

that all have enough to carry them through. But to handle three or four hives is to become an expert, and if the readers will only try it they will soon find that, after a little, they can count off honey, brood and bees as fast as they can handle frames, which, together with the satisfaction of *knowing* just what each hive contains, will never allow them to go back to the "lifting-guessing" plan again.

Then I have also learned a new plan of uniting nuclei or queen-rearing colonies for winter, so that they can be ready early instead of being only poorly fixed at best when left till October, as they usually are. It is this:

The latter part of August, select the strongest ones from the lot, or as many as you desire to winter, and go to the others and take all but a little brood away from them, dividing said brood among those selected for winter. In doing this I take all the bees along (less the queen) that adhere to their frames. These frames of bees and brood are set right in the selected hives, and so far I have not had a single bee or queen killed. The bees hatching from this brood are the ones which go through the winter, and I like uniting in the brood form much better than in the bee form. The bees left in the now small nuclei are used up, and mostly die of old age by the time I am through queen-rearing for the season.

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IN-AND-IN BREEDING.

It is a well settled principle in stock raising, that for vigor, constitution, longevity, general usefulness, and therefore profit, it is necessary to avoid the breeding together of near relatives, or if done at all, it must be with the greatest care and good judgment. Vital statistics also show that where this law of breeding is violated in the human family, by the inter-marriage of near relatives, punishment is swift and sure. Imbecility of mind, impotency of body and barrenness are frequent results. In the vegetable kingdom too, are many illustrations of the manner in which nature has guarded the marriage relation of plants. In some plants the male organs are confined to one individual and the female to another. In others, although the flowers are hermaphrodite, the stamens and pistils ripen at different times, making it impossible to closely in-breed. The pollen must be carried or blown from flower or flower in order to breed at all. Bees are the chief agents in bringing about this cross-fertilization, as they visit so many flowers of the same species of each field, and hence are almost sure to fertilize the

plant visited with pollen of others not closely related. Thus varieties are multiplied by crossing, and vigor is maintained and increased.

Now if these principles of breeding are recognized in the above mentioned examples, why will they not apply with equal force to the breeding of bees?

Can it be they were created for the purpose of more surely cross-fertilizing the vegetable kingdom and they themselves not subject to the same law? When bees are kept isolated and no attention is paid to their breeding, is it any wonder that they degenerate and cease to be profitable? Were it not for the fact that queens and drones delight to fly quite a distance from the home yard, and in so doing meet others from apiaries two or three miles apart, often, we think the disastrous effects of in-breeding would be more apparent than they are now. But it is quite apparent in many localities even in this age of improvement and knowledge. How many places where bees have been kept for twenty-five years without any attempt at improvement in the way of introducing queens and drones from a distance? We often hear the term, "scrub cattle" applied to cattle where no attempt has been made to improve them by judicious breeding. The term, "scrub bees" would be just as appropriate in some localities. They need breeding up just as well as scrub cattle or scrub hogs. Some people act on the assumption that a bee is a bee, and that is all there is to it. If they have a hive with bees in it, that is all that is required. If they get any honey, well and good, if not they can't help it for "it's all luck anyhow."

What a wonderful impulse was given to the business of producing honey in this country on the introduction of the Italians. Was it because the imported bees were any better in their own country than any other pure race under like favorable surroundings? Nay, verily, but it was the *cross* on our native stock that produced the wonderful results. Everybody admits that for business the crosses are superior to any pure race. The races in their purity are very desirable. The purer the race the more prepotency in the animals bred from representing that race. If we start with scrub cattle we want a cross with something removed as far as possible by judicious selection and breeding that the improvement may be apparent at once.

The same rule will apply to bees. To "breed up" there must be the pure race on one side. But one cross is not sufficient.

What would be thought of the man's judgment who should attempt to improve his stock by only one cross with a thorough-bred short horn bull, and then go back to the "scrubs" again?