

require, work themselves up to the necessary degree of heat and activity for a similar renovation, although the cleansing flight is denied them until the spring setting-out time arrives. However, if all other conditions are perfect under the protection system, the flying spell seems to be unnecessary for long seasons.

A uniform temperature of much below 43 degrees is probably unfavorable to the other and more necessary renovating operations, hence the advantage of a warm hive during long, protracted cold. Moreover, the air in Mr. A.'s cellar becomes unavoidably foul, and much damper than the air that sweeps through Mr. B.'s apiary and hives. For this reason heat is necessary to enable the bees to force out these very injurious elements from their quarters.

As I see it, the first essential condition for good wintering is a good quality of stores, gathered or stored from feeders after part of the brood is hatched, so that it is deposited within easy access to the contracted cluster of bees. The next important requisite is thorough elimination from the cluster of bees of the impurities and surplus moisture which are constantly emanating in greater or less amount from their bodies as waste material.

This is accomplished in either one of two ways—the one by the expulsive power of heat, the other by means of a free circulation of cold, fresh air; the one under the warm protection system; the other under the open-air, unprotected system.

The principles involved are quite different, but the end accomplished is the same—a dry winter nest. There are two methods of drying clothes on a cold winter day. One way is to hang them by a hot stove, where the heat turns the moisture into vapor, and, expanding the steam, expels it from the fabric. The other way is to hang the clothes out of doors, where they instant-

ly freeze stiff, but where the freely circulating, cold dry air soon absorbs the very ice and carries it away as frozen vapor. These two principles employed in drying clothes illustrate the two systems under which bees in winter quarters are kept dry and free from impure air. The one we might call the warm protected system, the other the cold free-air system.

According to my experience and observation, a weak or unpopulous colony needs warm protection. Especially is this true if their stores are not of good quality, or if they are short in quantity and scattered throughout the hive with much empty comb near the contracted cluster of bees. Again, some kind of protection is necessary in localities where cold weather is long continued, in a cold damp climate, or in a low altitude. It seems that a weak and unprotected colony requires too great a proportion of their bees to form that protecting crust I have mentioned, so that there is not a sufficient number of bees remaining to form what should be the main body of the cluster within this outer crust, where a little more heat should be maintained, the bees remaining less dormant and slightly active, and so able to minister to the needs of the colony as to heat and nourishment. When all, or nearly all, the bees are required for the more dormant crust, the colony perishes.

The best method of packing I have found, and I have tried about every form is to set the hives together in bunches or piles so that all their adjoining sides either on the bottom boards, bodies or covers. They should be placed four abreast facing south or southeast and the front end should be left exposed to the sun. The top and the northeast and west sides of the bunch may be packed with straw or chaff if desired and the packing held in place with boards and rocks or with burlap and baling wire. I think it is a good plan in case of weak colonies to place a second tier of four

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or five on top and bottoms removed. Two tiers and two sheets of tin temporary bottoms sheets a bee space on upper sides by top and back.

To avoid contraction and sticking, with heat tin shoved in between removed bottoms retain the pack bunch of hives from bees need be the hives in spring stands, since the yard is entirely should be done with and all locations bees on their first

## RIPENING HONEY

The Plan, While in Conditions, is

Get

BY W.

I was pleased to by Mr. Ireland, president of the Ontario Beekeepers' Association, in the issue of May 1, re ripening of honey, what he says. Mr. great deal of experience much good for the in this country; but I do not think his sive. There is more reputation as a beekeeper a proper understanding and I trust he will help to throw a little light on the conditions prevailing in close on to three years engaged as a governor