

forty-five degrees shall close it as near air tight as possible, and keep it thus until I open it to lower the temperature.

I wrote to Professor Cook for his opinion—and who is better fitted to give one—regarding the amount of air a colony consumes in winter. His reply was, that as long as they remained inactive he presumed the air within the hive would last them all winter.

Notwithstanding my bees had been abused by the low temperature of my cellar, I believe that I could have kept most of these colonies in good health till next October had I kept the temperature at forty-five to fifty degrees. I consider that we have the question of confinement entirely at our disposal. I believe I shall winter my bees with perfect success in the future, for I believe the problem is solved. This article may not be considered of value to those who have heretofore succeeded, but there are many who have not and those either did not know why they succeeded and others failed, or else intentionally or unintentionally kept their light under a bushel.

If the past winter does not mark an epoch, not only in my own, but the success of others who will follow the laws of the Pollen Theory, I will come up smiling and acknowledge my error. In a back number you spoke about wintering bees without combs. I had studied upon that point when I feared the presence of bee-bread in hives. Under all conditions, but as I now understand it, nothing can be better or cheaper than combs upon which to winter. We have no honey to extract; no combs to remove. If you had seen us feed 1,200 pounds per hour last autumn (three of us) you would agree with me regarding the economy, despatch and fun of the process.

I will try to be at the National Convention next December and show you a sample of my improved feeder, and then leave you to judge.

JAMES HEDDON.

Dowagiac, Mich., June. 1885.

Many now believe that there is less pollen in more northern localities than there is further south, and where the bees have been put in proper condition with the temperature of the repository right, we have never found pollen injurious, in fact, last year, we selected the combs containing the most pollen, and put them into hundreds of hives, and they wintered equally as well as those without pollen, or at last having only a little. Yet we know an instance that occurred this year, of two colonies

of bees starving to death in a repository containing nearly 200 colonies; the combs were clean and free from mould, not a drop of honey would be found in the hive, and the bees had become badly diseased with dysentery. It appears to us that after consuming their honey, rather than starve, they attempted to sip the honey out from amongst the pollen, some of which had soaked into it. When pollen is placed in cells, the honey being placed on top and capped over, any one examining these cells by cutting them down even with the pollen with a knife, will find the pollen saturated with honey, where the two come in contact. If bees eat a large quantity to sustain life they would naturally accumulate a large quantity of residue. We have frequently noticed that starving colonies die with dysentery, or starvation, whichever you term it; they died in short from dysentery and hunger, there being no stores in the hive. We do not wonder that after giving pure granulated sugar stores a fair trial, you imagined that you had mastered the winter problem, and probably you think you will never lose another colony. If you take pains and put every colony up as it should be you will not lose one per cent if your cellar or repository is as it should be, but let us warn you, friend Heddon, that if you undertake to put 300 colonies into some nook or corner, without any ventilation, your hopes will again be blasted. While 100 colonies will winter with perfect success in a repository without extra ventilation, 200 would create too much heat, and the clusters will be broken. The bees scattered about on the combs would probably commence brooding, if they have pollen. At all events they would become so uneasy that they would not winter well. 50° is too high a temperature. Bees become uneasy at that temperature. 42° to 45° is best if the cellar is damp, in fact if very damp, it will do to