

Ottawa, and may be sent in any time before the 1st of March, after which the lists will be closed, so that all the samples asked for may be sent out in good time for sowing. Parties writing should mention the sort or variety they would prefer, and should the available stock of the kind asked for be exhausted, some other good sort will be sent in its place.

WM. SAUNDERS,
Director Experimental Farms.
Ottawa, Dec. 22, 1902

Temperature ofthe Hive

There is no difficulty in ascertaining the inside temperature of a beehive when no bees are in it, but when we have a colony of bees in it the case becomes complicated. The temperature of the hive is sometimes the same as that of the bees; at times it is different, and sometimes the difference may exceed 100 deg. Fahr. To understand how this difference between the temperature of the hive and that of the bees comes to exist, we must study the action of the bees in utilizing their temperature in efforts to maintain their existence.

The bees carry on their important work in the hive at temperatures ranging from 80 deg. to 100. They cannot build comb at a lower temperature than 100 deg., but they can raise brood at a lower temperature, say, between 80 deg. and 90 deg. The temperature for storing honey is never constant, it is sometimes above 100 deg., and sometimes much below. As evaporation is a refrigerating or cooling process, when the bees evaporate, the temperature falls, and they have to wait until it raises again

before they can proceed. They evaporate a good deal at night, making use of the heat of the day to raise the temperature. It requires a good many units of heat to evaporate pound of water, and persons fond of mathematical calculations can calculate the foot pounds required to make one pound of honey, assuming what must be nearly correct, viz., that one pound of water has to be evaporated to make one pound of honey. A small colony cannot furnish the foot pounds required for a large crop of honey.

If we put a colony of bees in a bar frame hive with foundation starters the bees will cluster on the starters and commence building three or four combs. The bees may be seen hanging in festoons or loops of strings from their work. This marshalling of the builders is readily understood. When a bee gives up its load of building material it passes on and the next in line takes its place—the come like voters to the polls to cast their votes. No other arrangement would secure steady and continuous work, and the approaching bees gradually raised the temperature to the degree required for comb building. Some separation may be noticed between the cluster working on the different combs, but for a time they form but one cluster. Bees in a cluster at temperature over 50 deg. allow no heat to escape. The bees on the outside are at the same temperature as the surrounding air, and no heat is lost from the cluster. When bees cluster in a hive to build combs the temperature of the hive is not increased by the bees, and when they build combs on the branches of trees in the open air they must keep their heat within their clusters. As the bees extend their combs they commence forming separate clusters between the combs, and for a time the work of the colony is carried