

the spring and they are putting in their supplies, when breeding, before you answer. Advantage from the fall has been demonstrated; but opinion is as yet in the whole hive in- of packed walls; double walls, and action about the

colonies in hives only by a deep outer case, do not fall than those are protected. If it is fair to believe until spring "win- much dependent action. In other words, lies more in when they are weather, and when for the harvest, to keep them

yet have only a knowledge of the exist within the spring inclusive. about those con- elligently devise bees. Until we are as likely to sary apparatus, costly in labor mit importance. uage of modern- owledge we can onal dollar and

ations will use tus in obtaining they will help have yet done. their line, and better than the

commercial beekeeper, even though the latter has the necessary training. To ask them to abandon their random experimenting and find out facts for us is what we should now do.

Providence, R. I., Sept. 12.

WINTERING BEES

Read before the Colorado State Beekeepers' Association Convention in Denver, 1911.

BY OLIVER FOSTER.

In preparing bees for winter, shall we provide for their protection from extremes of cold and heat by packing the hives, or shall we leave them unprotected? This question should be considered with reference to several other conditions which must be taken into account.

Mr. A. carries his bees into the cellar, where he scrupulously maintains a uniform temperature of from 43 to 45 degrees. He has found that a much lower temperature than 43 degrees will result in a loss of many colonies and poor results generally, but he succeeds well with the higher temperature, and his experience is in harmony with all who winter in cellars.

Mr. B. maintains, on the other hand, that cold does not hurt the bees in the least. He leaves his colonies right out of doors, in ordinary single-walled, unprotected hives, with the full summer entrance wide open and with perhaps an additional large opening at the top of the hive, right over the bees, which opens into a space between an inner and an outer cover, this space having free communication with all outdoors through spaces under the upper cover at ends or sides.

His bees winter well, even though the mercury falls to zero or far below, and though the snowy blizzards often rage throughout the winter. And Mr. B.'s testimony agrees with that of many

others who have no use for winter packing and whose bees generally come through the winter and spring in good condition.

Why this difference of opinion and practice? How is it that A. and B. both succeed, each with his favorite method so different from that of the other, while various compromises between these two extremes do not as a rule give good results? I think we must look for the answer to this question in the fact that other important factors are figuring in the problem.

A. lives in a lower altitude, where the atmosphere is heavy and comparatively damp, and where cold weather continues for several months at a time in winter, with no warm days to enable the bees to fly and renovate their conditions. B. lives in Colorado's rare and dry atmosphere, where every two weeks or oftener throughout the winter the bright sunshine warms his unpacked hives and all outdoors as well, arousing the bees from their hibernating stupor, affording them the opportunity to take a cleansing flight, and to gather into their winter nest and into their now empty honey sac a fresh supply of stores from the outer combs and to reduce it to its proper consistency as to moisture for immediate use.

After this renovating spell they can crawl into the empty cells within the cluster or take their position with those that are delegated to form the outer protecting crust of the cluster. These crust-forming bees assume a state of almost perfect hibernation, in which condition almost any degree of cold is harmless to them for a limited time or until their honey sacs need replenishing, when another warming-up spell and a change of shift are necessary.

Mr. A.'s bees in the cellar have no such natural season of warming up; consequently, the bees of each individual colony must, of their own accord, and at such times as their necessities