

the steady temperature and moderate dryness, are not always easy to obtain and maintain. To secure them, two important principals in cellar construction should be observed: the cellar should be so low in the ground that it is very little affected by changes in the outside temperature, and the ground should be well drained.

In a cold region, however, excellent results may usually be obtained, especially if only a few colonies are to be wintered, by boarding off for the bees a portion of the basement of the beekeeper's residence, not near to, nor very far from the furnace, because the furnace and the warmed rooms above help to supply and maintain the required conditions so well that minor defects in the construction of the cellar do not matter, and but very little special attention is needed because the temperature is maintained and regulated by the furnace which burns hotter in the colder weather. The warm air around the furnace rises and causes air circulation, which dries and ventilates. If, in mild weather towards spring, the temperature is apt to rise too high, the cellar may be cooled by opening the basement windows a little. The chamber for the bees should be near or against the wall of the basement. This part of the wall may be banked outside with earth to above the level of the bees' chamber. The bees should not be placed in the same room as the roots.

Where a cellar is specially excavated for the bees, concrete is a good material for the walls, and it is a good plan to build over the cellar the house that is to be used as a workroom, for extracting the honey and for storing bee supplies. If the rooms above the cellar are not heated during the winter, it will be necessary to have the ceiling of the cellar double-walled with a large interspace packed with sawdust or other non-conducting material. The height from floor to ceiling of the bee cellar should be about six and a half feet, and the ceiling should be below the frost line. For good drainage and insulation, the side of a hill is a desirable place for building a bee cellar, and such a location has the advantage that a door can be placed at the floor level for easily bringing the bees in and out. To prevent the escape of heat, there should be one or two inner doors. To carry off the moisture produced by the bees, and to supply ventilation, a chimney should be provided. This chimney may open into the upper chamber.

For every volume of honey consumed, the bees give off an amount of moisture that, if condensed, would make an approximately equal volume of water. If the air of the cellar is already laden with moisture, the moisture produced by the bees will condense in the hive, a condition that if it occurs to any great extent and is long continued is liable to do great injury to the bees.

Very dry conditions are also unfavourable, especially towards the end of a long winter when more or less dysentery has developed. The stores may lose so much water that the bees are unable to remove them from the cells and the colony may die in consequence. This condition occurs most frequently in connection with granulated stores, but it sometimes takes place with stores that do not granulate, such as buckwheat honey and sugar syrup. Soft candy given to a colony suffering from this trouble will harden, and thus it, too, becomes unavailable for food, and the colony may starve.

In Canada, ventilated cellars are liable to become very dry in cold weather because of the small amount of water contained in the outside air that is drawn in. Air at zero can hold only one-sixth the weight of water that air at 45° can hold. The increase in moisture that occurs in a very dry cellar towards spring, as the outside temperature rises, is beneficial to the bees. In a dry cellar, an earth floor may be better than a cement floor.

Some cellars are fitted with an air intake from outside entering the cellar at or near the floor in addition to the chimney outlet. There is no question that by this means excellent ventilation may be obtained, and the cellar may be made dry, but