

RECORDED  
IN ANTBUS*Bombus* Latreille.

*B. lucorum* (L.), 2 ♀♀ 1.vii, 3 ♀♀ 8.vii, 1 ♀ 9.vii; *B. jonellus* (Kby.), 2 ♀♀ 8.vii, fairly normal specimens of the typical form; *B. lapidarius* (L.), 1 ♀ 9.vii; *B. soroensis* (Fab.), 2 ♀♀ 2.vii; *B. hortorum* (L.), 2 ♂♂, 2.vii and 11.vii; *B. muscorum pallidus* Evans 1 ♀ 1.vii, 1 ♂ 2.vii, 2 ♂♂ 8.vii; *B. agrorum septentrionalis* Vogt, 1 ♀ 2 ♂♂ 2.vii, 6 ♂♂ 8.vii.

*Psithyrus* Lep.*Ps. campestris* (Pz.) var. *swynnertoni* var.n.

♀. The hairs are black; half the hairs of the vertical tuft yellow, half black; mesonotum, except for a slight intermixture on disc, and mesopleuron ochreous; tergite 1 ochreous, black mixed at sides; 2 black with small lateral tufts on the apical quarter bright yellow; 3 with large lateral yellow tufts covering the whole length of the tergite at the sides; 4 mainly yellow, with a large baso-discal black lunule: 5 even more yellow, basal lunule smaller; venter with long pale hairs; legs black haired; wings rather dark; hairs a little longer than in specimens from S. England. Length 19 mm.

♂. The hairs are black; those of the tuft on vertex yellow; mesonotum yellow with an indeterminate black discal patch; mesopleuron yellow; hairs of abdomen yellow, disc of tergite 6 and most of tergite 7 black haired, sternite 6 with long lateral tufts largely black; legs black haired, considerably intermixed with pale hairs beneath the mid and hind femora; wings nearly hyaline; hairs a little longer and denser than in S. English specimens. L. 19 m.

Type ♀, Cara Island, 9.vii (Dept. of Entomology, Oxford Univ. Museum); allotype ♂, Loch Sween, Argyllshire, 25.viii.20 (Perkins coll., Oxford Univ. Museum); paratypes 4 ♀♀, Cara Is., 8.vii. 35 (three in Oxford Univ. Museum, two in my collection), 1 ♀, 'Scotland' (British Museum), 1 ♀, 2 ♂♂, Loch Sween, viii.20 (Perkins coll., Oxford Univ. Museum).

The British Museum female has rather fewer yellow hairs on abdominal tergites 1 and 2.

Mr. F. Allen (Map Curator at the Royal Geographical Society) kindly informs me that Loch Sween is in Argyllshire, the head of the loch being at 56° 2' N. and 5° 35' W. (i.e. very near Cara Island).

Females of *Psithyrus campestris* with as many or nearly as many yellow hairs turn up occasionally in various parts of Europe. They appear to be very rare, or at least to form only an insignificant part of the whole population; as a rule they have not been described in any detail.

The present form is apparently the only type of the species where it occurs and will probably be found to be a geographical race associating with the pale form *septentrionalis* Vogt of *B. agrorum* (Fab.). Apparently, however, the *Psithyrus* has a much less extensive range than its supposed host. Dr. R. C. L. Perkins,

F.R.S., has already mentioned and briefly described the Loch Sween specimens (1921, Ent. Mon. Mag., 57: 82-83) without giving them a name.

There is still need for more data as to the distribution of *Ps. campestris* (Pz.) in Scotland. Mr. K. J. Morton, of Edinburgh, has very kindly sent me information as to all the records he has knowledge of, and Mr. A. R. Waterston informs me that there are no Scottish specimens in the Royal Scottish Museum (specimens in the Cameron collection purporting to belong to this species were *Ps. sylvestris* Lep. with one *Ps. bohemicus* (Seidl)).

Scottish records:—(1) In the Evans coll. (examined by Mr. Morton), 1 ♂, Loch Sween (Morton), 1 ♂, Dumfries (Service), both apparently of the var. *swynnertoni*. (2) In coll. Morton, a series of males and a few females, Loch Sween. (3) Moray (det. F. Smith) (Gordon, 1887, Scottish Nat.: 178). (4) St. Fillans, Mid Perth (det. E. Saunders) (Rothney, 1906, Ent. Mon. Mag., 42: 14). The specimens on which the last two records were based are not available for study. According to Mr. Morton, the species does not occur in the Forth drainage area. The most northerly English record is from Carlisle (Routledge, 1933, Trans. Carlisle Nat. Hist. Soc., 5: 99).

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*STRONGYLOGNATHUS DIVERI* SP.N. (HYM. FORMICIDAE), A GENUS AND SPECIES NEW TO THE BRITISH LIST, WITH NOTES ON THE GENUS.

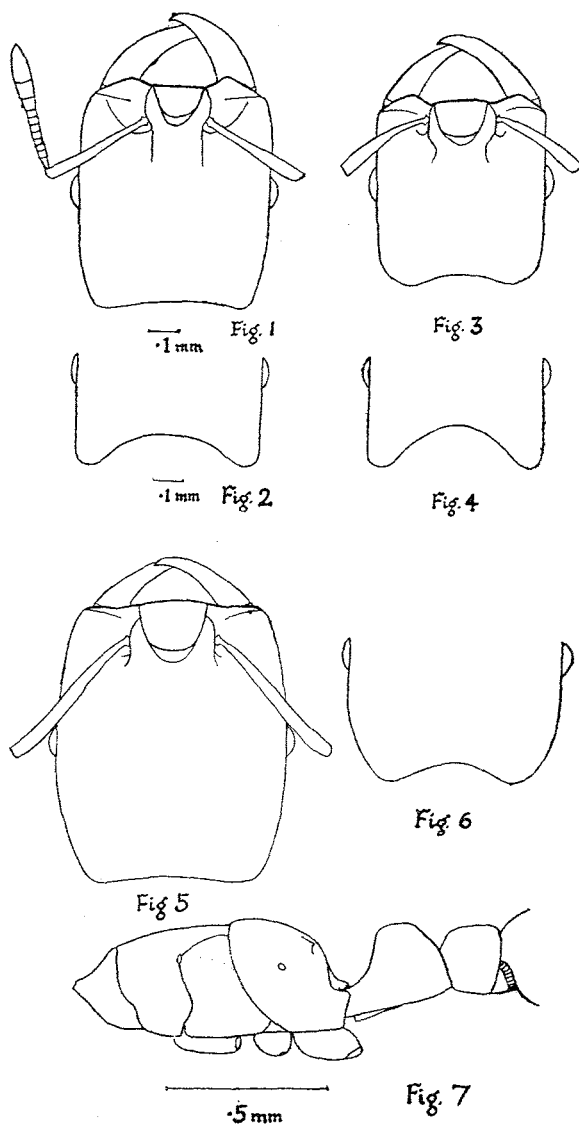
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*Strongylognathus* Mayr, Verh. zool.-bot. Ver. Wien 3, p. 389 (1853) (1) (στρογγύλος, cylindrical; γνάθος, mandible).

Subfamily: Myrmicinae. Tribe: Tetramoriini. Type: *Eciton testaceum* Schenck.

♂. *Head* rectangular, more or less emarginate at base; clypeus triangular, straight at sides, rounded posteriorly, convex or a little concave in middle, extending between the insertions of the antennae; *antennae* articulated close to the anterior border of the head; *frontal carinae* medium, sharply bordered at sides; no *scrobe* present; *frontal area* small, often indistinct; *mandibles* narrow, cylindrical, sickle-shaped, pointed, without a toothed masticatory border; *labial palpi* 3-jointed, first joint long, slender, second joint short, broader, third joint fusiform; *maxillary palpi* 4-jointed, first joint cylindrical, second and third joints shorter, fourth joint fusiform; *labrum* subquadrate, twice as broad as long, bilobed at apex forming two semicircles; *antennae* 12-jointed; *scape* not reaching the posterior border of the head; first joint of *funiculus*



1. Dorsal view of head of *Strongylognathus diveri*.
2. View of posterior margin of head of *S. diveri*, head tilted forward so that the emargination extends to its maximum apparent depth.
3. Dorsal view of head of *S. testaceus*.
4. Posterior margin of head of *S. testaceus*.
5. Dorsal view of head of *S. huberi* subsp. *foreli*.
6. Posterior margin of head of *S. huberi* subsp. *foreli*.
7. Lateral view of thorax of *S. diveri*.

longer than the second, the following joints short to the 3-jointed club, the last joint of which is longer than the two preceding taken together; *eyes* moderate, slightly prominent, situated in the middle of the sides of the head. *Thorax*: no suture above between pro- and mesonotum, suture between meso- and epinotum well defined; *epinotum* armed with two teeth, which are sometimes very minute or missing; *petiole* pedunculate, nodiform posteriorly; *post-petiole* nodiform, broader but lower than petiole; *gaster* short, oval, first segment occupying three-fourths of gaster. *Legs* fairly long; *posterior tibiae* with finely pectinate spurs.

♀. A little larger than ♂; *head* and *pedicel* as in ♂; *mesonotum* not very prominent, not covering all the pronotum; *epinotum* with two teeth. *Wings*: one *discoidal cell* and one *cubital cell* present, *radial cell* open.

♂. *Mandibles* pointed; *palpi* as in ♂ and ♀; *antennae* 10-jointed; *scape* shorter than funiculus; *funiculus*, first joint small, scarcely longer than broad, second joint long, as long as the three following taken together; *Mayrian furrows* present; *epinotum* with two teeth, sometimes wanting; *size* and *wings* as in ♀.

### **Strongylognathus diveri sp.n.**

♂. Reddish-testaceous, head and base of first segment of gaster slightly darker, legs paler; eyes black; whole body furnished with scattered bristle-like hairs. *Head* quadrate, sides parallel, posterior border emarginate, posterior angles bluntly pointed and projecting, anterior margin projecting in a blunt point in front of the antennal cavities; *front* and *cheeks* longitudinally striate; *clypeus* convex, smooth, shining, anterior border straight, posterior border rounded; *frontal area* somewhat indistinct, finely longitudinally striate; *frontal carinae* bluntly pointed anteriorly, bordered with a sharp raised ridge continuing round the antennal cavity; *antennal cavity* concentrically striate; *mandibles* long, pointed, smooth, except at apex, the latter faintly sculptured; *eyes* moderate, not composed of many facets; *antennae* long; *scape* slender and curved at base, clavate towards apex, when bent back not reaching posterior border of head by about one-third of the length of the same; *funiculus* pubescent, longer than scape, long, with a long 3-jointed club; first joint of *club* shorter and narrower than second, last joint pointed, long, longer than the two preceding taken together. *Thorax* slightly longer than head, broadest a little before apex, considerably narrower than head, distinctly longitudinally striate except in centre; *pronotum* rounded in front, *anterior angles* rounded, no trace of suture between pronotum and mesonotum above, but marked by a furrow at sides; *suture* between mesonotum and epinotum marked by a depression, continued at sides; *episternite* of *mesothorax* rather distinctly defined and somewhat strongly striate longitudinally; *epinotum* somewhat convex above, the dorsal surface, when viewed from the side, bordered at sides by a margin, or ridge, continued from the base of the mesonotum to the small tooth with which the epinotum is furnished, separating it from the lateral surface, the declivity transversely striate. *Petiole* pedunculate, the posterior portion furnished with a *node* which is higher than the post-petiole; *peduncle* beneath with a slight, narrow, projecting ridge at base; *post-petiole* transverse, broader than petiole, rounded at sides and in front, almost straight posteriorly; *gaster* moderate, smooth. *Legs* long, *femora* spindle-shaped. *Long.* 2.7—3. mm. (with mandibles), 2.5—2.8 mm. (without mandibles).

Type in B.M. Coll.

Described from three workers taken by Captain C. Diver (2) near Studland, Dorsetshire, in company with workers of *Tetramorium caespitum* L.

*S. diveri* comes nearest to *S. testaceus* Schenk, from which it differs in that it is larger, darker in colour, and considerably more strongly sculptured; the head is longer, and the club of the antennae is slightly longer and narrower, especially the last joint. The eyes are slightly larger and more prominent, the head is less emarginate posteriorly and the posterior angles slightly less prominent. The mesothoracic episternite is considerably more defined; and the margin or ridge, which divides the dorsal from the lateral surface of the thorax, is not noticeable in *S. testaceus*. (This latter character is present in *S. destefanii* Emery and *S. huberi* For.). The teeth to the epinotum are more distinct, those of *S. testaceus* being very minute. It is unnecessary to compare *S. diveri* with any of the other species and subspecies, as it and *S. testaceus*, are the only two species at present known in which the anterior margin of the head projects at the sides in front of the antennal foveae. The posterior border of the head is also considerably more emarginate.

The genus *Strongylognathus* is confined to the Palaearctic Region, species being found in Europe, West Siberia, Asia Minor and the southern shores of the Mediterranean.

Seven species are known (including *S. diveri*), six subspecies and three varieties. These are:—

1. *Strongylognathus afer* Emery    Algiers, Tunis.  
    subsp. *caeciliae* Forel    -    -    Spain.
2. *S. destefanii* Emery    -    -    Sicily.
3. *S. emeryi* Menozzi    -    -    Calabria.
4. *S. huberi* Forel    -    -    Fully (Switzerland).  
    var. *christophi* Emery    -    -    South Russia.  
    var. *gallica* Emery    -    -    South France.  
    subsp. *alpina* Wheeler    -    -    Zermatt.  
    subsp. *ceconii* Emery    -    -    Tremiti Island (Adriatic).  
    subsp. *foreli* Emery    -    -    Algiers.  
    subsp. *rhebinderi* Forel    -    -    Caucasus.  
    var. *bulgarica* Viehmeyer    Bulgaria.
- subsp. *ruskyi* Emery    -    -    Urals.
5. *S. kervillei* Santschi    -    -    Angora.
6. *S. testaceus* Schenck    -    -    Central Europe, Caucasus.
7. *S. diveri* sp. n.    -    -    England.

All the species of *Strongylognathus* are of a darker or lighter

yellow colour and live only in the nests of the ant *Tetramorium caespitum* L., its subspecies and varieties. They are called degenerate slave-makers, for, though they all possess falcate mandibles as in the true slave-makers (ants of the genus *Polyergus*), they appear to have more or less given up making spontaneous slave-raids, the habit becoming vestigial. Forel (3) has shown that if strange *Tetramorium* workers and pupae be placed near a *S. huberi* and *T. caespitum* colony, the *Strongylognathus* workers will go forth in a closed phalanx, pierce the heads of the strange *Tetramorium* workers and carry in their pupae. Nevertheless, their own *Tetramorium* will afterwards carry out the strange pupae and throw them away. It must be admitted, however, that *S. rhebinderi* has been found (4) in such circumstances that point to the fact that a slave-raid was taking place, and Kutter (5) has shown that *S. alpina* does make slave-raids. Also *Strongylognathus* species occur with some of the fiercer races of *Tetramorium* — in Sicily I found *S. destefanii*, of which only the female was known until then, in some numbers in nests of *T. ferox* Ruzsky (6).

The workers of *S. huberi* are often present in very considerable numbers; whereas those of *S. testaceus* are very much reduced, and it appears as if they may eventually disappear altogether, leaving only males and females, as is the case with *Anergates atratulus* Schenck, an ant which also lives only in the nests of *Tetramorium caespitum*, and was discovered by Crawley and myself in the New Forest in 1912 (7).

Wasmann (8), who found an immense mixed colony of *T. caespitum* and *S. testaceus* in Bohemia, suggested that the colony was jointly founded by the alliance of a *Strongylognathus* queen with a *Tetramorium* queen, but Wheeler (9) is of the opinion that the former enters the latter's nest after it has already been established and become populous.

It only remains for me to thank Dr. O. W. Richards for the drawings illustrating this note and to congratulate Captain Diver on his most interesting discovery. It is to be hoped that this year we shall be able to obtain further information on the habits of this new ant.

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## THE PARASITES OF BRITISH BIRDS AND MAMMALS.

### VII. RECORDS OF IXODOIDEA FROM HEDGEHOGS AND THEIR NESTS.

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In connection with the parasitological surveys of British mammals which are being carried out by the Bureau of Animal Population at Oxford, I have received through the kindness of Messrs. C. Elton and D. H. S. Davis some material collected off hedgehogs and from their nests.

Thirteen hedgehogs and nests have been examined, and of these five yielded no ticks at all and two of the records have already been published (Thompson, 1935). The following table gives the results of examining five hedgehogs and nests. The remaining record is dealt with separately immediately after the table.

HOST.	LOCALITY.	SPECIES OF IXODOIDEA.	No. OF SPECIMENS.
<i>Erinaceus europaeus</i> Linn. (Hedgehog) (H.7).	Oxon., N. Oxford Golf Course, 30.x.1934.	<i>Ixodes hexagonus</i> Leach.	1 male.
<i>E. europaeus</i> Linn. (H.9).	Oxon., Witney, 14.xii.1934. (In empty nest.)	<i>I. hexagonus</i> Leach.	1 nymph.
<i>E. europaeus</i> Linn. (H.11).	Oxon., Witney, 16.xii.1934. (Hog dead in nest.)	<i>I. hexagonus</i> Leach.	1 male, 1 female, 5 nymphs.
<i>E. europaeus</i> Linn. (H.13).	Oxon., N. Oxford Golf Course, 7.ii.1935. (Hog dead in nest but no ticks on it.)	<i>I. hexagonus</i> Leach.	3 nymphs.
<i>E. europaeus</i> Linn. (H.12).	Oxon., Witney, 27.i.1935. (Hog dead in nest.)	<i>I. hexagonus</i> Leach. <i>I. ricinus</i> Linn.	4 nymphs. 1 male.

The particular nest from which material of exceptional interest was obtained was situated in a small copse at the edge of a pasture field in a garden at Witney, Oxon., and was examined on December 14th, 1934, by Mr. H. V. Chorley. It was a large nest measuring roughly three feet by two feet and had contained during the previous summer a family of four young. At the time of collecting the material the nest was deserted. A total of 798 specimens of *I. hexagonus* Leach were collected, and the following are the numbers of each form taken:—

19 replete females	}	= 31 females
12 unfed females		
41 males	= 41 males	
233 replete nymphs	}	= 314 nymphs
81 unfed nymphs		
412 replete larvae	= 412 larvae	
—		
Total = 798		

During the last week of December, 1934, and the first fortnight or so of January, 1935, the females deposited large numbers of eggs. During February, 1935, the few larvae and nymphs cast their skins. Of the nymphs which survived, eighty-nine became females and eighty-six became males. In the latter part of March, 1935, Mr. D. H. S. Davis wrote, saying that a stock of *I. hexagonus* Leach consisting of unfed females, males, unfed nymphs and eggs was being kept alive at the Bureau from the original collection from the nest.

The rarity of the males of *I. hexagonus* Leach may be gathered from the following statement by Nuttall (1911, p. 345): '... we have recently (March, 1911) discovered a male of *I. hexagonus* Leach in the nest of a hedgehog. This is the first male we have captured, whereas we possess hundreds of females, nymphs and larvae from various hosts.' In view of this the occurrence of so many males in a single nest is of great interest, and it is evident from the records that the males should be sought for in the nests of their hosts. Unlike *I. ricinus* Linn., *I. hexagonus* Leach apparently never copulates on the host's body. Although *I. hexagonus* Leach has been recorded from a large variety of hosts, the hedgehog seems to be much favoured (Thompson, 1935). The occurrence of a single male of *I. ricinus* Linn. in one of the hedgehogs' nests examined is of interest, as it appears to have only been recorded from this host by MacLeod (1932).