



BeeFacts

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page 1

With Comb and Brush en Route

Collecting tools of worker bees



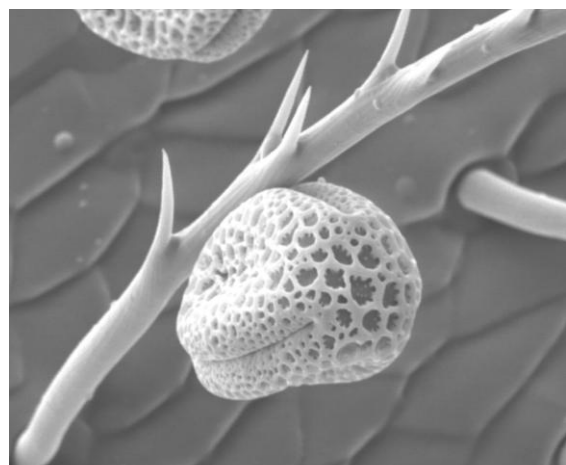
(photo: hakuna jina)

Spring has come, bees awaken to new life and start their activities according to their tasks in the bee hive. Ten thousands of worker bees start working “in the field” to collect pollen and nectar for their kin – and at the same time deliver the important service of pollination of agricultural crops and natural vegetation.

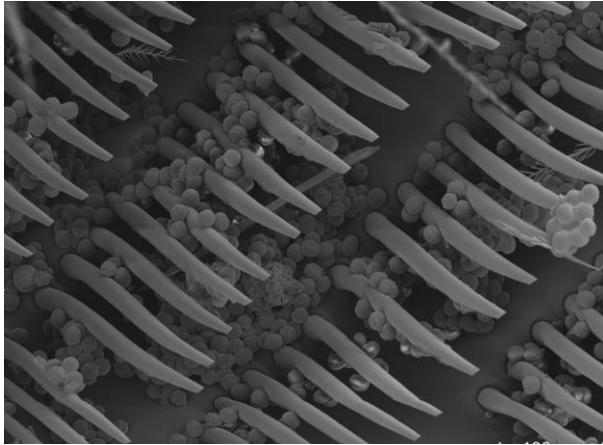
The famous zoologist and ethologist Karl Ritter von Frisch (Nobel prize winner in 1973) has paid intensive attention to the life of honeybees. His work has led to important findings also with regard to worker bees. They have not been described so brilliantly in words and detailed drawings – for example their collecting tools – by anyone else. However, even deeper insights into the anatomy can be gained with the latest scanning electron microscopes which enlarge the picture by a factor of 100 000.

A Natural Wonder

Karl von Frisch has observed the work of the collecting bees: „Every bee which is about to swarm to collect pollen and nectar will take a little bit of honey in her honey stomach along with her. On the flowers, the bee will sit on the stamina, as can be watched on big poppy blossoms or wild roses particularly well, will scratch off loose pollen with its jaws and forelegs and moisturise the pollen with the honey from the hive to make it sticky. If there are lots of pollen grains, they will get stuck in the body hair all over the bee when it is working in the flower, and sometimes the bee will look as if dusted with flour” ¹⁾ (translation of original text by FNL).



Pollen in the hair of a honeybee (photo: BASF SE)

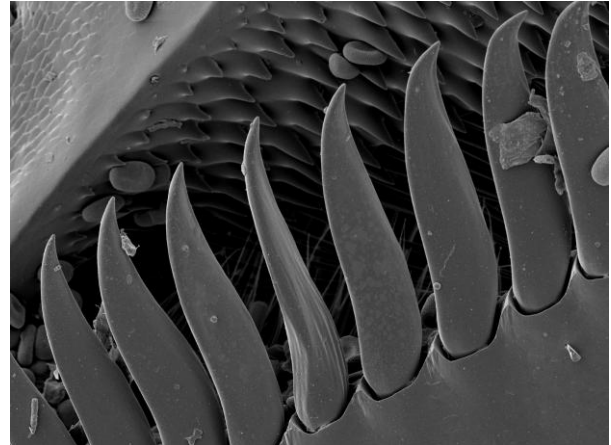


Brush on the hind leg of a bee full of pollen (photo: Bayer)

Whilst the bee is flying to the next flower, the legs under its belly perform frenetic action: The pollen from the body hair and from the other legs is brushed off using tiny brushes on the hind legs. Then, with a rather stiff bristle comb located at the end of the lower hint legs, the pollen is brushed off the tiny brushes of the opposite leg, alternating left and right legs. Now the pollen is in the comb, but just for a second, then – with a deft pressure of the heel spur – it is pushed through the cleft onto the outer side of the lower hint leg and up into the pollen basket.

Push by push the pollen is squeezed further up, the pollen load grows and will finally fill the whole pollen basket. Every once in a while, the middle legs will squeeze and knock on this basket so that the bale remains tight and does not get lost.

Back to the bee hive, the worker bee will strip off the pollen from the baskets into a storage cell. Soon after, a young bee working inside the bee hive will put its head into this cell, crush the two pollen bales with its extended jaws, hence forcefully pressing the newly collected pollen onto the supply which has been filled in earlier”¹⁾ (translation of original text by FNL).



Bristle comb (photo: Bayer)

Mutual benefits

Thanks to the indefatigable worker bees flying from flower to flower, agricultural crops like rape seed, fruits, vegetables as well as spice and medical plants show markedly better yields. By planting intercrops such as phacelia, sunflower, buckwheat or “pasture for bees”, farmers in return can offer additional sources of food to the bees.

There are manifold opportunities to make our environment more colourful: in our private gardens, in public parks, along road- and waysides, along railway lines and on countless other unused surface areas. Such measures will not only benefit honeybees but also other insects and wildlife of our cultivated landscape.

¹⁾ Frisch, Karl von: Aus dem Leben der Bienen. Verständliche Wissenschaft, Band 1, 9. Auflage. Springer-Verlag Berlin Heidelberg New York 1977, S. 18-19.