

know a horse from A to Z. To manage bees one must study their habits and disposition, and learn as far as possible why and how they do things. This takes time, but it is well spent.

#### Difficulties.

Experiments in Apiculture are of necessity far more complicated than in almost any other line of agriculture, because there are so many variable factors to be considered. This work has not to my knowledge been taken up in this way before. It is a very valuable field, and whether it is considered worth continuing will depend largely on the care and earnestness with which the experimenters conduct the work. If all the conditions laid down in the instructions cannot be fulfilled by the experimenter, he should get them as nearly as possible and state definitely in his report just where he was unable to have things according to direction. He should read the instructions carefully several times until perfectly familiar with them before going at the work, then nail them to the wall of the work room for frequent reference.

#### Equipment.

To get value from this work it will be necessary to conduct it in a business-like way, and make a little initial outlay for necessary equipment. While it is possible to handle bees in a limited way without tools or protection, most successful apiarists find that three things are indispensable,—First, a good smoker, one which will hold ever in readiness a volume of smoke, not to be used cruelly, but to control the bees of a colony under all circumstances. The majority of the smokers now in use in small apiaries should have been in the museum years ago. Second, a good veil, held out from the face by the rim of a hat, and drawn close around shoulders and chest so no bee can get near the face. The material must be black, light weight and strong, without dots or figures to interfere with the sight. Third, a hive-tool, the commercial hive

tools are good, or a screw-driver and a wall-scraper used by paper-hangers will answer. A quantity of wired frames and full sheets of medium brood foundation will also be needed.

#### System.

To control swarming one must inspect the bees often, so as to know their condition all the time. This requires system. One day of the week should be set aside for the apiary, not necessarily the whole day if there are only a few hives. Weather or other conditions may cause the apiary work to be postponed till the next day; but next week the regular day should be resumed. System goes a long way towards success in anything. Of course the bees should be visited and studied as much as possible, but one particular day of the week should be the day for regular apiary work.

#### The Spring Cleaning.

Let us suppose that Monday is "Apiary Day." On the first fine Monday in April or May, when a little honey is coming in, the hives should be overhauled, and their insides, as well as the frames of combs and queen-excluders, scraped clean of superfluous wax. This can be done by transferring the combs and bees of each hive in succession into a clean hive. In this operation care should be taken to expose brood as little as possible to hot sun, cold wind or robbers, and to keep the combs in exactly the same order. It will be possible at this time to choose the colonies for the Experimental group.

#### Choosing Experimental Group.

Choose an even number of colonies for the experiment, preferably not less than ten nor more than twenty. They should be as nearly uniform as possible in every way;

They should all have the same quantity of bees, brood and honey. They should all have the same race of bees.

The queens should all be of the same age. The hives should all be the same

make. They should each have a queen-excluder between the brood and the super.

There should be the same proportion of drone to worker comb chambers, and it should be the same in all.

There should be the same proportion of drawn combs to foundation in all.

The hive entrances, during the first few months, should be small, so the bees are not crowded out of the entrance. Watch this carefully. If an entrance is too large robbers, while one that is too small will induce swarming.

Bottomboards should be the same for all the hives, so the entrance can be enlarged when necessary.

The hives, if painted, should be the same color, and should be painted in the same direction and have the same exposure to wind, sun and rain.

The hives should be under the same shade, which will be the same from the sun from 10 a.m. to 4 p.m.

Neatness should be observed in all apiary arrangements.

#### Group Division.

Divide the Experimental colonies into two equal lots. Mark the colonies of one lot and B of the other lot. Uniformity should be obtained amongst individuals by making them have in each the same number of queens, etc. Clip all the queens.

Now throughout the whole of the experiment, manage lot B just as you would manage the whole apiary if you had no other co-operative experiments. Any change in your management will spoil the experiment, so give a fair comparison between the two groups of managing and ours. Lot A are to be managed according to the instructions given below.