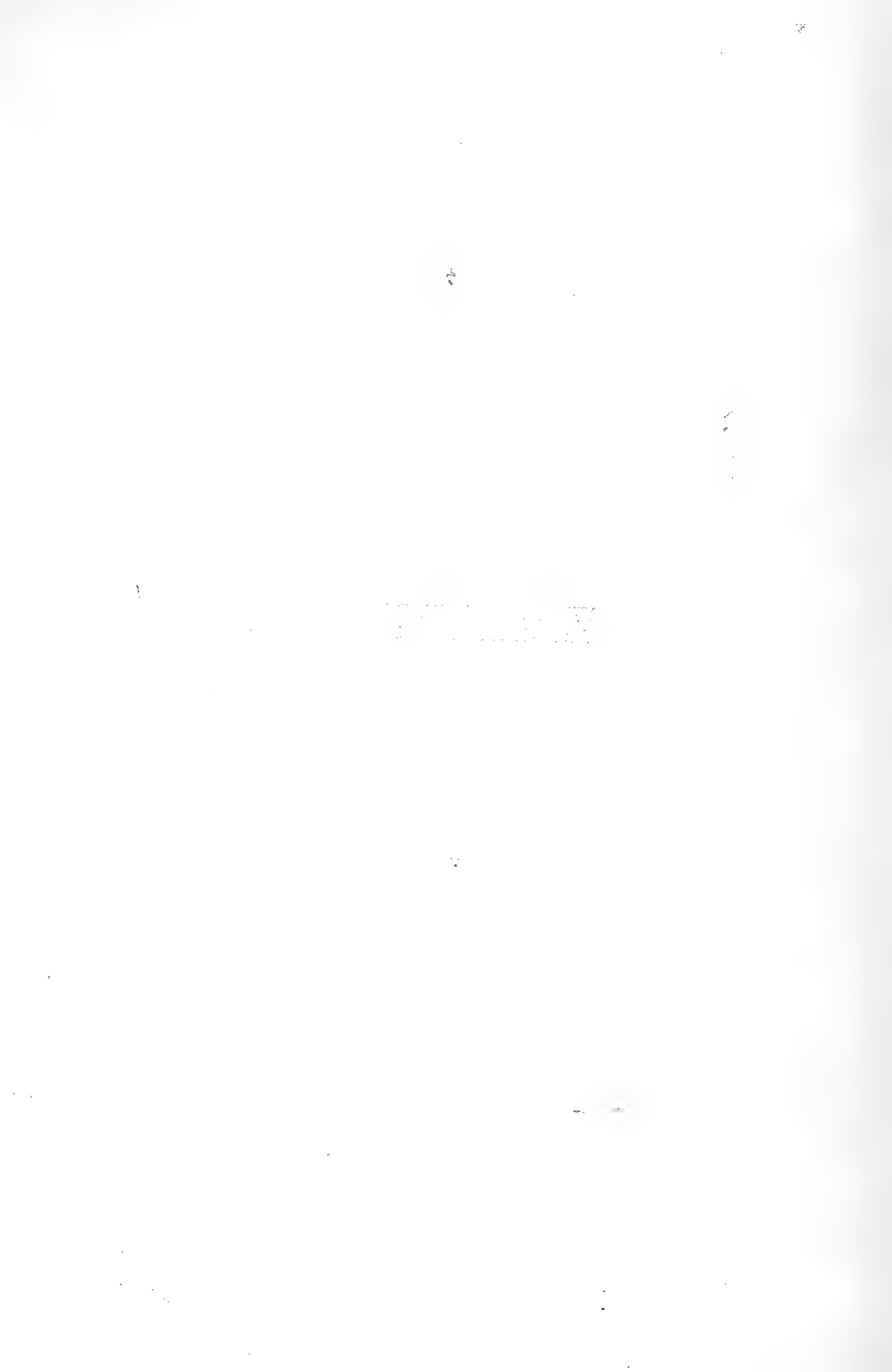
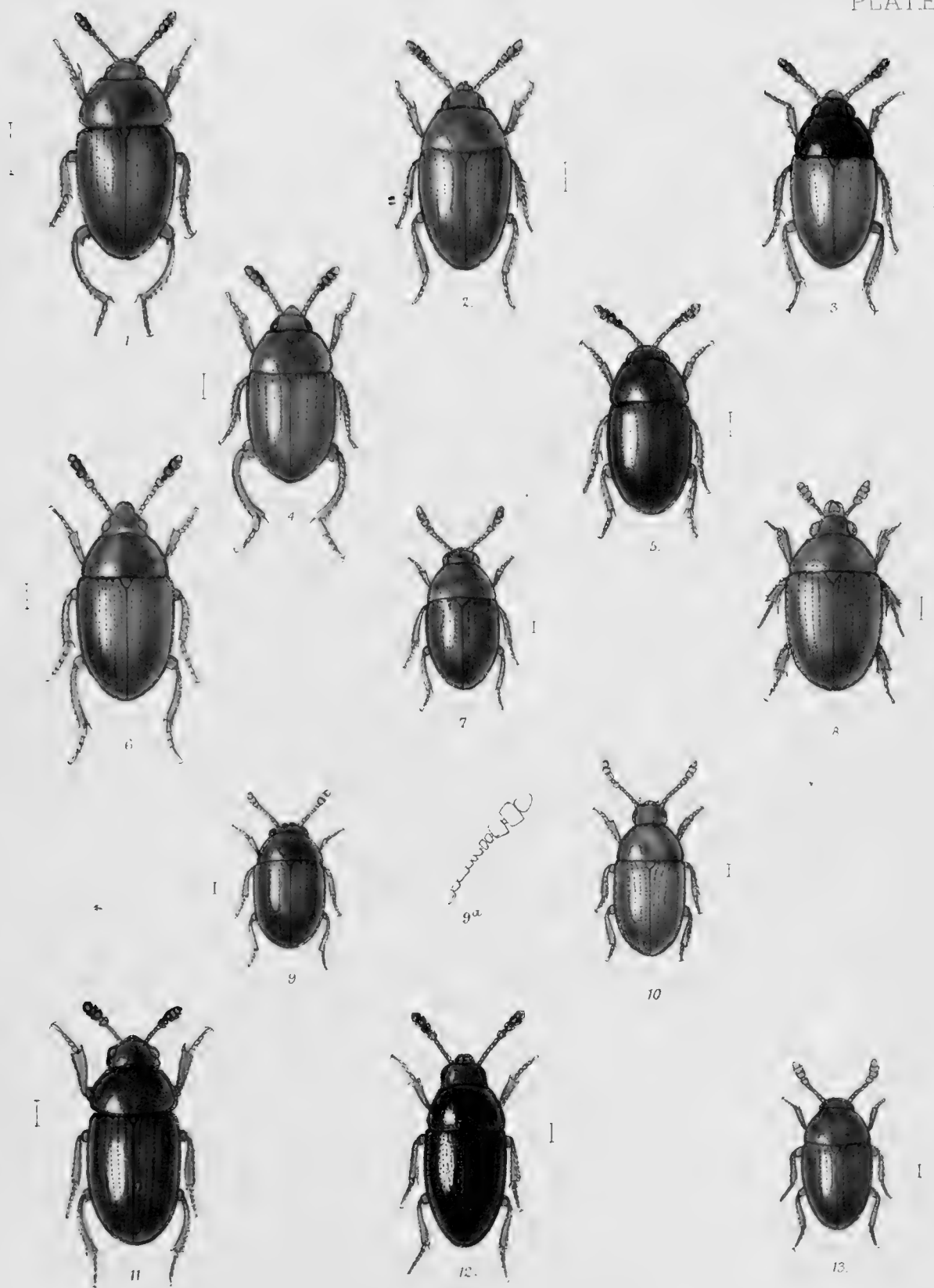


PLATE LXXII.

- FIG. 1. *Anisotoma cinnamomea*, *Panz.*
2. " " *obesa*, *Schmidt.*
3. " " *punctulata*, *Gyll.*
4. " " *calcarata*, *Er.*
5. " " *nigrita*, *Schmidt.*
6. " " *rugosa*, *Steph.*
7. " " *parvula*, *Sahlb.*
8. " " *ciliaris*, *Schmidt.*
9. *Colenis dentipes*, *Gyll.*
9a. " " " *antenna.*
10. *Agaricophagus conformis*, *Er.*
11. *Hydnobius Perrisi*, *Fairm.*
12. " " *punctatissimus*, *Steph.*
13. " " *strigosus*, *Schmidt.*



R. Morgan del. sculp.

Vincet Brooks Day & Son Imp

J. Reeve & Co Lond n



PLATE LXXIII.

- FIG. 1. *Necrophorus humator*, *F.*
2. " *vestigator*, *Hers.*
3. " *interruptus*, *Steph.*
4. " *ruspator*, *Er.*
5. " *mortuorum*, *F.*
6. " *vespillo*, *L.*
7. *Necrodes littoralis*, *L.* (male).
8. " " " (female).
9. *Silpha tristis*, *Ill.*
10. " *nigrita*, *Creutz.*
11. " *obscura*, *L.*
12. " *quadripunctata*, *L.*
13. " *reticulata*, *F.*



R Morgan del, et lith

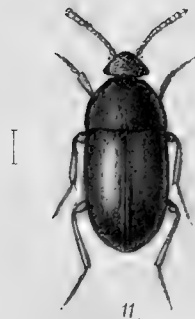
Printed by Woodroffe Day & Son, Imp.

L. Reeve & Co. London.

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 08-14-2013 BY 60322 UCBAW

PLATE LXXIV.

- FIG. 1. *Silpha opaca*, *L.*
2. „ *thoracica*, *L.*
3. „ *rugosa*, *L.*
4. „ *sinuata*, *F.*
5. „ *dispar*, *Herbst.*
6. „ *lævigata*, *F.*
7. „ *atrata*, *L.*
8. „ „ *v. subrotundata*, *Steph.*
9. *Choleva angustata*, *F.*
10. „ *spadicea*, *Sturm.*
11. „ *velox*, *Spence.*
12. „ *Wilkini*, *Spence.*
13. „ *anisotomoides*, *Spence.*



R Morgan del et lith

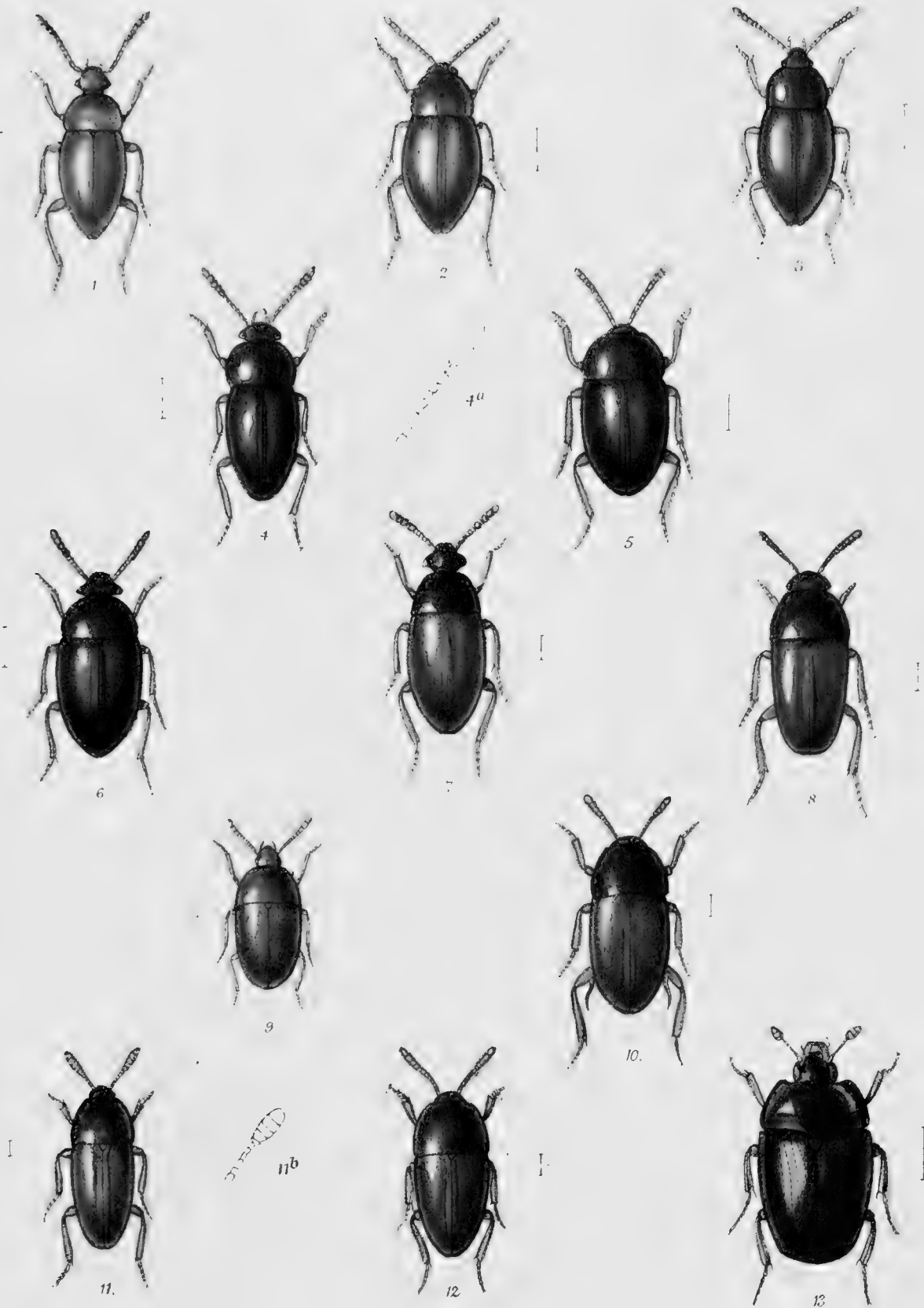
Vincent Brooks, Day & Son Imp

L. Reeve & Co London.

THE
LIBRARY
OF THE
CONGRESS

PLATE LXXV.

- FIG. 1. *Choleva agilis*, *Ill.*
2. „ *fusca*, *Panz.*
3. „ *nigricans*, *Spence.*
4. „ *tristis*, *Panz.*
4a. „ „ antenna.
5. „ *grandicollis*, *Er.*
6. „ *chrysomeloides*, *Panz.*
7. „ *Watsoni*, *Spence.*
8. *Catops sericeus*, *F.*
9. *Bathyscia Wollastoni*, *Jans.*
10. *Colon dentipes*, *var. Zebei*, *Kr.* (male).
11. „ *brunneum*, *Latr.*
11b. „ „ antenna.
12. „ *latum*, *Kr.*
13. *Sphærites glabratus*, *F.*



R. Morgan, del et lith.

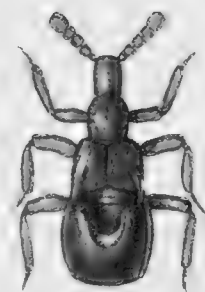
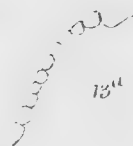
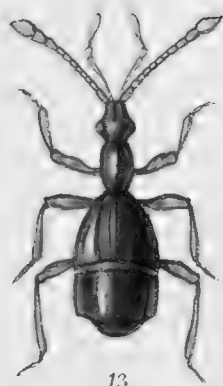
Vincent Brooks, Day & Son Imp.

L. Reeve C^o London.

Handwritten text, possibly a signature or a name, located in the center of the page. The text is faint and difficult to read.

PLATE LXXVI.

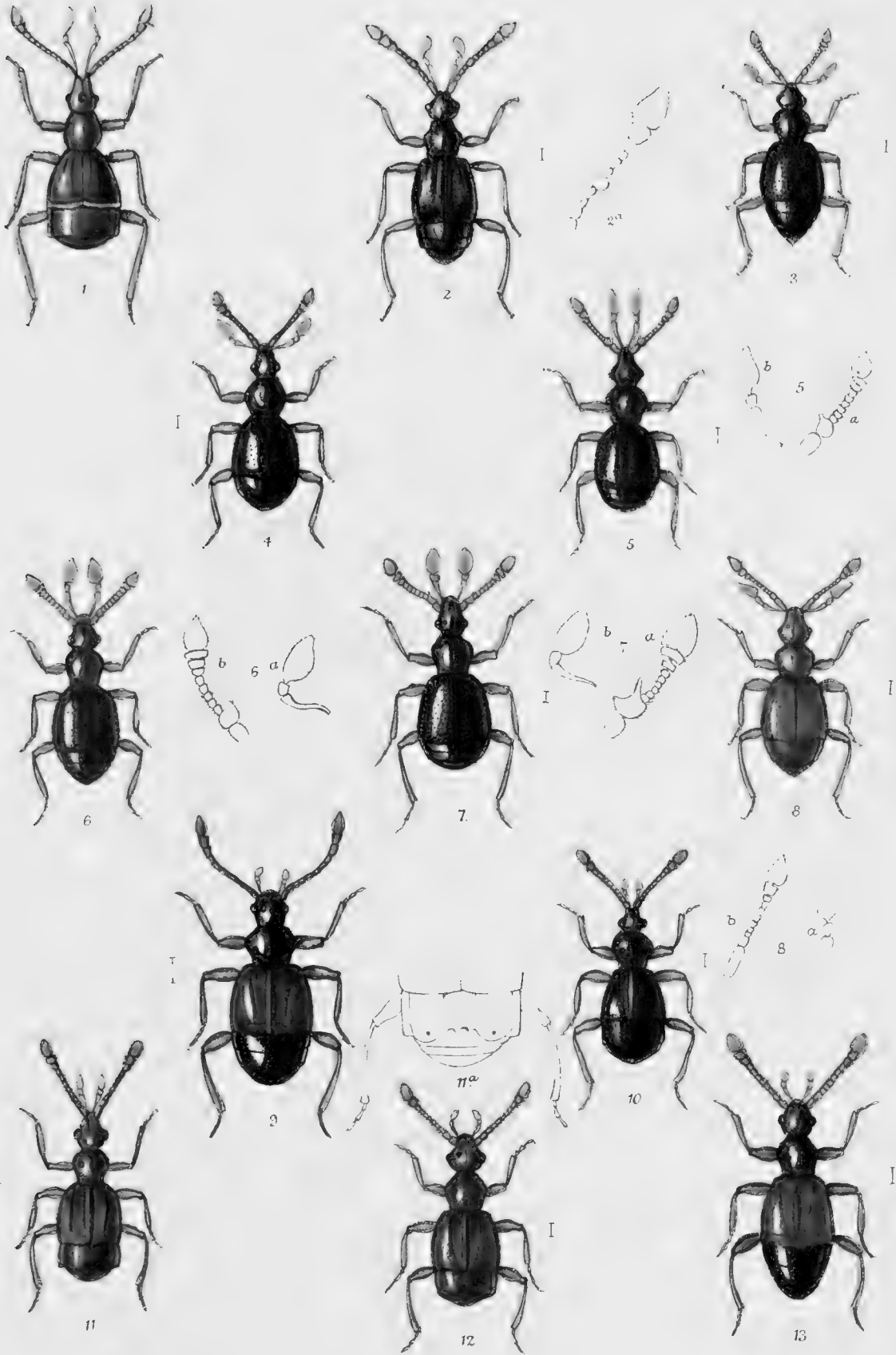
- FIG. 1. *Neuraphes angulatus*, Müll.
2. „ *Sparshalli*, Denny.
3. *Scydmaenus Godarti*, Latr.
4. „ *collaris*, Müll.
5. „ *scutellaris*, Müll.
6. *Euconus denticornis*, Müll. (female).
7. „ *hirticollis*, Ill.
8. *Eumicrus tarsatus*, Müll.
9. *Cephennium thoracicum*, Müll.
10. *Euthia scydmaenoides*, Steph.
11. „ *Schaumi*, Kies.
12. *Claviger testaceus*, Preyss.
13. *Pselaphus Heisei*, Herbst.
13a. „ „ antenna.



PROPERTY
OF THE
UNITED STATES
DEPARTMENT OF THE ARMY

PLATE LXXVII.

- FIG. 1. *Pselaphus dresdensis*, *Herbst*.
2. *Tychus niger*, *Payk*.
2a. „ „ antenna of male.
3. *Bythinus puncticollis*, *Denny*.
4. „ *bulbifer*, *Reich*.
5. „ *Curtisii*, *Denny*.
5a. „ „ antenna of male.
5b. „ „ maxillary palpus.
6. „ *securiger*, *Reich*.
6a. „ „ maxillary palpus.
6b. „ „ antenna of male.
7. „ *Burrellii*, *Denny*.
7a. „ „ antenna of male.
7b. „ „ maxillary palpus.
8. „ *glabratus*, *Rye*.
8a. „ „ maxillary palpus.
8b. „ „ antenna.
9. *Rybaxis sanguinea*, *L*.
10. *Bryaxis fossulata*, *Reich*.
11. „ *hæmatica*, *Reich*.
11a. „ „ abdomen in male (after
Aubé).
12. „ *juncorum*, *Leach*.
13. „ *impressa*, *Panz*.



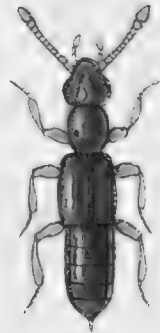
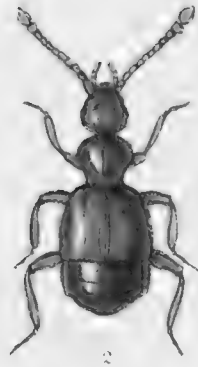
R. Morgan, del et lith.

Vincent Brooks, Day & Son Imp

L. Reeve & Co London

PLATE LXXVIII.

- FIG. 1. *Batrisus venustus*, Reich.
2. *Trichonyx sulcicollis*, Reich.
3. *Trimium brevicorne*, Reich.
4. *Euplectus nanus*, Reich.
5. „ *Karsteni*, Reich.
6. „ *signatus*, Reich.
7. „ *minutissimus*, Aubé.
8. „ *piceus*, Mots. (*nigricans*, Denny)
9. *Bibloporus bicolor*, Denny.
10. *Ptinella testacea*, Heer.
11. „ *denticollis*, Fairm.
12. „ *aptera*, Guér.
13. *Pteryx suturalis*, Heer.



6

7

8



9

10



11

12

13

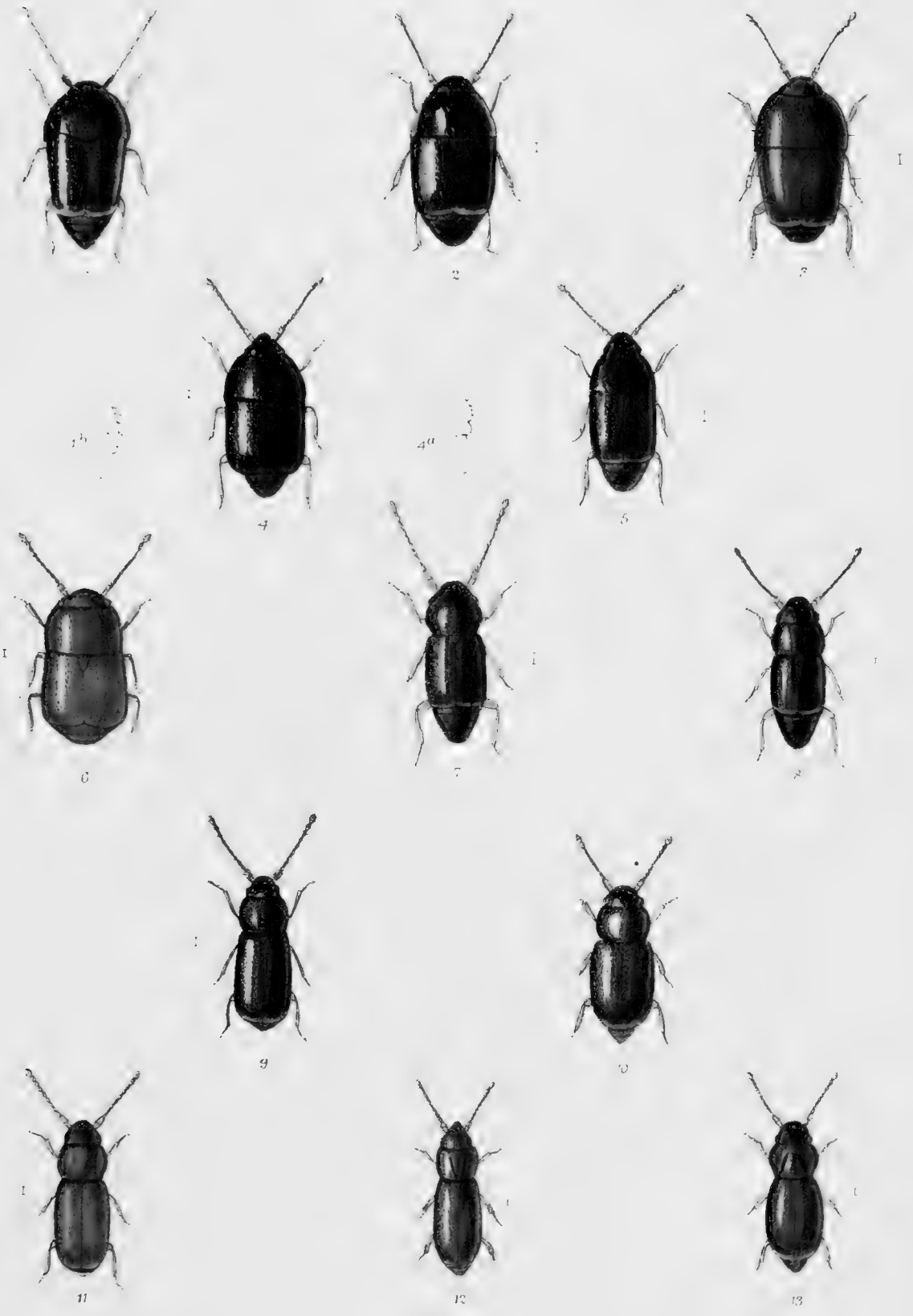
F. Menger del. et sculp.

Vineyard, Essex, England, 1871

L. Reeve & Co. London

...
...NTY
...STA





R.Morgan, del et lith.

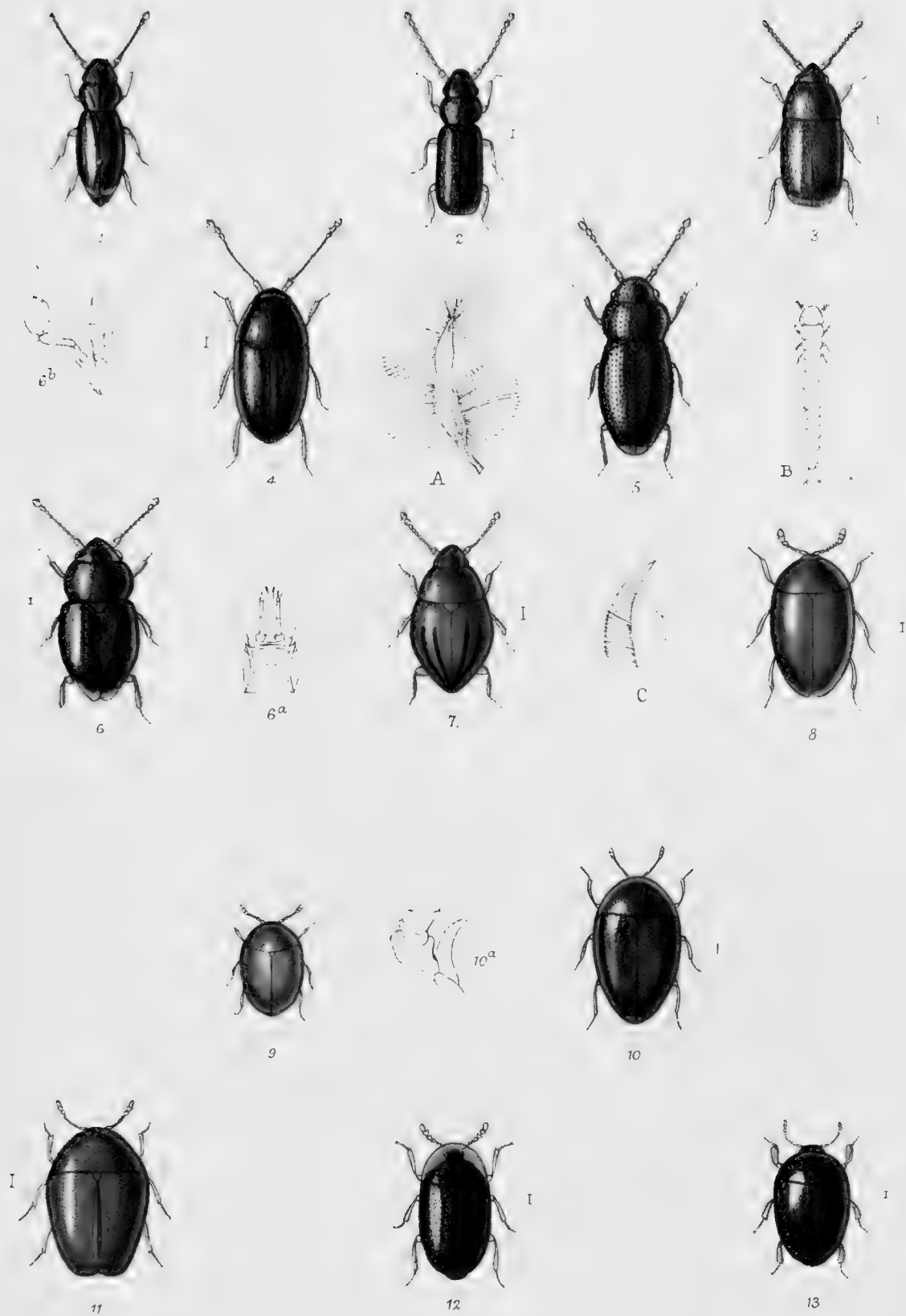
Vincent Brooks, Day & Son Imp

L.Reeve & Co London

1957
1958
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025

PLATE LXXX.

- FIG. 1. *Millidium trisulcatum*, *Aubé*.
2. *Actidium coarctatum*, *Hal*.
3. *Euryptilium saxonicum*, *Gillm*.
4. *Nossidium pilosellum*, *Marsh*.
5. *Ptenidium punctatum*, *Gyll*.
6. ,, *evanescens*, *Marsh*.
6a. ,, ,, labium.
6b. ,, ,, maxilla.
7. ,, *Gressneri*, *Er*.
8. *Orthoperus atomus*, *Gyll*.
9. ,, *atomarius*, *Heer*.
10. *Corylophus cassidioides*, *Marsh*.
10a. ,, ,, maxilla.
11. *Sericoderus lateralis*, *Gyll*.
12. *Sacium pusillum*, *Gyll*.
13. *Sphærius acaroides*, *Waltl*.
A. *Trichopteryx*, wing (after Matthews).
B. ,, larva ,,
C. ,, mandible ,,



R Morgan del, et lith.

Vincent Brooks, Day & Son Imp

L Reeve & Co London.

1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
2045
2046
2047
2048
2049
2050
2051
2052
2053
2054
2055
2056
2057
2058
2059
2060
2061
2062
2063
2064
2065
2066
2067
2068
2069
2070
2071
2072
2073
2074
2075
2076
2077
2078
2079
2080
2081
2082
2083
2084
2085
2086
2087
2088
2089
2090
2091
2092
2093
2094
2095
2096
2097
2098
2099
2100



PLATE LXXXI.

- FIG. 1. *Phalacrus corruscus*, *Payk.*
2. *Olibrus æneus*, *F.*
3. *Stilbus testaceus*, *Panz.* (*consimilis*, *Marsh.*)
4. *Subcoccinella vigintiquatuorpunctata*, *L.* (*Lasia*
globosa, *Schneid.*).
5. *Hippodamia tredecimpunctata*, *L.*
6. *Anisosticta novemdecimpunctata*, *L.*
7. *Adalia bothnica* v. *crucifera*, *Weise.*
8. „ *bipunctata*, *L.*
9. „ *obliterata*, *L.*
10. *Mysia oblongoguttata*, *L.*
11. *Anatis ocellata*, *L.*
12. *Coccinella quinquepunctata*, *L.*
13. „ *sempunctata*, *L.*



1



2



3



4



5



6



7



8



9



10



11



12



13

PLATE LXXXII.

- FIG. 1. *Coccinella decempunctata*, *L.* (*variabilis*, Ill.).
2. *Halyzia octodecimguttata*, *L.*
3. „ *quatuordecimguttata*, *L.*
4. „ *sedecimguttata*, *L.*
5. „ *conglobata*, *L.* (*quatuordecimpunctata*, *L.*).
6. „ *vigintiduopunctata*, *L.*
7. *Micraspis sedecimpunctata*, *L.* (*v. 12-punctata*, *L.*).
8. *Hyperaspis reppensis*, *Herbst.*
9. *Platynaspis luteorubra*, *Goeze* (*villosa*, *Fourc.*).
10. *Scymnus frontalis*, *F.*
11. „ *nigrinus*, *Kug.*
12. „ *hæmorrhoidalis*, *Herbst.*
13. „ *suturalis*, *Thunb.* (*discoideus*, Ill.).



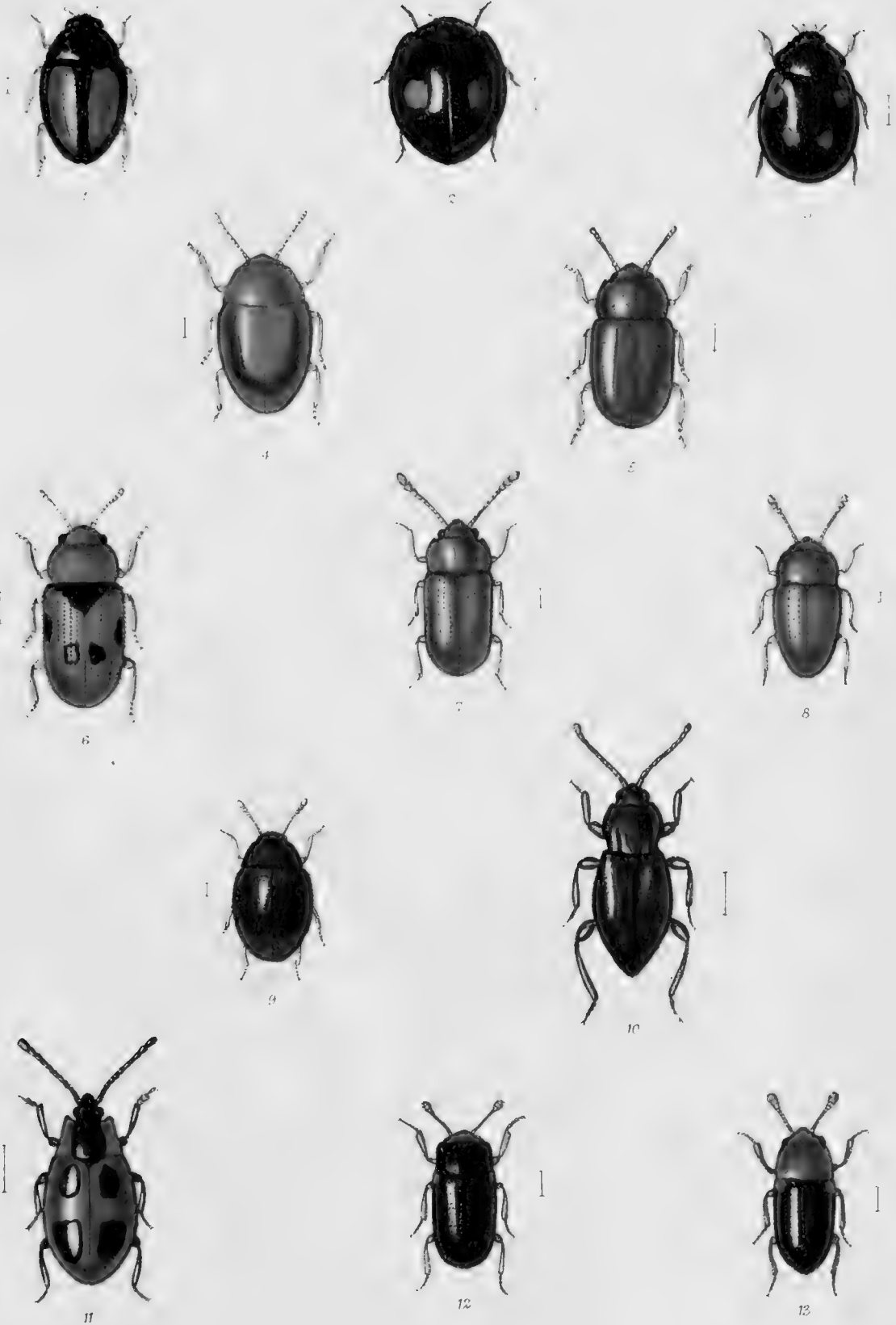
R. Morgan del, et lith.

Vincent Brooks, Day & Son Imp.

L. Reeve & Co London.

PLATE LXXXIII.

- FIG. 1. *Scymnus testaceus*, *Mots.* (*Mulsanti*, *Wat.*).
2. *Chilocorus similis*, *Rossi* (*renipustulatus*, *Scriba*).
3. *Exochomus quadripustulatus*, *L.*
4. *Rhizobius litura*, *F.*
5. *Coccidula rufa*, *Herbst.*
6. „ *scutellata*, *Herbst.*
7. *Symbiotes latus*, *Redt.*
8. *Mycetæa hirta*, *Marsh.*
9. *Alexia pilifera*, *Müll.*
10. *Lycoperdina bovistæ*, *F.*
11. *Endomychus coccineus*, *L.*
12. *Dacne rufifrons*, *F.*
13. „ *humeralis*, *F.*



R. Morgan del, et lith.

Vincent Brooks, Day & Son, Imp.

L. Reeve & Co London

PLATE LXXXIV.

- FIG. 1. *Triplax russica*, *L.*
2. „ *ænea*, *Schall.*
3. *Cyrtotriplax bipustulata*, *F.*
4. *Aglenus brunneus*, *Gyll.*
5. *Colydium elongatum*, *F.*
6. *Teredus nitidus*, *F.*
7. *Oxylæmus cylindricus*, *Panz.*
8. *Orthocerus muticus*, *L.*
8a. „ „ antenna.
9. *Endophlœus spinulosus*, *Latr.*
10. *Ditoma crenata*, *F.*
11. *Synchita juglandis*, *F.*
12. *Cicones variegatus*, *Hellw.*
13. *Myrmecoxenus vaporariorum*, *Guér.*

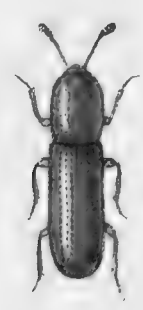
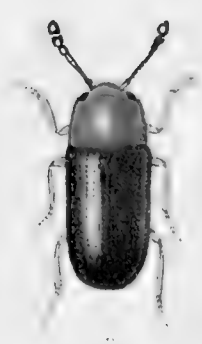


Plate 11

Plate 11

PLATE LXXXV.

- FIG. 1. *Langelandia anophthalma*, *Aubé*.
2. *Cerylon histeroides*, *F.*
3. „ *fagi*; *var. excavatum*, *Fowler*.
4. „ *ferrugineum*, *Steph.*
5. *Murmidius ovalis*, *Beck.*
6. *Hister quadrimaculatus*, *L.*
6a. „ „ „ antenna.
7. „ *cadaverinus*, *Hoff.*
8. „ *purpurascens*, *Herbst.*
9. „ *bissexstriatus*, *F.*
10. „ *bimaculatus*, *L.*
11. *Carcinops minima*, *Aubé*.
12. *Paromalus flavicornis*, *Herbst.*
13. *Hetærius sesquicornis*, *Ol.*



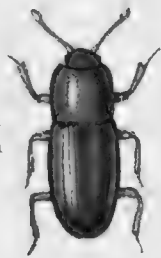
1



2



3



4



5



6



6a



7



8



9



10



11



12



13

R. Mordax del. et lith.

W. H. B. Brock del. et lith.

L. Reeve & Co. London.

PLATE LXXXVI.

- FIG. 1. *Dendrophilus pygmæus*, *L.*
1a. " " " antenna.
2. *Myrmetes piceus*, *Payk.*
3. *Saprinus nitidulus*, *Payk.*
4. " *immundus*, *Gyll.*
5. " *virescens*, *Payk.*
6. " *maritimus*, *Steph.*
7. *Teretrius picipes*, *F.*
8. *Plegaderus dissectus*, *Er.*
9. *Abræus globosus*, *Hoff.*
10. *Acritus minutus*, *Herbst.*
11. " *punctum*, *Aubé.*
12. *Onthophilus globosulus*, *Ol. (sulcatus, F.)*.
13. " *striatus*, *F.*



1



2



3



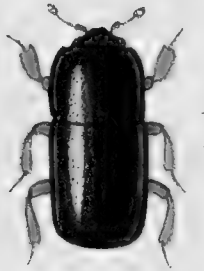
4



5



6



7



8



9



10



11



12



13

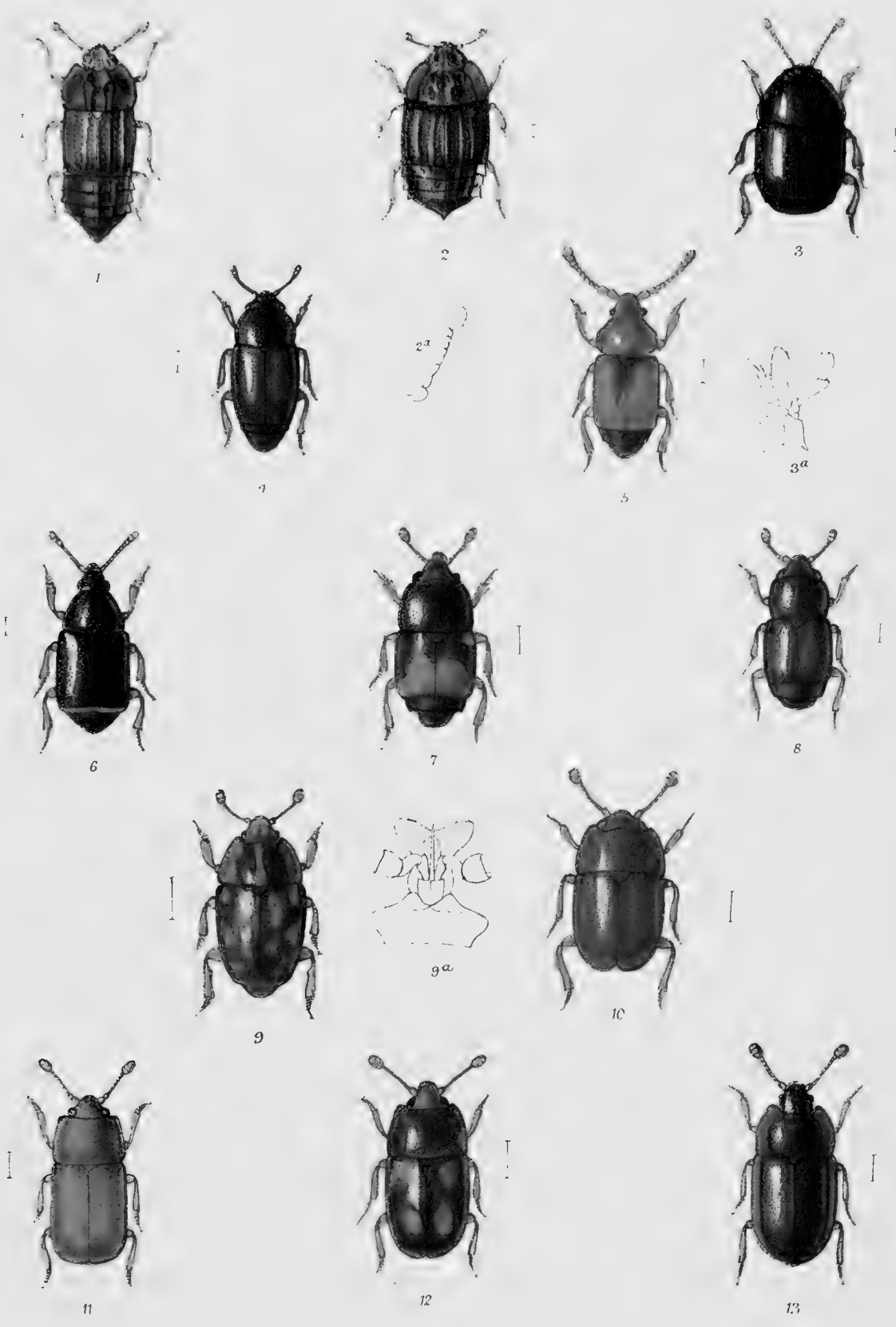
R. Morgan del et lith

Vincent Brooks Days sculpsit

L. Reeve fecit London

PLATE LXXXVII.

- FIG. 1. *Micropeplus margaritæ*, *Duv.*
2. „ *tesserula*, *Curt.*
2a. „ „ antenna.
3. *Brachypterus gravidus*, *Ill.*
3a. „ „ maxilla.
4. „ *urticæ*, *Kug.*
5. *Cercus pedicularius*, *L.*
6. „ *rufilabris*, *Latr.*
7. *Carpophilus hemipterus*, *L.*
8. „ *mutilatus*, *Er.*
9. *Epuræa decemguttata*, *F.*
9a. „ „ labium.
10. „ *æstiva*, *L.*
11. „ *longula*, *Er.*
12. „ *deleta*, *Er.*, var.
13. „ *parvula*, *Sturm.*



R. Morgan, del et lith

Vincent Brooks, Day & Son Imp

J. Reeve & Co London

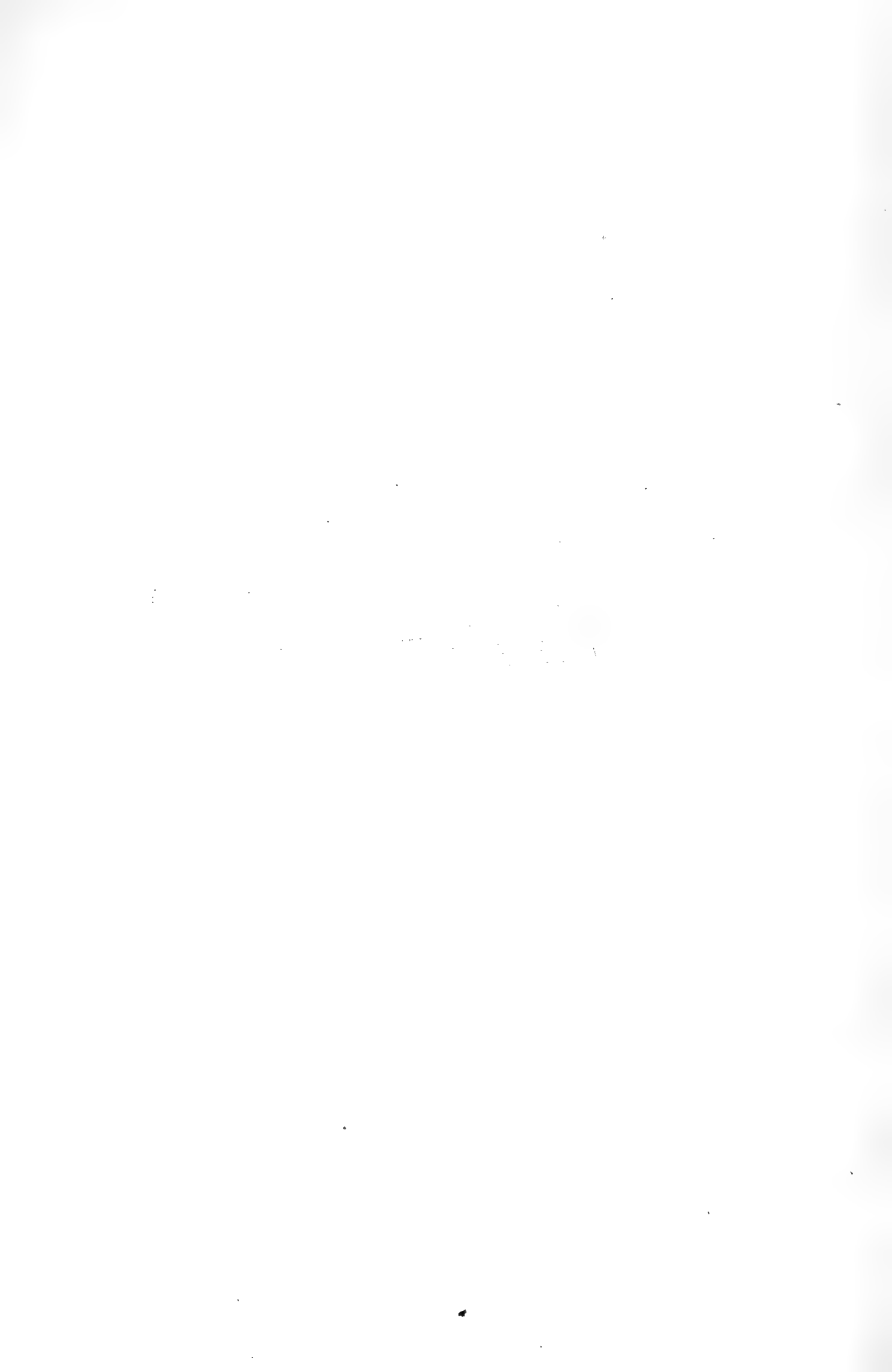


PLATE LXXXVIII.

- FIG. 1. *Epuræa pusilla*, *Er.*
2. „ *angustula*, *Er.*
3. *Omosiphora limbata*, *F.*
4. *Micrurula melanocephala*, *Marsh.*
5. *Nitidula bipustulata*, *L.*
6. „ *quadripustulata*, *F.*
7. „ *rufipes*, *L.*
8. „ *flexuosa*, *F.*
9. *Soronia grisea*, *L.*
10. *Amphotis marginata*, *Er.*
11. *Omosita depressa*, *L.*
12. „ *colon*, *L.*
13. „ *discoidea*, *F.*



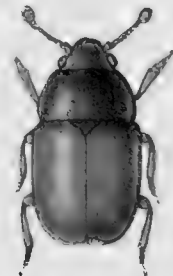
1



2



3



4



5



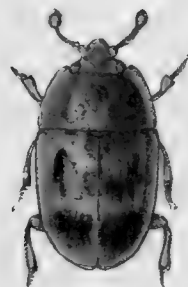
6



7



8



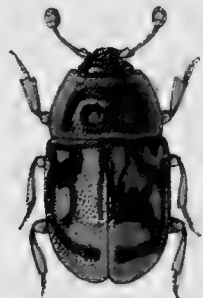
9



10



11



12



13

E. Mergar, del et lith

Vincent Brooks Layson, Imp

PLATE LXXXIX.

- FIG. 1. *Thalycera sericea*, *Sturm.*
2. *Pocadius ferrugineus*, *F.*
3. *Pria dulcamaræ*, *Scop.*
4. *Meligethes rufipes*, *Gyll.*
4a. " " anterior tibia.
5. " *æneus*, *F.*
5a. " " anterior tibia.
6. " *viridescens*, *F.*
6a. " " anterior tibia.
7. " *difficilis*, *Heer.*
7a. " " anterior tibia.
8. " *viduatus*, *Sturm.*
8a. " " anterior tibia.
9. " *bidens*, *Bris.*
9a. " " anterior tibia.
10. " *umbrosus*, *Sturm.*
10a. " " anterior tibia.
11. " *picipes*, *Sturm.*
11a. " " anterior tibia.
12. " *symphyti*, *Heer.*
12a. " " anterior tibia.
13. " *serripes*, *Gyll.*
13a. " " anterior tibia.

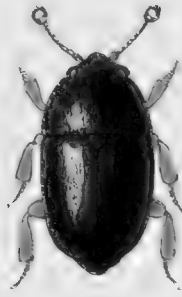
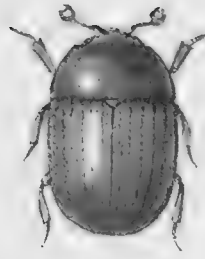


PLATE XC.

- FIG. 1. *Meligethes murinus*, *Er.*
1a. " " anterior tibia.
2. " *obscurus*, *Er.*
2a. " " margin of forehead.
2b. " " anterior tibia.
2c. " " anterior tarsus of male.
3. " *erythropus*, *Gyll.*
3a. " " anterior tibia.
4. " *exilis*, *Sturm.*
4a. " " margin of forehead.
4b. " " anterior tibia.
5. " *solidus*, *Kug.*
5a. " " margin of forehead.
5b. " " anterior tibia.
6. " *brevis*, *Sturm.*
6a. " " margin of forehead.
6b. " " anterior tibia.
7. *Cychramus luteus*, *F.*
8. *Cryptarcha strigata*, *F.*
9. " *imperialis*, *F.*
10. *Ips quadriguttata*, *F.*
11. " *quadripunctata*, *Herbst.*
12. " *quadripustulata*, *L.*
13. *Pityophagus ferrugineus*, *F.*



1a



2



3a



4

1b

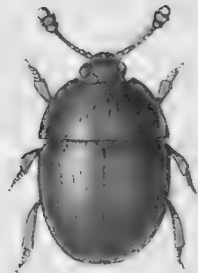


5

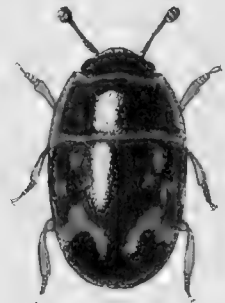
2b



6



7



8



9

3b



10



11



12



13



PLATE XCI.

- FIG. 1. *Rhizophagus depressus*, *F.*
2. „ *cribratus*, *Gyll.*
3. „ *nitidulus*, *F.*
4. „ *bipustulatus*, *F.*
4a. „ „ antenna.
4b. „ „ posterior tarsus of male.
4c. „ „ anterior leg.
5. *Nemosoma elongatum*, *L.*
6. *Tenebrioides mauritanicus*, *L.*
7. *Thymalus limbatus*, *F.*
8. *Monotoma conicicollis*, *Aubé.*
9. „ *spinicollis*, *Aubé.*
10. „ *sub-4-foveolata*, *Wat.*
11. *Holoparamesus depressus*, *Curt.*
11a. „ „ leg.
11b. „ „ antenna of male.
12. *Anommatus 12-striatus*, *Wesm.*
13. *Lathridius lardarius*, *De G.*



1



2



3



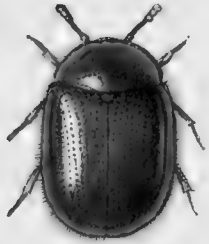
4



5



6



7



8



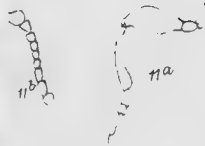
9



10



11



12



13

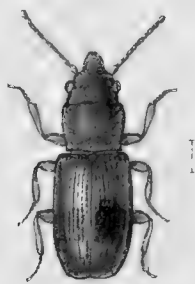
R. Morgan del, et lith.

Vincent Brooks, Day & Son Imp.

L. Reeve & Co. London

PLATE XCII.

- FIG. 1. *Coninomus nodifer*, *West v.*
2. *Enicmus transversus*, *Ol.*
3. „ *minutus*, *L.*
4. „ *testaceus*, *Steph.*
5. *Cartodere elongata*, *Curt.*
5a. „ „ antenna.
6. „ filum, *Aubé.*
7. *Corticaria pubescens*, *Gyll.*
8. „ *umbilicata*, *Beck. (cylindrica Mannh.)*
9. *Melanophthalma transversalis*, var. *Wollastoni*, *Wat.*
10. „ *fulvipes*, *Com. (curta Woll.)*
11. *Pediacus depressus*, *Herbst.*
12. *Læmophlæus bimaculatus*, *Payk.*
13. „ *ater*, *Ol.*



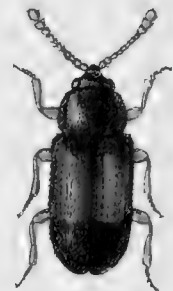
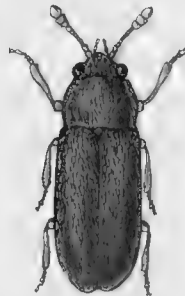
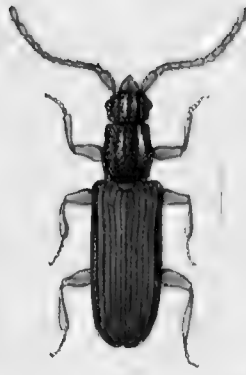
R. Morgan del, et lith.

Vincent Brooks, Day & Son Imp

L. Reeve & Co London.

PLATE XCIII.

- FIG. 1. *Læmophlœus clematidis*, *Er.*
2. *Dendrophagus crenatus*, *Payk.*
3. *Brontes planatus*, *L.*
4. *Psammœchus bipunctatus*, *F.*
5. *Hypocoprus latridioides*, *Mots.*
6. *Nausibius dentatus*, *Marsh.*
7. *Silvanus surinamensis*, *L.*
8. „ *similis*, *Er.*
9. *Cathartus advena*, *Waltl.*
10. *Byturus tomentosus*, *F.*
10a. „ „ tarsus.
11. *Diphyllus lunatus*, *F.*
12. *Diplocelus fagi*, *Guer.*
13. *Telmatophilus sparganii*, *Ahr.*



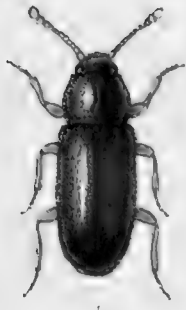
R. Morgan, del et lith.

Vincent Brooks, Day & Son Imp

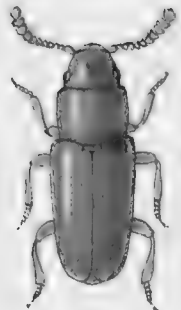
L. Reeve & Co London

PLATE XCIV.

- FIG. 1. *Telmatophilus caricis*, *Ol.*
2. *Antherophagus nigricornis*, *F.*
3. „ *pallens*, *Gyll.*
4. *Cryptophagus lycoperdi*, *Herbst.*
5. „ *populi*, *Payk.*
6. „ *saginitus*, *Sturm.*
7. „ *ruficornis*, *Steph.*
8. „ *cylindrus*, *Kies.* (*parallelus*, *Bris.*).
9. „ *acutangulus*, *Gyll.*
10. „ *bicolor*, *Sturm.*
11. „ *pubescens*, *Sturm.*
12. *Micrambe vini*, *Panz.*
13. *Paramecosoma melanocephalum*, *Herbst.*



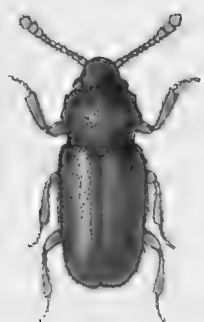
1



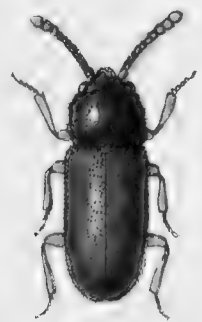
2



3



4



5



6



7



8



9



10



11



12



13

R. Morgan del et lith.

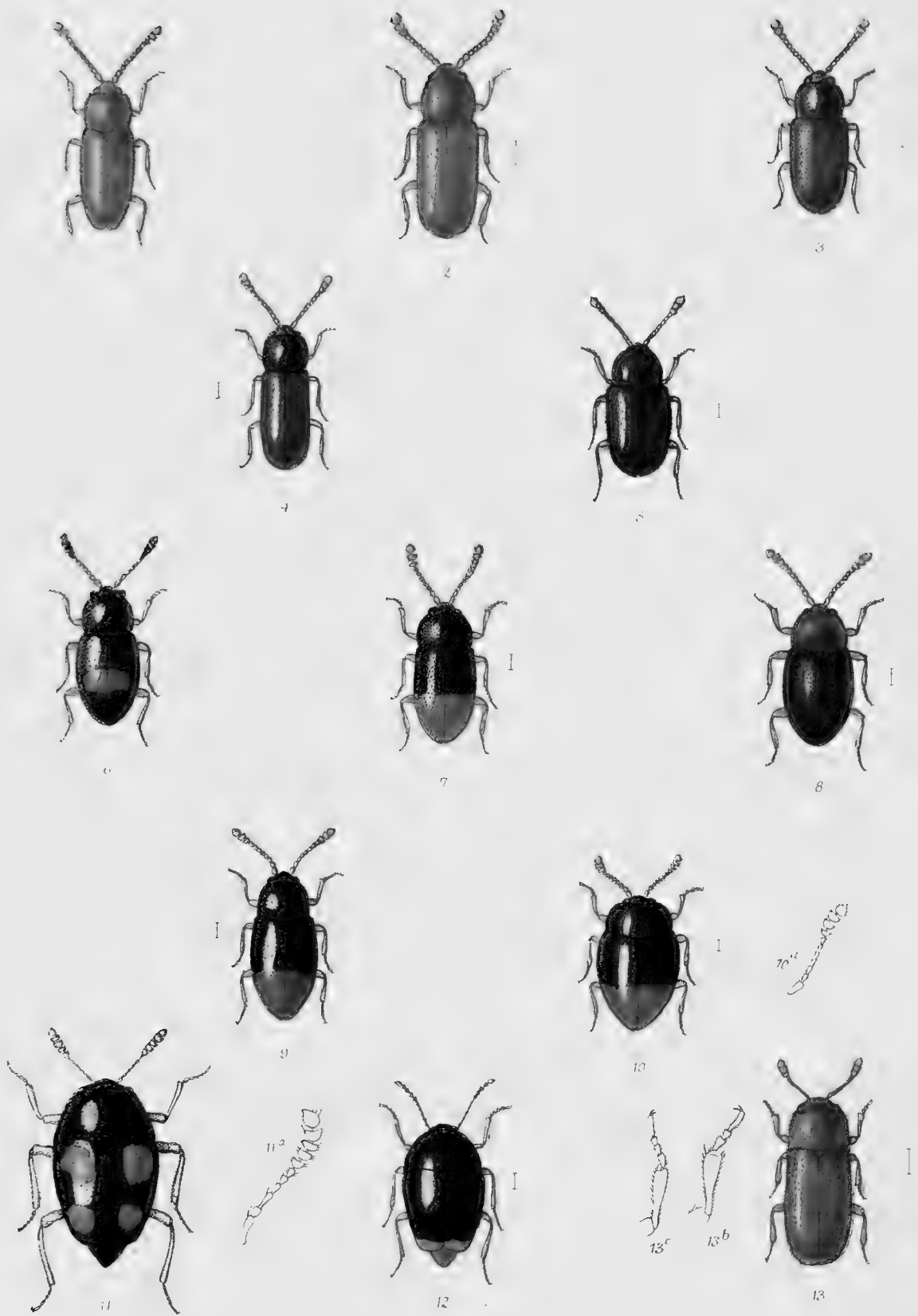
Vincent Brooks, Day & Son Imp

L. Reeve & Co London

1941
1942
1943

PLATE XCV.

- FIG. 1. *Cænoscelis ferruginea*, *Thoms.*
2. *Atomaria fimetarii*, *Herbst.*
3. „ *nigriventris*, *Steph.* (*nana*, *Er.*).
4. „ *linearis*, *Steph.*
5. „ *fuscipes*, *Gyll.*
6. „ *gutta*, *Steph.*
7. „ *mesomelas*, *Herbst.*
8. „ *nigripennis*, *Payk.*
9. „ *ruficornis*, *Marsh.*
10. *Ephistemus gyρινoides*, *Marsh.*
11. *Scaphidium quadrimaculatum*, *Ol.*
11a. „ „ „ antenna.
12. *Scaphisoma agaricinum*, *L.*
13. *Typhæa fumata*, *L.*
13a. „ „ „ antenna.
13b. „ „ „ anterior tarsus of male.
13c. „ „ „ ordinary tarsus.



P. Molyneux del.

Woodruff, Bro. K. Day & Sewell

L. Pease & Co. London

PLATE XCVI.

- FIG. 1. *Triphyllus punctatus*, *F.*
2. *Litargus bifasciatus*, *F.*
3. *Mycetophagus quadripustulatus*, *L.*
4. „ *piceus*, *F.*
5. „ *atomarius*, *F.*
6. „ *multipunctatus*, *Hellw.*
7. „ *populi*, *F.*
8. „ *quadriguttatus*, *Müll.*
9. *Dermestes vulpinus*, *F.*
10. „ *tessellatus*, *Ill.*
11. „ *lardarius*, *L.*
11a. „ „ *antenna.*
12. *Attagenus pello*, *L.*
13. „ *trifasciatus*, *F.* (*verbasci*, *L.*).



1



2



3



4



5



6



7



8



9



10



11

Handwritten note: 22/25



12



13

R. Mordax, 1870

Y. West, 1870, by G. J. G. G. G.

L. Pezom, 1870

PLATE XCVII.

- FIG. 1. *Megatoma undata*, *Er.*
2. *Tiresias serra*, *F.*
3. *Anthrenus scrophulariæ*, *L.*
3a. Club of sub-genus *Anthrenus*, i. sp.
3b. Club of sub-genus *Florilinus*, *Muls.*
3c. Club of sub-genus *Helocerus*, *Muls.*
4. *Anthrenus varius*, *F.*
5. *Trinodes hirtus*, *F.*
6. *Syncalypta setigera*, *Ill.*
7. *Byrrhus pilula*, *L.*
8. „ *dorsalis*, *F.*
9. *Cytilus varius*, *F.*
10. *Morychus æneus*, *F.*
11. *Simplocaria semistriata*, *F.*
12. *Limnichus pygmæus*, *Sturm.*
13. *Aspidiphorus orbiculatus*, *Gyll.*
13a „ „ antenna.

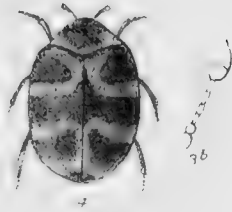


PLATE XCVIII.

- FIG. 1. *Georyssus pygmæus*, *F.*
2. *Elmis æneus*, *Müll.*
3. „ *Volkmar*, *Panz.*
4. „ *parallelopipedus*, *Müll.*
5. *Limnius tuberculatus*, *Müll.*
6. *Macronychus quadrituberculatus*, *Müll.*
7. *Potaminus substriatus*, *Müll.*
7a. „ „ antenna.
8. *Parnus prolifericornis*, *F.*
9. „ *auriculatus*, *Panz.*
10. *Heterocerus femoralis*, *Kies.*
11. „ *lævigatus*, *Panz.*
12. „ *fuscus*, *Kies.*
13. „ *sericans*, *Kies.*

