Monograph of the British Phalangidea or harvest men / by O. Pickard-Cambridge.

G. H. Carpenter.

MONOGRAPH

OF

THE BRITISH PHALANGIDEA

OR HARVEST-MEN.

BY

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M.A., F.R.S., C.M.Z.S., &c., &c.

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TO

R. H. MEADE, Esq., M.R.C.S.,

Of Bradford, Yorkshire,

THIS LITTLE MONOGRAPH

ON

THE BRITISH SPECIES OF PHALANGIDEA

Is Dedicated,

In grateful remembrance of his (too early relinquished)

researches on the subject,

BY

THE AUTHOR.

Bloxworth Rectory,
Nov. 3rd, 1890.

On the British Species of Phalangidea or Harvest-Men.

By the Rev. O. PICKARD-CAMBRIDGE, M.A., F.R.S., C.M.Z.S., &c., &c.

(Plates A, B, C, D, E.)

(Introduction.)

THE popular idea of this curious group of the Arachnida is that they are spiders. With the Spiders *(Araneidea)*, however, they have only an *Ordinal* affinity, that is (in general terms and omitting details and exceptions) the Harvest Men (or *Phalangidea*) have, in common with spiders, *eight legs* (each of seven main joints), articulated to the inferior side of the fore part of the body, which is composed of the caput and thorax, or *cephalothorax*; and on the upper side of this, more or less in front, the eyes, two in number, and always simple, are placed. They have also, like spiders, in front of the legs, *two leg-like palpi*, of six joints, as well as *two falces*, each consisting of two joints, ending with a moveable claw, which, opposed to a fixed claw of the falx, forms a pair of pinchers, and, in reality, represents a third joint.

When, however, we come to observe the *differences* between Harvest-Men and true Spiders, these are very great and for

the most part easily seen. In the *spiders* the fore part, or cephalothorax, *is nearly always visibly distinct* from the hinder part, or abdomen, to which it is joined by a distinct pelicle. In the *Harvest-Men* the cephalothorax and abdomen fit *close up to each other*, and are in fact united throughout their whole breadth, looking, to an ordinary observer, like one homogeneous piece, the division between them being, however, always traceable by a, more or less deep, transverse groove, or indentation. In most *spiders* the abdomen is developed to a much larger size than the cephalothorax, and is always furnished with spinning organs—*spinners*—while that of the Harvest-Man* has no spinning organs, and, as a rule, appears to have shrunk up and become in many cases as small as it could possibly become; the portions, or segments, of which it consists, especially the three posterior ones, having become contracted or crushed up into each other as though by some strong attraction from in front or pressure from behind. Most people will, no doubt, call to mind one of our most abundant of the Harvest-Men, whose little nearly circular body, smaller than a small pea, and poised, as it were, between its exceedingly long, slender, thread-like legs, is thus carried suspended, with great quickness and facility, over the rough grass and herbage of our fields, woods, and hedges in early autumn. This is *Leiobunum rotundum* Latr. (or possibly *L. Blackwallii* Meade—a closely allied species.

To go on, however, with their differences from spiders. The eyes of all known *British* Spiders are 6 or 8 in number, while those of the *Harvest-Men* are 2 only, and these are placed on the sides of an eminence near the centre of the fore part, or caput, also in spiders the cuticle of the abdomen is *continuous*, while in the Harvest-Men it is divided into *transverse segments*, which are often only traceable by a slightly indented line, though sometimes by folds (in the epidermis), showing the pristine division of the abdomen into distinctly divided segments. In the adult male spiders, again, the palpi always end with a congeries of corneous lobes and spines,

* Spinning organs have, however, been discovered in the *Cyphophthalmidæ*, but their use and economy are not known.

used in generation ; but this is never the case in the Harvest-Men, whose palpi, though often varying much in form and development in the two sexes, end similarly in both, with a simple claw ; their method of generation is also totally and remarkably distinct. Again, in *spiders* the basal joints of the legs are articulated to a sternal plate of considerable size, while, though this is represented in the Harvest-Men, it is of quite subsidiary importance and generally difficult to observe ; the extremities of the legs are also subdivided into many minute articulations. These *external* differences are easily observed, and when we come to *internal* ones it will be sufficient here to note one, that is that the respiratory system is simply *tracheal*, and its external orifices quite differently situated from those of the tracheæ and Sac-tracheæ of spiders.

Probably no one who attends fairly to the differences above noted will mistake a Harvest-Man for a spider. Yet it might still be difficult at first sight to distinguish some of them (the *Trogulidæ* for instance) from some of the larger and longer legged *Acarids*, especially some of the family *Trombidiidæ*, but if it is remembered that the latter never have the abdomen segmented, while that of the Harvest-Man always is so, or at least shews its former separation by transverse lines or grooves, there will be very little chance of confusion. There are, of course, other striking differences between the Order of Mites, or *Acaridea*, and the Harvest-Men, but the one I have mentioned may suffice for our present purpose.

In one of the most recent works upon this order, M. Simon divides Harvest-Men—*Phalangidea* (or according to his terminology, the *Opiliones*) into three sub-orders, based on well marked structural characters ; as, however, all our British species belong to one only, the third—*Opiliones* "Plagiostethi"*—there is no need, for our purpose, to go into this primary division. The whole group or order *Opiliones* of Mons. Simon is co-extensive with my order *Phalangidea*, which seems to me to be sufficiently sub-divided directly into various *families* without the intervention of *Sub-orders*. This is, however, a question of classification into which it is

* *Plagiostethi* fr. πλάγιος *transverse* στῆθος breast (sternum).

scarcely necessary to go here. Our British species, 24 in number, are distributed among three families, *Phalangiidæ*, *Nemastomatidæ*, and *Trogulidæ*, each of which, as well as the British genera and species contained in them, will be characterised in detail further on.

Harvest-Men cannot boast of any bright colours; they are mostly of different shades and mixtures of *white*, *grey*, *brown*, *yellowish*, *and black*. The sexes may usually be distinguished by the smaller size of its body and by the brighter or clearer markings and colours *in the male*, its long slenderer legs and their better developed armature, as well as by the development of the falces and palpi. In many cases, unless actually dissected, the sexes, in some groups *(Trogulidæ)* are, however, very difficult to distinguish, especially in the immature state.

The trivial name *Harvest-men* has been obtained by the commoner species of the group, probably because they are observed in their *greatest abundance* at the *harvest time*, among the herbage grass and weeds in the hedges and cornfields; for the same reason no doubt the French call them "faucheurs" (reapers). The species thus observed belong to the family *Phalangiidæ* and principally to a few species, such as *Phalangium cornutum*, *Liobunum rotundum*, and *L. Blackwallii*, while on bushes and moss-covered trees as well as among herbage in woods *Oligolophus morio* is very common; and on heaths and chalk downs, under stones, &c., *Phalangium saxatile*.

It is not easy to conjecture why, compared to spiders, there should be so few species of this group in existence. The *European* species do not much exceed fifty, those as yet known of *Great Britain* being, as before observed, only twenty-four. Some are widely distributed and abundant, others very local and rare; but as so few naturalists pay any attention to them we cannot at present speak with much certainty upon this. Not much is known of their habits. Some may be seen pursuing their way at night on tree trunks, &c., but many are diurnal as well, if not exclusively so. They prey upon small

insects, young * spiders, acarids, myriapods, and even the young of their own kind; on all of these I have myself observed them feeding. They are said to be very thirsty creatures, imbibing water greedily, but on this I have not myself made any observations. They are also possessed of great nervous irritability, and have power to throw off their exceedingly brittle slender legs when laid hold of. The leg thus thrown off moves freely for, sometimes, hours after separation from the body. It is probable that legs thus separated may be renewed, as in the case with spiders, but I do not believe it has yet been proved as a fact. Although some species are very active yet many are slow and clumsy in their movements, especially those species whose habitat is among moss and débris, and which are seldom seen unless carefully searched for. It is supposed that some groups, *Trogulidæ* and *Nemastomatidæ*, live for several years, while the life of the *Phalangiidæ* is restricted to one season, but from what facts these conclusions are drawn I know not. Various works, some of great importance, have been written by foreign authors on the Phalangidea, beginning with *Linnæus*. These need not be detailed here. M. Simon refers to all of them in his work on the *French* (or practically *European*) species "Arachnides de France," tom. 7, p. 133 et seq., 1879. Two works only, as far as I know, have been published by English authors—that of N. Tulk on the Anatomy of *Phalangium opilio*, Ann. and Mag. N. H. xii. p. 153 (1843), and a paper (to which a short supplement was afterwards added) by R. H. Meade, "Monograph on the British Species of *Phalangiidæ* or Harvest Men," Ann. and Mag. N. H., ser. 2, vol. xv., pp. 393-416, pl. x. xi. (1855).† The supplement was published in the 3rd ser. of that Magazine, vol. vii., 1861, pp. 1-5 of the same Magazine. In these Mr. Meade describes *sixteen* species, one of which, *Phalangium canes-*

* Mr. G. C. Bignell, of Plymouth, has lately met with an example of *Liobunum rotundum* which had captured and was devouring an adult female of a species of *Lycosa*.

† To these may be added an account of the "Phalangidea" in Art. on Arachnida, by O. P. Cambridge in Ed. ix. Encyclop. Brit., pp. 277-280, 1875.

cens, is certainly no more than a small, and perhaps local, form of *Phalangium cornutum*; and another, *Phalangium minutum* Meade, appears to be a very doubtful species, leaving *fourteen* only certainly known to be British at that time. To these I am able now to add *nine* others, and I do not doubt but that if these groups were fairly worked, especially along our South-Eastern, Southern, and South-Western Coasts, the twenty-four species here described would be materially added to. In recommending our entomologists to turn a wider attention to the Phalangidea, I may observe that besides being a group of animals of very remarkable details of structure, they have nothing whatever disgusting or objectionable about them, but are particularly interesting and cleanly in their ways and quite inoffensive, possessed of no venom, and doing no injury to man or any of his possessions; rather, on the contrary, by preying upon the insect world, doing him good. Of the twenty-four British Phalangids twenty-one have been found by myself in Dorsetshire, two of the remaining three being Alpine forms, and one a doubtful species.

DESCRIPTIONS OF GENERA AND SPECIES.

CLASS ARACHNIDA.

ORDER Phalangidea (Cambr.) Opiliones (Sundeval, Simon).

Plate A.

Cephalothorax (consisting of the caput and thorax) forms a single portion on which there are usually grooves, sutures, or impressed lines more or less distinctly marking the segments composing it. In some pristine form no doubt these segments, like those similarly soldered together in the corresponding portion of the true spiders, were separated and free, but in the existing forms the progress of development has crowded them up together, not only to the extent of coalescence, but almost to the obliteration of any trace of their once separate existence.

Abdomen segmented; fitting up and united to the cephalothorax throughout its width, having been evidently acted upon by the same causes as those which crushed up the segment of the thorax into the caput. The segments of the abdomen are not the same

above as below; usually 8 above and 5 or 6 beneath are traceable. Some of the upper ones are, owing to the crushing up above mentioned, indistinct, and scarcely distinguishable from the thorax. Underneath, the anterior segment is usually prolonged between the basal joints of the legs and forms a quasi-sternum, which we may call the *genital plate*. It covers the genital aperture, which is thus more or less close to the mouth parts. The posterior segment contains the anal aperture.

Eyes two; usually close together, on an eminence of the caput.

Sternum (properly so called), small and usually hidden beneath the anterior portion of the genital plate; in front of the sternum is the *labium*, over which on each side extend the maxillæ of the 1st and 2nd pairs of legs, by which it is more or less covered.

Maxillæ. These are differently formed lobes springing from the basal joints of the palpi and two anterior pairs of legs. There are 3 pairs of these, one pair belonging to the palpi and a pair each to the 1st and 2nd pair of legs. Above the first pair of maxillæ between the falces is a small pointed portion of structure called the *epistoma*, apparently designed to close-in the mouth parts above.

Spiracular openings. Two; one on each side beneath the first abdominal segment, usually concealed by a fold of the epidermis underneath the coxæ of the fourth pair of legs.

Falces. Two; projecting in front beneath the caput, three-jointed, the 3rd (or extreme) joint forming in opposition to a projection, or prolongation of the second joint, a crab's claw or pinchers, similar to that of the scorpions and chelifers.

Palpi. Two; close in front of the legs, each consisting of 5 joints, or, counting the basal joint, of which the maxillæ form a portion, 6—i. axillary, ii. humeral, iii. cubital, iv. radial, v. digital, the last ending with a single claw.

Legs, seven-jointed—i. coxal, ii. exinguinal, iii. femoral, iv. genual, v. tibial, vi. metatarsal, vii. tarsal; the last always more or less minutely subdivided, and ending with one or two, rarely pectinated, claws. On each side of the caput on the margin just above the basal joints of the first pair of legs, is, in most of the *Phalangidea*,

a small oval orifice, called the "lateral pores," often looking like an eye, and formerly considered to be a spiracular opening, but now decided to be the orifices of glands, whose office is as yet undiscovered.

Organs of generation consist, in the *male*, of an intromittent organ or penis, usually withdrawn beneath the external sheath or covering—*genital plate*; that of the *female* being provided with a large corresponding ovipositor capable of protrusion. Like the Araneidea the Phalangidea are oviparous, and also increase in size by successive moultings of the skin.

Three families only—i., *Phalangiidæ;* ii., *Nemastomatidæ;* iii., *Trogulidæ*—are as yet known to be represented in Great Britain, and all three are comprised in Mons. Simon's Sub-order *Opiliones plagiostethi.* Of the other European families—*Sironidæ*, *Phalangodidæ*, and *Ischyropsalidæ* — none have yet been found in Britain.

FAM: I. PHALANGIIDÆ.

In this family the ventral segments are 5 or 6 in number; the first is prolonged into a genital plate between the basal joints of the legs, reaching quite to the mouth parts. Two transverse folds behind the eye-eminence. Eyes near together on an eminence near the middle of the caput; basal joints of the *legs* not soldered together laterally; the *maxillæ* of the second pair always visible.

Palpi elongated, of simple form; digital joint much larger than the radial and ending with a claw. *Epistoma* long-pointed, or triangular.

This family may be subdivided into i., *Sclerosomatinæ*, in which the epidermis is chitinous and squamose, and the five anterior segments of the abdomen form with the cephalothorax a large scutum covering the whole creature, while the 3 posterior segments are distinctly visible, overlapping each other and forming a more or less vertical termination to the abdomen immediately above the anal plate, which last has a small accessary portion on each side of it—no lateral pores. *Epistoma* elongate-pointed. ii., *Phalangiinæ.* Epidermis simply coriaceous, the upper abdominal

segments traceable, if at all, only by impressed lines or slight furrows. Anal plate without accessary lateral portions ; lateral pores on the caput present and conspicuous. *Epistoma* triangular.

Sub-Family I. Sclerosomatinæ.

In this sub-family there is only one genus as yet known in Britain—*Sclerosoma* Luc.

GEN : SCLEROSOMA (Lucas).

Homalenotus (C. Koch and Meade).

Epidermis hard and coriaceous ; the division of the cephalothorax and abdomen being distinctly marked by a deep transverse indentation. Cephalothorax pointed before, sides parallel behind, and ending with a strong, vertical, or oblique corneous point or spike. *Falces* very small, upper surface flattened, that of the abdomen slightly convex along the midde, of a somewhat oblong oval form roundly truncated behind and armed with spines or pointed tubercles. *Eye-eminence* small and armed with spines or points, *palpi* short. *Legs* short, moderately strong. 2nd pair longest, but least strong. Metatarsi undivided, Tarsi, 1 and 4, 11-jointed ; 2, 18-jointed ; 3, 10-jointed.

Sclerosoma quadridentatum (Cuvier).

Homalenotus quadridentatus (Meade).

Pl. B, fig. 4.

Length from $1\frac{3}{4}$ to 2 lines, its surface covered slightly and roughened with yellowish scales. The colour of this species is yellowish brown ; it is often of a deeper and more suffused hue, owing probably to its having been for a longer time in contact with the soil. On the upper side of the abdomen are four rows of black spots, each containing a strong tubercle surmounted by a short pale bluntish tubercular spine. These thus form two nearly parallel, longitudinal, central rows of four each and a sub-marginal row on each side of the same number, but less strong, besides a posterior transverse marginal row of four more almost equally

separated from each other. The hinder margin of the thorax has also some small tubercular spines just behind the ocular eminence; those on the posterior margin of the abdomen are the largest, and are directed strongly backwards.

The *cephalothorax* has a blackish marginal border interrupted at regular intervals by rather irregular yellow-brown spots. There are also some blackish markings on each side and behind, near the base of the eye-eminence. This eminence is nearer the posterior than the anterior margin, and is armed with several small blunt tubercular spines of different sizes and not (apparently) symmetrically placed; the fore margin of the caput ends with a long, strong, central, nearly straight, horn-like spine directed forwards, and which is itself sometimes armed with one or more small lateral spines.

Legs 2, 4, 1, 3, the coxal, exinguinal, femoral, and genual joints armed with variously sized bluntish spines, some of those on the coxæ being the strongest; those on the femora of the first pair are most numerous and regularly arranged, and those on the femora of the second pair the weakest. The tibiæ are quite devoid of armature.

This species is widely distributed in England, but nowhere, so far as I am aware, abundant. I have received it from several parts, and have met with it at most seasons of the year in the Bloxworth district, and in other localities, among moss and at the roots of plants and among decayed vegetable matter in woods and hedges. I have also found it under stones at Portland. Mr. Meade speaks of it as tolerably abundant among moss on the Chalk Hills near Hampden, in Buckinghamshire, in August, 1854, and also as occurring at Brighton. It is sluggish and awkward in its movements.

Sclerosoma Romanum.

Homalenotus Romanus (L. Koch).

Pl. B, fig. 5.

Length from $1\frac{1}{2}$ to $1\frac{2}{3}$rds of a line.

This species is nearly allied to the foregoing and its surface similarly squamose, but it may easily be distinguished by its

smaller size and paler colours, though its markings (which are, however, usually more distinct and regular) are similar and the number and position of the abdominal and thoracic tuberculose spines are alike. The whole, however, of this armature is stronger, more abundant, more regular, and more conspicuous. The *tibiæ*, as well as the other joints of the legs, are armed with sharp spines, and the frontal horn has a stronger, nearly circular base. This horn is quite straight, and, in some examples, there is another, curved and of lesser strength issuing immediately beneath it and directed forward and downward. The frontal horn is also more frequently armed with small subsidiary spines than that in *S. quadridentatum*.

The eye-eminence is armed with 5 long spines of equal length, two in front directed forward, one in the middle, vertical, and two behind directed backwards.

The difference above noted will make it easy to be separated from *S. quadridentatum*. It is found in similar situations, but is much rarer than that species. I first met with it in 1878 in Holwell, near Sherborne, and subsequently at Bloxworth and its neighbourhood. I am not aware of its having been found yet in any other British locality.

Sub-Family II. Phalangiinæ.

For characters of this sub-family see supra p. 170. We have, as yet known, only 5 British genera of this group.

GEN: LIOBUNUM (C. Koch).

Body (cephalothorax and abdomen) very small, nearly round. Epidermis coriaceous. Anterior segments of the abdomen, on the upper side, scarcely distinguishable, especially in the male. No armature on the cephalothorax. *Eye-eminence* small and also unarmed, or if any armature is ever present it consists of exceedingly minute tubercles. *Lateral pores* small and inconspicuous. *Falces* small and with no sexual development in the male. *Genital plate* large. *Legs* very small and slender, tibiæ of the second pair

subdivided by immovable or "false" articulations. *Palpi* not very long, simple, and ending with a denticulated claw.

In this genus the result of the crushing up together of the thorax and anterior portions of structure, mouthparts, &c., is very observable, the abdomen and basal joints of the legs appearing to have had it all their own way. Only two species have yet been observed in Britain.

Liobunum rotundum.

Phalangium rotundum Latr. (1791).

Leiobunus rotundus Meade (1855).

Pl. B, fig. 6.

Length of the female 2 to 2½ lines, of the male 1½ to 2 lines.

The *female* has the cephalothorax and abdomen of a somewhat oblong-oval form, and the epidermis is minutely squamose; it is of a pale brownish-yellow colour, the sides and forepart of the cephalothorax dark brown, and a broad oblong marking (rather broadest behind), on the upper side of the abdomen, as well as the hinder part of the same are also dark brown. The brown marking on the abdomen is spotted with white. The paler markings on the abdomen are often of a bright silvery hue. The legs are of great length and tenuity, their colour is brown, or yellow-brown, of a more or less deep hue according to age. The femora are furnished with minute denticulations. The exinguinal joints are generally of a darker colour than the rest. The eye-eminence is small, situated nearer to the hinder than to the fore extremity of the cephalothorax. It is quite smooth, though with a central longitudinal groove or indentation which separates the eyes; these are each encircled with a dark brown rim. Just below the fore margin of the caput and above the base of the falces, are two small nearly contiguous blunt projecting points. The *male* is much smaller, as well as shorter and rounder in form than the female, and the legs are longer. It is usually of a deep reddish brown colour without any markings traceable, and the legs are also darker coloured.

Generally distributed and found abundantly towards the end of summer and in early autumn in most woody and wild places runn-

ing with great swiftness and facility over the herbage. The muscular power of the legs is shown in the manner of progression, of this species especially (but also of some other phalangids), the body being sustained and carried along, poised as it were, between the legs. No doubt the great strength of muscle which enables them to do this is contained in the largely developed coxal joints, which are themselves so strongly united to the cephalothorax. The facility with which this species throws off its legs when meddled with has been mentioned above. I once saw one running with very fair speed and facility having lost all but two legs, an anterior one on one side and a posterior one on the other.

Liobunum Blackwallii.

Leiobunus Blackwallii Meade, "Ann. Mag. N. H." 1861.

Pl. B, fig. 7.

This species is nearly allied to *L. rotundum*, but is smaller, the female measuring 2 and the male less than $1\frac{1}{2}$ lines. The legs also, in many examples at any rate, seem to be shorter though even more thread-like; there is, however, certainly often a difference between individuals in respect to the length of the legs. It may easily be distinguished by the dark fore part of the caput being divided longitudinally by a white or pale band running from the fore margin to the eyes; these are also encircled with white wings. The abdomen has a longitudinal dark band on the upper side, but instead of ending in a nearly quadrate form as *L. rotundum*, its hinder extremity is dilated and extends laterally over the sides. The paler portions of the abdominal markings are in this species also of a silvery hue.

The *male* is less distinctly marked, generally being almost uni-colorous, of a yellow-brown, sometimes reddish, hue, but the characteristic differences from *L. rotundum* may generally be traced.

Although abundant in most seasons in woods and on wild heathy places, I think this species is more local than the former, and I do not remember ever as yet having found the two species on or close to the same spot.

GENUS PHALANGIUM (Linn).

Phalangium (Sim).

Phalangium (Meade).

Cephalothorax furnished with more or less conspicuous spines or denticulations; those in front of the eye-eminence are generally more or less irregularly placed, usually in two rough groups on a ridge on each side of the median line—in no case do any form a distinct transverse line of three on or near to the anterior margin of the caput, as in a subsequent genus *Oligolophus.*

The *Abdomen* has transverse rows of minute denticulations on the upper side corresponding with the different segments, and a central longitudinal boldly-angular dark band, more or less distinctly marked. *Eye-eminence* of moderate size and armed with two rows of sharp tubercles or spine-like teeth, the longitudinal space between them being hollow. *Lateral pores* large, oval, and conspicuous. *Anal plate* small, oval, or broader than long, sometimes almost circular. *Genital plate* large, somewhat oblong, and sometimes enlarged at its anterior extremity, which is rounded, or truncated. *Legs* long, moderately strong, 2, 4, 1, 3. The tibiæ are devoid of false joints, but they are present in the metatarsi. The metatarsi, however, of the first pair of legs in one of the British species, *P. saxatile*, are devoid of them. Femora armed with rows of numerous more or less strong spines or denticulæ. The *palpi* end with a non-pectinate claw.

M. Simon remarks on the difficulty of giving distinctive characters of this genus; and indeed it is not easy to differentiate it quite satisfactorily from *Oligolophus** C. Koch, Sim. Mr. Meade included in *Phalangium* a species (*O. morio* = *Phalangium urnigerum* Hermann Meade) separated from it by M. Simon, while Mr. Meade included in his genus *Opilio* the most of the species included in Simon's genus *Oligolophus.* M. Simon lays but small stress upon what seem to me to be the best marked distinguishing

* Not Dr. Carl L. Koch, of Nuremberg, long since deceased, but Dr. C. Koch, of Frankfort, now, I believe, still living.

characters between *Phalangium* and *Oligolophus*—*i.e.*, the absence (though not invariable) of false joints in the metatarsi of the first pair of legs of the latter and the invariable presence of 3 spines or denticulations in a transvere row on or close to the anterior margin of the caput, in front of the ocular eminence. These spines are not found in either of the three British species included here in *Phalangium*, and their absence will, I believe, be found to be a good distinguishing character from *Oligolophus*. M. Simon remarks that *Oligolophus glacialis* (closely allied to *Oligolophus morio*, and included by him in the same genus), has false joints in these metatarsi, whence he appears to infer the untrustworthiness of this character; but I observe that in *O. glacialis* (a species unknown to me) the anterior margin of the caput is not said to have a transverse row of 3 spines or denticulæ on the anterior margin of the caput. I should therefore relegate this species to *Phalangium*, though at the same time removing *O. morio* from that genus and including it along with Mr. Meade's species of the genus *Opilio*, but under Dr. Koch's name of *Oligolophus*, inasmuch as the name *Opilio* is already in use for the specific name of the type species of *Phalangium*.

PHALANGIUM OPILIO.

Phalangium opilio Linn (1761).
„ *cornutum* Linn (1761).
„ „ Meade (1855).
„ *opilio* Sim. (1879).

Pl. B, fig. 8, and Pl. A, fig. i.—v.

Female; length 3 to 4 lines; male 2 to 3, and even $3\frac{1}{2}$ lines. Colour above of a greyish hue to a brownish yellow (apparently according to age and locality, those in chalky or limestone districts being greyer than others) with a broad distinctly defined somewhat tapering, longitudinal, central, strongly angulated dark brown mottled band, usually darkest on the edges and often distinctly margined with whitish or pale yellowish brown. This band is frequently divided longitudinally by a pale stripe. The sides of the abdomen are marked and mottled with brown; the

under side is white or whitish grey. Each segment of the abdomen has on the upper side a marginal row of minute sharp denticulations, weakest, least regular and conspicuous on the posterior segments ; a similar row also edges the posterior margin of the thorax. The lateral edges of the cephalothorax are also armed with sharp tubercles or denticulæ, and a group of the same occupy each side of the central line in front of the eye-eminence with occasionally a single one in the slightly hollow interval between these groups ; others are also found irregularly placed on each side of the cephalothorax. Just in the middle above the falces, beneath the anterior margin of the caput, are two small but distinct prominent teeth.

The *eye-eminence* is of moderate size, about equal in length and breadth. The two longitudinal rows of denticulæ with which it is armed are 5-8 in number, and about equal in strength to those on the caput in front of it.

The *falces* are small in this sex, and have a small patch of minute denticulæ on the upper side of the basal joint. The palpi appear to vary in length, in both sexes, but mostly so in the males.

The *legs* have the femora of an angular shape, the angles armed with rows of strong sharp denticulæ. The tibiæ are also angular, and similarly, but much less strongly and conspicuously armed. The metatarsi have generally fewer or more false joints towards their distal ends. The colour of the legs is pale yellowish to yellow-brown.

The genital plate is rather tapering, but slightly widened at the fore extremity, and curvi-truncate.

The *male*, besides being smaller and having the abdomen smaller in proportion to the size of the cephalothorax than the female, has the angular dorsal band less well marked and often not traceable. The spiny armature also is stronger, the legs longer and dark coloured, the palpi much longer and the falces larger, the second joint being produced at its hinder extremity into a more or less long, strong, pointed and slightly curved horn. The variations in the strength of this horn are remarkable, and are, perhaps,

dependent as well on the age of the individual as on the season. The extremity of the genital plate is wider than in the female and more squarely truncate. The exposed sides of the coxæ of the legs, chiefly of the anterior pairs, are also often furnished with small tuberculous teeth.

This species is abundant and generally distributed in woods, waste grounds, and hedgerows, &c., becoming adult in summer and early autumn. It is the one to which, probably, the trivial name of Harvest-men peculiarly attaches, being most common in harvest time. I find immature individuals of a peculiarly ashy and hoary hue, very common on the grassy flowery flats near the Chesil Beach, Portland, early in the summer, so much so that I have at times suspected them to belong to a distinct species, though I have not yet succeeded in obtaining corresponding adults, which would alone prove either their distinctness, or their identity with the present species. The only adults I have met with there have been of the ordinary *P. opilio* type. I have not, however, had much opportunity for working in that locality during the later summer and autumn seasons.

Phalangium parietinum.

Phalangium parietinum Degeer (1778), Meade (1855).

Pl. B, fig. 9, and Pl. A, fig. 6.

As large or often rather larger than *P. opilio*.

Length of the female 4 to 5 lines, male 3 to 4 lines.

The form of the body in this species is an elongate-oval, the abdomen being pinched in laterally near its fore extremity. The *cephalothorax* is of a yellowish colour mottled with whitish, and the *abdomen* is of a general pale whitish-grey and yellowish and brown mottled appearance, with an indistinct whitish longitudinal central line or mark sometimes present. The under side of the abdomen and the coxal joints of the legs are also more or less spotted and mottled with brown or blackish ; the coxal markings are usually elongate. The broad normal angulated band on the upper side of the abdomen is (though sometimes obselete) usually very faintly marked by being a little darker than the rest of the

surface ; the angles, however, are not so sharp nor so well defined, though more numerous, than in *P. opilio* ; and it has, besides numerous small whitish points or spots generally more or less well defined upon it, a series of curvi-angular blackish or dusky brown transverse stripes corresponding with the abdominal segments, which last are also marked by marginal rows of minute denticulæ.

The armature of the cephalothorax is very similar to that of *P. opilio*, but less strong ; and whereas in some examples of this latter I have occasionally found a minute denticule in the bare space between the two groups of stronger spines or denticulæ in front of the eye-eminence, I have never seen this in the present species. The *eye-eminence* is small—not so large as in *P. opilio*—and the teeth on its crest are also fewer in number and less strong. The space between the fore-margin of the caput and the base of the falces is devoid of the two prominent teeth characteristic of *P. opilio*.

The *legs* (2, 4, 1, 3) are long, armed as in *P. opilio*, but not so strongly or conspicuously. They are of a yellowish white colour more or less distinctly annulated with yellowish brown. *Falces* small, yellowish white mottled with a deeper hue. *Palpi* moderately long, yellowish white marked with brown, terminating with a simple claw. Genital plate large, slightly tapering but widened at its fore extremity, where it is rounded. The ovipositor of the female is of great length, cylindrical, and bifid at its end ; when fully protruded about half of its length from the extremity is thickly annulated by a double series of curvi-angular red-brown distinctly defined markings. Pl. A, fig. 6*b*.

The *male* is shorter and broader in form than the female. The palpi and falces are stronger, and the armature of the legs is stronger, as also is that on the margins of the abdominal segments. The whole of this sex is of a more uni-colorus hue than the female, being of a general more or less deep yellow-brown colour, palest underneath, and the dark markings on the coxæ of the legs are distinct though not so large.

This species is by no means (in my own experience) as abundant as *P. opilio*—in fact, I have hitherto found it rather scarce. It is usually found on walls in autumn. It may be easily distinguished from *P. opilio* not only by its different habitat but by the distinctness of the abdominal angular band of the latter and the absence of any markings on the coxæ of the legs and under side of the abdomen, and (in the male) by the great development of the 2nd joint of the falces of *P. opilio*.

Mr. Meade comes to the conclusion that the *Phalangium opilio* of Linnæus is identical with this species, whereas M. Simon (like Latreille) considers it to have been identical with *P. cornutum* of that author, and in this I am inclined to agree with M. Simon.

Phalangium saxatile.

Opilio saxatilis C. L. Koch (1839 and 1848).

Phalangium saxatile C. L. Koch-Sim. (1879).

Pl. C, fig. 10.

Length of the female $2\frac{1}{2}$ to $3\frac{1}{2}$ lines, of the male $1\frac{3}{4}$ to 2 lines.

This species resembles *P. parietinum* in general form, but is much smaller. Its colour is of an ashy to yellowish-grey, marked and mottled with white, black and yellowish-brown. The abdomen has the normal angulated dark dorsal band, though in some examples it is very indistinctly marked, and scarcely darker than the rest of the surface ; it is somewhat tapering, coming to a point just above the anal plate, its angles are more numerous than those in *P. opilio*, but its general pattern is more like that of *P. parietinum*, there being generally, more or less strongly marked, a series of transverse curved dark markings, on each side of the median line, each pair of markings meeting in the centre in a largish white spot. These white spots form a central longitudinal line throughout the abdomen, and sometimes almost run into each other. In some examples, chiefly immature, there is another line of white spots, on each side, on the margin, of the dorsal band. The under side of the abdomen is white, thinly spotted with blackish, and there are also some blackish markings on the coxæ of the legs, the legs being

yellowish white, more or less distinctly and broadly annulated with dark yellow-brown.

The armature of the cephalothorax, abdomen, and legs appears to resemble in its general characters that of *P. parietinum*. It is the strongest in the male.

The *eye-eminence* is small, and placed distinctly nearer to the fore margin of the abdomen than to that of the caput, and nearer in proportion than in *P. parietinum;* the denticulæ on its summit are also fewer and less strong than in that species.

The *male* is of the usual shorter broader form than that of the female; it has the pattern on the abdomen less distinct than in that sex, and is commonly of a more generally suffused yellow-brownish hue. The metatarsi of the first pair of legs are shorter than usual and have no false joints in either sex. The denticulæ on the abdomen of the male are thickly studded in the rows and rather strong, while in the female they are almost obsolete.

This species can scarcely be confounded with either *P. opilio* or *P. parietinum*, being so much smaller and greyer in hue, and with the central longitudinal row of white or yellowish spots on the abdomen always more or less conspicuous. It is found under stones and at the roots and base of herbage. I have met with it abundantly in the Isle of Portland, in Purbeck, and on other parts of the coast district, as well as (less commonly) in woods and hedges and on heaths and downs in the Bloxworth district. It seems to me to be most abundant in the chalk and limestone formations, though by no means confined to them.

Phalangium minutum.

Phalangium minutum Meade (1853).

I have never seen an example of this species, and the types are unfortunately lost. I can, therefore, only give here a transcription of Mr Meade's characters of it.

Length $\frac{2}{3}$ lines. Body rather short and wide; Cephalothorax large, with a considerable-sized eye-eminence, crested with blunted tubercles. The colour is whitish or yellowish grey. The front

and sides of the thorax are variegated with a few irregular-shaped black spots, and the back of the abdomen is traversed longitudinally with a widish dorsal band having one triangular projection on each side. It is of a dark grey colour, mottled or variegated in a transverse direction with white. The palpi are furnished with a projecting process on the third joint, and together with the legs, which are rather short and stout, are of a yellow or brownish colour.

Mr. Meade was unaware of their locality and doubtful as to their sex, and one example only was adult.

GEN : PLATYBUNUS (C. L. Koch 1839),

MEGABUNUS Meade (1855) ad partem.

Cephalothorax with but few denticulæ ; those on the anterior margin of the caput very small, but some rather strong on the lateral margin ; and, if any, a few less strong on the upper side. *Eye-eminence* large, deeply channelled along the middle and surmounted by two rows of 8 or more small denticulæ or sharp tubercles in each row.

Lateral pores large.

Palpi armed with spines. The cubital and radial joints are widened at their extremity on the inner side into a more or less strong apophysis.

Falces short, simple in the female ; stronger and often armed with toothlike projections in the male.

Legs long, 2, 4, 1, 3, but not excessively so ; femora furnished with rows of small sharp denticulæ.

The *abdomen* has the normal dark dorsal band tolerably well defined, strongly marked in some instances, but without denticulæ.

Two species only have as yet been found in Britain.

PLATYBUNUS CORNIGER.

Phalangium cornigerum Herm (1804).

Megabunus corniger Meade (1855).

Platybunus corniger Simon (1879).

Pl. C, fig. 11, 12.

Female adult, 3 to 3½ lines, male 2 to 2½.

The *female* is of a dull greyish yellow-brown or clay colour mottled with a deeper hue and spotted with whitish.

The *abdomen* is smooth and destitute of spines or tubercles; it has the normal dorsal band darker than the rest, at times slightly reddish brown, tolerably, sometimes very distinctly, marked. This band is broad, slightly tapering, a little angulated on the sides, truncated at the third segment from the hinder extremity or sometimes thence continued indistinctly to the first segment; it has occasionally a narrow pale marginal line on each side and is marked with numerous pale whitish spots arranged roughly in tranverse lines. The underside of the abdomen, and the genital plate, are pale whitish.

The *eye-eminence* is large, about equal in length and breadth, deeply channelled longitudinally at the top, where it has two rows of not very large teeth or sharp spinous tubercles, eight to ten on each side.

The *cephalothorax* has a few very small denticulæ. Two or three of these are placed in an irregular group on each side of the median line in front of the eye-eminence, and occasionally there is one in the centre nearer the fore margin of the caput.

Falces rather long but not very strong.

Palpi moderate in length; the cubital joint has its inner extremity produced into a projection or apophysis about half the length of the joint and directed forwards; the same part of the radial joint is also enlarged or very slightly produced. The anterior edge of the humerial joint is armed with strongish pointed tubercles of different sizes, each ending with a small sharp spine and irregularly disposed along the joint.

There are a few very minute spines of the same nature beneath the radial joints.

The *legs* are rather long and slender, 2, 4, 1, 3, and the femora are furnished with minute denticulæ; they are of a dull pale brownish yellow; the extremity of the tarsi and the tarsal claw are black.

The *male* is of a shorter form and broader in proportion to its length than the female, resembling the female closely in colours and markings, which, however, are generally less well defined. The falces are armed with a strong, prominent, sharp, conical, hornlike protuberance near the extremity towards the outer side and near the articulation of the fang. This, however, is only developed at maturity. The segments of the abdomen in this sex are also unusually well marked on the under side.

This species is abundant in the Bloxworth district among herbage and underwood, as well as among dead leaves and moss in woods, becoming adult in spring and early summer. It appears to be widely distributed, at any rate in the South of England, and I have also received it from the North of England and Scotland, as well as from Devonshire from Mr. G. C. Bignell.

Platybunus triangularis.

Opilio triangularis Herbst (1799).
Platybunus denticornis C. L. Koch (1843).
Platybunus triangularis Sim (1879).

Pl. C, fig. 13.

Female, length 2 lines, male 1½ line.

This species is nearly allied to P. *corniger*, which it resembles closely in most of its characters, but may easily be distinguished by its smaller size, and also by its generally more ashy-grey colour. The abdominal dorsal band is dark brown, in general distinct, margined and spotted with white; some of the more conspicuous spots forming two parallel longitudinal rows, two white spots being in a transverse line on each segment. This band is also truncated at the thir dsegment from the end, but continued to the anal plate in a diminished and indistinct form, and margined with white. The rest of the upper side and sides are also thickly mottled and spotted with white.

The *eye-eminence* is larger in proportiun than in *P. corniger*, and the tubercular denticulæ are shorter and blunter, and usually fewer in number.

The *palpi* have stronger spines or denticulæ than those of *P. corniger*, the stronger ones more symmetrically arranged on the humeral joints; as well as some nearly as strong on the radial joints at the inner extremity; also on the humeral joints there are three similar, but smaller, prominent spines directed inwards on a slight protuberance. The apophysis at the inner extremity of the cubital joint is longer in proportion than in *P. corniger*, being about $\frac{2}{3}$rds the length of the joint itself, while that in *P. corniger* is no more than $\frac{1}{2}$.

The armature on the cephalothorax is similar but less strong than in that species; and the legs are shorter, and are more or less distinctly annulated with darker or lighter yellowish brown; the genital plate also is of a shorter more subtriangular form. Young examples are much the most strongly and distinctly marked.

There is but little, if any, difference in colours and marking between the sexes.

I first discovered this pretty little phalangid at Bloxworth in 1878, but the present is, I believe, its first record as a British species. It is tolerably common at most seasons of the year, chiefly at the end of winter and in spring, among grass and leaves, at the roots of herbage and among moss in woods and on heaths in the Bloxworth district. I have also received it from Ventnor, in the Isle of Wight, as well as from Ireland, co. Dublin, from G. H. Carpenter, Esq. I have never met with it on low trees and underwood, situations in which *P. corniger* is frequently found. It is rather sluggish and generally feeble in its motions.

GEN: MEGABUNUS (Meade).

Abdomen without denticulæ.

Cephalothorax armed with longish spines on the lateral margins, and a sing.e prominent one in the centre of the anterior margin of the caput.

Legs 2, 4, 3, 1 moderately long and armed with spines at the extremities of the femoral and genual joints, and also with some spinous tubercles along the coxæ of the 1st pair.

Palpi spinose ; the inner extremity of the cubital joint produced as in *Platybunus* into a strong apophysis.

Eye-eminence very large and armed with a double series of long divergent spines.

Lateral pores large, sub-marginal.

Only one species (*M. insignis*, Meade) is known as yet in Britain.

Mr. Meade included *P. corniger* with it ; it can, however, hardly be doubted but that these two species should be separated generically.

Megabunus insignis.

Megabunus insignis Meade (1855).

Plate C, Fig. 14.

Length of the *female* from 2 to 2½ lines ; length of the *male* 1½ to 2 lines. The colour of this remarkable species is a whitish, ashy grey, marked with black and yellow-brown.

The normal longitudinal dorsal band on the abdomen is strongly angular, yellowish brown, mottled with whitish grey, and well marked by a strong, though more or less broken, black marginal border. The sides, just at the junction of the upper and under segments, are also strongly, but irregularly, marked with black ; the underside is greyish ashy white, with some broken transverse parallel brown or blackish lines marking the different segments. The upper part of the cephalothorax, in continuation of the abdominal dorsal band, resembles that in colour, and the caput has a distinct submarginal black stripe on each side, just above the lateral pores. There are 3 marginal spines on each side of the cephalothorax, and a single prominent one directed forward in the centre close to the fore margin of the caput. This latter appears to be frequently, but not always, absent in young examples, while in the adult male it is stronger, issuing from a blunt tubercle. The *eye-eminence* is large with a constricted neck, or pedicle, and surmounted by two rows, 5 in each, of long, strong, divergent, sharp-pointed, tapering spines *of equal length*. The *legs* are moderately long—2, 4, 3, 1 of a dull yellow-brown hue with paler annulations, which are usually more

conspicuous in immature than in adult examples; at the anterior extremity, on the upper side, of each of the femoral and genual joints are two strong divergent spines, and there are also some strong spines on the coxal joints of the first pair. Each of the coxæ has a distinct yellow-brown transverse band at its extremity. The metatarsi of the 1st and 3rd pairs are without false articulations—those of the 2nd and 4th have, apparently, each one or two.

The *palpi* are strongly spinous; the fore extremity of the cubital joint on the inner side is produced into a strong obtuse apophysis, equal, or nearly so, to the joint in length. There is also a lesser apophysis at the anterior extremity, on the same side, of the radial joint. These apophyses are both thickly furnished with short hairs; at the fore extremity on the inner side of the humeral joint, and, directed inwards, is a somewhat corneous point, or projection, surmounted with small bristles. The colour and markings of the palpi are similar to those of the legs.

The *falces* are small, of a dull yellowish colour, marked with dark yellow-brown.

The male is similar to the female in colours and markings, with only, perhaps, a slight exaggeration of the various characters detailed above; though, as is usual in this sex, the abdominal segments are more distinctly marked.

I have met with this striking-looking species frequently in the Bloxworth district in the adult state in spring, summer, and early autumn, on the trunks of trees, as well as among moss, and at the base of herbage and among dead dèbris. On several occasions in very early spring I have found it in the immature state in great abundance among heather.

I have also found it under stones in the Isle of Portland, and have received it from various other parts of England; including Devonshire, from Mr. J. C. Bignell. The late Mr. Blackwall also found it in Wales, and Mr. Meade met with it in Yorkshire, and received it from Ireland, from whence (Co. Dublin) I have likewise had it sent to me by G. H. Carpenter, Esq. It has, therefore, a wide distribution.

M. Simon includes it as synonymic with *M. diadema* Fabr, which he describes and figures as having the fourth spine on the ocular eminence *shorter than the rest.* This, I understand from a correspondence on the point with M. Simon, is a constant character in the species he describes; while the *equal length* of the spines on the ocular eminence of *M. insignis* Meade is a constant character of the British form. I have never seen the least variation in any one of the numerous adult and immature British examples I have examined. I am strongly, therefore, inclined to believe it to be a distinct species from that of M. Simon, and should expect that, on comparison of the two, some other specific differences would become apparent. I have not, however, had an opportunity yet of comparing them. M. Simon does not appear to attach specific importance to the difference above noted, nor should I do so were it not for its being apparently a constant one.

GEN : OLIGOLOPHUS C. Koch, Frankport (1872)
E. Simon (1879)

Opilio Herbst-Meade (1855), ad partem.

The chief generic distinctions between this genus and *Phalangium* seem to be the presence of three spines or denticulæ of greater or less size in a transverse line on or close to the middle of the anterior margin of the caput; and the absence of false articulations in the metatarsi of the first pair of legs. In almost every other character there seems to be but little generic difference, though in some species the spiny armature of the cephalothorax and other parts is stronger and more marked. Having adopted the name *Opilio* as Linnæus' specific name of the type of *Phalangium*, I refrain from using it here as the generic name of the present group, and have adopted the name *Oligolophus* from Dr. C. Koch, who, however, includes in a separate genus—*Opilio*—some species which appear to me to be better included with the rest of his genus *Oligolophus.* Monsieur Simon attaches little importance either to the anterior row of 3 spines on the caput, or to the absence of false articulations in the metatarsi of the first pair of legs, and excludes

from *Oligolophus* a species (*O. spinosus* Bosc. = *Opilio histrix*, Meade), which seems to me certainly to belong to this group, including it in the genus *Acantholophus* C. L. Koch, of which we have not yet found any, at any rate characteristic, species in Great Britain. One of the species included by Mr. Meade in Phalangium (*O. morio—P. urnigerum* Meade), I have thought it best to include in this genus, differing as it does from *P. opilio*, and others of that genus, in the two distinguishing characters I have above mentioned. (See above under *Phalangium*). As limited here, *Oligolophus* contains nine known British species, one of them *O. agrestis*, Meade, being one of our most abundant Harvest-Men.

OLIGOLOPHUS MORIO, Fabr.

Phalangium morio, Fabr. (1779).

„ *urnigerum* Herm.—Meade (1855).

Oligolophus morio, Fabr.—Sim. (1879).

Pl. C, fig. 15, 16, and Pl. A, fig. 8.

Female length 3 to 4 lines, male 2 to 3 lines.

Female: Colour whitish yellow; dorsal abdominal band strongly and sharply angulated and of a deep brown or blackish hue edged with black and with a narrow white marginal border. Its anterior portion is distinctly continued on the cephalothorax and widening there covers the greater part of it; it is often divided longitudinally by a pale stripe, and tapers to the hinder extremity, which is more or less indistinct. The sides of the abdomen are more or less absent. with brown; the under side is unicolorous. The denticulæ on the abdomen are very small and inconspicuous, often more or less absent. Those on the cephalothorax are also small, the three characteristic ones are minute, of equal size, not very close together, in a transverse line near the fore central margin of the caput; behind each of the outer ones of these three are a few others, if anything, smaller and rather irregularly placed; and with the 3 anterior ones form a rough kind of transverse oval or nearly circular figure.

Ocular eminence rather small, surrounded by two rows, each of 5-7 minute teeth or denticulæ, and double (or nearly) the distance

from the fore margin of the caput, that it is from the abdominal division.

The legs are long, 2, 4, 1, 3 moderattely strong, dull yellowish, marked and striped or, in parts, suffused with brown. The femora and genuæ are armed with minute spines or denticulæ.

Palpi moderately long, similar to the legs in colour and markings. The extremity of the humeral joint on the inner side is slightly produced and furnished with a tuft of hairs. The cubital and radial joints are strong, and thickly clothed (mostly on the inner side) with short hairs.

Falces moderately long and strong.

The *male* differs much in general appearance and colour from the female. It is of a shorter, more quadrate form ; the abdominal dorsal band, including the cephalothorax, is black, as are, more or less, the legs and palpi. This band joins in posteriorly with the black colour of the sides and the other surrounding parts and is often lost in it, though in some (especially the Scotch examples) it is still well defined by a white or yellowish marginal border. The denticulæ on the abdomen are stronger and more conspicuous, forming transverse white rows. Those also on the cephalothorax, eye-eminence, and legs are likewise stronger, and there are a few beneath the tibiæ of the first pair ; there are likewise some on the upper side of the anterior extremity of the first joint of the falces as well as at the base of the second joint. The under side, as well as that part of the upper side and sides not suffused with black, are yellowish white, offering a strong contrast in the general appearance.

This species is abundant among grass and other herbage, also on low bushes, underwood, &c., as well as running on tree trunks, and secreted under stones, and appears to be generally distributed. Its usual time of attaining maturity is the summer and autumn. Examples received from near Glasgow and other parts of Scotland were larger and more richly coloured than any I have ever met with in England, the abdominal band being in these deep yellow-brown, pale along the middle, broadly margined with black, and surrounded with a very distinct whitish yellow border ; the

denticulæ were also stronger. Although the usual absence of the two small but prominent teeth between the fore margin of the caput and the base of the falces will generally prevent the species being mistaken for *Phalangium opilio*, yet too much stress must not be laid upon this, as I have an undoubted adult male of *O. morio* from Scotland, in which two small adjacent projecting pointing tubercles each terminating with a minute black spine, are plainly visible in the centre of the corresponding space where they are found in *P. opilio*.

Other characters, however, both of colour, markings, and armature, and the difference also of habitat are quite sufficient for the discrimination of the two species.

Oligolophus alpinus.

Opilio alpinus Herbst (1799).

Oligolophus alpinus Herbst-Simon (1879).

Pl. D, fig. 18.

This species is so nearly allied to the foregoing *O. morio*, that it seems questionable to me whether it be really distinct or not. It resembles it in size, colours,and markings, and most other characters. Mons. Simon says that the *males* are readily distinguishable by the following characters :—" The metatarsi of the third pair of legs are slightly curved, thicker, attenuated at the two extremities, and the tibiæ of the first pair have a series of spines *(spicules)* beneath them, which are always wanting in *O. morio*." I submitted several years since examples from * Scotland, Isle of Arran, &c., to M. Simon ; some of these he has determined to be *O. morio* and others *O. alpinus*. With regard to his first distinguishing character, I can find no difference between those thus determined ; and, as respects the second distinction, the spicules on the inferior side of the tibiæ of the first pair of legs are equally numerous and strong in all of them, while there are certainly *some*, though few and not so strong, beneath the first tibiæ of undoubted examples of

* Kindly collected for me by my cousin, the late Colonel Pickard, R.A., V.C., &c., at Balmoral, and Mr. H. C. Young, late of Glasgow.

O. morio from my own and other districts in the South of England. With regard to the *females*. M. Simon, while complaining that Drs. Koch and Thorell have given no positive character by which to separate them, confesses that he himself has been no more fortunate in this respect than those authors. As far as I can offer any opinion I suspect that the two species now known as *O. morio* and *O. alpinus*, with another, quite as nearly allied, continental species, *O. palliatus* Latr, embrace a widely dispersed, numerous, and exceedingly variable form, of which those inhabiting the lower and less elevated regions are *O. morio*, while those in the more mountainous or Alpine districts are *O. alpinus* and *O. palliatus*, the two latter presenting an extreme development of colours, markings, and spiny armature, all of which are comparatively less marked and weaker in the plains and lower altitudes than higher up in the mountains. A long series collected in all these different localities, plains, hills, and mountains, would, I suspect, on comparison, prove the above. It is very likely that high up on the mountains the differential characters noted would be found to be sufficiently constant and that the *O. morio* form would be absent, and thus the local form *O. alpinus* would be the established one there ; but the difficulty would arise when lower down towards the plains both forms would probably be found gradually intermixing with, and then giving way to, *O. morio*. Pending, however, further research, I have thought it best for the present to include *O. alpinus* as a species recognised by authors, and found on the mountains in Scotland. Pl. D shows three striking varieties of this species.

Oligolophus cinerascens.

Opilio cinerascens, C. L. Koch (1839).

Oligolophus cinerascens, C. L. Koch—Sim. 1879.

Pl. C, fig. 17.

This species is rather smaller than *O. morio*, the female measuring 3 lines, the male 2½ lines. There will, however, be probably some variation in this as in most of the other allied species. It is very nearly allied to *O. morio* ; its colour is greyish

yellow-white. The normal angular band on the abdomen varies in depth of colour, from being hardly distinguishable to dark brown or nearly black, and is most commonly divided longitudinally by a pale or reddish stripe, and bordered with white. The angulation of this band is a little different from that of *O. morio*, and in some examples the ground colour of the upper side is a warm violet-brown, on which oblique lines of white dots are conspicuous, the dorsal band being crossed by three rows of white tubercular denticulæ. These examples, the dorsal band being margined with white, are very handsome.

The armature of the cephalothorax is very similar also to that of *O. morio*, but the denticulæ, especially those in front of the eye-eminence, are, though similarly placed, fewer in number and less in size.

The *eye-eminence* is small, and the teeth or denticulæ on the summit (5—9) are smaller than in *O. morio*. The *legs* are rather short and strong, pale brownish yellow, and devoid of spines or denticulæ.

Examples of this species, which seems to belong to Alpine or northern districts, were sent to me from Scotland by Mr. H. C. Young (formerly of Glasgow) and Sir Walter Elliott, and have been examined by Mons. Simon.

The shorter and unarmed legs, and the fewer denticulæ on the caput, will probably render this species more easy to determine than *Oligolophus alpinus*.

Oligolophus agrestis.

Opilio agrestis Meade (1855).

Oligolophus ephippiger, Sim. (1879).

Pl. D, fig. 19, and Pl. A, fig. 7.

Female length $2\frac{1}{2}$ to $3\frac{3}{4}$ lines ; male, 2 lines.

This abundant species is very variable in the colour and depth of its markings. The ground colour is greyish white, often somewhat silvery, and the markings vary from brown to reddish brown, yellowish, black, and grey, and the abdomen is numerously studded

about with white points in somewhat transverse rows ; the normal dorsal band on the abdomen (extending as usual into the thorax) is strongly, but rather obtusely and irregularly angular, brown, yellowish, or reddish, often margined, especially on the fore part, with a more or less broken blackish or deep brown line—frequently this band is only traceable by its dark margins. It is truncated at the 3rd segment from the end, but sometimes indistinctly and brokenly continued. On each side of it, towards the hinder half of the dorsal band, the surface is strongly suffused with dark brown, becoming deeper as it runs back, so as quite to obliterate the margins of the band. The under side is marked and mottled with grey, brownish, and sometimes reddish. The abdomen is smooth and has scarcely any perceptible denticulæ, and those on the cephalothorax are very few and small ; at the centre of the anterior margin of the caput is a group of 7 or 8, of which the three foremost form a transverse line, the middle one being the largest and strongest, in advance of the others, directed slightly forwards, and often with another smaller one just behind it.

The *eye-eminence* is small, of a whitish colour, armed with two rows of very small tubercular denticulæ, few in number, and some, often more or less, obsolete. The *legs* are rather short, yellowish, strongly marked and clouded, but scarcely *annulated*, with brown and reddish brown, furnished with hairs, or fine bristles only—none amounting to spines or denticulæ. Their relative length appears to be 2, 4, 3, 1. The genital plate is somewhat sub-triangular, rounded at the anterior end, in the centre of which is a small circular indention, looking like a small piece bitten out.

Mons. Simon appears to have concluded this species to be identical with *Opilio tridens* C. L. Koch, but having carefully considered the description and figures given of the latter by Koch, I am convinced the present species is distinct and most probably identical with the *O. ephippiger* of M. Simon. It is in Dorsetshire a very abundant species in woods and on low trees, bushes, heather, and herbage of all kinds, as well as among moss and at roots of herbage, becoming adult in late summer and autumn ; I have also received it from

many other parts of England, as well as from Scotland. It is closely allied to the next species, *O. tridens* C. L. Koch, but may easily be distinguished by the shorter and more unequal 3 spines on the fore margin of the caput, by its almost unarmed eye-eminence, the less pointed form of the hinder part of the abdomen, and the circular notch at the anterior margin of the genital plate, as well as by its more varied colouring—which in *O. tridens* is of a much more uniform yellow-brown. The latter is also not so common, and is most usually found among moss and herbage in swamps and other wet places.

OLIGOLOPHUS TRIDENS.

Opilio tridens, C. L. Koch (1836).

Oligolophus tridens, C. L. Koch—Sim. (1879).

Pl. D, fig. 23.

Female, length, $2\frac{3}{4}$ to 3 lines ; male, 2 to $2\frac{1}{2}$ lines.

This species, though rather larger, is nearly allied to *O. agrestis* Meade. The general coloration is, however, of a more yellow brown, and the darker portions are often of a richer and deeper bistre-brown, never assuming the varied hues of *O. agrestis*. The cephalothorax is of a more or less completely deep brown colour, which is continued in the normal dorsal band on the abdomen ; this band is scarcely angulated, the sides being nearly parallel, with broken but strong deeper coloured marginal markings, and it does not often extend beyond the truncation at the third segment : the surface between that and the end of the abdomen is often paler than the rest of the ground colour, and very conspicuous. On each side of the dorsal band, towards and at its hinder part, the surface is deeply suffused with dark brown, generally, however, keeping within the longitudinal limits of that part of the band. The posterior part of the abdomen has a rather drawn out or elongated appearance. The Cephalothorax has several distinct spines or denticulæ on its margins. Those on its upper side are also stronger than in *O. agrestis*, the three in a transverse line at the central part of the fore-margin of the caput are longer, more nearly of the same size (though the central one is slightly the

longest); they are also nearer together than in that species and in a straight line, and all three are vertical or very nearly so. The denticulæ (5-6) on the eye-eminence are always present, and quite distinct, though of small size. The abdominal segments are also furnished with transverse rows of minute spines or denticulæ. The *legs* are moderately long, 2, 4, 3, 1, of a brownish-yellow hue marked with reddish brown chiefly in slender longitudinal lines along the angles of the femora, genuæ, and tibiæ. The armature of the legs is very similar to that *O. agrestis*, but is stronger. The genital plate has no notch in the margin of the fore extremity. The *male* is similarly though more richly coloured than the female, but is of a narrower form, and the armature of the different parts is stronger.

This is a tolerably abundant species, at the end of summer and in autumn, among grass, rushes, moss, and débris in damp places, and swamps, in the Bloxworth district, but is not so abundant nor so generally distributed as *O. agrestis*. I have received it from the Cheviot Hills from Mr. James Hardy, also from co. Wicklow, Ireland, from Mr. G. H. Carpenter, and do not doubt but that if it were looked for it would be found very generally distributed, in suitable situations throughout England.

Oligolophus palpinalis.

Opilio palpinalis Herbst (1799).

Opilio terricola C. L. Koch—Meade (1855).

Pl. D, fig. 20.

Female, length, $2\frac{1}{2}$ to $2\frac{3}{4}$ lines; male, $1\frac{1}{2}$ to 2 lines.

The general colouring of this species is yellowish brown, with richer-brown markings. The dorsal abdominal band is large, scarcely angulated, but often slightly tapering (behind the constriction near the thorax) towards the end; it is sometimes almost obsolete; the three characteristic spines at the middle of the fore margin of the caput are strong, close to each other in a straight transverse line, nearly vertical (slightly directed forwards), the middle one a little longer than the others; in

one example of the male it was nearly double the length of the middle spine.

The *eye-eminence* is of moderate size, armed with two rows (near to each other) of strongish, rather blunt-pointed, spines, or denticulæ of which the second from the anterior end is sometimes longer than the rest.

The *legs* are short, of a light yellowish brown colour, annulated with slightly reddish brown, 2, 4, 3, 1, rather slender, furnished with hairs only, except at the fore extremity, on the upper side, of the genuæ and femora, where there are two blunt denticulæ.

The *palpi* are similar in colour to the legs. The humeral, cubital, and radial joints have each of them a small production, or apophysis, clothed with hairs, at the inner extremity, that on the cubital joint being the strongest. These apophyses appear to be stronger in the female than in the male. The outer side, rather in front of the humeral joint, is armed with a row of 5 strong denticulæ—not all quite equal in length.

The *abdomen* is smooth, without bristles, spines, or denticulæ.

This species may easily be distinguished from the two preceding by the greater length and strength of the armature of the caput, and eye-eminence, and by the armature and other parts of the structure of the *palpi*. It is also smaller though very similar in colour to *O. tridens* C. L. Koch.

The male, besides being smaller than the female and darker in colour, differs in the greater strength of the 3 anterior spines and those on the eye-eminence.

I have frequently met with this very distinct little phalangid, though not in any abundance, among moss and leaves and at roots of herbage in woods at Bloxworth in October and November for many years past, but, excepting the locality given by Mr. Meade—North Wales—have not received it from any other part of Great Britain

Oligolophus Meadii sp. n.

Pl. D. fig. 21, 22.

Female, length $1\frac{3}{4}$ lines; male, 1 line.

The general colouring of this species is pale yellowish on the cephalothorax and legs, but ashy, and sometimes silvery, grey on the abdomen, with greyish brown and darker markings.

The *cephalothorax* is pale dull yellowish with several marginal denticulæ, and there are two parallel marginal brown lines running all round it. The middle of the anterior margin of the caput is armed with the three characteristic spines, near together, in a straight line, and directed forwards ; the central spine is at least double the length of the others, and often more. The *eye-eminence* is small, and the denticulæ on its summit also small, though distinct.

The normal dorsal abdominal band is not angulated, and is indicated by (in many cases rather obscure) brown or blackish marginal spots, which are usually strongest posteriorly. Each segment is furnished at its hinder edge with a rather closely studded transverse row of bluntish pointed, strongish white denticulæ, giving the abdomen a very bristly appearance.

The sides are marked with irregular, oblique, grey-brown markings, which also spread more or less over the under side.

The *legs* are moderately long, rather slender, of a dull pale yellowish colour, annulated and clouded with yellow-brown ; excepting two small denticulæ at the fore end on the upper side of the femora and genuæ, they are only furnished with hairs at the extremity ; on the under side of each coxal joint is a small, but distinct, blackish spot. The *palpi* are similar to the legs in colour and markings.

Some twelve years ago I found several very young examples of this very distinct and pretty species on Bloxworth Heath, but Mons. Simon doubted its specific distinctness. I have, however, frequently met with it since in a more advanced condition, and last autumn, adult, showing no departure, however, from the general characters of the immature examples. Its small size, and grey hue, as also, and particularly, the great disproportion in the relative length of the central and lateral spines on the fore margin of the caput, and the rows of denticulæ on the abdomen, will serve to

render it easily distinguishable from all others known to me as yet.

I have found it frequently, but not abundantly, under old turves and among heather stems and roots on the heath at Bloxworth. It gives me great pleasure to connect this species with the name of my old and earliest instructor on the subject of Spiders and Harvest-Men—Mr. R. H. Meade, of Bradford.

Oligolophus ephippiatus.

Acantholophus ephippiatus C. L. Koch.
Oligolophus vittiger Sim., 1879.
Opilio ephippiatus C. L. Koch (Meade, 1855).

Pl. E, fig. 24.

Female, length, $2\frac{1}{2}$ to $3\frac{1}{2}$ lines ; male, 2 to $2\frac{1}{2}$ lines.

The general colouring of this very distinct species is a cream yellow, minutely marked and spotted with white on the abdomen, the legs being pale yellowish, striped with brown, and suffused with yellow brown at the anterior extremities of the femora, genuæ, and tibiæ, giving them an annulated appearance. The fore half of the tibiæ of the first pair are often nearly black. The *cephalothorax* is marked with yellow-brown in continuation of the normal dorsal abdominal band, which is broad, of a rich deep brown, often approaching black, and not angulated, the sides being almost parallel, excepting a slight constriction followed by an enlargement towards the thorax : the posterior extremity of the band is squarely and very distinctly truncated at the third segment, and (but rarely) followed by one or two brown spots towards the extremity of the abdomen. On the anterior margin of the caput, in the centre, is an eminence on which are the three characteristic spines, or strong denticulæ, in a transverse line, near together, of equal length, rather directed forward, the middle one slightly in advance of the others ; behind these are two others, shorter and of less size. The margins of the cephalothorax are armed with several short spines, or denticulæ. The *eye-eminence* is rather small, and armed on the top with two rows, rather close together, of several

(4 or 5 each), small but distinct denticulæ. The *legs* are rather long and tolerably robust, they have the femora and genuæ armed with minute denticulæ, and at the fore extremity on the upper side of each of the two latter joints are two denticulæ of a larger size. The abdominal segments have a few very minute denticulæ along their posterior margins.

The *palpi* are furnished with numerous coarse hairs, and there are some small blunt denticulæ ending with minute black spines along the fore side of the humeral joint.

The male is smaller, and has the abdominal dorsal band darker and more distinct than the female. The legs also in this sex are longer, and the denticulæ on the different parts rather stronger.

Mr. Meade speaks of this species as abundant in various parts of England and Wales at the roots of grass, meadows, and pastures in summer. I have myself only met with it, though fairly common, among low plants, grass, and herbage in woods at Bloxworth and its neighbourhood at the end of June, and near Hoddesdon in Hertfordshire early in July. That these examples are identical with Mr. Meade's has been proved by comparison with types kindly lent to me by himself.

M. Simon includes Koch's *Acantholophus ephippiatus* (which I feel no doubt is the same as our British form) among the species of *Acantholophus*, not known in France, but I am convinced that *Oligolophus vittiger* Sim. is the same as the species now recorded, and which presents as far as I can see, no characters to justify its separation from the genus *Oligolophus*.

Oligolophus spinosus.

Phalangium spinosum Bosc, 1792.
Opilio histrix Latr (Meade, 1855).
Acantholophus spinosus, Sim., 1879.

Pl. E, fig. 25.

Female, length, $3\frac{1}{2}$ to $4\frac{1}{2}$ lines; male, 3 lines.

General colour dull brownish-yellow or clay colour, mottled and marked with a paler hue, as well as with different shades of brown.

The margins of the *cephalothorax* are rather strongly and roundly indented, and armed with small tubercles and denticulæ. The centre of the fore part of the caput is raised in a kind of longitudinal ridge, which has at its fore margin three strong denticulæ of equal length close together in a transverse line and directed forwards; behind these are 2—4 very small denticulæ.

The *eye-eminence* is small, and the denticulæ surmounting it are very minute.

The *abdomen* has only a few very minute denticulæ or tubercles on its segments. The dorsal band is distinct, of a darker hue than the rest, and bordered with strongish marginal spots or irregular blotches of brown to blackish, it is slightly angular in the middle, constricted just behind the thorax, and abruptly and squarely truncated at its posterior extremity. At the fore extremity it runs on to the thorax, but not very distinctly. In the abdominal pattern there is a strong resemblance to *O. ephippiatus*, which is, however, a very much smaller species.

The *legs* are rather short, 2, 4, 1, 3, tolerably strong, of a dull brownish-yellow hue mottled with whitish and somewhat obscurely annulated with reddish brown. They appear to be furnished with minute hairs, but are quite destitute of armature, except the exinguinal joints, which are furnished with small tubercles or blunt denticulæ.

Palpi short, rather strong; the cubital joint is considerably shorter than the radial.

This is a rare species in Great Britain. I have found it at Hursley, near Winchester, and at Corfe Castle, Dorset, and have received it from Isleworth (from Mr. Fenn), also from Gloucestershire, and one or two other localities. It appears to be restricted to chalk or lime-stone districts. Mr. Meade received it from Leicestershire. Its size as well as the greater strength and forward direction of the three characteristic spines on the fore-margin of the caput will serve to distinguish it at once from all our other known species.

Following Dr. L. Koch, Mons. Simon included this species in the genus *Acantholophus*, but I can find no good characters by

which to distinguish it from *Oligolophus*. The name *Acantholophus* would be in any case quite a misnomer even if the genus to which this species belonged were distinct from *Oligolophus*, inasmuch as the eye-eminence is surmounted by only very minute spines or denticulæ, far less conspicuous in fact than in some others of the genus *Oligolophus*.

Family Nemastomatidæ.

The cephalothorax has no transverse folds behind the eye-eminence, but is soldered into one piece with the anterior segment of the abdomen. The anal plate is formed of four portions; the coxæ of the legs are free, their anterior edges furnished with rows of denticulæ. The second pair of legs have no maxillæ attached to them. Palpi long, simple, digital joint much shorter than the radial and cubital joints, and without any terminal claw. The small supernumerary joint between the exinguinal joints and femora is wanting.*

Only one genus is known of this family.

GENUS NEMASTOMA, C. Koch (1839).

General form, short oblong-oval. *Eye-eminence* very near the anterior margin of the caput. No lateral pores; *Falces* small. *Epistoma* in form of a sharp pointed or else rounded tubercle.

Palpi at least twice the length of the body. *Legs* in some species long and slender, sometimes excessively so, in others shorter and stronger.

Nemastoma lugubre.

Phalangium lugubre, O. F. Muller (1776).

Nemastoma bimaculatum, Fabr. (Meade, 1855).

Pl. E, fig. 26.

Female, length $1\frac{1}{2}$ to 2 lines; male, 1 to $1\frac{1}{2}$ lines.

General colour black or deep blackish-brown, with two conspicuous somewhat oblong, white or cream coloured, often silvery, geminated spots in a transverse line at the hinder margin of the cephalothorax, The cephalothorax is, however, scarcely marked from the abdomen, of which last, in fact, all except the last 3 segments are soldered together.

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* See *Addenda*, postea.

The upper side of the abdomen is of a somewhat corneous nature, and has transverse rows of very minute tubercles or granulations, chiefly corresponding with the posterior margins of the different segments.

The *cephalothorax* is also granulose and has a notch in the middle of the fore margin of the caput.

The *eye-eminence* is near the anterior side of the caput, and has no regular crest, but only some very small tubercles.

The *legs* are not very long. They are black or dark brown with rather paler metatarsi and tarsi. Some of the joints are tolerably strong, especially of the first pair. They are furnished sparingly with very fine short hairs, and the bases of the femora are narrowly annulated with yellowish.

The *falces* are small. Those of the male have a strong, blunt process at the extremity of the first joint projecting forward over the second joint. The *palpi* are slender, as long, or nearly so, as the body. The digital joint does not much exceed half the length of the radial, and has no terminal claw. They are furnished with numerous fine but claviform hairs.

Excepting in the structure of the falces, the sexes do not differ much.

In one female in my possession the ovipositor was extended, and was as long or longer than the whole body.

This is an abundant species—but rather sluggish—among moss, at the roots of herbage, among dead sticks and other detritus in hedges and woods, as well as under stones and logs, and may be found at all seasons, even during the depth of winter. I have met with it in many parts of England, and in numerous localities in Dorsetshire. It has also been sent to me from Ireland by Mr. G. H. Carpenter.

Nemastoma chrysomelas.

Phalangium chrysomelas, Hermann (1804).

Nemastoma chrysomelas Meade (1855), Simon (1879).

Pl. E, fig. 27.

Female, length $1\frac{1}{4}$ to $1\frac{1}{2}$ lines; male, 1 line.

General colouring, yellowish brown with richer brown markings, and silvery (sometimes somewhat golden) spots. The form is oval, the eyes are placed at the inner extremities of two somewhat triangular processes extending from the sides of the cephalothorax towards the front and centre where they are raised, with their extremities surmounted by bifid (or sometimes trifid) black or deep brown tubercular prominences or denticulæ forming a double crest above the eyes. The lateral margins of the processes are also studded with similar prominences, as also are the posterior margins of the abdominal segment (which are very distinct) and those of the transverse sutures behind the eyes.

The *falces* are dark brown.

The *legs* are very long, slender, brown, the genuæ darkest, and the extremities of the femora and tibiæ palest, giving the legs a somewhat annulated appearance. The femora have a series varying in number, most numerous on the 4th pair, of narrow pale rings near the middle, giving the appearance of small false joints. The legs are furnished thickly with short hairs ; many of these on some of the joints are of the nature of minute denticulæ.

The *palpi* are long and slender, deep brown in colour, and thickly clothed with prominent hairs whose apices are small round pale knobs. The radial joint is rather less than half the length of the cubital.

The *abdomen* is dark yellow-brown above, marked along the centre with a double series of silvery, or pale golden, spots, two on each segment in a transverse line near to each other, though wider apart on the hinder portion of the abdomen. The spots on the anterior segments are often confluent, and sometimes some of the spaces between the abdominal segments are also of a golden hue. The male resembles the female except in being smaller, and having a short strong prominent corneous process at the fore extremity of the first and another at the hinder extremity of the second joint of the falces.

Although it cannot be considered a common species, this very pretty and delicate little phalangid is by no means unfrequent in

the Bloxworth district among dead leaves, moss, and débris in woods and hedges, and I have also found it under stones at Portland. Mr. Meade has met with it near Bradford in Yorkshire, and it has been sent to me from Scotland and Northumberland by Mr. James Hardy, and from Carlisle by the Rev. F. O. P. Cambridge.

Fam. Trogulidæ.

Cephalothorax soldered to the abdomen without any furrow behind the eye-eminence; the abdomen has the greater portion (all except the 3 posterior segments) formed into a large scutum or shield. The ventral segments are six in number, and the anal plate is composed of four portions.

Anterior margin of the cephalothorax prolonged into two plates bent forwards and united to form a kind of hood covering the mouth parts, on or at the base of which the eyes are placed.

Legs strong, those of the second pair longest and least strong, the coxæ are soldered to the under surface of the body, and the second pair are devoid of maxillæ. *Palpi* are short or moderate in length; the basal joints covered by the hood, without terminal claw.

This family is subdivided into two sub-families, one only of which (*Trogulinæ*) is as yet known to be represented in Britain.

Trogulinæ.

Ventral segments soldered into one piece, but indicated by transverse grooves, and also divided longitudinally by a furrow.

Palpi short, not half the length of the body; cubital joint much shorter than the radial.

Legs moderately long, strong; tarsi very distinct from the metatarsi, the number of sub-divisions or joints varying in the different legs from 1 to 4. Terminal claw of first, third, and fourth pairs long, that of the fourth pair small. Two genera have been found in England, each being represented by only one species.

GENUS ANELASMOCEPHALUS, Sim.

Form oval, convex ; much narrowed and depressed in front ; seventh upper segment of abdomen, slightly curved, and placed vertically on the posterior truncation. The eighth is brought round to the ventral surface, and is straight, strongly curving round the anal plate. Hood small, projecting forward, obtusely indented in front, furnished on the anterior edge with numerous long strong spines.

Palpi short. Legs moderately long, strong. Tarsi of the first and second pairs consist of three articles, and of four on the 3rd and 4th pairs of legs ; terminal claws almost equal in length ; those of 1 and 2 least strong. The femora are abruptly narrowed at the base.

One species only is known in Great Britain.

ANELASMOCEPHALUS CAMBRIDGII.

Pl. E., fig. 29.

Trogulus Cambridgii, Westw. (1874), Thes. Ent. Oxon, p. 202, Pl. 37, f. 6.

Length, $1\frac{1}{2}$ to $1\frac{3}{4}$ lines.

The whole of this curious arachnid is of a dark brown colour, sometimes nearly black, but it is so generally covered and disfigured by dirt that it is not always easy to trace clearly all the different points of structure.

The *eyes* are on each side of the hood near the anterior margin of the cephalothorax ; the spines or tuberculous denticulæ on each side in front of the hood are strong and curved. The legs, except the tarsi, are thickly clothed with strong tuberculous denticulæ terminating with long bent bristle-like points. The particles of the dirt among which these animals live clog up the spiny armature of the legs, and greatly obscure it. Among these spines are numerous ordinary hairs and bristles.

This species was first discovered by myself at Bloxworth in 1873 among moss and débris, and was shortly after described and figured by J. O. Westwood, Esq., M.A., Hope Professor of Zoology, Oxford. I have since occasionally met with it at various seasons of the year

in the same district, as well as under stones and rocks at Portland. It has also been sent to me from Ventnor, Isle of Wight, by Mr. Pearson, and from Cornwall by Mr. A. J. Michael. It must, however, I think, at present, be looked upon as one of our rarer arachnids. It is more abundant in France, where it has been since discovered by M. Simon (Arach. de France vii., p. 299), and it is also found in Germany.

GEN : TROGULUS Latr.

Body oval, depressed, narrowed in front. The two posterior segments of the abdomen turned under upon the ventral surface and bent round the anal plate. *Hood* oval, rounded or conical, formed of two stout plates, curved, and soldered together at the top, their inner edge armed with closely set tuberculous spines, hiding the interval between them ; their outer edge is broad at the base and cut away vertically. *Eyes*, widely separated. *Palpi* furnished with either simple or claviform hairs, of moderate length ; radial much longer than the cubital joint. *Legs* short, strong, with a false articulation at the base of the femora. Tarsi of the 1st and 2nd pairs of legs 2-jointed, of the 3rd and 4th pairs 3-jointed. Claws of 3 first pairs, long and strong, and much curved, that of the 2nd pair much smaller.

Of this genus only one species has as yet been met with in Great Britain, and that in the immature state.

TROGULUS TRICARINATUS, Linn.

Pl. E, fig. 28.

Length of an immature example rather over 1 line (that of the mature form being about $2\frac{1}{2}$ lines).

The form of this immature specimen is somewhat oblong-oval rather rounded behind, its colour bright violet-purple. The line of junction of the thorax and abdomen is indicated by a strong groove. The hood is represented by a strong prominence on the fore part of the caput divided into two parts, or blunt horn-like projections, in front, with an eye at the base of each projection ;

the interval between the eyes being rather more than two eye-diameters. The mouth parts are not hidden by the hood at this stage. The legs are short and rather strong, of a pale whitey-brown hue, the tarsi, dark brown. They are furnished, but not thickly, with short bristly hairs. The terminal claw of the hinder pair of legs is stronger and much more hooked than the rest.

A single example of the immature form was found among dead leaves and other débris in the shrubbery at Bloxworth Rectory by my son, C. Owen P.-Cambridge, in April, 1889. I believe it to be of this species, but cannot be quite sure, as the adult form differs so much in several respects from the young. In the adult of *T. tricarinatus* the colour is brown, and the femora of the first pair of legs are furnished on the outer side with a fringe of spines similar to those on the hood.

In the absence of adult examples I have taken the generic characters given above from "Les Arachnides de France" by Mons. Simon.

Differential Analysis of the Genera Found in Great Britain.

Sclerosoma.—*Cephalothorax* pointed in front and ending with a sharp spine. *Abdomen* armed with strong denticulations. *Legs* spinous. *Eye-eminence* spinous; no lateral pores.

Liobunum.—*Body* round, or nearly so, and smooth. *Eye-eminence* round and devoid of denticulations. *Legs* excessively long and slender.

Phalangium.—*Abdomen* oblong-oval; furnished with fine denticulations. *Eye-eminence* moderate in size and crested with small or moderate sized, but distinct, denticulations. An irregular group of denticulæ on or close to the middle of the fore-margin of the caput. *Femora of legs* spinous, with, usually, false articulations in the metatarsi of the first pair of legs.

PLATYBUNUS.—Short oblong-oval. *Abdomen* smooth or nearly so. *Eye-eminence* large, crested with blunt denticulæ. *Palpi* spinous.

MEGABUNUS.—Short-oval. *Abdomen* smooth. *Eye-eminence* large, crested with long, strong, sharp spines. *Legs* furnished with a pair of spines at the anterior extremity on the upper side of the femora and genuæ. *Palpi* strongly spinous.

OLIGOLOPHUS.—Oval. *Abdomen* either nearly smooth or furnished with fine denticulæ; rarely with rather strong blunt ones. *Eye-eminence* small, crested with minute to strong denticulæ. Centre of anterior part of caput furnished with a group of spines, of which three form a straight, or nearly straight, transverse row near or close to the margin. *Legs* with femora more or less denticulated, but no false joints in the metatarsi of the first pair.

NEMASTOMA.—Short-oval. Junction of thorax and abdomen only evidenced by a slight grooved line; the thorax forming with the first 5 segments of the abdomen a large shield or scutum. *Abdominal* segments bordered with blunt tubercles or denticulate processes. *Cephalothorax* without lateral pores. *Eye-eminence* crested with blunt tubercles similar to those on the abdomen. *Palpi* long and slender.

ANELASMOCEPHALUS. — Elongate, oblong-oval; narrow, and depressed in front; last abdominal segment turned under upon the ventral surface and strongly curved round the anal plate. *Eyes* on a hoodlike eminence, which projects over and covers the mouth parts. *Tarsi* of the legs divided into 3 articulations in the first and second pairs and 4 in the third and fourth.

TROGULUS.—Two last abdominal segments turned under upon the ventral surface and surrounding the anal plate.

Tarsi divided into 2 articulations in the first and second, and into 3 articulations in third and fourth pairs of legs.

Differential Analysis of British Species.

Sclerosoma.—Abdominal denticulæ or tubercles short, blunt. Legs without spines or tubercular denticulæ on the tibiæ. *quadridentatum* Cuvier.

Abdominal denticulæ sharp pointed. Legs very spinous; tibiæ also armed with spines. *Romanum* L. Koch.

Liobunum.—Anterior portion of caput dark. *Eyes* encircled with a dark ring. *rotundum* Latr.

Dark anterior portion of caput divided longitudinally by a white or pale band. *Eyes* encircled with a white ring. *Blackwallii* Meade.

Phalangium.—Underside white. *Female*, abdominal dorsal band dark, clearly defined, strongly angulated. Two small prominent teeth in a transverse line between the fore part of caput and falces. *Male*, second joint of falces produced into a more or less strong hornlike process at the base. Palpi long, especially the digital joint. *opilio* Linn.

Underside more or less suffused spotted or mottled with brown or blackish; coxæ marked with, usually, elongate spots. Abdominal dorsal band ill defined, the more distinctly characteristic abdominal markings being a series of curviangular dark transverse stripes. *parietinum* Degeer.

Abdomen divided longitudinally by a distinct, white, generally interrupted, rather tapering stripe. Underside white, thinly spotted with blackish; coxæ marked with a few blackish spots and linear markings.; general hue light grey. *saxatile* C. Koch.

PLATYBUNUS.—Pale greyish yellow-brown; dorsal band dark yellowish brown. Spines on the humeral joint of palpus irregularly disposed. Apophysis at the inner extremity of the cubital joint half the length of the joint itself. Falces of *adult male* armed with a sharp horn-like prominence near the extremity towards the outer side near the articulation of the fang. *corniger* Herm.

Colour ashy grey, spotted with white; dorsal band greyish brown; in general distinctly marked. Eye-eminence larger than in the last species. spines on the humeral joint of palpus strong, and (the larger ones) tolerably regularly disposed in a straight line. Cubital apophysis two-thirds the length of the joint. *triangularis* Herbst.

MEGABUNUS.—Eye-eminence large with a constricted neck or pedicle, surmounted by a crest of two rows of long divergent spines (5 in each row) of equal length. Palpi strongly spinous. *insignis* Meade.

OLIGOLOPHUS.—The three characteristic spines in the centre of the anterior margin of caput very small, of equal size, rather wide apart and scarcely equidistant from each other. Spines beneath the tibiæ of 1st pair of legs often absent; when present few and not strong. *morio* Fabr.

Spines beneath the tibiæ of 1st pair of legs numerous and strong. *alpinus* Herbst.

Normal dorsal abdominal band very variable in distinctness and depth of colour, nearly always divided longitudinally by a pale or reddish stripe. Denticulæ on thorax, eye-eminence, and caput very small; legs short.

cinerascens C. Koch.

The three characteristic spines (or denticulæ) on front margin of caput very small. Central spine

longest and strongest, a little in advance of the others and directed slightly forward. Denticulæ on eye-eminence very minute, often almost obsolete; a rounded notch at the fore end of genital plate. *agrestis* Meade.

The three central anterior spines rather close together, vertical or very nearly so and in a straight line; central spine slightly longest, denticulæ on eye-eminence small but distinct.

tridens C. Koch.

The three frontal spines strong, close to each other in a straight line, nearly vertical, slightly directed forward, the middle one a little the longest; denticulæ on eye-eminence strong, the second from the front often longer than the rest. Palpi spinose on the humeral joint.

palpinalis Herbst.

Colour ashy-grey with darker markings. Central spine of the three frontal ones at least double the length of the others, and sometimes slightly branched or armed with a small lateral denticula. Denticulæ on eye-eminence very small but distinct; those on abdomen numerous and strong. Normal dorsal abdominal band only indicated by blackish marginal spots. *Meadii* Cambr.

Abdominal dorsal band oblong, very distinct, nearly black on dull yellowish ground; sides of band almost parallel. Three frontal spines rather long, of equal length, a little directed forward, the middle one slightly in advance of the others. Denticulæ on eye-eminence small but distinct. Some small denticulæ along the fore side of the humeral joint of palpus. *ephippiatus* C. Koch.

Three frontal spines equal in length, strong, close together in a straight line, and much directed

forward. Behind them are 2-4 very small denticulæ. Eye-eminence small, denticulæ on it very minute. A much larger species than any others of the genus. *spinosus* Bosc.

NEMASTOMA.—Black; with two oblong geminated yellowish or whitish spots in a transverse line at the hinder margin of the cephalothorax. Legs short. *lugubre* O. F. Muller.

Abdomen marked with dull golden metallic spots, mostly in pairs, along the abdomen. *Legs* long and very slender. Palpi very long and thickly furnished with small claviform hairs of equal length. *chrysomelas* Hermann.

ANELASMOCEPHALUS.—Hood fringed with strong spines ending with curved bristles. Legs densely clothed with a similar armature. *Cambridgii* Westw.

TROGULUS.—Hood spinose, and, in the adult form, covering the mouth parts. Femora of first pair of legs furnished on the outer side with a fringe of spines similar to those on the hood. *tricarinatus* Linn.

LIST OF SPECIES DESCRIBED, WITH REFERENCES TO PAGES, PLATES, AND FIGURES.

ADDENDA.

P. 169.—To the description of the legs of the Order *Phalangidea* add the following:—

"Between the exinguinal and femoral joints there is, in the Family *Phalangidæ*, a small supernumerary one inserted; but in the Fam. *Nemastomatidæ* (p. 203) this extra joint is replaced by a kind of false articulation attached to, or, at any rate, at the base of, the femora. In *Nemastoma lugubre* this articulation differs in length and strength in the different legs; that on the 4th pair being subdivided into three portions. In the Fam. *Trogulidæ* a very small false articulation is apparent, though M. Simon says (Arach. d. Fr. vii., p. 297) there is none in the Genus *Anelasmocephalus*. The only species, however, of this genus I possess (*A. Cambridgii* Westw.)

undoubtedly has it; but it is not easy to be distinguished in most examples, owing to the dirt and other extraneous substances which clog the spiny legs of this species very shortly after it becomes adult."

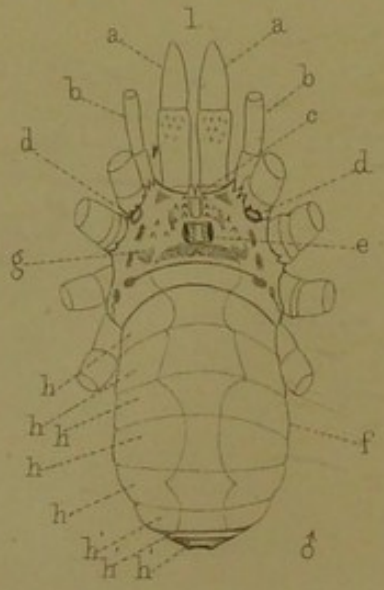
P. 183.—Under *Phalangium minutum* Meade, add :—

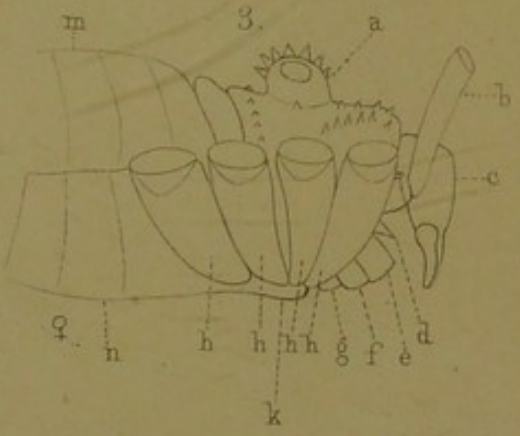
"Since the above was written Mr. Meade has kindly sent me the types of this species, but they are in too bad a condition to be of any use for identification."

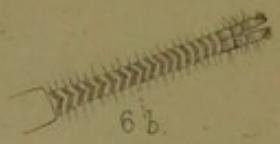
It has not been considered necessary, for the purpose of the present work, to enter upon the internal anatomy of the Phalangidea, on which branch of the subject the author has had no opportunity to carry out any original observations; but, in addition to the works already referred to (p. 157), a more recent one by Henri W. de Graaf, "*Sur la construction des organes Genitaux des Phalangiens*," profusely and elaborately illustrated, and of great importance, has been published (Leide: E. J. Brill, 1882).

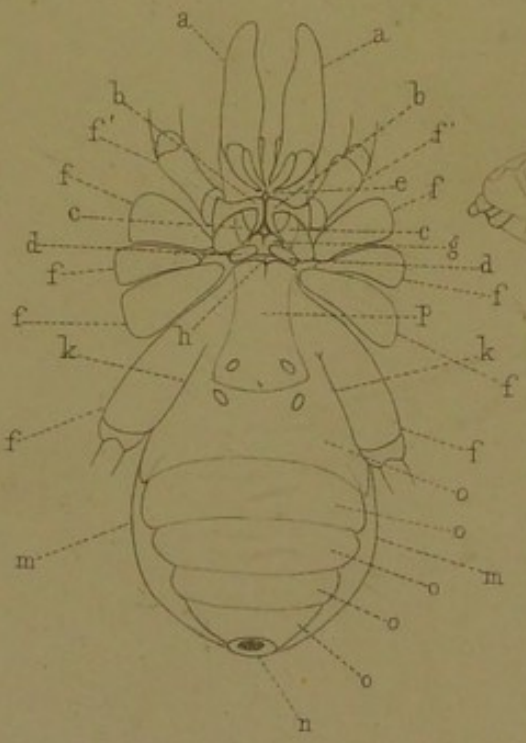
ERRATUM.

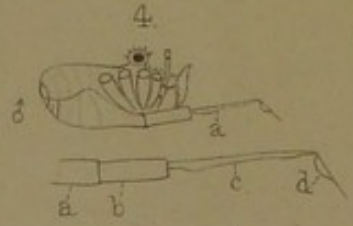
P. 170.—Line 7 from top of page, for *that* read *those*.

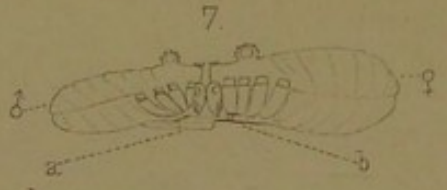


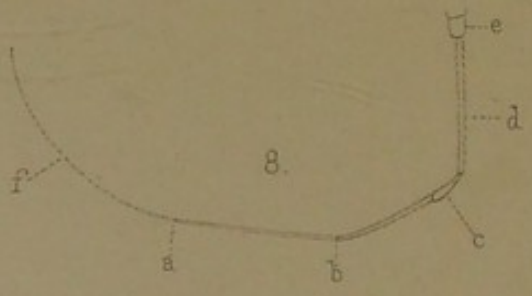












O.P. Cambridge del.
E. Carter sc.

Mintern Bros. imp.

BRITISH PHALANGIDEA.

Description of Plate A.

Fig. 1.—*Phalangium opilio* Linn, male (upper side); *a,a*, falces; *b,b*, palpi (cut off); *c*, geminated tuberculous teeth below the middle of the fore-margin of caput; *d,d*, lateral pores (see p. 171, line 2 from top); *e*, eye-eminence; *f*, abdomen; *g*, cephalothorax; *h,h*, abdominal segments.

2.—*Phalangium opilio* Linn, male (under side); *a,a*, falces: *b,b*, maxillæ formed by basal joints of palpi; *c,c*, maxillæ of first pair of legs; *d,d*, ditto of second pair of legs; *e*, epistoma; *f,f,f,f*, coxal joints of the legs; *f'f'*, first joints of palpi; *g*, labium; *h*, sternum (of which only the anterior extremity is visible, the rest being concealed by the genital plate *(p)*; *k,k*, approximate position of spiracular openings, which are concealed by the coxæ of the fourth pair of legs *(f,f,)*; *m,m*, abdomen; *n*, anal aperture; *o,o,o,o,o*, inferior segments of abdomen; *p*, genital plate.

3.—*Phalangium opilio* Linn, male, profile; *a*, eye-eminence; *b*, palpus; *c*, falx; *a*, epistoma; *e*, *f*, *g*, maxillæ attached to palpi and first two pairs of legs; *h,h,h,h*, coxal joints of legs; *k*, genital plate; *m*, upper segments of abdomen; *n*, inferior ditto.

4.—*Phalangium opilio* Linn, male, profile; *a*, penis.

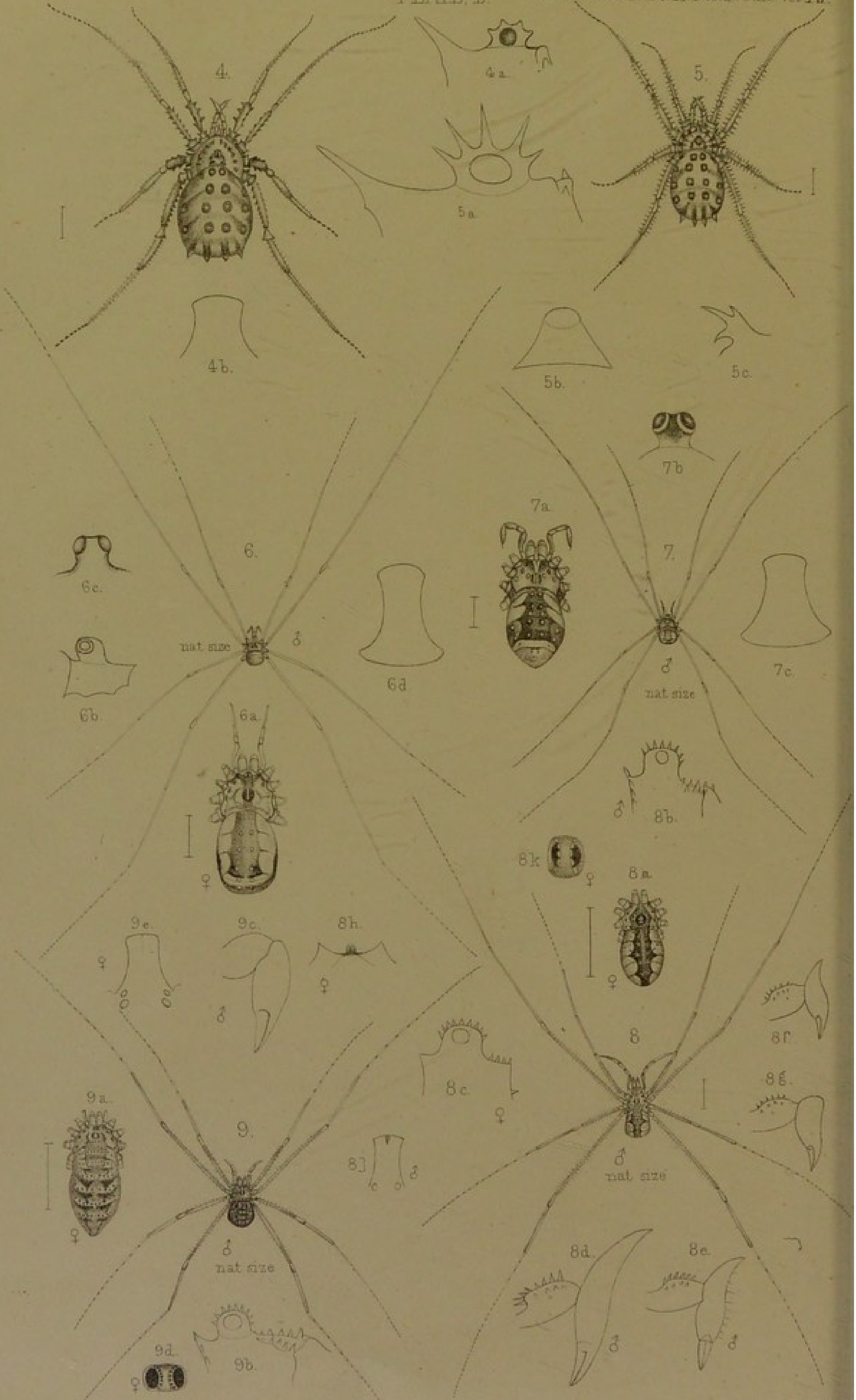
5.—Penis of *P. opilio;* *a*, genital plate; *b*, sheath; *c*, corpus; *d*, glans.

6.—*Phalangium parietinum* Degeer, female, in profile; *a*, ovipositor; 6*b*, portion of ovipositor more enlarged.

7.—*Oligolophus agrestis* Meade, male and female in copulâ; *a*, ovipositor (female); *b*, penis (male).

8.—Leg of a phalangid; *e*, supernumerary joint between coxæ and femur; *d*, femur; *c*, genua; *b*, tibia; *a*, metatarsus; *f*, tarsus minutely subdivided.

PLATE. B. *Proc. Dorset N.H & A Field Club Vol XI.*



O.P. Cambridge delt

Mintern Bros imp

BRITISH PHALANGIDEA.

Description of Plate B.

Fig. 4.—*Sclerosoma quadridentatum* Cuv. ; 4*a*, profile of cephalothorax and eye-eminence ; 4*b*, genital plate.

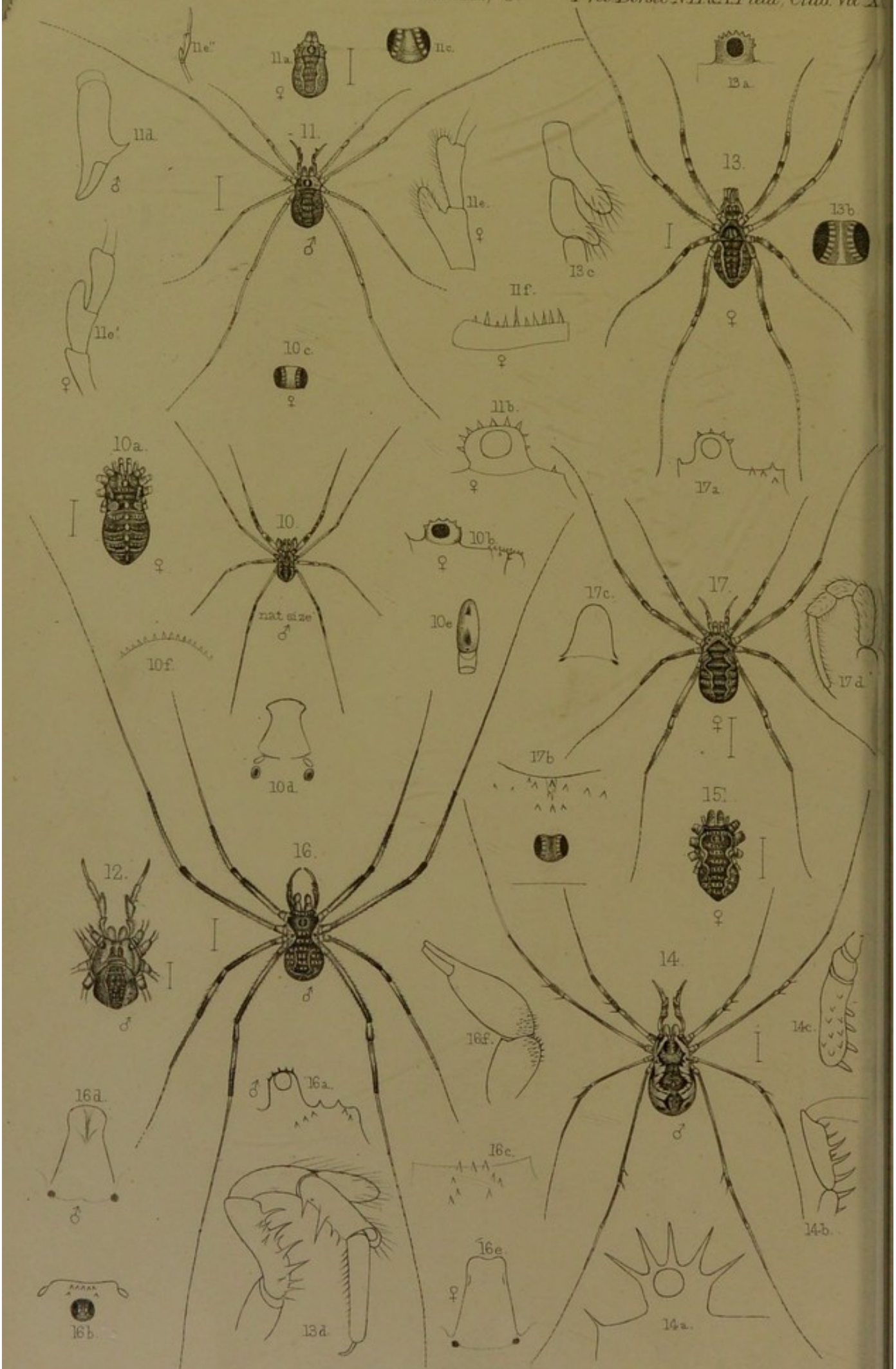
5.—*Sclerosoma Romanum* L. Koch ; 5*a*, profile of cephalothorax and eye-eminence ; 5*b*, genital plate ; 5*c*, profile of spine in front of caput, in another example.

6.—*Leiobunum rotundum* Latr., adult male ; 6*a*, adult female without legs, enlarged ; 6*b*, profile of cephalothorax and eye-eminence ; 6*c*, eye-eminence from in front ; 6*d*, genital plate.

7.—*Leiobunum Blackwallii* Meade, adult male ; 7*a*, adult female without legs ; 7*b*, eye-eminence from in front ; 7*c*, genital plate.

8.—*Phalangium opilio* Linn, adult male ; 8*a*, adult female without legs or palpi ; 8*b*, profile of cephalothorax (male) and eye-eminence ; 8*c*, ditto of female ; 8*d*, 8*e*, 8*f*, 8*g*, one of the falces of each of four individuals (males) to shew different developments of the horn on the second joint ; 8*h*, outline of front of caput to shew the two characteristic denticulæ ; 8*j*, genital plate (male) ; 8*k*, eye-eminence of female from above.

9.—*Phalangium parietinum* Degeer, adult male ; 9*a*, adult female without legs or palpi, more enlarged ; 9*b*, profile of caput and eye-eminence (male) ; 9*c*, one of falces of male ; 9*d*, eye-eminence (female) from above ; 9*e*, genital plate (female).



O.P.Cambridge del.
E.Carter sc.

BRITISH PHALANGIDEA.

Minterne Bros imp.

Description of Plate C.

Fig. 10.—*Phalangium saxatile* C. L. Koch, adult male; 10*a*, adult female, without legs or palpi, more enlarged; 10*b*, profile of cephalothorax and eye-eminence (female); 10*c*, eye-eminence from above; 10*d*, genital plate; 10*e*, coxal joint of one of the legs shewing dark spots; 10*f*, transverse sectional line of abdomen shewing denticulæ (male).

11.—*Platybunus corniger* Hermann, adult male; 11*a*, adult female, slightly enlarged, without legs or palpi; 11*b*, profile of eye-eminence and upper part of cephalothorax (female); 11*c*, eye-eminence from above; 11*d*, falx of male; 11*e*, portion of palpus (female); 11*e'*, ditto from another example; 11*e'e'*, ditto from another; 11*f*, humeral joint of palpus (female).

12.—*Platybunus corniger* Herm., adult male, without legs or palpi, much enlarged.

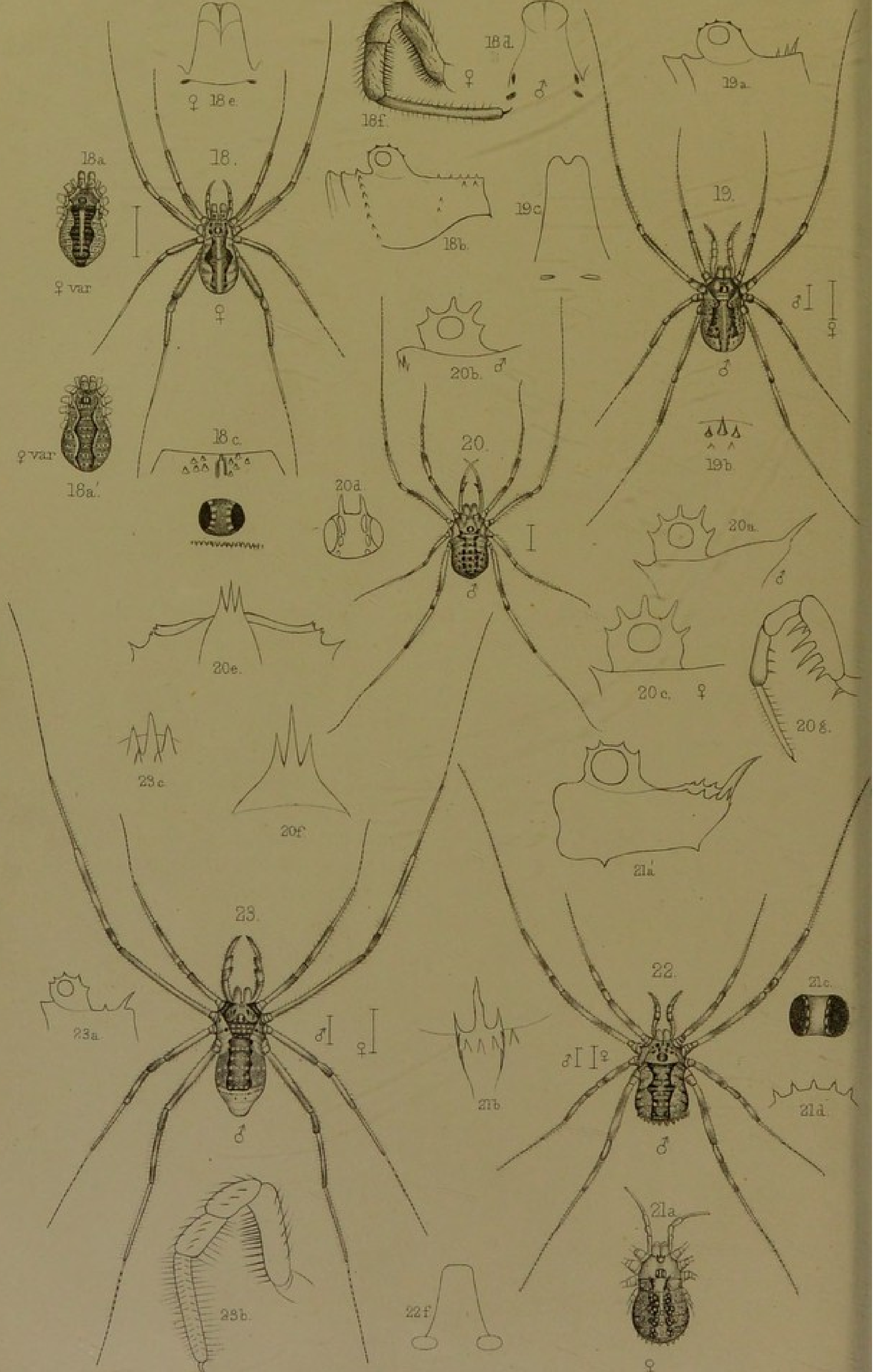
13.—*Platybunus triangularis* Herbst., adult female; 13*a*, profile of eye-eminence from above; 13*c*, portion of palpus; 13*d* (at bottom of plate), palpus, shewing spiny armature.

14.—*Megabunus insignis* Meade, adult male; 14*a*, profile of eye-eminence and upper part of cephalothorax; 14*b*, portion of palpus shewing armature; 14*c*, coxa of one of the legs.

15.—*Oligolophus morio* Fabr., adult female without legs or palpi.

16.—*Oligolophus morio* Fabr., adult male; 16*a*, profile of eye-eminence and upper part of cephalothorax; 16*b*, eye-eminence and fore part of caput from above; 16*c*, fore part of caput from above (another example); 16*d*, genital plate (male); 16*e*, ditto female; 16*f*, one of the falces (male).

17.—*Oligolophus cinerascens* C. L. Koch, adult female; 17*a*, profile of eye-eminence and upper part of cephalothorax; 17*b*, fore part of caput, and eye-eminence from above; 17*c*, genital plate; 17*d*, one of the palpi.



G. P. Cambridge del.
E. Carter sc.

BRITISH PHALANGIDEA.

Mintern Bros imp.

Description of Plate D.

Fig. 18.—*Oligolophus alpinus* Herbst., adult female; 18*a* and 18*a'*, varieties of female without legs and palpi; 18*b*, profile of cephalothorax and eye-eminence; 18*c*, eye-eminence and fore part of caput from above; 18*d*, genital plate (male); 18*e*, ditto (female); 18*f*, palpus.

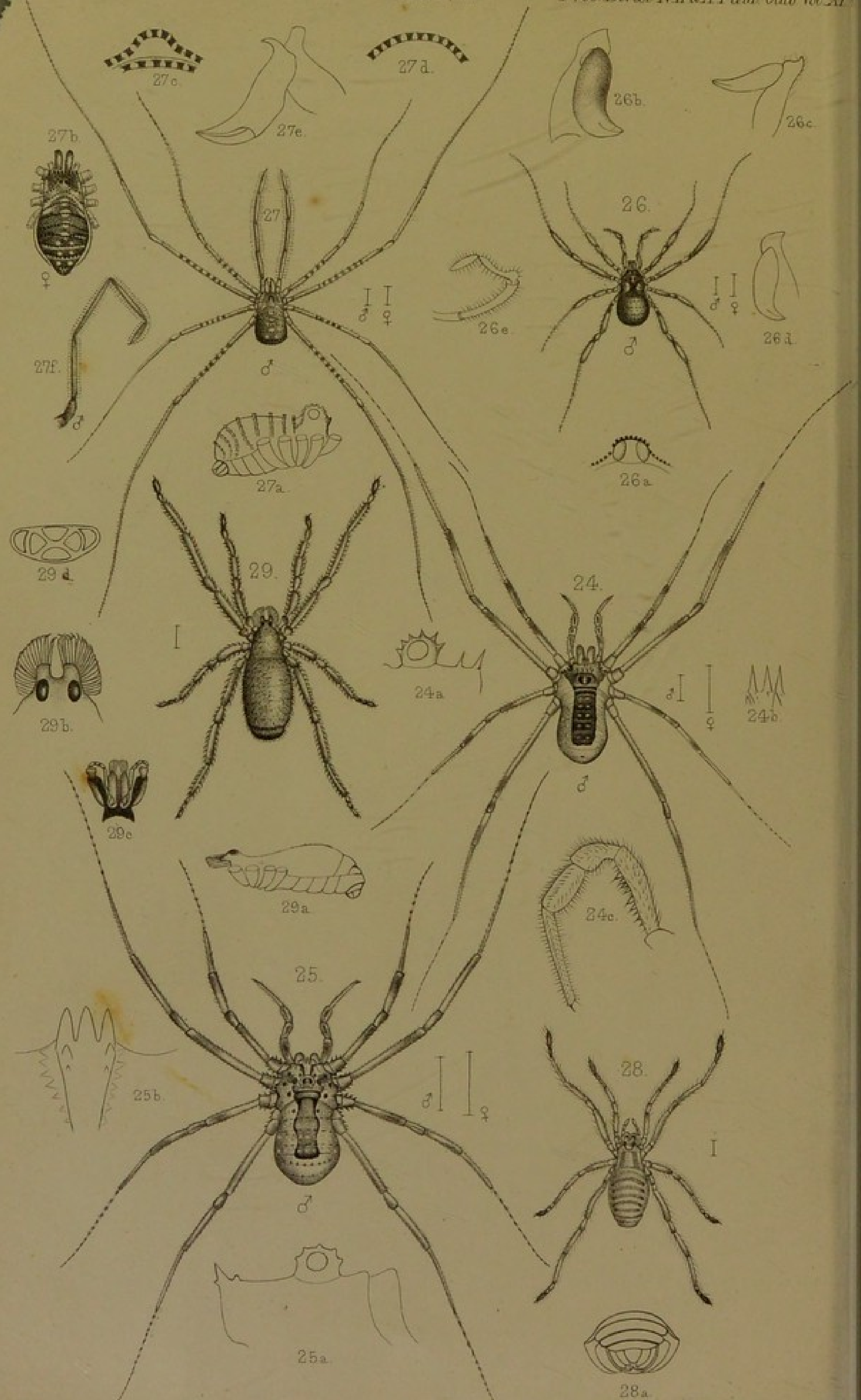
19.—*Oligolophus agrestis* Meade, adult male; 19*a*, profile of eye-eminence and upper part of cephalothorax; 19*b*, fore part (in centre) of caput; 19*c*, genital plate.

20.—*Oligolophus palpinalis* Herbst, adult male; 20*a*, profile of eye-eminence and upper part of cephalothorax of male; 20*b*, profile of eye-eminence (male) from another example; 20*c*, profile of eye-eminence (female); 20*d*, eye-eminence (male) from above; 20*e*, fore extremity of caput (female); 20*f*, spines at fore extremity of caput (male); 20*g*, palpus of male.

21*a*.—*Oligolophus Meadii* Cambr., adult female, without legs; 21*a'*, profile of eye-eminence and cephalothorax (female); 21*b*, centre of fore extremity of caput (female) shewing the characteristie spines; 21*c*, eye-eminence from above (female); 21*d*, transverse section of upper side of abdomen shewing denticulæ.

22.—*Oligolophus Meadii* Cambr., adult male.

23.—*Oligolophus tridens* C. L. Koch, adult male; 23*a*, profile outline of eye-eminence and upper part of cephalothorax; 23*b*, palpus; 23*c*, characteristic spines in middle of fore part of caput.



BRITISH PHALANGIDEA.

Description of Plate E.

Fig. 24.—*Oligolophus ephippiatus* C. L. Koch, adult male; 24*a*, profile of eye-eminence and upper part of cephalothorax; 24*b*, characteristic spines at centre of fore extremity of caput; 24*c*, palpus.

25.—*Oligolophus spinosus* Bosc, adult male; 25*a*, profile of cephalothorax and eye-eminence; 25*b*, characteristic spines at centre of fore extremity of caput.

26.—*Nemastoma lugubre* O. F. Muller, adult male; 26*a*, profile of eye-eminence and caput from in front; 26*b*, 26*c*, 26*d*, falx of male in several positions; 26*e*, palpus of male.

27.—*Nemastoma chrysomelas* Hermann, adult male; 27*a*, profile without legs or palpi; 27*b*, adult female without legs or palpi; 27*c*, transverse section of eye-eminence and caput from in front; 27*d*, ditto of abdomen from behind; 27*e*, falx of male; 27*f*, palpus of male.

28.—*Trogulus tricarinatus* Linn, immature; sex (?); 28*a*, abdomen from behind.

29.—*Anelasmocephalus Cambridgii* Westwood, adult; sex (?); 29*a*, profile without legs or palpi; 29*b*, eye-eminence from in front; 29*c*, under side of caput, shewing falces; 29*d*, form of hinder extremity of abdomen.

MONOGRAPH

ON THE

British Species of Chernetidea,

OR

False-Scorpions.

BY

THE REV. O. PICKARD-CAMBRIDGE,

M.A., F.R.S., C.M.Z.S., &c.

[From "Proceedings" of the Dorset Natural History and Antiquarian Field Club, Vol. XIII., 1892.]

SIME & CO., DORCHESTER.

1892

TO MY NEPHEW,

THE

REV. FREDERICK OCTAVIUS PICKARD-CAMBRIDGE, B.A.,

THIS LITTLE MONOGRAPH

ON

THE BRITISH SPECIES OF CHERNETIDEA OR FALSE-SCORPIONS

IS DEDICATED,

In remembrance of many pleasant hours passed together in Arachnological research,

BY

THE AUTHOR.

On the British Species of False-Scorpions.

Pseudo-Scorpiones—Cambr. & Thorell. *Chernetes*—Sim.

CHERNETIDEA (Cambr.)

By Rev. O. PICKARD-CAMBRIDGE, M.A., F.R.S., &c.

Introduction.

WHEN speaking to you two years ago on the British species of *Phalangidea* or *Harvest Men* I could feel pretty sure that some of my hearers would at once call to mind the group of the Articulata intended, and probably would be conversant with some of the commoner species. This, however, is not the case in respect to the group upon which I am now going to say a few introductory words. It is probable that few, if any, of you may know what a *false-scorpion* is, though you may have a very good notion of a *true* scorpion. With the latter you rightly associate a *tail*, or more properly a *post-caudal-elongation*, ending with a *formidable and venomous point* or *sting*. Well, in this respect the *false-scorpion* totally differs, as it has no tail at all, and having no sting is quite harmless. It resembles in some other external points the *true*

scorpion, but differs in that very material one; and hence it has obtained the popular name of *false-scorpion.*

The mode of life of this group is a very obscure one, being passed under stones and dead bark of trees, among moss, dead leaves, or other rubbish, and in old buildings, one species often inhabiting old libraries. Thus they are seldom seen unless specially searched for. Their colouring is plain, chiefly yellow-brown, brown, and red-brown, and generally without any special pattern or markings. Entomologists, particularly those who work at the *Coleoptera* (or beetles), must often see them while searching for the *Geodephaga* (or ground-loving beetles); but, I am sorry to say, they do not as a rule often note or collect them. One or two of the *false-scorpions* (and possibly others) have a curious habit, which may, perhaps, have brought them to the notice of even comparatively uninterested observers. I allude to their seizing on the leg of a fly with their forcipated palpi, and being thus carried about by the fly from place to place. This is a *quasi-parasitic* habit; but, excepting as a means of transport and dispersion, it does not appear to be of any special advantage to the passenger, nor, excepting as an incubus, does it seem to injure the fly. From what has just been said it will be gathered that the *false-scorpions* are all of small size. Those I have exhibited show the largest and smallest as yet found in Britain. Some of the exotic species are larger, but none are of large size. Like the "Harvest Men," it is considered now that the *false-scorpions* form a separate *order* of the *Arachnida.* They agree with other Arachnids in possessing eight *legs* and two *palpi*, as well as in the union of the caput and thorax, forming what is termed the "Cephalothorax." They agree also in having the *whole-body* divided into two main portions, the cephalothorax and abdomen, with the eyes (when present) on the former; but they differ from all the other groups, either in the number and position of the eyes, or in the form of the palpi, the segmentation of the abdomen, or in the nature and position of the breathing organs. These and other

special characters unite them as one of the most obvious and well marked groups of their class. Externally (as before observed) they bear a very strong resemblance to the *true* scorpions, and at first sight they might well be considered minute examples of that group, simply destitute of a tail ; but they differ notably from the *true* scorpions in respect to their respiratory system and other parts of their anatomy. Perhaps their closest natural affinities are to some groups of the extensive order *Acaridea* (or mite-tribes) ; and in regard to some of their characters they approach the order *Solpugidea*. These last, however, are exclusively exotic, and comprise, comparatively speaking, only a few species of one of the most homogeneous and distinct of the various Arachnidous orders.

Having thus shortly mentioned their more general characters and position it will be necessary here to give a rather more detailed description of a *false-scorpion*. (See plate A, figs 1 to 6.) I shall use as few technical terms as possible, though, of course, to some extent it is not always possible to avoid technical terms, inasmuch as there are no others available for describing many portions of structure.

Class : ARACHNIDA.

Order Chernetidea.

In treating of this group some years ago—(1875, Encylop. Brit. Ed. IX., vol. ii., p. 282)—the strong external resemblance of its species to the *true* scorpions, led me to include it with them as two *sub-orders* of the order *Scorpionidea*. Subsequent study has led me to conclude, with Mons. Eugène Simon, that in spite of their superficial resemblance to the *true* scorpions the essential differences between these two groups necessitate their separation into two distinct *Orders*.

The *Cephalothorax* and *Abdomen* of the *Chernetidea* form together an elongate-oval or oblong figure ; these two portions being sessile or fitting up close to each other without any distinct connecting-pedicle. The *Cephalothorax* frequently shews the originally separate *caput* and *thoracic segments* by more-or-less well-marked grooves or indentations. The surface (or *epidermis*) of the

cephalothorax is coriaceous; the palpi are of a harder and more chitinous nature; while the legs and outside of the abdomen are of a more flexible kind. The surface of the *cephalothorax* is at times glossy and smooth, at other times granulose or shagreened. The hairs, with which various portions of their structure are furnished, are either simple and fine, or stout and clavate.

The *Eyes* when present are *two* or *four* in number, generally of a flattened form, pale white or whitish, and placed symmetrically on the sides of the caput, near its fore-extremity. The presence or absence of eyes forms an important character in the separation of *genera* and is also of great use in grouping them.

The *Legs* are short and vary in the number of their joints—from 5 to 7, or even 8. i., The basal joint or *coxa*; ii., the *exinguinal* or *trochanter*; iii., the *femur*; iv., the *tibia*; v., the *tarsus*. Between the exinguinal joints and the femur there is often another small joint more or less visible (or rather the femur is sub-divided). This joint is called by M. Simon the *trochantin*, and is used by him as a distinguishing family character. Also in some examples of *Obisium muscorum* there is a distinct joint between the femur and tibia; unless indeed the tibia is shortened to a mere patella or cubital joint, and the tibia then becomes a metatarsus, the tarsi being also sub-divided. The tarsus is also frequently sub-divided into the metatarsus and tarsus proper. The tarsi end with two curved finger-like claws, beneath which is a kind of sucker, probably the modified form of an originally third or inferior claw (found so commonly in numbers of other *Arachnids*). This sucker is evidently intended to facilitate adhesion to smooth objects in locomotion. The basal joints (or coxæ) fit up almost close together beneath the cephalothorax without any sternum. A very small sternum-like portion, however, may be found in the genus *Garypus* (Sim.), a genus not yet found in Britain.

The *Palpi* (including the basal joint which corresponds to the maxilla in the *Araneidea* or spiders) are six-jointed: i., the maxilla; ii., the axillary joint; iii., the humeral; iv., the cubital; v., the radial; vi., the digital. The radial and digital joints are very much

modified when compared to the corresponding parts of the palpi in the Araneidea, and form together a terminal portion like a pair of forceps, pincers, or nippers similar to the didactyle claw of a lobster or crab. The base of the pincers is more or less rounded or bulbous, and has its inner extremity produced into a long finger-like fixed claw, against which is opposed another very similar one articulated to the bulb. The bulbous portion represents the *radial*, and the articulated claw the *digital* joint. The use of this pair of nippers is to seize and hold their prey ; though they do not appear to possess much power of compression or pinching with them. It is by their means that, as before observed, some of these little creatures obtain the assistance of flies, for the purpose of locomotion by laying hold of the fly's leg. The relation, length, and form of the different joints of the palpi are of great importance in the differentiation of the species.

The *falces* are often large, short, two-jointed, and project immediately beneath the fore margin of the caput. The basal joint of each falx is the largest, and the next (articulated to it) is of a fang or claw-shape opposed to the produced claw-like inner or superior extremity of the basal joint, and with it forming a pair of forceps. The falces possess several curious and characteristic appendages called the *galea*, the *flagellum*, and the *serrula*, but their function is not yet certainly known, and they are not easily observed, nor do they appear to be always present. M. Simon has made use of the two latter in his sub-division of this group into families. The *galea* is a transparent cylindrical apophysis directed forwards at the extremity of the moveable fang of the falces ; the *serrula* is also transparent and attached to the base on the inner side of the same fang ; and the *flagellum* is a small transparent process on the inner side of the basal portion of the falx.

The *Abdomen* is, in general, formed of 11 segments above and 9 underneath, covered by transverse coriaceous plates, united by lateral membranes. These plates are often divided longitudinally.

The orifices of the breathing organs are situated beneath the anterior portion of the abdomen, at the extremities of the 2nd and

3rd segments on either side. They are four in number and not always easily discerned. Beneath the first abdominal segment are placed the two orifices of the genital organs; the parts of which are duplex in both sexes. There is also in the middle of the first segment of the abdomen, on the under side, a spinning apparatus. This was first described some years ago by Prof. Menge. The full functions of this apparatus have not been entirely discovered, but its only use as yet known is to envelope the eggs in a kind of cocoon.

The internal anatomy of this group, such as the digestive, circulatory, and respiratory systems have all been investigated and described by Menge, but for our present purpose no notice need be taken of this part of the subject further than to say that the respiration is by means of tracheæ.

The sexes in this order offer no certain outward characters for their separation, excepting the larger and more tumid form of the female when distended with ova.

The *Chernetidea* are universally distributed and are found under stones, old logs of wood, dead bark of trees, among dead sticks and rubbish, moss and decayed leaves; also in old rooms and out-buildings, and more or less at all seasons of the year. One species, the smallest known, *Chiridium museorum*, is found among old books, MSS. in libraries, and in herbaria, where probably it feeds on poduridæ and other insects found in such places, and is known as the book-scorpion. Little is really known of their habits and mode of life, owing chiefly, no doubt, to the obscurity in which they dwell. Their food appears to consist of minute insects and other arachnids in their immature stages. Their power of spinning, so far as known, appears only to be exerted in the formation of a cocoon for their eggs; these are carried about by the female and hatch out within the cocoon, where (according to a distinguished Russian naturalist, M. Metschnikoff) they undergo a series of metamorphoses, and become fully formed on quitting the parent.

The species of this order are comparatively few everywhere, and not very numerous in individuals; though some few species will

be found (probably in most districts) fairly abundant. Some are pretty active in their movements, running backwards and sideways as well as forwards; and with their outstretched, formidable-looking, but very innocuous, forcipated palpi, present a highly threatening appearance. Others seem only to run backwards and sideways. For the most part, however, they are rather dull and sluggish.

The known British species are 20 in number (belonging to six genera), and of these I have met with 14 species in Dorsetshire. The known European species are about 46, comprised in nine genera (Sim. Ar. Fr. tom. vii., p. 10). I feel no doubt but that the number at present recorded as British might be soon considerably added to, if entomologists would pay a little attention to this group, especially along our sea-coasts.

With regard to the collecting and preserving of the *Chernetidea*, there need not be much said. They do not offer any special attraction to collectors, who merely want something pretty to look at, like butterflies and moths; but they are certainly singular looking creatures and easily captured, and may be preserved in a dry state and set out without difficulty on card like those I have exhibited, or (which is better for the purpose of the easier determination of the species, and scientific examination in general) they may be bottled in spirit of wine and placed in glass test tubes as we preserve spiders.

I will only now detain you with a few general remarks on the classification of the *Chernetidea*, and on the works that have been written upon them. The remainder of my paper will then be more technical, and, of course, chiefly of interest to the specialist.

With regard to the sub-division of this order it is not surprising that, in a group so homogeneous as the present, only one *family* can be clearly characterized in it, and in fact the characters of this *family* are simply the characters of the *order*. Some previous writers have given chief weight in characterizing their sub-divisions, to the presence, absence, or number when present, of the eyes;

while Mons. Simon, who is undoubtedly at the head of all living Arachnologists, attaches less value to this character and sub-divides the one family *(Cheliferidæ)* into three sub-families, based chiefly on the presence or absence of the appendages of the falces mentioned just now, and of the small quasi-joint (trochantin) found at times between the trochanter and femur of some or all of the legs. In this arrangement species are brought together by M. Simon in his several sub-families (and sometimes also in his genera), both with and without eyes, as well as differing in the number of eyes when present. It appears to me that, to say the least, by this method we lose the very tangible and obvious character of the eyes in thus really making them of only specific value, while we gain but little in any other respect from this arrangement. I propose, therefore, to make the eyes the basis of the sub-division I shall propose of the families, sub-dividing it into three divisions or groups—1st, those possessing *four* eyes; 2nd, those with *two*; and 3rdly, those with *none*. It may be noted that when arranged thus in a linear form the species fall almost exactly into the same relative positions as in M. Simon's arrangement.

Various authors from Linnæus onwards have written upon the *Cheliferidæ*; but the more recent and important are Dr. Ludwig Koch, Herr. Menge, Mons. Metschnikoff, and the most recent—Mons. Simon. This last author gives a *resumé* in his vol. vii. of the Arachnides de France, A.D. 1879, of all the authors who have thus contributed to our knowledge of this group. I may mention, however, that in England the late Dr. Leach as long ago as 1817 (Zool. Miscell., iii., p. 47) recorded and described seven or eight species. His types are in the British Museum; their condition is not altogether satisfactory, but I have, I believe, succeeded in determining most of them with fair certainty. His figures are rough, some of them very inaccurate, and his descriptions very brief and meagre. Another English author, Mr. H. Tulk (Ann. Mag. N.H., 1844, vol. xiii., p. 55), first describes one of the curious appendages of the falces mentioned above—the *serrula* (Sim).

These are the only works, so far as I know, written upon the British species, and I hope the present monograph, attempting to bring these species together in a tangible form, may induce others to study them.

SYNOPSIS OF THE BRITISH FORMS.

Class : ARACHNIDA.

ORDER CHERNETIDEA.

Family : Cheliferidæ.

Group I.—*Four Eyes.*

Chthonius orthodactylus, Leach.
„ *Rayi*, L. Koch.
„ *tetrachelatus Preyssler*
„ *tenuis*, L. Koch.
Obisium muscorum, Leach.
„ *sylvaticum*, *C.*, L. Koch.
„ *maritimum*, Leach.

Group II.—*Two Eyes.*

Roncus Cambridgii, L. Koch.
„ *lubricus*, L. Koch.
Chelifer Hermannii, Leach.
„ *cancroides*, Linn.
„ *meridianus*, L. Koch.
„ *subruber*, Sim.
„ *Latreillii*, Leach.

Group III.—*No Eyes*

Chernes nodosus, Schr.
„ *insuetus*, sp. n.
„ *cimicoides*, Fabr.
„ *dubius*, sp. n.
„ *phaleratus*, Sim.
Chiridium museorum, Leach.

Descriptions of the Genera and Species.

Group I. *Eyes four.*

Two British Genera only are comprised in this group—*Chthonius* C. Koch and *Obisium* Leach.

These may be thus distinguished :—

i. Claws of pincers, straight, *Chthonius.*

ii. Claws of pincers, curved, *Obisium.*

GEN : CHTHONIUS (C. Koch.)

The *Cephalothorax* is equal in length and breadth ; it is either squarely or a little roundly truncated in front, and the eyes are placed two on each side of the anterior part of the caput, more or less separated from each other in a line parallel with the plane of the Cephalothorax. The abdominal segments are eleven ; those on the upper side entire—(*i.e.*, not divided by a longitudinal central divisional line). *Falces*, strong, nearly as long as the Cephalothorax. *Palpi*, rather long ; the radial and digital joints (forming the forecept or pincers) are very long, and the fingers straight. The femora of the third and fourth pairs of *legs* are very strong and compressed, and the tarsi are divided. The first and second pairs devoid of a "trochantin ;" surface of the integuments, smooth and shiny.

Four species only are as yet known in Britain—*C. orthodactylus* Leach, *C. Rayi* L Koch, *C. tetrachelatus* Preyss, and *C. tenuis* L. Koch.

These may be shortly distinguished as follows :—

1. Cephalothorax of equal width throughout, *C. tetrachelatus.*
2. Cephalothorax wider in front than behind.
   - *(a)* Bulbous portion of pincers unicolorous, or nearly so, with the rest of the palpus.
     - i. Size smaller ; eyes separated by a less interval ; Cephalothorax less wide in front.—*C. orthodactylus.*
     - ii. Size larger ; eyes separated by a greater interval ; Cephalothorax more widened in front.—*C. Rayi.*
   - (*b*) Bulbous portion of pincers black-brown.—*C. tenuis.*

CHTHONIUS ORTHODACTYLUS. Pl. A, fig. 7.

Syn : *Obisium orthodactylum* Leach. Zool. Misc. iii., p. 51, pl. 141, f. 2, 1817.

„ *Chthonius orthodactylus* Leach—Sim. Araneides de France, tom. 7, p. 73, 1879.

Length scarcely more than $\frac{2}{3}$rds of a line.

The *Cephalothorax falces* and *abdominal segments* are of a dull yellowish-brown colour, the former tinged with olive. The *legs* are paler and the *palpi* tinged with reddish.

The *Cephalothorax* is perceptibly, but not greatly, wider in front than behind.

The *eyes* are of tolerable size, the posterior eye rather the largest, and are divided by an interval equal to scarcely more than the diameter of the posterior one. The anterior eye is no more than half its diameter from the fore margin of the caput.

The *Cephalothorax* is smooth and glossy, and with the *abdomen* is clothed thinly but pretty regularly with prominent slender spine like tapering, sharp-pointed bristles ; the *legs* and *palpi* are furnished with finer, but some longer, hairs. The bulbous portion of the pincers is very moderately tumid, the claws straight and double or more the length of the bulb. When looked at in profile the inner outline of the pincers is a very little curved, scarcely amounting to even the most obtuse angle between the bulb and the fixed claw.

The *falces* are strong, and equal in length to the *Cephalothorax ;* they are furnished with a few spine-like bristles above.

I have found this species at various seasons of the year, though rarely, among dead leaves and moss in woods at Bloxworth, the specimens being identical with the type in the Leach Collection, British Museum.

CHTHONIUS RAYI. Pl. A, fig. 10.

Syn : *Chthonius Rayi* L. Koch. Darst. Eur. Chernet, p. 48, 1873, and E. Simon, Araneides de France, tom. 7, p. 74, 1879.

Length from 1 line to $1\frac{1}{3}$rd.

This species is nearly allied to *C. orthodactylus.* It is, however, larger, and of a darker brighter colour, the falces and palpi strongly

tinged with red-brown. It may be distinguished readily by the greater interval between the eyes. These are rather smaller, and are separated by nearly, if not quite, two diameters interval, the anterior eye being a diameter's distance from the fore-margin of the caput. The Cephalothorax also is considerably wider in front than behind, and the sides looked at from above are rather incurved towards the hinder part. The falces are also more bulbous-shaped at the hinder portion, and there is also a small obtusely pointed prominence near the extremity of the moveable fang. The palpi are very similar in both species, but in *C. Rayi* the bulbous portion is rather more bulbiform, and longer in proportion to the length of the claws.

This is a widely dispersed and rather common species. I have met with it under stones, logs, old bricks and débris, also among moss and dead leaves; and, in addition to other localities in this neighbourhood, at Sherborne, Glanvilles Wootton, and at Portland. I have also received it from Devonshire (*J. C. Bignell*), Cornwall, and various other parts of England. It appears to be one of the most abundant species on the Continent.

CHTHONIUS TETRACHELATUS. Pl. A, fig. 15.

Syn : *Scorpio tetrachelatus* Preyss. Verz. Böhmischer Insekten, No. lix., pl. 2, 1790.

" *Chthonius trombidioides* C. Koch, 1843. Archn. x., p. 76, fig. 806, 807.

" " " L. Koch. Darst. Eur. Chernet, p. 49, 1873.

" " " E. Simon, Aran. de France, tom. 7, p. 70, pl. 19, fig. 18.

Length $\frac{3}{4}$ths of a line.

This small but very distinct species is of a uniform pale yellowish-brown colour; the falces and pincers (of the palpi), in some examples, rather darker and brighter than the rest, being tinged with reddish. It may be at once distinguished from either of the foregoing species by the cephalothorax being of equal width before

and behind ; being in fact almost exactly square. The anterior eye on each side is rather the largest, and is close to or not more than half a diameter's distance from the fore-margin of the caput ; the interval between the eyes is no more than, if quite as much as a diameter of the anterior eye. The claws of the pincers are straight and a little longer than the bulbous portion. This part is rather narrow, and is constricted or pinched in just behind the base of the fixed claw, furnishing a strong and readily seen distinguishing specific character.

I have met with this species, though rarely, among moss and dead leaves in woods at Bloxworth and in the neighbourhood, and also under pieces of rock and stones at Portland ; I have received it also from Hoddesdon in Hertfordshire, where it was found by Mr. F. M. Campbell, of Rose Hill, in 1887.

CHTHONIUS TENUIS. Pl. A, fig. 17.

Syn : *Chthonius tenuis* L. Koch. Darst. Eur. Chernet, p. 51, 1873, E. Simon Aran. de France, tom. 7, p. 72.

„ „ Cambr. : "The Naturalist," 1884, No. 113, p. 103.

Length from $\frac{3}{4}$ths of a line to $1\frac{1}{4}$ lines.

The colour of this species is yellowish-brown, the bulbous portion of the pincers being black-brown, and furnishing a readily seen character for distinguishing this from either of the other known British species. The *cephalothorax* is distinctly but not much wider in front than behind, and the sides are very nearly straight. The eyes are rather large ; the anterior eye on each side is scarcely half a diameter's distance from the fore-margin of the caput, and the interval between the anterior and posterior eyes is equal to or a little greater than a diameter. The claws of the pincers are double the length of the bulb and very slightly curved.

This easily distinguished species has been met with though very rarely among moss and dead leaves in woods at Bloxworth, and in the adjoining district, at various seasons of the year.

GEN: OBISIUM (Leach).

Cephalothorax, as broad as long, sometimes longer than broad, and as wide before as behind or slightly narrower in front. Eyes rather large or moderate size; the anterior eye on each side is near to but separated from the fore-margin of the caput, and the interval between the two eyes on each side is distinct, but not equal to a diameter. Tarsi of the two first pairs of legs sub-divided. Trochantin indistinct in the third and fourth pairs. Abdominal plates as in *Chthonius*. *Falces* strong, but not as long as the cephalothorax. Claws of the pincers curved, as long or longer than the bulb. The Cephalothorax, abdomen, &c., are furnished with simple hairs; the integument very smooth and shining.

Three species only are as yet certainly recorded in Britain; *O. muscorum* (Leach), *O. sylvaticum*, and *O. maritimum* (Leach). These may be distinguished as follows:—

i. Claws of pincers long, not so strong; more strongly curved, and considerably longer than the bulb.
O. muscorum (Leach).

ii. Claws of pincers short, strong, slightly curved, and scarcely equal, or no more than equal to the bulb in length.
a. Bulb very robust; humeral joint of pulpus shorter in proportion. *O. sylvaticum*.
b. Bulb less robust, of a more oval form; humeral joint longer in porportion to the cubital.
O. maritimum.

OBISIUM MUSCORUM. Pl. A, fig. 1, and B, fig. 6.

Syn: *Obisium muscorum* (Leach). Zol. Misc. iii., p. 51., pl. 144, fig. 3, 187.

„ *Obisium simile* (L. Koch). Darst. Eur. Chernet, p. 58, 1873, and E. Simon, Arachn. de France, tom. 7, p. 58, 1879.

„ *O. muscorum* (Leach). Dale, Hist., Glanvilles Wootton, p. 325.

Length 1⅓rd to 1½ lines.

Cephalothorax very glossy, bright, dark yellowish-brown, often slightly tinged with reddish; *falces* and *palpi* with a stronger red tinge. *Abdomen* dark yellow-brown; *legs* pale brownish-yellow.

Caput rather roundly truncated in front; cephalothorax a little but distinctly longer than broad, sides parallel; *eyes* on slight tubercles and tolerably large, the anterior eye on each side is separated from the fore margin of the caput by at least half a diameter, sometimes to nearly a diameter's interval, and a similarly varying interval separates the anterior and posterior eyes from each other. The anterior eye is round, the posterior slightly larger, and of rather an irregular form. The *palpi* are long, the pincers long and strong; the claws are considerably (sometimes at least one half) longer than the bulb, and curved; they also form a distinct though obtuse angle with the bulb; the humeral joint is distinctly, though not strongly, granulose, both before and behind. The *falces* are less in length than the cephalothorax.

This is an abundant species at Bloxworth and its neighbourhood, among moss and dead leaves in woods, at all seasons of the year, and I have met with it in many other parts of Dorsetshire. It is also widely distributed in Great Britain. It has been sent to me by, among others, Mr. J. B Masefield, from Staffordshire; by the Rev. F. O. P. Cambridge, from Cumberland; by Mr. J. C. Bignell, from Devonshire; by Mr. Reid, from Epping Forest, where I also found it myself; by Mr. E. A. Butler, from Hastings; and by Mr. W. F. Blandford, from Dartmoor. Mr. J. H. Carpenter has also sent it to me from Ireland.

In respect to the number of joints in the two first pairs of legs, M. Simon states, p. 7, that in no case has he found a joint between the femur and tibia in false scorpions; but in some examples of *O. muscorum* I have undoubtedly found (*a*), the coxa; (*b*), the trochanter or exinguinal joint; (*c*), the femur (undivided); (*d*), a short joint; (*e*), a longer one; (*f*, *g*), tarsus, distinctly sub-divided into two joints (vide plate 1, fig. 3). (*d*) Appears distinctly to serve as a genual joint, while (*e*) is the real tibia. A type of *O. muscorum* (Sim.) has also similar joints to those above described.

Mons. Simon describes a species under the name *Obisium muscorum* (Leach), in his Araneides de France, tom. 7, p. 54, and has kindly sent me types of it. After a careful examination of the types of Leach's species, in the British Museum, and comparison of them with those received from M. Simon, as also with both British and French types of *Obisium simile* (L. Koch, Sim.), it appears to me pretty certain that Leach's types belong to the latter (*O. simile*, Sim.); although my examination has not been as satisfactory as could be desired owing to Leach's specimens being in a dry and more or less shrivelled state. Leach's name, therefore—*O. muscorum*—takes precedence of *O. simile*; and *O. muscorum*, Simon, must have its name changed. Whether we have this last species in Britain or not is very doubtful. M. Simon has, indeed, so named some very young British examples I sent to him for identification; but after careful comparison I believe them to be only immature specimens of *O. muscorum*, Leach. The two species are very closely allied, and I hesitate to record the latter as British, until the occurrence of adult examples proves its belonging to our fauna.

OBISIUM SYLVATICUM. Pl. B, fig. 7.

Syn: *Obisium sylvaticum* (C. L. Koch). Die. Arachn. x., p. 61, tab. 343, fig. 794.

Length 1½ lines.

An example of what I believe to be this species was kindly sent to me by Mr. Beulah, of Raventhorpe, Brigg, Lincolnshire. It was found near Chingford, in Epping Forest, several years ago, and had been somewhat unskilfully prepared and mounted as an object for the microscope; hence its examination has not been as easy as might have been wished, especially in regard to its colours. It is, however, very distinct from either of our other known British species. It may be at once distinguished from *O. muscorum* (Leach) by the less curved, shorter palpi, and the far more robust bulb of the pincers, whose fixed claw is also no more than equal in length to the bulb. The cubital joint is rather

shorter then the humeral, and its stem is straight, distinct, and the bulb on this portion of its inner side springs rather abruptly from it, thus differing also from *O. muscorum* (Sim.) The humeral joint is devoid of granulations. The hairs, such as still remained uninjured, are fine and simple. In regard to the joints of the first two pairs of legs, this species resembles *O. muscorum* (Leach) ; in other general respects also there is much similarity. In the prepared specimen the colour appeared to be dull yellow-brown, with paler legs.

OBISIUM MARITIMUM. Pl. B, fig. 8.

Syn : *Obisium maritimum*, Leach. Zool. Misc. iii., p. 52, pl. 141, f. 1, 1817.

Length slightly over 1 line.

Cephalothorax and *abdomen* dark brown tinged with olive, and very glossy ; *palpi* and *falces* red-brown ; *legs* pale yellow-brownish tinged with olive. *Cephalothorax* slightly longer than broad, sides parallel, truncated in front in an oblique line on either side from the centre, where there is a slight but distinct shallow depression.

Eyes rather large, very nearly of equal size ; those of each pair are separated from the fore-margin and from each other by a diameter's interval. The hairs with which this species is furnished are long, fine, and simple. The *palpi* are long and strong ; the bulb of the pincers is of a cylindrical-oval form ; the claws are strong and no more than (if even quite as much as) equal to the bulb in length, and very slightly curved.

I have received this very distinct species (which does not appear to be known on the Continent of Europe) from the Devonshire Coast, where it was found and kindly sent to me by Mr. G. C. Bignell, of Stonehouse, Plymouth. Its habitat was, Mr. Bignell informs me, under stones below high water mark. I have also received it from a similar situation in Jersey from Mr. J. Sinel.

M. Simon conjectures (Arachn. de France, tom. 7, p. 67) that the *Obisium maritimum* of Leach is probably identical with either *O.* (*Roncus*) *lubricus* L. K. or *R. Cambridgii* L. K. But Leach

distinctly includes it in his 4-eyed group, and the species described above agrees well with Leach's description and figure as far as they go; and, especially, the very peculiar submarine habitat of the two, are in accordance with each other. Leach says: "Habitat in Angliâ occidentali inter rupes ad littora maris." Moreover, the examples received from Jersey and Devonshire are identical with Leach's types in the British Museum.

The observations made (ante p. 213) in respect to the joints of the first two pairs of legs in *O. muscorum* also apply to the examples I have examined of the present species.

Group II. *Eyes two.*

This group comprises only two genera as yet known in Britain—*Roncus* L. Koch and *Chelifer* Geoffr. ad partem.

i. Cephalothorax entire—*Roncus.*

ii. Cephalothorax divided transversely by grooves into three portions—*Chelifer.*

GEN: RONCUS, L. Koch (*Obisium* Sim. ad partem).

This genus is nearly allied to *Obisium* and resembles it closely in many respects, but may be easily distinguished by having only two eyes; these are small and situated one on each side near the fore corners of the caput. The *cephalothorax* is as long or only very slightly longer, than broad, and its sides are parallel as far as the eyes, or else slightly curved. The abdominal segments are eleven. Trochantin in second and third pairs of legs only. Two species only have been found in England—*Roncus Cambridgii*, L. Koch, and *R. lubricus*, L. K., which may be thus distinguished—

i. Humeral and cubital joints of palpi equal, and claws of pincers equal to the bulb in length.

R. Cambridgii.

ii. Humeral joints distinctly longer than the cubital and claws of pincers longer than the bulb.

R. lubricus.

RONCUS CAMBRIDGII. Pl. B, fig. 9.

Syn: *Roncus Cambridgii*, L. Koch. Darst. Eur. Chernet, p. 45 (1873).

„ *Obisium lubricum*, E. Simon. Arachn. de France, tom. 7, p. 63 (1879).

Length slightly over 1 line.

The *cephalothorax* is roundly truncated before; of a yellow-brown colour slightly tinged with reddish. The palpi and falces much more strongly tinged with red; the claws of the pincers reddish; the plates of the abdominal segments dull brownish and the legs of a paler hue. The eyes are small, round, and rather more than a diameter's distance from the fore-margin of the caput.

The *palpi* are of moderate length, rather strong, the humeral and cubital joints as nearly as possible equal in length, the latter has a very distinct neck or stem at the base, abruptly enlarging into a somewhat roundish oval form in front. The claws of the pincers are slightly curved and equal to the bulb in length. The hairs with which this species is clothed are few, fine, and simple.

This is a rather scarce species; I have only found it myself occasionally among moss and dead leaves in woods at Bloxworth, but a specimen in the British Museum was found on Dartmoor. It does not appear to have been met with in Germany, and but sparingly in France, South Italy, Austria, Algeria, and Morocco. It was described in 1873 as a new species by Dr. Ludwig Koch from specimens sent to him by myself from Bloxworth. M. Simon by some oversight has this species in his Araneides de France, under the specific name of *lubricum*, while he gives the name *Cambridgii* to *R. lubricus*, L. Koch.

RONCUS LUBRICUS. Pl. B, fig. 10.

Syn: *Roncus lubricus*, L. Koch. Darst. Eur., Chernet (1873), p.m. 44.

„ *Obisium Cambridgii*, E. Simon. Arachn. de France, tom. 7, p. 64 (1879).

Length 1 line, or a little more.

Cephalothorax and *falces* yellow-brown and very glossy ; *palpi* red-brown ; *abdomen* dull yellowish-brown ; *legs* pale dull yellowish ; *eyes* small, round, removed nearly 2 diameters distance from the fore-margin of the caput ; *palpi* long strong ; humeral joint distinctly longer than the cubital ; claws of the pincers curved and distinctly longer than the bulb.

This species is very nearly allied to *Roncus Cambridgii*, resembling it in general form and colours ; but it may be readily distinguished by the rather longer palpi, the claws of the pincers being longer than the bulb and the humeral longer than the cubital joint, as well as the rather greater interval between the eyes and the fore-margin of the caput. I have only met with four specimens of this rare species, one of which is the type from which Dr. Ludwig Koch described the species in 1873. This specimen and one other were found among moss in a wood at Bloxworth, one under a stone at Pokeswell, and the fourth was found by my nephew (F. O. P. Cambridge) some years ago under a stone near Sherborne. It has occurred, though rarely, in France, but, so far as I am aware, nowhere else on the Continent.

GEN : CHELIFER, Geoffr. at partem.

Cephalothorax longer than broad ; broadish behind and narrowing gradually to the fore extremity. It is divided transversely into three portions by two more or less strong constrictions or grooves ; the anterior portion forms the caput and is divided off by the stronger of the grooves, and the posterior portion is usually half of the width of the central portion, the caput and the central portion being generally of equal or nearly equal width. The central and posterior portions form the thorax. The surface is generally either granulose or shagreened or both ; the hairs with which the cephalothorax and abdomen (and at times the legs and palpi) are furnished are at times short and obtuse, or more or less claviform, though sometimes fine. The upper abdominal plates are 11, the first 10 divided longitudinally. The falces are small and do not occupy the whole width of the caput. The legs are short and

the extra joint (trochantin Sim.) is found in all four pairs. The eyes, two in number, are of tolerable size, of a flattened form and opaque appearance, situated close to the fore corners of the caput.

Five species of this group have been met with in England—*Chelifer Hermannii* Leach, *Chelifer cancroides* Linn, *C. meridianus* L. Koch, *C. subruber* E. Sim, and *C. Latreillii* Leach.

The species may be distinguished shortly as follows:—

a. Hairs clavate.

i. Palpus long, slender.

a′ Cubital joint of palpus very slightly, if at all, shorter than the humeral; palpi of a very attenuated form. *C. Hermannii* Leach.

a″ Cubital joint distinctly (but not greatly) shorter than the humeral, and palpi generally stouter. *C. cancroides* Linn.

ii. Palpus robust.

a‵ Claw of pincers equal to the bulb in length; hairs on palpi generally clavate. *C. meridianus.*

a″ Claw of pincers shorter than bulb; hairs on palpi mostly obtuse, if any clavate. *C. subruber* Sim.

b. Hairs simple (not clavate). *C. Latreillii* Leach.

CHELIFER HERMANNII. Pl. B, fig. 11.

Syn: *Chelifer Hermannii*, Leach. Zool. Miscell. 3, p. 49, pl. 142, fig. 3.

Length, 1⅓rd lines.

Colour, yellow-brown; the *cephalothorax* rather the darkest, the legs and palpi palest. The eyes are in the normal position. The Cephalothorax is divided into three portions, the two anterior of which are of nearly equal width; the posterior part half the width of the middle portion. The constrictions between these parts are moderately strong. The abdominal plates are furnished with short clavate hairs. The hairs had been rubbed off the cephalothorax and palpi.

The *palpi* are long and slender; the humeral joint is very slightly longer than the cubital; the pincers nearly as long as the humeral and axillary joints together; the bulb and claws are equal in length, the bulb being, if anything, rather shorter than the cubital joint. When looked at sideways the bulb is exactly cylindrical—*i.e.*, equal in width throughout.

The above description was made from Leach's type specimen in the British Museum collection. Leach gives us its habitat as—"under the bark of trees."

M. Simon, Arachn. de France, tom. 7, includes *C. Hermannii* among the synonyms of *Chelifer cancroides*, Linn.; but after careful comparison of a typical French example of this latter, received from M. Simon, it appears most probable that the two are distinct, though very nearly alike. *C. Hermannii* is not only smaller, but the palpi are of a distinctly longer slenderer form; its habitat, also "under the bark of trees," points to its specific difference.

CHELIFER CANCROIDES. Pl. B., fig. 12.

Syn: *Acarus cancroides*, Linn, Faun. Suec., No. 1,968 (1761).

Phalangium cancroides, Linn, Syst. Nat. Ed. xii., part 2, p. 1,028 (1767).

Chelifer cancroides, Sim., Arachn. de France, tom. 7, p. 23, 1879 (exclude reference to *C. Hermannii*, Leach).

Length 1$\frac{3}{4}$ths to 2 lines.

Cephalothorax and *palpi* dark yellow-brown, *legs* and *abdomen* paler. Similar in general form and appearance, and, as far as could be observed, in the possession of clavate hairs, to *C. Hermannii*, Leach; but may be distinguished not only by its larger size and darker colouring, but by the distinctly more robust form of the palpi; the bulb of the pincers is equal in length to the cubital joint, the cubital joint is distinctly, though not very much, shorter than the humeral. The present species, moreover, is found in houses and outbuildings, among old rubbish, &c.; while *C. Hermannii* is found under the bark of trees. Four examples are in the British Museum collection. Two of these were found in

buildings at Peckham, another in an old account book in London, and the fourth in an old building at Westminster. These all agree well with typical European examples received from M. Simon, and, after a careful examination of the type of *Acarus cancroides* in the Linnean Society's cabinet, I believe them to be the same as the species described by Linnæus. The drawing from which the figures of this species were engraved was made for me by Miss Fisher, of Fulham-road, London, from one of the Peckham specimens in the British Museum.

Chelifer meridianus. Pl. C, fig. 15.

Syn: *Chelifer meridianus*, L. Koch. Darst. Eur. Chernet., p. 20 (1873), and Simon, Arachn. de France, tom. 7, p. 25 (1879).

Length rather over 1 line.

Cephalothorax dark yellowish-brown, its surface thickly shagreened, and granulose on the margins. *Palpi* tinged with reddish, surface shagreened, in some parts granulose. *Abdominal plates* shagreened and dark yellow-brown. *Legs* pale yellow-brown. The hairs on the cephalothorax, palpi, and abdomen are short, pale, and all clavate.

The *caput* is broader (from front to back) than the thorax, of which last the hinder portion is less than half its breadth.

The *eyes* are large, but indistinct, and about half a diameter's distance from the fore margin of the caput.

The *palpi* are rather short, strong; the axillary joint is strongly and roundly protuberant on the upper side, as well as underneath on the posterior side. The humeral is longer than the cubital joint, and the cubital is strongly protuberant on the inner side towards the hinder extremity. The bulb of the pincers is of the same length as the cubital joint, and the claws, which are slightly curved, are equal to the bulb in length; this last is short, stout, and broadest near the hinder extremity. The shorter, stronger palpi, and their clavate hairs, as well as the equal length of the claws and bulb of the pincers, will serve to distinguish this species at a glance from *C. subruber*.

A single example was found some years ago among dead leaves, &c., in a wood at Bloxworth, and determined by M. Simon to be *C. meridianus*, L. Koch.

CHELIFER SUBRUBER. Pl. C, fig. 14.

Syn: *C. subruber*, Simon Arachn. de France, tom. 7, p. 30 (1872).

Length 1 line to 1½.

Cephalothorax yellow-brown, slightly tinged with red; *palpi* red-brown; *abdominal plates* deep brown; *legs* pale yellow-brown. The surface of the cephalothorax and abdominal plates is densely shagreened; the sides of the thorax are granulose; each of the abdominal plates is furnished with a row of short claviform hairs on the hinder margin. The hairs on the cephalothorax are also clavate. Some of the hairs on the palpi are obtuse, some clavate; those on the claws of the pincers fine. The groove dividing the caput and thorax is strong, and the posterior portion of the thorax is half its width. The caput and thorax are of nearly about equal width. The anterior margin of the caput is strongly and somewhat roundly obtuse, and the eyes, which are large, are placed nearly half a diameter's length from it.

Palpi moderately long, tolerably strong; the axillary joint is strongly and obtusely protuberant on the upper side; the humeral and cubital joints are of equal length. The claws of the pincers are slightly curved and considerably shorter than the bulb, the latter being equal in length to the cubital joint without its stem; the bulb narrows gradually to the claws, running into them without any decided or abrupt depression.

This species is allied to *C. meridianus*, L. Koch, but may be distinguished among other characters by the claws being distinctly shorter than the bulb of the pincers, whereas in *C. meridianus* they are of equal length.

Examples were kindly sent to me by Mr. W. P. Haydon, by whom they were found in an oil mill at Dover in January, 1880; and I have since (November, 1886) received numerous examples

from the Rev. F. O. P. Cambridge, by whom they were found in an old building at Hyde, near Bloxworth. The Dover examples have been examined and verified by M. Simon. I have also received it from Mr. C. G. Bignell, found near Plymouth.

CHELIFER LATREILLII. Pl. B, fig. 13.

Syn: *Chelifer Latreillii*, Leach. Zool. Misc. 3, p. 49, pl. 142, fig. 5.

" " *Degeerii*, C. Koch, Die. Arachn. x., p. 53, fig. 788, 789 (1843).

" " " E. Simon, Arachn. de France 7, p. 22 (1871).

Length 1⅔rds of a line.

Cephalothorax dark brown tinged with olive.

Palpi rich deep brown tinged with red, bulb of pincers deepest, and claws clearer red; *falces* and legs pale yellowish-brown; *abdominal plates* yellowish-brown, divided by a longitudinal line. The hairs on the legs short, mostly fine, and simple; those on the cephalothorax, the palpi (except the claws), and on the abdomen are short and obtuse, but not claviform. The surface of the cephalothorax, abdomen, and palpi is thickly and finely granulose. The claws of the pincers are curved and equal in length to the bulb, and the humeral joint is a little longer than the cubital. The anterior transverse indentation of the cephalothorax is, as nearly as possible, midway between the fore and hinder extremity.

The *eyes* are of good size, round, and placed at somewhat more than a diameter's distance from the fore margin of the caput.

This species is nearly allied to *C. cancroides*, but may be distinguished by the non-clavate hairs on the palpi and abdomen, the less size, and strength of the pincers, and its brighter, more varied colours; the form of the bulb also differs, being of a much broader, more oval shape. I have received this species from Mr. C. W. Dale, Glanvilles Wootton; also from Mr. E. A. Butler, Hastings; from Mr. Matthews, Sandwich and Deal; as well as from near Berwick on-Tweed; from Mr. J. E. Mason, Alford, Lincolnshire; and

from Mr. W. F. Blandford, from Deal. All the specimens agree with the type in the British Museum of Dr. Leach's *Chelifer Latreillii*.

Group III. *Eyes none.*

Two British Genera—*Chernes*, Menge, and *Chiridium*, Menge—are comprised in this group :—

i. Cephalothorax divided into three portions—*Chernes.*

ii. Cephalothorax divided into two portions—*Chiridium.*

GEN : 1. CHERNES, Menge (*Chelifer* Simon, ad partem).

The characters of this genus are very similar to those of *Chelifer*, except in the want of eyes, which distinguishes it at a glance. The anterior transverse furrow dividing the caput and thorax appears also to be usually less strong. Five species have been found in Great Britain, two of them being apparently new to science.

These five species may be diagnosed as follows :—

i. *Hairs simple.*

a. Bulb of pincers very nearly, or quite, as broad as long, and claws shorter than bulb.

C. insuetus, sp. n.

b. Bulb of pincers distinctly longer than broad ; claws equal to bulb in length. *C. nodosus*, Schr.

ii. *Hairs clavate.*

à. Bulb of pincers very tumid, but slightly longer than broad ; claws equal to bulb in length.

C. cimicoides, Fabr.

'a. Bulb less tumid and distinctly longer than broad claws, at least the moveable one, a little longer than bulb.

α. Hairs strongly and uniformly clavate, and an impression at the middle of the hinder part of the caput.

C. phaleratus, L. Koch.

β. Hairs less strong and many simple ; no impression behind caput. *C. dubius*, sp. n.

CHERNES NODOSUS. Pl. C, fig. 16.

Syn : *Chelifer nodosus*, Schrank. Fn. Boic. III., p. 246 (1803), and Simon Arachn. de France, tom. 7, p. 33 (1879).

Length slightly over 1 line.

Cephalothorax and *palpi* yellowish red-brown, the former rather duller than the latter. *Abdominal segments* yellow-brown ; *legs* paler. The *caput* and first segment of the thorax are of equal width (from back to front) ; the second segment of the thorax is very narrow. The surface of the cephalothorax and abdominal segments is very finely shagreened, the latter granulose on the sides. The hairs on this part, as well as on the palpi and abdomen, are simple, but obtuse. The *palpi* are rather short and strong. The axillary joint is considerably and somewhat sub-conically protuberant above, as well as protuberant near its base underneath. The humeral joint at its widest part, behind, is considerably less broad than long ; the cubital joint is very tumid on its inner side ; the bulb of the pincers is distinctly longer, to the base of the fixed claw, than its width behind ; and the claws are slightly curved and equal to the bulb in length.

This is a widely dispersed species. All I have yet seen have been found attached by the forceps or pincers of the palpi to the leg of a fly. I have received it thus attached, from Mr. C. W. Dale, Glanville's Wootton ; from Mr. R. H. Meade, Bradford, Yorkshire ; Mr. F. M. Campbell, Hoddesdon, Hertfordshire ; Rev. F. O. P. Cambridge, Carlisle ; Mr. Stoddart, Bristol ; Mr. G. C. Bignell, Stonehouse, Devon ; and Mr. Denison Roebuck, from near Leeds and Bradford, Yorkshire.

CHERNES INSUETUS (sp. nov.) Pl. C, fig. 17.

Length 1½ lines.

Cephalothorax red-brown ; *palpi* of the same, but of a clearer brighter hue. The *thorax* is rather paler than the *caput*, which is much broader from front to back than the first segment of the thorax. The *legs* are pale brownish-yellow. The hairs are all fine and simple. The palpi are short and very strong. The axillary

joint is exceedingly protuberant in a sub-conical form, both above and beneath. The humeral joint is very strong, its width behind at the broadest part being more than half its length, and the cubital joint is excessively gibbous on its inner side. These two last joints are about equal in length. The bulb of the pincers is nearly or quite as broad as long, the claws being slightly shorter than the bulb and a very little curved.

Examples of this distinct species were sent to me from Dover in October, 1880, by Mr. W. P. Haydon, by whom they were found among *débris* and refuse in company with *Chelifer subruber* Sim., in his oil mills. Mons. Simon determined them to be new to science. It may easily be distinguished from *Chernes nodosus*, to which it is allied, by its larger size and much stronger palpi, the joints of which are differently proportioned.

CHERNES CIMICOIDES. Pl. C, fig. 18.

Syn: *Scorpio cimicoides*, Fabr. Ent. Syst. iii., p. 436, No. 9 (1793).

„ *Chelifer Geoffroyi*, Leach, p. 50 } Zool. Misc. iii. (1817).

„ „ *Olfersii*, Ibid., p. 50 }

„ „ *fasciatus*, Ibid., Trans. Linn. Soc. Lond. xi., p. 391 (1815).

„ „ *cimicoides*, Sim. Arachn. de France, tom. 7, p. 39, pl. 18, fig. 16.

„ „ *Hahnii*, C. Koch. Arachn. x., p. 51, fig. 787 (1843).

Length 1½ lines.

Of a short broad form. *Cephalothorax* dark yellow-brown; *palpi* deep red-brown; *abdominal segments* dark yellowish-brown; *legs* pale dull brownish-yellow. The surface of the cephalothorax is finely shagreened, and, as well as the palpi, abdomen, and legs, furnished with strong clavate hairs. The palpi are moderately long, strong, and the axillary joint is very obtusely or roundly prominent above; the bulb of the pincers is very robust, a little longer than broad, and the claws are slightly curved and rather

shorter than the bulb. The strong clavate hairs will serve to distinguish it at a glance from either of the foregoing species of the genus.

I have met with this species, though very rarely, under decaying bark of trees at Bloxworth, and have received it from Mr. C. W. Dale, Glanville's Wootton ; Mr. J. C. Bignell, Stonehouse, Devon ; Mr. W. F. Blandford, Marlborough and the New Forest ; and from the late Mr. W. Farren Cambridge. Among the synonyms of these species I have included three of the species described by Leach as having two eyes (*C. fasciatus*, *C. Olfersii*, and *C. Geoffroyi*). The type, however, in the British Museum of Leach's *C. Geoffroyi* has no eyes and is certainly identical with *Chernes (Chelifer) cimicoides*, while from the damaged condition of the type of *C. Olfersii* it is impossible to say with certainty what it is, though probably, from its general appearance, and its clavate hairs, it is also identical with *C. cimicoides*. *Chelifer fasciatus*, Leach, is given by himself as identical with his *C. Geoffroyi*, and no doubt it is so.

CHERNES DUBIUS (sp. n.) Pl. C, fig. 19.

Length slightly over 1 line.

Cephalothorax, regularly rounded in front, yellow-brown ; *caput* broader from back to front than the thorax, and the transverse grooves much curved ; *palpi*, yellowish red-brown ; *abdominal segments*, pale yellow-brown ; *legs*, paler. (The colours in the only two specimens in my possession have evidently rather faded, and therefore the natural colour of this species will have been probably darker and richer than above described.)

The cephalothorax, palpi, legs, and abdomen are all furnished with not very robust yellowish slightly claviform hairs.

The *Palpi* are long ; the pincers long and strong ; the bulb is as nearly as possible equal in length to the fixed claw ; the axillary joint is protuberant above near its anterior extremity ; the humeral and cubital joints are equal in length, the latter rather gibbous towards its base on the inner side. I found a single example of

this species among *débris* during a visit to the late Mr. J. C. Dale at Glanville's Wootton some years ago, and another was subsequently sent to me from Sherborne by my nephew (Fredk. O. P. Cambridge).

It may easily be distinguished from *C. cimicoides* by the longer less strong palpi, and by the less strong and not so thickly or uniformly disposed clavate hairs; from the other two British species of this genus it may be known by its having *clavate* and not simple hairs. The two specimens noted were determined by M. Simon, at the time of their capture, to be the *Chelifer phaleratus*, Sim.; and an example in the British Museum collection was found at Hillingdon, Middlesex; but on submitting to him a short time since examples found in the New Forest (see next species) there seems no doubt that these latter examples are the true *C. phaleratus*, Sim., and, though M. Simon thinks that the two others may be less developed examples of the same species, I have come to the conclusion, after careful examination and comparison, that the differences pointed out warrant (at any rate for the present) their being described as distinct, and if so probably new to science. Their habitat (among moss) differs also from that of the New Forest specimens, which were found under bark of trees.

CHERNES PHALERATUS. Pl. C, fig. 20.

Syn: *Chelifer phaleratus*, Sim. Arachn. de France, tom. 7, p. 38, pl. 18, fig. 12 (1879).

Length $1\frac{1}{4}$ lines.

Cephalothorax and *palpi* reddish yellow-brown; *abdomen* darker reddish-brown; *legs* pale yellowish-brown; *caput* and *thorax* of equal width, the posterior division of the latter rather narrower than the anterior. The whole surface is densely shagreened, more coarsely on the cephalothorax than elsewhere. The hairs are mostly clavate and of a reddish or ferruinous hue. Some, however, on parts of the palpi and legs, are simple. The transverse indentations of the cephalothorax are strong, especially that defining the caput, and in the centre of this indentation is a rather

marked impression running and losing itself a little way towards the middle of the caput.

The *palpi* are rather long and strong; on the upper side of the axillary joint is a strong roundly obtuse eminence, with a lesser one on the under margin. The humeral and cubital joints are of equal length. The hinder part of the humeral joint is broadest and its lower corner moderately abrupt, but not angular. The cubital joint is as strong as the humeral and tumid (but not abruptly so), on the middle of its inner side, the outer marginal line forming an even curve. The bulb of the pincers is robust, broad at the base and narrowing gradually to the claws, which are equal to the bulb in length (the moveable claw slightly longer), and curved, but not strongly so. The length of the bulb is equal to that of the cubital joint.

This species is nearly allied to the foregoing (*C. dubius*, Camb.), but is a little larger and its surface is more coarsely shagreened. The bulb of the pincers also is rather more robust in proportion; the humeral joint of the palpus is straighter on the inner margin; the cubital joint is less gibbous near its posterior extremity on the inner side, and the marginal posterior line is not uniformly curved; and in *C. dubius* there is no impression at the middle of the hinder part of the caput; the hairs also in *C. phaleratus* are much more strongly and uniformly clavate than in *C. dubius*.

Examples of this species were kindly sent to me by Mr. W. F. Blandford, by whom they were found under bark of trees in the New Forest in May, 1890, and are undoubtedly the true *C. phaleratus*, Sim.

GEN. 2. Chiridium (Menge).

Cephalothorax as long as broad; very broad at the hinder extremity and narrowing gradually to a broadish obtuse point in front. The *abdomen* is of a broad-oval form, broadest behind and continuing to enlarge gradually from its junction to the thorax; it has ten segments above divided by a longitudinal line. The cephalothorax is divided near the middle by a deep transverse

groove or indentation, the posterior indentation (more or less visible in the genera *Chelifer* and *Chernes*), except is scarcely represented as a shallow depression. *Eyes* none ; *falces* very small ; *legs* short, supernumerary joint (*trochantin*) very short and only on the third and fourth pairs. The moveable claw of the falces ends with a membranous galea.

One species only of this genus is as yet recorded in Britain. France possesses one other.

CHIRIDIUM MUSEORUM. Pl. C, fig. 21.

Syn : *Chelifer museorum*, Leach. Zool. Misc. iii., p. 50, pl. 142, fig. 4 (1817).

„ *Chiridium museorum*, Simon. Arachn. de France, tom. 7, p. 43, pl. 18, fig. 19, 20.

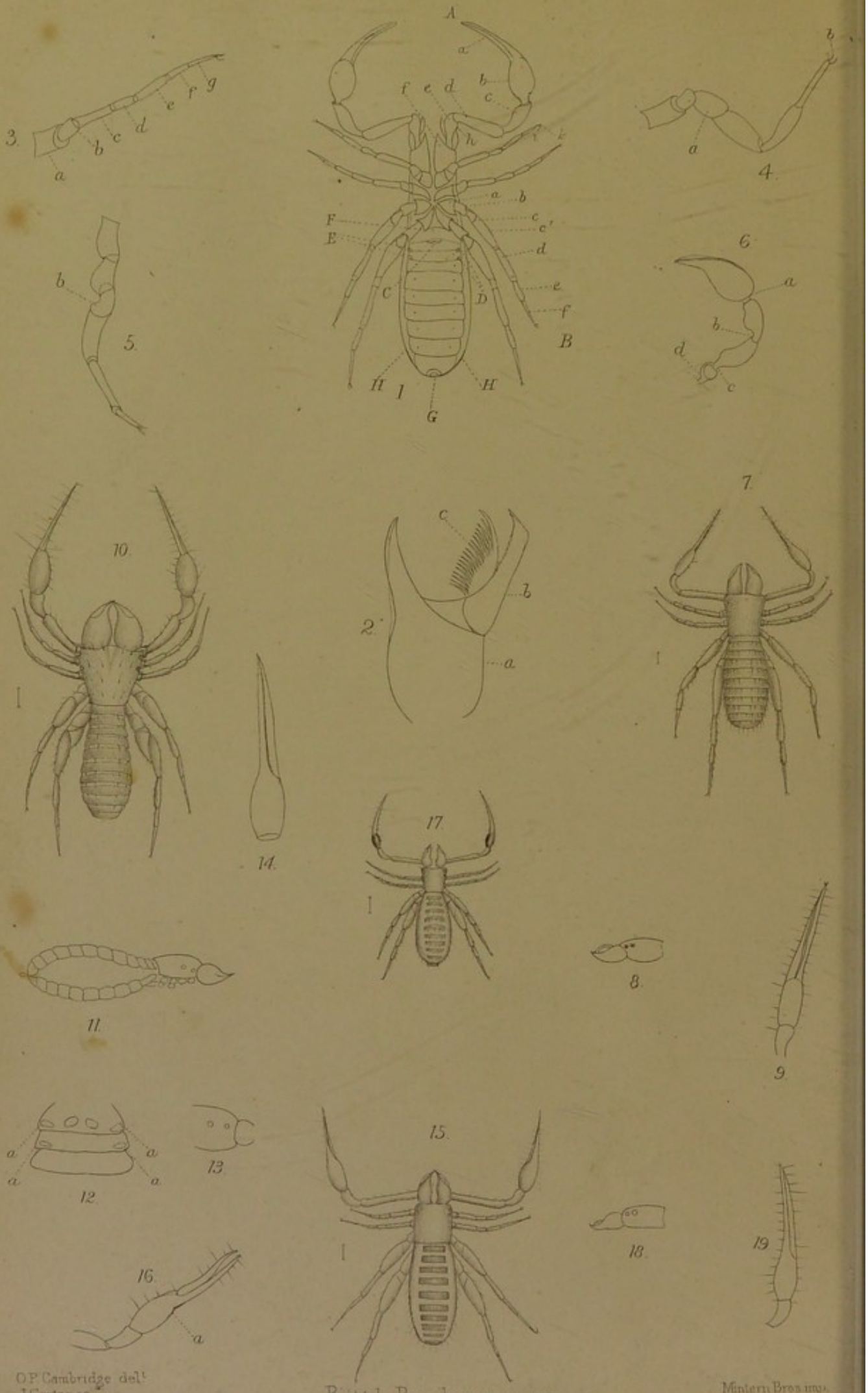
Length $\frac{2}{3}$rds of a line.

The *cephalothorax* and *abdomen* are together of a broadish regular oval form, pointed in front and round behind. *Cephalothorax* and *palpi* dark red-brown, *abdomenal segments* rather paler. The surface of cephalothorax, abdominal segments, and palpi are densely and rather coarsely granulose. The transverse indentation is strong, and the cephalothorax is also longitudinally depressed or indented, at least in the only examples I have, which are dried and mounted on card. The hairs are very short, fine, simple, and white. *Palpi* rather long, not very strong ; humeral joint distinctly longer than the cubital. The bulb of the pincers and the claws are equal in length. The axillary joint is strongly and doubly protuberant at its base on the outer side.

This little species cannot well be mistaken for any other one of the Chernetidea. It is found in old houses, under bark of trees, among old books, &c. It appears to be rare in Great Britain. Examples were sent to me some years ago from Glanville's Wootton by Mr. C. W. Dale, and I have a specimen taken at Bloxworth, as well as one found under old bark in Epping Forest by my son (R. J. P. Cambridge). Mr. C. F. George, of Kirton-in-Lindsay, Lincolnshire, tells me he once found a great number of this species

in a deserted sparrow's nest, and I have also received it from Mr Beulah, near Brigg, in the same county.

List of Species, with Reference to Page, Plate, and Figures.



O P Cambridge del.
J Carter sc.

British Pseudoscorpiones.

Mintern Bros imp.

DESCRIPTION OF PLATE A.

Fig. 1. *Obisium muscorum* Leach. Outlines of under side, enlarged, to shew different portions of structure.

A. *Palpus*—*a*, claws of pincers; *b*, bulb of do.; *c*, cubital joint; *d*, humeral joint; *e*, axillary joint; *f*, maxilla; *h*, falx.

B. Leg of 3rd pair—*a*, coxa; *b*, exinguinal joint; *c*, trochantin; *c*, femur; *d*, tibia; *e*, metatarsus; *f*, tarsus.

H. Under side of abdomen shewing transverse segments.

G. Anal aperture with terminal button.

D. E. Spiracular orifices. C. Orifice of spinning apparatus.

C. Site of spinning apparatus.

F. Genital apertures.

Fig. 2. One of falces enlarged with fangs open—*a*, basal joint; *b*, articulated fang; *c*, serrula.

Fig. 3. Leg of 1st pair more enlarged—*a*, coxa; *b*, trochanter on exinguinal joint; *c*, femur; *d*, general joint; *e*, tibia; *f*, metatarsus; *g*, tarsus.

Fig. 4. Leg of 1st pair of *Chernes cimicoides*—*a*, trochantin; *b*, termina; claws.

Fig. 5. Leg of 4th pair of do.—*b*, trochantin.

Fig. 6. Palpus of *Chelifer meridianus*—*a*, *b*, *c*, *d*, stems of the several joints,

Fig. 7. *Chthonius orthodactylus* Leach.

,, 8. Profile outline of cephalothorax and falces of do.

,, 9. Part of palpus of do.

Fig. 10. *Chthonius Rayi* L. Koch.

,, 11. Profile outline of do. without legs or palpi.

,, 12. Portion of under side of abdomen of do. *a*, *a*, *a*, *a*, spiracular openings.

,, 13. Profile outline of portion of cephalothorax and falces do.

,, 14. Pincers of palpus do.

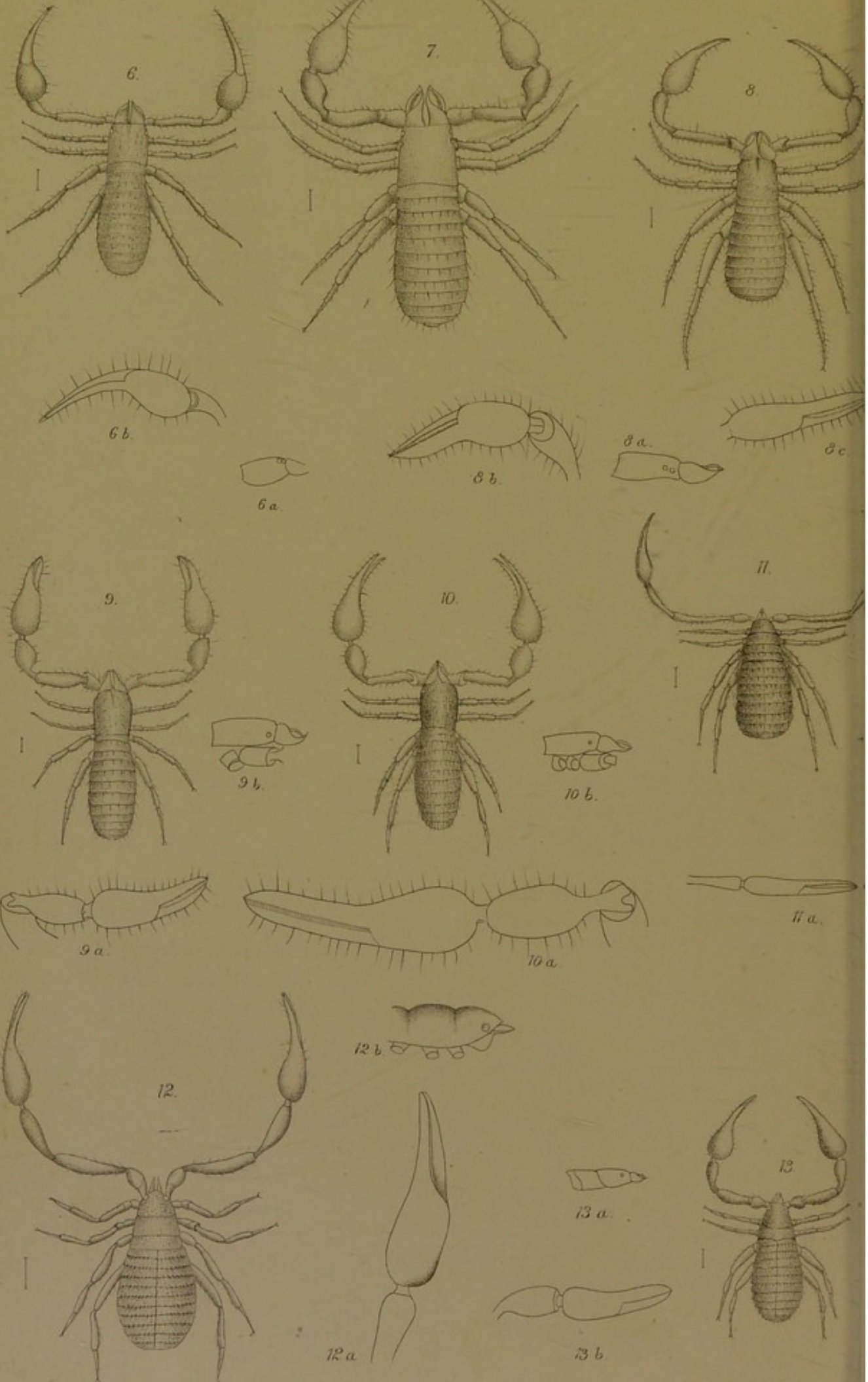
Fig. 15. *Chthonius tetrachelatus* Preyss.

,, 16. Portion of palpus of do. *a*, indented bulb.

Fig. 17. *Chthonuis tenuis* L. Koch.

,, 18. Profile outline of cephalothorax and falces of do.

,, 19. Pincers of palpus do.



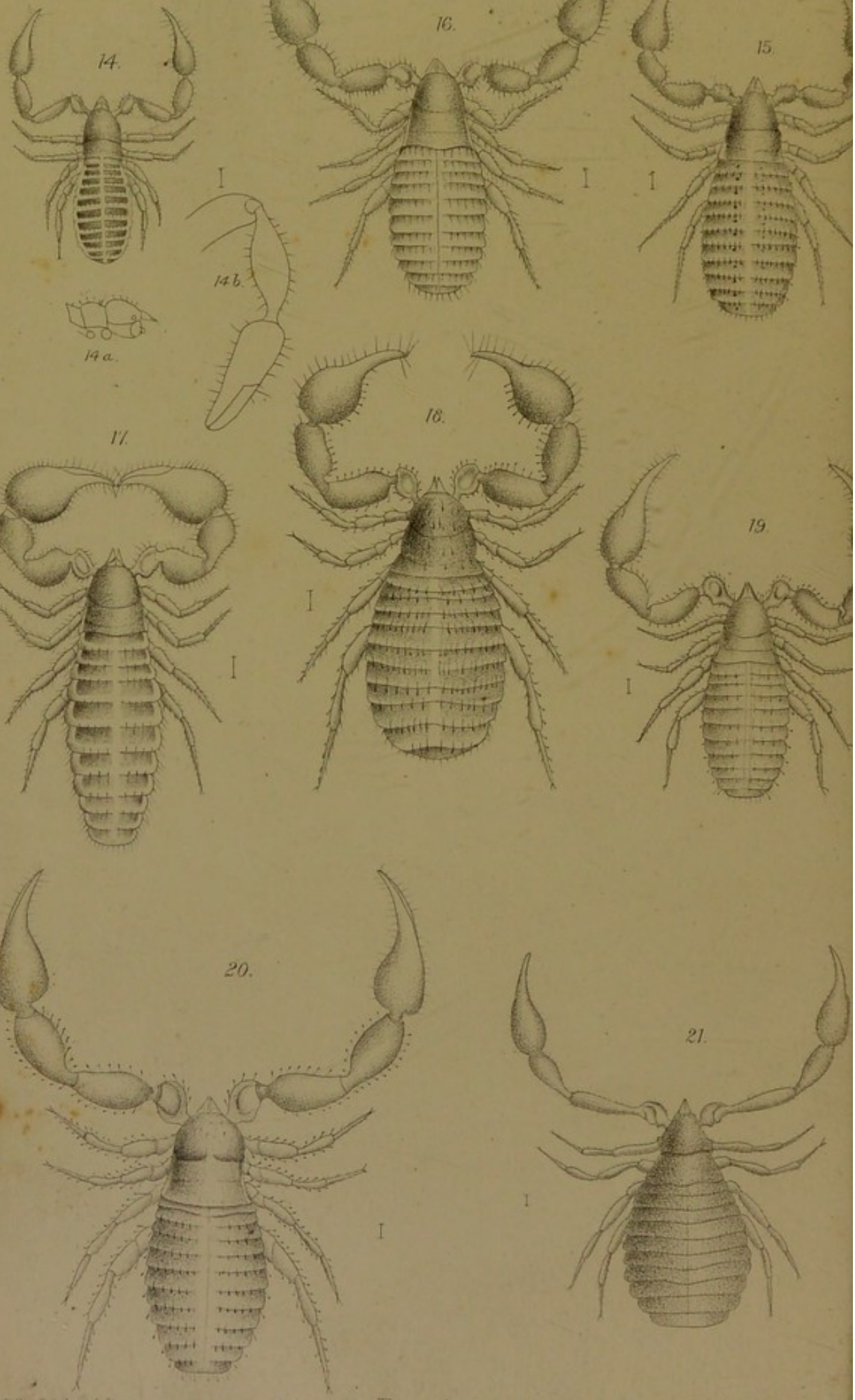
O.P. Cambridge del.
J. Carter sc.

British Pseudoscorpiones

Mintern Bros. imp.

DESCRIPTION OF PLATE B.

Fig. 6. *Obisium muscorum* Leach.
6*a*. Profile outline of cephalothorax and falces do.
6*b*. Pincers of palpus do.
Fig. 7. *Obisium sylvaticum* C. L. Koch.
Fig. 8. *Obisium maritimum* Leach.
8*a*. Profile outline of cephalothorax and falces; 8*b*, 8*c*, pincers of palpus in two positions.
Fig. 9. *Roncus Cambridgii* L. Koch.
9*a*. Palpus; 9*b*, profile outline of cephalothorax and falces.
Fig. 10. *Roncus lubricus* L. Koch.
10*a*. Portion of palpus of do.; 10*b*, profile outline of Cephalothorax and falces.
Fig. 11. *Chelifer Hermannii* Leach.
11*a*. Pincers of palpus viewed sideways.
Fig. 12. *Chelifer cancroides* Linn.
12*a*. Pincers of palpus viewed sideways; 12*b*, profile outline of Cephalothorax and falces do.
Fig. 13. *Chelifer Latreillii* Leach.
13*a*. Profile outline of cephalothorax and falces do.; 13*b*, pincers of palpus do. viewed sideways.



British Pseudoscorpiones.

DESCRIPTION OF PLATE C.

Fig. 14. *Chelifer subruber* Sim.
14*a*. Profile of cephalothorax and falces do. ; 14*b*, palpus do.
Fig. 15. *Chelifer meridianus* L. Koch.
Fig. 16. *Chernes nodosus* Schranck.
Fig. 17. *Chernes insuetus* Sp. nov.
Fig. 18. *Chernes cimicoides* Fabr.
Fig. 19. *Chernes dubius* Sp. nov.
Fig. 20. *Chernes phaleratus* Sim.
Fig. 21. *Chiridium museorum* Leach.