

Terrestrial Acari of the Tyne Province.

By the REV. J. E. HULL, M.A.

I.—ORIBATIDÆ.

ADDENDA ET CORRIGENDA.

(See vol. IV., part II).

At p. 382 the primary division of the Family into two groups was accidentally omitted, viz. :—

§i. *Brachypylina*.

Anal and genital apertures comparatively small, more or less quadrate, subequal, well separated. Tibiæ of all the legs clavate or subclavate.

(Includes sub-families A, B, C, and D).

§ii. *Macropylina*.

Anal and genital apertures longer, contiguous, unequal. Tibiæ all cylindrical or broadest at the base.

(Includes sub-families E and F.)

On p. 384, for 4th line of dichotomous table of *Tegeocranus*, read "Lamellæ without cusp."

On p. 392, after the entry under 55 add

55a. *Melanozetes cambricus*, Hull (sp. nov.)

Body rather rotund, dull black. Dorsal spines pretty long curved, stiff but slender. Lamellæ as of *edwardsi* but running to a point in front. Sensilli clavate, small.

Taken by Dr. Jackson on Moel Siabod in moss at 2,000 feet.

P. 393. *Oribates nervosus*, Berl. Has occurred with *Formica rufa* at Riding Mill and Chopwell (66b, 67b).

P. 400. In line 5 of the dichotomous table delete "acute."

P. 408. *Hoploderma stricula*, K. Has occurred plentifully under stones in West Allendale (67a).

On page 409, fifth line from the end, read "*spiculate* head."

II.—THROMBIDIIDÆ.

In extending the local list so as to include all species on record for the British Isles I have had to rely chiefly on the published papers of Dr. C. F. George (Naturalist *passim*) and the Irish list of Mr. J. N. Halbert (Clare Island Survey). I am indebted to Dr. George and the authorities of the Hull Municipal Museum for the privilege of examining Dr. George's mounted specimens—41 slides in all, including 21 British species. The Irish list enumerates 31. A few other odd records gave me a nucleus of 46 species in all, and I have been able to increase the total to 87. I owe very much to the ample supplies of material which I have received from Dr. Randell Jackson, Mr. R. S. Bagnall, Dr. J. W. H. Harrison, Mr. W. Falconer, Mr. W. P. Winter, Mr. J. C. Varty-Smith, and others. I have also to thank Mr. Wm. Evans for a MS. list of Scotch species.

What I have said concerning classification, nomenclature, and arrangement in my previous paper on the Oribatidæ is equally applicable here and need not be repeated.

By Dr. Berlese and others the Family is divided into two sections according as the larvæ and adults are similar (homomorphous genera) or dissimilar (heteromorphous). The distinction appears to be quite good though based on facts imperfectly known and useless for purposes of identification. The heteromorphous group includes the first two sub-families—*Thrombidiinæ* and *Rhyncholophinæ*—distinguished by the presence of a continuous pubescence on body and legs, and a chitinous crista (median, longitudinal, and usually more or less linear) bearing one or two pairs of sensilli.

A.—Sub-family Thrombidiinæ.

Mandibles external and hooked. Sensilli situated near the middle of the crista. Eyes (British species) always 4.

- | | | | | | |
|----|---|-----|-----|-----|---------------------------|
| 1. | Tarsus conspicuously pulvillate | ... | ... | ... | <i>Allothrombium</i> . |
| | Pulvillus absent or very inconspicuous | ... | .. | 2 | |
| 2. | Body hairs simple spiniform nude | ... | ... | 3 | |
| | Body hairs otherwise... | ... | ... | 6 | |
| 3. | Crista with two pairs of sensilli | ... | ... | ... | <i>Johnstoniana</i> . |
| | Crista with only one pair of sensilli... | ... | ... | 4 | |
| 4. | Eyes conspicuously pedunculate | ... | ... | ... | <i>Podothrombium</i> . |
| | Eyes not on common peduncle, sessile | ... | ... | 5 | |
| 5. | Fore margin of body with a super-rostral process | | | | |
| | (nasus) | ... | ... | ... | <i>Rhinothrombium</i> . |
| | Nasus absent | ... | ... | ... | <i>Eothrombium</i> . |
| 6. | Sensilli situated behind middle of crista | ... | ... | 7 | |
| | Sensilli situated before the middle | ... | ... | ... | <i>Sericothrombium</i> . |
| 7. | Body hairs spiniform pectinate or plumose | | | | <i>Microthrombidium</i> . |
| | Body hairs crassate, variously formed, villous | ... | ... | ... | <i>Enemothrombium</i> . |
| | Body hairs (at least behind), ramose above, villous | | | | |
| | below | ... | ... | ... | <i>Georgia</i> . |

ALLOTHROMBIUM, Berl., 1910.

Tarsi with a conspicuous pulvillus under and between the claws. Palpal claw large, without accessory claws or spines. Dorsal setæ plumose, pretty dense. Eyes on long peduncles.

Type: *fuliginosum*, Herm.

1. *Allothrombium fuliginosum*, Herm. 67.

British examples appear to belong to *var. norvegicum*, Berl.

Yorkshire, Scotland.

SERICOTHROMBIUM, Berl., 1910.

Palp without secondary claws or spines. Dorsum wide, depressed, usually wrinkled and impressed, indented in the middle of the posterior margin. Eyes on long peduncles. Crista bad to see.

Type: *holosericeum*, L.

1. Tarsus i much thicker than tibia i... ... *brevimanum*.
Tarsus i not thicker than the tibia ... 2
2. Dorsal trichomes all alike *scharlatinum*.
Anterior and posterior trichomes dissimilar *holosericeum*.
2. *Sericothrombium holosericeum*, L. 66, 67, 68.
Tarsi i slightly clavate. Dorsal trichomes truncate-clavate, but attenuate or even acute in the thoracic region.
The common "scarlet mite," abundant everywhere.
It sometimes reaches a length of 4mm.
3. *Sericothrombium scharlatinum*, Berl. 67.
Dorsal trichomes uniform—very slightly clavate with rounded tips; about 130 μ in length. Very plentiful in West Allendale in May; elsewhere the records are hopelessly confounded with the preceding.
Yorkshire.
4. *Sericothrombium brevimanum*, Berl. 66, 67.
Trombidium mushami, Geo.
T. buccinator, Geo.
Dorsal trichomes much shorter than in the two preceding species, varying a little in form, but all truncate-clavate with expanded tips.
Yorkshire.

ENEMOTHROMBIUM, Berl., 1910.

Dorsal trichomes more or less inflated (usually also transversely septate) rising from a socket which is generally rayed or lobed at its summit: the trichomes of the limbs (at least of the upperside) spatulate and feathered, plano-convex. Article iv. of the palp with secondary claw or claws and seriate spines. Eyes not pedunculate but seated on a tuber.

Type: *bifoliosum*, Can.

- | | | | | |
|----|---|-----|-----|-------------------|
| 1. | Dorsal trichomes arcuate clavate | ... | ... | <i>clavatum</i> . |
| | Dorsal trichomes erect | ... | ... | 2 |
| 2. | Dorsal trichomes fusiform clavate | ... | ... | <i>pexatum</i> . |
| | Dorsal trichomes much inflated, not acuminate | | | 3 |
| 3. | Dorsal trichomes without stalk above the socket | | | <i>bullatum</i> . |
| | Dorsal trichomes shortly stalked | ... | ... | <i>subrasum</i> . |
5. *Enemothrombium clavatum*, Geo. 66, 67.

E. densipapillum, Berl.

Fond of sphagnum, though by no means confined to it. Easily distinguished by the curved trichomes.

Yorkshire, Scotland.

6. *Enemothrombium pexatum*, K. 67.

Ottonia conifera, Geo.

Enemothrombium calycigerum, Berl.

Dorsal trichomes septate, the distal segment smaller, smooth and bluntly pointed or slightly wedge shaped.

Yorkshire, Ireland, Scotland.

7. *Enemothrombium bullatum*, Geo. 67.

E. rasum, Berl.

This species, like the next, has much inflated trichomes which mostly collapse in drying or when mounted in balsam. They are everywhere contiguous on the living animal, so that the dorsum under the lens appears to be areolate and glabrous.

Usually found in water or near it. Yorkshire. Cumberland (Varty-Smith). Scotland.

8. *Enemothrombium subrasum*, Berl. 67.

Ottonia ignota, Geo.

Generally in water or wet sphagnum. After death only a few of the larger trichomes preserve their form. The basal segment appears to be longi-

tudinally ribbed (so also in the other three species), but this may be due to the seriate hairs. The distal segment is a mere flattened cap with a fringe of minute spiny hairs.

GEORGIA, gen. nov.

General appearance of a slender *Enemothrombium*, but (as in some *Sericothrombia*) the dorsal trichomes vary, being more or less setaceous and feathered on the anterior parts of the dorsum, but from the shoulders backward they are lobate or ramose at the apex and plumose below; always obtuse and opaque. Hairs of the limbs simple, plumose.

Type: *ramosa*, Geo.

9. *Georgia ramosa*, Geo. 66, 67.

Ottonia ramosa, Geo.

Ottonia sheppardii, Geo.

Microtrombidium ramosum, Halbert.

Quite a common species in Britain, but not yet recognised abroad.

Yorkshire, Cheshire, Lancashire, Scotland, Ireland.

MICROTHROMBIDIUM, Berl., 1910.

Agreeing generally with the two foregoing, but differing in the following characters: Abdomen not narrowed behind; no inflated or spatulate or branched trichomes on either body or limbs; eyes usually sessile or nearly so; accessory armature of article iv. of the palp considerably reduced, and article v. more or less bluntly pointed, never distally expanded.

Type: *pusillum*, Herm.

I give these characters with some reserve as few species are known to me; but those which I do know indicate two very distinct groups.

§i. *Microthrombidium*, s. str. Type : *pusillum*, Herm.

Dorsal pubescence of thickened opaque trichomes.

Eyes obliquely raised on a much abbreviated peduncle. Tarsus i broadly ovate. Lateral spine of palp usually solitary and very strong.

§ii. Type : *sucidum*, L. K.

Dorsal pubescence of true translucent spines uniformly tapering to a fine point, feathered with long fine hairs. Eyes less oblique, more nearly sessile, and further apart than in §i. Tarsus i oblong or only slightly clavate.

§i.

1. Dorsal trichomes mingled with some feathered spines ... *plancum*.
Dorsal trichomes all similar 2
2. Dorsal trichomes slender, rather long, almost cylindrical *pusillum*.
Dorsal trichomes shortly fusiform, densely hairy ... *simulans*.

10. *Microthrombidium pusillum*, Herm. 67.

Ottonia valga, Geo.

Trombidium parvum, Geo.

The examples recorded under this name are all northern (Germany northwards). The species may therefore be different from Hermann's *pusillum*, in which case its name will be *puniceum*, Koch. I do not find any specific difference between the British specimens I have seen and the *pusillum* of Thor and Oudemans. In West Allendale I find it in sphagnum and have never seen it below 1,000 feet.

Yorkshire, Ireland, Scotland.

11. *Microthrombidium plancum*, K. 67.

M. geographicum, Berl.

West Allendale, in moss, 1913. I have never seen it since.

12. *Microthrombidium simulans*, Berl.

This I have never seen.

Ireland.

§ii.

- | | | | | |
|----|---|-----|-----|-------------------|
| 1. | Dorsal trichomes all spinous, feathered | ... | ... | <i>sucidum</i> . |
| | Some of the trichomes longer nude | ... | ... | <i>spinosum</i> . |

13. *Microthrombidium sucidum*, L. K. 67.

Rare, in sphagnum, West Allendale.

14. *Microthrombidium spinosum*, Can.

Not known to me.

Ireland.

PODOTHROMBIUM, Berl.

Abdomen ellipsoid, dorsum convex, its clothing spinous simple, its cuticle often dusky. Legs long and slender; tarsus i not (or scarcely) thicker than the tibia. Article v. of the palp long, slender, clavate. Sensillar area of crista central between the eyes which are pretty strongly pedunculate.

Type: *bicolor* Hermann.

- | | | | | |
|-------------------------------------|-----|-----|-----|------------------|
| Tarsus i shorter than the tibia | ... | ... | ... | <i>filipes</i> . |
| Tarsus i not shorter than the tibia | ... | ... | ... | <i>bicolor</i> . |

15. *Podothrombium bicolor*, Herm.

Conspicuous on account of the contrast between the dark body and red legs. In West Allendale it is the most abundant of the *Thrombidiinae*, particularly among the rushes and sphagnum of the fells, ascending to 2,000 feet.

Generally distributed.

16. *Podothrombium filipes*, K. 67.

Johnstoniana levipes, Geo.

The slender legs give it the appearance of a *Rhyncholophus*. The usual habitat is under stones, and I have not seen it above 600 feet.

Yorkshire.

17. *Podothrombium magnum*, Berl. 66.

First pair of legs as in *bicolor* but the species is larger (always over 2 mm.) and wholly red.

Durham (Easington—R.S.B.)

JOHNSTONIANA, Geo. (*Diplothrombium*, Berl.)

Accessory claw of palp lateral with a basal tooth.

Above the rostrum a conical process ('nasus').

Eyes very prominent, lateral. Dorsal trichomes elbowed at the base and seated on tubercles.

Type: *eximia*, Berl.

18. *Johnstoniana eximia*, Berl. 67.

Diplothrombium eximium, Berl.

Johnstoniana errans, Geo.

This interesting little species I usually find on dead wood. Dr. George identifies it with Dr. Johnston's "Wandering mite," but I cannot follow him.

Yorkshire, Cheshire, Scotland (Evans).

- 18a. *Johnstoniana errans*, Johnston. 3 mm. 68.

Rhyncholophus errans, Johnston (Proc. Berw. Nat. Club, 1852). Dorsal setæ on tall cylindrical tubercles. The crista terminates behind in a curious heart-shaped bald spot.

Somerset, Yorkshire, Cambridge.

19. *Johnstoniana longipalpis*, Berl.

Tarsus i tuberculate at the base above.

Cheshire (Delamere—Dr. Jackson).

EOTHROMBIUM, Berl.

Crista linear, the sensilli independent and unenclosed on either side of the middle. Eyes quite sessile, red, conspicuously unequal. Dorsal trichomes spinous, simple, short and not very dense. Abdomen oblong; cephalothorax well defined.

Type: *echinatum*, Berl.

20. *Eothrombium echinatum*, Berl. 66, 67.

Ottonia echinata, Geo.

Ottonia evansii, Geo.

A small species of a pale flesh colour, with conspicuous red eyes, not uncommon among moss.

Yorkshire, Cheshire, Cumberland, Scotland (Evans).

21. *Eothrombium siculum*, Berl.

Smaller than *echinatum* with more slender legs. I have not seen it.

Ireland.

RHINOTHROMBIUM, Berl.

Exactly like the preceding genus except that a nasus is present, and the sensillar area is enclosed

Type: *nemoricola*, Berl.

22. *Rhinothrombium nemoricola*, Berl. 1950 μ . 66, 67.

Very similar in appearance to No. 18, but much less common, and usually found under stones.

Ratio of tarsus i : tibia i = 100 : 60.

Cumberland.

23. *Rhinothrombium inopinum*, sp. n. 1560 μ . 67.

Considerably less than *nemoricola*. Dorsal pubescence composed of stout short spines, acute and dagger-shaped, each springing from a well-defined ring. Cuticle scabrid. Anterior eye much smaller than the posterior and not placed obliquely. Tarsus i, 280 ; tibia, 240. (Fig. 47).

West Allendale, in moss.

B.—Sub-family Rhyncholophinæ.

Mandibles internal, not hooked. Sensilli terminal, anterior or posterior or both. Post-thoracic furrow present or not. No accessory claws to the palps. Eyes 2 or 4, sessile.

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|----|--|-----|-----|-----------------------|
| 1. | Crista consisting of sensillar area only | ... | ... | <i>Smaris.</i> |
| | Crista normal, i.e., linear with terminal expansions | | | 2 |
| 2. | Eyes 4 | ... | ... | <i>Rhyncholophus.</i> |
| | Eyes 2 | ... | ... | 3 |
| 3. | Dorsum sculptured, its clothing crassate or scaly | ... | | <i>Smaridia.</i> |
| | Dorsum plain, setæ not crassate, nude or plumose | | | 4 |
| 4. | Post-thoracic furrow absent | ... | ... | <i>Achorolophus.</i> |
| | Post-thoracic furrow present | ... | ... | 5 |
| 5. | Dorsal trichomes opaque, dark coloured | ... | ... | <i>Ritteria.</i> |
| | Dorsal trichomes translucent | ... | ... | <i>Belaustium.</i> |

SMARIDIA, Dugès, 1834.

Dorsum strongly shouldered, its surface variously sculptured; trichomes more or less clavate or squamose. Rostrum prominent, very long when fully extended.

Type : *papillosa*, Herm.

24. *Smaridia ampulligera*, Berl.

Dorsal trichomes not pectinate or plumose.

Yorkshire, Scotland.

SMARIS, Latr., 1807.

Like *Smaridia* but much larger, and the sensillar area only of the crista is present (often taken for a pair of median eyes!). Rostrum inferior, normally hardly visible from above. Dorsal trichomes spine-like.

Type : *expalpis*, Herm.

25. *Smaris expalpis*, Herm. 66, 67, 68.

Quite common, and partial to watery places and sphagnum. Ascends over 2,000 feet on Cheviot. The dorsal trichomes are narrowly lanceolate, elbowed at the base, each springing from the centre of a hexagonal space.

RHYNCHOLOPHUS, Dugès, 1834.

Eyes four. Body not rounded behind, but truncate or slightly angular. Dorsal trichomes rodlike,

opaque, dark. Pedes i. and iv. usually long and slender.

Type: *phalangioides*, De Geer.

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|----|---|-----|-----|-----|------------------------|
| 1. | Dorsal trichomes bluntly serrate | ... | ... | ... | 2 |
| | Dorsal trichomes minutely pectinate, or nude... | ... | ... | ... | 3 |
| 2. | Dorsal trichomes long, slender, acute | ... | ... | ... | <i>regalis</i> . |
| | Dorsal trichomes shorter, thicker, obtuse | ... | ... | ... | <i>phalangioides</i> . |
| 3. | Dorsal trichomes very minutely and sparsely pectinate | | | | <i>penninus</i> . |
| | Dorsal trichomes quite smooth | ... | ... | ... | <i>pachypus</i> . |

26. *Rhyncholophus phalangioides*, De Geer. 67.

The dorsal trichomes, thickly serrate to the very tip, never end in a single point.

Yorkshire, Cumberland, Scotland.

27. *Rhyncholophus regalis*, Koch. 66, 67, 68.

R. communis, Geo.

The dorsal trichomes end in a single point. (Fig. 53, 57).

The most abundant species, ascending to 1,800 feet in West Allendale. It runs swiftly in hot sunshine, on dry banks and over rocks. Generally distributed.

28. *Rhyncholophus penninus*, sp. nov. 67.

Total length, 1,300 μ . Differs from the two foregoing species in having no spines on the third joint of the palp, and those on the fourth are mere tubercles, hardly visible. Also the legs are less unequal, due to the comparative shortness of the fifth and sixth articles of legs i and iv (counting the tarsus as the seventh). From trochanter to tarsus of leg iv the lengths of the joints of an average specimen are 110, 120, 240, 250, 290, 130. The exceedingly minute pectinations of the setæ are only visible under a high power. (Fig. 55, 58).

A few specimens only, West Allendale.

29. *Rhyncholophus pachypus*, sp. nov. 67.

Distinguished from the preceding by the nude setæ, which are of varying length and comparatively few. Also the legs are much thicker, and the proportions of the articles are different (compare the following measures of the fourth leg with those given above—130, 130, 280, 320, 400, 170). The dorsum is unicolorous. (Fig. 59).

West Allendale, at 900 feet. I have also received it from Yorkshire (Cleveland).

RITTERIA Krämer.

Eyes 2. Body large and almost quadrate, not rounded behind, widest at the shoulders. Dorsal trichomes opaque, serrulate. Crista not projecting beyond the fore margin.

Type: *nemorum*, Koch.

- | | | | | |
|----|---------------------------------|-----|-----|----------------------|
| 1. | Three white spots on the dorsum | ... | ... | <i>trimaculata</i> . |
| | Dorsum without spots | ... | ... | <i>nemorum</i> . |

30. *Ritteria nemorum*, Koch. 2,200 μ . 66, 67, 68.

The most abundant species in this family, met with chiefly in the larval (on various Opiliones) and adult forms. Note that under the microscope some of the trichomes (which are all black) may appear white by reflected light. The cuticle is clear red.

var. vertex, Krämer, has the long trichomes of the anterior sensillar area serrulate, not smooth as in the type. General and common.

31. *Ritteria trimaculata*, Herm.

I have met with this species only in a sedgy bog in Delamere Forest, where it was plentiful. It is narrower than *nemorum*. The dorsal trichomes are brown except two large humeral spots (reniform) of white trichomes, and another behind generally smaller and more or less circular. Cuticle pallid. Scotland.

BELAUSTIUM, Heyden, 1828.

Eyes 2. Body elliptical, elongate, not shouldered, clothed with slender translucent setæ, simple or plumose. Dorsum not very convex. Post-thoracic furrow present. Anterior sensillar area projecting above the rostrum in a sort of nasus.

Type: *murorum*, Herm. (= *quisquiliarum*, Herm).

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|----|---|------------------------|---|
| 1. | Dorsal trichomes plumose or serrulate .. | ... | 2 |
| | Dorsal trichomes nude | ... | 4 |
| 2. | Dorsal trichomes fusiform densely serrulate ... | <i>scopularium</i> . | |
| | Dorsal trichomes normally filiform | 3 | |
| 3. | Apex of crista triangular... .. | <i>tardum</i> . | |
| | Apex of crista more or less rounded | <i>quisquiliarum</i> . | |
| 4. | Dorsal trichomes rigid, spiny, acute | <i>rubripes</i> . | |
| | Dorsal trichomes normally filiform | 5 | |
| 5. | Apical pre-sensillar setæ, several | <i>miniatum</i> . | |
| | „ „ two | <i>harrisonii</i> . | |
| | „ „ one only | <i>sabulosum</i> . | |

32. *Belaustium miniatum*, Herm. 66, 67, 68.

Rhyncholophus hirsutus, Geo.

Apical part of crista hardly projecting beyond the prodorsal margin, and bearing about 10 slender setæ. A form with pubescence a little denser than the type, especially behind (*Rhyncholophus hirsutus*, Geo.) has been referred to *rubripes*, Trou. which is, I think, a mistake.

Generally distributed in moss and detritus of all kinds. I have even taken it from a squirrel's drey. Lancashire, Yorkshire, Cumberland, Ireland.

33. *Belaustium rubripes*, Trouessart. 66.

The spiny setæ mark this species off from all the rest. In front of the anterior sensilli there are nine, exactly like those of the dorsum, 4 in a transverse line, 5 marginal.

Maritime or sub-maritime. Taken by Dr. Harrison in Greatham marshes. Other British records under this name should probably be referred to 32.

34. *Belaustium quisquiliarum*, Herm. 66, 67, 68.

Abundant in moss and at the roots of grass in summer.

Not recorded for Ireland, but probably distributed quite generally.

35. *Belaustium tardum*, Halbert.

West coast of Ireland, under stones. (Fig. 63).

36. *Belaustium scopularium*, sp. nov.

Body very long and narrow ($1,850\mu \times 700\mu$) like the next species, but distinguished from that and from all the rest by the form of the dorsal trichomes—fusiform, acute, thickly clothed with appressed spinules. The post-thoracic furrow is inconspicuous, and the prodorsum (or cephalothorax) is very small compared with the rest of the body. Crista normal, apical presensillar setæ two. Setæ of the legs simple. (Fig. 64, 65).

Colour light red. A single example was taken on the sandhills at St. Anne's-on-the-Sea, Lancashire.

37. *Belaustium harrisonii*, sp. nov. 66.

Body long and narrow ($1,500\mu \times 600\mu$) like that of the preceding, the pubescence simple but dense—more so than in any other species. Prodorsum small, transverse furrow inconspicuous. Presensillar setæ 2. (Fig. 61, 62).

Colour red, but the dense pubescence gives the animal a greyish brown appearance. Probably maritime or sub-maritime; taken by Dr. Harrison in Greatham marshes.

38. *Belaustium sabulosum*, Halbert. 66.

Greatham marshes (Dr. Harrison).

Ireland (coast sandhills).

- 38a. *Belaustium vittatum*, sp. nov. 1,900 μ (width 740 μ .) 66.

Elongate; red with a median yellow stripe commencing behind the shoulders and expanding a little at the posterior margin. There is a slight constriction of the body about the middle. Crista linear not prominent in front. Dorsal spines short but spiny, not very dense. (Fig. 60).

Durham (Easington, R. S. B.)

ACHOROLOPHUS, Berl.

Eyes 2. Body more or less ellipsoid, without post-thoracic furrow. Dorsal setae usually spinous, short, simple. Anterior sensillar area prominent, very strongly spinose with straight long spines.

Type: *globiger*, Berl.

- | | | | | | |
|----|---|-----|-----|-----|---------------------|
| 1. | Front sensillar area globose | ... | ... | ... | <i>globiger</i> . |
| | " not globose | ... | ... | ... | 2 |
| 2. | Crista in a chitinous plate as wide as sensillar area | ... | ... | ... | <i>norvegicus</i> . |
| | Chitinous plate of crista much narrower | ... | ... | ... | <i>porcinus</i> . |

39. *Achorolophus globiger*, Berl. 2.2 mm. 67.

The globose knob on the prodorsal margin is very conspicuous. Pubescence spiny.

Yorkshire, Cumberland. Not common.

40. *Achorolophus norvegicus*, S. Thor. 2 mm. 67.

Rhyncholophus mantonensis, Geo.

The broad chitinous channel in which the crista lies distinguishes this species at once.

Cheshire, Yorkshire, North Wales (Flintshire).

41. *Achorolophus porcinus*, sp. nov. 3.3 mm. 68.

Elongate (breadth 1.5 mm.) Pale red. Pubescence short and fine, hardly spiny. Length of fore leg 2.8 mm., its tarsus rectangular 380 μ long, penultimate joint 520 μ . (Fig. 48).

A single example in Newham bog, Northumberland.

42. *Achorolophus falconerii*, sp. nov.

Of the size, form, and colour of *A. norvegicus*, but distinguished from that and from the rest of the genus by the form of the dorsal trichomes which are short, thick, serrulate, and thinly scattered over the dorsum. (Fig. 49, 52.)

Yorkshire (W. Falconer), a single specimen.

C.—Sub-family Erythræinæ.

Mandibles external, hooked. Epimera contiguous. No post-thoracic furrow; no crista. Dorsal few, scattered.

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|----|---|-----|-----|-----|----------------------|
| 1. | All the tarsi many-jointed | ... | ... | ... | <i>Tarsolarcus</i> . |
| | Tarsi undivided (except, rarely, tarsus ii) | ... | ... | 2 | |
| 2. | Apical joint of palp terminal on the penult | ... | ... | | <i>Anystis</i> . |
| | „ „ lateral on the preceding | ... | ... | | <i>Erythræus</i> . |

ANYSTIS, Heyden.

Palp of 4 articles, the last on the apex of the preceding. Tarsi undivided.

Type: *baccarum*, L.

43. *Anystis baccarum*, L. 66, 67, 68.

Ubiquitous. The “money-spinner.”

ERYTHRÆUS, Latr.

Palp of 5 articles, the last appendiculate—*i.e.*, seated laterally on the base of the preceding. Tarsus ii occasionally of several segments.

Type: *parietinus*, Herm. (Type fixed by Heyden, 1828).

44. *Erythræus parietinus*, Herm. 66.

On school walls, Chester-le-Street.

TARSOLARCUS, S. Thor, 1912.

Palp appendiculate. All the tarsi of several segments; ambulacrum with two strongly pectinate claws and a pulvillum.

Type: *articulosus*, S. Th.

45. *Tarsolarcus articulatus*, S. Th.

North Wales (Aberglaslyn, Capel Curig—Dr. Jackson).

D.—Sub-family Rhaphignathinæ.

Mandibles external, styligerous. Epimera disjunct.

- | | | | | | |
|----|--------------------------------------|-----|-----|-----|-----------------------|
| 1. | Dorsum concave, fore margin, 4-lobed | ... | ... | ... | <i>Bryobia.</i> |
| | Dorsum more or less convex | ... | ... | ... | 2 |
| 2. | Palp 4-jointed | ... | ... | ... | <i>Tetranychus.</i> |
| | Palp 5-jointed | ... | ... | ... | 3 |
| 3. | Rostrum retractile | ... | ... | ... | <i>Cryptognathus.</i> |
| | Rostrum not retractile | ... | ... | ... | 4 |
| 4. | Dorsum areolate | ... | ... | ... | <i>Rhaphignathus.</i> |
| | Dorsum not areolate | ... | ... | ... | <i>Stigmaeus.</i> |

CRYPTOGNATHUS, Krämer, 1879.

Rostrum exposed or not, with a basal transparent collar.

Type : *lagena*, Krämer.

46. *Cryptognathus lagena*, Kr.

Dorsum punctate and reticulate. Bright red.
Ireland.

RHAPHIGNATHUS, Dugès, 1824.

Legs short. Tarsi 2-clawed. Cuticle areolate.

Type : *piger*, Schrank.

- | | | | | | |
|----|---|-----|-----|-----|-------------------|
| 1. | Areolations round or oval | ... | ... | ... | <i>patrius.</i> |
| | Areolations angular (mostly pentagonal) | ... | ... | ... | <i>sphagneti.</i> |

47. *Rhaphignathus patrius*, Berl. ♂ 350 μ , ♀ 520 μ .

Lancashire (Southport, in moss—Dr. Chaster).

48. *Rhaphignathus sphagneti*, sp. nov. 67

Bright red. Length of ♂ 430 μ ; ♀ a little larger.
Body strongly shouldered; areolations polygonal;
dorsal setæ long, rodlike, very slightly thickened
apically, minutely spiculate.

West Allendale, in sphagnum.

STIGMÆUS, Koch. 1842.

Legs short, tarsal claws 3. Cuticle not areolate.

Type: *kermesinus*, Koch.

49. *Stigmæus elongatus*, Berl. 67.

Under stones, West Allendale, rare.

BRYOBIA, Koch, 1842.

Dorsum flat or concave with raised margin, produced in front into a 4-lobed hood. Peritreme present.

Type: *pretiosa*, Koch.

50. *Bryobia pretiosa*, Koch. 66, 67, 68.

Bryobia pratensis, Geo.

General and abundant, in all sorts of situations, but more particularly in moss and under stones.

TETRANYCHUS, Dufour, 1832.

Legs rather long and slender. Palp of 4 articles.

Ambulacrum 4-clawed.

Type: *telarius*, L.

51. *Tetranychus telarius*, L. 67.

The "red spider"; a garden pest, living gregariously in a web on the leaves of plants, but probably blamed for damage done by other creatures.

52. *Tetranychus pilosus*, Can.

Dorsum with very long setæ.

Scotland (W. Evans).

E.—Sub-family Cheyletinæ.

Mandibles internal styliform. Legs of five articles only. Palpi working horizontally. Eyes none or very inconspicuous.

- | | | | |
|----|--|--------|------------------|
| 1. | Legs i abnormal (with coiled claw) short | ... | <i>Myobia</i> . |
| 2. | „ normal | ... .. | <i>Cheyletus</i> |

MYOBIA, Heyden, 1828.

Legs of the first pair short, thick with spiral claw.

Cuticle hyaline. Parasitic on mammals.

Type: *musculi*, Schrank

53. *Myobia musculi*, Schrank. 67.
Common on *Apodemus silvaticus* and *Sorex vulgaris*.
Has all the appearance of a Sarcoptid.
54. *Myobia chiropteralis*, Mich.
On *Vesperugo pipistrellus* and *Rhinolophus hipposideros*.
- 54a. *Myobia ensifera*, Poppe.
On rats, wild and tame. Middlesex (Hirst).

CHEYLETUS, Latreille.

Legs normal. Palp thick, with a strong claw and one or two pectinate setæ. Not parasitic.

Type: *eruditus*, Schrank.

- | | | | |
|----|---|--------|------------------------|
| 1. | Trichomes of legs and dorsum flabelliform | ... | <i>ornatus</i> . |
| | „ „ setaceous | ... | 2 |
| 2. | Pedes i twice as long as the body | ... | <i>venustissimus</i> . |
| | „ shorter | ... .. | <i>eruditus</i> . |
55. *Cheyletus eruditus*, Schrank. 66, 67, 68.
Abundant everywhere, in the litter of barns, &c.; in meal and fodder; in nests of *Formica rufa*, &c.
56. *Cheyletus venustissimus*, Berl. 66, 67.
In the open among grass; in barns, &c., among litter. Also on *Apodemus silvaticus*, and on the hay moth, *Caradrina cubicularis*: not a parasite, of course.
Easily recognised by the pink colour and long slender legs.
57. *Cheyletus ornatus*, Can. 67.
In barns and byres, among hay refuse. Ninebanks; not common.

F.—Sub-family Eupodinæ.

Mandibles hooked or chelate. Palpi not appendiculate. Legs of 5-6 articles. Eyes conspicuous, generally pearly white.

- | | | |
|----|--|-----------------------|
| 1. | Body black, wholly or partly ; legs more or less red | 2 |
| | Body fuscous or whitish, legs pink | 3 |
| 2. | Excretory aperture dorsal | <i>Penthaleus.</i> |
| | „ terminal behind | <i>Halotydaeus.</i> |
| | „ ventral | <i>Chromotydaeus.</i> |
| 3. | Pedes i more than twice length of dorsum... | <i>Linopodes.</i> |
| | „ scarcely longer than dorsum | 4 |
| 4. | Femur iv much swollen | <i>Eupodes.</i> |
| | „ not crassate | <i>Tydaeus.</i> |

PENTHALEUS, Koch, 1842.

Body black, legs red. Excretory aperture dorsal.

Type : *hæmatopus*, Koch.

- | | | |
|----|-------------------------------|--------------------|
| 1. | Dorsum with long hairs | <i>longipilis.</i> |
| | Hairs of dorsum short | <i>hæmatopus.</i> |

58. *Penthaleus hæmatopus*, Koch. 66, 67, 68.

Plentiful everywhere in ground moss.

59. *Penthaleus longipilis*, Can. 66, 67, 68.

Exceedingly like *hæmatopus*, but seems lighter coloured on account of the long hairs. Nearly as frequent in West Allendale, but I have not met with it so freely elsewhere.

HALOTYDÆUS. Berl., 1891.

Black marked with red, legs red. Excretory aperture marginal behind.

Type : *hydrodromus*, B. & Tr.

60. *Halotydaeus hydrodromus*, B. & Tr. 67, 68.

General ; on stones and sea-weed.

LINOPODES, Koch, 1842.

Legs long and slender, especially the first pair which much exceed the length of the body, and are not gressorial but tactile. Femur iv very slightly enlarged.

Type : *motatorius*, L.

61. *Linopodes motatorius*, L. 550 μ . 66, 67, 68.

Colour usually yellowish brown with a pale T-mark as wide as the dorsum. First pair of legs pale and long, four times the length of the body.

Abundant everywhere under stones, dead wood, &c. Gregarious, nearly always in restless motion, zigzag or almost gyratory, the fore-legs held forward with continual tremulous movement.

EUPODES, Koch, 1842.

Legs of normal length; femur iv swollen.

Type: *variegatus*, K.

62. *Eupodes variegatus*, K. 330 μ . 66, 67, 68.

Variable in colour but commonly yellowish or greenish with dark reddish irregular spots, or patches. Shoulders prominent, eyes conspicuous.

Under stones, flower-pots, wood, &c., and in moss—everywhere.

63. *Eupodes clavifrons*, Can. 170 μ . 67.

West Allendale, in sphagnum. (Fig. 73, 75).

RHAGIDIA, Thorell.

Femur iv not swollen. Setæ rod-like (Brit. spp.)

Mandibles broad-based and conspicuously chelate.

Type: *gelida*, Thorell.

64. *Rhagidia gigas*, Can. 1200 μ . 67.

Yellowish white. Sometimes called *terricola*, K., but among the many *Scyphius* "species" of Koch it is not easy to say definitely which name belongs to this species. There is, however, no doubt whatever that our species is *gigas* Canestrini. It may be recognised at once by the subscapular setæ, of which three are visible from above. We have probably one or two other species of lesser size hitherto overlooked as immature examples of *gigas*.

One at least I have found to possess fully developed external genitalia, but it is so exceedingly fragile that I have never been able to make a satisfactory mount.

. West Allendale: adults rare.

64a. *Rhagidia muscicola*, sp. nov. 314 μ . 67.

Pure white. Carapace as broad as long (110 μ). Posterior setæ 6, straight, two long (65 μ), two a little shorter (40 μ), and two lateral, very short. Subscapular bristle solitary. Legs of first pair with the middle joints thickened.

In moss from a pinewood at 800 feet, West Allendale.

65. *Rhagidia halophila*, Lab. 68.

Budle Bay, pretty frequent. Light orange yellow. Ireland, Lancashire.

TYDÆUS, Koch, 1892.

Body oval, legs short. Fixed finger of mandibles straight: usually on plants.

Type: *foliorum*, Schrank.

- | | | | | | | |
|----|---|-----|-----|-----|-----|-------------------|
| 1. | Dorsum finely granulate | ... | ... | ... | ... | <i>granosus</i> . |
| | Dorsum quite smooth | ... | ... | ... | ... | 2 |
| 2. | Colour red; posterior setæ 6 short | ... | ... | ... | ... | <i>roseus</i> . |
| | Yellowish; posterior setæ 4, the middle pair long | ... | ... | ... | ... | <i>foliorum</i> |

66. *Tydæus foliorum*, Schr. 67.

On trees, shrubs, and herbage generally; also very commonly in hay refuse. Usually pale yellow.

Distribution quite general though records are wanting.

67. *Tydæus roseus*, sp. n. 190 μ . 67.

Oval, but almost truncate behind; widest (120 μ) just behind the transverse furrow. The anterior part of the dorsum is not indented laterally. The transverse furrow is curved backwards in the middle, and has the usual scapular bristle near

each extremity. A little in front of it is another similar but shorter lateral bristle. On the hind margin of the dorsum there are six setæ, very short, with a stronger seta very little farther forward on each side. All these setæ are straight, rigid, acute, and quite nude.

The colour is a clear salmon-pink. A few specimens were taken on the leaves of *Sanicula europæa* in September (West Allendale).

67a. *Tydæus olivaceus*, K. 67.

Broad oval, quite smooth; setæ few simple. Greenish with dark markings.

West Allendale, moss in woods.

68. *Tydæus granosus*, Can.

Lancashire (Southport—Dr. Chaster).

G.—Sub-family Alichinæ.

Body somewhat quadrate, the dorsum very distinctly divided into two or three parts, of which the anterior is much the narrower and usually bears two pairs of sensilli, the second pair seated in an Oribatoid astheterium.

Of the few genera I have seen only one—*Alichus*.*

ALICHUS, Koch.

Mandibles stout with strong chela. Eyes 2.

Type: *roseus*, Koch.

69. *Alichus roseus*, Koch. 67.

Clear crimson red behind where the dorsum is studded with short plumose setæ: in front darker, tinged with purple.

West Allendale, rare.

* Since this was written Mr. S. Hirst has recorded (Journ. Zool. Research, Nov., 1917) *Nanorchestes amphibius*, T. & T., from the Isle of Wight, and a new species *N. poduroides*, Hirst (sub *Speleorchestes*, Träg., which seems to me an unnecessary genus) from the Malvern Hills. *Nanorchestes* differs from *Alichus* in being saltatory and having only one tarsal claw. *Alichus* is 3-clawed.

H.—Sub-family Bdellinæ.

Mandibles elongate minutely chelate. Palpi simple antenniform, second and fifth joints longer than the rest, the latter usually setate, rarely with terminal claw instead of tactile setæ.

- | | | | |
|----|---|-----|----------------|
| 1. | Apical joint of palp forming a claw ... | ... | <i>Scirus.</i> |
| | „ „ setate, blunt ... | ... | 2 |
| 2. | Eyes 4 ... | ... | <i>Bdella.</i> |
| | Eyes 5 ... | ... | <i>Cyta.</i> |

SCIRUS, Herm., 1802.

Mandibles long and slender. Palp not elbowed, terminal article acuminate.

Type: *setirostris*, Herm.

70. *Scirus setirostris*, Herm. 67.

Small, pink. Usually among hay litter in barns and stables, but also at the roots of grass. I have also taken it from a squirrel's drey.

Lancashire.

CYTA, Heyden, 1828.

A fifth (median) eye near the base of the rostrum. The third joint of palp hardly distinct from the second. Palp elbowed. Mandibles short and broad.

Type: *latirostris*, Herm.

71. *Cyta latirostris*, Herm. 66, 67, 68.

In detritus of all sorts, inland or maritime.

Yorkshire, Cheshire, Flintshire.

72. *Cyta cæruleipes*, Dugès. 67.

Ninebanks, in moss. Distinguished readily by the purplish hue of the legs.

BDELLA, Latr.

Eyes 4. Palp elbowed; article iii quite distinct.

Type: *rubra*, Latr. (= *longirostris*, Herm. or *vulgaris*, Herm.)

1.	Dorsal setæ of mandible 2 or more	...	...	3
	Dorsal setæ fewer (1 or 0)...	...	...	2
2.	Apex of palp broadly truncate, its setæ unequal...	<i>longirostris</i> .		
	Apical setæ of palp subequal	...	...	<i>calva</i> .
3.	Dorsal setæ of mandible 2	...	...	4
	„ „ many	...	...	6
4.	Apical article of palp clavate short	...	...	{ <i>vulgaris</i> . <i>lignicola</i> . <i>decipiens</i> .
	Terminal article of palp cylindrical	...	...
5.	Dorsal setæ of mandible both basal	...	...	<i>norvegica</i> .
	„ „ basal and median	...	...	<i>silvatica</i> .
6.	Setæ of art. 5 of palp all equal	...	...	<i>littoralis</i> .
	Apical setæ of art. 5 of palp longer than the rest			7
7.	Articles iii and iv of palp equal in length	...	...	<i>pallipes</i> .
	„ „ unequal	...	...	8
8.	Dorsal setæ of mandible more than 12 (about 20)			<i>lacustris</i> .
	„ „ 11 or 12	...	...	<i>capillata</i> .

73. *Bdella longirostris*, Herm. 66, 67, 68.

Bdella hexophthalma, Geo.

General and common. The bases of the sensilli (a pair near the base of the mandibles, another just in front of the line joining the eyes) are frequently conspicuously red like the eyes, and being of the same size, have been mistaken for eyes.

74. *Bdella vulgaris*, Herm. 66, 67, 68.

I take the species of the Italian authors as the standard, as their naming is not questioned and definite details are available. I append a comparison of measurements of the palp—1, of *vulgaris*, according to Canestrini; 2, *vulgaris mihi*, from the Northumbrian coast; 3, *decipiens*, Thor. (from the original description). The numbers represent in order the length of the articles, beginning from the second, the length of the longer apical seta being added. In each case article ii is taken as the unit.

1. *vulgaris* (Canestrini) ... 100 : 24 : 16 : 50—144.
2. *vulgaris* (*mihi*) ... 100 : 24 : 16 : 60—150.
3. *decipiens*, Thorell ... 100 : 9 : 8 : 32—Circa 144.
[*lignicola*, Can. ... 100 : 14 : 14 : 18—120.]

The first two agree in having the length of the rostrum double its width at the base; but there is discrepancy in the body-lengths which are: (1) .66 mm.; (2) .88 mm.; [(3) 1.50 mm.]. Again, according to Thorell, *decipiens* has the sixth article of the fourth leg nearly twice as long as the fifth: in the other two these joints are about equal. The rostrum of *decipiens* is four times as long as wide at the base, which is approximately the proportion in *lignicola*, Can.

From these facts I conclude that *decipiens*, Thor. is a valid species allied to *lignicola*, Can., and certainly not a variety of *vulgaris* as Trägårdh supposes. Moreover my littoral *vulgaris* presents no character sufficient to separate it from *vulgaris*, Can., but in view of the discrepancies already noted together with the spiny nature of the dorsal setæ it may be very well be named *var. maritima*.

75. *Bdella decipiens*, Thor.

Ireland (Halbert). Whether this is genuine *decipiens* or my *vulgaris* *var. maritima*, I do not know.

76. *Bdella lignicola*, Can. 600 μ . 66, 67, 68.

Crimson pink; often more or less purple. The smallest species of the genus.

77. *Bdella calva*, Hull. 67.

Very pale pink. The mandibles long and very slender.

West Allendale, under a rotten log.

78. *Bdella silvatica*, Krämer (*fide* Thor.) 67.

West Allendale, under stones and in moss; not common.

79. *Bdella norvegica*, S. Thor. 67.

West Allendale. The few examples I have taken occurred under stones.

80. *Bdella littoralis*, L. 66, 67, 68.

A large species distinguished by the long setæ (*e.g.* on the dorsal face of the mandibles and abdomen) in general, but comparatively short apical setæ of the palp, which are about the same length as the setæ on article ii.

Not reported for Ireland; otherwise it seems pretty general on British coasts.

81. *Bdella capillata*, Kr. 67, 68.

Local specimens and those taken by me on the Dee estuary hardly appear to be anything more than a variety of *littoralis*. The distinctive characters of Krämer's species seem to be three apical setæ on the palp, and not more than 11 or 12 setæ* on the dorsal face of the mandibles. So far as I can make out only Halbert's Irish specimens conform to these conditions, other authors seem to have had more than one form before them.

Flintshire, Ireland.

82. *Bdella lacustris*, Hull. 66, 67, 68.

An abundant species in the north of England, equally at home on stony shores of lakes and among grass, rushes, &c., on the moors, as well as in the plains. This and the next have the dorsal setæ of the abdomen transformed into short stout acute spines. The setæ on the mandible number 20 or more.

* Eleven in Krämer's figure. According to Dr. Thor, the corresponding setæ in *littoralis* range from 8 to 15 (it is 10 to 13 in my specimens). No other known species save *capillata* conforms to these limits.

83. *Bdella pallipes*, L. Koch. 66, 67, 68.

Originally described from the Arctic. It seems to be as general as the preceding, but never so gregariously plentiful. Easily recognised by the equal length of the third and fourth joints of the palp.

Westmoreland, Yorkshire, Lancashire (Southport, Dr. Chaster). Lincolnshire (Dr. George—three specimens, now in the Hull Museum).

III.—GAMASIDÆ.

The chief existing British records are due to Michael (various papers), Halbert (Clare Island Survey—71 species), Hirst (parasites), and Donisthorpe (myrmecophiles). These in the aggregate make a good solid total which I have been able to increase by some 50 per cent. or thereabouts, very largely by means of material sent by the same correspondents who so liberally supplied me with other Acari. I have had the further advantage that my own collecting has been chiefly confined to an upland area (ranging from 700 feet to 2,200 feet above sea-level) while my correspondents have ransacked the plains and coast regions. But my geographical position has the very serious disadvantage that the indispensable books of reference and microscopical appliances do not abound in this recess of the Pennines. I am therefore deeply indebted to those who have lent me books, &c., and others who have verified references for me, and have made extracts and tracings from works not accessible to me.

In 1916 Dr. Berlese of Florence described over 100 new Gamasids. While new material is coming in at this rate it is fairly obvious that the limits of genera cannot be in a very fixed state.

For convenience of arrangement, I divide the family into two main sections—the *Barypoda*, short-legged and slow-

footed; and the *Oxypoda*, long-legged and swift-footed. They may be formally characterised thus:—

§i. *Barypoda*.

Genital foramen of the male in the middle of the sternal scutum, usually circular.

Legs comparatively short, especially the first pair
Mouth parts nearly always inferior and invisible from above. Lateral margin of the dorsum forming a projecting ledge or ridge, very rarely white rounded and unprotected.

§ii. *Oxypoda*.

Genital foramen of the male on or before the margin of the sternal scutum, usually transverse.

Legs usually long, especially i and iv. Rostrum always conspicuous. Sides of the body rounded and unprotected, except when the dorsal and ventral scuta are continuous.

SUB-FAMILIES.

i. *Barypoda*.

1. Genital valve of ♀ central in sternal scutum :
leg-grooves usually present *Uropodinae*.
Genital valve of ♀ behind the sternal scutum :
no leg-grooves 2
2. Dorsum broad behind with membranous centre *Antennophorinae*.
,, much longer than broad *Zerconinae*.

ii. *Oxypoda*.

1. Parasites of vertebrates. Epidermis glabrous,
striate 2
Living at large (except a few hirsute parasites) 3
2. Stigmata dorso-lateral *Pteroptinae*.
Stigmata normal *Dermanyssinae*.
3. Ped. ii of ♂ swollen, one or more joints spurred *Gamasinae*.
,, not conspicuously crassate or spurred *Laelaptinae*.

A.—Sub-family Uropodinæ.

Mouth-parts all reduced and enclosed in a ventral cavity (camerastoma) as in Oribatidæ. No unchitinised expansible skin in the adult stage.

1.	Venter grooved laterally for the legs	...	...	2
	Leg-grooves absent	...	...	12
2.	Ped. i without claws, very short	...	...	3
	„ with normal ambulacrum	...	...	5
3.	Dorsum without border, the setæ very long	...	<i>Trichocylliba.</i>	
	Dorsal setæ very short, dorsum bordered	...	4	
4.	Annular scutum of border continuous or 0	...	<i>Cillibano.</i>	
	„ „ interrupted behind	...	<i>Discopoma.</i>	
5.	Perigenital scutum present	...	6	
	No perigenital scutum	...	7	
6.	Pre-anal suture present	...	<i>Uroplitella.</i>	
	No pre-anal suture	...	<i>Urodiscella.</i>	
7.	Pre-anal suture present	...	<i>Urobovella.</i>	
	No pre-anal suture	...	8	
8.	Marginal scutum interrupted behind	...	<i>Haluropoda.</i>	
	„ of several isolated plates	...	<i>Uropolyaspis.</i>	
	„ otherwise	...	9	
9.	Epigynal plate fringed	...	<i>Urotrachytes.</i>	
	„ not fringed...	...	10	
10.	Infra-marginal lamina projecting in front...	...	<i>Trachyuropoda.</i>	
	„ not projecting	...	11	
11.	Marginal scutum as in <i>Cillibano</i>	...	<i>Urodinychus.</i>	
	„ „ <i>Dinychus</i>	...	<i>Uropoda.</i>	
12.	Ped. i clawless	...	<i>Uroseius.</i>	
	„ normal	...	<i>Dinychus.</i>	

CILLIBANO, von Heyden, 1828.

Type: *cassidea*, Herm.

1.	Elliptic oblong	...	...	<i>catula.</i>
	Circular or sub-circular	...	...	2
2.	4 bacillar setæ on dorsum, in a transverse row	...	<i>virgata.</i>	
	Dorsal setæ all minute, hardly visible	...	<i>cassidea.</i>	

Halbert records *Cill. vegetans*, Dugès (from *Geotrupes stercorarius*)—the nymph of some fimicole species unknown. The name, I suppose, is taken from Oudemans, who is inclined to be arbitrary in such

matters. As a matter of fact, there is no such species; Dugès writes "*vegetans* Latreille," and gives no figure nor any specific character.

1. *Cillibano cassidea*, Herm. 800–1,000 μ . 66, 67, 68.

Perfectly circular (the outline often slightly flattened in front), with the disk of the dorsum conspicuously pitted, as also is the ventral scutum. I have recorded a form with pitted genital valve as *C. minor*, Berl., but I now think that the presence or absence of this local pitting is of no significance. In well developed specimens the dorsal scutum will be found to be beautifully reticulate, the meshes polygonal with a pit in the centre of each.

Quite general everywhere, in moss, under stones, &c.

2. *Cillibano virgata*, sp. n. 750 μ . 67.

Sub-circular, smooth, claret brown. Dorsal shield divided by a very shallow median furrow forked behind the middle and curved backward on each side to the margin, leaving a transverse part behind which bears a pair of clavato-pectinate setæ. Two similar setæ stand in a line with these on the lateral margin. Epigyne oval, rounded at both ends, apiculate in front. Ventral shield reticulate.

West Allendale, Leicestershire. Usually on wood.

3. *Cillibano catula*, sp. n. 370 μ . 67.

Broad oblong-ovate, yellowish brown. Dorsal shield finely and densely punctate, margin narrow. Marginal setæ hardly projecting over the rim. Epigyne narrow oval, round in front, straight behind, deeply punctate. Ventral shield not punctate.

In moss and manure, West Allendale.

Cheshire, Westmoreland.

4. *Cillibano dinychoides*, sp. n. 655 μ . 67.

Sub-circular, smooth, shining reddish brown, uniformly convex. Leg-grooves exceedingly faint. Male genital aperture between coxæ iv rather large (width 85 μ). Femur ii with a stout conical acute spine underneath. A clavate seta on each side of the anus, projecting beyond the posterior margin.

Ninebanks, in manure, male only.

5. *Cillibano littoralis*, Trou.

Margin setate, without scutum.

Ireland (under stones between tide-marks).

UROSEIUS, Berl., 1888.

Type; *acuminatus*, Koch.

6. *Uroseius acuminatus*, K. 67.

Cilliba vegetans, Halbert?

West Allendale on *Pterostichus niger* and other beetles not specialised in habitat. I have never met with the adult acarus (my specimens are of course "pedunculate nymphs") but evidently it does not frequent manure or carrion.

Ireland?

7. *Uroseius novus*, Oud. 67.

A pedunculate nymph exactly like the preceding, but with a pair of bacillar setæ on the hind margin.

West Allendale, on *Necrophorus mortuorum*. Evidently the adult acarus is a carrion feeder, but my carrion "traps" have failed to attract it.

DISCOPOMA, G. & R. Can., 1882.

Type: *splendida*, Krämer.

8. *Discopoma integra*, Berl. 440 μ .

Ireland, in sphagnum and under bark.

9. *Discopoma pulcherrima*, Berl.

Ireland, with *Formica fusca*.

10. *Discopoma splendida*, Krämer.

Delamere Forest, among dead leaves (nymph). I have not seen the adult which is included by Berlese among myrmecophiles.

TRICHOCYLLIBA, Berl.

As *Cillibano*, but with large curved spiny dorsal setæ.

Type: *comata*, Berl.

11. *Trichocylliba comata*, Berl.

Myrmecophile, at least in part. (Donisthorpe).

GLYPHOPSIS, Mich. (*Urotrachytes*, Berl.)

Type: *formicariæ*, Lubb.

12. *Glyphopsis formicariæ*, Lubb.

66, 67.

Usually with *Lasius flavus*.

Lancashire (R.S.B.). Cornwall (Michael). Isle of Wight, Surrey, &c. (Donisthorpe). Scotland, Ireland.

TRACHYUROPODA, Berl., 1888.

Type: *festiva*, Berl. (South American).

All the species are myrmecophiles, red; dorsum rough and sculptured.

- | | | | |
|----|--|--------|-----------------------|
| 1. | Dorsal ridges interrupted by a transverse furrow | ... | 2 |
| | Median ridge continuous | ... .. | 3 |
| 2. | Rim of the transverse furrow densely setose | ... | <i>bostockii</i> . |
| | Transverse furrow broad, shallow, nude | ... .. | <i>troguloides</i> . |
| 3. | Marginal scutum interrupted in front | ... .. | <i>wasmanniana</i> . |
| | „ continuous all round | ... .. | 4 |
| 4. | Lateral indentations of dorsal ridge closed within | ... | <i>coccinea</i> . |
| | „ „ open on both sides | | |
| | | within | ... <i>excavata</i> . |

13. *Trachyuropoda coccinea*, Mich.

66, 67

This is the red Uropod usually occurring in the nests of *Formica rufa* and *F. fusca*—at any rate in the north of England; also east of Ireland, but not in the west.

Lancashire, Yorkshire.

13a. *Trachyuropoda excavata*, Wasm.

With *Lasius* spp. Notts and South of England
(Donisthorpe).

14. *Trachyuropoda troguloides*, C. & F.

T. lamellosa, Halbert.

Ireland, with *Lasius flavus* and *L. niger*.

15. *Trachyuropoda wasmanniana*, Berl.

See Donisthorpe's British Ants for this and other
myrmecophiles.

16. *Trachyuropoda bostockii*, Mich.

The largest of the red Uropods. Usually with
Lasius umbratus.

Lancashire (Ainsdale-R. S. Bagnall).

URODINYCHUS, Berl., 1903.

Type : *carinatus*, Berl.

1.	Dorsum obovate ; smooth and unpunctured	...	...	...	...	<i>campomolendinus</i> .
	Dorsum wide, elliptical or oval	...	...	...	...	2
2.	Dorsum not pitted	...	...	...	...	3
	Dorsum pitted	...	...	...	...	4
3.	Bay-coloured, shining, uniformly convex	...	...	...	...	<i>kramerii</i> .
	Gray and dull, with longitudinal ridges	...	...	...	...	<i>minusculus</i> .
4.	Dorsum studded with scaly hairs	...	...	...	...	<i>janetii</i> .
	Dorsum without scaly hairs	...	...	...	...	5
5.	Dorsum rosy pink	...	...	...	...	<i>roseus</i> .
	Dorsum usually brown	...	...	...	...	6
6.	Four stout setæ in a transverse row on dorsum					
	behind	...	...	...	...	<i>thorianus</i> .
	No such setæ present	...	...	...	...	7
7.	Dorsal pitting sparse and coarse	...	...	...	...	<i>ovalis</i> .
	„ fine and dense	...	...	...	...	<i>punctatissimus</i> .

17. *Urodinychus kramerii*, Can. 66, 67.

In barn and stable refuse chiefly, often in countless
myriads, like small reddish brown seeds.

Lancashire. I have no other record, but no doubt
it is similarly abundant elsewhere.

18. *Urodinychus janetii*, Berl. 66, 67.
 With *Formica rufa* and *F. fusca*. Rather dingy looking.
 Lancashire, Yorkshire (J.W.H.H.)
19. *Urodinychus campomolendinus*, Berl.
 Ireland ("commonly under bark"—Halbert).
20. *Urodinychus punctatissimus*, Halb.
 Ireland (Achill Island, one ♀ in moss, Halbert).
21. *Urodinychus roseus*, sp. nov. 67.
 Length 500 μ . Form of body and dorsal scuta as in *janetii*, but cuticle quite smooth and rather glossy, and the punctures are finer and farther apart. Median scutum with three series of fine longish hairs on each side. Genital valve of ♀ a broad ellipse truncate behind, very broadly rounded in front: this and the whole ventral scutum punctured like the dorsum.
 Ninebanks, 2 females: note of habitat lost, but almost certainly from manure.
22. *Urodinychus ovalis*. Koch. 67.
 Claret brown.
 West Allendale, usually in manure, but once or twice on damp boards laid out as traps.
23. *Urodinychus thorianus*, Berl. 66, 67.
 Like the preceding in form, size, and colour, and described by Berlese as a variety of it. The habitat is quite different so far as my observations go.
 Under bark of standing trees, Ninebanks, Birtley; also in moss occasionally.
 Ireland, under bark.
24. *Urodinychus minusculus*, Hull.
 Grange-over-Sands, in a mole's nest (R. S. B). Not very happy in this company, but cannot be included in *Trachyuropoda* (which it resembles very closely).

25. *Urodinychus tectus*, Krämer. 67.

If this really is Krämer's species, he deserves to lose the honour of discovery on account of his misleading figure of the epigyne. In our species it is narrow oval, broadest in the posterior half; he draws it oblong with broadly rounded fore margin. Dorsum ridged as in the preceding, but polished and glossy.

On account (apparently!—no diagnosis being given) of the presence of a small posterior dorsal scutum, Berlese has recently (1916) made Krämer's species type of *Urodiaspis*.

Moss and dead leaves, Ninebanks.

Cumberland (Penrith, Varty-Smith). Ireland, (Wicklow, in fungi).

26. *Urodinychus* [*reticulatus*, sp. nov.] 67.
650 μ (Nymph).

Dorsal shield reticulate, mesh 8–10 μ , with three longitudinal series of short bristly setæ. Similar on the lateral scutum, not passing the margin. Peritreme sinuous running forward and outward, then directly forward, terminating on the margin.

West Allendale.

27. *Urodinychus lucidus*, sp. nov. 550 μ .

Dorsal shield divided as in *Cillibano virgata*, but by a glabrous band, not a furrow; sparsely punctate; two series of short spiny setæ on each side. Margin narrow with fairly long projecting spiny setæ. There are four longer rodlike setæ behind, extending well beyond the margin. Epigyne long, narrow, straight behind, and tapering to an acute point in front; smooth, the rest of the venter pitted.

Ainsdale (R.S.B.); female only.

28. *Urodinychus* [pontianus, sp. nov.]480 μ (Nymph).

67.

Oblong oval, well shouldered. Margin very narrow with strong spiny setæ projecting beyond the rim, 9 or 10 on either side; two similar frontal setæ.

Ninebanks, in moss.

PHAULODINYCHUS, Berl.

Type: *interruptus*, Halb.

1. Marginal scutum not reaching the end of the dorsal. *interruptus*.
 „ just reaching the posterior end of
 dorsal *minor*.

Maritime species.

29. *Phaulodinychus interruptus*, Halb. 900 μ . 68.

Plentiful under stones, Budle Bay, North Sunderland, Warkworth.

30. *Phaulodinychus minor*, Halb.

Ireland; habitat same as that of the preceding. Not yet found elsewhere.

URODISCELLA, Berl.

Type: *ricasoliana*, Berl.

1. Dorsal median scutum with shallow punctures ... *signata*.
 Without punctures above 2
 2. Ventral plates quite smooth and shining *philoctena*.
 „ more or less pitted *ricasoliana*.

All the species are myrmecophilous.

31. *Urodiscella philoctena*, Tr.

Ireland (with *Lasius flavus*).

32. *Urodiscella ricasoliana*, Berl.

See Donisthorpe's British Ants.

33. *Urodiscella signata*, sp. nov.

Length 485 μ . Scuta both above and below finely and pretty densely pitted. Hairs of dorsum as in *ricasoliana*. Marginal border narrow as in that species, but set with tiny spines as in *philoctena*; not interrupted in front. Colour pinkish.

Lancashire (Ainsdale, R.S.B.) with *Lasius flavus*.

UROPLITELLA, Berl.

Type : *paradoxa*, C. & B.

1. Body oval ; peritreme very slender *ovatula*.
 Sub-circular ; peritreme normal *minutissima*.

All the species are myrmecophilous—pink, rather
 hirsute.

34. *Uroplitella ovatula*, Berl.

Lancashire (R.S.B.) with *Lasius flavus*.

35. *Uroplitella minutissima*, Berl. 66, 67.

Whitfield, Birtley, Fatfield : with *Lasius flavus* and
L. niger.

UROBOVELLA, Berl.

Type : *obovata*, C. & B.

1. Length about 500 μ *obvata*.
 „ 750 μ *notabilis*.

Myrmecophiles ; pink and glossy.

36. *Urobovella obovata*, C. & B. 67.

Ninebanks, with *Formica fusca*, at 1,200 feet.

37. *Urobovella notabilis*, Berl.

Ireland, with *Formica fusca*.

UROPOLYASPIS, Berl.

Type : *hamuliferus*, Mich.38. *Uropolyaspis hamuliferus*, Mich. 66, 67.

The specific name is a misnomer. Michael apparently studied the species as a balsam mount, and Berlese has never seen it alive. I was quite sure my specimens were of a different species till I had mounted one and found that the peculiar trichomes had collapsed into the hooked form delineated by Berlese. In life, they appear to be pellucid globules when viewed vertically ; in profile they are seen to taper into a curved stalk, which is indented on one side. Berlese is mistaken in say-

ing that the trichomes are absent on the ventral plates (of the adult). They appear even on the genital valve of the female. Nymphs—not known to Michael or Berlese—do not present any notable feature. The characteristic trichomes are present but less numerous than in the adult.

West Allendale, Penshaw; with *Lasius niger* and *L. flavus*.

Lancashire (Ainsdale—R. S. B.)

UROPODA, Latr.

Type: *obscura*, Koch (according to Berlese!)

- | | | | |
|----|--|-----|------------------|
| 1. | Median scutum divided transversely behind... | .. | <i>obscura</i> . |
| | „ undivided | ... | <i>sartor</i> . |

Whatever Latreille's *Uropoda vegetans* may be it is certainly not *obscura*, Koch, and the use of the generic name here is *technically* indefensible.

39. *Uropoda obscura*, Koch.

Ireland (Nymph, in moss, Dublin county).

40. *Uropoda sartor*, sp. nov.* 66, 67.

Length 900–1,200 μ . Outline a long oval; dorsum strongly arched; colour dark reddish brown; surface slightly scabrid. The median scutum merges into the marginal in front, where there is a very slight pseudo-cephalic prolongation of the dorsum. The whole dorsal surface is pretty densely and rather coarsely punctured; but as usual there is a median strip with modified cuticle—smoother and more finely punctured. This strip is broad behind, tapering gradually forward, bounded on either side by the two innermost rows of setæ, and runs to the extreme edge of the scutum behind, thus including the area which in *obscura* is cut off by a transverse furrow. There are three rows of setæ on each side of the median scutum, and one

* Should have been included under *Urodinychus*.

on the marginal. All the setæ are of the same length (about equal to the breadth of the marginal scutum), stout, straight, rodlike.

The under side is irregularly punctured, less densely than the dorsum (except the genital valve of the female, where the punctures are more numerous). The outline of the epigyne is rather narrow oval, truncate behind, rounded in front where the rim is produced forward into a long subulate point which just reaches the sternal margin. The epigyne is small for the size of the species, lying almost wholly between the coxæ of the third pair of legs.

Abundant in manure. I have specimens from West Australia. Nymphs were found swarming on asters at Chopwell. The protonymph travels on beetles but is not pedunculate.

DINYCHUS, Krämer, 1886.

Type: *perforatus*, Kr. (= *inermis*, Koch).

- | | | |
|----|---|------------------|
| 1. | Median dorsal scutum without thick posterior setæ... | <i>inermis</i> . |
| | 2 or 4 stout setæ near posterior margin of median scutum 2 | |
| 2. | Posterior setæ 2 3 | |
| | „ 4 4 | |
| 3. | Marginal scutum continuous <i>vartismithii</i> . | |
| | „ interrupted in front... .. <i>bisetis</i> . | |
| 4. | Posterior setæ less than their own length apart ... <i>tetraphyllus</i> . | |
| | „ much farther apart <i>fossor</i> . | |

41. *Dinychus inermis*, K. 66, 67.

Fairly plentiful in manure; also under loose boards, &c.

42. *Dinychus vartismithii*, sp. nov.

A very well-marked species.

Narrow oval, with elongate pseudo-capitulum, which runs to a rounded point. It is formed by an extension of the marginal scutum, acutely

triangular, and bordered by an infra-marginal ridge as in *Trachyuropoda*. Dorsum smooth, concave along the middle line, with a ridge on either side, smoothly rounded. Median strip outlined by setæ. Posterior setæ close together, acute. They overlooked a small detached scutellum, narrow transverse. Lateral margins beset with short curved spines; 3 or 4 nearest to the posterior margin short, straight and farther apart than the rest. Just within the posterior margin are the four characteristic short foliate setæ.

Genital aperture of male circular, its fore margin opposite the interval between coxæ ii and coxæ iii.

Two males sent from Newton Moss, Penrith, by J. C. Varty-Smith.

43. *Dinychus bisetis*, sp. nov. 67.

Very like *inermis* and similarly pitted, closely and deeply: but—the pseudo-capitulum is much larger with two frontal setæ and the marginal scutum is not continued upon it; the two posterior setæ correspond to the lateral two of *tetraphyllus*; they overlook a broad indentation in the marginal scutum, but it does not include a definite scutellum as in the preceding species.

In manure heaps, not uncommon. West Allendale.

44. *Dinychus tetraphyllus*, Berl. 66, 67.

Fairly plentiful; usually on dead wood, or under bark.

Ireland, in moss.

45. *Dinychus fossor*, sp. nov. 67.

Much like *tetraphyllus* in general appearance, but the four large setæ are placed as in *Cillibano virgata*.

Moles' nests, West Allendale.

B.—Sub-family Zerconinæ.

Here I include *Celaenopsidæ*, Berlese, *Rhodacarinæ*, Oudemans, and *Thinozerconidæ*, Halbert; also the genus *Dendrolaelaps*, Halb. Some or all of these sub-families may be justified by-and-by, but at present it seems to me that the available material is hardly sufficient to fix the comparative value of the characters on which the divisions have been based.

The dorsal plate may be entire or divided, but if divided the parts are contiguous so that always the whole dorsum is covered, and the covering plate may be, at least in part, continuous with ventral plate. The ambulacrum of the first pair of legs is always reduced, but never, I believe, wholly lacking. The genital aperture of the male is always in the sternal scutum but sometimes lies close to the fore margin, thus approximating to the Gamasine position. The epigyne is always post-sternal. In the adult stage there is never any unchitinized expansible skin (except in some species of *Seiodes*).

1.	Body elongate, dorsum quite smooth	...	...	2
	Body broader, dorsum more or less rough	...	...	3
	Body oval convex, dorsum smooth	...	...	... <i>Celaenopsis</i> .
2.	Rostrum large and conspicuous	...	...	... <i>Rhodacarus</i> .
	„ of normal size	...	...	... <i>Dendrolaelaps</i> .
3.	Peritreme dorso-lateral	...	...	... <i>Thinozercon</i> .
	Peritreme absent	...	...	... <i>Epicrius</i> .
	Peritreme normal	...	...	4
4.	Dorsal scutum not transversely divided	...	...	5
	„ divided transversely in the middle	...	...	6
5.	Body trigonous, broad behind	...	...	... <i>Trachytes</i> .
	„ oblong or oval	...	...	... <i>Seiodes</i> .
6.	Dorsum with a diverse margin and posterior spines	...	...	... <i>Seius</i> .
	„ with only a serrate and setate margin	...	...	... <i>Zercon</i> .

SEIODES, Berlese, 1877.

Type; *ursinus*, Berl.

- | | | | |
|----|---|-----|---------------------|
| 1. | Dorsal setæ obtuse, dorsum rounded in front | ... | <i>histicinus</i> . |
| | „ slender acute, dorsum truncate in front.. | ... | <i>punctatus</i> . |

46. *Seiodes histricinus*, Berl. 67.

The undivided dorsal scutum is oblong, leaving a pretty wide nude margin (an exception in this group).

Ninebanks, in manure.

47. *Seiodes punctatus*, sp. nov. 67.

Body oblong oval, yellow brown. Dorsal scutum concave in the middle, but with a median ridge (narrow in front, expanded behind). The margin is flat, of uniform width, and bears on each side a series of fine setæ. The outer edge bears a series of similar setæ. The hollow part is conspicuously punctate, but the ridge and margin are smooth and shining with a very few faint punctures. Ventral plates strongly punctate.

West Allendale, in moss on the fells.

TRACHYTES, Mich., 1894.

Type: *piriformis*, Koch.

48. *Trachytes piriformis*, K. 66, 67.

Gibside, Chopwell; Allendale. In moss.

General, but records are lacking.

RHODACARUS, Oudemans, 1902.

Made the type of a new sub-family by Oudemans, mainly because it was supposed to have a "true cephalothorax and abdomen." On the strength of this he says the genitalia are placed exactly as in spiders—which might be said of the female but certainly not of the male. As a matter of fact, the division seems to be merely the usual division of the shield, which is just like that of *Dendrolaelaps*, placed by Halbert among the *Gamasinae*.

Type: *roseus*, Oud.

49. *Rhodacarus roseus*, Oud. ♂ 385 μ . 66, 67.

Silksworth, Gibside, Chopwell; West Allendale. In moss usually. Rosy pink.

Lancashire (Grange - R. S. B.) Westmoreland
(Varty-Smith). Ireland.

50. *Rhodacarus pallidus*, sp. nov. ♂ 440 μ . 67.

Translucent white with the appendages tinted with brown. Considerably larger than *roseus*. Epistome with a simple acute tapering process without terminal plume or basal teeth; otherwise resembling *roseus*.

West Allendale, under deeply embedded stones with *Pergamasus hamatus*. I have seen two males only.

DENDROLAELAPS, Halbert, 1915.

Very like the preceding genus but with less conspicuous rostrum, and the male has a dorsal spur on tarsus ii, as well as a ventral spur on femur ii.

Type: *oudemansii*, Halbert.

51. *Dendrolaelaps oudemansii*, Halbert.

Ireland, under bark.

52. *Dendrolaelaps bicornis*, sp. nov. ♂♀ 500 μ . 67.

The female of this species differs only in size from that assigned to *oudemansii* by Halbert, so far as I can see. The male also is of the same general form, but the dorsum is excavated behind, and on the forward rim of the hollow there is a pair of very stout lateral spines, conical and obtuse. This excavation is present in male nymphs also, but the spines are acute and no longer than broad, and there is another similar pair between them.

Adults hyaline with brownish legs. Nymphs and larvæ milky white.

West Allendale, abundant under bark of fallen trees with *Zerconopsis remigera*.

THINOZERCON, Halbert, 1915.

Type: *michaelii*, Halb.

Halbert makes this species the type of the new sub-family; but I think a solitary genus should not be

so isolated without very strong reasons. With much more hesitation I also include *Celaenopsis* here.

53. *Thinozercon michaelii*, Halbert.

A *Zerconoid* species living between tide-marks ; as yet recorded from Ireland (east and west coasts) only.

CELAENOPSIS, Berlese, 1886.

Type: *cuspidata*, Krämer.

The most striking feature of this genus is the three marginal scuta of the ventral surface.

54. *Celænopsis cuspidata*, Krämer. 66.

Gibside (R. S. B.)
Ireland.

ZERCON, Koch, 1842.

Type: *triangularis*, Koch.

- | | | | | | |
|----|---|-----|-----|-----|-----------------------|
| 1. | All the dorsal setæ similar acute | ... | ... | ... | 3 |
| | Some of the setæ thickened rodlike | .. | ... | ... | 2 |
| 2. | All the dorsal setæ thick | ... | ... | ... | <i>trigonus</i> . |
| | Twelve plumose setæ in the posterior half | ... | ... | ... | <i>triangularis</i> . |
| 3. | Posterior dorsal scutum regularly pitted | ... | ... | ... | <i>perforatulus</i> . |
| | „ „ finely reticulate | ... | ... | ... | <i>caudatus</i> . |

55. *Zercon triangularis*, K. 66, 67, 68.

General, and fairly frequent.
Cheshire, Ireland.

56. *Zercon caudatus*, Berl. 67.

(?= *pellatus*, Koch).
Westmoreland (Varty-Smith). Lancashire.

57. *Zercon perforatulus*, Berl. 67.

Ninebanks ; particularly plentiful in nests and runs of *Sorex vulgaris*.

58. *Zercon trigonus*, Berl. 67.

West Allendale ; few, mostly in sphagnum.
Westmoreland (Patterdale, R. S. B.) Ireland.

SEIUS, Koch, 1842.

Type : *togatus*, Koch.

59. *Seius togatus*, Koch. 66, 67.

Holywell Dene; Chopwell (R. S. B.)

EPICRIUS, C. & F., 1877.

Type : *geometricus*, C. & F.

60. *Epicrius geometricus*, C. & F. 67.

Holywell Dene (R. S. B.) West Allendale, under stones.

Cheshire, Flintshire. Lincolnshire (Dr. George). Ireland.

Scotland (Evans. Also *E. mollis*, which Berlese says is only a sub-adult form of *geometricus*. I have seen only one example of *E. mollis*—taken in West Allendale—and cannot give an opinion).

C.—Sub-family Antennophorinæ.

ANTENNOPHORUS, Haller, 1877.

Type : *uhlmanni*, Haller.

- | | | | | | |
|----|-------------------------------|-----|-----|-----|--------------------|
| 1. | (♀) Sternal scutum undivided | ... | ... | ... | <i>foreli</i> . |
| | (♀) „ divided into 2 parts | ... | ... | ... | 2 |
| 2. | Coxæ denticulate above | ... | ... | ... | <i>uhlmanni</i> . |
| | „ not denticulate above | ... | ... | ... | 3 |
| 3. | Central dorsal scutum present | ... | ... | ... | <i>grandis</i> . |
| | No central dorsal scutum | .. | ... | ... | <i>pubescens</i> . |

Myrmecophiles, characteristically broader than long.

The fore-legs are antenniform, without ambulacrum, wholly or distally darkened.

61. *Antennophorus uhlmanni*, Hall.

[Donisthorpe].

62. *Antennophorus grandis*, Berl.

[Donisthorpe].

63. *Antennophorus foreli*, Wasm.

[Donisthorpe].

64. *Antennophorus pubescens*, Wasm.

[Donisthorpe].

D.—Sub-family Pteroptinæ.

PTEROPTUS, Dufour, 1832.

Type: *vespertilionis*, L.

65. *Pteroptus vespertilionis*, L.

PTILONYSSUS, Berl. & Trou., 1889.

Type: *nudus*, B. & T.

66. *Ptilonyssus nudus*, B. & T.

Middlesex: on a sparrow (Hirst).

E.—Sub-family Dermanyssinæ.

DERMANYSSUS, Dugès, 1834.

Type: *gallinae*, Redi.

67. *Dermanyssus gallinae*, Redi. 66, 67.

Birtley, on a canary. West Allendale—on fowls,
and swarming in sparrows' nests.

Lancashire (Manchester, on pigeons—A. D. Imms).

Oxford (on *Pipistrelle*!—R. S. Bagnall).

F.—Sub-family Lælapinæ.

- | | | | | |
|----|--|-----|-----|-----------------------|
| 1. | All the tarsi with pulvillus but no claws | ... | ... | <i>Myrmonyssus</i> . |
| | „ normal | ... | ... | 2 |
| 2. | Ventral scutum of male undivided | ... | ... | 3 |
| | Anal scutum of male separate | ... | ... | 8 |
| 3. | Parasites of vertebrates: mandibles almost styliform | | | 4 |
| | Living at large: mandibles normal | ... | ... | 5 |
| 4. | Tarsi with normal ambulacrum | ... | ... | <i>Lælaps</i> . |
| | Tarsi all clawless | ... | ... | <i>Myonyssus</i> . |
| 5. | Body rotund: ventral and anal scuta of ♀ amalgamated | | | <i>Ololaelaps</i> . |
| | Oval or oblong: anal scutum of ♀ free | ... | ... | 6 |
| 6. | Dorsum scabrid, with variously formed trichomes | ... | ... | <i>Cosmolaelaps</i> . |
| | Dorsal trichomes normally setaceous | ... | ... | 7 |
| 7. | Epistome very long, produced into a spine | ... | ... | <i>Oolaelaps</i> . |
| | Epistome rounded and toothed | ... | ... | <i>Hypoaspis</i> . |
| 8. | Anal (or ventro-anal) scutum narrowed behind | ... | { | <i>Eviphis</i> . |
| | „ „ very broad behind | ... | { | <i>Amblyseius</i> . |
| | | | | 9 |

- | | | | | |
|-----|--|-----|-----|---------------------|
| 9. | Zerconiform ; dorsum pitted or sculptured ... | ... | ... | <i>Zerconopsis.</i> |
| | Oval ; smooth or very slightly scabrid ... | ... | ... | 10 |
| 10. | Dorsal setæ crassate ; no ventro-lateral scutellum ... | ... | ... | <i>Ameroseius.</i> |
| | Trichomes normal ; ventro-lateral scutellum present | | | 11 |
| 11. | Pulvillus trifid, the lobes narrow acute ... | ... | ... | <i>Episeius.</i> |
| | Pulvillus normal ... | ... | ... | <i>Lasioseius.</i> |

MYONYSSUS, Tiraboschi, 1904.

Type : *decumani*, Tir.

There are two postero-lateral tubercles on the dorsal shield. Anal scutum large, wider than long.

- | | | | | |
|----|--|-----|-----|------------------|
| 1. | Five ridges, longitudinal, on the dorsum ... | ... | ... | <i>gigas.</i> |
| | Dorsal ridges not marked ... | ... | ... | <i>decumani.</i> |

68. *Myonyssus decumani*, Tir. 67.

Ninebanks, on the common rat.

Shetland Islands, on house mouse (Waterton).

69. *Myonyssus gigas*, Oud. 67.

Ninebanks : abundant on *Mus silvaticus* ; occasionally in moles' nests ; frequent in nests of *Sorex vulgaris*.

Scotland (Ayrshire—J. Gloag).

LAELAPS, Koch, 1842.

Type : *agilis*, Koch.

§i. Dorsal scutum scabrid, reticulate, covering the whole dorsum, pubescence pretty dense, practically uniform. Ventral shield large, similarly pubescent ; anal plate contiguous, much wider than long. *Hemilaelaps* (type : *stabularis*).

- | | | | | |
|----|------------------------------------|-----|-----|--------------------|
| 1. | Sternal scutum as wide as long ... | ... | ... | <i>echidninus.</i> |
| | „ wider than long ... | ... | ... | <i>stabularis.</i> |

§ii. Dorsal scutum not covering the whole dorsum, pubescence sparse, irregular, very spiny, usually a few long spines behind. Ventral shield small, with 3 (or 4) pairs of spines. *Laelaps* proper.

- | | | | | |
|----|------------------------------------|-----|-----|------------------|
| 1. | Lateral anal spines very small ... | ... | ... | <i>festivus.</i> |
| | Anal spines sub-equal ... | ... | ... | 2 |

- | | | | | | | |
|----|----------------------------------|-----|-----|-----|-----|------------------|
| 2. | Sternal spines equal... | ... | ... | ... | ... | <i>hilaris.</i> |
| | Sternal spines unequal... | ... | ... | ... | ... | 3 |
| 3. | Anterior sternal spines shortest | ... | ... | ... | ... | <i>agilis.</i> |
| | „ „ longest | ... | ... | ... | ... | <i>pachypus.</i> |

70. *Laelaps pachypus*, K.

On *Arvicola amphibius*, *Microtus orcadensis*.

Middlesex; Orkneys (Hirst).

71. *Laelaps agilis*, K.

67.

Usual host *Arvicola amphibius*. Ninebanks, on *Mus silvaticus*.

Middlesex and Berwickshire (Hirst). Lincolnshire (Dr. George). Ireland (on a field mouse, Halbert). Scotland (Evans).

72. *Laelaps festivus*, K.

67.

Laelaps semitectus, L. Koch, 1879.

Ninebanks, on *Mus silvaticus* and *Evotomys glareolus*; also in a nest of *Sorex*.

Scotland (Ayrshire, Bute, Aberdeen, Lewis, Shetlands—Hirst).

73. *Laelaps hilaris*, K.

On field voles, &c.

Scotland (Orkneys, Cumbrae, Islay, Kincardine—Hirst).

74. *Laelaps echidninus*, Berl.

67.

Ninebanks, on *Mus silvaticus*.

Lancashire (Silverdale, from a mole's nest—R. S. B.)

“Only on *Epimys norvegicus*”—Hirst.

75. *Laelaps stabularis*, K.

66, 67.

A regular inhabitant of barns, stables, &c., as well as a regular inmate of the nests of rodents. I have found the nymph “travelling” on the common hay moth, *Caradrina cubicularis*.

LAELASPIS, Berl.Type: *astronomicus*, Berl.76. *Laelaspis equitans*, Mich.Myrmecophilous. Very broad, acuminate behind,
with long spiny dorsal hairs.**MYRMONYSSUS**, Berl.Type: *diplogenus*, Berl.All myrmecophilous. Tarsi bearing a caruncle
without claws. Ventral scutum of ♀ acuminate
behind remote from the anal.77. *Myrmonyssus acuminatus*, Berl. 66.Birtley, with *Formica fusca*.**PSEUDOPARASITUS**, Oud.Type: *meridionalis*, Cann.78. *Pseudoparasitus meridionalis*, Cann.

Ireland, debris from nests of sea-birds, Clare Island.

Also with *Formica fusca*, county Dublin.**AMBLYSEIUS**, Berl.Type: *obtusus*, K.Small ovate species conspicuous by reason of three
pairs of long simple flexuous setæ, one pair
scapular, one posterior, the other postero-lateral.

1. Dorsum truncate behind	...	...	...	...	<i>obtusus</i> .
„ rounded behind	...	...	...	...	<i>foenalis</i> .

79. *Amblyseius obtusus*, K. 67.

West Allendale: barns, stables, &c., in hay litter.

80. *Amblyseius foenalis*, Berl.Leicestershire, under pieces of wood about a farm-
stead.**EPISEIUS**, nom. nov.Type: *serratus*, Halb.This is the *Paraseius*, Trägårdh of Halbert, of which
unfortunately the type is an *Epicrius* (*E. mollis*).

Berlese includes Halbert's species under *Lasioseius*, from which they differ in chaetotaxy and form of ambulacrum. Hairs of dorsum all fine and short. Caruncle of three spreading acute lobes (indicating a partly aquatic habit).

- | | | | | | |
|----|---|-----|-----|-----|-------------------|
| 1. | Anal scutum (♀) sub-circular | ... | ... | ... | <i>serratus</i> . |
| | „ much wider than long | ... | ... | 2 | |
| 2. | Lateral scutum inflexed behind coxa iv. | ... | ... | | <i>tenuipes</i> . |
| | „ not inflexed (obliquely truncate) | ... | | | <i>italicus</i> . |

81. *Episeius serratus*, Halb.

Ireland, in sphagnum.

82. *Episeius tenuipes*, Halb.

Ireland, from moss on a stone in a mountain stream.

83. *Episeius italicus*, Berl.

67.

Ovingham (R. S. B.). West Allendale.

Yorkshire (W. P. Winter). Ireland, in moss, one ♀.

AMEROSEIUS, Berl.

Type: *hirsutus*, Koch.

Body broad oblong. Dorsal setæ spiny long in a single lateral series, marginal behind, 2 or 3 in front (immediately behind the shoulder) sub-marginal. Cuticle smooth.

* * * In Berlese's sub-division of this I cannot follow his distribution of species, and I drop *Zercoeseius*, which is simply *Lasioseius* with crassate setæ. And there seems to be no alternative but to institute *Zerconopsis* for *remiger* and *minutus*.

84. *Ameroseius hirsutus*, K.

66, 67.

Marsden, Chopwell (R. S. B.)) West Allendale.

Cheshire, Ireland.

85. *Ameroseius ingens*, sp. nov.

67.

Body somewhat quadrate; dorsum finely and conspicuously reticulate, but quite smooth. Very considerably larger than *hirsutus*, and the dorsal spines are similarly placed, differing only in size.

West Allendale, a single specimen (♀) in moss.

LASIOSEIUS, Berl.Type : *muricatus*, K.

Body oval. Dorsal setæ in longitudinal parallel series, simple setaceous, or slightly squamose-clavate or plumose. Cuticle smooth or very slightly scabrid.

- | | | |
|----|---|----------------------|
| 1. | Dorsal pubescence setaceous | 2 |
| | „ of thickened setæ... .. | 3 |
| 2. | Ventro-anal scutum straight in front... .. | <i>muricatus</i> . |
| | „ emarginate in front | <i>levis</i> . |
| 3. | Ventro-anal shield nearly as broad as venter | <i>spathuliger</i> . |
| | „ not so broad | <i>plumosus</i> . |

86. **Lasioseius muricatus**, K. 67.

Whitfield—on a decaying log, abundant.

Ireland (Wicklow, one specimen).

87. **Lasioseius levis**, O. & V.

Ireland, moss and sphagnum.

88. **Lasioseius plumosus**, Oud. 66, 67.

In the litter of barns, stables, &c., abundant.

89. **Lasioseius spathuliger**, Leon. 67.

Very like the preceding but larger and always in living herbage. I have never met with it indoors.

Ireland, in moss.

ZERCONOPSIS, gen. nov.Type : *remigera*, Krämer.

Body oblong, truncate behind, the prescapular part triangular. Sides more or less serrulate: dorsum flat, rough and punctured.

- | | | |
|----|--|-------------------|
| 1. | Two clavate setæ on the hind margin | <i>remigera</i> . |
| | All the setæ minute similar | <i>minutus</i> . |

90. **Zerconopsis remigera**, Kr. 67.

Ninebanks Vicarage, under a dead blackbird laid out as a trap. Also abundantly under bark of a fallen tree.

Ireland, in fungus and fungus-infected bark.

91. *Zerconopsis minuta*, Halb. 67.

West Allendale, in moss.

Ireland, in sphagnum.

EUIPHIS, Berl.

Type: *ostrinus*, Koch.

92. *Euiphis ostrinus*, K. 66, 67, 68.

Quite general, chiefly on dead wood.

Ireland.

LOLOAELAPS, Berl.

Type: *venetus*, Berl.

- | | | | | | | |
|----|---------------------------|-----|-----|-----|-----|-------------------|
| 1. | Marginal hairs very short | ... | ... | ... | ... | <i>confinis</i> . |
| | „ wanting | ... | ... | ... | ... | <i>venetus</i> . |

93. *Ololaelaps venetus*, Berl. 600 μ .

Ireland, common.

94. *Ololaelaps confinis*, Berl. 700 μ . 66, 67, 68.

Very broadly ovate. Claret brown. Abundant.

Ireland, in moss.

95. *Ololaelaps placentula*, Can. 66, 67, 68.

Nearly hemispherical; yellow brown.

Cheviot and Wooler (R. S. B.). West Allendale,
Waldridge Fell.

Cumberland.

HYPOASPIS, Can.

Type: *Kramerii*, Can.

Very like *Hemilaelaps*, but mandibles normal, and
ventral scutum of female narrow with a few paired
setæ. Cuticle smooth, or nearly so.

- | | | |
|----|--|--------------------------|
| 1. | Hirsute with short hairs: dorsal scutum narrowed | |
| | behind | <i>longipes</i> . |
| | Sparsely setate | 2 |
| 2. | Dorsal scutum covering the whole dorsum | 3 |
| | „ leaving part of dorsum exposed | 4 |

3. Broad oval, rounded behind *nitidissimus*.
 Narrow elongate, truncate behind *hypudæi*.
4. Anal shield trigonous equilateral *oblongus*.
 „ „ base (front margin) longer than
 sides *ovatulus*.
96. *Hypoaspis longipes*, Halb.
 Ireland, a single ♂, habitat unknown.
97. *Hypoaspis hypudæi*, Oud.
 I have not seen this species, which is certainly not at
 home in its present company.*
 Neighbourhood of London, on rats (Hirst).
98. *Hypoaspis ovatulus*, Halb.
 Ireland, in flowers of *Campanula*.
99. *Hypoaspis oblongus*, Halb. 691 μ . 67.
 West Allendale, in various habitats.
 Ireland, under bark of decayed trees. Scotland
 (Evans).
100. *Hypoaspis nitidissimus*, sp. n. 870 μ . 67.
 Oval, but well-shouldered, pale yellow brown,
 broadest behind the middle. Dorsal scutum faintly
 reticulate in wide mesh, pretty densely clothed
 with longish hairs, a little longer and stronger on
 the hind margin. Genital shield of female rather
 long (400 μ) narrowed in the middle and widest
 behind the constriction, rounded before and behind,
 lightly reticulate, with two traverse rows of 4 setæ
 in the posterior part. In a line with these setæ
 there is a semi-elliptic scutellum on either side.
 Anal scutum small, rounded, a little wider than
 long.
 West Allendale, Leicestershire. Usually in barns.
101. *Hypoaspis bombicolens*, Can. 67.
 In nests of *Bombi* (*smithianus*, *pratorum*) and
 occasionally travelling on the bees.
 Essex, in a wasp's nest (Nicholson).

* Taken in barns and byres in West Allendale since this was written.

GYMNOLAEELAPS, Berl.

Type : *myrmecophilus*, Berl.

Sternal scutum and genital (♀) overlapping.

- | | | | | | |
|----|--|-----|-----|-----|------------------------|
| 1. | Length 1,300 μ : dorsal hairs few and minute | ... | ... | ... | <i>laevis</i> . |
| | Much smaller : hairs longer and more numerous | ... | ... | ... | 2 |
| 2. | Anal and ventral scuta well separated | ... | ... | ... | <i>acutus</i> . |
| | „ „ „ contiguous | ... | ... | ... | 3 |
| 3. | General form obvate | ... | ... | ... | <i>myrmophilus</i> . |
| | Body not narrowed behind | ... | ... | ... | <i>myrmecophilus</i> . |

102. *Gymnolaelaps laevis*, Mich.

[Donisthorpe].

103. *Gymnolaelaps myrmecophilus*, Mich.

[Donisthorpe].

104. *Gymnolaelaps myrmophilus*, Berl. 66.Birtley, with *Formica fusca*.105. *Gymnolaelaps acutus*, Mich.Ireland, with *Myrmica scabrinodis*.

COSMOLAEELAPS, Berl.

Type : *claviger*, Berl.

- | | | | | | | |
|----|---|-----|-----|-----|-----|---------------------|
| 1. | Dorsal setæ clavate | ... | ... | ... | ... | <i>claviger</i> . |
| | Setæ expanded distally, but not clubbed | ... | ... | ... | ... | 2 |
| | Setæ sub-simple or blade-like, acute | ... | ... | ... | ... | 3 |
| 2. | Setæ all ciliate | ... | ... | ... | ... | <i>ornatus</i> . |
| | Setæ not ciliate | ... | ... | ... | ... | <i>cuneifer</i> . |
| 3. | Male with ventral dagger-like process | ... | ... | ... | ... | <i>styliferus</i> . |
| | Male with venter normal | ... | ... | ... | ... | <i>vacuus</i> . |

Generally myrmecophilous.

106. *Cosmolaelaps claviger*, Berl.

Ireland (Dublin and King's County).

107. *Cosmolaelaps ornatus*, Berl.

Lancashire (Silverdale, in moles' nests, R. S. B).

108. *Cosmolaelaps cuneifer*, Mich. 66, 67.Abundant with *Formica rufa* and *F. fusca*.

109. *Cosmolaelaps styliferus*, Halb. 473 μ .

Ireland, with *Lasius flavus*.

110. *Cosmolaelaps vacuus*, Mich. 67.

Ninebanks, with *Lasius niger*.

Ireland, with *Lasius niger* and *Myrmica scabrinodis*.

OOLAEAPS, Berl.

Type : *oophilus*, Wasm.

1. Posterior dorsal setæ longer and stronger *oophilus*.
 ,, hardly longer than the rest *montanus*.

Myrmecophilous. Digits of mandibles small, nearly edentate (♀).

111. *Oolaelaps oophilus*, Wasm. 66, 67.

Quite abundant with *Formica fusca*: less so with *F. rufa*.

112. *Oolaelaps montanus*, Berl. 66, 67.

With *Formica fusca*, *Myrmica* spp., &c. The only species commonly found with *Myrmica* in West Allendale.

Ireland, with *Formica fusca*.

G.—Sub-family Gamasinæ.

Sexual dimorphism of the second pair of legs is the great characteristic of this group. In rare instances the fourth pair also is affected, and in the titular genus the dorsal scuta. The latter is usually associated with a difference in general body-form, as well as the general difference in size.

- | | | |
|----|--|---------------------------|
| 1. | Parasites of mammals | ... <i>Haemogamasus</i> . |
| | Living at large* | 2 |
| 2. | Tarsi i without ambulacrum | ... <i>Macrocheles</i> . |
| | All tarsi with the usual ambulacrum .. | 3 |
| 3. | Lobes of pulvillus lanceolate acute (littoral species) | 4 |
| | Ambulacrum normal in form | 6 |
| 4. | Dorsal scutum undivided | ... <i>Hydrogamasus</i> . |
| | Dorsal scuta 2 | 5 |

* Migrant nymphs of species frequenting manure, carrion, and bees' nests are often found, sometimes in great number, on insects.

5.	Epistome trifid	<i>Cyrrhydroclaps.</i>
	Epistome denticulate, not divided	<i>Halolaelaps.</i>
6.	Tarsi (ii at least) with apical spurs	<i>Pachylaelaps</i>
	Tarsi not apically spurred	7
7.	Anal aperture in ventral scutum	9
	Anal scutum separate	12
8.	Two dorsal scuta	10
	Dorsal scutum undivided	11
9.	Epigyne triangular	<i>Gamasus</i>
	Epigyne quadrate	<i>Euryparasitus.</i>
10.	Dorsal and ventral scuta continuous	<i>Ologamasus.</i>
	„ „ not continuous	<i>Pergamasus.</i>
11.	Anal scutum small, rotund	<i>Gamasolaelaps.</i>
	„ broad, trigonous	12
12.	Body oblong, dorsal scutum divided (at least partly)	<i>Cyrtolaelaps.</i>
	Body rotund, dorsum scutum undivided	<i>Sphaerolaelaps.</i>

MACROCHELES, Ltr.

Type: *marginatus*, Herm.

The specific characters given below, in the table and otherwise, will perhaps be found to be more valuable than the names, as in one or two cases I have been unable to reconcile the nomenclature of the Italian authors with that of others.

The genus is well marked by the absence of ambulacra on the tarsi of the first pair, and by the possession of a single dorsal scutum very strongly chitinized and (*minus* excepted) rough with reticulations. This dorsal scutum is really composed of two so intimately welded together as to be indistinguishable in nearly every species; but indications of the dividing line are sometimes visible in well-marked individuals, and always plain to see in *superbus* and *minus*.

1.	Dorsal scutum finely punctured, not reticulate ...	<i>minus.</i>
	„ reticulate (at least in part) ...	2
2.	Epistome with elongate undivided process ...	3
	„ with forked process (usually on a forked base)	4

- | | | |
|----|--|-----------------------------|
| 3. | Base of the process rhomboid, apex shortly plumose | <i>longispinosus</i> . |
| | No rhomboid base, apex not plumose | <i>longulus</i> . |
| 4. | Femur iv (♂) spurred | 5 |
| | Spurs only on the second leg (♂) | 6 |
| 5. | Patella iv (♂) spurred | <i>superbus</i> . |
| | Patella iv (♂) not spurred | <i>gladiator</i> . |
| 6. | All the dorsal setæ simple curved acute | 7 |
| | Humeral setæ, at least, clavate | 8 |
| 7. | Basal branches of epistome apically bifurcate | <i>pisentii</i> . |
| | „ „ simple | <i>glaber</i> . |
| 8. | All the dorsal setæ clavate | <i>tridentinus</i> . |
| | Setæ of the middle of dorsum simple or 0 | 9 |
| 9. | Tarsus iv with about 8 clavate plumose setæ | <i>plumipes</i> . |
| | „ without clavate setæ | <i>marginatus</i> . |
113. *Macrocheles gladiator*, sp. nov. 67.

Length 1,080 μ . Pale yellow-brown. Epistome similar to that of *plumipes*, as is also the dorsal chaetotaxy (nearly all the setæ clavate and minutely plumose); otherwise very different from that species as the ventro-anal scutum of the ♀ is very large and semi-circular, while the male has on femur iv a large curved acute spur with a blunt branch at its base.

Ninebanks, in manure.

114. *Macrocheles superbus*, sp. nov. 1800 μ .

Body parallel-sided behind the shoulders then much narrowed. In this posterior region the dorsal scutum leaves a wide margin. Setæ few, all clavate. Ventral shield reticulate, sternal not reticulate. Femur iv and patella iv each with an acute spur. No plumose setæ on tarsus iv.

Lancashire (Grange—Bagnall). Yorkshire (East Riding, W. Falconer).

115. *Macrocheles marginatus*, Herm. 66, 67, 68.

A large and common species, conspicuous by the contrast of the dark dorsal shield with the very white body-margin which surrounds it.

Ubiquitous. Halbert records a variety *littoralis* for Ireland, probably a distinct species.

116. *Macrocheles plumipes*, sp. nov. 67.

Very like *marginatus* in general appearance, but the legs are shorter, especially the fourth pair. The dorsal shield is completely margined with clavate setæ. Most readily distinguished by the tarsus of the fourth pair which is comparatively short (4 times the length of the ambulacrum : in *marginatus* 6 times), with only three simple acute spines, the rest, about 8 in number, being clavate and finely but conspicuously plumose.

Ninebanks, in manure.

117. *Macrocheles tridentinus*, Can. 66, 67.

The only species with *all* the dorsal setæ clavate.

It is, I think, the *M. terreus* of Oudemans, but not of Halbert : certainly not *tridentinus*, Oudemans !

Cheshire, Ireland.

118. *Macrocheles pisentii*, Berl. 66, 67.

Chopwell, from a nest of *Formica rufa*. Ninebanks, moss.

Cheshire, dead leaves.

119. *Macrocheles glaber*, Müll. 66, 67, 68.

Very abundant everywhere in manure, and almost always one of the passengers on *Geotrupes*, spp. and other dung-beetles, along with various nymphs. Berlese appears to identify it with *badius*, Koch, which I think is a mistake. Oudemans, on the other hand, seems to consider it identical with Berlese's *vagabundus* ! Though I have had thousands of females under my eye, I have never succeeded in capturing a male. This species and *Hypoaspis bombicolens* are the only (non-parasitic) *Gamasids* I have met with 'travelling,' when sexually mature, on insects, along with various nymphs.

Linked with the two preceding by the uniform shape and distribution of the dorsal setæ; except the frontal pair which are slenderly clavate, all are acute and spinous, curved and appressed, three series on each side of the dorsal scutum and one marginal on the nude body—all of the same size except one on each shoulder which is larger. Process of epistome with lamellar base as in *marginatus*. Genital and ventral scuta contiguous.

120. *Macrocheles longispinosus*, Kr. 66, 67.

Similar to the next following species in the sub-circular form of the body and finer texture of the dorsal scutum. Marginal setæ very slightly clavate, longer and more patent than in *longulus*.

Yorkshire North Wales (Flintshire and Moel Siabod—Jackson). Ireland. It is probably quite general in moss of woods.

121. *Macrocheles longulus*, Berl. 67.

Ninebanks, at one of my carrion traps.

Ireland (moss and rotten wood).

122. *Macrocheles minimus*, sp. nov. 740 μ . 66.

Body oval, dorsal scutum oblong, with two lateral rows of clavate setæ on either side and four fine bristles in a trapesium on the disk; one curved clavate scapular setæ on each side and three sub-scapular; vertical setæ contiguous. Dorsal scutum yellow brown, very finely pitted. Genital shield without hyaline border, large co-terminous with the ventro-anal shield on a transverse line; the rest of the outline of the posterior scutum circular, widest near the middle.

Gibside (R. S. B.) Female only. Leicestershire.

PACHYLAELAPS, Berl.

Type: *pectinifer*, Cann.

Process of epistome distinctive, more or less Y-shaped with a multidentate comblike terminal margin. Body oblong with parallel sides; dorsal shield smooth, undivided. Tarsi (at least of legs ii) with one or more conical thick spines near the apex. Anal scutum of ♀ separate.

- | | | | |
|----|--|--------|---------------------|
| 1. | Teeth of epistomal comb contiguous acuminate | ... | <i>longisetis</i> . |
| | „ „ basally free, more or less | | |
| | bifurcate | ... .. | 2 |
| 2. | Peritreme undulate | ... .. | <i>fossorius</i> . |
| | „ straight | ... .. | 3 |
| 3. | Teeth of epistome eight uniformly bifurcate | ... | <i>littoralis</i> . |
| | „ fewer | ... .. | <i>pectinifer</i> . |
123. *Pachylaelaps pectinifer*, Cann. ♂ 700 μ , ♀ 800 μ . 67.
 Anal scutum (♀) discoidal but wider than long.
 Leicestershire, Flintshire. Ireland (a single female—
var. magnus, Halbert).
124. *Pachylaelaps littoralis*, Halb. ♂ 819 μ .
 Ireland, maritime.
125. *Pachylaelaps longisetis*, Halb. ♀ 793 μ .
 Peritreme undulate. Anal scutum (♀) longer than wide.
 Ireland, under bark.
126. *Pachylaelaps fossorius*, sp. nov. ♀ 680 μ .
 Broad oblong, slightly wider behind.
 Epistome terminating in a V-shaped pecten; the three central teeth broad bifid from the middle. Margin of epistome diverging immediately from the base of the pecten (*i.e.*, there is no long 'neck') and finely denticulate.
 Ventral shields reticulate with large mesh; sternal with eight lateral setæ, the front pair longer than the rest; genital more or less hexagonal with a

long strong spiny setæ at each of the lateral angles, and a pair of smaller setæ projecting over the anterior margin; anal shield much wider than long with a setæ at each lateral angle. There are four spines flanking the anal scutum on either side, one only to the genital shield. No lateral scutellum.

Ninebanks, under deeply embedded stones; once only in moss.

CYRTOLAEELAPS.

Type: *nemorensis*, Koch.

Epistome with two lateral dentate lobes and a median bifurcate or penicillate seta. Two dorsal plates, or one deeply incised.

- | | | |
|----|---|----------------------|
| 1. | Dorsal scuta 2 | 2 |
| | One dorsal shield with lateral incisions | 5 |
| 2. | Dorsal shields overlapping on the median line ... | <i>herculaneus</i> . |
| | „ quite separate | 3 |
| 3. | Posterior dorsal shield emarginate behind ... | <i>kochii</i> . |
| | „ „ rounded behind | 4 |
| 4. | Space between the shields angular in the middle ... | <i>humilis</i> . |
| | „ „ rounded in the middle ... | <i>nemorensis</i> . |
| 5. | Lateral incisions wholly oblique | <i>cervus</i> . |
| | „ transverse, only oblique at the apex | <i>transisalae</i> . |

127. *Cyrtolaelaps herculaneus*, Berl. 66, 67.

The largest species, which with *kochii* and *transisalae* ascends to the sphagnum of the fells in West Allendale. Probably of wide distribution, but there are no records.

128. *Cyrtolaelaps nemorensis*, K. 66, 67, 68.

A small species common among grass and in moss of woods.

Cheshire, Yorkshire, Lancashire, Cumberland, Flintshire, Ireland.

129. *Cyrtolaelaps humilis*, sp. nov. 67.

Similar in form and size to *nemorensis* of which it may possibly prove to be a variety though I have no reason for believing that it is.

Length (♀) 700 μ ; greatest breadth 480 μ . Differs from all the other species in having the innermost tooth of the lateral lobes of the epistome smaller than the rest (two in number and about equal in size). The median seta is simply bifurcate. Dorsal scuta broad, leaving very little nude surface; the dividing space narrow and broadly V-shaped in the middle. Humeral setæ fairly strong; the rest of the dorsal setæ nearly uniform, nevertheless a little longer in front (especially on the frontal slope) and shortest on the hind margin; all slender, acute.

West Allendale, under stones.

130. *Cyrtolaelaps kochii*, Trag. 66, 67.

Harperley, Hylton, Fatfield (Bagnall). West Allendale, frequent among sphagnum and rushes up to 2,000 feet. Flintshire, Ireland (Clare Island, a single female).

131. *Cyrtolaelaps transisalae*, Oud. 67.

West Allendale, not unfrequent among sphagnum, which appears to be its usual habitat.

Westmoreland (Varty-Smith). Yorkshire, (*Polytrichum*, W. P. Winter), Ireland.

132. *Cyrtolaelaps cervus*, Kr. 66, 67.

Gamasus ignotus, Geo.

I believe this to be quite general, though records are few.

Yorkshire, Ireland.

HYDROGAMASUS, Berl.

Type: *giardi*, B. & T.

133. *Hydrogamasus giardi*, B. & T.

Ireland (Dublin, rocks exposed by the tide).

CYRTHYDROLAELAPS, Berl.

Type: *hirtus*, Berl.

134. *Cyrtodrolaelaps hirtus*, Berl. 68.

Budle Bay, not frequent.

Ireland.

GAMASOLAEALAPS, Berl.

Type: *excisus*, L. Koch.

135. *Gamasolaelaps excisus*, L. K. 68.

Budle Bay, with the preceding.

Ireland (Mayo, Dublin).

HALOLAEALAPS, Berl.

Type: *glabriusculus*, Berl.

136. *Halolaelaps glabriusculus*, Berl. 66, 67, 68.

Seahouses, Druridge Bay, Warkworth, Marsden.

Ireland (Westport). Scotland (Firth of Clyde—King).

137. *Halolaelaps celticus*, Halb. 68.

Bamburgh (Bagnall).

Ireland (Westport, Howth).

HAEMOGAMASUS, Berl.

Type: *hirsutus*, Berl.

- | | | |
|----|--|---------------------|
| 1. | Sternal shield diffusely hairy | <i>hirsutus</i> . |
| | „ with 3 pairs of setæ | 2 |
| 2. | „ deeply excavated behind | <i>oudemansii</i> . |
| | „ only slightly concave behind | 3 |
| 3. | Genito-ventral shield very convex laterally | <i>nidi</i> . |
| | „ „ much narrower | <i>horridus</i> . |

138. *Haemogamasus hirsutus*, Berl. 66, 67.

Swarms, as a rule, in moles' nests.

Lancashire (Silverdale, Bagnall).

139. *Haemogamasus nidi*, Mich. 67.

Nests of moles, rats, &c. Commonly on *Mus silvaticus*.

140. *Haemogamasus horridus*, Mich. 67.

In West Allendale, I have seen this on *Mus silvaticus* only.

Scotland (Hebrides, Shetland—Hirst).

141. *Haemogamasus oudemansii*, Hirst.

On the common rat (Hirst).

EURYPARASITUS, Oud.

Type: *terribilis*, Mich.

142. *Euryparasitus terribilis*, Mich. 66, 67.

A regular inmate of moles' nests, and found occasionally on various rodents.

[GAMASOIDES, Berl.

Gamasoides bispinosus, Halbert.

Ireland, in moss.

If correctly diagnosed, this should be the 'coleoptrate' nymph of some species of *Gamasus*, known or unknown].

GAMASELLUS, Berl.

Type: *falciger*, Can.

143. *Gamasellus alienus*, sp. n. 67.

♀ 950μ (breadth 600μ). Clavate setæ 8-2 humeral, 2 posterior, 2 on each scutum, each about 100μ in length. The nymph appears to be *Asca affinis* of Oudemans.

West Allendale; moles' nests, and in moss.

- 143a. *Gamasellus rubicundus*, sp. n. 67.

Differs from *alienus* in size (♀ 800μ); in colour, which is vinous red; and the epistome ends in two little incurved horns.

Ninebanks; females only, under a dead fowl.

OLOGAMASUS, Berl.

Type: *calcaratus*, Koch.

- | | | | |
|----|---|-----|-----------------------|
| 1. | Sternal shield divided by a transverse line ... | ... | <i>inornatus</i> . |
| | „ not so divided ... | ... | 2 |
| 2. | Femur ii (♂) with long acute spur ... | ... | <i>pollicipatus</i> . |
| | „ short obtuse spur ... | ... | <i>calcaratus</i> . |
144. *Ologamasus calcaratus*, K. 66, 67, 68.

Red-brown. The female (of all three species) is similar to *Ololaelaps*, the male narrower.

Quite general, in moss.

145. *Ologamasus pollicipatus*, Berl. 66, 67, 68.

Yellow-brown. Apparently very variable, and Berlese tabulates several varieties which at present I cannot undertake to identify with any certainty.

Abundant everywhere, in moss.

146. *Ologamasus inornatus*, Berl. 67.

Not difficult to separate from the preceding; but whether it is really specifically distinct, I do not know. Like Berlese I have failed to turn up a male.

West Allendale, moss in woods, rare.

Cumberland, Ireland.

PERGAMASUS, Berl.

Type: *crassipes*, L.

A miscellaneous assortment, but only one sub-genus (*Amblygamasus*, Berl—type: *septentrionalis*, Oud.) has been put forward, while *alpestris*, *hamatus*, and *robustus* are each typical of a group of at least equal value. There should therefore be 4 sub-genera—or none.

- §i. *Amblygamasus*, Berl.

Body of both sexes piriform, rostrum very prominent, cuticle polished and smooth. Femur ii of ♂ crassate but spurless. Colour ruddy brown.

The only British species is *septentrionalis*.

§ii. Pergamasus, proper.

Body of both sexes piriform, cuticle conspicuously reticulate and rather rough. Femur ii crassate with a strong falcate spur: patella ii with a prominent apical spur or branch projecting inwards and forwards. Colour ruddy brown, rather dull.

- | | | | | | | |
|----|---|-----|-----|-----|-----|-------------------|
| 1. | Epistome 5-dentate | ... | ... | ... | ... | <i>crassipes.</i> |
| | „ 3-dentate | ... | ... | ... | ... | 2 |
| 2. | Patella ii (♂) with thick L-shaped process below... | | | | | <i>alpestris.</i> |
| | „ without this process | ... | ... | ... | | <i>coniger.</i> |

Also, probably, *processiferus*, *diversus*, *lapponicus*.

§iii. Paragamasus.

Body oblong, more or less parallel-sided in both sexes. Ped. ii as in section ii, but without the patellar spur. Colour pale yellowish brown.

- | | | | | |
|----|--|------|-----|---------------------|
| 1. | Main spur of femur ii (♂) very large truncate | ... | ... | <i>robustus.</i> |
| | „ „ not truncate | ... | ... | 2 |
| 2. | Accessory spur of femur ii (♂) as long as the main | | | |
| | | spur | ... | <i>minor.</i> |
| | „ „ shorter | ... | ... | 5 |
| 3. | Accessory spur of femur ii (♂) truncate | ... | ... | <i>runciger.</i> |
| | „ „ acute slender | ... | ... | <i>runcatellus.</i> |

§iv. Plesiogamasus—type: *hamatus*.

Body of male narrow oblong, of female rather piriform. Ped. ii of male only slightly crassate, all the spurs more or less cylindrical. Colour very pale.

- | | | | | |
|----|--|-----|-----|------------------|
| 1. | Body of male constricted in the middle | ... | ... | <i>parvulus.</i> |
| | „ without constriction | ... | ... | <i>hamatus.</i> |
147. Pergamasus crassipes, L. 66, 67, 68.

Ubiquitous; of *Gamasids* found at large, by far the most frequent.

Var. longicornis, Berl., with elongate patellar spur is very common in the north of England. Also two or three other forms with variations of the patellar

spur, especially a small spring form (δ 1 mm.) in which this spur is hardly visible from above.

148. *Pergamasus alpestris*, Berl. 66, 67.
The local form is *var. alpinus*, Berl. Common.
Ireland, a single δ in moss.
149. *Pergamasus coniger*, Hull. 66, 67.
Exceedingly near *alpestris* : perhaps only a variety.
Yorkshire, Lancashire, Flintshire.
150. *Pergamasus processiferus*, Halb. 742 μ .
Ireland, in moss.
151. *Pergamasus lapponicus*, Träg.
Ireland, frequent in moss.
152. *Pergamasus diversus*, Halb.
Ireland, under stones.
153. *Pergamasus robustus*. Oud. 66, 67, 68.
A very common species.
Ireland, common.
154. *Pergamasus runciger*, Berl. 66, 67, 68.
Common, gregarious.
Ireland (also *var. armatus*, Halb.)
155. *Pergamasus runcatellus*, Berl. 66, 67, 68.
Birtley, Hylton, Walldridge Fell, West Allendale,
Newham Bog. Yorkshire, Cumberland. Ireland
(apparently not common).
156. *Pergamasus minor*, Berl.
Lancashire.
157. *Pergamasus parvulus*, Berl. 66.
Gibside; West Hartlepool.
Ireland (also *var. dilatatellus*, Berl.)

158. *Pergamasus hamatus*, Koch. 67.

Under deeply embedded stones, West Allendale; males and females in March. The long narrow body of the male makes it very conspicuous. It is extremely probable that the ♀ described by Berlese is not the ♀ which I find with *hamatus* ♂. The habitat is peculiar, the only other *Gamasid* found there normally is *Rhodacarus pallidus*.

159. *Pergamasus septentrionalis*, Oud. 66, 67, 68.

Usually in moss of woods.

Cheshire. Ireland (*var. norvegicus*, Berl.)

GAMASUS, Latr.

Type: *coleoptratorum*, L.

§i. *Gamasus*, proper. Labial cornicles on a tubercular base. Tarsi not spined.

Species: *coleoptratorum*, *kempersi*, *lunaris*, *consanguineus*, *fmietorum*, *hortivagus*, *anglicus*, *bombianus*, *stygius*.

§ii. *Eugamasus*. Labial cornicles sessile. Tarsi with at least one spine.

Species: *immanis*, *kraepelini*, *magnus*, *cornutus*, *trouessarti*, *oudemansi*, *nidicolens*, *fucarius*.

1.	Epistome with many teeth (laterally at least)	...	2
	„ undivided, or 3 lobed, or with 2 or 3 or 5 teeth	... ..	5
2.	Epistome with a long central spine	... ..	3
	Central spine similar or sub-similar to the rest	...	4
3.	Femur i (♂) with bifurcate axillar tubercle	...	<i>anglicus</i> .
	„ with undivided axillar tubercle	...	<i>lunaris</i> .
4.	Length exceeding 2 mm.	... ..	<i>immanis</i> .
	„ under 2 mm.	... ..	<i>trouessarti</i> .
5.	Body piriform, dorsal setæ thickened	... ..	6
	Body elliptic or more or less parallel-sided	... ..	7
6.	Dorsal setæ uniformly rod-like	... ..	<i>cornutus</i> .
	„ short, deflexed, distally lanceolate	...	<i>nidicolens</i> .
7.	Setæ of posterior scutum equal and similar	... ..	8
	„ „ dissimilar (obviously)	...	11

- | | | | | | | | |
|-----|---------------------------------------|-----|-----|-----|-----|-----|-------------------------|
| 8. | Epistome 5-dentate | ... | ... | ... | ... | ... | <i>hortivagus</i> , |
| | „ 2-dentate | ... | ... | ... | ... | ... | <i>wasmannii</i> . |
| | „ 3-dentate | ... | ... | ... | ... | ... | 9 |
| 9. | Epistome constricted behind the lobes | ... | ... | ... | ... | ... | <i>kraepelinii</i> . |
| | „ not constricted | ... | ... | ... | ... | ... | 10 |
| 10. | Humeral spines obtuse | ... | ... | ... | ... | ... | <i>coleoptratorum</i> . |
| | „ acute | ... | ... | ... | ... | ... | <i>magnus</i> . |
| 11. | Some clavate setæ on hind margin | ... | ... | ... | ... | ... | <i>kempersii</i> . |
| | No clavate setæ anywhere | ... | ... | ... | ... | ... | 12 |
| 12. | Epistome 3-lobed | ... | ... | ... | ... | ... | <i>bombianus</i> . |
| | Epistome deeply 3-dentate | ... | ... | ... | ... | ... | 13 |
| 13. | Setæ of vertex 2, fairly long | ... | ... | ... | ... | ... | <i>finetorum</i> . |
| | Setæ of vertex 4 short | ... | ... | ... | ... | ... | <i>consanguineus</i> . |
160. **Gamasus kempersii**, Oud. 68.
 Seahouses, on the rocks.
 Ireland.
161. **Gamasus lunaris**, Berl. 66, 67.
 Usually in manure.
 Cheshire. Ireland (coast).
162. **Gamasus finetorum**, Berl. 66, 67, 68.
 Common everywhere; not confined to manure heaps.
 Lancashire, Yorkshire, Cheshire, Ireland.
163. **Gamasus consanguineus**, Can. 67.
 West Allendale; a few from a stack-bottom.
164. **Gamasus coleoptratorum**, L. 66, 67, 68.
 Common everywhere; adults usually on manure,
 nymphs at large or passengers on beetles (especially
Geotrupes spp.)
165. **Gamasus hortivagus**, Berl. 67.
 West Allendale, adult in barn refuse. Nymphs on
 beetles.
 Ireland (*Gamasoides spinipes*, Halbert).
166. **Gamasus anglicus**, sp. nov. 1,200 μ . 66, 67.
 ♂. Second leg very thick; femoral spur long, tapering
 blunt, axillar tubercle bifid; a small patellar

process, and a large conspicuous one on the tibia, wedge-shaped.

Yorkshire (W. Falconer). Lancashire (Rev. S. G. Birks).

167. *Gamasus nidicolens*, Hull. 1,700 μ . 67.

♀. Body piriform; anterior scutum triangular with long setæ; posterior rounded, leaving a very narrow border all round: no space between the scuta. Spines of posterior scutum and margin short flattened lanceolate.

Nests of *Bombi*, West Allendale.

168. *Gamasus bombianus*, Hull. 1,500 μ . 67.

Found in nests of *Bombus smithianus* and *B. pratorum* in West Allendale.

♂. Hirsute with spiny setæ. Second leg very thick, with stout femoral spur and short broad patellar process; tarsus with two strong spines within, one basal, the other near the middle.

♀. Body oval; anterior scutum pentagonal, concave before and behind the shoulders, with ten long spiny setæ; posterior scutum oblong, short haired, leaving a wide margin.

169. *Gamasus wasmannii*, Oud. 67.

West Allendale, two females on separate occasions under stones.

170. *Gamasus loricatus*, Wankel.

Middlesex; nymph on the brown rat (Hirst). Scotland.

A species unknown to me.

171. *Gamasus magnus*, Kr. 66, 67.

Appears to be local. Fatfield, Birtley; West Allendale.

Ireland, in moss,

172. *Gamasus immanis*, Berl. 68.
Littoral. Bamburgh (Bagnall).
Lancashire (Furness, Bagnall). Ireland, Scotland
(King).
173. *Gamasus trouessartii*, Berl. 68.
Littoral. North Sunderland, Budle Bay.
Lancashire (Bagnall).
174. *Gamasus kraepelinii*, Berl. 67, 68.
Ninebanks, on a dead fowl. Bamburgh, on a dead
rabbit.
Ireland, on decayed fungi. Scotland (Isle of May,
Evans.)
175. *Gamasus cornutus*, Can. 66, 67, 68.
General and common in grass, &c. Pale yellow-
brown, piriform, with many rod-like setæ.
Ireland (one ♂ only, under bark). Scotland (Evans).
176. *Gamasus oudemansii*, Berl. 67.
West Allendale, in moles' nests.
177. *Gamasus stygius*, sp. n. 67.
Length of both sexes about 1,100 μ ; nymph very
little smaller. Colour of body and scuta dull
whitish.
♀ broad elliptic oval, not shouldered; posterior
scutum leaving a narrow margin all round, anterior
strongly convex in the middle behind, both evenly
covered with rather spiny setæ of uniform length,
as also is the exposed body margin, the two
humeral setæ only about twice as long.
♂ narrower; dorsal setæ longer and denser; epistome
with one ligulate lobe rounded at the apex
minutely denticulate at the base and with one or
two lateral denticles; setæ of the legs (both
sexes) spinous and long, especially on the proximal
joints.

Nymph similar in form to the ♀; but with posterior scutum shorter and straight in front, not contiguous to the anterior; dorsal setæ longer, especially the humeral pair; scuta red brown. Epistome (like that of the ♀) of three acute lobes, the median much the largest. This nymph is in all probability the *Poecilochirus carabi* of Canestrini. It travels in a fasting state on *Necrophorus*, spp., but feeds rapidly on reaching carrion, becoming considerably distended. Adults appear within twenty-four hours of the arrival of beetles carrying the nymphs.

Ninebanks, on dead birds and mammals exposed as traps.

178. *Gamasus fucarius*, sp. n.

67.

Of the same size and general appearance as *G. nidicolens*, but the dorsal setæ are simply spinous and not flattened. The two occur together with various species of *Bombus*, and in spring the female bees almost invariably carry a considerable number of nymphs. All bee-borne nymphs are doubtless included under the *fucorum* of De Geer and most subsequent authors, but the form named *bomborum* by Oudemans probably belongs to *nidicolens*, and his *subterraneus* (ex Muller) to *bombianus*, while the remaining form (with triangular posterior scutum) may be assigned to the present species; but I have no definite proof of these collations.

Fucarius ♂ is much smaller than the female. The femoral stridulatory spur is very stout, and constricted at the base without accessory tubercle, unless that is represented by a branch on the distal side. Tarsus ii has two strong inferior spines, one basal, the other about midway (see fig. 37).

DESCRIPTION OF PLATES.

PLATE I.

1. *Cillibano dinychooides*, dorsum.
2. „ „ posterior margin of venter.
3. „ *virgata*, dorsum.
4. „ „ ventral plates and epigyne.
5. *Urodinychus reticulatus*, dorsum.
6. „ „ peritreme.
7. „ *lucidus*, dorsum.
8. „ „ peritreme.
9. „ „ epigyne.
10. „ *roseus*, dorsum.
11. „ „ epigyne.
12. *Cillibano catula*, dorsum.
13. „ „ outline of epigyne.
14. *Urodinychus minusculus*, dorsum.
15. „ „ outline of epigyne.
16. „ *sartor*, dorsum.
17. *Urodinychus tectus*, epigyne of British example.
18. „ „ epigyne, according to Krämer.
19. *Dinychus bisetis*, dorsum.
20. „ *vartismithii*, dorsum.
21. *Dendrolaelaps bicornis* ♂, posterior margin of dorsum.
22. „ „ ♂ nymph, posterior margin of dorsum.

PLATE II.

23. *Macrocheles superbus*, dorsum.
24. „ „ part of fourth leg of male.
25. „ *gladiator*, part of fourth leg.
26. „ „ humeral trichome.
27. „ „ epistome.
28. „ *plumipes*, epistome.
29. „ *glaber*, dorsum.
30. „ *minimus*, dorsum.
31. *Gamasus anglicus* ♂, dorsum.
32. „ „ ♀, dorsum.
33. „ „ ♂, tarsis i.
34. „ „ ♂, stridulatory spurs of second leg.
35. „ *fucarius* ♂, dorsum.
36. „ „ ♀, dorsum.
37. „ „ ♂, stridulatory spurs.
38. *Pergamasus coniger* ♂, mandibles.
39. „ „ ♀, mandible.
40. „ „ ♂, stridulatory spur.



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