

## WINTER ENTRANCES, ETC.

There are a few well-formulated rules for wintering which are observed by all who use ordinary care—namely, keep hives dry, give plenty of food, and protect from cold. Yet with all these rules well kept great loss will come from a winter like that of 1903-4. We must add to these rules this one: Allow plenty of fresh air.

I am talking about out-of-doors wintering. I know that cellar-winterers advocate fresh air, but have seldom known those who winter bees outdoors to have much to say about the supply of air, and I am confident that the vast majority seek to shut out the air rather than to let it in.

Bee-keepers in New England were among the heavy losers last winter, and those with whom I have talked give this description of the condition in spring of the dead colonies. The spaces between the combs were clogged with dead bees, frames and combs were sticky and foul with excrement, and the whole interior of the hive was dripping with damp mold. The living colonies were, most of them, in an equally deplorable condition except that above the ramparts of dead bees were a handful of brave weak survivors.

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I had a few colonies which were not unlike those last described, and in every case they were colonies which I had molly-coddled, or which had lain under the snow too long. Every one of my colonies which was allowed its regular summer entrance, came through with clean, sweet combs, strong bees, and a spirit for conquest. Last winter my 38 colonies were disposed as follows: Three in my seashore cottage in the full blast of all the winds that blow, with entrances  $1\frac{1}{2}$  inch holes three to the colony; five on farms about Provincetown, Mass.; three on a farm in Lancaster, Mass.,

with entrances the width of the hive and 3-8 deep; ten on farms in Norwich, Conn., with entrances the width of the hive and from 3-8 to 7-8 inch. deep; two glass observatory hives in a north window; seventeen in my yard at home with entrances of all sorts.

The bees at the seashore were all alive and flourishing when my family and I arrived there for our summer stay. They had had no care since the preceding August, yet were all alive, while we are told that 90 per cent. of the bees along the coast died.

My bees in Lancaster wintered poorly because they were covered with snow too long. The bees on farms in Norwich were set on high stone walls where they got the good, fresh air, and they wintered well except two starved from lack of stores due to my own carelessness. Of the bees in my home yard, the colony which showed all along a fine state of health had an entrance 12 inches long and 7-8 of an inch deep. This entrance was open all the time except occasionally, when the cold went way below zero; I either threw dry snow lightly over the entrance or else pushed a porous cloth into the entrance. This was done more to conserve heat than otherwise, for I feared that the bees might consume all their stores in trying to keep warm. At no time from fall to spring could more than a bare sprinkling of dead bees be seen on the bottom of the hive. All winter long the bees occupied at least seven of the spaces between the combs.

My various observations of last winter have led me to leave all my hives this winter with ample entrances, in several cases an entrance the equivalent of 12 square inches. I do not advocate so large an entrance, but shall sacrifice a few colonies this winter, if necessary, to find out the effects of such an entrance. I am watching