

show them that something is changed in their whereabouts. The old, experienced bee, that usually flies out of its hive in a "bee-line," will then face about and reconnoiter before going away. But if it has left the hive in the usual bee-line, there are many chances that it will get disconcerted in coming home. Although some reliance may be placed on the "home" call, many bees will have alighted in the wrong place, and perhaps have been destroyed. Bees may be changed from one spot to another within a short distance, if they are given a very decided notice of the change, by disturbance of alighting-spot in the placing of an obstruction as stated, but it is not advisable to try these things when they need their whole force in the hive to keep warm during cold weather.

The most important requirement in wintering is good food. A strong colony with honey-dew or fruit juice is worse off for winter than a comparatively weak colony with good, healthy stores. If the confinement is of long duration, the bees of the hive that contains unhealthy food will become restless, owing to their intestines being loaded with an excess of feces. They will then either leave the cluster and become chilled, or be compelled to discharge their excrements in the hive, and thus soil the brood-combs and the other bees, causing the speedy loss of a good portion of the swarm. On the other hand, the colony which is supplied with healthy stores will keep clustered together and will be able to pass through a very long period without much suffering or loss.

If our colonies are strong in bees and have plenty of good food, the next requirement is a good shelter. It is well to have the inside of the hive so arranged that the moisture arising from the bees may pass off

without causing the hive to become damp on mild days. For this purpose absorbents, such as chaff, sawdust, etc., are used. We use forest leaves, because they are plentiful where we keep our bees, and also because these leaves are usually neat and may be placed over the combs without soiling anything. Chaff and sawdust must be put in sacks, and the bees sometimes gnaw a hole in the sack or cushion so provided, and when you remove it it allows a quantity of sawdust or chaff to fall in the hive among the combs. Dry oak-leaves are much more easily removed.

I have heard the objection that dry oak-leaves are not as good a non-conductor of heat or cold as the chaff. This may be correct, but they are much better than many people think. Did you ever try to dig a hole in the ground, in the woods, when the ground was frozen? If you did, you must have noticed that when there is a thickness of leaves of three or four inches over the soil, you are able to dig into that soil long after the bare ground has been frozen over. This shows how much shelter there is in forest leaves, though they may not be as efficient as sawdust or chaff.

I have sometimes heard people say that this matter of absorbents above the bees was nonsense. It is not to me as I have seen the matter tried on hundreds of colonies, and I will here say what the experience was. We used to put leaves in the caps of our hives, not to absorb the moisture but to keep the heat from escaping, just to help keep the bees warm. When we did this we used an enamel cloth over the bees and placed the leaves on top of this enamel cloth. During a very hard winter, many of our bees died, the hive apparently wet from one end to the other, in the brood-chamber, from the moisture that had escaped from the bees. Nearly every