

## HYMENOPTERA.



## NOTES ON HYMENOPTERA.

BY FREDERICK SMITH.

I HAVE great pleasure in contributing a few notes on Hymenoptera to the "Annual" of this year, having some valuable Entomological information to communicate, localities to point out for some of our rarest fossorial Hymenoptera, and to make known the discovery of a fine species of ant, new to the fauna of this country. The glorious summer and autumn that we so lately enjoyed, were in every respect highly favourable to the aculeate Hymenoptera; Entomologists will therefore be quite justified in expecting a valuable record of observations and discoveries; happily these anticipations will, I think, be fully realized.

Records no doubt exist of seasons equally favourable for the appearance of Hymenopterous insects, and memorable for the captures of new and rare species, but none perhaps that contain notices of more interesting discoveries, or a larger amount of additional Entomological information.

The addition of a new species, and that a very marked and distinct one, to the list of our British *Formicidæ*, is an event of rare occurrence, and, at the same time, one that has afforded me great pleasure; in addition to which the discovery of a locality that will probably yield nearly every species of our *Formicidæ*, and a very large majority of the fossorial tribe, gives me an opportunity of pointing out to my brother Hy-

menopterists a spot teeming with rarities in all the families of the *Aculeata*.

Nearly sixty years have passed since the publication of Kirby's "*Monographia Apum Angliæ*," yet notwithstanding the careful researches of subsequent Entomologists, some of the species, founded upon the examination of one sex only, have not yet been united to their legitimate partners; therefore, every discovery that proves the identity of any two or more thus constructed species, is, in my opinion, a great boon to science; it has been my good fortune to unravel one or two of these Entomological enigmas.

The appearance of an insect in large numbers year after year, for a considerable period, succeeded abruptly by its almost total extinction in the same locality, is one of a series of Entomological phenomena of which we have little or perhaps no very satisfactory knowledge. Arrested development, at some stage of an insect's transformations, would apparently account for it, to a certain extent, with some degree of satisfaction; but when it so happens, that the season of the insect's disappearance was apparently in every respect highly favourable for its re-appearance, corresponding in fact with seasons in which the insect was observed in the greatest abundance, then it is that we are compelled to seek for causes in other directions, and usually to conclude by confessing our ignorance, and our inability to fathom the Infinite Wisdom that both regulates the coming and the going of these His creatures.

During the last twenty years I have assiduously searched for aculeate Hymenoptera at Hampstead Heath, and in its vicinity, and am consequently tolerably well acquainted with the species inhabiting that locality; but, alas! it is one that is being rapidly destroyed; the extension of the modern Babylon will soon surround, if it does not spread over, that richest of Entomological locations. But many rare species

are still to be found there in diminished numbers. One rarity, *Tiphia minuta*, is usually to be captured sparingly in the month of June. Last season, however, my attention was directed by Mr. Baly to the appearance of that species in unusual numbers. On visiting the spot pointed out, I literally found them in hundreds, where, even in the most favourable seasons, the capture of a dozen examples would have been considered a great harvest. *Tiphia minuta* may be truly called a *sun-shiner*; it runs with great rapidity, occasionally taking wing and flying over and near the ground, gyrating in circles with great rapidity. On the sun being momentarily obscured they drop instantly to the ground, a few seconds sufficing for their burying themselves in the sand, where they lie motionless until the sun again shines forth. On no previous occasion have I seen this insect in numbers at all approaching the multitudes observed on this occasion.

The typical species of the genus, *Tiphia femorata*, also occasionally appears in vast multitudes, and is usually a much more abundant insect than *T. minuta*. In the year 1858 I found *T. femorata* in incalculable numbers at Pakefield, near Lowestoft; some of the heads of the wild carrot were covered with them, but although I searched the same spot during the four following seasons but few were observed; and in 1863, even in the finest weather, at the proper period of the season, not more than two or three could be found.

It has no doubt been observed, that for the last three or four years I have commented upon the almost total disappearance of certain species of *Andrenidæ* from their former haunts near the metropolis, where year after year they formerly appeared in great abundance. The past season was apparently in every respect so congenial and suitable to these insects, that I confidently expected their appearance in some abundance, but I have been greatly disappointed,

as well as surprised, at their non-appearance. Of some of the formerly most common species I have not observed a single individual; of others rather an increased number, but still a very scanty number appeared. This great diminution, I trust, is not general, and that from other centres they will spread, and again, as formerly, be found in the vicinity of the metropolis. With me the leaf-cutting bees, *Megachile*, are become quite insects of rarity; and of the solitary representative of the genus *Anthidium*, in this country, I did not observe a single individual during the entire season; the latter insect is not a burrower in the ground, neither are the majority of the species of the genus *Megachile*, therefore we cannot attribute their disappearance to the supposed cause of the diminution of the number of ground-burrowing bees, namely, the occurrence of a succession of unusually wet seasons having caused their destruction. May it not be, as has been observed of many animals, birds and even of fish, that a temporary migration to other localities occasionally takes place even amongst insects, and that their reappearance may be confidently expected to be as sudden as was their departure.

Judging from the communications that have reached me, it appears, that perhaps in the memory of no living Entomologist have wasps been more generally abundant than during the past season; the depredations committed by these marauders in gardens and orchards have possibly never called forth more bitter complaints against them. In many districts a price has been put upon them, that has stimulated boys to join in their wholesale destruction. From the best information I have been able to obtain, the abundance of fruit has been such, that it has, in many cases, scarcely proved worth while to carry it to market, the cost of doing so being quite equal to the price the fruit would fetch. Such being the case, it becomes a question whether fruit-growers have

not been waging war against their friends; be that as it may, one thing is quite certain, we had enough and something to spare for the poor wasps. I for one cannot bring myself to join in the exultation that has been occasioned by their wholesale destruction. Whenever we observe the appearance of an insect so general and abundant, we may feel assured that its appearance is for some wise, although probably to us inscrutable, purpose.

It will be found that the majority of my Notes this year relate to insects captured at Bournemouth, Hants; and perhaps of all the localities that I have searched, Deal and its neighbourhood alone excepted, this is the richest in Hymenopterous insects. About two months of uninterrupted fine weather preceded my arrival, therefore many species were over for the season; but I think the list of captures subjoined will amply bear out my opinion of Bournemouth being one of the finest localities for Hymenoptera in England:—

*Captures at Bournemouth during the month of August, 1864.*

Fam. FORMICIDÆ.

Formica rufa.  
 „ congerens.  
 „ exsecta.  
 „ cunicularia.  
 „ nigra.  
 „ fusca.  
 „ umbrata.  
 „ flava.  
 „ fuliginosa.  
 Tapinoma erratica.  
 Myrmica ruginodis.  
 „ scabrinodis.  
 „ lævinodis.  
 „ sulcinodis.  
 Tetramorium cæspitum.

Fam. MUTILLIDÆ.

Mutilla Europæa.  
 „ ephippium.  
 Myrmosa melanocephala.  
 Methoca ichneumonides.

Fam. SCOLIADÆ.

Tiphia femorata.

Fam. POMPILIDÆ.

Pompilus fuscus.  
 „ gibbus.  
 „ plumbeus.  
 „ rufipes.  
 „ sepicola.  
 „ affinis.  
 „ exaltatus.

Fam. POMPILIDÆ—*cont.*

Pompilus hyalinatus.

Ceropales maculata.

Evagethes bicolor.

## Fam. SPHEGIDÆ.

Ammophila sabulosa.

,, viatica.

Miscus campestris.

## Fam. NYSSONIDÆ.

Nysson dimidiatus.

Mellinus arvensis.

## Fam. CRABRONIDÆ.

Crabro cribrarius.

,, cephalotes.

,, patellatus.

,, Wesmaeli.

Oxybelus uniglumis.

Diodontus minutus.

Cemonus unicolor.

## Fam. PHILANTHIDÆ.

Cerceris arenaria.

,, labiata.

,, ornata.

## Fam. EUMENIDÆ.

Odynerus parietum.

,, trimarginata.

## Fam. VESPIDÆ.

Vespa vulgaris.

,, germanica.

,, rufa.

,, sylvestris.

## Fam. ANDRENIDÆ.

Colletes succincta.

Fam. ANDRENIDÆ—*cont.*

Colletes Daviesana.

Sphcodes gibbus.

,, ephippia.

Halictus rubicundus.

,, leucozonius.

,, cylindricus.

,, albipes.

,, prasinus.

,, flavipes.

,, aratus.

,, morio.

,, fulvicornis.

,, minutus.

Andrena Cetti.

,, thoracica.

,, pubescens.

,, denticulata.

,, tridentata.

,, bicolor.

,, argentata.

,, Smithella.

Cilissa hamorrhoidalis.

,, leporina.

Dasypoda hirtipes.

## Fam. APIDÆ.

Panurgus Banksianus.

,, calcaratus.

Nomada baccata.

,, solidaginis.

,, ochrostoma.

Epeolus variegatus.

Megachile versicolor.

Bombus muscorum.

,, terrestris.

,, hortorum.

,, lucorum.

,, lapidarius.

Apathus Barbutellus.

**FORMICA CONGERENS.**—The only British specimens that I had seen previous to its recent capture were two males and two workers from Loch Rannoch. This species constructs a heaped-up nest, similar to that of the wood-ant, which species it very closely resembles, although a very distinct insect. The worker is the most difficult to separate from that of *F. rufa*, but it is much more pilose, its head rather broader and shorter; the eyes pilose and smaller, and the scale of the petiole more pointed above; the vertex is more darkly coloured, the black colouring being sharply marked, not shading off into the rufous colour of the face, and the thorax is always more or less black above.

The male has the head and thorax covered with black pubescence; the female has the abdomen opaque, and covered with a fine cinereous pile; the abdomen of *F. rufa* is highly polished and shining.\*

**FORMICA EXSECTA**, Nyl.—Female.—Shining; rufo-testaceous, the flagellum, the head above, the mesothorax and the abdomen nigro-fuscous; the base of the abdomen rufo-testaceous, the wings hyaline; the nervures flavo-testaceous; the occiput widely emarginate, and the scale of the petiole deeply notched above. (Frontispiece, Fig. 2 ♀.)

Length  $3\frac{1}{4}$  lines.

Worker.—Head, thorax and legs rufo-ferruginous, slightly shining; the abdomen black; the flagellum and the vertex fuscous; the occiput widely emarginate; the scale of the petiole deeply notched. (Frontispiece, Fig. 2 ♂.)

Length 2— $2\frac{1}{2}$  lines.

Male.—Black, shining and pilose, the legs pale rufo-testaceous, the wings hyaline, the nervures rufo-fuscous, the

\* *Formica congerens* is the species of ant in the nest of which Dr. Nylander first found *Tinea ochraceella*, near Uleaborg, in Finland.—H. T. S.

stigma dark brown; the head emarginate at the vertex; the scale of the petiole notched.

This is the finest addition that has been made to the British *Formicidæ* for many years; like *F. rufa*, this species builds a heaped-up nest, but one of much smaller dimensions; those which I observed not being more than eight or ten inches in diameter at the base, and this at the middle of autumn. According to the observations of Dr. Nylander, Dr. Mayr and others, the sexes of this species are developed during the month of July; consequently as I did not discover it until the end of August, I only obtained the workers. The male and female I have described from specimens transmitted to me by Dr. Mayr. This species was first discovered by Dr. Nylander in Finland, and first described by him in his fine monograph of the *Formicidæ* of that country. The species cannot fail of being recognized, the deep notch of the head is at once striking and distinctive.

*FORMICA UMBRATA*.—For the first time I took all the sexes of this species from the nest; they closely resemble those of *F. flava*, but present the following differences:—the worker has the scape and legs of the antennæ covered with a fine whitish pile, and the eyes are pilose. The female is readily separated, having the head fully as wide as the thorax, and the wings dark fuscous at the base. The male is quite black, and has dark smoky wings.

*TAPINOMA ERRATICA*.—This ant is extremely abundant at Bournemouth, where it was first captured, in this country, by Mr. Dale; it is certainly a widely-distributed species, having been found in Surrey, Hants, Middlesex, and in Cornwall at the Land's-End; it is doubtless overlooked, or confounded with *F. nigra*; from the latter it is to be dis-

tinguished with facility, by its having the scale of the petiole decumbent, resting on the oblique truncation of the metathorax; in *F. nigra* the scale is upright.

*MYRMICA CÆSPITUM*.—This species is apparently most abundant in situations near the sea; at Southend, Dover and Bournemouth it is not uncommon; and at the Land's-End I found it in great numbers under blocks of granite in October last.

*METHOCA ICHNEUMONOIDES*.—Mr. Dale, as well as myself, has found this very rare insect at Bournemouth.

*EVAGETHES BICOLOR*, St. Farg.—St. Fargeau described this insect in the “Encyclopédie Méthodique,” in mistake, as the *Aporus bicolor* of Spinola; Shuckard endorsed the same error in his “Essay on the Fossorial Hymenoptera;” the former author has corrected himself in the “Histoire Naturelle,” and in that work established the genus *Evagethes* for the reception of the species. In both genera the anterior wings have the same number of marginal and submarginal cells, but their relative proportion to each other is very different, independent of other structural variations. In the genus *Aporus* the prothorax is elongate, in *Evagethes* it is transverse; in the former the wings are inserted in the middle of the length of the thorax, at the sides; in the latter their insertion is considerably before the middle; *Aporus* has tridentate mandibles, in *Evagethes* they are bidentate.

I have hitherto held an opinion, differing from that of the above-named eminent Entomologists, and have considered *Evagethes* a variety of *Pompilus pectinipes* (*crassicornis*, Shuck.) I have on more than one occasion taken a specimen in company with *P. pectinipes*, at Weybridge, and was led to regard it as a variety of that insect, having the second

transverse medial nervure obsolete; this I was partly led to do by a remark in Shuckard's Essay: "the Rev. C. Bird showed me a remarkable variety (of *P. crassicornis*) which has upon the left side the nervures of *Aporus*." Having fortunately obtained a fine series of *Evagethes* at Bourne-mouth, including both sexes, I shall here characterize both genus and species afresh.

### Genus EVAGETHES, St. Farg.

Head.—Subrotund, slightly wider than the thorax; eyes lateral, large and ovate; the ocelli in a triangle on the vertex; the mandibles bidentate; the antennæ inserted in the anterior part of the face, incrassate in the middle, and tapering to a point at their apex. Thorax somewhat gibbous; the prothorax transverse; the metathorax short and obtuse; the superior wings with one marginal and two submarginal cells; the marginal cell small, subtriangular, not extending beyond the second submarginal; the first submarginal cell oblong, the second subquadrate and slightly narrowed towards the marginal cell, receiving both the recurrent nervures; the second recurrent nervure received near to, not at, the apex of the cell. The anterior tarsi of the female ciliated outside, and all the tibiæ and tarsi spinose.

EVAGETHES BICOLOR.—Female.—Black, with the first, second and extreme base of the third segment of the abdomen red. Head with a fine silvery pile, most dense on the face; the anterior margin of the clypeus and the tips of the mandibles rufo-piceous. The thorax at the sides, beneath the metathorax and legs, with a fine silvery pile; the posterior margin of the prothorax arcuate; the wings fusco-hyaline, with a broad blackish border on their apical margins. Abdomen covered with fine silky silvery pile.

Length  $2\frac{1}{4}$ — $3\frac{2}{3}$  lines.

Male.—Black, usually more or less red on the second abdominal segment; sometimes entirely black; covered with a fine silvery pile; the border of the wings usually lighter than in the female.

Length  $2\frac{1}{2}$ — $2\frac{2}{3}$  lines.

This rare insect has been taken at Parley Heath by Mr. Dale, and by myself at Weybridge and Bournemouth. The examples referred to by Shuckard, as being in the Collections of Stephens and Curtis, were both the true *Aporus bicolor*.

MISCUS CAMPESTRIS.—This very local insect is plentiful at Bournemouth in July and August; its other localities are Parley Heath; Ringwood; Dorsetshire; Hawley, near Blackwater, Hants, and Weybridge.

CRABRO PALMIPES.—Male.—Black and shining. Head and thorax with distant delicate punctures; the face silvery; the scape outside, collar and scutellum yellow; the anterior legs yellow; the coxæ, trochanters, a line on the femora and tibiæ behind, a spot on the basal joint of the tarsi, and the claw-joint, black; the basal joint dilated, the following joints subtriangular; the intermediate and posterior legs with the base of the tibiæ and the basal joint of the tarsi white; wings hyaline; abdomen elongate.

Length  $2\frac{1}{2}$  lines.

Female.—Black. Head smooth, shining, and finely punctured; a longitudinal impressed line between the ocelli, which extends a little beyond them; in front of the anterior ocellus is a deeply impressed line that extends to the face, which is canaliculated, smooth, and shining; the clypeus covered with silvery pubescence; a narrow line of the same runs half-way up the inner orbits of the eyes; the scape in front yellow; on each side of the ocelli is a slightly impressed

smooth depression. The mandibles black. Thorax shining and finely punctured; the mesothorax with three abbreviated raised lines in front, the central one longest; the metathorax smooth and shining, with an enclosed subcordiform space at its base, and a deep central longitudinal incisure; the wings hyaline and iridescent, with their extreme base yellow; the exterior margin of the tegulæ testaceous, the stigma black; the anterior and intermediate tibiæ in front, and the base of the posterior pair, pale yellow; the basal joint of the intermediate and posterior tarsi pale, with the apex black; the claw-joint rufo-testaceous; the spines at the apex of the tibiæ black. Abdomen clavate, with the tip of the apical segment ferruginous and sprinkled with silvery setæ.

Length 3 lines.

This is one of the rarest species of the British *Crabronidæ*; the female is described for the first time from a British specimen; it was unknown until the last season, when my son Edward took both sexes at Shirley, Surrey. I have thought a careful description of the unique example desirable; it is now in the Collection of W. H. L. Walcott, Esq., of Clifton, Bristol.

### ANDRENIDÆ.

*HALICTUS PRASINUS*.—This hitherto rare species occurred in some numbers at Bournemouth in August last, the locality where Mr. Dale first discovered it; the male was taken for the first time. The female is fully described in the "Monograph of the British Bees." It is readily distinguished from all the other species of *Halictus* by its having the head and thorax of an opaque dark olive-green; its abdomen black, with a cinereous fascia at the base of the second and third segments, the apical margin of the latter and the whole of

the following segments covered with fine cinereous pubescent pile; the apical segments frequently more or less abraded.

Length  $4\frac{1}{2}$  lines.

Male.—Head and thorax shining obscure olive, and finely punctured; the apex of the clypeus white; the face thickly clothed with hoary pubescence, the cheeks more thinly so. Thorax thinly covered with hoary pubescence; the anterior tibiæ, all the tarsi, the extreme apex of the femora, and the base of the posterior tibiæ, pale rufo-testaceous; wings hyaline and iridescent, the costal nervures and the stigma dark fuscous. Abdomen black, elongate, and widest towards the apex, with a scattered hoary pubescence; a white pubescent band at the base of the second and third segments; the apical segment rufo-testaceous.

Length  $3\frac{1}{2}$ —4 lines.

It will be seen that the male differs from that of every known British species in having the apical segment of the abdomen pale testaceous; this alone will distinguish it.

*ANDRENA DENTICULATA*.—This rare species occurred at Bournemouth, but it was not taken until it was too late to obtain fine specimens of either sex; during June and July it would no doubt be found in fine condition.

*ANDRENA TRIDENTATA*.—August is the month in which this extremely rare insect appears; according to my observation it frequents the Rag-wort only. If we refer to Kirby's Monograph, we find a note appended to his description, "taken but once at Melton, near Woodbridge, Suffolk." In company with *A. tridentata* I found the equally rare *A. rufitarsis*, of which species Mr. Kirby remarks, "taken at Barham, very rare;" the localities are about eleven miles

apart; these observations on the localities of Kirby's species, taken in conjunction with the fact of both being found in some numbers on the same flower at Bournemouth, in addition to their very close resemblance, satisfy me that *A. rufitarsis* is the female of *A. tridentata*. In Mr. Kirby's own interleaved copy of the "Monographia," I found a note to the effect that *A. rufitarsis* was probably only a variety of *A. fuscipes*. This is certainly not the case; both sexes of the latter insect were extremely abundant at Bournemouth—*A. tridentata* was taken near to Christchurch.

The differences between the female of *A. tridentata* and the female of *A. pubescens*, are the following: *A. tridentata* ♀ is much more pubescent, the pubescence paler, nearly covering the abdomen, not leaving a naked space between the fringe on the apical margins of the segments; the apical fimbria is pale golden and is tipped with fulvous in the middle of its apical margin; all the tarsi are pale rufo-testaceous; the pubescence which clothes the inner surface of the basal joint of the posterior tarsi is pale fulvous; this is also the colour of that which clothes the disk of the thorax; the flagellum is pale rufo-testaceous beneath, excepting the two basal joints, which are black. The female of *A. pubescens* has only the two apical joints of the antennæ pale; the anal fimbria is fuscous. Both sexes of *A. pubescens* frequent the common heath (*Calluna vulgaris*).

**ANDRENA ARGENTATA.**—This is a very local species, but abundant at Bournemouth; it was discovered about twenty years ago at Hawley, Hants, and at Sandhurst, Berks; a year or two subsequent to which I found it at Weybridge; since that time I have not met with it until the last season; it frequents the Heath.

PANURGUS CALCARATUS.—Extremely local in its distribution, but plentiful at Bournemouth; this insect frequents the common mouse-ear hawkweed (*Hieracium pilosella*).

NOMADA BACCATA.—This beautiful little species is parasitic upon *Andrena argentata*; it is plentiful at Bournemouth; the parasite and the bee I have always found together.

MEGACHILE VERSICOLOR.—I captured a single specimen of this very rare bee in a meadow to the west of the Sanatorium at Bournemouth; probably it was too late a period in the season; the male is not known.

BOMBUS SMITHIANUS.—This fine species was taken in June last in Shetland, by Mr. Rich; all the specimens that I have seen have been captured near Lerwick.

BOMBUS POMORUM.—The addition of this fine species to the British list is mainly due to my son Edward, who took a female in June last on the sandhills at Deal.

It will be observed that I have adopted an opinion differing from that of several eminent Hymenopterists in considering the *Bremus pomorum* of Panzer to be a true *Bombus*, not an *Apathus*; this arises from the fact of my having had specimens for examination. Opinions contrary to my own were, I have little doubt, based upon an examination of the figure in Panzer's "Fauna Germanica." In the year 1837 I captured three male humble bees, which at that time I regarded as very highly-coloured examples of the male of *Apathus rupestris*, and as such they were, without very critical examination, arranged in my Collection. A female *Bombus* being captured that was unknown to me, but which bore a strong resemblance to the three supposed *Apathi*, taken in the same neighbourhood, induced me to

re-examine the males, when I at once discovered that they were true *Bombi*; I feel no doubt of their being the same species, and as such I give descriptions of each. In my Catalogue of the British Bees I have given the *B. pomorum* as a variety of *Apathus rupestris*, but with a mark of doubt, never having seen either a British or European specimen.

Female.—Length 8 lines. Black: the face clothed with black pubescence; the clypeus smooth and shining, the labrum fringed with ferruginous hairs. Thorax clothed with black pubescence, obscurely fringed in front with a mixture of yellowish hair, a similar fringe on the scutellum; the legs with a short black pubescence, that on the basal joint of the tarsi beneath ferruginous; at the extreme apex of the anterior and intermediate tibiæ a little short pale pubescence. Abdomen: clothed with ferruginous pubescence, the basal segment with a mixture of pale yellow hairs, that on the extreme base being black; beneath, with a few scattered pale hairs.

Male.—Length 7 lines. Black: the face densely clothed with black pubescence, the clypeus with a few scattered black hairs. Thorax: clothed with pale yellowish-white pubescence, with a band of black between the wings; the legs with thin short black pubescence above; the femora fringed with long pale pubescence, that on the basal joint of the tarsi beneath ferruginous. Abdomen: clothed with fulvo-ferruginous pubescence, that on the basal segment is pale yellowish-white; the second segment has pale pubescence on the apical portion; beneath, it is very thin and pale. Panzer describes the pubescence as hoary-white, and it would doubtless be so after exposure to the sun, &c.; the colour of the hair on all the *Bombi* soon fades and loses its original brightness.