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19. On some new or little-known Acari, mostly Parasitic in Habit. By Stanley Hirst, F.Z.S.

(Submitted for Publication by permission of the Trustees of the British Museum.)

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(Text-figures 1–15.)

The present note deals with a miscellaneous series of Mites from various localities, including a number of new Gamasid mites found by Mr. James Waterston in the nasal cavities of Scottish birds, also several new ectoparasites from various sources. *Demodex* is recorded from several new hosts, viz., deer, long-eared bat, mole, and water-rat, three of the species being regarded as new. An interesting pseudoparasite of flies is also described, and a new English jumping-mite (*Speleorchestes*).

Text-figures 1–7 were drawn by Mr. E. J. Engel Terzi, nos. 8–15 by Mr. Percy Highley.

Family Gamasidæ.

Rhinonyssus caledonicus, sp. n. (Text-fig. 1.)

♀. *Abdomen* not elongated. Hairs on *venter* mostly only slightly thickened at the base, the posterior ones situated just in front of the anus are not dentiform, and there is only one pair in this position. Genito-ventral plate shorter and wider than in *R. neglectus* and *R. waterstoni*. *Legs* of moderate length, those of the first pair apparently sometimes longer than the others. Legs furnished with spinules, but they are minute. Claws of first leg with a distinct short process or denticle dorsally.

Length ·92–1·01 mm.

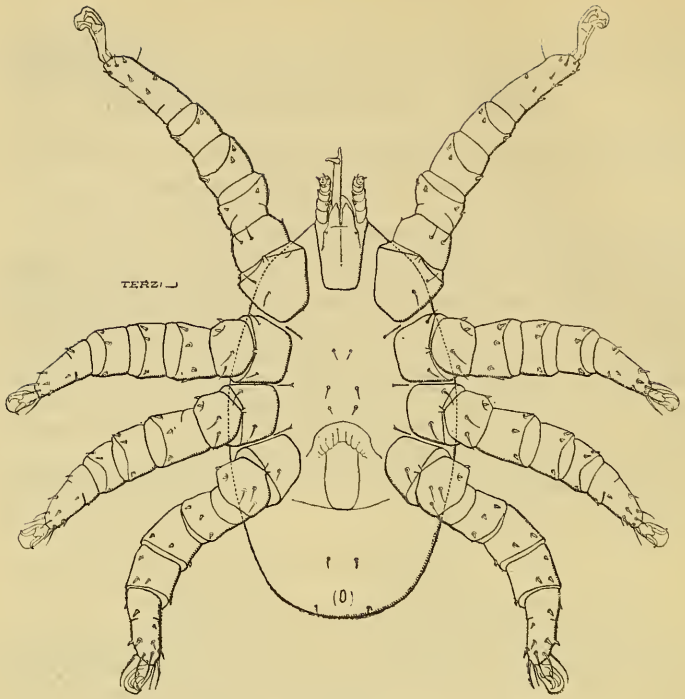
Habitat. Nasal cavities of *Uria grylle* (Black Guillemot), North Mavine, Mainland, Shetland Islands: Gluss Voe (25. ii. 1912), and Gluss Point (17. x. 1912), and Voe, Mainland, Shetland (2. iii. 1912). Specimens collected by James Waterston.

Rhinonyssus levinseni Trägårdh.

Sommatericola levinseni Trägårdh, Monograph arktisch. Acar. in Römer and Schaudinn's Fauna Arctica, 1905, iv. pp. 28–30, text-figs. 42–47, also pl. i. figs. 1, 3, and 8.

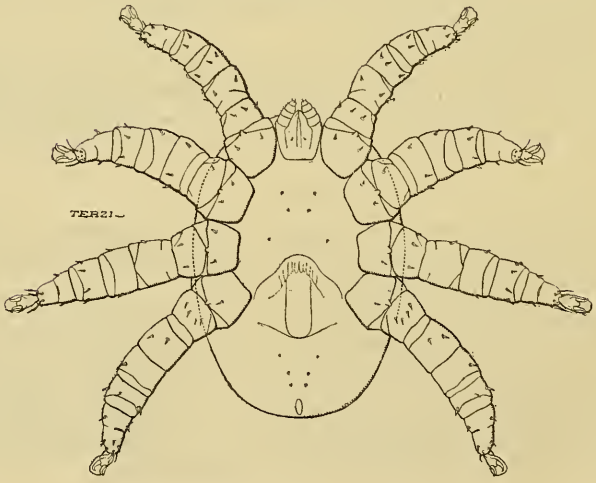
Trägårdh's genus *Sommatericola* must, I think, be regarded as a synonym of *Rhinonyssus* Trouessart. His species *Sommatericola* = *Rhinonyssus levinseni* (from nasal cavities of *Sommateria mollissima*) seems from his description to be closely allied to *R. scoticus*, but he depicts more spinules round the anus than are present in that species, and also shows the lateral spines on the palp as much stronger than in *R. waterstoni*.

Text-figure 1.



Rhinonyssus caledonicus, sp. n., ♀. Ventral view.

Text-figure 2.



Rhinonyssus waterstoni, sp. n., ♀. Ventral view.

Rhinonyssus waterstoni, sp. n. (Text-fig. 2.)

♀. *Abdomen* not elongated. Very minute spinules are present on the *venter* in this species, instead of the hairs that are present in *R. caledonicus*. *Capitulum* short; segments of palp very short, being very much wider than long; tarsal segment very small, the conical tubercle on it well developed. *Legs* not very long, the first pair apparently slightly shorter than the fourth. Coxæ with very short spinules or hairlets instead of the fairly long hairs present in *R. caledonicus*. Spines on legs much weaker than in *R. neglectus*. Claw of first leg apparently without any dorsal process.

Length ·96 mm.

Habitat. Nasal cavities of the Razorbill (*Alca torda*), Ollaberry, North Mavine, Shetland Islands. Specimens collected by James Waterston (15. xii. 1913).

Rhinonyssus echinipes, sp. n. (var. of *R. neglectus*?). (Text-figs. 3 & 4.)

♀. *Abdomen* not very elongated in the female sex. There are three pairs of minute denticles or tubercles anteriorly on the *venter*. The three pairs of denticles in front of the anus are much smaller and weaker than in *R. neglectus*. *Capitulum* apparently shorter than in *R. neglectus*. Segments of the palp also shorter; the minute conical tubercle on the tarsus is unusually large in this species. *Legs*. Denticles on posterior coxæ weaker than in *R. neglectus* or replaced by hairs with a somewhat thickened base; the other segments of the legs furnished with numerous strong denticles as in *R. neglectus*.

♂. Abdomen apparently more elongated (conical) than in the female.

Length, ♂ 1·36 mm., ♀ 1·36 mm.

Habitat. Nasal cavities of Ringed Plover (*Ægialitis hiaticola*), Queyfirth, North Mavine, Shetland Islands (5. i. 1914). Specimens collected by James Waterston.

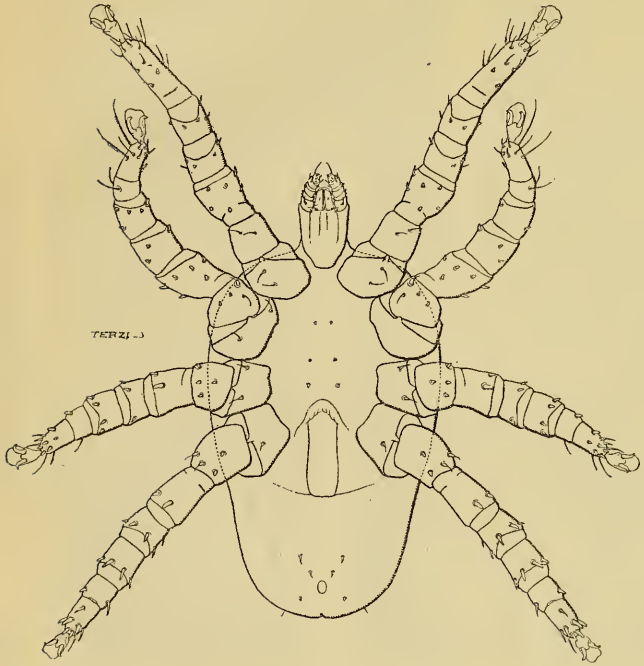
Rhinonyssus neglectus, sp. n. (Text-fig. 5.)

♀. *Abdomen* not elongated. Three pairs of strong but short spinules are present anteriorly on the *venter*, and three pairs of very strong spinules (grouped closely together) are placed immediately in front of the anal aperture. *Capitulum* unusually elongated. Palpi with the segments more slender than in *R. echinipes*. *Legs*. First and fourth pairs of legs rather long, being considerably longer than the second and third pairs. Denticles on legs much stronger than in *R. caledonicus* and *R. waterstoni*.

Length 1·36 mm.

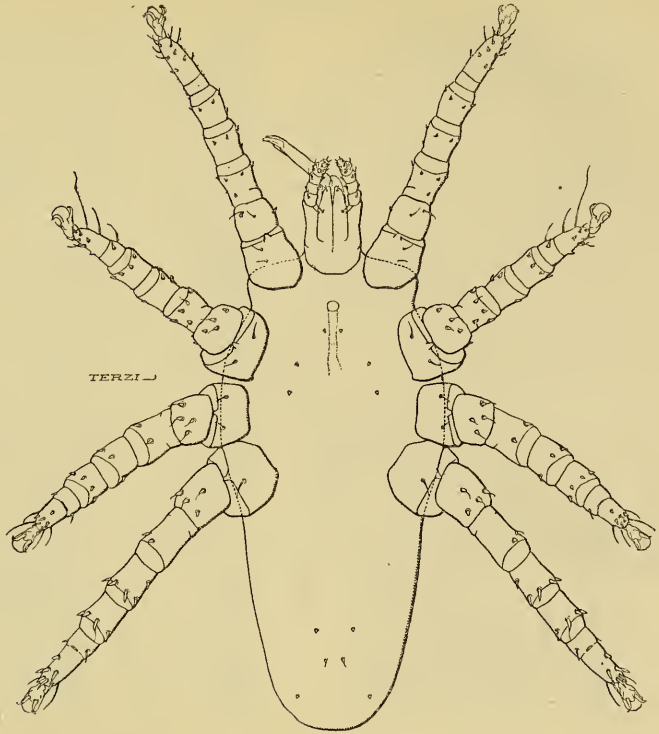
Habitat. Nasal cavities of *Tringa striata* (Purple Sandpiper),

Text-figure 3.



Rhinonyssus echinipes, sp. n., ♀. Ventral view.

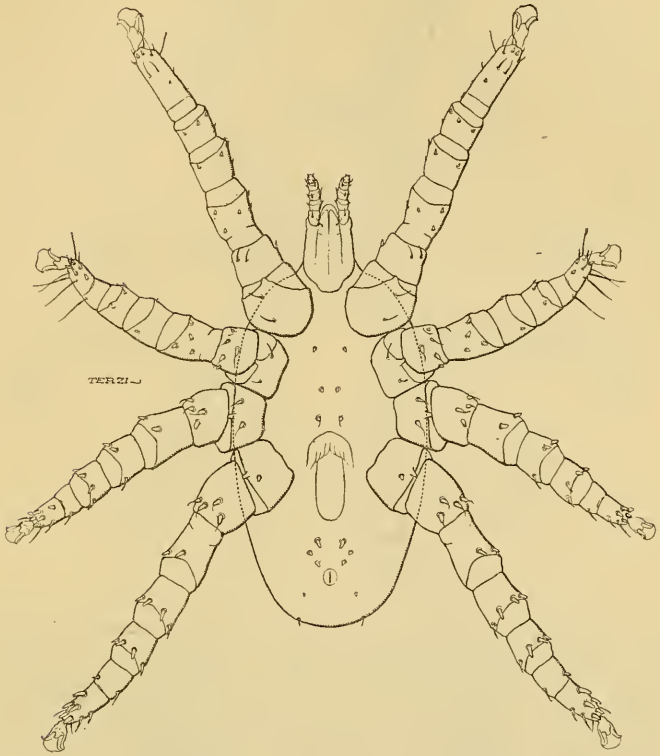
Text-figure 4.



Rhinonyssus echinipes, sp. n., ♂. Ventral view.

Yell Sound, Ollaberry, North Mavine, Shetland Islands: Little Roe Island (13. ii. 1913). Specimens collected by James Waterston.

Text-figure 5.



Rhinonyssus neglectus, sp. n., ♀. Ventral view.

Rhinonyssus coniventris Trouessart. (Text-figs. 6 & 7.)

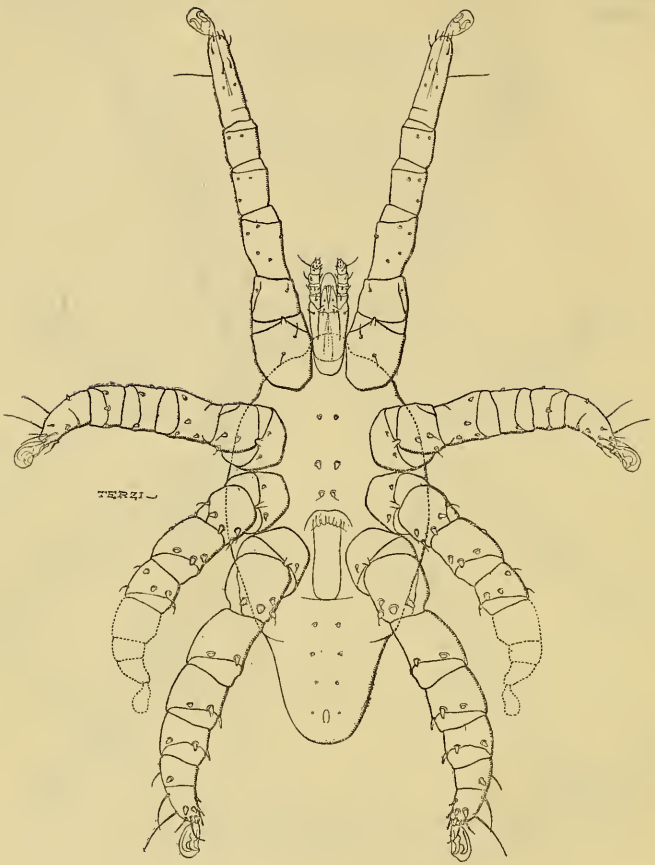
♀. *Abdomen* elongated (conical). Anterior spinules on *venter* similar to those present in *R. neglectus*, etc. There is also a pair of spinules situated not far behind the genito-ventral plate and two pairs of minute spinules or tubercles near the anal orifice. *Legs.* Last pair of legs greatly enlarged and furnished with very strong spinules.

♂. Fourth leg about as long as the first and not much stouter.

Length, ♀, 1·45 mm.

Habitat. Nasal cavities of the Turnstone (*Strepsilas interpres*); North Roe, Mainland, Shetland. Specimens collected by James Waterston (27. ii. 1911).

Text-figure 6.

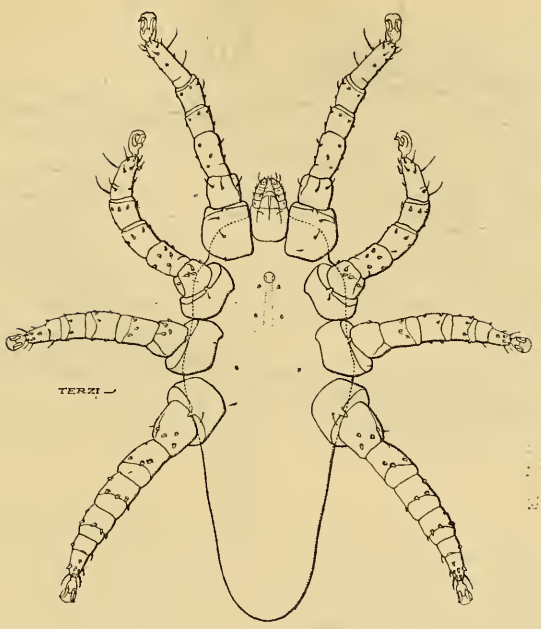


Rhinonyssus coniventris, ♀. Ventral view.

Liponyssus berlesei, sp. n. (Text-figs. 8 & 9.)

♀. *Body* fairly long oval, and sometimes slightly constricted near the middle (behind the last pair of legs); the abdomen is sometimes rather swollen, and may exceed the width of the anterior part of the body; posterior end with a slight notch. *Dorsal shield* wide anteriorly, but narrowed and coming to a point posteriorly. There are some quite short hairs on the scutum, chiefly placed near the margin, and also a few very minute and inconspicuous hairs in the middle of its surface.

Text-figure 7.



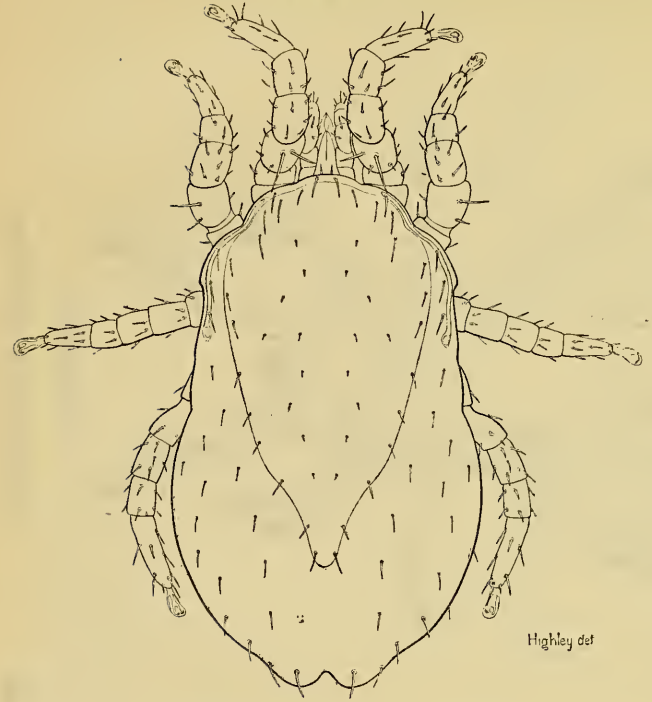
Rhinonyssus coniventris, ♂. Ventral view.

Hairs on uncovered part of dorsum not very numerous, and mostly shorter than those on the venter. *Sternal plate* wider than long and with three pairs of long hairs, its anterior margin is not well defined, being continued forwards by transverse linear markings that reach the front end of the body. *Genito-ventral* plate short, of moderate width, and the posterior end is blunt (not pointed). *Anal plate* of the usual pyriform shape, but more elongated than usual. *Peritreme* reaching forwards almost to the level of the middle of the coxa of the first leg. *Legs* normal in appearance, being of moderate length. Second coxa with a long, sharp anterior spine and a very slight rounded spur posteriorly. Third coxa posteriorly with a sharp, well-developed inner spur, and an inconspicuous outer denticle. Tarsus of second leg with a pair of short pointed denticles at the end. The hairs on the legs are shown too strong (spiniform) in the figures of this species. They are more hair-like.

Length (including capitulum) ·87–·90, width ·36–·44 mm.

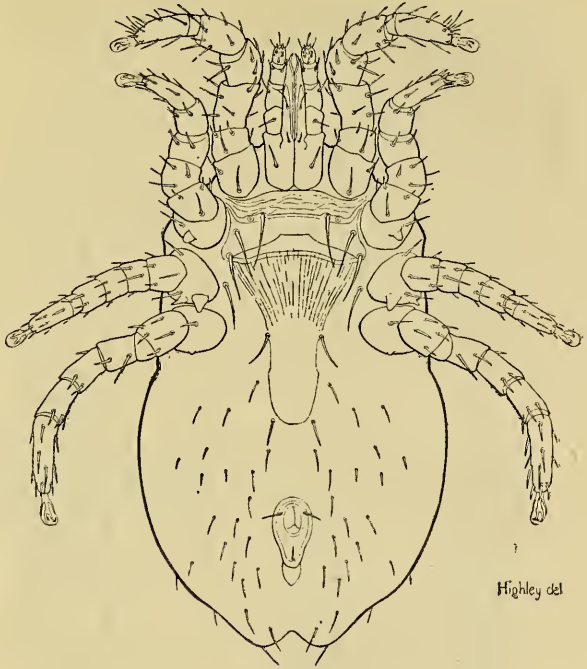
Habitat. Parasitic on *Myospalax scansus*, Shensi, North China; several specimens collected by Capt. H. E. M. Douglas (24. xi. 1908).

Text-figure 8.



Liponyssus berlesi, sp. n., ♀. Dorsal view.

Text-figure 9.



Liponyssus berlesi, sp. n., ♀. Ventral view.

Liponyssus serpentium Hirst.

This species was described from examples found on a Couper's Snake at the Society's Gardens. I have examined some additional specimens from the Horned Viper (*Vipera cerastes*), also from our Gardens. The first-named host is a Mexican species, whilst the latter is a North African form. This mite has also been found on snakes that have died at the Bronx Zoological Park, N.Y. It is believed that this parasite was introduced with the Malayan Python (*Python reticulatus*), and, whilst it does not harm that host, may leave it and attack American snakes of any kind, giving rise to a kind of blister or eruption under the edge of the scale, causing death. According to Mr. Ditmars, several snakes have been lost from this cause. The above details, relating to the American case, are taken from Mr. P. S. Falshaw's letter accompanying the specimens.

Liponyssus serpentium is easily distinguished from the allied *L. natricis* by the presence of two dorsal shields instead of only one. The genito-ventral plate is ornamented with longitudinal linear markings, as in *L. natricis*.

Liponyssus arabicus, sp. n.

♀. There are two plates on the *dorsum* in this species, the posterior being very minute and oval as in *L. serpentium* mihi, but the anterior one is long and wedged-shaped, reaching far backwards, and only separated from the minute posterior plate by a comparatively short space (whereas in *L. serpentium* the two plates are widely separated from one another). Anterior plate furnished with a number of hairs. The minute posterior plate does not bear any hairs. Hairs of body lacking minute off-shoot present in *L. bacoti* mihi. The minute platelets present between the main shields in *L. serpentium* appear to be absent in the new species. Besides the usual fine striations of the integument, there are a number of fairly long, but very fine chitinous (?) linear markings, especially numerous at the sides of the body. *Venter.* Sternal shield trapezoidal in shape, and with two pairs of hairs on its surface. Genito-ventral shield long and narrow. Anal plate pear-shaped; the paired hairs on it shorter than the unpaired one. *Legs.* Coxæ without spurs; the other segments with the usual fairly stiff hairs, but without any strong spines.

Length ·73 mm.

Habitat. A single specimen from a lizard (*Agama adramitana*); Ad Dthala, Upper Hushabi, South Arabia.

Liponyssus bursa Berlese.

During a recent visit to the Natural History Museum, Mr. M. Koidzumi brought me two specimens of a mite found on a Chinese patient at Hôko Tô Island, Formosa. They are referable to the tropical fowl-mite (*Liponyssus bursa* Berlese).

Family Listrophoridæ.

Listrophorus frontalis, sp. n. (Text-fig. 10 A & B.)

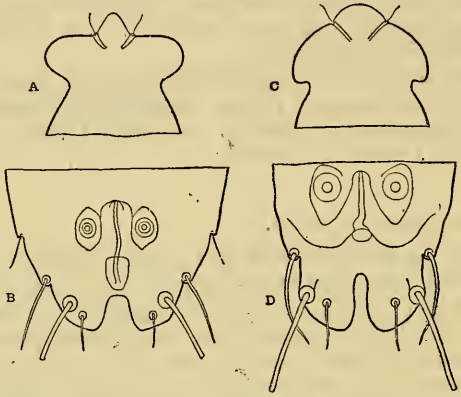
♂. Dorsal (frontal) process of capitulum much more strongly salient than in *L. argentinus*, being fairly long and conical (text-fig. 10 A). Abdominal lobes rather shorter than in *L. argentinus*, and somewhat differently shaped (text-fig. 10 B).

♀. Process of capitulum similar to that in the male.

Length, ♂ 330–345 μ, ♀ 365 μ.

Habitat. Parasitic on the rodent *Orizomys delticola*, from Isla Ella del Delta, Parana.

Text-figure 10.



A. Anterior end of *Listrophorus frontalis*. B. Posterior end of abdomen of male of the same species. C. Anterior end of *Listrophorus argentinus*. D. Posterior end of abdomen of male of this mite.

Listrophorus argentinus, sp. n. (Text-fig. 10 C & D.)

♂. Dorsal (frontal) process wider than long and rounded in outline (text-fig. 10 C). Abdominal lobes ending in a delicate, almost truncate process, the posterior edge being, however, slightly oblique; the gap between the two lobes long and narrow (text-fig. 10 D).

♀. Capitulum of female very like that of the male.

Length, ♂ 345–360 μ, ♀ 415–450 μ.

Habitat. Argentina; on a rodent (*Scapteromys tomentosus*).

Trichœcius brevipes Can. & Trt.

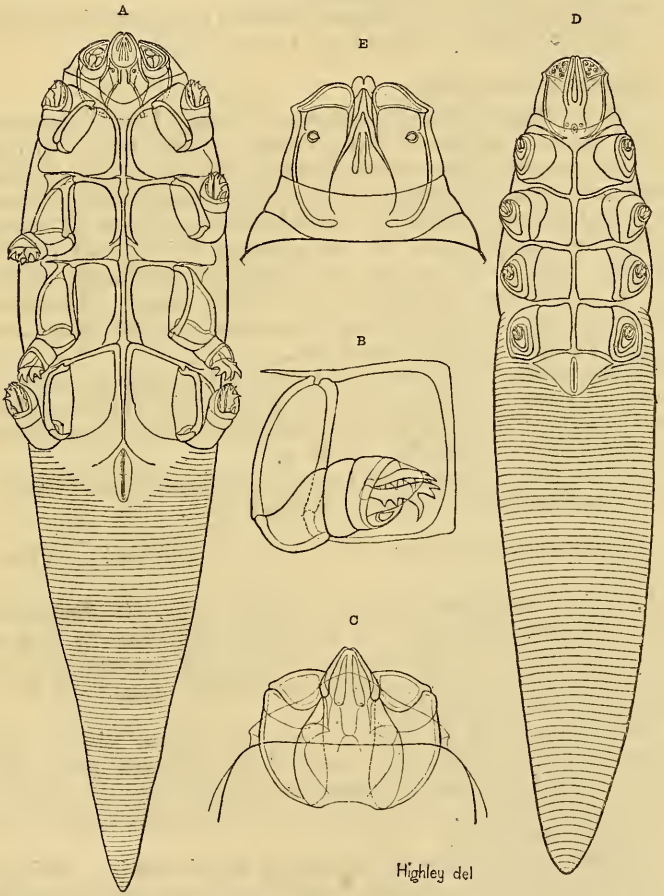
According to Canestrini and Kramer in 'Das Tierreich' (Sarcoptidæ, etc.), this interesting little Listrophorid mite has only been found in Thessaly, and I cannot find a later reference to the species. As a matter of fact, it is not uncommon on English rodents. I have collected numerous specimens off *Evotomys glareolus britannicus* at Exeter, and off *Microtus agrestis* at Barnes, Surrey.

Family Demodicidæ.

Demodex chiropteralis, sp. n. (Text-fig. 11 A, B & C.)

♀. This species differs from the small form of *Demodex* (*D. soricinus*) sometimes present in the skin of the long-eared bat in its much larger size and stronger legs, the latter being

Text-figure 11.



A. *Demodex chiropteralis.* Ventral view. B & C. Enlarged view of foot and of capitulum of same. D. *Demodex melesinus,* ♀; ventral view. E. Dorsal view of capitulum of same species.

very strongly chitinised, and furnished with unusually large claws, the genual joint, or articulation, is very pronounced, and the distal half of the limb readily movable. Vulvar opening

elongated. Body wide, the abdomen pointed posteriorly. (Both my specimens of this species are slightly damaged, and it is difficult to give the exact proportions.) Capitulum apparently without any dorsal tubercle or spinule; it is rather like that of a nymph in some respects.

Measurements. Total length 229 μ, length of cephalothorax + capitulum 114–115 μ, of abdomen 115 μ ?; greatest width of cephalothorax 59–61 μ, of abdomen ?.

Host. Long-eared bat (*Plecotus auritus*); two specimens collected by the author (October 21st, 1919).

Demodex soricinus Hirst.

♀. I have found several specimens of a small form of *Demodex* in the skin of long-eared bats, which is very similar to that found in rats and shrew-mice described under the name *soricinus*. The capitulum in these specimens from bats is apparently without any dorsal tubercle or spinule. The body is somewhat differently shaped, the posterior end of the abdomen being blunt (almost rounded), instead of pointed as in typical specimens of the species. Capitulum considerably wider than long. Abdomen a little shorter than cephalothorax + capitulum; body a little more than three times as long as its width.

Measurements. Total length 111–128 μ; length of cephalothorax + capitulum 63–75 μ, length of abdomen 52–53 μ, width of cephalothorax 33–38 μ, width of abdomen 33–36 μ, of capitulum 18–23 μ, length of capitulum 13–19 μ.

Material. Several specimens from live long-eared bats (*Plecotus auritus*), collected by the author, October 1919.

Demodex gliricolens, sp. n. (var. of *D. arvicolæ* ?). (Text-fig. 12.)

♂. Body varying rather considerably in shape. One specimen is rather narrow and elongated, and about five times as long as wide. Abdomen of this example distinctly longer than the cephalothorax + capitulum. Capitulum rather narrow and fairly elongated (about as long as wide).

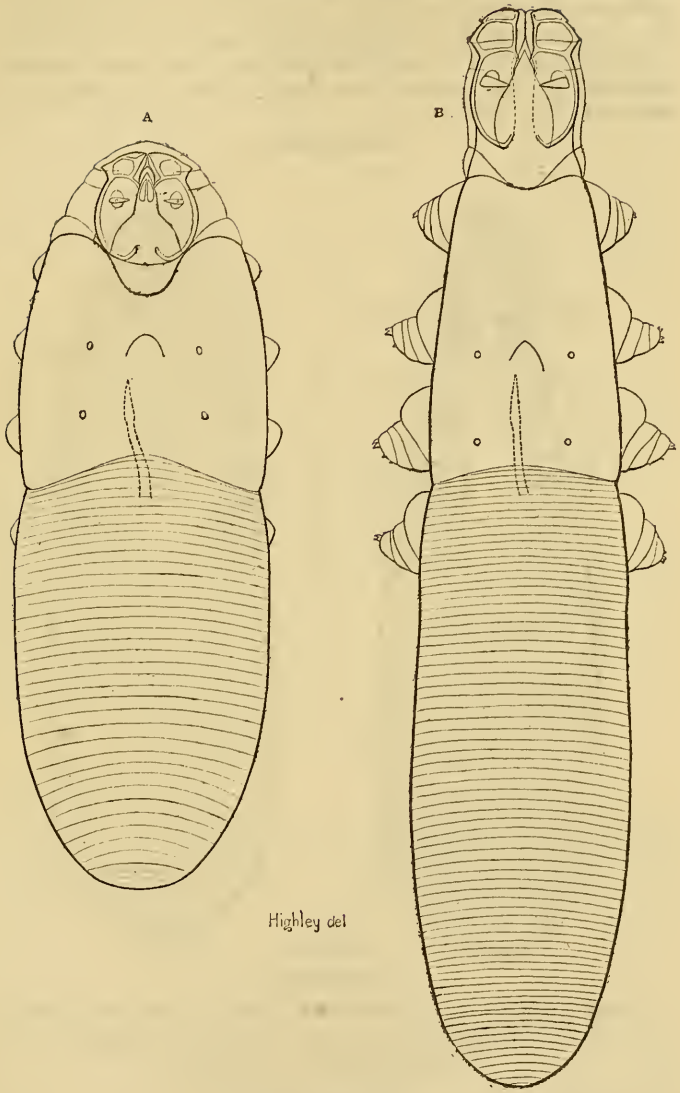
Another specimen is much shorter and comparatively wide, being about three times the width of the cephalothorax. The abdomen is slightly shorter than the united length of cephalothorax and capitulum. Capitulum of this specimen rather wide, being wider than long.

Posterior end of abdomen rounded off in this species. Spinule on dorsal surface of capitulum smaller and more slender than is usually the case in *D. arvicolæ*.

Genital opening of male situated on the dorsal surface above the interval between the first and second pairs of legs, in this respect resembling *D. erminecæ*; the opening is, however, very simple, consisting merely of a curved line.

Measurements. Slender example. Total length 144 μ, length of cephalothorax + capitulum 70 μ, of abdomen 74 μ, greatest

Text-figure 12.



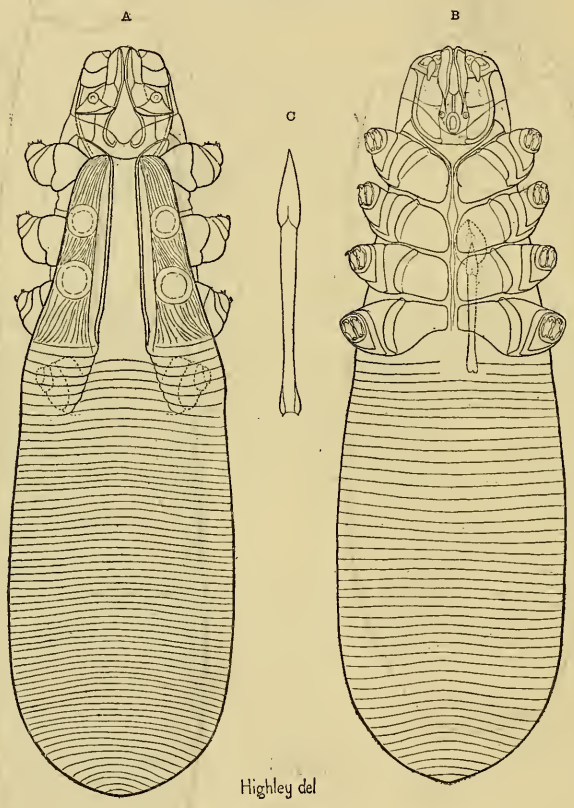
Demodex gliricolens, ♂.

A & B. Dorsal views, showing variation in shape of body

width of cephalothorax 29 μ, of abdomen 30 μ, length of capitulum 18 μ, its width 17 μ. The short wide form measures as follows:—Total length 103 μ, length of cephalothorax + capitulum 56 μ, of abdomen 47 μ, greatest width of cephalothorax 35 μ, of abdomen 36 μ, length of capitulum 15 μ, its width 15 μ.

Host. Water-rat (*Arvicola amphibius*); two male specimens collected by the author from freshly-killed examples of this mammal (July 1919).

Text-figure 13.



Demodex talpæ.

A. Dorsal view of female. B. Ventral view of male. C. Penis greatly enlarged.

Note.—The sexual orifice of the male is really dorsal in position and the penis situated in the median line.

Demodex talpæ, sp. n. (Text-fig. 13.)

♀. Body about four times as long as the width of the cephalothorax. Cephalothorax usually rather narrow in front, becoming a little wider posteriorly. There is a well-defined longitudinal

groove running down the middle of the cephalothorax, which always seems to be present, and is the chief distinguishing feature of the species. This groove is limited laterally by a rather sharp line, which sometimes has the appearance of being double (owing to the depth of the groove). Abdomen sometimes with the sides slightly convex, and it is then distinctly wider than the cephalothorax, in other specimens the abdomen is of fairly uniform width throughout its length; it is a little longer than the cephalothorax. Capitulum fairly elongated, but still it is slightly wider than long. Spinule on its dorsal surface flattened in much the same way as in *D. arvicolæ*, and pointed distally (internally), the outer angle distinct. The spinule is fairly thick, for under very high magnification a distinct posterior edge can be seen; it is fairly large and wide as compared with the size of the capitulum. One of the little claws or denticles on the ventral surface of the terminal segment of the palp is much longer than the others.

♂. Male very like the female in general appearance and with the dorsal groove well-developed. Body about four times as long as width of cephalothorax, the abdomen being longer than the cephalothorax + capitulum. Male sexual orifice situated on the dorsal surface above the interval between the second and third pairs of legs. Penis quite long and slender.

Measurements. ♀. Total length 128–130 μ; length of cephalothorax + capitulum 59–62 μ, of abdomen 68–74 μ; greatest width of cephalothorax 31–34 μ, of abdomen 34–41 μ; length of capitulum 15–19 μ, its width 19–20 μ. ♂. Total length 126 μ; length of cephalothorax + capitulum 54 μ, of abdomen 72 μ, of penis 22 μ; greatest width of cephalothorax 30–33 μ, of abdomen 37 μ; greatest width of capitulum 21 μ, its length 16 μ.

Material. Several specimens obtained by the author from freshly-killed moles (*Talpa europæa*); May 1919.

Demodex bovis Stiles.

I have examined specimens apparently referable to this species collected by Dr. E. Brumpt from deer. The material consists of a small piece of skin, preserved in spirit, containing a number of pustules filled with whitish matter and numerous parasites in all stages of development. The material is not very well preserved. The following is a description of the adult specimens:—

♀. Shape very like typical examples of *D. bovis*, the body is from a little more than three times to about three and a half times as long as the cephalothoracic width. Abdomen not quite so sharply pointed as in typical specimens of *D. bovis*; it is nearly always distinctly longer (sometimes considerably longer) than the cephalothorax + capitulum, but occasionally only about the same length. Capitulum wider than long. Spinule on its dorsal surface moderately long and distinctly bent or angular near the distal end.

♂. Male sexual orifice situated well forward on the cephalothorax above the first pair of legs; the minute lobes, etc., round it are exactly as in specimens from cattle. Males are very rare in the slides mounted from the material, and the measurements of the male sex given below are based on very few examples.

Measurements. ♀. Total length 180–238 μ; length of cephalothorax + capitulum 90–101 μ, of abdomen 90–143 μ; greatest width of cephalothorax 58–65 μ (rarely 70), of abdomen 53–60 μ. ♂. Total length 199 μ; length of cephalothorax + capitulum 79 μ, of abdomen 120 μ; greatest width of cephalothorax 61 μ, of abdomen 64 μ.

Host. Material from a deer (species?) at Chantilly, France (*Dr. E. Brumpt*).

Demodex melesinus Hirst. (Text-fig. 11 D & E.)

The *Demodex* of the badger is of unusual interest, for of all the known forms it most closely resembles that present in man (*D. folliculorum*), but is smaller in size and has the capitulum more elongated.

Demodex canis var. erinacei Hirst.

Since writing my paper on *Demodex*, I have obtained a number of specimens of this variety from the head of a hedgehog caught by the Museum taxidermist (Mr. A. H. Bishop) at Dymchurch, Kent (3. viii. 1919). They are elongated specimens, agreeing fairly well with those on which my description was based. These additional examples measure as follows:— ♀. 312–370 μ (a large bent example of this sex probably measures about 400 μ). ♂. 232–292 μ.

Family Trombidiidæ.

Tetranycopsis horrida C. & F.

This "Red Spider" has not been recorded from England. I have seen an example collected by Mr. K. G. Blair, on hazels at Shoreham, Kent, and during an excursion to that locality I obtained another specimen myself. The species, apparently, is not very abundant, even where it occurs. Numerous specimens of the lime-tree mite (*Tetranychus tiliarium*) occurred on the hazels in this locality.

Genus Psorergates.

In some details of structure, the immature stages of the mites of the genus *Psorergates* resemble those of the genus *Demodex*. For instance, the feet of the larval and nymphal stages are incomplete, consisting of an epimeron, shaped almost exactly as in *Demodex*, both its ends being angular and supporting a roughly circular disc-shaped segment, bearing processes or claws furnished with denticles of a similar type to those present in the immature stages of *Demodex*. In spite of the difference in shape

and general appearance, it seems probable that the genera *Psorergates* and *Demodex* are related to one another.

Speleorchestes ventriosus, sp. n.

♀. This new saltatorial mite differs from *S. poduroides*, mihi in being much stouter in appearance; the abdomen is especially wide (hence the specific name *ventriosus*), being much stouter than in *S. poduroides*. Ovipositor when protruded provided with a basal collar-like structure or sheath as in *S. poduroides*, but it is longer than in that species, its length exceeding the distal part of the ovipositor that projects beyond it (whereas in *S. poduroides* the collar is much shorter than the part of the ovipositor that projects beyond it). Shape of hairs and their distribution much as in *S. poduroides*.

Owing to its rather squat appearance, this new species of *Speleorchestes* somewhat resembles *Nanorchestes*, but the anterior part of the cephalothorax is quite separate and distinct from the posterior portion, not being enclosed by it laterally; posterior part of cephalothorax much narrower than the abdomen and divided from it by a distinct constriction (whilst in *Nanorchestes* the posterior part of the cephalothorax is almost as wide as the abdomen and only separated from it by a slight groove).

Length (including cheliceræ) 317 μ; width of anterior (cephalic) part of cephalothorax 62–67 μ; width of posterior (thoracic) part of cephalothorax 107–110 μ; width of abdomen 155–160 μ.

Habitat. Hindhead, Surrey; a number of specimens collected by the author under stones near the path running above the natural hollow known as "the Devil's Punch Bowl" (just below Hindhead Beacon), May 1918.

Speleorchestes poduroides Hirst.

I have added a few more measurements for comparison with those of *S. ventriosus*, sp. n.

Length (including cheliceræ) 278–290 μ; width of anterior (cephalic) part of cephalothorax 58–60 μ; width of posterior (thoracic) part of cephalothorax 82–85 μ; width of abdomen 106–115 μ.

Key to British Species of Saltatorial Mites (Genera *Nanorchestes* and *Speleorchestes*).

Body short and wide; anterior part of cephalothorax enclosed laterally by the posterior part	*Nanorchestes* Tops. & Trouess.
Dorsal hair on chelicera slender and divided into two plumose branches	*N. collinus* Hirst (Mendip Hills).
Dorsal hair on chelicera rather short, stiff, rod-like, and not divided	*N. amphibius* Tops. & Trouess. (Littoral species.)
Body more elongated; anterior part of cephalothorax free (not enclosed laterally by posterior part)	*Speleorchestes* Trgdh.

Body fairly narrow; the part of the ovipositor projecting beyond the collar-like sheath longer than the sheath itself	*S. poduroides* Hirst (Malvern Hills.)
Body wider; sheath of ovipositor longer, the part projecting beyond the sheath shorter than the sheath itself	*S. ventriosus*, sp. n. (Hindhead, Surrey.)

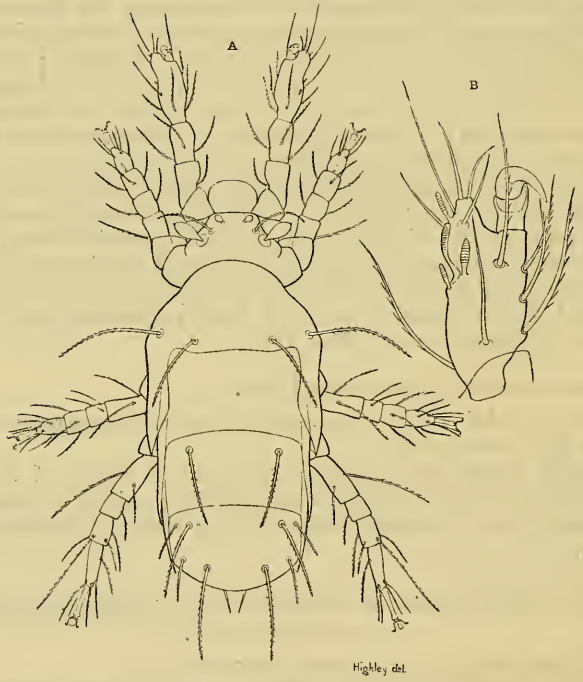
Family TARSONEMIDÆ.

PYGMEPHORUS TARSALIS, sp. n. (Text-fig. 14.)

? *Pigmephorus stercoricola* Berlese, Redia, 1911, vii. p. 184.

♀. Tarsus of first leg ending in a large conical protuberance situated above the claw, which is moderately developed. Striated

Text-figure 14.



Pygmephorus tarsalis, sp. n., ♀.

A. Dorsal view. B. Tarsus of first leg much enlarged.

sensory (so-called olfactory) hairs on first tarsus all slender, and none of them are especially large; the distal one is not very long, being very slender; the two proximal ones are placed close together, they are club-shaped, and one of them is longer than

the other (also slightly longer than the distal one). The remaining (second) sensory hair is prone and closely applied to the segment, and therefore is inconspicuous. Second tarsus with a single striated sensory hair dorsally near the proximal end, and it is comparatively stout. The pair of tiny oval structures situated in front of the pseudostigmata are smaller and further part than in *P. americanus*. Pseudostigmata not rounded off distally (as is the case in *P. spinosus* and *P. pilosus*), but ending in a point. There is only one pair of long hairs on the cephalothorax (instead of three pairs as in *P. americanus*); each hair being situated just in front of, and slightly to the side of, the pseudostigmata. An exceedingly short and inconspicuous hair is also present close to each of these two long hairs. The posterior hair present on the cephalothorax in *P. americanus* is missing in this species from mushrooms. Tarsus of fourth leg with quite long hairs. Hairs on body long and very slightly feathered, the feathering being scarcely visible even under very high magnification (instead of quite distinct as in *P. spinosus* and *P. pilosus*).

Measurements. Total length 217–297 μ; width 100–132 μ.

Habitat. Numerous specimens from off the top-surface of cultivated mushrooms; received through the kindness of Professor H. Maxwell Lefroy.

Pygmephorus americanus Banks. (Text-fig. 15.)

Pigmeophorus americanus Banks, Treatise on Acarina, P.U.N. Mus. 1904, xxviii. p. 77, fig. 151 (figured without description).

Pigmeophorus americanus Banks, Proc. Ent. Soc. Washington, vii. p. 139 (1905).

♀. This species is chiefly distinguished from the others of the genus by the position of the little oval structures or accessory stigmata *? (situated on the cephalic segment in front of the pseudostigmata), which are larger than usual and placed quite close together (instead of widely apart as in *P. tarsalis*). Another character is the shape of the pseudostigmata, which are not elongated but short and globular, lacking the slight terminal (apical) point present in *P. tarsalis*.

Two rather long hairs are present on each side of the cephalothorax (instead of one long hair and a very short one as in *P. tarsalis*). There is a third pair of very long hairs on the cephalothorax situated just in front of the posterior margin.

The following details of structure may also be useful:—

Shape of body similar to that of *P. tarsalis*; some specimens appear to be much wider than others (as compared with their length), but this is perhaps merely due to the pressure of the cover-slip. Hairs on body distinctly plumose. First leg stouter

* Oudemans apparently considers these minute paired oval structures to be organs of sense (see Arch. Naturg. 79, Abt. A, Heft 9, p. 113, 1913), but it seems to me to be more probable that they are stigmata, for they appear to be connected with the respiratory tracheæ.

than in *P. tarsalis*, resembling that of *P. æstivus* in this respect. First tarsus produced beyond and above the claw, but apparently not so strongly as in *P. tarsalis*.

Striated sensory ("olfactory") hairs on first tarsus rather similar to those of *P. tarsalis*; they are four in number, all of them being more or less club-shaped; the one situated near the distal end is very short and slender, the next is the largest, being rather stout, close beside it there is another slender but not very short sensory hair, the sensory hair nearest the proximal end of the tarsus is very short and slender. Second tarsus with a short but fairly stout sensory hair near the proximal end; the claws of this leg are distinctly bifid.

There is an unusually stiff bristle on the dorsal surface of the first leg (especially well developed in examples from *Lyperosia irritans* (=*Hæmatobia serrata*)).

Length of body 205–225 μ; width 110–140 μ.

Habitat. Pseudoparasitic on *Musca domestica* (slides in collection of Laboratoire de Parasitologie, Paris) and *Stomoxys calcitrans* (the specimen from the latter was collected by Dr. J. Burton Cleland, and therefore is presumably Australian in origin). Also numerous specimens (reddish in colour) found on an English specimen of *Lyperosia irritans*.

Prof. T. Harvey Johnston and M. J. Bancroft mention in their paper on the life-histories of *Musca australis* (*M. fergusoni*) and *M. vetustissima* (Proc. Roy. Soc. Queensland, 1920, xxxi. footnote on p. 183) that "These flies may be parasitised by larval mites, a red one probably *Acarus muscarum* Linn., and also a minute whitish species." The latter is probably the species identified as *P. americanus* in the present note.

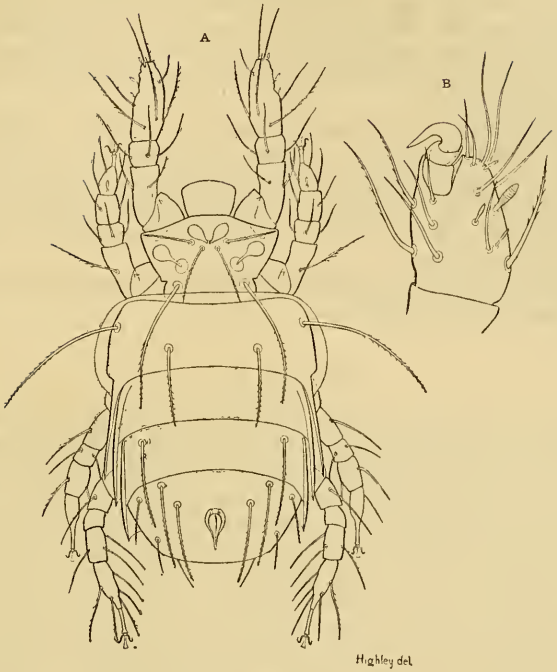
Pygmephorus americanus var. socotrensis, var. nov.

♀. Very like the typical *P. americanus* in most respects, but with the sensory (striated) setæ on the tarsi of the first and second legs different in shape, the largest one on the first tarsus being considerably elongated and cylindrical, whereas in *P. americanus* (typical form) it is club-shaped. The sensory seta of the penultimate segment of the second leg differs in a similar manner. The paired oval structures situated near the front of the cephalothorax are placed close together as in *P. americanus*, but are constricted in the middle (perhaps differences like this are merely due to the presence of air or gas in the preparation). Pseudostigmata globular as in *P. americanus*. There is a stiff dorsal bristle on the second free segment of the first leg, much as in *P. americanus*.

Measurements. Total length 210 μ; width 125 μ.

Hab. Musca domestica; Socotra. A single specimen found on a dry example of a fly from that locality.

Text-figure 15.



Pygmephorus americanus, ♀.

A. Dorsal view. B. Tarsus of first leg much enlarged.

Pygmephorus spinosus Kramer.

♀. The first tarsus is very characteristic in this species, being much enlarged, the claw also very large and moving against a strong process or spine. There are four striated sensory hairs (the so-called olfactory hairs), a distal pair of fairly long cylindrical ones being placed close together (one of them is slightly stouter than the other), and a proximal pair of very short rather club-shaped ones. Second tarsus with a single sensory hair dorsally, which is not very long but fairly stout, situated near the proximal end of the segment. Pseudostigmata rounded at the distal end. Hairs on body long and more distinctly feathered than in *P. tarsalis*.

Habitat. Talpa europœa; England and the Continent.

Pygmephorus pilosus Oudmns.

♀. First tarsus not produced nor enlarged. The second striated sensory hair (from the distal end) is much larger and stouter than the others, the first being of moderate length and slender; the two proximal sensory hairs are quite short, one of them is slender but club-shaped, the other very slender, straight, and cylindrical.

Second tarsus with a rather long spine in the middle of the dorsal surface, and with a short spine and also a short club-shaped sensory hair near the proximal end. Claws of this leg slender and not bifurcated. Pseudostigmata rounded distally (not pointed). Hairs of body and limbs more distinctly feathered than in *P. tarsalis*.

Habitat. Arvicola agrestis and *Talpa europæa*, England; several specimens off these hosts.

Acarapis, gen. nov.

I propose the new generic name *Acarapis* for *Tarsonemus woodi* Rennie, 1921, the principal structural differences between this new genus and *Tarsonemus* being as follows:—Anterior leg of larva of *Acarapis* well-developed and furnished with a pair of claws and a pulvillus, but the second and third legs are very short (almost rudimentary) and without either claws or pulvillus. (In *Tarsonemus* the larval stage has all three pairs of legs well-developed and all end in claws and pulvillus.) The globular pseudostigma always present between the first and second legs in the females of *Tarsonemus* is absent in *Acarapis*. Fourth leg of female shorter and stouter than in *Tarsonemus*, and furnished with a larger number of hairs, resembling *Scutacarus* in this respect.