

FOR THE CANADIAN BEE JOURNAL.

BEES IN WINTER.

I HAVE been interested in reading queries and replies numbered 45 and 46.

As there seems to be a misunderstanding as to my views and experiments regarding the subjects therein treated, perhaps an explanation from me would be acceptable to your readers.

Very few of us who produce honey for our income, are chemists; neither do we have the time to post ourselves thoroughly regarding many particular points in chemistry, even pertaining to our own pursuit. Well, must we all know that neither honey nor cane sugar contain heat within themselves. We know that it can be productive of heat only by the part it may play in chemical action. From my readings, I had gathered the idea that the action produced when cane sugar was taken into an animal organism, was more productive of heat than would result from honey or grape sugar, when similarly taken. My four, somewhat extensive experiments, as well as the experiments of others, in wintering our bees on pure cane sugar syrup, had given me the idea that what I had read regarding the matter, was correct.

In every instance, I have noticed that a less quantity of sugar syrup than of honey, would be consumed during the period of confinement. Of this point I feel quite well assured, and I think the large experiment of Mr. A. I. Root has given him the same opinion.

However, this is by no means the important factor connected with the use of cane sugar, in wintering. While we all well know that bees are often successfully wintered upon natural stores, we know that they frequently, yes *too* frequently die with bee-diarrhœa, when so wintered. This is not all. In my own experience I have never seen a colony of bees *perfectly wintered* upon natural stores. I fear I never shall. I mean by perfect wintering, examples where our bees remain continually in the quiescent state, and though confined within their hives for 5 months, void nothing upon their first flight; containing no fecal accumulations whatever. Messrs. Corneil and Demaree mention the fact of my losing bees last winter, whose stores were exclusively sugar syrup. They speak quite truly, but in so speaking, they are discussing a question of heat, and not of bee-diarrhœa. None of those stocks showed signs of bee-diarrhœa, which is our only winter enemy, worthy of mention, because it is little trouble for us to maintain such temperature as we know to be conducive to perfect wintering as far as it within itself has to do with the problem. All my colonies that froze to death, were not well protected. Those packed out-of-

doors, upon sugar syrup stores, were, as before stated, in white boxes elevated nearly above the snow line, thus getting no protection from the earth and snow.

In my Glenwood apiary, where 208 colonies were all on natural stores, the manager, Mr. W. H. Shirley, and myself, found numerous colonies frozen solid, the bees of which showed no considerable fecal accumulation, and none of them had discharged within the hive; neither did their bodies indicate that they would be forced to do so for some considerable time yet. These colonies were better protected than the sugar fed ones in my home apiary; though in the same kind of boxes, the packing was thicker, the boxes dark red and rested well under the snow, being only about four inches above the ground.

The colonies that died here upon sugar syrup, in our "old cold cellar," were among the weaker ones of the apiary, and that cellar remained for weeks with a temperature not to exceed ten degrees above zero, at any time.

From my readings and former experience, I had been led to believe that cold, alone, would not bring mortality to our bees, when in normal clusters within their hives. The above experiment, however, shed new light.

In all these experiments, I had no evidence that cane sugar did not contain elements productive of more heat than was contained in honey.

It is a low temperature *within* our hives that affects the bees. As to how the temperature without, may affect the temperature within, depends not alone upon the non-conducting principles of our hives, but upon the *duration* of said temperature without.

The past winter has no equal in the memory of our oldest inhabitants, for its *continued* low temperature.

As I have several times made the statement incorporated in query No. 46, and not objected to by any answerer except Mr. Demaree, I will here say that nearly all agree with my idea regarding how exercise produces heat and I think had they omitted to have answered the question asked, and answered the one answered by Mr. Demaree which was not asked they would have agreed with my observation and experience, that bees do not only arouse to activity when the temperature runs extremely low, but that such activity raises the temperature.

Dowagiac, Mich.

JAMES HEDDON.

BEES IN WINTER QUARTERS.

B. LOSRE.—Weather fine—Bees all packed on their stands except one in cellar—a late swarm. There is no material like waste paper for packing with me.

Cobourg, Nov. 18th, 1885.