[Observations on the Origin of Honey] Abbe Bouffier

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Description

On the kinds of ready-made honey bees collect from honey dew. nn.427-29. Microfilm Reel 8063. Originally published in The Annual Register for the Year 1768, 6th Edition, as "A curious and interesting Account of a Substance, not before attended to, which the BEES collect and turn to honey. Extracted from a Memoire read before the Society of Science at Montpelier, by the Abbe Bouffier de Sauvages, entitled, Observations sur l'Origine du Miel," p. 95 (London, 1800).

Transcription

By the Abbé Bouffier

[From the Annual Register for 1768.]

IT was formerly the opinion of naturalists, that the bees do not collect honey in the form we see it; the liquor they collect being digested in their stomachs, where both its nature and consistency are changed. But this opinion seems to be founded on erroneous principles; and it is now believed, that the bees have no other share in the making of honey than simply collecting it; because the honey is, when properly diluted, subject to vinous fermentation, a property not found in any animal substance.

The flowers of many sorts of plants afford a quantity of honey, of saccharine juice, which the bees collect and carry to their hives; but besides this liquor, the Abbé Bouffier acquaint us, that he has seen two kinds of honey dews, which the bees are equally fond of, both deriving their origin from vegetables, though in a different manner.

The first kind, the only one known to husbandmen, and which passes for a dew which falls on trees, is no other than a mild sweet juice, which, having circulated through the vessels of vegetables, is separated in proper reservoirs in the flowers, or on the leaves, where it is properly called the honey dew: Sometimes it is deposited in the pith, as in the sugar-cane, at other times in the juice of summer fruits, when ripe. Such is the origin of the manna, which is collected on the ash and maple of Calabria and Briançion, where it glows in great plenty from the leaves and trunks of these trees, and thickens into the form in which it is usually seen.

‘Chance, says the Abbé, afforded me an opportunity of seeing this juice and its primitive form on the leaves of the holm-oak: These leaves were covered with thousands of small round globules, or

drops, which, without touching one another, seemed to point out the pore from whence each of them had proceeded. My tasted informed me that they were as sweet as honey: The honey-dew on a neighbouring bramble, did not resemble the former, the drops having run together; owing either to the moisture of the air which had diluted them, or to the heat, which had expanded. The dew was become more viscous, and lay in large drops covering the leaves; in this form it is usually seen.

‘The oak had at this time two kinds of leaves; the old, which were strong and firm, and the new, which were tender, and newly come forth. The honey-dew was found only on the old leaves, though these were covered by the new ones, and by that means sheltered from any moisture that could fall from above. I observed the same on the old leaves of the bramble, while the new leaves were quite free from it. Another proof that this dew proceeds from the leaves is, that other neighbouring trees not furnished with a juice of this kind, had no moisture on them; and particularly the mulberry, which is a very particular circumstance, for this juice is a deadly poison to silk worms. If this juice fell in the form of a dew, mist, or fog, it would wet all the leaves without distinction, and ever part of the leaves, under as well as upper. Heat may have some share in this production: For though the common heat promotes only transpiration of the more volatile and fluid juices, a sultry heat, especially if reflected by clouds, may so far dilate the vessel, as to produce a more viscous juice, such as the honey-dew.

‘The second kind of honey-dew, which is the chief resource of bees after the spring flowers and few by transpiration on leaves are past, owes its origin to a small insect called a vine-fretter: The excrement ejected with some force by this insect makes a part of the most delicate honey known in nature.

'These vine-fretters rest during several months on the barks of particular trees, and extract their food by piercing that bark, without hurting or deforming the tree. These insects also cause the leaves of some trees to curl up, and produce galls upon others. They settle on branches that are a year old. The juice, at first perhaps hard and crabbed, becomes, in the bowels of this insect, equal in sweetness

to the honey obtained from the flowers and leaves of vegetables; excepting that the flowers may communicate some of their essential oil to the honey, and this may give it a peculiar flavour, as happened to myself by planting a hedge of rosemary near my bees at Sauvages; the honey has tasted of it ever since, that shrub continuing long in flower.

‘I have observed two species of vine-fretters, which live unsheltered on the bark of young branches: They have a smooth skin, and those without wings seem to be the females, which compose the greater bulk of the swarm; or perhaps the young in their caterpillar state, before they are changed into flies; for each swarm has, in its train, two or three males with wings: these live on the labour of the females, at least I always saw them hopping carelessly on the backs of the females, without going to the bark to seek for food.

‘Both species live in clusters, on different parts of the same tree, entirely covering the bark; and it is remarkable that they there take a position which to us appears very uneasy; for they adhere to the branch with their head downwards, and their belly upwards.

‘The lesser species is of the colour of the bark upon which it feeds, generally green. It is chiefly distinguished by two horns, or strait, immoveable, fleshy substances, which rise perpendicularly from the lower sides of the belly, one on each side. This is the species which live on

the young branches of brambles and elder.

‘The former of these species is double the size of the latter, and is that which I have more particularly in view, because it is that from which the honey proceeds. These insects are blackish; and instead of the kind of horns which distinguish the other, have, in the same part of the skin, a small button, black, and shining like jet.

‘The buzzing of bees in a tuft of holm-oak, made me suspect that something very interesting brought so many of them thither. I knew that it was not the season for expecting the honey-dew, nor was it the place where it is usually found, and was surprized to find the tuft of leaves and branches covered with drops which the bees collected with a humming noise. The form of the drops drew my attention, and led me to the following discovery. Instead of being round like drops which have fallen, each formed a small longish oval. I soon perceived from whence they proceeded. The leaves covered with these drops of honey were situated beneath a swarm of the larger black vine-fretters; and on observing these insects, I perceived

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them, from time to time, raise their bellies, at the extremity of which there then appeared a small drop of amber colour, which they instantly ejected from them to the distance of some inches. I found by tasting some of these drops which I had catched on my hand, that it had the same flavour with what had before fallen on the leaves. I afterwards saw the smaller species of vine fretters eject their drops in the same manner.

‘This ejection is so far from being a matter of indifference to these insects themselves, that it seems to have been wisely instituted to procure cleanliness in each individual, as well as to preserve the whole swarm from destruction; for pressing as they do one upon another, they would otherwise soon be glued together, and ren-

dered incapable of stirring.

‘We may now with some probability account for the seeming odd situation in which they rest. Their belly is about twenty times larger than their head and breast. If the insect was placed on a contrary direction, it could not, without extreme difficulty, raise its heavy belly, so as to project it far enough outward to discharge the drop over its companions; whereas, when the head is lowest, much less effort is necessary to incline [it] forward; and even in this situation the insect seems by its flutterings to collect all its strength. When the winter’s cold and rains come on, these vine-fretters place themselves wherever they are least exposed; and as they then take but little nourishment, and but seldom emit their drop, they seem not to mind whether the head or tail be uppermost.

‘The drops thus spurted out fall upon the ground, if not intercepted by leaves or branches; and the spots they make on stones remain some time, unless washed off by rain. This is the only honey-dew that falls; and this never falls from a greater height than a branch where these insects can clutter.

‘It is now easy to account for a phaenemenon which formerly puzzled me greatly. Walking under a lime-tree in the king’s garden at Paris, I felt my hand wetted with little drops, which I at first took for small rain. The tree indeed should have sheltered me from the rain, but I escaped it by going from under the tree. A seat placed near this tree shone with these drops. And being then unacquainted with any thing of this kind, except the honey-dew found on the leaves of some particular trees, I was at a loss to conceive how so glutinous a substance could call from the leaves in such small drops; for I knew that rain could not o-

vercome its natural attraction to the leaves, till it became pretty large drops;

but I have since found that the lime-tree is very subject to these vine-fretters.

‘Bees are not the only insects that feast on this honey, ants are equally font of it. Led into this opinion by what naturalists have said, I at first believed that the horns in the lesser species of these vine fretter, had at their extremity a liquor which the ants went in search of: But I soon discovered that what drew the ants after them came from elsewhere, both in the larger and lesser species, and that no liquor is discharged by the horns.

‘There are two species of ants which search for these insects. The large black ants follow those which live on the oaks and chesnut: The lesser ants attend those on the elder. But as the ants are not like the bees provided with the means of sucking up fluids, they place themselves near the vine-fretters, in order to seize the drop the moment they see it appear upon the anus: And as the drop remains some time, on the small vine-fretters, before they can cast it off, the ants have leisure to catch it, and thereby prevent the bees from having any share: But the vine-fretters of the oak and chesnut being stronger, and perhaps more plentifully supplied with juice, dart the drop instantly, so that the larger ants get very little of it.

‘The vine-fretters finding the greatest plenty of juice in trees about the middle of summer, afford also, at that time, the greatest quantity of honey; and this lessens as the season advances, so that in the autumn, the bees prefer it to the flowers then in season.

‘Though these insects pierce the tree to the sap in a thousand places, yet the trees do not seem to suffer at all form them, not do the leaves lose the least of their verdure. The husbandman therefore acts injudiciously when he destroys them.’

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