

£70 A-YEAR.

HOW I MAKE IT BY MY BEES ;

AND

HOW A COTTAGER,

OR OTHERS,

MAY SOON DO THE SAME.

BY

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PRICE ONE SHILLING.

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COTTAGE BEE CULTURE.

THE main object of all the recent publications on the Management of Bees has appeared to have been for the sale of some particular set of hives or boxes, of various kinds and constructions, ranging in price from two to six guineas, and completely beyond the reach of persons of humble means.

My object in writing this little book is certainly not to condemn those valuable scientific inventions, for doubtless they have contributed much interesting amusement and instruction to those who could afford to indulge themselves, and were desirous to gain an insight into the internal wonders and mysteries of the beehive; but my desire is to give the cottager and my poorer neighbours the advantage of my practical experience during the space of thirty years, and to record how for many years I met with constant failure and disappointment (which I now know was caused only from the want of a proper knowledge of feeding, &c.), and how

since I have adopted my improved management, I have met with continued success. My great wish is to teach others in what way almost all the advantages set forth by the use of those very costly boxes, hives, &c., may be easily attained by the proper construction and management of the common straw hive, combined with other inexpensive additions, for the purpose of obtaining the largest possible quantity of honey without destroying the bees, and how, commencing with one hive of bees, they may in a few years, with proper attention, render it a most profitable speculation and permanent source of income.

In 1864 I recommenced keeping bees, and without any other outlay than twelve shillings, excepting what has been produced from the sale of honey, I have now in 1868 nearly one hundred stocks, remarkably strong and vigorous, independent of a considerable balance in money in their favour.

If my plain instructions are carefully put into practice, failure is almost impossible. My aim is to show how the largest profits are to be secured by the smallest possible outlay.

Our thanks are still due to those of a more scientific, practical, and searching mind, of whose valuable discoveries we take advantage, and imitate, in a more humble form.

ASPECT FOR HIVES.

Amid all the boundless power of our great Creator, there is not probably one individual subject more full of interest to all inquiring minds than the natural history of the honey-bee; for to those who look merely on the surface of things for amusement, there is the spectacle presented of an insect community, constituted under a regular government, and exhibiting various social phenomena which are not the less attractive, although they are only partially understood.

We, as honey manufacturers, must be content without inquiring too deeply into the whys and wherefores connected with the mysterious natural history of the honey-bee, on which pages by the hundred might be written; but will be content with the knowledge of the fact that they are ever ready and willing to work from morn to night, gathering and storing honey for our benefit.

I will now humbly endeavour in homely terms to give information on my method of management, in the various departments of apiculture, which, if carefully followed, must lead to a prosperous termination.

ASPECT FOR HIVES.

In almost all bee gardens you will notice that the hives of bees are ranged close under

to the deterioration in quality and lessening the quantity of saleable honeycomb.

STANDS FOR HIVES.

The cheapest and as good as any stand I find is an empty American cheese-box, of circular formation ; first place four bricks flat on the ground, turn the box upside down, and place it securely on the bricks, leaning from back to front, the better to carry off all moisture ; place your hive of bees on this, and cover them well over with a sack, or artificial manure bag, and be careful that the ends of the sack reach below the hive, so that the drip may be carried to the ground, without settling on the floor-board ; and then, with a milk-pan for a roof over all, the hive is secure from all weather, and will stand sound and good for many years. The cheese-boxes may be obtained from the grocers at 2s. 6d. per dozen ; the bags at 1s. 6d. per dozen, and the imperfect milk-pans from the potteries at 3s. 6d. per dozen, so that the hive, the stand, and covers, will cost about 1s. 6d. for each stock of bees, and will answer every purpose as well as the most expensive outfit.

THE NEW PLAN OF MANAGING SWARMS.

A swarm is said to contain from 12,000 to 20,000 bees. When the bees require more room, and there is no provision made for their accommodation, the queen, with a great number of her subjects, leaves the hive ; there is great agitation in the hive, excited by the queen, and the temperature is raised very high ; the bees perspire, and the air becomes intolerable, a louder hum than usual is heard, and the queen quits the hive, a swarm leaving with her ; in a short time the bees cluster on some branch of a tree or shrub. You may dispense with the noise, hurry and excitement usually displayed on these occasions, for, remember, in the performance of every operation with your bees, you cannot be too quiet and gentle, although firm and prompt action may sometimes be requisite. Therefore, when your bees have quietly settled, be in no haste for a quarter of an hour or so, for it is a frequent cause of their rising again and flying away, if disturbed too soon. It is a good plan to syringe or sprinkle them gently with cold water during the time you allow them to remain clustering together ; this cools them, and when they are shaken into the hive, and placed on the ground, they are much more readily

disposed to crawl into the new habitation, than to fly wildly about. There will generally be a considerable number of bees on the ground, and round the outside of the hive, showing some reluctance to join their companions inside ; these outsiders you may half drown with water, and make them gladly take refuge from your discipline with those already housed.

And now my plan of proceeding may appear to the uninitiated a very strange one, nevertheless I believe it to be for stocking a strong apiary the greatest improvement ever discovered in the management of swarms. When you have ascertained satisfactorily that the queen is quietly settled in her new abode, do not, as is generally the case, allow the new swarm to remain in the situation where it was taken until the evening, but first having removed the old hive from which the swarm issued to some distance on a new stand, at once place the new swarm on the old stand just vacated by the removal of the parent hive ; by this means nearly all the full-grown bees will join the new swarm, and all those abroad in the fields will return laden with honey, and materials for commencing filling the new empty hive, and it will at once become a very strong and numerous hive of bees. By all intelligent

bee-keepers, it is now a well understood fact, that one fully populated hive will produce more honey than three or four weakly ones, left to their own resources.

When the new swarm has been working fifteen days or so, open the hole in the top of the hive, place on the adapting board as before explained, and put on a super hive, box, or glass, and the bees will store for you from fifteen to twenty pounds of honeycomb, having as well made a plentiful provision in the lower hive for their winter consumption.

As our proceedings with the old hive have been of rather a summary nature, it must not be neglected or forgotten, after the great depopulation, they will generally (as is most desirable) give up all desire for more swarming, and destroy all embryo queens; this will prevent all late swarming, which is an object of importance to be wished for; the queen will have left thousands of eggs in the cells of the old hive to be hatched out, and as for a time they will be rather short of bees to be sent into the fields on foraging excursions, assistance must be given them, by feeding them for a few days, or until they have taken about four pounds of the sugar syrup. This will give them renewed life and energy; you will see young bees daily making their appearance in great

countries yearly for importations of honey and wax, when in England we lose more than this, from the want of a sufficient number of bees to gather that which is provided by a merciful Providence for our benefit.

TOP SUPER HIVING.

When you find you have raised the number of stocks which you can accommodate, you may commence the humane system of taking honey without swarming, or destroying your bees. For the sake of amusement and variety, I practise three methods, but they are all about equal as to the quantity of honeycomb produced. For top hiving you must first place on the adapting-board, and follow the directions given in the previous article on hives.

COLLATERAL, OR SIDE HIVING.

The celebrated Mr. Nutt, and others, have extolled this system in their published works, recommending boxes at the cost of from two to six guineas for the purpose.

The cottage hive can be easily adapted to this plan; you have but to make a passage on the floor-board with a small frame, or flat trough, four inches square, and one quarter of an inch in height; then when the bees show

symptoms of swarming, cut with a sharp slender knife a notch in the stock-hive next to the floor-board, and fit in the frame, leaving one end projecting; allow the bees to have free passage through this for a few days as a side entrance, then cut a corresponding notch to fit the frame in an empty hive to place at the side close up to the old stock, the bees will then as readily begin to fill the collateral straw hive as those of the most expensive nature, and store as much honeycomb. I say this advisedly and from long practical experience. To remove the side hive when filled, you have to follow the directions for taking any other super hives; a small cap, or bell-glass may be placed on the top of the old hive, independent of the one at its side, work will then be progressing in both places at the same time.

NADIR, OR UNDER HIVING.

This system has also been strongly recommended by various writers, but all their fine plans I have found to be of a too difficult, complicated, and expensive nature to be of any practical use to the cottager.

My plan, somewhat in imitation, is most simple and inexpensive, as well as effective, the outlay being only a few pence, instead of pounds. I was first impressed with the idea

top, on a fresh stand in the same position, then turn the inverted box carefully with the lid uppermost, the lid having been at the bottom during the progress of filling ; the comb will not be fixed to it, but free to be removed, when you will be gladdened and astonished with the sight of such a quantity of beautiful white honeycomb as you never before beheld.

FEEDING BEES.

This is the most important, and perhaps the least understood and practised, of any branch of Bee Management ; but to feeding I attribute principally all my great success as an apiculturist ; but the essential knowledge to gain is to learn when to feed, how to feed, and what food to supply.

The summer of 1860 was the coldest and the most constantly wet of any year in the memory of this generation, scarcely any honey was collected ; the harvest of that year was so late that I only finished carting corn on the Southdowns on the 5th November.

I had a stock of twenty-two hives of bees at that time, and finding in the autumn they had no provision of food for the winter consumption, I began to feed with sugar syrup. This would have been quite correct had I under-

stood how to apply it properly ; but in my lamentable ignorance I filled old honeycomb, and other receptacles, and placed the food at the front of the hives ; the natural consequence of this was, that in a few days the whole apiary was in a state of confusion, war, and robbery. So that I discontinued feeding, thinking the bees might quiet down ; but alas ! my precaution came too late, a general war had been declared, freebooters were ripe for robbery, and assassination was going on in all quarters, for when they found no food on the outside of the hives, they stormed the castle, and so deadly was this great battle, the strong attacking the weak, that hive after hive fell victims, were cleared out and killed, leaving only one swarm alive out of the whole lot ; but had I then understood the art of feeding as I now do, I should certainly have saved the whole apiary from destruction. Thousands of swarms died in every county in England the following winter, when they might easily have been saved by judicious feeding.

BEE FOOD.

To every pound of loaf or best moist sugar add half a pint of water, boil for a few minutes, and when put out to cool, stir into each gallon of the syrup two tablespoonfuls of

run, and one teaspoonful of salt. The only safe and proper way to administer the food, is at the top of the hive through the hole in the centre.

The most useful feeder is an inverted bottle, sold by Neighbour & Sons, High Holborn and Regent Street, price 2s. 6d., and it would be well for you to procure one of these as a pattern to adapt others by, making it safer than any written directions I can give you. I use empty pickle bottles, called Captain White's, which answer the purpose perfectly. When the feeding bottles are properly fitted, the syrup will only escape so fast as the bees store it away below. The bottle must be carefully covered by an empty hive, and over this some sacking, or matting, so that bees from other hives may not learn what is being performed for their neighbours' benefit.

Above all, be careful not to shed any portion of the liquid on the outside of the hive, or great confusion and fighting may be the consequence.

WHEN TO FEED.

In the spring of the year all light hives of bees *must be fed* with from four to six pounds each of the prepared food ; the stronger hives may also be fed more moderately to advan-

tage, as the queen will not begin to lay eggs until she finds some new stores are accumulating for the sustenance of the young bees ; so that in feeding even the vigorous stocks you stimulate and excite them into greater activity, thus raising the temperature of the hive, and when the queen feels this change, she, fearing all the cells may be filled, will commence laying eggs at an earlier period than she otherwise would have done, which will naturally conduce to early swarming, or to filling the top hives, &c. All your stock hives of bees that do not weigh sixteen pounds in the autumn, independent of the hive, must be fed up to that weight before you may consider them safe to pass the coming winter.

SUMMER FEEDING.

This sounds rather a strange term, or at all events a novel plan, in the management of bees, at a time when they are supposed to be able to get all they require in the fields ; but nevertheless it is a plan I experimented on last summer with immense success. On the 1st of June I took two swarms on the old plan ; they were as nearly as possible of the same size, and on one of these I resolved to make a trial of summer feeding.

I fed these bees only at night, or on wet

days, and in ten days, on inspecting the two hives, I found the fed one completely filled with comb, and the one left to its own resources had only three pieces of comb a part of the way down the hive. I then allowed both hives to remain quiet for a fortnight, when the fed hive showed symptoms of casting a maiden swarm ; to prevent them doing so I placed a large cap on the top, the bees readily took to this, and began to build comb ; I then recommenced my night and wet-day feeding, on the top of the cap, and fourteen days afterwards I took it off filled with twenty-one pounds of honeycomb, which was sold for £1 11s. 6d. The bees consumed syrup to the value of seven shillings only.

The flavour of the honeycomb was not to be distinguished from the other taken at the same time from unfed hives.

The companion hive, at this time, had still a portion of it not filled with comb.

DEPRIVING STOCK HIVES.

In September, after the honey-gathering season was past, I deprived several of the stock hives of from three to five pounds of honeycomb each, and then fed to make up the weight. For twenty pounds, of which I deprived them in this way, I found it required

twenty-five pounds of the food to restore the weight, but as the value of the honey was 30s., and the cost of food only 7s., there was a profit attached to the operation. The bees that were treated in this way have passed the winter, and appear as strong and vigorous as any others in the apiary.

Then, in October, I practised a much more desperate course with two old rotten hives, damaged from the exposure to a southern aspect, unfitting them to stand another winter, although well provisioned to do so.

I first fumigated the bees, letting them fall into a box fitted for the purpose; after this operation was completed, I removed the old hive in each case, and placed a new empty hive over them; the following morning they were clustering at the top of the hive, the same as a new swarm. My first idea was to return them the honey, (32 lbs. between the two,) but having a greater demand than I could supply at that time, I was tempted to dispose of it.

And then, relying on my experience, gained from summer feeding, I resolved to experiment on these two destitute hives of bees, by feeding them. They gladly took the food, both night and day, and in three weeks had filled their new hives with white honeycomb,

and sealed up sufficient food for their winter provision. On examining them this spring, I found them as strong and healthy as any others. Their combs still remaining a pure white colour ; this was from the low temperature of the hive during the winter ; I sold the 32 lbs. of honey for £2, and the food I gave them cost 13s. for the two hives.

I intend to make much more extensive experiments in feeding this coming season.

After the proofs I have given you, I feel fully justified in saying that bee feeding is only partly understood, and, indeed, we can hardly conjecture the extent to which it may be practised.

TO RENDER BEES HARMLESS.

The olfactory nerves of the honey-bee are of so delicate a nature that any kind of fumigation immediately produces something of a paralytic nature on their system, which for a time renders them as harmless as blue-bottle flies.

For this purpose I use a tin tube, such as schoolboys use for pea-shooters, one end being turned for two inches, and flattened, leaving a passage through ; and when I wish to perform any operation on my bees, I merely insert the flat end of the tube into the

entrance of a hive, or under the side of a super; I then give them three or four good puffs of tobacco-smoke through the tube, and the bees will remain for several minutes, perfectly under control, during which time you may do anything you wish with them, without the protection of gloves or bee dress.

TAKING OFF SUPER HIVES.

First supply yourself with a large empty box, with a close-shutting lid, and in different parts of the box have several holes, stopped with corks; then remove the super some distance from where it is taken off, and shut it into the dark box for half an hour, the bees by that time will have discovered their separation from their queen, and on your drawing one of the corks, they will be attracted by the light, and make their escape in a quick time, and return to the mother hive. The reason of having holes at different parts of the box, is that sometimes at the end of the season the bees from other hives are very troublesome, when they discover the super of honeycomb, and enter the hole the others are escaping from, and then, if left to themselves, they will in a short time empty all the combs of honey. Therefore, when the bees are escaping from the box, never leave them with the apertures

open ; and if strange bees should come to annoy you, at once cork up the outlet, and open another at the opposite end of the box, the bees will then generally depart quietly, leaving the super filled with honeycomb, and free from bees. But should the marauding bees still be troublesome, close up the box altogether, and remove it to a shady place ; cover it over with a wrapper, leaving it in that situation for some hours, or even for the night. The bees will then readily make their escape when they again discover the means of doing so. An occurrence of this nature may but rarely take place, but when it should do so, it is well to be prepared how to deal with it.

REMOVING BEES.

The most favourable time to remove hives of bees is in the autumn, or the early spring. Some writers will tell you that the hives must be suspended on a pole, and carried on men's shoulders. But my plan is to provide myself with pieces of packing wrapper three feet square ; one of these I spread on the ground, near the hive which is to be removed ; I then give a few puffs of tobacco-smoke into the entrance to drive the bees from the floor-board, into the upper part of the hive ; then

take the hive without the floor-board, and place it on the cloth, the corners of which pull close up to the sides of the hive, and bind strong string several times round it, to secure the wrapper. This entirely prevents the escape of a single bee ; then turn the hive crown downwards, which saves the combs from becoming displaced, as well as giving a plentiful supply of air through the canvas.

I packed sixteen hives of bees in this way last autumn by daylight, loaded them in a spring van, and drove them a distance of ten miles without causing them the slightest damage in any way.

When I reached the garden in which I wished to place them, I found the bees were clustering in great numbers on the covering ; so that, instead of removing it at once, I first placed the hive, canvas and all, on the block, then unfastened the string round the hive, allowing the ends of the wrapper to fall down so that the bees had a free passage in and out of the hive, and in a few days, when the bees had become accustomed to the place, I drew out the canvas from between the hive and block without causing any annoyance to them.

Should you purchase young swarms from a distance, they must be removed the same day on which they swarmed, or be left for removal

until the autumn ; for, should the hive be taken away when only partly filled with comb, the excitement of the bees will be so great, and the temperature of the hive will be raised so much, that the combs will give way from the top, and bees, honeycomb, and all, will fall in one confused mass, to the ruin of the swarm.

TO WEIGH HIVES, ETC.

The most convenient manner of doing this is to have a tripod, the three legs of which may be six feet in length, with a bolt passing through the whole, so that they may spread easily in any direction at the bottom. A hook must also be fixed on the bolt at the top, on which to hang the ring of a Salter's spring balance. A scale of half-inch board, thirty inches square, with cord through each corner, and confined by a ring at the top, will complete a very convenient weighing machine.

All hives, floor-boards, &c., should be weighed before they are used, and the weight entered in a book. You may then at any time ascertain the exact quantity of honey contained in the hive.

NUMBERING HIVES.

It is necessary, in a large apiary, either to number or name all hives of bees, and after

marking them, enter them in a book at the top of a leaf, leaving the remainder of the page on which to record remarks, such as, at what date they took to the super hive, and how much honey it contained when last examined, and at what time you may expect to take it off, and when taken record the weight, &c. Without some guide of this nature you will find, where you have a large number of stocks, and rely on your memory alone, that constant troublesome mistakes will be happening.

The quantity of honey required by bees for winter food has been variously estimated. I weighed three of the Woodbury frame boxes once a month, during the last winter, and found the consumption of each colony to have been as nearly as possible one ounce per day.

Now, one of these boxes was filled, early in the season, with a large double swarm; another, later, with a moderate-sized one; and the other with a late small one. There must have been three times the number of bees in No. 1 than in No. 3, and No. 2 would double No. 3; yet each hive, when weighed every month, had consumed exactly the same weight of honey for their food. Many writers on bees have mentioned this fact (of which, until this proof, I had been sceptical), that two or three swarms united in the autumn in one hive will consume

no more honey through the winter than the smallest one left to itself. But no one has yet been able satisfactorily to explain how this mysterious fact is to be accounted for.

BEES' ENEMIES.

Never put a new swarm of bees in an old hive, as there will almost certainly be the eggs of the honey-moth deposited in the crevices of the hive, which will hatch out, and probably destroy the swarm. Nothing is more to be dreaded by the bee-keeper than the moth, as when they once gain an entrance to the hive, the bees appear as if powerless to expel them, although they will seize them savagely at the entrance. When moths have once established themselves in a hive, and the maggots begin to eat their way through the combs, the sooner the bees are fumigated and put into another hive the better, as for them to remain with the moth maggots would be certain destruction to them.

Moths, as well as the large slug, may be taken in great numbers, late on summer evenings, by spreading a mixture of sugar, home-made wine, and rum, on walls or the stems of trees.

ENTRANCE TO HIVES.

Do not have a large round entrance to the hive, making the admission of mice, large slugs, and other enemies an easy matter, but have an entrance of only about a quarter of an inch in height, and from an inch in winter, to four inches in length in summer. But a watch must be kept on the entrance, as sometimes the weight of the hive will press it down, stopping the entrance altogether. I have known many swarms destroyed from this cause.

Should wasps, or robber bees, attack a hive, the only plan is to narrow the entrance, so that only one or two bees can pass at the same time; this enables the bees the better to defend their city gates, and generally to hold their own against all invaders.

TO DESTROY WASPS.

A very simple and easy plan of doing this is to saturate a piece of woollen rag with spirits of turpentine, and put it into the entrance of the nest, leave it there for the night and the next morning every wasp will be dead. A wasp's nest, when removed unbroken, is very extraordinary and beautiful in its construction, and a curiosity quite worthy of preservation.

UNITING SWARMS.

This, in the swarming season, is a very easy matter to accomplish. Should you have two swarms on the same day, and wish to join them, first lay down two stout sticks nine inches apart, take one of the hives and knock it on the ground two or three times, until the bees are all shaken out of the hive; then sprinkle them quickly with thin syrup, place the hive with the other swarm on the stick over those shaken on the ground for the night, and the next morning they will be found peaceably united in one happy family. One of the queens will be found dead on the ground, as no two queens are at any time allowed to occupy the same hive.

Should one hive have been occupied by a swarm two or three weeks even, they quite as readily welcome the addition of another fresh taken one; and when they have done so, it is astonishing the rapidity with which they fill their hive, as well as a super on the top. Any late swarms cannot be more profitably appropriated to any other purpose. This operation must be performed in the evening, and it is well to remove the hive on to a stand very early the following morning after the union has been completed.

PROFITS OF BEE KEEPING.

Mr. Pettigrew, in a letter to the *Gardener's Chronicle*, writes :—"Bees properly managed are very profitable. My father, then a common labourer, made £90 in one year by his bees : and last year a friend of mine, in the same parish in Lanarkshire, made £40 from nine or ten stock hives." He then goes on to state that some hives weighed from 100 pounds to 130 pounds, &c. However, we will not venture to raise our expectations to any such marvellous quantities to be taken from single hives, but be content with an *average* of twenty-five pounds only from each stock hive as a good return for our care and trouble. Doubtless, in some districts this average may be far exceeded ; but I only tell you of my own experience on the Southdowns.

I fancy I have now told of all my plans of management of the cottage hive.

Should you aspire to become more learned in the natural history of the honey-bee, and desire to make more searching investigation into the internal arrangements and operations of the bee-hive, you must read the books written by Neighbour, Taylor, Pettett, and others, and apply their mechanical inventions

and contrivances to this interesting and instructive purpose. I have myself made a fair trial of all these scientific inventions, much to my pleasure and amusement; but as to the quantity of honey to be obtained by these means, I have had ample proof that my simple and inexpensive mode of management may successfully compete with them. Bees have neither pride nor vanity in the exterior decorations of their dwellings; and when more room is required for their operations, they will as readily store honey in a straw hive, an old box, a tub, bucket, or flower-pot, as in the most costly, highly-finished, and ornamental pavilion that can be placed at their disposal. But it must be remembered that all entrances from the stock hive into any of these super-appliances must be guarded by the three-sixteenths of an inch passages.

I commenced my present plan of bee-keeping with only one hive, purposely to prove the self-supporting nature of a properly managed apiary, and also to convince the cottager how, by starting in the same manner, he may soon, as a bee-keeper, attain the same position I have myself arrived at. He will then have the satisfaction of knowing that his bees will supply him with double the income he could gain by expending all his strength

and labour in the fields ; in fact, " he may then lay down his shovel and his hoe."

I would say to the cottager the same as " a French bishop," wishing to better the condition of his poor clergy, once said to them : " **KEEP BEES ! KEEP BEES !**"



I find I can supply well-furnished FEEDING BOTTLES, put on the rail, at 2s. each, or 3s. 6d. the pair.

Also well-made FLAT-TOPPED HIVES, with strong hoop round the bottom, at 10s. 6d. the half-dozen. These Hives last three times as long as those where the straw comes in contact with the floor-board.

ADAPTING BOARDS, with the three-sixteenths of an inch apertures, at 9s. the half-dozen.

BEE DRESS, 1s. 3d. each.

MOUTH FUMIGATORS, 1s. each.

P. O. O. on Lewes.