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THE BBREAD AND BUTTER SERIES,

No. 2.

APICULTURE:

The Double-Hive, Non-Swarming System.

By GEORGE A. STOCKWELL,

PROVIDENCE, R. I.

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THE BREAD AND BUTTER SERIES.

If bread may represent what is necessary to life, and butter, the surplus, then the two make the goal for which all men and women are striving.

The important factor in effort and accomplishment is economy, not only the economy of material wealth and resources, but also, of time, and of mental and physical forces.

Some of the industries referred to in this series, may give profitable employment for all time and energy, or they may be conducted to advantage in the interval of other pursuits; and if they be made secondary, they supply what every worker must have, if the span of life be covered, namely, recreation. Continuous labor, mental or physical, wearies and wears out. Life is prolonged, and made better by a change of occupation, even if the interval be brief, for in this interval the burden of the mind is lifted, the weariness of the body is forgotten, and both mind and body, refreshed, return with greater vigor to usual occupation. The man who works all day at the anvil, finds only relaxation and pleasure in the hardest toil required in the garden or apiary, and the teacher or accountant goes from the school-room, counting-room, to some outside industry, with eagerness, and delight, even if it demand the closest mental application. The burden is shifted, that is all, and it is this shifting that repairs, builds up and saves.

Again, physical inactivity kills, directly or indirectly, many men and women. Lives have been prolonged, if not saved, by out-door work in some secondary industry, agreeable to the worker. The use of the hoe in the garden, in the "rosy morn," is a better tonic than that found in a dozen bottles. Man is a gymnasium in himself; he was given all the "gymnastic machinery" required at birth. All he has to do is to set this machinery in motion. If life be sedentary, and this machinery be employed in a secondary occupation, the profit is found not only in good or better health, but also in an increase of bread and butter.

The details given in these papers are founded upon actual experience of the writers, in other words what is recommended, has been done, and found to be practical and profitable.

The series will include: "Bee-keeping for Women;" "A Bee Farm;" "A One Acre Farm;" "Bees and Poultry;" "How to Keep a Horse;" "How to Raise Canaries;" "How to Raise Lettuce in Winter;" "How to Make Hens Lay in Winter;" "Pigeons for Profit."

THE DOUBLE-HIVE, NON-SWARMING SYSTEM.

BEE-KEEPING is now recognized as an industry worthy of the attention of self-supporting men and women.

The age of conjecture and experiment has passed and Bee-keeping has become a definite factor and a helpful agent to many in solving the problems of life—the problem of the evolution of bread and butter—the problem of gaining a living.

Now, when the industry is established, when there is no longer any doubt as to the result of systematic bee-keeping, the question of method is to be considered. All agree that the shortest and easiest road to honey, or its equivalent, money, is the best. The object of this paper is to set forth briefly, yet clearly, the details of a system by which it is believed the product of the bees may be greater than by any other system. It is founded upon common sense, actual experience, and a study of bee economy.

The “Double-Hive, Non-Swarming System of Bee-Keeping” has proved to be more profitable than any other system. It makes easier and more satisfactory the management of the apiary; it provides for the concentration of labor on the part of both man and bees; it makes the most of the bee-power and drives it to the extreme point of utility.

The system is founded on this principle : that the greater the number of laborers, the greater the product. This must be admitted as a self-evident truth, except perhaps in the case of politicians and office-holders. A man employs two men to build a barn. If the two men live long enough they will complete the structure, but the farmer must have the barn by haying time. What does he do ? Does he throw stones at the two men and say that barn building is a humbug ? No, he increases the number of workmen. The conditions are similar in the apiary. The bee-keeper, with a puny colony of bees, struggling for existence in a narrow hive, declares that bee-keeping is a snare and delusion. Naturally, he expects the bees to supply themselves, with all the workmen they require. This they will do if the conditions be favorable, if the efforts of the bees be supported by the right "system." As bees, subject to man, are no longer in a state of nature, the part lacking must be supplied as far as possible by the bee-keeper.

THE HIVE.

The hive used in the "Double-Hive, Non-Swarming System," is the two-story simplicity hive, or two interchangeable simplicity bodies, one above the other. When the growth of the colony demands it, a half-story is inserted between the brood chamber and the upper body, giving a two and a half story hive.

The brood chamber contains ten frames of the simplest construction, that hang free from tin rabbets. If extra

honey be the product of the apiary, the second story contains ten broad frames. If comb honey be the product, the second story may contain seven broad frames, each holding eight one pound sections. A better arrangement, however, for the production of comb honey, is made by using two half stories, each containing twenty-eight sections. As far as the bees and the product is concerned, there is no difference between a whole story and two half stories, but the latter is more convenient for the bee-keeper. In the sections are sheets of foundation, hanging in the centre, two-thirds of the depth of the sections. Separators, tin is the best, are indispensable. The cover of the hive is made of one board nailed at the ends to prevent warping, or two boards with the seam between them made water-tight. The cover should be made wide enough to extend two or three inches over the sides of the hive. The bottom board is like the cover, and the two are interchangeable. The hive stands upon the bottom board but is not attached to it.

“NON-SWARMING.”

As this term is usually a misnomer, it may be considered as such here, as artificial swarming is introduced. The system herein set forth, however, is, or may be, practically non-swarming, without either natural or artificial swarms.

Artificial swarming is described, because most bee-keepers wish an increase of bees, but if no increase be wanted, the colonies may be practically non-swarming. A

strong colony with a prolific queen, in some seasons, may increase so rapidly that a double hive, even a triple hive would not contain them. It would be necessary then to separate or to "swarm" the colony. This process, however, is so unlike natural swarming, that it is not worthy of the name of "swarming," therefore, the use of the term "non-swarming," if natural swarming be prevented, is not a misnomer. In two years, in an apiary of sixteen colonies one year, and twenty the other year, swarmed artificially, only three attempts were made to swarm. These were not successful and would not have been made if the hives had not stood in a sheltered place, where there was no movement of the air, and where, in July, the rays of the sun fell directly upon the hives. If the hives had stood in the shade, the attempt to swarm would not have been made. Again, in the same apiary, colonies not swarmed artificially, did not attempt to swarm, but were content with increased accommodations, and produced a large amount of honey.

FALL PREPARATION.

Preparation for the use of the "Double-Hive, Non-Swarming System," should begin in the fall. The queen should be stimulated to lay as far towards winter as possible, by feeding honey or sugar syrup. It is desirable that the queen should lay up to within twenty-one days of cold weather. That will give her eggs a chance to hatch before winter. This cannot be regulated with certainty, but an approximation is possible. The object is to

fill the hive with young workers, that may not only live through the winter, but also live to take the first flow of honey in the spring. This wealth of bees, with, of course, a corresponding wealth of winter stores, enables the colony to pass the winter in comfort, around what is to the bees a warming fire,—the fire or heat generated by their bodies in mass, and they come forth in the spring active and vigorous. The hive is crowded, and in consequence of the presence of this immense household, the queen begins to lay earlier than she would if the bees were not in so large a force. The result is, that when honey comes in the spring, there is an army of bees, young and strong and ready to gather it. The bees, in winter, should remain on the summer stands, protected on the north and west by a wind break ; single wall hives are sufficient. The entrance should be left open, the width of the hive, but made so shallow that mice cannot enter.

The half-story is an overflow chamber for compact nesting in cold weather. Pieces of hoops nailed to two cross pieces span the frames, leaving a three-inch space over the centre of the brood nest. Over the hoops are laid several thicknesses of burlap. Thrusting the hand on the burlap, next to the bees in the middle of winter, is like putting it under a sitting hen. There is a good fire there in the bees' sitting-room, and the table, just below them, is bountifully supplied. Why should they not be comfortable ?

SPRING MANAGEMENT.

With colonies in the condition described, spring management consists chiefly in letting them alone until the

time comes to make the first artificial swarms. They are so strong, the hives are so crowded, that the bee-keeper knows that the first run of honey will cause them to swarm. He prepares at once to stop the swarming fever, by artificial swarming, and to arrange the colonies for the all summer harvest. When it is evident that the buds are nearly ready to burst forth into blossoms, the work begins. If the keeper wait till the full tide of honey comes, the bees in their crowded condition will swarm; if they do not swarm, the manipulation during the flow is an interference and a hindrance. All work of preparation should be completed before the bees begin the harvest, and then the bees should be let alone.

From the centre of the brood nest is taken two frames of brood with the clinging bees. The frames removed are placed in a new hive and the hive carried to or near the place where it is to remain. Returning to the parent colony, two frames of foundation are inserted in the place of the two combs of brood and queen cells (if there be any), are cut out. The second story of the hive, another body like the brood chamber, is placed on top, and arranged as already described. The drone or queen trap is now attached to the entrance, and that colony is started on its season's work. Each of the ten colonies is prepared in the same way.

Artificial swarming, after the honey season begins, when the bees are busy gathering the crop, is accomplished in this way: Move the hive to one side, the width of the hive, or more; place an empty hive, one body, where the

one moved stood ; take off the second story of the hive containing the colony to be divided and place it on the empty body. If this be done, the work of the bees goes on with little interruption comparatively. The honey gatherers returning from the fields, entering the hive by the entrance in the second story, may not discover that the lower half of their home has been removed. At all events, the upper story in its usual place, catches the returning bees and at least keeps them away from the operator. The returning bees, are the mischief makers often, and if they be kept away, manipulation is quicker and easier. When the division is made, return the brood chamber to its former stand with the second story in place as before.

The immediate effect of this method of artificial swarming on the parent colony is one of confusion. The bees find their brood nest broken up, and two sheets of foundation in the centre. They find also an open chamber above into which they swarm eagerly for the brood nest was becoming crowded. Over the combs placed in the second story is poured a little honey, enough to trickle across the empty combs, and drip on to the frames of brood. With a rush they follow up these honey streams to their source, gather it, explore, clean and repair. Swarming fever is checked by present events. The working space is doubled and a new life begins. Now comes the honey from the fields pouring in. Where shall the bees deposit it? The brood-chamber, except, perhaps, the outside combs, is full of brood and honey. The sheets of foundation are not yet ready, although drawn out enough, perhaps, a third of the

length, for the queen to lay in, and she has begun to deposit eggs in them. The honey must go to the second story, and there it goes. An entrance is made to the second story by boring an inch auger hole in the centre of that story and providing it with an alighting board. An alighting board for this entrance may be made by shaping a piece of shingle to resemble a broad shovel with a handle half an inch in length. Insert the handle in the auger hole and fasten it with a tack. The honey gatherers will use the upper entrance and the pollen gatherers usually the lower entrance.

If the colonies were allowed to swarm naturally, there would be twenty in all, perhaps twenty to work early in the season, but none of them would be generally as strong as those prepared as described, and, moreover, the ten will gather more honey by this system than the twenty conducted in the ordinary way. Further, in the course of the season one colony at least is obtained from each of the ten colonies. Thus there is what is equivalent to the natural increase and more honey than the ten and their natural swarms would gather.

In natural swarming, often the outgoing part of the colony is greater than the remaining. Indeed, many a colony has been left with so few bees that it was crippled, and practically worthless for the season.

By this system of artificial swarming, the number of bees taken away is so small, compared with the whole number that there is practically no diminution of strength, and at the same time the regular, natural increase is se-

cured. The result of the operation of swarming, or robbing, appears to be stimulating rather than otherwise. The object is to keep the colony recruited to the utmost capacity of the hive, and when this is attained the problem is solved, for the bees diverted from swarming ; must gather honey if there be any, and as a matter of course must gather more than they could otherwise.

When there is a quick run of honey, basswood, for example, the bees, where it is abundant, cannot get it all. What they gather must be snatched quickly. Then is the time when the big colony, a hundred thousand strong, shows its utility. The honey pours in in a steady stream. The greater the force of laborers the greater the product.

THE NUCLEI OR ARTIFICIAL SWARMS.

When the ten colonies have been prepared as described, there are ten nuclei of two frames each, standing side by side, each marked with the number of the parent colony. They are marked in order that if too many bees return to the old colonies each may be recruited from its own. The young bees will remain, but many of the old bees will go back.

As the nuclei are to raise their own queens, care must be taken that the frames removed contain unhatched eggs. If there be a queen cell, so much the better. If the swarming be done before the middle of May, and it ought to be in the latitude of Southern New England, dependent, of course, upon the season, no queens can be obtained as soon as the nuclei would raise their own queens. The nu

clei are left undisturbed long enough to determine how many bees will remain. If not enough remain to cover the brood, one frame or more from the parent colony is held over the nucleus, and the bees are shaken or brushed into it. When the number of bees is sufficient, the ten nuclei are united at once into two full colonies of ten frames each.

A nucleus should not be left ununited over night unless there are bees enough to cover the combs, and the night be warm; but nights in May are often cool, and the brood, unprotected, may be chilled, and, therefore, the work of a day should be complete; that is to say, if only five colonies can be swarmed in a day, the swarms or nuclei should be united on the same day.

The two full colonies, made of the nuclei, in proper time are treated like the original colonies. Before the first of July the nuclei taken from the colonies are united at once and become a part of the working force of the apiary. After the first of July the nuclei may be united immediately, or left till fall and united for the winter. In some seasons nuclei obtained after the first of July may be united and gather surplus honey before the season closes, but usually the ten original colonies and the earlier nuclei are the main dependence.

SUMMER MANAGEMENT.

During the summer the "let alone" method is followed as much as possible, and this is one of the attractive features of this system. The apiary may be left days, even weeks to itself, and generally the work goes on without a

hitch. This may not be considered the proper way to conduct any industry, but the keeper is not the only factor in the apiary. The bees are doing the work. In any apiary the let-alone-system is not practiced as much as it ought to be. The keeper who is continually opening hives and interfering with the work of the occupants is like the man who pulls up corn to see if it be growing.

No industry will run itself, but the bees will attend to their work when the overseer, the keeper, is absent, as well as when he is present. If he must go away he knows that his bees will not run away without the queen, and he knows that the queen cannot get through the trap.

Most of the artificial swarms are made before the first of July. Those made after this time are merely to relieve the colonies, if crowded, and to obtain the quota of increase.

Three frames of brood and bees were taken from a colony about the first of July. At the same time a half-story was inserted between the brood chamber and the upper story, making the hive two stories and a half. The colony was not disturbed again till October, when eighty pounds of comb honey was taken from the colony, every section full and all capped except eight partly capped, in an outside tier. But this is not the best way to conduct an apiary where comb honey is the product. The honey should be removed as soon after it is capped as possible. It will be more attractive if removed before the bees run over and soil it. There can be no doubt that frequent removal of honey stimulates the bees. When they are stripped bare

of stores, they appear to be inspired anew with courage and energy.

The first artificial swarming is made about the middle of May. Another may follow about the first of June, and another the middle of June.

The condition of the colony may warrant the keeper in taking three frames from a colony, for it must be remembered that since the first or second swarming, a great number of bees have been added to the colony, a much larger number than has been taken away; or, he may decide that only one frame or none may be taken away, the object being as stated several times, to keep the colonies recruited to the maximum capacity of the hive.

TO TAKE OUT HONEY.

If the product be comb honey, and the honey-chamber be two half-stories, the work is simple and easy. Drive the bees below with a little smoke; take off the two half-stories; place one-half story, with empty sections, over the brood chamber, place the other half-story on this and carry to the honey room the half-story removed. The bees that cling to it will return to the hive. If some of the sections are not filled or capped, do not return them to the hive from which they were taken, but place them in the empty crate, or half story, that is to be given to the next colony. Thus proceed throughout the apiary.

With combs to be extracted more time is required. Some bee-keepers use the two half-stories instead of the whole story, and, of course, the shallow frame, but this plan re-

quires more time in handling and extracting. The second story might be removed and another put in its place, but it is too heavy and unwieldy to move quickly and easily. On a wheelbarrow in the rear of the colony are two or three bodies, or hives, each containing ten empty brood combs. From the colony is taken the capped combs of honey and their places filled by empty combs.

As some brace combs may be broken in taking out and a little honey be liberated, the combs placed in the hives in the wheelbarrow must be covered with a cloth while the operator is at work, to prevent robbing, especially if the bees are not at work on any particular crop.

The keeper goes from hive to hive till his empty combs are exhausted, or until the bees, attracted by the honey, become too numerous, and then to the honey-room, to leave the frames of honey, to get more empty combs, or to extract.

The placing in a hive of empty combs from which the honey has just been extracted, must be done quickly, for they often drip with honey, and on some days it may not be possible to carry such combs through the apiary without attracting some bees. The odor of honey travels quickly in an apiary. But working quickly and on only a few hives at a time, there is little difficulty.

A BEE BRUSH.

The best bee-brush is made in this way: Gather green grass, a handful, tie in the centre, and then cut both ends even with the scissors. This brush irritates the bees less than any other, and is certainly the cheapest.

AIDS AND GUIDES.

The most skilful bee-keeper may not always trust exclusively to his own knowledge and experience. He is reassured and helped by reference to some authority. *The Beekeeper's Guide*, by A. J. Cook, is a standard work, and makes labor in the apiary easier and more profitable. See second page of cover.

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