The Wise Bee

The working bee.*

Of this in-sect there are 3 different kinds in every hive. First, the labouring bees, which make up by far the greatest number, and are thought to be neither male nor female but merely born for the purpose of continuing the breed by supplying the young with provisions while yet in their helpless state.

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The Hive Bee

The Drone Bee.

The second order are the drones, and are of a dark colour, longer, and more thick than the former by ⅓ they are supposed to be the males, and there is not above 100 of them in a hive of 7 or 8 thousand bees.

The Queen Bee

The 3rd sort are still fewer in number; some assert that there is not above 1 in every swarm; but I do not think this is true, there being sometimes 5 or 6 in the same hive. These are called queen bees, and are said to lay all the eggs from which the whole swarm is hatched in the season.

In examining the structure of the common bee, the first remarkable part that appears is the trunk, which serves to extract the honey from the flowers.

Apis or apes is the latin of bee

It is not formed like that of other flies, in the manner of a tube, by which the fluid is to be sucked up; but like a besom to sweep or a tongue, to lick it away. The animal is furnished also with teeth, which serve it in making wax, which is also gathered from the flowers like honey. In the thighs of hind legs there are two cavities, edged with hair; and into these as into a basket the animal puts the wax. Employed thus, the bee flies from flower to flower, increasing its store, and adding to its stock of wax; untill the ball upon each thigh becomes as a grain of pepper; by this time having got a sufficient load it prepares to return, and makes the best of its way to the hive.

The belly of the bee is divided into 6 rings which sometimes shorten the body by slipping one over the other, it contains within it besides the intestines, the honey-bag, the venom bag and the sting. The honey-bag is as transparent as crystal, containing the honey which the bee has brushed from the flowers, of which the greater part is carried into the hive, and poured into the cells of the honey-comb; the remainder serving for the bee's nourishment, for during summer it never touches what has been laid up for Winter. The sting, which serves to defend this little animal from its enemies, is composed of three parts; the sheath and 2 darts which are exceedenly small and penetrating. Both darts have several small

points, or barbs, like those of a fish-hook, which render the sting more painful and make darts rankle in the wound.

Still however, this instrument would be very slight did not the bee poison the wound. The sheath which makes the first impression, sometimes sticks so fast in the wound, that the animal is obliged to leave it behind; by which the bee soon after dies, and the wound is considerably inflamed.

From examining the bee singly, we now come to consider it in society, as an animal not only subject to laws, but active, vigilant, laborious and disinterested. All its provisions are laid up for the communité, and all its arts in building a cell, designed for the benefit of posterity. Wax is the substance with which bees build their cells, and is fashioned into convenient appartments for themselves and their young.

When they begin to work in their hives, they form themselves into 4 companies; one of which roves in the field in search of materials; another employs itself in laying out the bottom and partition of their cells; a 3rd is employed in making in making the inside smooth from the corners and angles; and the forth company brings food for the rest or to relieve those who return with their respective burdens.

But they are not kept constantly to one employment

; they often change the task assigned them; those who have been at work being permitted to go abroad, and those that have been in the fields already, take their places. They seem even to have signs, by which they understand each other; for when any of them wants food, it bends down its trunk to the bee from whom it is expected, which which then opens its honey bag, and lets some drops fall into the other's mouth, which is at that time open to receive it. In a days time they are able to make cells, which lie upon each other, numerous enough to contain 3000 bees.

If we examine their cells, they will be found to be formed in the exactest proportion. The cells are perfect hexagons; these are double in every honey-comb, opening on every side and closed at the bottom. The bottoms are composed of little triangular panes, which, when united together, terminate in a point, and lie exactly upon the extremities of other panes, of the same shape in opposite cells. These lodgings have have spaces, like streets, between them, large enough to give the bees a free passage in and out, and yet narrow enough to preserve the necessary heat. The mouth of every cell is defended by a border, which makes the door a little less than the inside of the cell, which serves to strengthen the whole. These cells serve for different purposes for

The Bee Tree

laying up their young — for their wax — and for their honey, which make their principal subsistance.

The honey-comb

It is well known that the habitations of these insects ought to be very close; and what their hives want from the unskilfulness of man they supply by their own industry, so that it is their principal care, when first hived, to stop up all the crannies. For this purpose they make use of a resinous gum, which is more tenacious than wax, and differs greatly from it. It has generally an agreeable and aromatic odour, when it is warmed. When the bees begin to work with it, it is soft, but it acquires a firmer consistance every day; till at length, it assumes a brown colour, and becomes much harder than wax. The bees carry it on their hinder legs; and some think it is to be met with on the birch, the willow, and the poplar. If examined through a glass hive, from the hurry the whole swarm is in, the whole at first appears confusion; but the spectator soon finds every animal diligently employed, and following one pursuit with a settled purpose. Their legs are the instruments

by which they model and fashion their various buildings, and give them such symmetry and perfection. They begin at the top of the hive; and several of them work at a time at the cells which have 2 faces. The construction of their combs costs them a great deal of labour; they are made by insensible degrees, and not cast at once into a mould. The cells for their young are most carfully formed, those designed for lodging the drones are larger than the rest, and that for the Queen bee largest of all. Honey is not the only food on which those animals subsist. The meal of flowers, of which their wax is formed, is one of their most favorite repasts. It is a diet which they live upon in summer and of which they lay up a large winter provision. The wax of which they combs are made is no more than this meal digested and wrought into a paste.

In april and may the bees are busy from morning to evening in gathering their meal but when the whether is too hot in the midst of summer they work only in the morning. The bee is furnished with a stomach for its wax and another for its honey.

How numerous however the number of bees may appear in one swarm; they all owe their origin to a single parent which is called the queen bee. It is indeed surpresing that a single insect in one summer should give birth to above 20,000 young;

; but upon opening the body, the wonder will cease; as the number of eggs appearing at one time amounts to 5000. This animal, whose existence is of such importance to her subject, may easily be distinguished from the rest by her size and the shape of her body. If this insect be carefully observed, she will be seen at times with a numerous retinue, marching from cell to cell, plunging the extremity of her body into many of them and leaving a single egg in each. The bees which generally compose her train, are thought to be males and serve to impregnate her by turns. These are larger and blacker than the common bees; without sting and without industry. The sexes formed only to transmit a posterity. It must be observed however that all this fertility of the queen bee, and the great attentions paid to her by the rest, are controverted by more recent observers. They assert that the common bees are parents themselves; that they deposit their eggs in the cell in which they have prepared, that the females are impregnated by the males, and bring forth a progeny which is totally their own. The egg is fixed to the bottom of the cell, and touches it by a single point. A day or two after it is deposited the worm is excluded from its shell having the appearance of a maggot rolled up in a ring and laying on a small bed of whitest coloured jelly; upon which also the little animal begins to feed; in the mean time the instant it appears, the

working bees attend it with the most anxious attention, and paternal tenderness. Thus extended and plentifully fed, the worm in less than 6 days time comes to its full growth, and no longer accepts the food offered it. When the bees see that there is no further occasion of food, they perform the last office of tenderness, and shut the animal up in its cell, walling up the mouth of its apartment with wax; there they leave the worm to itself, having secured it from every external injury. The worm is no sooner left enclosed, but from a state of inaction, it begins to labour, extending and shortening its body, and by this means lining and the walls of its apartment with a silken tapestry, which it spins in the manner of caterpillars, before they undergo their last transformation. When their cells are thus prepared, the animal is soon after transformed into an aurelia; but differing from that of the common caterpillar as it exhibits not only the legs but the wings of the future be, in its present state of inactivity. Thus in about 20 or 21 days after the egg is laid, the bee is completely formed, and fitted to undergo the fatigues of its state. When all its parts have acquired their proper strength, and consistence, the young animal opens its prison by piercing, with its teeth, the waxen door, that confines it. When just freed from its cell it is as yet moist, and encumbered with the spoils of its former situation;

; but the officious bees are soon seen to flock round it and to lick it clean with their trunks, while another brood with equal assiduity are observed to feed it with honey, others, again begin immediately to cleanse the cell that has just been left; to carry the odours out of the hive and to fit the place for a new inhabitant. The young be soon repays their care by its industry; for as soon as ever its external parts become dry, it discovers its natural appetite for labour and industriously begins the task, which it unremittingly pursues through life. The toil of man is irksome to him, and he earns his subsistence without pain. but this little animal seems happy in its pursuit, and finds delight in all its employments.

When bees first begin to break their prisons, there are generally about 1000 excluded in one day. Thus in the space of a few weeks the number of the inhabitants in one hive of a moderate size becomes so great, that there is no place to contain the new-comers; and they are scarcely excluded from the cells, when the are slain by the old bees, to sally forth in quest of new habitations. In other words the hive begins to swarm and the new progeny prepare for exile. While there is room enough in the hive, the bees remain quietly together; it is necessity alone that compels the seperation. Sometimes, indeed, the young brood, with graceless obstinacy refuse to depart, and even venture to resist

their progenitors. The youngs ones are known by being browner than the others with whiter hair. The 2 armies are therefore easily distinguished, and dreadful battles ensue. But the favour almost always terminates in favour of the veterans, and the rebellious off-spring are driven off, not without loss and mutilation. In different countries the swarms make their appearance at different times of the year, and there are several signs previous to this intended migration. The night before, an unusual buzzing is heard in the hive: in the morning though the whether be soft and inviting, they seem not to obey the call, being intent on more important meditations within. All labour is discontinued, in the hive, every bee is either employed in forcing, or reluctantly yielding submission, at length after some noise and tumult a queen bee is chosen to guard rather, than to conduct the young colony to other habitations, and then they are marshaled without any apparent conduct. In less than a minute, they leave their native globe, and forming a cloud round their protectress, they set off, without seeming to know the place of their destination. The world before them, where to choose their place of rest." The usual time of swarming is from 10 in the morning to 3 in the afternoon, when the sun shines bright and invites them to seek their fortunes.

They flutter for a while in the air, like flakes of snow

and sometimes undertake a distant journey, but more frequently are contented with some neighbouring assylum; the branch of a tree, a chimney-top or some other exposed situation. It sometimes is found that there are 2 or 3 queens in a swarm, and the colony is divided into parties but it most usually happens that one of these is more considerable than the others and the bees by degrees desert the weakest, to take shelter under the most powerful protector. The deserted queen does not long survive this defeat; she takes shelter under her new monarch and is soon destroyed by her jealous rival. Till this cruel execution is performed the bees never go out to work, and if there should be a Queen bee belonging to the new colony left in the old hive, she always undergoes the fate of the former. However it must be observed that the bees never sacrifice any of their queens, when the hive is full of honey, for there is then no danger in maintaining a plurality of breeders. When the swarm is thus conducted to a place of rest, and the policy of government is settled, the bees again resume their labours. The making cells storing them with honey, impregnating the queen, making proper cells for the arising progeny and protecting them from external danger, employ their unceasing industry. But soon after and towards the latter end of summer when the colony is sufficiently stored with

inhabitants, a most cruel policy insues. The drone bees, which are (as has been said) generally in the hive to the number of 100 are marked for the slaughter. These which had hitherto led a life of indolence and pleasure, whose only employment was in impregnating the queen, and rioting upon the labours of the hive, without aiding in the general toil, now share the fate of most voluptuaries, and fall a sacrifice to the general resentment of society. When the hive sends out several swarms in the year, the first is always the best, and the most numerous. These, having the whole summer before them have the more time for making wax and honey, and consequently their labours are the most valuable to the proprietor. Although the swarm chiefly consists of the youngest bees, yet it is often found, that bees of all ages compose the multitude of emigrants and it often happen that bees are seen remaining behind. The number of them is always more considerable than that of some populous cities for sometimes upwards of 40,000 are found in one single hive. So large a lodge may be well supposed to work with great expedition, and in fact, in less than 24 hours they will make combs about 20 inches long, and 7 or 8 broad. Sometimes they will half fill their hives with wax in less than 5 days. In the first 15 days, they are always found to make more wax than they do during the rest of the year.

As of wax, there are also 2 kinds of honey; the white and

the yellow. The white is taken without fire from the honey-combs. The yellow is extracted by heat, and squeezed through bags in a press. The best honey is new, thick, and granulated, of a clear, transparent, white colour, of a soft and aromatic smell, and of a sweet lively taste. Honey made in mountainous countries is preferable to the valley. honey made in Spring is more highly esteemed than that gathered in the summer, which last is still more valuable than that of Autumne, when the flowers begin to fade and lose their fragrance. The bees are nearly alike in all parts of the world, yet there are differences worthy our notice. In Gaudeloupe the bee is less by one half than the European and blacker and rounder. They have no sting, and make their cells in hollow trees; where, if the whole they meet with is too large, they form a sort of waxen house, of the shape of a pear, and in this they lodge and store their honey, and lay their eggs. They lay up their honey in waxen bezels of the size of a pigeons egg, of a black or deep violet colour, and these are so joined together, that here is no space left between them.

The honey never congeals, but is fluid, of the consistance of oil, and the colour of amber. Resembling these there are some little black bees, without a sting, in all the tropical climates; and though these countries are compleat with bees like our own, yet these form the most useful and laborious tribe

in that part of the world. The honey they produce is neither so impalatable, nor so surfeiting as ours; and the wax is so soft, that it is only used for medicinal purposes, it being never hard enough to form into candels, as in europe.

Of insects that receive the name of bees; among us there are several, which however differ very widely from that industrious social race we have just been describing.

The Humble-bee.

Is the largest of all this tribe as the 1st little finger, being as large seen in every point of ours. These are perched on field, and every flower. They build their nests in holes of the ground, of dry leaves mixed with wax, and wax defended by moss from the whether. Each humble bee makes a seperate cell, about the size of a small nutmeg, which is round and hollow, containing the honey in a bag. Several of these cells are joined together