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Myrmecophilous Notes for 1922.

By H. DONISTHORPE, F.Z.S., F.E.S.

FORMICIDAE.—MYRMICINAE.

Myrmecina graminicola, Latr.—The very interesting colony of this species, which I have now had under observation for over twelve years, continues in a flourishing condition. The following is a short extract from the yearly journal kept for this colony during the past twelve months. During the winter the ants kept very quiet and very few deaths occurred. Very little food of any kind was given to them. April 23rd, some bits of raw beef were given, these were cut up by the ants and fed to the larvae: the latter having pellets of the meat placed on their bodies for them to chew at. April 27th, many large larvae present. May 2nd, first packet of eggs observed. May 28th, several packets of eggs, and ♂, ♀, and ☿ pupae. Several ♀ "Daddy-long-legs" given to the ants; their bodies were cut up and devoured, and numerous eggs, taken from them, fed to the larvae. June 11th, fresh packet of eggs, and four winged ♀ ♀ present. June 22nd, very many winged ♀ ♀ and a few ♂ ♂ hatched; many eggs present. July 2nd, still more winged ♀ ♀ hatched. July 9th, the body of a "Magpie-moth" placed in the nest, the ants would have nothing to do with it! This shows how very distasteful the moth must be, as *Myrmecina* is so fond of an insectivorous diet, devouring greedily flies, earwigs, clothes-moths, and other ants, etc. July 24th, some of the winged ♀ ♀ had shed their wings, and this continued until October 29th, when only one ♀ remained with one wing left. The colony is now in a very flourishing condition—a large number of ☿ ☿, still more deälated ♀ ♀, and many medium and small larvae being present. The outstanding features are that many more winged females, and far fewer ♂ ♂, have been reared than in any single year previously, and the colony was given less food last winter than usual. It is very difficult to draw any safe conclusions from the above as to the reasons for the production of females (*i.e.*, ♀ ♀, *not* ☿ ☿) at any time in a colony. Professor Emery has expressed the views that ♀ ♀ are only produced from larvae which have been fed with liquid food disgorged into their mouths by the ants, and not by bits of insect and other animal food given to them. Also, that perhaps the most important reason why they are produced is when there is no ♀ in a nest. If I had not read his papers I should have come to the conclusion that this year ♀ ♀ were produced in my colony

by an abundance of animal food (raw beef, etc.) fed to the larvae, after a winter of scarcity. Also in this colony there can never have been the impulse to bring up ♀ ♀ through their absence, as the original ♀, the queen mother of the colony, was present in 1915 when winged ♀ ♀ were first produced, and ever since then the colony has consisted of nearly as many ♀ ♀ as ☿ ☿.

Forel considers that the sex of an ant is already determined in the egg—as is the case with Termites. Space, however, will not allow me to deal with this subject at any further length here; but I hope to return to it in the future.

Formicoxenus nitidulus, Nyl.—Mr. H. J. Jeffery, of Newport, Isle of Wight, tells me he has found a colony of this little inquiline ant in a nest of *Formica rufa* in Parkhurst Forest. This is an interesting addition to the ant fauna of the Isle of Wight.

Solenopsis fugax, Latr.—Mr. J. H. Keys, of Plymouth, sent me ♂ ♂ and ☿ ☿ of the above species from the Lizard, in Cornwall, to confirm. It is a new county record.

Stenamma westwoodi, West.—When working fungi for Coleoptera at "Beechen Corner," in the New Forest, in October, I captured several ☿ ☿ of this ant at the roots of a fungus. The only other record I have of this species from the New Forest is from specimens in the Cambridge Museum Collection, taken by the late Dr. Sharp. Mr. Hallett has also taken this ant in agarics, at Cwrt-yr-ala, in September and October, 1921. Mr. W. E. H. Hodson tells me he has found a number of colonies at Winchmore Hill this year. It will be remembered that the only other actual nests of this species found in the British Isles are those discovered by Mr. R. A. Phillips, in Ireland [*Irish Nat.*, **30**, 125-27 (1921)]. The colony given to me by him in September, 1921, has progressed favourably, and not a single ant of the original colony died in the first twelve months I had it under observation. The following is a brief extract from my note book on this colony for 1922. April 25th, the queen laid her first eggs for the year and continued laying throughout the summer. May 28th, a number of semipupae, some pupae and one coloured pupa present. June 5th, a few more coloured pupae present. June 22nd, many light coloured ☿ ☿ (callows) and one ♂ hatched; ☿ ☿ continued to hatch during the summer, and a few callows died. October 10th, I introduced a *Stenamma* ☿, from the New Forest, into this nest; not much notice was taken of it by the ☿ ☿ in the nest. When it approached any of them they backed away from it; it walked over the larvae, and endeavoured to make itself at home. I never saw it attacked and it lived in the nest for two days, but a dead ☿ was present in the light chamber on October 13th, which was probably the New Forest specimen. October 15th, several long Dipterous larvae given to the ants, the ☿ ☿ arranged their own larvae on them in rows, like so many little pigs feeding side by side at a trough.

The colony consists to-day (December 8th) of some 75 ☿ ☿, about 100 larvae, and the queen mother.

Leptothorax acervorum, F.—On July 14th ants from a colony of this species were observed coming out of and going in to some beetle burrows high up in an old apple tree in an orchard at Darenth Wood. The burrows were probably old ones of *Scolytus prumi*, which was in evidence in several of the apple trees near at hand.

Dolichoderinae.

Iridomyrmex humilis, Mayr.—In March Mr. Keys sent me specimens of an ant to name, which had been taken in houses in Plymouth. These proved to be ☿ ☿ of the Argentine ant, and from a new British locality. This pest continues the rapid extension of its range. Forel [*Le Monde Social des Fourmis* (**1**, 1921)] stated it had already been recorded from the centre of France. In my book [*British Ants*, 342, (1915)] I mentioned that it had occurred at Belfast (in great numbers), and in Edinburgh. I have since recorded it from Eastbourne (in great profusion), Enfield, and Guernsey.

Formicinae.

Acanthomyops (*Dendrolasius*) *fuliginosus*, Latr.—On May 10th I observed a number of ☿ ☿ of this species marching in files on and near a large hollow beech at Rhinefields, near the Rhododendron Walk in the New Forest. As I have previously pointed out [*Ent. Rec.* **31**, 4 (1919)], this ant is very scarce in this locality, and this is the second time only that I have seen it in the Forest in all the years I have visited there. On May 5th the species occurred rather plentifully in a hedgerow along a bridle-path to Wimbledon Common. This is the first time I have found this ant so near home; the actual nest was not found, but *Oxypoda vittata* was running with the ants.

On July 31st I picked up a winged female on a road at Barkham; no nest nor ☿ ☿ could be found anywhere near by. She got rid of her wings when placed in a box, and died in two days after she had been taken home and placed in a small plaster nest.

During the seven years I have visited the *fuliginosus* colony established in a birch tree, of which it took possession at Woking on August 27th, 1915, after a fierce battle with a colony of *A.* (*C.*) *umbratus* (the original owners), I have taken 35 different species of myrmecophiles in it.

I gave a description of this battle in 1916 [*Ent. Rec.*, **28**, 2 (1916)]; and on February 2nd, 1921, I exhibited at the meeting of the Entomological Society of London [*Proc. Ent. Soc. Lond.*, **1921**, vii.-ix.] a number of ☿ ☿ of *A.* (*D.*) *fuliginosus*, all of which had ☿ ☿ of *A.* (*C.*) *umbratus* fastened by their mandibles to their legs, etc., from this battle, and 30 species of the myrmecophiles. I stated that it had seemed a good opportunity to note how soon a new nest became infested with myrmecophiles, and consequently I have visited this tree from time to time ever since August, 1915.

The following is a list of the species taken in the order in which they were found, but only the dates of visits are mentioned when an additional species was found:—

Woking, August 27th, 1915.

Battle between *A.* (*D.*) *fuliginosus* and *A.* (*C.*) *umbratus*.

1. *Myrmedonia lugens*
2. ,, *cognata*
3. *Phyllomyza lasiae*

} Running about among the ants. These three species must have followed the *fuliginosus*.

May 10th, 1916.

4. *Myrmedonia laticollis*.
5. *Tropidopria fuliginosa* and no. 3 also present.

August 17th, 1917.

6. *Scatopse transversalis* var.
7. *Amphotis marginata* and no. 2 also present.

March 19th, 1920.

8. *Myrmedonia funesta*.
9. *Quedius brevis*.
10. *Microglossa gentilis*.
11. *Harpactes hombergi*.
12. *Aphiochaeta aequalis*.
13. „ *ciliata* and no. 2 also present.

April 4th, 1920.

14. *Myrmedonia limbata* and nos. 2, 8, and 9 also present.

May 30th, 1920.

15. *Oxypoda vittata*.
16. *Ptenidium formicetorum*.
17. *Beckia albina*.
18. *Limosina curtiventris*.
19. *Loxotropa fuliginosi*.
20. *Laelaps* (*Laelapsis*) *cuneifer* and nos. 3, 8, 9, 10, and larvae of 9 also present.

June 20th, 1920.

21. *Ptenidium laevigatum* and nos. 3, 9, 10, 12, 13, 14, 15, 16, and pupae of 9 also present.
22. Chalcid bred from *Quedius brevis* pupa.

August 14th, 1920.

23. *Ceraphron fuliginosi* and nos. 2, 3, 4, 6, 8, 9, and 18 also present.

September 27th, 1920.

24. *Othius myrmecophilus*.
25. *Spalangia erythromera*.
26. *Lagynodes niger* var. *aterior*.
27. *Aspilota nervosa*.
28. *Tetrilus diversus*. Very young spiders and egg-sacks on carton of nest.
29. *Quedius mesomelinus*.
30. Larvae of Dipteron; small but fat and broad. Nos. 2, 3, 4, 8, 9, and 11 also present.

October 7th, 1921.

31. *Oxypoda haemorrhoa* and nos. 2, 3, 4, 6, 7, 8, 10, 20, 25, 28, 29, and 30 also present.

June 8th, 1922.

32. *Nototheca confusa*.
33. *Dendrophilus pygmaeus* and nos. 2, 3, 4, 6, 9, 10, 15, 20, and 30 also present.

September 22nd, 1922.

34. *Schizoneura corni*, alate ♀ and nos. 2, 3, 4, 6, 7, 9, 10, 20, 21, 30, and 33 also present.

October 18th, 1922.

35. Proctrupid sp. ?, and no. 15 also present.

In connection with a few species in the above list:—

Nos. 2 & 4 (*Myrmedonia cognata*, Märk, and *M. laticollis*, Märk, are about equally common, and are two of the insects most frequently found present in this nest. This is not generally the case with the former beetle in *fuliginosus* nests, either as regards to distribution or numbers.

No. 9 (*Quedius brevis*, Er.). On June 8th I brought home some larvae of this beetle and placed them in a cell with some refuse from the nest. One pupated on June 12th and hatched on July 5th, seventeen days being spent in the pupal state.

No. 10 (*Microglossa gentilis*, Märk) was not observed in this nest until March, 1920; since then it has been quite abundant at times. In 1909 I discussed the problem of this (and other) species inhabiting both birds' nests and ants' nests (*Trans. Ent. Soc. Lond.*) **1909** 398-402).

No. 21 [*Ptenidium* (*Matthewsium*) *laevigatum*, Er.] has been found twice. I have little doubt that this is a myrmecophilous species. It has occurred with both *Formica rufa* and *A.* (*D.*) *fuliginosus* elsewhere. One of the four specimens in the Matthews' Collection was originally in his series of *P. formicetorum*, and marked by him as being a typical specimen of the latter species, he having no doubt taken it with ants. Many of the British records of *P. laevigatum* are probably erroneous.

No. 25 (*Spalangia erythromera*, Först.) I have bred this year from pupae from No. 30; this is a new host for the Chalcid. It will be remembered that when I first discovered a host for this insect, I bred it from pupae of *Phyllomyza lasiae*. [For notes on the life-history, etc., of *S. erythromera* see *Ent. Rec.* **34** 4 (1922)].

No. 30. I have not so far been successful in breeding the imagos from these larvae, though I have frequently brought examples home and placed them in cells with bits of carton and refuse from the nest and damp earth. They always pupate, some fastening themselves on bits of the carton, but no flies have ever hatched out. These larvae are chiefly to be found in the earth, often very damp, immediately beneath the carton of the ants' nest. I have found Dipterous eggs, from which the larvae had emerged, attached to the carton of the nest, which I have thought might be those of this species.

No 33. *Dendrophilus pygmaeus*, L. This is the first time, as far as I am aware, that this *Formica rufa* guest has ever been taken in a nest of *A.* (*D.*) *fuliginosus*. As a second specimen occurred on September 22nd, it is not the case of a single chance specimen.

The carton of the nest is of a light brown colour. I keep the hole in the tree packed with grass, etc., in the usual manner, and of course various species of non-myrmecophilous Coleoptera, etc., are often found, such as *Aleochara succicola*, Th., *Atheta nigricornis*, Th., *Xantholinus linearis*, Ol., *Clambus punctulum*, Beck., *Hister merdarius*, Hoff., *Euplectus karsteni*, Reich., *Coninomus constrictus*, Gyll., *Corticaria denticulata*, Gyll., and *C. eppelsheimi*, Reitt., etc. I think that the reason that the *fuliginosus* have not deserted their nest, which ants will frequently do when continually disturbed, is that I generally give

them some sugar when I repack the nest. Mr. Champion also occasionally visits this nest, and he kindly informs me what species of Coleoptera he finds present. I am indebted to him for the first record of No. 14 (*Myrmedonia limbata*, Pk.); he also found No. 32 (*Nototheeta confusa*, Mk.) there this year, and *Quedius ventralis*, Ahr.

Acanthomyops (*Donisthorpea*) *niger*, L.—On August 20th marriage flights of this ant took place both at Putney (noted by Miss F. Kirk), and at Horsford in Norfolk, where I was at the time. In the latter locality the sexes of *A.* (*C.*) *flavus*, and species of *Myrmica* were also on the wing. Another flight occurred at Putney, on September 21st, all over the district, at about 5.30 p.m. Sparrows were catching the winged ants both on the ground and in the air, and a large green dragon-fly was "hawking" them; flying up and down the Hazlewell Road.

Acanthomyops (*Chthonolasius*) *umbratus*, Nyl.—When evening sweeping at Barton Mills on September 5th, numerous ♂ ♂ and winged ♀ ♀ of this species were swept up off long grass, and were very active in the net. On September 22nd when evening sweeping at Woking, a single winged ♀ was netted. On being placed in a glass-topped-box she immediately got rid of her wings.

Formica rufa, L.—On May 9th a single winged ♀ was seen running in a sand-pit near Lyndhurst, New Forest, a marriage flight having no doubt taken place that morning, the day being hot and sunny. On June 6th at Woking a deälated ♀ was picked up as she was crossing a foot path. This I took home and endeavoured to get accepted by some *F. picea* ☿ ☿ from the New Forest. The experiment was not successful however; as she died (or was killed) in a few days.

Formica picea, Nyl.—On May 7th ☿ ☿ of this ant were running about all over the "*picea*" area in Matley Bog. Several nests were located; the colony from one of these, which contained no less than 15 deälated ♀ ♀, was taken home and fitted up in a plaster nest. The ants were evidently not at home in the plaster nest; and the colony did not thrive, though eggs were laid and larvae brought up. Amongst other food given to this nest was a number of *F. rufa* ☿ cocoons, some of which were cut open and the *rufa* pupae devoured; others were allowed to hatch and the *rufa* ☿ ☿ lived for some time in the *picea* colony. Latterly they were sometimes pulled about by the *picea* ☿ ☿, and all eventually died. I have presented the individuals which remained of the colony to Miss Cheesman of the Zoological Gardens, as she had prepared a formicarium in the Insect House, consisting of a bog with growing sphagnum, rushes, etc., for their reception. She tells me that they all went down into the sphagnum at once on arrival; but have not appeared since. It remains to be seen if the ♀ ♀ will lay eggs, and the ☿ ☿ build up a typical *picea* nest next year.

Camponotus (*Camponotus*) *herculeanus*, L., subsp. *pennsylvanicus*, Retz.—Mr. J. W. Saunt sent me to name a number of ants comprising ♂ ♂, winged ♀ ♀, ♃ ♃, and ☿ ☿, which proved to belong to the above subspecies. He told me that about July 7th he noticed a large deälated ♀ ant on the floor of a saw-mill at Coventry, which he realised was not a British species. On hunting about he found a plank of American oak which had been bored by Coleopterous, or Lepidopterous, larvae, and on cutting off a piece a hole was exposed which was

tightly packed with dead ants. After shaking out and removing with tweezers a large number of these, the entrances to a central chamber were exposed, and inside he discovered five live winged ♀ ♀. Of course these ants had been introduced in timber from North America; but how, and why, they came to be packed into the small space in which they occurred (Mr. Saunt kindly sent me the piece of oak and I should say the borings were Coleopterous) I am quite unable to explain. In *British Ants* (p. 348) I give other records of this American species occurring in Britain. Winged ♀ ♀ were also sent to the Museum (a year or two back), from Alfreton, Derbyshire, which had been imported from America in ash poles.

Coleoptera.

Atemeles emarginatus, F.—A specimen of this insect was found running at large in a sand-pit at Matley Passage, New Forest, on May 15th. A few Myrmicas were about in the sand-pit; the beetle had probably just left a *Myrmica* nest, preparatory to entering one of *Formica fusca*.

Clythra 4-punctata, L.—A number of specimens were observed seated on brambles over a *rufa* nest in Ramnor Inclosure, New Forest, on May 11th. One pair, *in cop.*, was quite close to the nest on a twig, and ants were continually running over them, apparently without disturbing them in any way.

Braconidae.

Aspilota concolor, Nees.—Mr. Morley has kindly named for me a ♂ of this species which I took in a nest of *Formica fusca* at Box Hill on May 1st, 1910. I have several times taken *Aspilota nervosa*, Hal., in the nest of *A.* (*D.*) *fuliginosus*. Mr. Morley tells me that this genus is parasitic on Diptera; it is therefore certain that when found with ants, they are parasitic on the flies which have bred in the ants' nests.

Diptera.

Microdon rhenanus, Andries, and *M. latifrons*, Lw. ?—On May 6th I found one larva and a few empty pupa cases of a *Microdon* in a nest of *A.* (*D.*) *niger* situated in a stump of Scots pine in the New Forest. The larva was unfortunately injured when breaking up the stump with a digger, and as it died next day, it was placed in spirit. On May 11th I again visited the ride where the stump had occurred, to endeavour to obtain more specimens. A number of old, empty *Microdon* pupa cases were found in various pine stumps containing *niger* colonies (proving that the flies had been abundant last year), but neither larvae, nor live pupae, were seen. As the pupa cases were different from any I had previously seen I sent some to Father Wasmann, who informed me they were *Microdon rhenanus*, Andries, a rare species and new to Britain. He also kindly supplied me with the reference to the original description [*Zeits. f. Wissen. Zool.* ciii, Heft 2 (1912)]. I subsequently gave a pupa case to Mr. Edwards for the Museum, with the reference, and he informs me that it does not agree with the description of *M. rhenanus*, and moreover he is of the opinion that it is that of *M. latifrons*. As I found *Microdon* puparia in several different stumps, they may not all belong to the same species, and it

is most probable that those sent to Wasmann are *M. rhenanus*.* Of the others however I can only say that they do not appear to me to agree with one of *M. latifrons*, taken by Mr. Champion at Woking, which I have before me. The latter is distinctly larger, the ground surface is smoother, and the raised reticulated pattern is neither so prominent, nor so pronounced; moreover the shape is different, being more parallelsided, and not as narrowed towards the base.

Microdon latifrons, Lw., was taken in Britain in 1875, at Oxshott, and in 1900 at Nethy Bridge, by Colonel Yerbury; and by the late Rev. H. S. Gorham, in the New Forest, in 1902: but these I believe were only specimens of the imago netted at large. Quite recently Mr. Champion found live pupae at Woking in ants nests under pine bark, and Mr. Main at Ascot, from which the flies were reared. It is unfortunate that I was not put on to these localities in time to ascertain the host ant of the fly, which host, as far as I know, is unknown on the Continent.

As is well known, the larvae of all species of *Microdon* occur in many parts of the world, but always in ants' nests, where they pupate; and have been known for many years. The food, however, on which they lived was unknown, and it had never been discovered until 1912. Unfortunately Forel, in his last volume [*Le Monde Social des Fourmis du Globe*, **2**, 113 (1922)], states that it is still unknown. In 1912 [*Ent. Rec.*, **24**, 35-6 (1912)] I demonstrated by experiment of what the food of these larvae consisted. It may be as well to recapitulate briefly what I then wrote concerning one from a number of the larvae of *Microdon mutabilis* taken in nests of *Formica fusca*, at Porlock, and introduced into a plaster nest containing a colony of that ant—"The smallest larva I had is now full grown and still alive to-day, December 23rd, it having lived in my nest for over seven months." [It subsequently pupated and hatched.] "It is always in the chamber occupied by the ants. When they move it very slowly follows them. The ants often sit on it and walk over it, but they never feed it. In my former experiments [*Ent. Rec.*, **19**, 255 (1907): **21**, 18-19 (1909)], I kept the ants and larvae in a bowl with earth, and as the ants and the *Microdon* larvae were always beneath the earth, I could never see them without disturbing the nest. Now I have been able constantly to observe them, it is quite clear that the food of the larva consists of the droppings, and pellets (Janet's *Boulettes de nettoyage*), of the ants. It has never had any other food in the bare chamber in which it lives, it has never gone to the honey which is in the last (the light) chamber, the ants have never fed it, and it has grown to a full size larva from a very tiny young one."

Heteroptera.

Nabis lativentris, Boh.—Examples of the larva of this bug were observed in company with ☿ ☿ of *Formica fusca*, and *F. fusca* var. *glebaria*, on the cliffs at Ventnor, I. of W., on September 9th. Mr. G. C. Leman and his son also found young stages of *N. lativentris* running about with ☿ ☿ of *F. fusca* at Southwold in August. On both of the above occasions the bugs were about the same size as the

* Since this was written I have heard again from Father Wasmann and he tells me the specimens sent to him are *M. rhenanus*.

ants. Other records of the occurrence of the larva of this *Nabis* with ants may be found in the *Ent. Mo. Mag.* for June, 1921 [*E.M.M.* **57** 137 (1921)].

Aphididae.

Trama troglodytes, Heyden.—Specimens were found at large in a nest of *A.* (*D.*) *niger* under a stone at Freckenham, on September 5th. As usual when the nest was exposed the ants carried the Aphids into safety.

Aphis heraclei, Koch.—Many specimens occurred in a nest of *Myrmica ruginodis* at the roots of *Heracleum sphondylium* at Stowting, on June 30th. *Forda formicaria* was found in company with the Coccid *Ripersia subterranea* in a nest of *A.* (*D.*) *niger* under a large stone on the beach at Ventnor, I. of W., on September 11th.

Lepidopterology.

In the recently issued Trimestres of the *Annales de la Société Entomologique de France* the illustrious Abbé J. de Joannis has written a critical revision of the species of Lepidoptera whose larval stage produce or inhabit galls on plants in the European area. He has taken as the basis of his paper the great work of Houard, *Catalogue des Zoocécidies des Plantes d'Europe et du Bassin de la Mediterranée*, treating of each species in detail and finally showing that out of the 62 species of Lepidoptera recorded by Houard 12 should be deleted as included upon incomplete or erroneous original and unconfirmed observations, while at the same time M. de Joannis adds 12 European species, which are not included in the original work of Houard.

These 62 species are divided among the families *Sesiidae* 3, *Pyralidae* 1, *Pterophoridae* 2, *Orneodidae* 4, *Tortricidae* 24, *Hyponomeutidae* 1, *Gelechiidae* 15, *Elachistidae* 9, *Nepticulidae* 2, *Tineidae* 1.

The Abbé's remarks and criticisms are written in a most kindly manner with ample apologies to the author for having to point out such a series of errors both of commission and omission. He quotes with much apparent pleasure, and as an incentive for future observers the words of the late Lord Walsingham in vol. xl. of the *Ent. Mo. Mag.*: "One finds here [Biskra, Algeria] among the Micros an unusual proportion of gall-makers. This habit is adopted by at least seven distinct genera:—*Phalonia*, *Oecocecis*, *Coleophora*, and four new ones (*Anoecisis*, *Cecidophaga*, *Hypocecis* and *Proactica*). I am able to record nine gall-making species in these genera without taking account of *Amblypalpis olivierella*, Rgt., the galls of which I believe I also found on *Tamarix*, and two others, not yet bred, one on *Gymnocarpon fruticosum*, possibly an inquiline, and one on *Haloxylon articulatum*."

The following are the species given as "cécidogènes" by the Abbé Joannis with the host plant, those marked with an asterisk being found in Britain:—

**Sciapteron tabaniformis*, Rott., on poplars (*Populus nigra*, *alba*, etc.); var. *rhingiaeformis*, Hb., on *P. nigra*; and subsp. *synagriformis*, Ramb., on *P. alba*, etc.

Sesia flaviventris, Stdgr., on willows (*Salix caprea*, etc.).

S. triannuliformis, Frr., on Sorrel (*Rumex acetosella*).

**Odontia dentalis*, Schiff., on *Echium vulgare* and *Anchusa* sp.