[19 Dec. 1857]

HYMENOPTERA.

Notes on Aculeate Hymenoptera, with some Observations on their Economy.

By Frederick Smith.

"Come with me
And I will show thee where the wild bee haunts,
And which the flower each toilsome wanderer loves."

Of all the insect tribe, there is none whose appearance in abundance, or their scarcity, is more dependant on sunny days than the aculeate *Hymenoptera;* many indeed, of the fossorial division, are never seen excepting on the hot days of July and August. It will therefore be premised, that the record which it is now our task to draw up will enumerate the appearance of all, or most of the rarities of the *Aculeatæ*. The oldest living Entomologist will, we presume, look back vainly—in vain will he try to recall to memory a season surpassing that of 1857; from the earliest days of spring to the final close of autumn, a succession of glorious entomological days succeeded each other. We believe it will be acknowledged by every one, when he has scanned the pages of this Annual, that such a record of appearances of rarities in unusual abundance, in all orders of insects, was never before compiled. We have, however, only to treat upon one order of the insect world, and here we meet our difficulty, that is to say, which species has not appeared in abundance. The earliest bee, which harbingers

the coming throng (*Andrena Clarkella*), appeared in profusion in the spring; and during the month of September, so fine and spring-like were the days, that some bees, apparently deceived by it, came forth before their winter's sleep; of these we observed *Andrena Gwynana* and *Afzeliella*, both sexes of the latter; we also met with *Melecta punctata*, *Anthophora acervorum* and *Nomada succincta* and *Marshamella*. Such appearances are seldom observed, but we have elsewhere recorded one or two similar occurrences.

The success of the insect-hunter, like that of the hunter after larger game, will of course be greatly enhanced by experience; thus he who has made himself acquainted with the "private lives" of his favourites, and the whereabouts they dwell, will start with immense advantages over the young and inexperienced.

We have explored many localities, and have from time to time directed others to such spots as we have found prolific; it has been our lot, during two seasons previous, to explore the sand-hills near Deal, and some other spots along the line of coast to Dover. During the latter part of July and the beginning of August last we made some further explorations, some at different points and at right angles with the coast line, penetrating short distances inland. It was on one of these inland excursions that we discovered—

> "A populous solitude of Bees—
> And fairy-formed and many-coloured things."

And to this we shall specially direct attention. In no one spot have we ever found such an assemblage of rarities, including one or two we had not seen alive before.

Our attention has during the past season been particularly attracted to the habits of the leaf-cutting bees; the circumstance which, in the first instance, directed our attention to

the subject, was so fraught with disappointment, was so calculated to raise in our minds certain misgivings of a long-cherished belief, that we even now recall the circumstance to mind with a sort of melancholy unwillingness. Sitting one day, looking out of the open window of our parlour, which overlooked the Channel at Deal, we were suddenly aroused from our afternoon's rest, by observing a little bee alight on the flower of a scarlet Geranium which adorned the window-sill; with the well-known adroitness of a leaf-cutter bee it quickly disengaged a circular piece from one of the scarlet petals. *Anthocopa papaveris!* we exclaimed, and were outside in front of the window in a moment, net in hand; in a few minutes a bee again alighted on the Geranium, it was captured—*Anthocopa!*—no—*Megachile argentata.*

Now we have no wish, in fact we cannot—will not—give up our firm conviction and belief,—that there once existed a veritable Ali Baba,—that Jack ascended the bean-stalk,—or that Robinson Crusoe lived in his desolate island and could not make a wheelbarrow; neither can we allow the circumstance above recorded, to shake our belief in there being a species of leaf-cutter bee, which *always lines* its subterranean chambers with the petals of the scarlet poppy. We have hitherto regarded the little creature as a sort of regal upholsterer, who prepared gorgeous dwellings for its young brood; this belief was instilled into our minds on reading Rennie's chapter on the Upholsterer-Bee; and now, after the lapse of years, the little bee cutting the scarlet geranium, we reluctantly confess it, somewhat shakes our belief in what we fear may possibly prove to be an entomological romance. The observations recorded below have, we must admit, created a suspicion in our minds that *Anthocopa* selects the poppy, *when the poppy* chances to grow nearer to her

dwelling than any other *suitable leaf or flower;* but we will now proceed to detail our observations.

Megachile maritima frequently selects the leaves of a species of *Salix* for the outer-covering of her cells, but the inner lining is a much more flexible and delicate leaf, such as the laburnum; at another time we have found her cells composed of rose leaves for the outer coatings, but within lined with the soft leaves of the Trefoil; usually, the divisions between the cells are formed of *several* circular pieces of leaf placed close together, but we have seen the sagacious creature cutting the thick leaves of the laurel, *one* circular piece serving in the place of half a dozen cut from thinner and more flexible leaves. On the sandhills at Deal, where, during July and the beginning of August, *Megachile argentata* is to be found burrowing in almost every mound, we have had innumerable opportunities of examining its burrows; we have usually found the cells composed outwardly of the leaves of the Trefoil, but within, almost invariably, of the yellow petals of *Lotus corniculatus.* We, however, found the same species of bee burrowing in an enclosed piece of ground, within two or three hundred yards of the sandhills, lining her cells with the petals of the scarlet Geranium, some plants of which grow along one side of the enclosure, which is laid out as a flower-garden.

Megachile centuncularis is perhaps the most widely distributed species of the genus, it is found in all parts of Europe; we have seen it burrowing in sandbanks and also in decaying trees, posts and rails; this species cuts the leaves of the rose, the willow, the lilac, and of several other trees and shrubs; and, like the other species, selects softer leaves for the inner lining of the cells. At Deal we observed several individuals which had formed their burrows in an old brick wall, we watched them in their flight to and from a

rose tree, which grew a few yards from their burrows; and these bees also, I was delighted to observe, like the *M. argentata*, resorted to the scarlet Geraniums for the inner lining of their cells. These observations, and others made on previous occasions, are convincing proofs to us, that the leaf-cutting bees resort to those plants which they find nearest to their burrows, when suited to their purposes; at any rate, such plants which they first discover; at one time lining their cells with the sober-coloured green leaves of the laburnum, and at another selecting the petals of the gorgeous scarlet Geranium.

The observations made induce us to think it quite possible that the *poppy-bee* only occasionally appears in that character, and that at another time she may be the Geranium, the Lotus or the Laburnum-bee; it *may* prove that this species is really an inhabitant of Great Britain, but has been overlooked, from the fact of its not having been detected cutting the leaves of the *poppy*. Should the latter prove to be the case, the above observations on leaf-cutting bees will have attained their object, and the writer will be pardoned having thus much trespassed on the patience of his readers.

Captures of Formicidæ.

Three years ago we described all the known British species of the genera *Formica* and *Myrmica*, amounting at that time to twenty-eight, to these five have since been added; and there can be little doubt of the number of species being greatly increased when Scotland and its adjacent islands are carefully searched. We would particularly direct the attention of the Coleopterist to these insects when searching in the nests of the wood-ant and also of the other species of *Formica*; there are two or three species of *Myrmica*, well known on the Continent, which appear always to

inhabit the nest of the wood-ant, never constructing a nest of their own; one of these, *Myrmica lucidula*, has during the past season been discovered by Mr. Waterhouse; this very distinct and beautiful species is a fine addition to our Fauna, it was found at Weybridge, Surrey.

Formica congerens. Only males of this species have been obtained; they were found amongst a few *Hymenoptera* taken in Scotland by Mr. Foxcroft in 1846; this is the species in the nests of which *Tinea ochraceella* was discovered by Nylander in Finland.

Formica brunnea. This species has long been included in the British list of Mr. J. F. Stephens, but in his cabinet it was represented by the female of *F. umbrata* of Nylander; amongst a number of ants collected at Deal we have discovered a single female of this species.

Ponera contracta. This rare insect we never had the good fortune to capture; Dr. Power, whose eye a novelty cannot escape, took a couple of workers at Brighton.

Myrmica unifasciata. A colony of this scarce species was discovered by Mr. Baly; it consisted of not less than 150 individuals; its formicarium was constructed in a decaying post, at Lower Shorne, near Gravesend.

Myrmica lippula. A single specimen was taken by Mr. Reading, in July, near Plymouth, under a stone, amongst a colony of *F. fusca.*

The *Myrmica graminicola* of Smith's Essay, is synonymous with *M. lippula.* We have obtained a large number of the *Myrmica acervorum,* and, after a careful examination, we agree with Nylander in considering *F. graminicola* a variety of that species; *M. lippula* is readily distinguished from the other minute species of the genus by its small eyes, and the long petiole of its abdomen; we have taken the female as late as November, on the wing, in the London

district; the late Mr. W. Wing captured it on the ninth of December.

Myrmica nitidula, Nylander. This species was added to the British List by Mr. G. R. Waterhouse, who found it in the nests of *Formica rufa*; it is readily distinguished by being entirely smooth, shining, and destitute of pubescence. Nylander finds it in the nest of *F. rufa* and *F. congerens*; it is singular that this species, and also *Myrmica muscorum*, an insect not yet found in this country, appear always to establish their colonies in the nests of species of *Formica*; we have little doubt, if our Coleopterists look carefully for minute ants when searching in the nests of the wood ant, they will find the *Myrmica muscorum*; it is distinguished from *M. nitidula* by being very pubescent.

FOSSORES.

Pompilus pectinipes. This species is not rare at Deal; we captured both sexes on the west side of the sand-hills, opposite the first battery.

Ammophila lutaria. This species we took at the same time and place as the former insect.

Miscophus spurius? Dahlb. Having discovered this species last season to be an inhabitant of Great Britain, we were anxious to obtain more specimens, in this we were not disappointed; both sexes occurred on the west side of the sand-hills, about half-way between Sandown Castle and the battery.

Trypoxylon attenuatum. This species has been captured by Mr. Parfitt in Devon, and by myself at Reigate Common.

Astata boops. This species was captured in June on Reigate Common, a new locality for this very local insect.

Crabro Lindenius, *C. capitosus* and *C. hyalinus*. Mr.

Parfitt informs me that he has captured specimens of each of these very local and rare species.

Crabro melanarius. Mr. Bold captured this species, new to the British Fauna, in July, 1856, near Lannercost, Cumberland; it is described by Dahlbom in the first volume of his Hymenop. Europ. page 339.

Cerceris labiata. This very local species was captured in the beginning of August at Kingsdown, by my son Edward Smith.

Phylanthus triangulum. This very local insect is still plentiful in Sandown Bay, where Mr. Unwin found it last July.

Family APIDÆ. Captures of ANDRENIDÆ.

Colletis marginata. This rare species was again taken at the latter part of July along the south-west side of the sand-hills near Deal; the specimens were old and worn; the end of June is probably the best time to capture it.

Sphecodes rufescens. A very remarkable specimen has been captured by Mr. C. F. Allen, in which the anterior wing has the second submarginal cell obsolete; such occurrences are of extreme rarity amongst the bees, although frequent in some groups of fossorial insects.

Halictus maculatus. Mr. Parfitt has captured the male of this species, near Exeter; the female was taken by Mr. Unwin in July, in Sandown Bay, Isle of Wight.

We are now about to direct the steps of the Hymenopterist to one of the richest localities, which during upwards of twenty years we have had the good fortune to discover; here appeared to be the *metropolis* of all those autumnal species of extreme rarity, which belong to the genus *Andrena*, and its close ally *Cilissa*. We have always had a belief that the spring species of *Andrena* were extremely *numerous* in individuals,

Another phase in the economy of these bees is worthy of notice; for two or three days we noticed a number of males of *B. Latreillellus* buzzing and flying about the entrance to a nest, occasionally alighting and entering, then issuing out and buzzing in a most excited manner; now and then a worker returned home laden with spoil. Although we sat quite close to the hole into which they entered, they took no heed of us, never attempting to fly at or sting us; in fact, so harmless they appeared, that we picked up several in our fingers as they issued forth; the males, it is true, kept up a continual buzzing about our heads, and we occasionally captured a fine highly coloured specimen; at last we observed the cause of this assemblage of males; a fine fresh example of the female at last showed herself at the entrance to the nest, this was a signal for a more furious buzzing than before; numbers alighted within a few inches of the female, and a fierce combat ensued; about ten or twelve of these males clung together and rolled over and over struggling in close combat; the female, who had retreated into the burrow, again appeared, and this time took flight; in a moment every male was gone, the whole host not less than twenty or more, flew off in chase of the female,—we saw them no more. We noticed another day an assemblage of males as before, but we saw no second female take flight.