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Myrmecophilous Notes for 1921.

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The very long hot summer and the drought of 1921, made it a very poor year for Ants in England; nearly all the species burying themselves much deeper than usual in the ground. The entire failure of many species of Aphids during part of the summer also had a marked effect upon the *Formicidae*. My colleague Mr. Crawley tells me that he was informed of several cases of ants entering dwellings this year, where they had never done so before. I also heard of similar occurrences, and we are both agreed to attribute this to the lack of plant-lice. Some ants, as we shall see later, had their marriage-flights quite a month earlier than is usual with them. *Formica sanguinea*, which always goes down for the winter sooner than our other species of *Formica*, disappeared still earlier than usual this year.

FORMICIDÆ.

Ponera punctatissima, Roger.—My friend, Mr. Philip Harwood, sent several winged females and workers of this rare little ant to me to name. He tells me he captured two ♀ ♀ in fungi, and a winged ♀ which he beat off a fungus on October 29th, in the Limpsfield Woods, near Westerham. On November 5th he took twelve more specimens, including winged ♀ ♀ as well as ♂ ♂, in the same locality, in a sawdust heap on which some large fungi were growing. I have only one previous record from West Kent, when a winged ♀ was swept by the late Edward Saunders, in a wood at Bromley, far from any houses [*Brit. Ants*, p. 72]. In Harwood's locality also, no houses are anywhere near, nor is there a refuse heap, or anything to suggest the ants had been introduced.

Myrmecina graminicola, Latr.—In my last year's notes I recorded that no winged females had been reared for the first time for four years in my observation nest of this little species, which I have now had in my possession for over eleven years. I suggested that the fighting, which took place between the ants in 1919, might have caused this, and that as no fighting to speak of had occurred in 1920, winged females might be produced again in 1921. Such has been the case, and large numbers of winged ♀ ♀ were reared; the first individuals putting in an appearance on June 17th. One or two of these females are still

retaining their wings to-day (November 15th). Many males were reared as usual, and the colony continues in a flourishing condition.

Stenammas westwoodi, West.—As pointed out in *British Ants* (p. 142), very few actual colonies of this rare species have ever been found. Its habits are obscure, and it is usual only to find isolated workers, often in or near other ants' nests; though sometimes a certain number may occur together in moss, etc. Mr. Phillips has, however, recently found a number of colonies in their actual nests in County Wexford. For his very interesting account of these discoveries see the *Irish Naturalist* for November [30 125-7 (1921)]. I am indebted to Mr. Phillips, and to Mr. Stelfox of the Dublin Museum, for a nice little live colony of this ant, which they kindly posted to me. On September 20th I fixed up this colony, which consisted of a dealated ♀, some 50 ♂♂, and a number of medium and large larvæ, in a four-chambered "Janet" nest. The ♀ laid eggs on September 21st, and again between November 2nd and 7th. I find the ♂♂ "feign death" when touched; they also have a curious habit, when the cloth over the nest is raised and the colony disturbed by being exposed to the light, of rushing at a larva, seizing it, and apparently giving it a good shaking up! I have found when touched that a larva will exude a drop of thick white fluid; it is probable that this is a means of defence, and possible that the worker shakes up a larva to induce it to discharge this fluid. These ants devour flies and other insects readily, with bits of which they feed the larvæ, as also with crumbs of cake and biscuits; but they do not appear to care much for honey. Mr. Main has kindly photographed two of the larvæ for me. He had them in his possession for about a fortnight, at the end of which time, when I returned them to their nest, the ♂♂ for a long time would have nothing to do with them. Eventually they were placed with the rest of the brood. The following is a short description of the egg and larva:—

Egg.—White, opaque, shining, longer than broad, somewhat parallel-sided, rounded at each end; rather large for the size of the insect.

Larva.—Greyish white, head pale yellow, mandibles reddish; covered all over with short anchor-tipped golden hairs. Plainly segmented to within a third of the posterior end; the head and 3 thoracic somites bent over posteriorly towards the ventral surface. Head flat, rounded, with short very pointed mandibles; abdomen pyriform.

The larva is semi-transparent under the microscope, part of the alimentary canal, breathing apparatus, and nervous system being visible through the skin from the dorsal and ventral aspects; but not nearly so plainly through the sides. At the ventral posterior end of the body, a white opaque mass can be seen through the skin, which is evidently of a liquid consistency, as when the larva is touched with a paint brush, a thick white drop of fluid is exuded from the anus, which either evaporates very quickly, or is partly received back into the body, leaving a thick white coating of the consistency of "Chinese White" on the anal surface of the larva.

Acanthomyops (Donisthorpea) niger, L.—Marriage flights of this ant took place on July 7th and 8th this year at Putney; about a month earlier than the more usual time. On August 20th another flight occurred in my garden at Putney in the afternoon, and shortly after it

had commenced a number of Sea Gulls had arrived, and were observed to catch the flying ants high up in the air. Yet another flight was observed (and also of *A. (C.) flavus*) on September 5th, when very many swallows collected and levied toll on the ants.

Formica exsecta, Nyl., \frown * *F. fusca*, L.—Several mixed nests of these two species were found by Harwood on July 15th, when he was staying at Rannoch, in Scotland. He tells me there were three or four in number, within a yard or so of each other, situated under stones about seven inches by four inches in size. Little or no nest was visible from above, and, in fact, nothing to indicate that ants were to be found beneath the stones. The mixed colonies were not very strong, although a fair number of ants were found; the *exsecta* \textasciitilde \textasciitilde predominating over the *fusca* \textasciitilde \textasciitilde in each case. Very few mixed colonies of these ants have been found before, either in Britain or on the Continent [see *British Ants*, p. 279].

Formica sanguinea, Latr.—Colonies of the "Slave-Maker" were discovered by Harwood at Brasted, Westerham, and Ightham near Sevenoaks; the first records for Kent of this species.

Formica fusca, L.—On the afternoon of May 22nd when at Bewdley I captured a female of this ant on the wing. This appears to be the earliest date on which a winged *fusca* \textasciitilde has been found away from the nest.

Introduced Ants.—On January 11th I visited Kew Gardens in search of ants, but found them to be far less abundant than in former years. The gardeners have (in my opinion very unnecessarily) been continually killing off ant colonies in the hot-houses in recent years, by means of poison. The ants do little, if any, harm, only attending such Aphids and Coccids that may occur on the plants, and it is very ridiculous to say that the ants introduce these pests into the hot-houses. On the other hand they do much good by killing off other noxious insects. *Prenolepis donisthorpei*, Forel., still occurs in the Fern House, and *Triglyphothrix striatidens*, Emery, was also present. The only other ant noticed was the common *Technomyrmex albipes*, F. Smith, in the Palm House, etc.

COLEOPTERA.

Quedius mesomelinus, Marsh.—On September 27th last year a number of this beetle was found in the Woking *A. (D.) fuliginosus* nest, and again this year on October 7th more specimens, including a fine \textasciitilde , occurred in the same nest. I have taken it with the same ant at Chiddingfold in numbers, and sparingly at Oxshott. This insect shows strong leanings towards a myrmecophilous life, and as I pointed out in my paper on the "Origin of the Ancestral Form of Myrmecophilous Coleoptera" [*Trans. Ent. Soc. Lond.* 1909 407], we can

* \frown This sign was invented by Wasmann in *Die Zusammengesetzter Nester und gemischten Kolonien der Ameisen*, Munster (1891), to express the union of two species to form a single colony. The name of the auxillary species is always placed after the sign.

easily imagine a descendant of *Quedius mesomelinus* as a regular ants'-nest species.

Microglossa gentilis, Märk.—Previous to last year I had only taken this species at Oxshott, but it put in an appearance in the Woking *fuliginosus* nest on March 19th, 1920; on May 30th it was common together with its larvæ. It was subsequently observed on June 20th, 1920, and June 6th and October 7th, 1921.

Scydmaenus exilis, Er.—Harwood found this little beetle in a nest of *Formica rufa* in the Limpfield Woods near Westerham, in considerable numbers extending over a period of many weeks. On September 17th I had the pleasure of taking it with him in this nest. This precludes the possibility of its being only a chance find; moreover J. J. F. X. King sent me several specimens taken on July 24th, 1915, in a *rufa* nest at Bridge-of-Gairn, and Wasmann tells me he has it in his collection, taken by the late Viehmeyer with the same ant in Saxony. The beetle is often, and probably generally, found under bark—I have taken it under such circumstances in Sherwood Forest—but the above records show that at times it can, and does, lead a myrmecophilous life.

CHALCIDIDÆ.

Spalangia erythromera, Först.—Having at last discovered the true host of this Chalcid, it seems advisable to give a short account of both how this was arrived at, and also its history as a British insect.

On April 6th, 1906, I captured a specimen of this insect (which had not previously been found in Britain) in a nest of *A. (D.) fuliginosus* at Wellington College. On the same date I took home a number of the ants and their larvæ, carton from the nest, and other débris, which I fixed up in a large glass bowl to serve as an observation nest. In this bowl large numbers of the *Spalangia* were reared (the insect continuing to emerge all through the year); as well as other parasitica; Diptera including many *Phyllomyza lasiæ*; etc. I jumped to the conclusion, perhaps naturally, that as the Chalcid is shining black like the ant with which it always occurs, and as the ants treat them without hostility, even tapping antennæ with them at times, they were parasitic on the ant larvæ; and there the matter rested. I subsequently captured the species, always with the same ant, at Darenth Wood, 26-vii-09; Oxshott, 9-ix-13; Weybridge, 28-viii-14; and Woking, 27-ix-20, 22-ix, and 7-x-21.

On September 27th, 1920, I took home, from a *fuliginosus* nest at Woking, a small quantity of carton, damp earth beneath it, refuse, etc., which had in it a number of fat Dipterous larvæ, and various species of Dipterous pupæ; but neither ants, nor ant larvæ. This I fixed up in a small plaster nest. On December 10th a *Spalangia* put in an appearance. I suggested that—"This however proves nothing, as the *Spalangia* may leave its host before pupating, and have been present as a pupæ in the débris" [*Ent. Rec.* 33 23 (1921)]. It nevertheless made me suspicious, and I isolated some of the Dipterous pupæ in a small glass-topped box. On February 18th, 1921, a *Spalangia* emerged from a pupa of *Phyllomyza lasiæ*; thus settling the question of the host. Two more specimens were reared from

Phyllomyza pupæ; one on April 10th, and the other on September 20th.

BRACONIDÆ.

Blacus mamillans, Ruthe.—Mr. Hallett sent me a ♂ of this Bracon, which he had taken at Porthcawl, Glamorgan, on May 16th, 1921, in company with ♀ ♀ of *A. (D.) niger*. The shape, colour, and general appearance of the body and legs are very like the ant. The ♂ of this insect was unknown to science.

PROCTOTRYPIDÆ.

Helotus anomalipes, Pz.—Mr. Hallett took a ♂ of this Proctotrypid in company with *Leptothorax acervorum* at Candleston, near Porthcawl, in July, 1916. The insect in question is superficially so like a ♂ of the ant, that it was not until he was setting it together with ♂ ♂ of the *Leptothorax*, he discovered it was not an ant. This and the previous species were kindly identified by Mr. Morley.

Ceraphon sp.?—I captured a specimen of a species of *Ceraphon* in a nest of *F. rufa* at Westerham on September 5th, 1921, which I believe to be new to Britain; at any rate I have not taken it before.

HETEROPTERA.

Piezostethus formicetorum, Boh.—This curious little myrmecophilous bug was discovered by Harwood in a nest of *Formica rufa* in the Limpsfield Woods, Kent, in some numbers, both nymphs and adults being present. He showed me this nest on September 17th, when I secured a few nymphs. This capture is of considerable interest, as the bug has never been found in England before. It was first recorded for Britain in 1872 from Aberdeenshire where it was taken in *rufa* nests at Glen Lui (Hislop) and Breemar (B. White). After this it was not found again until 1907 when I turned it up in *rufa* nests at Rannoch, Perthshire. In May, 1909, I took it at Nethy Bridge; and again at Rannoch in June, 1911, when it occurred in some numbers in one *rufa* nest, both nymphs and adults being present. In July, 1915, J. J. F. X. King found it with its usual host at Bridge of Gairn, Aberdeen.

APHIDIDÆ.

Tetaneura ulmi, Geoff.—This species occurred in some numbers in a nest of *A. (C.) flavus* in my garden at Putney on March 25th. My previous captures of this Aphid are as follows: in nests of—*Myrmica ruginodis* Loch Arber 31-iv-08; *A. (C.) alienus* Whitsand Bay 16-iv-09; *A. (C.) flavus*, *Myrmica scabrinodis* and *Formica fusca* Bradgate Park 3-v-09; *A. (C.) flavus* Darent Wood 6-vi-09; *Tetramorium caespitum* St. Issey 25-iv-11; *A. (C.) flavus* Isle of Eigg 18-ix-11; and *A. (C.) flavus* Lundy Island 9-vi-13. Mr. Laing tells me he has kept a special lookout for it, but has only found it on elm at Newlands Corner in Surrey. I imagine however that he has not looked for it in Ants' nests. It is very curious that a species which is associated with the elm should occur in ants' nests on Lundy Island, and the Isle of Eigg, where elm trees are not to be found! There is much yet to be learnt about the life history of most of the myrmecophilous *Aphididae*.

(To be concluded.)