

THE HONEY BEE

(Continued from Page 252)

have a most beautiful example of a wise creation, and a thorough study and understanding of these insects, with their economic adaptation of means to the end, will, I feel convinced, awaken no small amount of astonishment and pleasure to the student.

I may mention, before proceeding further, that we are indebted more to reverend gentlemen than any other persons for the knowledge we have of the bee, more especially the Rev. Mr. Langstroth, in America; Rev. Mr. Dzierzon, in Germany, and a blind gentleman, Mr. Francis Huber, of Geneva—all earnest investigators, who sought the aid of such men as Prof. Leuchart and Prof. C. L. Von Siebold of Munich, Dr. Joseph Leidy, of Philadelphia, and later the views of these gentlemen have been substantiated by Prof. Cheshire, of the London Microscopical Society—all skilled microscopical anatomists.

The queen is the most important member of the colony. She is raised by the bees under the swarming impulse, from an egg less than three days old, which, if left to hatch as deposited by her majesty, under the usual conditions of the hive, would produce a working bee, taking just twenty-one days from egg to perfect insect; but by feeding the larva, which emerges from the egg in three days, with a superabundance of highly concentrated food—termed "royal jelly" (for want of a more expressive name)—a great change in this insect is brought about. This food is secreted from glands in the head of the nurse bees, and fed to the larva for three or four days, when it is changed to food composed of honey, pollen and water, digested into chyle by the nurse bees, and fed to queen larva in such abundance that a surplus always remains in the royal cell after the queen has vacated it. This never happens with other members of the colony. The change

which this stimulating food brings about is almost beyond our understanding, and always creates great interest to the student of apiculture.

This egg, as I have stated before, which would have brought forth a working bee in twenty-one days, now produces a far higher developed insect in fifteen. Compared with the worker, it is about one-half as large again, its jaws are shorter, its head rounder, and it has, besides the two compound eyes, three ocelli on top of the head. Its thorax is one one-hundredth of an inch larger, which fact has been turned to valuable account by the practical bee-keeper, for a worker bee can get through an opening seventeen one-hundredths of an inch wide, but a queen cannot; she requires eighteen one-hundredths. So by using zinc with perforations of the first-mentioned size between the brood hive and the surplus receptacle, to confine the queen below, much time can be saved in handling bees for commercial gain.

The queen will under no consideration gather honey or pollen—in fact, never leaves the hive except to meet the drone, and that only once in her life, and to accompany the bees when swarming. She has wax-secreting glands in her abdomen, but only in rudimentary form, so cannot secrete wax. She has no pollen baskets on her legs, and although she has a sting one-third longer than the worker, she will never use it except to sting a rival queen. As a worker its life would be about two months in summer, or working season; and in winter, or its semi-dormant state, eight months, but as a queen she will live four years, or until she gets so old that her eggs produce mostly drones or males, when the bees will supersede her. Her prolific egg-laying is astonishing, for in the height of the breeding season, in a populous hive, she will lay from 2,000 to 3,000 eggs in twenty-four hours.

I now come to the most interesting and wonderful part of this insect's

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