

loss of queens in winter and failure before the honey flow, to be twice as great in the latter. This means that if 10 per cent. will fail in those having only young queens, 20 per cent will fail when the bees do their own superceding. It pays, then, to go in to winter with queens in their prime.

For those who have a fall flow, perhaps the best time to supersede would be then. If natural swarming be practised it would not be hard to keep a simple record—a temporary one would do—so that all old queens would be known. The current season's swarms contain the bulk of old queens.

The next important thing is plenty of stores. Here, too, I speak in the light of experience. I have a good many times lost heavily for no other reason than because there was not stores enough. What is enough? That depends on locations. In my present field, if there is to be neither leading nor equalizing of stores, not less than 50 pounds. We get very little before June 15th, and very little after August 1st. If your location furnishes honey in April and May, or say from frost to frost, perhaps 25 pounds is enough. Whether wintered out or in makes a difference. Let each colony have from 5 to 10 pounds more than they can possibly use. Ten pounds per colony in 100 colonies at 10 cents per pound is \$100. You cannot invest \$100 anywhere to better advantage. That honey in the hives is worth more than cash in the bank. Let the colony have room and plenty of stores. I have for years run for both comb and extracted honey. Every apiarist who has produced both knows that the comb honey colonies are heaviest every time. I found by experience that the comb honey colonies winter best, and the reason is that they have the best honey, closely packed.

Young bees are also a necessity. In this locality nectar is not found except in limited quantities, after September 1st at most. Usually so little comes after July 1st that breeding almost entirely ceases by the middle or latter part of September, and the days will be warm and the bees flying all through October, November and December, so that when January and February arrive they are quite warm. I never had safely started in the spring until there was a goodly number of hatching bees. I want hatching bees in February. If the latter part of winter, or say January and February be very cold, we are almost sure to lose pretty heavily, because the long days fall, and no chance to replenish by young bees in February and March, soon makes a colony to weak too rally.

We find, then, that we must have a lot of

young bees for winter. The colony should have hive room enough that they can have breeding room and plenty of stores at the same time. These are my conclusions after using hives of almost all sizes and shapes. The matter of the size of hive hinges largely on what the location will bear, though I believe it is very, very much more safe and profitable in the long run to err in having the hive too large, rather than too small.

PACKING.

I surely believe in some protection in winter. I have had several years experience in Iowa, and suppose that Canada in the main, is somewhat colder. My present location, N. E. Colorado, has as great range and more abrupt changes, than Southwest Iowa, but the atmosphere is dry, the ground nearly always free from snow, and sunshine nearly all the time. It is very common for the temperature, in winter, to be up to 30 to 50 in the heat of the day, and near zero at 9 or 10 at night. Notwithstanding the abrupt and extreme variations, the changes are not felt by man or bear as a much less degree would be felt in most climates.

For this climate I would pick with the hives fronting south, and leave the fronts open, packing 3 or more inches on the back and sides, while the top should have not over 2 or 3 inches and the cover close down on the packing material. The sun shining so much will make the hive fronts so warm that the bees will cluster against the warm part like a kitten against a warm brick, while the shallow packing on the top with the cover resting on it will heat through and through, adding warmth to the interior and taking out moisture that accumulates about the top. I think this is a good idea in the spring also, for it helps the colony in breeding.

While in Iowa I wintered both in cellar and out doors, and if I were there now I would cellar winter. My experience was decidedly in favor of the cellar. I feel confident that in those earlier days we wintered at too low a temperature—about 35 to 45 F.—and without proper ventilation of the hives. With so low a temperature as 30 to 40 the tendency is to stagnate circulation, and precipitate moisture in the honey, and on the hives. A temperature of 40 to 50 with hives well ventilated, I think is the better way. Of course the strength of the colony has a bearing on the temperature and the matter of ventilation. A very strong colony with a good upward ventilation would stand a higher temperature of the cellar than if not ventilated. Whether in the cellar or out doors, there