

THE VALUE OF POLLEN

With regard to the importance of pollen to bee-keepers, it was as well that they should remind themselves of what pollen consisted. Was it not the essence of the plant or tree and its fruit? The roots, the bark, the branches, and the leaves were only auxiliaries to the flower that bore the pollen. This fact demonstrated its importance. The fertilising dust of the flowers, as they were accustomed to briefly call pollen, was, as most present were aware, the ovules with a cellulose covering, something like the covering of an egg, the shell. A better name for this dust was pollen-grains, the size of which varied from $\frac{1}{2000}$ th to $\frac{1}{20000}$ th part of an inch. Of course, to see these grains separately a pocket lens was necessary, or better still, a microscope with a $\frac{1}{4}$ -in. or $\frac{1}{2}$ -in. objective would be of great assistance in studying the shape and size of these grains. The microscope provided the means of identifying the source and purity of the honey. The bee-keeper from any sample of honey he took was able to trace the origin of such produce by recognizing the pollen-grains, which, differ in size and shape and colour according to the plant from which they are obtained; thus he was enabled to say from what source his honey was derived. Again, as regarded the adulteration of honey, the apiarist could take a sample of that known to be pure honey and compute the number of grains he found within a certain area: this could be compared with another sample supposed to be diluted with glucose, whereupon the difference in the number of grains would be apparent, and that would form a clue to what extent adulteration had taken place. But, after all, the most important point in connection with pollen lay in the fact that it was a bee-food, and that was what he wished to lay special stress on. The very "fitting out" of the bee for the easy collection of pollen showed that the same was necessary for its welfare. The hairs on its body, the arrangement of them, the receptacle for bringing it home, all pointed to the importance of it in the hive, so that it became clear to the bee-keeper that he should see that his bees had sufficient pollen; for pollen to the bee was what bread and meat was to man, or, to put it more concretely, it was as oatmeal to the Scotsman. It built up the frame and renewed the tissues, thus making the bee strong and

better able to resist foul brood, as well as carry out the work for which it was destined. Pollen was also used in the cappings for covering the brood. He had noticed this year a great quantity of brood in an advanced pupa state which had not been sealed over properly, and he attributed this in a great measure to lack of pollen. It was well known that sealing was often left over till late, when the conditions of heat were favorable, but he had never seen it postponed so long as it had been this year.

Another consideration was in connection with driven bees. In many cases driven bees were put into winter quarters without any thought of pollen for them. They were placed on combs or on sheets of foundation, and fed with syrup, but the necessity for pollen was generally overlooked or forgotten. Now here was a use for the pollen-clogged combs. If these were reserved from summer or late autumn, or taken from the hives when driven bees were expected, they could be turned to a useful purpose. Driven bees could not gather sufficient pollen for their own needs, because the season was usually far advanced. Pea-flower was the best substitute for pollen. This might be given by dredging it into cells dry, or by mixing it with a little syrup, or by placing it in another comb on the cluster. It could also be given to the bees as a sort of paste on the top of the hive in a feeder.—MR. HAYES in British Bee Journal.

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