

THE HONEY BEE

Incalculable Value of the Product of Its Marvellous Storehouses and Labor in the Fields

Mr. E. F. Robinson, of Victoria, B.C., has kindly favored us with the following very interesting article, which was prepared by him for the Victoria Natural History Society:

Before taking up the subject of fertilization of plants by the bee, I must make some reference to the fruits of this insect's labor, viz., honey, wax and pollen.

Nectar as gathered by the bee fresh from the fields is composed of about 60 per cent. cane sugar and 40 per cent. water, also a small quantity of volatile oil, which gives to different kinds of honey their distinctive flavors and odors. To this nectar when stored in the cells the bees add formic acid, which changes the cane sugar into grape sugar. This formic acid is secreted by glands in the head of the bee, and comes in contact with the nectar while it is being disgorged from the honey sack into the comb cell; it acts as a preservative, as it is a powerful antiseptic. The acid also prevents the honey candying by this conversion from cane to grape sugar. Formic acid also forms the principal ingredient of the poison injected at the time of stinging. Honey is a pure hydro-carbon, and when used as a food by the bee is completely used up in developing heat, which is so essentially necessary for brooding and wax manipulation. A temperature of at least 70° is required to successfully raise brood or build comb. Honey is undoubtedly the best food for the bee, especially when introduced into northern counties by man. It being a hydro-carbon, it serves the bee in winter, just as the large accumulation of fat serves the bear, namely, to furnish warmth during the long hibernation in the cold weather. On account of this

very complete combustion, as it were, there is very little accumulation of feces, and the bee is enabled to stand a confinement to the hive for over four months without any great inconvenience in this respect; but if, through shortage of stores, it should eat any pollen (which is a nitrogenous food), then dysentery sets in by the fecal accumulation, and the only remedy is a cleansing flight to save the colony.

A bee's load of honey, or nectar, is about one grain, and the largest amount stored by a colony in one day has reached 11 pounds 2 ounces. The bees which stored this amount numbered 50,000, or about 10 pounds, there being 5,000 bees to the pound. No other nation has turned its attention to honey production like America. Many men in California harvest their forty tons each in a good season, and a Captain Hetherington, in New York State, numbers his colonies by thousands. The above day's work of 11 pounds 2 ounces of honey stored means 77,875 bee-loads, and, allowing four blossoms visited for each load, we have 311,500 fertilizations, as the result of one day's labor of these industrious insects.

As regards wax, it also is a pure hydro-carbon, produced from its like, honey, but at a great sacrifice to the latter, as it requires the consumption of 20 pounds of honey to furnish the material to build one pound of comb. Fortunately, this precious material goes a long way, as one pound of comb will hold about 20 pounds of honey. I may mention that man, with all his scientific knowledge, has never been able to furnish a substitute for wax. All attempts to adulterate the comb foundation given the bees with paraffine, stearine and other substances have completely failed, for no other substance will stand the weight of honey in the heat of the hive during the summer without sagging and breaking down.

Not only is this material so well adapted for the purpose, but the architecture