

bottom bar is $10\frac{1}{4}$ inches. Each joint is coated with thick paint before nailing. For the lugs cut two pieces of $\frac{3}{4}$ -inch wood, $1\frac{1}{4} \times 3\frac{1}{2}$ inches. From one end of each piece cut a cheek $\frac{3}{4} \times 1$ inch. This feeder will drown bees unless a slit is put inside of it to float on the top of the syrup. To fill the feeder, turn back the quilt sufficiently far, pour in the syrup, then replace the quilt.

FEEDING A POLLEN SUBSTITUTE.

In some parts of the Dry Belt there is a lack of pollen in the early spring months, so that in the ordinary course brood-raising is seriously hindered. The bee-keeper in such a region can provide a substitute in the form of finely ground, dry, unbolted rye-meal, or even ordinary flour, which is set out in shallow troughs or boxes. The layer must be quite thin, otherwise the bees will drown in it. To attract the bees, smear a little honey on the edge of the tray. The boxes must be placed in a warm spot, sheltered from the wind. Continue feeding until the bees cease to use it, which will be when the blossoms provide the real article.

Various methods have been devised for feeding artificial pollen inside the hive, but in practice they are found to be injurious to the welfare of the colony.

CHAPTER XII.

Preparing for Winter.

In British Columbia the custom has been so far to winter bees unprotected on the summer stands. Only a very few bee-keepers have given protection of any kind, this usually consisting of a shed to shield the hives from the rain. Since many remarkable cases of successful wintering occur where according to all recognised principles every bee should have died long before spring, most bee-keepers assume it is entirely unnecessary to give the hives any kind of shelter from the winds and rains of winter and spring. The real test of any system of management, however, is always the same—what is the average production of honey per colony in the ensuing honey-flow, not what did one or two exceptional colonies net. The writer is not familiar with the management of apiaries in the Dry Belt, but he knows that in the district of the Lower Fraser the bee-keepers who average around 150 lb. per colony invariably protect their hives during the winter and spring months. Furthermore, he knows that in the same yard where protected and unprotected colonies are side by side the yield from the former is usually double that from the latter. On the average a winter-protected colony is equal in honey production to two managed on the let-alone plan.

To no phase of bee-keeping has the writer devoted more time and labour in the past six years than to this problem of winter protection. He has made and tried out every device recommended in the bee books and magazines, compared the results, and studied their behaviour in different degrees of atmospheric temperature. At a very early stage of the experiments he discovered that spring protection—that is, during the months of March and April—was even more important than during the months of winter, for it was found that after brood-raising commenced a weak protected colony would in time outstrip in strength more populous colonies whose hives were exposed to the direct influence of the elements. The next conclusion was that a solid packing, say of straw or sacking, held in position between the walls of the hive and the outside case, such as is generally employed on this continent east of the Rocky Mountains, was not suited for our more temperate climate, unless probably in those regions where steady frost prevails for several weeks at a time. On Vancouver Island and the Lower Mainland we often in spring have many days in succession when the thermometer registers from 48 degrees, the minimum temperature for bee-flight, to 52 degrees, and one learns that at such times the bees in packed