ceeded in rearing fine Italian queens as late as October, when the weather was very fair, which were fertilized by such selected drones.

I think it wise, as a rule, not to attempt to rear any great number of queens until June, when the interval of scarcity after apple-blossoms has passed, and the subsequent flow of honey has commenced. The point which I desire to impress is this, that queen-rearing should be carried on, as far as possible, when the bees are gathering honey most abundantly. There is probably no more auspicious time than during the swarming period. I would avail myself of every opportunity to preserve the oldest and best developed queen cells, from suitable stock, where preparations had been made for swarming.

HOW TO REAR QUEENS.

I here give place to a paper by M. Quinby, which has received the hearty approval of many of our most capable bee-keepers. He says:

"* * * I have studied well the conditions that produce good queens, as well as inferior ones, and I have never yet found a queen that will duplicate herself on every occasion, unless it is one of the common variety. I can count a few dozen, perhaps, after which will be some variation. I have settled down pretty much on one system:

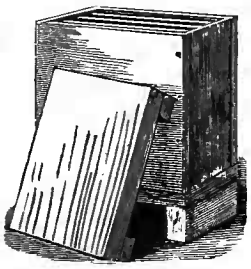

Fig. 56.—NUCLEUS BOX.

"First, make a nucleus box, five inches wide, seven inches long, and six inches high, holding, at least, three combs (fig. 56). These combs should contain honey enough to last two or three days, or more. Now, go to the hive from which you are breeding, and obtain a piece of worker-brood comb, nearly three inches long and about

half an inch wide (fig. 57). This should be new, if possible. The larvæ should not be less than two nor more than three days old, from the egg. In the center of the middle comb cut a space three inches long by an inch deep. Insert this piece of brood, which is supported at the ends, by the shape, as shown in fig. 58. Allow no more brood in the box. In the middle of the day when the bees are flying, take out from a strong colony that is

Fig. 57.—COMB, WITH BROOD FOR QUEEN RAISING.

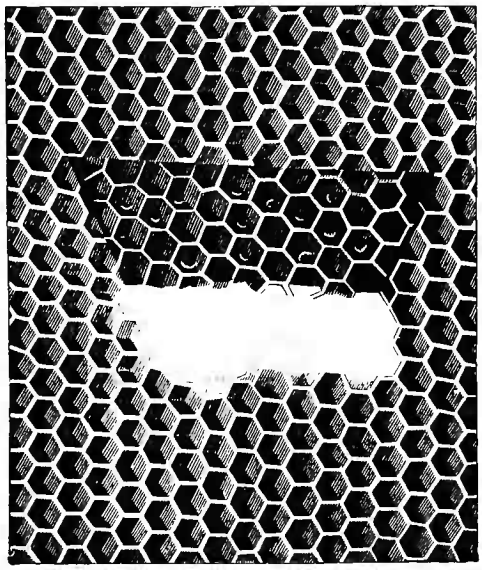

Fig. 58.—COMB, AS ABOVE, INSERTED IN COMB.

maturing brood, a little less than a quart of bees, nearly all of which will be young bees, which are thought to be better nurses. Shut them in the nucleus box thirty-six or forty-eight hours, and then let them out. They will

build several queen cells (fig. 59). If the brood was just the right age, they will be likely to hatch in ten days, not less. At the end of that time, look early in the morning, and if you can cut any of them out without injuring the others, do it, but leave one. If joined so that you will have to destroy a part to separate them, leave them, but examine several times through the day, and if any hatch, remove them at once ; I have found four hatched, at one

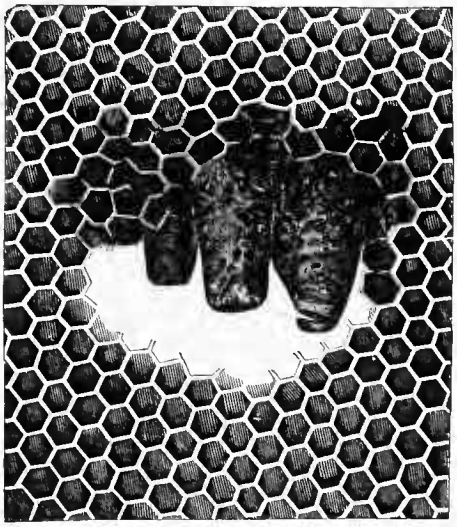

Fig. 59.—QUEEN CELLS ON COMB.

time. The cells that have been cut out may be used to supply other nuclei, or they may be transferred to the queen nursery (fig. 60). I claim that I can raise, thus cheaply, as good queens as can be obtained. I feel like saying better than those will average, where a full colony has been employed to raise a dozen. I know that I am on delicate ground. Some of my best friends, who are earnest in their wishes to advance the science of bee-culture, will pity, perhaps condemn me. If the reasons that I

give are not sufficient to sustain the system, let it fall; I want it upheld by merits of its own, or not at all.

"How is it with natural swarms? Ten or fifteen cells are often made where a swarm has issued. The first are made under the impulse of the swarming fever. If the swarm issues before any are sealed over, very many will be started at once. Some of them, however, after the swarm has left, receive much less attention than the first ones did. If want of attention makes an inferior queen in case of artificial rearing, can any one say why the same causes will not produce the same results here? We are not likely to ascertain for a certainty, as all except two or three of the first are destroyed. But when we come to imitate natural swarming, in a sense, by removing a queen from a full stock, and claim better queens in consequence, we can test it somewhat. We find in the attempts to replace the mother, a still greater diversity in the time of starting cells. It is reported that some queens will hatch in nine days, some in ten, others sixteen and eighteen, and at all intermediate times. Those hatching under ten days are claimed to be deficient in development, and short-lived. I never had any nine-day queens, and cannot say. Those that are slow to mature are quite apt to be deficient. I do not say that some such do not make beautiful queens, but the average is no better than ten-day queens.

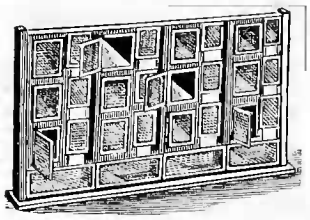

Fig. 60.—QUEEN NURSERY.

"When first deprived of the mother, the bees make cells over larvæ, without seeming to care much for a convenient place; after the first impulse is over, they find a good place occasionally, and commence other cells, but having a large number already, they work as if they cared little for these last. They seem to nurse such for want of

something to do—never expecting to need them. They may be all right, except late, and just sealed over when the first one hatches. It is hardly possible to cut out such an unripe cell, and get from it a good queen. Until a queen has its shape and begins to get color, it is very delicate and tender. The cell is twice the size necessary to hold it, and if it is cut off, and only turned over—even if carefully done—it falls from one side to the other, and is bruised badly, making it a cripple, and inferior in color.

"Some of the advantages of the nucleus system may be found in the particular care of a few points.

"1. I want new comb for the brood, as cells can be worked over out of that, better than from the old and tough. New comb must be carefully handled. If none but old, tough comb is to be had, cut the cells down to one-fourth of an inch in depth. The knife must be sharp to leave it smooth, and not tear it. The bees will enlarge and turn downward such shallow cell nearly as well as on new comb.

"2. Clean comb in condition to lay in, must be given the bees in the brood hive frequently, perhaps every day, if rearing many queens. Look every day, so as to know just when the queen lays in any comb. You should cut out the brood in five or six days from the time the eggs are laid, and be sure of queens hatching in ten or eleven days afterward, according to the age of larvæ. As all the eggs in the comb were laid within a few hours of each other, all will mature about the same time; such cells can be cut out and handled without injury. A colony may be deprived of its queen, and receive a cell the next day which will hatch in a few hours. As there are but few brood cells given them, the nurses in proportion are even greater than in full colonies. Remember, this is all the brood they have to take their attention. They have just realized their need of a queen; they have the means placed conveniently, with space underneath: they work

with a will, having no earlier or later ones to choose from, and in three days all are sealed up.

"Compare these queens with those raised in hives full of brood. I do not claim to get better queens, but may I not claim as good, and more uniformly good? Just give the nucleus an additional comb of brood of all ages the next day, and no convenient place cut for queen cells, and they would start but few. There are too many young bees to be cared for, like the full stock. Many of those started would be neglected. Have I made it clear that nurses and brood can be economically adjusted?

"When the young queen has commenced laying, and has been removed, new brood can not be given to the bees and they be expected to rear as many more queens willingly. They should have some of the cells ready made, given them, making themselves useful in caring for queens until they lay. Whenever another batch of cells is wanted, introduce another supply of nurse-bees, and work as before."

ANOTHER METHOD.

There is another method of rearing queens, which in many respects I prefer to the one just described. I practice both, yet, considering all essential features, I have a preference for frames uniform in size with those in the hive, for all operations, as thus honey and bees can usually be more conveniently supplied. Yet, if the small nucleus boxes are used, honey may be secured in the flush of the season by furnishing the small frames filled with empty comb or foundation, to these boxes, after removing such as have been filled with honey. I have often been able to obtain a large number of such combs well filled and capped over, which I have saved with proper care, until wanted for similar purposes the following season. The full-sized frames for nuclei are preferable because the bees used to rear the queens are of value, if swarms