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## Title Page

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## THE BEEHIVE AS AN AID IN BIOLOGY

The honey bee never fails to create interest. She calls forth the instinct of curiosity in the daring and fear in the timid. She challenges the courageous only to teach him caution. She challenges the timid and develops confidence. To those who like to study instinct in relation to environment, she presents countless problems.

Some writers claim that bees are intelligent and that our inability to understand this is due to our living in a totally different world, interpreting this world by senses tuned to a different chord. Consequently each goes about his business in his own way, but intelligently. We have been able, however, to direct the instinct of the bee to the end that she renders us service. Hence a study of her behaviour brings to light a lot of biological information.

One of these relates to the three different kinds of bees: the queen, the drones, and the workers. The queen and workers are females, while the drones are males.

The queen lays two kinds of eggs; i. e., fertilized and unfertilized. The fertilized are laid in small cells, the unfertilized in large cells. Furthermore, the queen can determine which kind of egg is to be laid. When she comes to a large cell, she lays unfertilized eggs and no other. When she comes to a small cell, she lays a fertilized egg and no other. Just how she controls this is not known.

A peculiar thing about these eggs is the fact that the fertilized always de-

velop into females and the unfertilized into males. Thus the females have a father and a mother, while the males have a mother but no father.

Now these fertilized eggs if given one kind of food (royal jelly) develop into queens, while if given the usual food (honey) develop into workers. The workers can lay eggs, and often do when a colony is queenless. But these eggs hatch and produce males only. This is due to their being unfertilized.

The drones, whether they come from eggs laid by the queen or the workers, are males. Their only purpose is to fertilize the eggs of the queen. They are large fellows, and eat much, but never work. Some people (ladies) think this is a characteristic of males. However, the laziness of the drones may be due to their not having a father. At any rate, the workers in July and August begin to kill them, since the mating season is over and food supplies need to be conserved for the long winter. At this time there is great excitement about the hive. The workers are hurrying hither and thither looking for the drones. Upon finding one, they seize him by the legs or wings and drag him from the hive. They then bite his limbs or wings until he is unable to run or fly, and leave him exposed to die alone without the comfort of friends, since he has none.

If an old queen becomes impotent, a new one will be developed. The new queen kills the old one. This is called supersedure. The common method, however, is for the old queen to leave the hive, taking the working force with her. This is called swarming.