

or give them honey from those that have it to spare.

It may not be out of place for me to say here that it would improve the sale of honey very much if, on the approach of the honey flow, every bee-keeper, (and especially those who have been feeding syrup), would extract the old honey and spring honey out clean and save it for fall feeding, and then if we manage right, or rather, let the bees manage right by allowing them to cap the honey well before extracting it, we will then have a first class grade of honey throughout the season if it is to be had.

H. COUSE.

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### SOME EXPERIMENTS IN WINTER.

**W**HAT bees have been wintered as a general rule with fair success in cold climates under the conditions to which they are subjected in winter confinement, to my mind proves nothing more than that the honey bee possesses wonderful powers of endurance. In the absence of better and more natural conditions, perhaps an *even* or uniform temperature in the winter repository will give the most uniform results as to bringing bees through the winter in the possession of life. But under such conditions, those bees should dwindle and waste away in the early spring is the most natural conclusion in the world. A uniform temperature of 45° or any other uniform temperature is most unnatural and contrary to all sound theory, and I should expect any living thing to wear out under the monotonous influences except in a state of profound hibernation. That bees do survive such treatment is persuasive evidence that they do hibernate in some degree as claimed by Brother Clarke.

Reasoning from this standpoint I have had a theory for several years that a better way to winter bees in a cold climate would be to keep them in a low temperature, perhaps just above the freezing in the repository in very cold weather, and at intervals of about ten days raise the temperature in the repository to a summer heat and keep it up for ten or twelve hours.

My theory was that such a "warming up" would enable the bees to discharge by exhalation all surplus moisture from their bodies external or internal. In other words have the same effect as does a winter flight. In order to test the matter at the beginning of last winter I placed in a fruit and vegetable cellar where the temperature goes down to near the freezing point during very cold weather, a small colony of bees, and at intervals of about ten days the

hive was carried into my office where the temperature was kept all through the day at a summer heat. The pad was removed from the top of the brood-chamber so that nothing but a thin screen cover was left on to keep the bees in place. As the warm air of the room would begin to be felt by the bees they would gradually rouse themselves and in a few hours they would send up a loud roaring noise like hot summer time. Just before night the pad was replaced and the hive was returned to the cellar for another period of repose. The experiment covered about one hundred days or till the 15th day of March when the bees in the yard began to gather pollen from the elm. On that day the hive was taken to the yard and placed on the summer stand and the heroic little band of workers were carrying in pollen in an incredible short time. These bees wintered perfectly though they were subjected to the severest tests for experimental purposes. In the early part of February they were fed on warm syrup in which flour had been stirred while the spruce was boiling hot, to try what effect such an "impure food" would have on the bees in their confinement, and although the experiment was repeated several times the bees were able to overcome every difficulty by means of the "warming up process."

This experiment leads me to believe that bees can be wintered with perfect success in any tolerably close room if it is so arranged that it can be heated up at the will of the apiarist to a high temperature. Perhaps a furnace under the building would heat it more evenly than in any other way, still it could be heated from a small side room.

The hives should be covered with wire cloth screens so as to give perfect upward ventilation when the cushions are removed preparatory to the heating up process.

To test the matter more thoroughly I extended the experiment to four little weak nuclei with not exceeding a pint of bees each already enfeebled by the first shock of winter, and by my new process I have brought them safely through the winter. They had no sealed stores, hence were fed on syrups at intervals through the winter.

It is proper to say here that none of these bees were fed on *pure food*. The syrup was made of damaged honey mixed with sugar syrup.

The warming up process "so solves the wintering problem."

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We have known of cases somewhat similar to the one related by Mr. Dem-