

Two-queen Colonies can Increase Honey Production

WITH correct management the use of two queens per colony for part of the season can increase the honey crop considerably without adding to the number of hives, and serve the threefold purpose of effectively controlling swarming, enabling requeening to be done efficiently, and creating a greater bee force. The period for which it is necessary to retain both queens in each colony depends on locality and can thus be determined only by experience, though seasonal conditions may prolong or reduce the normal period. This article by R. S. Walsh, Apiary Instructor, Auckland, describes how the two-queen system has been used successfully for several seasons by a beekeeper in the Auckland district.

MISS E. THORPE, of Opaheke, has operated an apiary of 45 colonies under the two-queen system for a number of years, and though this locality is by no means first-class beekeeping country and is heavily stocked with bees, she has achieved some remarkable results. In the 1944-45 season, which was an average one for the Auckland district, she obtained 90lb. per colony, and in the extremely-poor season of 1945-46 she averaged 74lb. per colony. In the past two seasons, which have been good, she has had a yield of 170lb. per colony.

The two-queen system should succeed in any district suited to beekeeping. However, unless there is some nectar available in November, the cost of feeding would probably be prohibitive. It is of great value where honey flows are of long duration, but even during a short flow it has proved capable of excellent returns obtained from hives headed by a single queen.

Hives in some districts are slow to build up in the spring, and though this may be considered a disadvantage, it is by no means so, as it is unnecessary to install the second queen before the main hives are well forward. It would serve no useful purpose to set the operation in motion too early, as a cumbersome amount of equipment

would have to be adjusted later, resulting in unnecessary labour and loss of time.

In the Opaheke district preparations for swarming become evident about mid-October, and it is about this time that the hives are prepared for the first step in the two-queen system. Miss Thorpe breeds her own spring queens, as she considers the raising of cells and their introduction to the divided portion of the hive more successful than efforts to persuade the bees to accept mated queens at this period of the season. This difficulty is not likely to be experienced in every district, and therefore where acceptances of introduced queens are reasonably good a considerable advantage will be gained. It is the opinion of the writer that if a reliable source of supply is available, the introduction of laying queens, particularly in late districts, will greatly assist in the accomplishment of the plan.

Division Boards

Colonies should be divided for the reception of the second queen at any time between mid-October and early November according to swarming indications and local knowledge of the likely date of the commencement of the main honey flow. Enough division



A hive divided by a wooden division board.

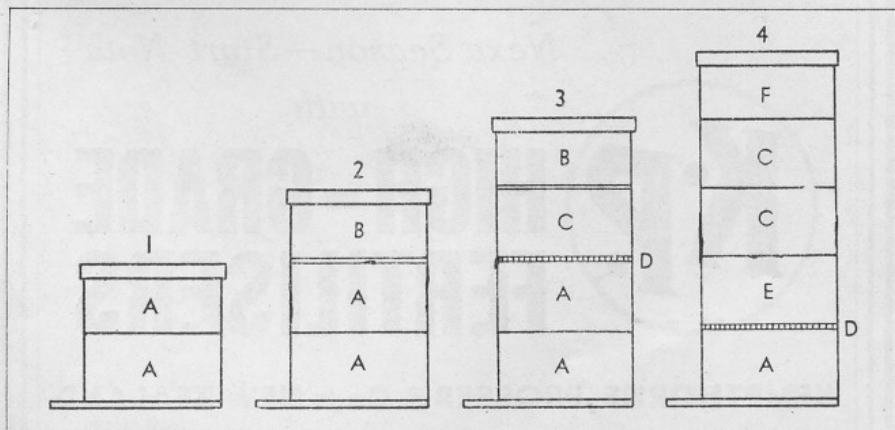
boards should be available for all hives considered strong enough to be divided successfully. Colonies with less than eight frames of brood would be unsuitable, but any of these weaker hives with good queens could be brought up to desired strength by using brood from very strong colonies.

Timber 1/4 in. thick, heavy tin with wooden rims around three sides, or double screens can be used for division boards. Boards made from wood give good service if made from a single block of timber, but if made up from two or more lengths, the heat of the colonies will almost certainly shrink them, allowing the bees through. Division boards made of tin are excellent, but are inclined to sag from the weight of the colony resting on them when, as is necessary at times, both hive and bottom board are lifted to the ground. Double screens are perhaps the best type of division or bottom board for the purpose. Wire gauze is attached to either side of a wooden rim 1/4 in. thick, and a 3 in. by 1/4 in. cut is made at one end to provide an entrance for the bees. The 1/4 in. space between the screens prevents any communication between bees in either colony and has the advantage of permitting the heat of the stronger, lower hive to reach the division above.

Making the Division

The division or nucleus is made from what may be termed the parent colony. Four frames of hatching brood adhering bees, two frames of honey and pollen, and three empty combs are arranged in a super, which is set upon the division board, and the whole is placed over the main hive. An extra frame of bees should be shaken into the nucleus, as only the young bees will remain with the division, and for this reason as much hatching brood as possible should occupy the brood frames supplied. The space left in the parent colony should be filled with good, empty brood frames. If cells are to be used, the entrance of the nucleus should face toward the rear of the main hive, but if laying queens are introduced, entrances may face the same way as the parent colony.

It is advisable to block entrances of newly-made divisions loosely with green grass, and care should be taken,



The four steps in the two-queen system. 1—A two-storey colony before making the division. 2—Colony after division, with new queen introduced. 3—Supering of the parent hive. 4—Colony after reduction to single-queen unit, with brood and honey adjusted. A—Brood chamber. B—Division. C—Super with honey. D—Excluder. E—Unsealed brood. F—Sealed brood.

of course, to see that the queen is not transferred with the bees from the parent colony. The caged queens or cells, whichever are used, should be introduced immediately. As with all manipulations in bee culture, the operation will be more successful if there is a light nectar flow.

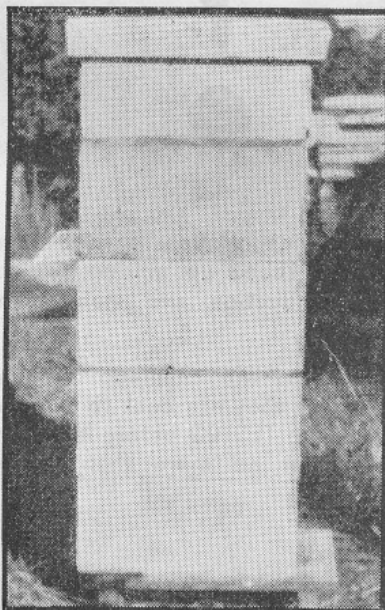
The desire of the bees to swarm will almost certainly now be quelled, but it will be necessary to examine the nuclei in eight days and remove any cells that may have been started. When the young queen mates or is safely introduced it is advisable to clip her wings as a means of recording her age. If the early honey is of poor quality, the extra force of bees that will be reared from it will ensure the elimination of the bulk of it and its replacement by a larger surplus of good-quality honey later in the season.

Early Supering

Within a fortnight, according to weather conditions and available nectar sources, additional room may be required by the parent hives. The division is lifted off and a queen excluder added to all parent colonies showing signs of congestion. A super of drawn combs is placed above the excluder and the division is then set above the extra super.

The division should be examined at this time, as it is imperative that the queen should have ample room for expansion of the brood nest. As it is not desirable to permit her more than ten combs in which to lay, it is important that these brood combs remain reasonably free of honey, and if necessary the division should also receive an additional super for honey storage.

As in the case of the parent colony, a queen excluder should be placed above the division and a super of combs added. A half super is quite satisfactory, but all combs in the brood nest that have been filled with honey



Parent colony and division with extra super accommodation provided.

USE OF TWO-QUEEN COLONIES



Portion of Miss Thorpe's apiary, showing hives in the early stages of being united by the paper method.

must be replaced with empty brood combs. The division may be given extra ventilation by raising the brood chamber on 1/2 in. blocks placed at the corners of the end at which the bees enter.

Reducing to Single Unit

It is not possible to set a specified time limit for reducing the dual-queen colonies to a single-queen unit, as this would probably vary from year to year in an average district.

The aim of the whole plan is to have the colonies reach their maximum strength immediately before the main honey flow. If both queens are retained too long, the beekeeper will be faced with readjusting a large amount of equipment and much heavy lifting.

When colonies have been reduced top supering is practised for the remainder of the season. The time for final manipulation in the Auckland district in a normal season is the first week in December. As all colonies do not make the same progress, those that have not reached the desired standard by that time may be reduced later or assisted with brood and bees from any weaker hives in the apiary. The old queen is found and destroyed, the excluders and division board removed, and the bees of both parent hive and division united by the paper method. The bees are then allowed a week in which to settle down before the brood and honey are readjusted. At the end of this time the young queen is found and confined to the lower brood chamber by means of a queen excluder. She is given two frames of hatching brood and seven or eight frames of drawn comb. The whole of the unsealed brood, followed by the supers containing the honey and then the sealed brood, is placed immediately over the queen excluder. In eight days each frame of brood above the excluder must be examined for queen cells and any discovered should be destroyed.

The return to a single brood chamber at the beginning of the main honey flow appears satisfactory in the Auckland district, but a double brood

chamber may be more suitable for some districts. The arrangement of the brood where two brood chambers are used is approximately the same. The lower brood chamber should consist of four hatching frames of brood and five empty brood combs, and the unsealed brood should occupy the upper chamber. The honey should be placed immediately above the excluder and the rest of the hatching brood above the honey.

The period in which both queens occupy the one hive is ended when they have achieved the purpose for which they were intended—the control of swarming by the division of the colony, the introduction of a young queen, and the final adjustment of the brood with consequent distribution of bees. By this method requeening of colonies is accomplished under ideal conditions and hives are populated by enormous numbers of bees reared on the early honey of poorer quality.

Wintering

In the Auckland district colonies continue to breed heavily until the early winter months, and if the whole of the winter stores are left on colonies in the autumn, unrestricted breeding continues, with consequent consumption of stores intended to carry the bees through until the following spring. Miss Thorpe solves this problem by wintering the bees in a single brood chamber and keeps the bulk of the stores in the honey house. The shortage of honey restrains the queen, and breeding is kept in check by feeding out the frames of honey sparingly until the queen is required to accelerate her output of young bees. Another advantage claimed for wintering in one brood chamber in this district, where pollen is over-abundant, is that the bees use up all the pollen in the brood nest, whereas, if wintered in double brood chambers, they would exist almost entirely on fresh pollen. It is sometimes necessary to winter a division over a parent colony, and where this is done an empty half super should be placed between the two colonies as an aid to ventilation.