

The Hopkins Method of Queen Rearing

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The Hopkins Method allows the beekeeper to control to a large degree the quality and quantity of virgin queens, while doing the least amount of manipulation. Since 1984 when “The Hopkins Method of Queen Rearing” was first printed in the American Bee Journal many things have changed in the world and in the beekeeping industry. Some things improve with age, (Myself not included) and validate truths behind “good” ideas and practices. The Hopkins Method of Queen Rearing is one of these good ideas that can be put into practice easily by all beekeepers.

For all the reasons that everyone is already aware of, rearing your own quality queens for yourself or for sale to others is a better idea today than it was in 1984. It is the rare beekeeper who hasn't thought about raising his or her own queens. Generally the “problems” associated with raising your own queens are the complex instructions given in contemporary beekeeping and queen rearing books, the vast amount of specialized and costly queen rearing equipment that you are told is necessary, plus seemingly endless and time crucial manipulations of the queen, egg, and larva.

Believe me when I tell you that you can raise more quality queens than you probably can use yourself with virtually no specialized equipment or manipulation. The Hopkins Method of Queen Rearing is as good and probably better for you now than when it was first introduced over 80 years ago.

Please read on.

G. W. Hayes, Jr.

April 1991 Many beekeepers reach the point in their interest in bees and beekeeping where they would like more control over the honey bee stock that they are using. For many the thought of producing their own queens holds some fascination.

Queens are the focal point of either success or failure in a season and most beekeepers want some control in the type of honey bee stock that they feel will be best suited to their environmental conditions and management practices. When a beekeeper reaches this stage in his beekeeping career, the next step is to purchase queens of advertised ancestry. These commercially produced queens usually perform well for the beekeeper regardless of the lineage. But, there is always one race or strain that has a special appeal to the beekeeper, whether it be because of honey production, reduced swarming tendencies, disease resistance, or even color. The beekeeper, if he is like most of us, decides that he would like all of his colonies to perform like a few of the exemplary ones. The expense in purchasing queens to restock even a relatively small number of

colonies can be rather high at \$5 to \$10 each. “That is too much money! Maybe I can raise my own queens,” is the common response by many beekeepers. Out comes the “Hive and the Honey Bee,” “ABC, XYZ” or maybe even one of the specialized queen rearing books on the market. When the beekeeper peruses his reference books he discovers that there is more than one way to raise his own queens. There is the Miller Method, the Alley Method, the Smith Method, the Doolittle or Grafting Method, and a variety of paraphernalia to make these systems work; queen cell cups, grafting needles, grafting bars, etc., etc. Then you have queenright cell builders, queenless cell builders, cell starter colonies, nursery cages, mating nucs, feeding, robbing and everything in between. For a beekeeper with only a few colonies the literature can get rather overwhelming. For the beekeeper with hundreds of colonies, it becomes overwhelming from the standpoint of equipment and labor involved. This is not to say that these methods do not work or are inefficient because they do work well enough to base a whole queen rearing industry on them.

The Doolittle or grafting method is the method most often employed by queen breeders. The reason for this method of removing the appropriate age larva and redepositing it in an artificial queen cell cup is because it is exceedingly difficult to transport individual eggs and a method was needed to align the larva in the proper vertical queen cell position. To be sure that the queens produced from this method or the best possible there must be present larva of the youngest possible age grafted into a queen cell cup that is primed with royal jelly or even double grafted so that the larva is constantly in contact with the vital food that makes the worker larva a queen. The primed and grafted queen cell cup should be affixed in the vertical position on a special horizontal grafting bar attached to a frame that is put into a queenless colony that will recognize these artificially prepared queen cells as potential queen replacements for their colony. The proper feeding by the young “nurse” bees with ample amounts of nectar and pollen will assure that the developing queen larvae will be copiously fed and the virgins will be in prime condition and form on emergence. (I have purposely left out some steps and procedures that should be present for queens to develop to their optimum. These can be easily obtained from some of the references already mentioned).

This method is somewhat labor intensive, but yields reasonably good queens. I do have one objection and that is the manipulation of very young developing larva which at the optimum age are the size of a comma on this page. Without the utmost preparation and care, the larva can be easily damaged in the grafting procedure. If the queen cell is not properly prepared with royal jelly, all this effort placed on rearing quality queens will be wasted.

With this in mind, the next obvious step is to devise a means by which the larva is not handled directly at all. The general classification of this method would be “cell punching.” In this method the entire worker size cell with an egg or appropriate age larva is removed by cutting or coring it out with a variety of tools. Two of the hazards of grafting (mechanical damage and starvation) are

eliminated. Since the whole cell is removed, the larva is not touched directly in any way and it is removed intact with its food supply uninterrupted. The cell is now mounted on the exact type bar used for mounting artificial queen cell cups in the Doolittle Method.

This “cell punch” method is the method that I have used until recently. The selected queen is isolated on a frame of drawn medium brood foundation. After two to two and one-half days this frame is used to cell punch eggs, thereby assuring that the youngest possible age larvae will be used for queen-production. The younger the larvae that are used, the more ovarioles or egg-producing structures the queen will have and thus her vigor and productive life will be greater. This method is still somewhat labor intensive, but it eliminated the hazards that I was concerned about and so I was satisfied with the procedure and the results.

One day I was talking with Dr. George Ayers of Michigan State University, a fellow beekeeper and queen breeder. During the conversation he mentioned that he needed some medium brood foundation. The thought immediately hit me that the only people who use medium brood foundation are queen breeders who use the cell punch method. I asked him if he was rearing queens by the “cell punch” method and he said no he was using the “Case Method.” My comment was, “What in the world is the Case Method?” In a nut shell I was told it is the removal of a complete frame with eggs or appropriate age larvae from a selected breeder colony. This frame is laid on its side supported and elevated an inch or two above the brood nest in a queenless colony. The queenless colony simply starts feeding these cells that are in the proper cell position and many queens can be raised.

Having never heard of this method and realizing that it is a perfectly sound idea, I endeavored to find out more about the “Case Method” of queen rearing. This method of queen rearing was only called the “Case Method” in the United States. It was actually developed by a Mr. I. Hopkins and published in New Zealand in 1911.(1) Frank Pellet in his book “Practical Queen Rearing” of 1918 devotes several pages to the then new “Hopkins Method” of queen rearing. To quote from Pellet’s “Practical Queen Rearing,” “Many extensive honey producers who desire to make short work of requeening an entire apiary, and do not care to bother with mating boxes or other extra paraphernalia, make use of the Hopkins Method.

To begin with, a strong colony is made queenless to serve as a cell building colony. Then, a frame of brood is removed from the center of the brood nest of the colony containing the breeding queen from whose progeny it is desired to rear the queens. In its place is given a new comb not previously used for brood rearing. At the end of four days this should be well filled with eggs and just-hatching larvae.

This new comb freshly filled is ideal for cell building purposes. The best side of the comb is used for the queen cells and is prepared by destroying two rows of worker cells and leaving one,

beginning at the top of the frame. This is continued clear across the comb. We will now have rows of cells running lengthwise of the comb, but if used without further preparation the queen cells will be built in bunches so that it will be impossible to separate them without injury to many of them. Accordingly, we begin at one end and destroy two cells and leave every third one intact.

We now have a series of individual worker cells over the entire surface of the comb with a half inch or more of space between them. This prepared surface is laid flatwise with cells facing down, over the brood nest of the queenless colony.

Some kind of support is necessary to hold the comb far enough above the frame to leave plenty of room for drawing large queen cells.

If all conditions are favorable, the beekeeper will secure a maximum number of cells. From 75 to 100 fine cells are not unusual. By killing the old queens a day or two before the ripe cells are given, it is possible to requeen a whole apiary by this method with a minimum of labor.

By laying the comb on its side, the cells can be removed with a very slight effort and with a minimum of damage.

The "Hopkins Method" works as can be seen from the accompanying photographs. If the above original instructions are followed, a large amount of queen cells can be produced as simply and easily as any method that I have seen or tried. The only problem, if it is one, is that this method produces too many queen cells. Unless the queenless colony you use as a starter/cell builder is at peak strength with large numbers of young bees, there may be too many queen cells to be properly cared for. Not every beekeeper needs fifty to one hundred queen cells at a time. If your queen needs are less, simply reduce the number of undamaged worker cells.

To damage or destroy the rows of worker cells on the comb face simply use your hive tool or a small stick to scrape across the cells to the mid-rib as if a line were being drawn. On new comb this is done quickly and easily.

The final concern is how to remove the queen cells after they have been capped. Remove the frame with all the adhering queen cells as soon as they are capped. Place the frame on its bottom bar and cut around each queen cell with a knife, remove it and put it in your queenless colony to be requeened. The sealed queen cell is then lightly but firmly pressed into the surface of a comb, with developing brood, to be placed in a queenless colony to be requeened. The cell should adhere snugly in the depression in the comb of developing brood. The young nurse bees that will take care of the unsealed developing brood and the sealed brood that may emerge with the virgin queen will accept her immediately as she is the only queen that they have had recent contact with. Two

or three sealed queen cells should be introduced into the queenless colony in this fashion. This will insure that at least one virgin will be successful in emerging, mating and then laying fertilized eggs. The earlier that this can be done while the virgin is still in the larval stage, the less possible danger may be done. If the queen cells are removed and manipulated late in the pupal stages, the soft developing wing and leg tissues may be damaged.

Other than nothing at all, what could be more easily done to raise quality virgin queens? The Hopkins Method just described allows the beekeeper to control to a large degree the quality and quantity of virgin queens, while doing the least amount of manipulation. No grafting, no specialized tools, no cell bars and little chance of the beekeeper making accidental errors.

As I have said in the past, beekeepers as a group are tinkerers and dabblers. They like to be intimately involved in “helping” their colonies by sometimes constant and calculated manipulations. Honey bees are amazingly flexible in adapting to various environmental influences, whether it’s frigid temperatures, poor nectar sources or the well meaning keeper of the hives. Understanding the reason bees do what they do for survival of the colony is what makes the “Hopkins Method” of queen rearing a pristine example of how the beekeeper can benefit from using the honey bee’s innate desire to raise the largest number of quality replacement queens, while doing the least amount of labor to accomplish it.

REFERENCE

1. Phillip, E. F.: Beekeeping 1937; p. 447.

The Classroom

by Jerry Hayes
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Q. I enjoyed reading your article on “The Hopkins Method of Queen Rearing”. I would like to know where I might obtain more specific information and instructions on this specific method. It appears that this method is so simple and fundamental that it is ridiculous.

Thanks for any assistance you might give me.

James A. Cosgrove Metairie, Louisiana

A. Thank you for your letter and interest in my article on the “Hopkins Method of Queen Rearing,” that appeared in the May 1991 American Bee Journal.

You asked for specific information and instructions on this method of queen rearing. A copy of the section on the Hopkins Method from Frank C. Pellett's 1929 book, "Practical Queen Rearing" appears below. As you can see, the information is simple and direct. I know many feel it is too simple and easy and as a result do not even try this method. It is a shame that in our society we think that the more complicated something is, the better it is. Not so!

BIG BATCHES OF NATURAL CELLS BY THE HOPKINS OR CASE METHOD

Many extensive honey producers who desire to make short work of requeening an entire apiary, and who do not care to bother with mating boxes or other extra paraphernalia, make use of the Case method, which has been somewhat modified from its original form. This method is advocated by such well known beekeepers as Oscar Dines of New York and Henry Brenner of Texas. The plan was first used in Europe.

To begin with, a strong colony is made queenless to serve as a cell building colony. Then a frame of brood is removed from the center of the brood nest of the colony containing the breeding queen from whose progeny it is desired to rear the queens. In its place is given a tender new comb not previously used for brood rearing. At the end of four days this should be well filled with eggs and just hatching larvae. If the queen does not make use of this new comb at once, it should not be removed until four days from the time when she begins to lay in its cells. At that time nearly all the cells should be filled with eggs and some newly hatched larvae.

This new comb freshly filled is ideal for cell building purposes. The best side of the comb is used for the queen cells and is prepared by destroying two rows of worker cells and leaving one, beginning at the top of the frame. This is continued clear across the comb. We will now have rows of cells running lengthwise of the comb, but if used without further preparation the queen cells will be built in bunches that will be impossible to separate without injury to many of them. Accordingly, we begin at one end, and destroy two cells and leave one in each row, cutting them down to the midrib, but being careful not to cut through and spoil the opposite side. Some practice destroying three or four rows of cells, and leaving one to give more room between the finished queen cells.

We now have a series of individual worker cells over the entire surface of the comb, with a half inch or more of space between them. The practice varies somewhat with different beekeepers beyond this point. However, this prepared surface is laid flatwise with cells facing down, over the brood nest of the queenless colony, first taking care to make sure that any queen cells they may have started are destroyed. In general, it is recommended that the colony be queenless about seven days before giving this comb. By this time there will be no larvae left in the hive young enough for rearing queens, and the bees will be very anxious to restore normal conditions. Some beekeepers simply take away all unsealed brood, rather than leave the bees queenless so long.

As generally used, this method requires a special box or frame to hold the prepared comb. This is closed on one side to prevent the escape of heat upward and to hold the comb securely in place. Some kind of support is necessary to hold the comb far enough above the frames to leave plenty of room for drawing large queen cells. It is also advisable to cover the comb with a cloth which can be tucked snugly around it, to hold the heat of the cluster. By using an empty comb-honey super above the cluster, there is room enough for the prepared comb and also for plenty of cloth to make all snug and warm.

Strong colonies only should be used for this, as for any other method of queen rearing. If all conditions are favorable, the beekeeper will secure a maximum number of cells. From 75 to 100 fine cells are not unusual. By killing the old queens a day or two before the ripe cells are given, it is possible to requeen a whole apiary by this method with a minimum of labor. According to Miss Emma Wilson, it is possible to get very good results by this method, without mutilating the comb, although it is probable that a smaller number of queen cells will be secured. By laying the comb on its side as practiced in this connection, the cells can be removed with a very slight effort and with a minimum of danger.

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