HOW TO PRODUCE EXTRACTED HONEY

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How to Produce Extracted Honey

1.—PREPARING COLONIES FOR THE FLOW.

To produce honey one must have a big force of bees. The honey-productiveness of an apiary is not to be measured by the number of colonies it contains, but by the number of bees in the individual colony. Therefore the only way to achieve the best results in honey is to see that each colony is in good working order by the time the flow opens. To do so it will be necessary to examine each separately in order to ascertain its condition. Special attention must be given to each queen. Every one that is in any way defective should be replaced with another that is young and vigorous. It will never do to hang on to a queen whose prolificness is doubtful. The colony which she occupies will yield very little surplus, or, in all probability, no honey at all. Far better to replace her, even if you have to buy another in order to do so.

The next thing that must be taken notice of is the strength of each colony. If the flow be a month or six weeks ahead, and your weak stocks have young prolific queens, you may make an effort to build them up to full strength in time for it; but if it be near at hand, a better way is to unite them.

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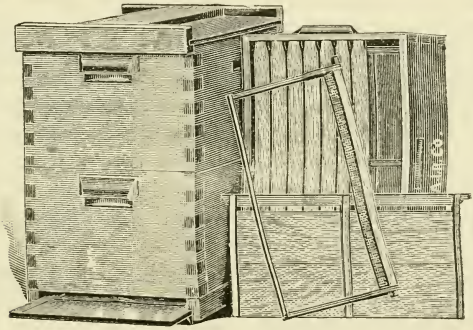
In some localities the flow proper is preceded by a light flow from some other source, while in others there is a dearth of honey until the opening of the harvest. Where the former is the case, the bees will make good progress in brood-rearing, and the colonies consequently build up nicely to meet the general harvest. In case of the latter, the bees will be in the poorest kind of condition when the flow commences. To prevent this they should be given stimulative feeding. This will bring about the same conditions as would a natural flow. Every colony in your apiary should be in good, prosperous condition by the time the harvest commences; and to have them so it may be necessary to requeen, unite, and stimulate.



LANGSTROTH HIVE WITH FULL-DEPTH SUPER.

What kind of hive to use for producing extracted honey.—For localities where the honey-flow is short and uncertain, we recommend the Danzenbaker or eight-frame Langstroth; but where the flow is heavy and protracted the ten-frame Langstroth or

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the Jumbo will give better results, as the queen has more comb surface to lay in, and a correspondingly larger force of workers can be reared.

2.—SUPERING.

We will assume that you have succeeded in getting your colonies into good order for the honey-flow. The next thing to do is to put on supers. Many make the fatal mistake of waiting till the last minute before purchasing their supplies. It is folly to go to the expense and trouble of establishing an apiary, and then when the time arrives for one to reap the rewards of his labor to lose it all simply on account of procrastination. Long before the harvest opens, supers should be put together and painted, frames nailed and wired, and foundation put in, etc.; for honey-flows wait for no man. Unless this be done you are sure to be the loser, and you will soon be mortified to see the bees stick honey-comb in every available corner of the hive and your honey crop go to waste. Take time by the forelock and get your supplies in readiness.

When to super.—Don't put on your supers before the bees are ready for them, as you gain nothing by doing so, but only render it harder for the bees to keep up the necessary heat. This must be especially heeded in cold climates. Neither delay it too long, and thus waste time. As soon as you see indications of honey coming in from natural sources in such quantities that the tops of combs in the brood-nest begin to whiten, you may conclude it is time for you to put on supers. The propensity of Italian bees is to store honey in the brood-nest, in some localities to the exclusion of brood. We have seen colonies whose brood-

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nests were packed almost to the *total* exclusion of brood, while little or no work was done in the supers. It is advisable in such cases to keep "swapping" combs with the supers. This "swapping" serves a twofold purpose; viz., the full combs placed in the super act as a bait to induce the bees to enter, while the empty combs, or, better still, frames of foundation, given below, give the queen an opportunity to lay. When the bees get well started in the upper stories, do as little handling as is consistent with the successful management of the colony, as, every time you pull it to pieces, the bees are hindered in their work and honey is lost.

There are many who advocate the non-use of the queen-excluding honey-board; but we strongly advise its use in connection with the production of extracted honey. If it is not used, the queen will soon make her quarters in the upper story, and, instead of nice white combs of honey, you will have a mixture of brood (in all stages of growth from the hatching bee down to the egg), pollen, drones, and possibly queen-cells. Instead of being nicely and evenly sealed, the combs will always contain (as long as the queen remains) unsealed honey and brood—a very unpleasant feature in extracting time. Second, your queen will be in a most dangerous position, and will stand a chance of being killed every time you handle those big unwieldly extracting-combs. Third, there can be no certainty as to her whereabouts; and when, as in the case of swarming, it is necessary to find her, there are so many more combs to be looked over. The same is true with reference to the finding of queen-cells. Fourth, it almost makes it impossible for one to use that great labor-saver, the bee-escape, and renders it an absolute necessity to re-

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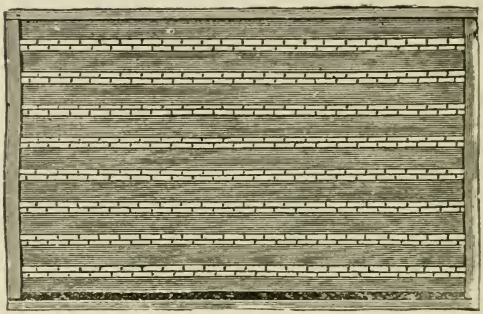
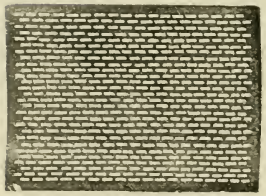
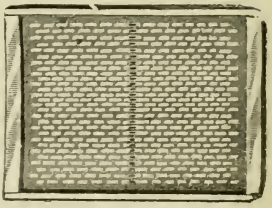


SLATTED WOOD-ZINC HONEY-BOARD.



UNBOUND.



BOUND.

move the combs from the supers and brush the bees off them one by one. We recollect seeing on one occasion, when in the height of extracting, a queen and her attendants placidly located on a large honey-comb, apparently taking in the situation. Her colony had had on no honey-board, and she was in the super when the escape was put on. It was next to impossible for us to tell what hive she belonged to, and the whole proceeding entailed extra work and worry. Put a honey-board on each bottom story, and thus confine the

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queen and attendant brood-rearing conditions to their own department—the brood-nest.

As soon as the first super is filled and the process of sealing is begun, put on a second one. To do this, lift the one nearly completed; place the empty one on the brood-nest, and put on top the one nearly completed. The colony will then occupy a hive of three stories. Always put the empty super nearest the brood-nest, as the bees will start to work in it more readily; and when they do start it will be near at hand, and they will have but a short distance to travel. After the first extraction, combs can be used in these empty supers, and it will be found that the filling and sealing of them is done much more rapidly than when starters, or even full sheets of foundation, are used.

We have said before that, for some localities, the eight-frame Langstroth or Danzenbaker, and for others the ten-frame Langstroth or the Jumbo hive, is preferable. In the brood-nest the full amount of frames can be used; but in the supers, where it is desirable to have thick combs, wide spacing may be done to advantage. Give seven frames in the eight-frame super and eight frames in the ten-frame. See that your spacing is done regularly, for if it is not, a portion of the combs will be no thicker than the ordinary brood-comb; others will be veritable slabs of honey, and not infrequently natural comb will be built between them. Now, don't get hold of the idea that, in order to do wide spacing, loose frames will be necessary. The regular self-spacing Hoffman is the best under all conditions. No beginner should for one moment entertain the though of using loose frames. We are aware that this style of frame is used and recommended by

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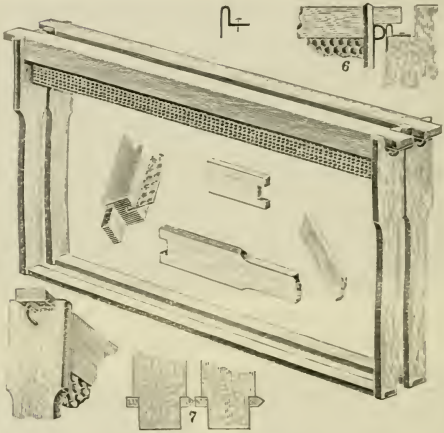

HOFFMAN FRAMES.

some of our oldest bee-keepers; but in our opinion the Hoffman is so far superior that, could our old friends be only induced to give it a fair trial, the former would soon be converted into kindling.

In some localities bees do their swarming before, in some during, and in some after, the honey-flow. In the latter case it is not as detrimental as in the two former; but in any case, swarming is a hindrance to the best results in honey-production. Bees which should be working with concentrated energy in one hive, divided into half a dozen diminutive swarms, in most cases are of no use to themselves or the bee-keeper so far as honey-production is concerned; and the supers, which would otherwise have been well filled, are almost entirely depleted of what they may already

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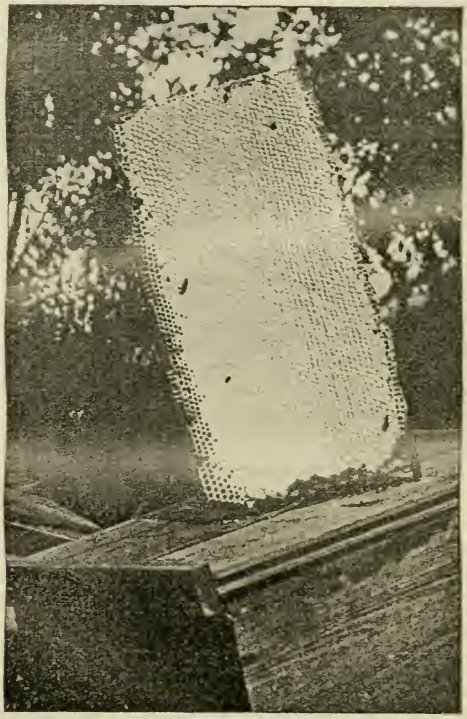
contain in order to supply provender for the new swarms.

Now it will be seen that, in order to get good results, swarming must be kept under control, and at the same time the colony must be kept strong. This may be accomplished by using the "shook" or brushed-swarm system. This, briefly explained, is as follows: As soon as a colony swarms, or shows symptoms of swarming, take away the brood-nest and substitute another with frames of foundation instead, putting the honey-board and supers of the same, if the colony had these on originally. Now shake the bees from the old brood-nest in front of the entrance of the new one. (Make sure that the queen runs in along with the rest; for, if she is missing, the colony will be hopelessly queenless.) The bees will then go right to work, fix up their new brood-nest, and the storing of honey will be continued as though nothing had happened. *Never* give the shook swarm any brood whatever. The frames of brood from the old brood-nest may be distributed among weak colonies; or they may be left near the old stand with a few bees to take care of that which is unsealed, the entrance of the hive containing them turned in the opposite direction to that which it originally faced. At the end of three weeks (at which time all the brood will have hatched) the bees may be dumped in front of the old stand and made to unite with the bees first shaken.

The following is another good plan for controlling swarming: Remove the brood-nest of the colony that is expected to cast a swarm, and place its upper story or stories on a bottom-board in its place. Put the removed brood-nest immediately behind the stand it

formerly occupied, and now occupied by the upper stories, turning its entrance in the opposite direction. The bees of working age, not knowing of the change,



FRAME OF SEALED HONEY.

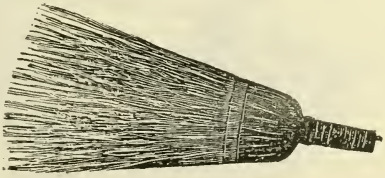
will return to the old location. Thus we shall get the *workers* just where they are wanted—in the honey-

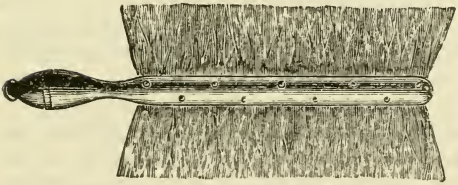
apartment; and, at the same time, the strength of the brood-nest proper will be so reduced that all ideas of swarming will be given up, and in most cases the bees will destroy all queen-cells already started. In eight days the brood-nest can be returned to its former position and the supers placed on top. In many instances no further idea of swarming will be contemplated. During the time that the colony is divided, a laying queen should be caged in the queenless portion, in order to keep the bees quiet.

3.—TAKING HONEY OFF THE HIVES.

We will assume that you have been so far successful —that you have succeeded in getting your colonies

THE COGGSHALL BEE-BRUSH.

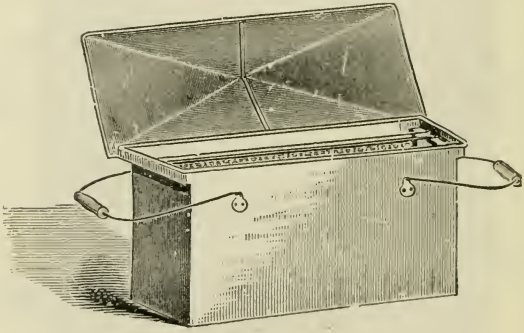




THE DIXIE BEE-BRUSH.

in good condition for the flow; have kept swarming well under control; have done your supering judi-

ciously, and now your attention must be turned to extracting. Look over all of your upper stories, and mark those which contain sealed honey. Bee-keepers, especially beginners, often like to "rush" matters, and extract honey that is unsealed. If you do this you will be making one of the worst moves possible to the bee business; and such an action will in all probability react against you individually, ruining your standing with the wholesale honey-dealer, as well as with your local trade.

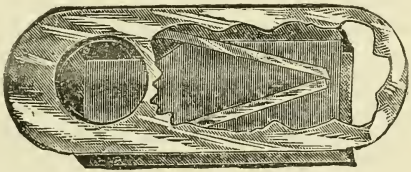


COMB-BUCKET.

It is not always necessary to wait until the end of the flow before extracting. It is sometimes advantageous to extract all ripe honey before, as there will be no robbers to contend with, and the combs extracted will come in handy for putting on again and getting refilled. As long as the flow lasts, extract only that which is well sealed, leaving on the partly sealed combs until after the flow, in order to get the honey in them ripened as much as possible. We may mention here that some large extracted-honey producers prefer to leave all

honey on the hives as long as possible, claiming that by so doing, they get a much thicker and better grade. While this will insure a very fine article to the discriminating connoisseur, yet it is not enough better so that the public will pay more for it. When the flow is over, and all the honey is removed, the combs should be carefully sorted, all the unripe honey extracted by itself, and used for feeding, or sold for manufacturing or any other purpose where sugar syrup would be used; but it should never be sold for a table honey.

How to **remove the bees from the super.**—Some practice removing the full supers, bumping them around on the ground, thus jarring the bees and causing them to fall from the combs. This is far from being a good plan, as bees are killed, heavy combs of honey are broken down, the frames themselves are broken, and



Porter bee-escape, showing springs.

robbers soon make themselves heard and felt. Others practice getting the bees from the supers by smoking between the combs. This is another poor way of doing it. Imagine the excitement caused by the excess of smoke necessary in order to be effective—so much, indeed, as to cause "unbidden tears" to flow from the eyes of the operator. The colony sometimes gets so excited as to ball its own queen, and becomes so

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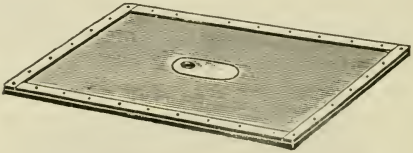
demoralized that it yields itself a prey to the first attack of robber-bees. Again, the quality of the honey taken from the hives is sometimes slightly injured on account of being tainted with the smell and taste of smoke.



Porter bee-escape on board in position for use.

Another way to get bees from the combs, and one which is better than either of those given above, is to brush them off comb by comb. For doing this, either the Coggshall or the Dixie brush will be the right kind to use. Have a couple of empty hive-bodies sitting on a wheelbarrow or cart close at hand. Give a little smoke; lift the super off and brush the bees in front of the hive, putting the combs of honey into one of the hive-bodies. Even this method is anything but desirable. Be careful as you will, robbers will put their noses in, and, before long, their tongues and stings, too. Besides, there is nothing that aggravates the bees more than being brushed, and they will demonstrate their feelings in the most effective way. There is only one satisfactory method of getting bees out of the supers, and that is by escaping. Space forbids our describing the several kinds of escapes. The mention of the one we use and recommend will be sufficient. This is known as the Porter, and is used in connection with a board as illustrated. Place this on beneath the

super you wish to get the bees out of late in the afternoon, and by the next morning it will be found practically free of bees. The advantages derived from the use of the escape are apparent. There is no brushing nor shaking, no stinging, no robbing, and no smoking. Hundreds of pounds of honey may be removed from the hives without receiving a sting or using a whiff of smoke. Where a colony has on one super only, and it is desirable to remove it, don't put the escape on top of the honey-board and escape the bees into the brood-nest. but put an empty super between and the escape on top of it.

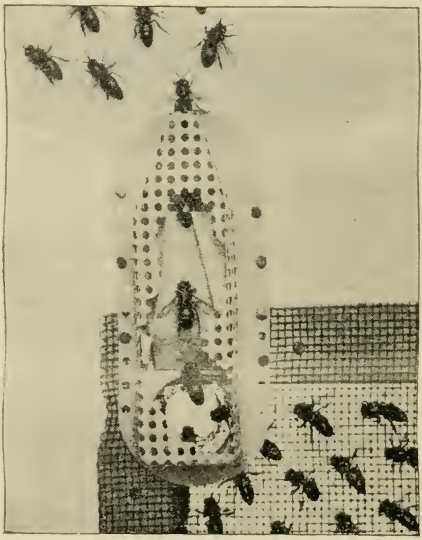
Sometimes the springs in a Porter bee-escape get propolized, and stick so that the bees can not get through. When this is the case, remove it from the board and place it for a few minutes in a kettle of boiling water. This will remove the propolis, and make it workable again.

After taking your supers of ripe honey off the hives, remove the escape-boards also, and put on the covers. Then place the supers on a wheelbarrow, or some other handy device, and remove them to the honey-house and stack them up neatly. Before we proceed to deal with the next step—extracting—we will give a few hints on

4.—FIXING UP THE HONEY-HOUSE FOR EXTRACTING.

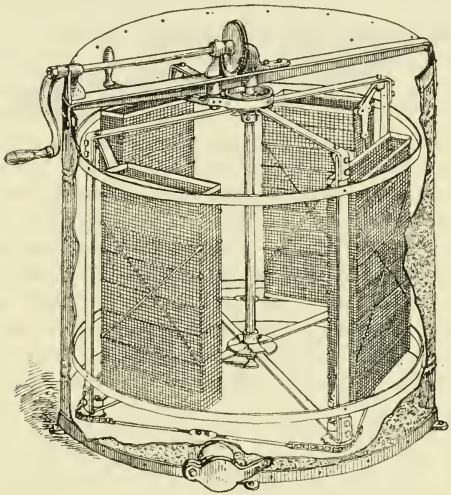
The first requisite is a bee-tight house, having wire-cloth screens with Porter honey-house bee-escapes on the windows and doors. Whatever bees intrude when the supers are being carried in will soon make for the light, and eventually get out through the escapes. For

a little while after commencing to extract, robbers, attracted by the smell of the honey inside, will loaf around; but, finding no means of ingress, they will soon cease their futile attemps to enter, and turn their attention to some more profitable and honest employ-



Escape in position on honey house window.

ment. One who does not own a bee-tight honey-house must do his extracting at night, covering up everything snugly when he gets through. If not, bees will take possession of the house the next morning, and get into everything that contains honey, and he will find it



Reel of four-frame reversible Cowan extractor.

almost impossible to drive them out and restore the normal conditions of quiet.

Well, presuming that your bee-house is in good order, and that the windows and doors are all nicely fixed up with Porter honey-house escapes, the necessary inside fixtures, for an apiary of about 100 colonies, will be—an extractor, two tanks (one for light and one for dark honey), an uncapping-can, two honey-knives, and two stout pails. Extractors are made in different sizes—from two to six frames. For an apiary of the size mentioned above, or smaller, a two-frame Cowan reversible will do nicely; but if you contemplate going into the business to any greater extent, we advise you

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to buy one of the larger sizes. These are set on ball-bearings, and the pockets are connected with a chain and sprockets, so that reversing one reverses all. Make a strong platform about 2½ feet high for your extractor to rest on, and fasten the same to it by means of the lugs at the bottom. Screws for doing this are supplied with each extractor. In addition to these, a pair of stay-rods and screw-hooks with each of the four-frame machines are furnished. Screw the hooks in the stand on each side of the extractor; attach the stay-rods to them at one end and to the handles of the extractor on the other, and screw the turn-buckle until the desired tension is reached—don't overdo it. *Oil the parts of your extractor every time it is to be used.* We have visited apiaries in California in which the parts of extractors had literally worn out for want of lubrication.

Tanks.—Large casks with a faucet in the bottom of each might be used; but these give more or less trouble from leaking; especially is this the case in warm climates. In dry climates like that in Colorado or California they could not be used at all. Large galvanized-iron tanks with suitable honey-gates will be more satisfactory in all places. We don't keep these in stock, but can make them to order of any given size. Put in two tanks or from 80 to 100 gallons capacity in a convenient position in the honey-house on stands like that upon which we advised you to mount your extractor. These are for storing and settling the honey, and obviate, to a great extent, the disagreeable necessity of straining.

Honey-knives.—These are used for cutting the cappings off the honey-combs. See that they have a keen edge, such as would be given by a very fine whetstone,

Bingham uncapping-knife.

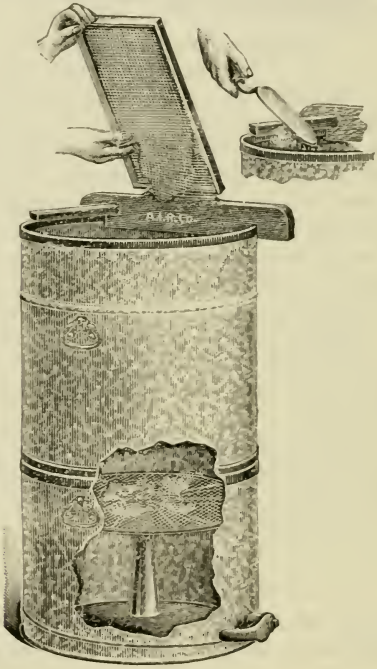
and are thoroughly clean before commencing operations. The Bingham knife is the one we recommend for heavy extracting. Some advise using the knives hot. This is done by keeping one in water slightly warmer than luke-warm on a small oil-stove near by while the other is in use. Others object to this on the ground that it entails more trouble, and the knife, if it gets too hot, melts the cappings and makes a mess, the wax congealing on the edges and rendering it hard to use. Whether the knives shall be heated in water or not will depend upon the character of the honey. In California we have used the heated knife, as the honey is so thick.

Pails.—These are for taking the honey from the extractor, and pouring into the tanks for settling. They should be of good, stout material, and have handles capable of bearing the necessary strain.

5.—EXTRACTING.

In order to do the work expeditiously, not less than two people should attempt it—one to do the uncapping and the other to extract. Take the comb from the super and place it on the frame on top of the uncapping-can. The projecting screw-point in the frame will absolutely prevent any slipping, and act as a pivot upon which the frame can readily be turned from side to side. In commencing the operation the top of

the frame should lean as much to the left of the perpendicular as it does to the right in the illustration. Gradually tip it over to the right as the flakes of cappings begin to peel off. This will prevent their sticking to



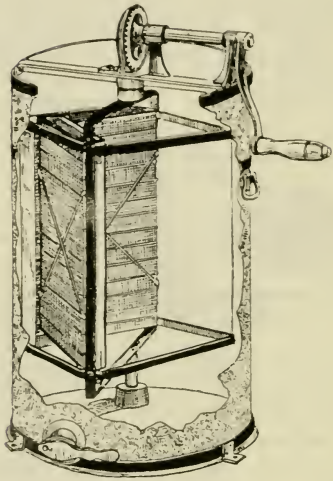
The Dadant Uncapping-can.

the comb and having to be scraped off. As is shown in the illustration, the knife should begin at the bottom and work upward. The fewer bits of cappings you get

on the surface of comb uncapped, the cleaner the honey extracted will be. In uncapping combs, don't try to *press* the knife along through the cappings, but proceed with a forward and backward motion, the same as if you were using a saw. Don't be content to peel off the cappings a little at a time, but make a practice of uncapping as wide a surface as you can; and if you practice in this way, ere long you will be able to take off the entire surface of a fully sealed comb without once removing your knife. It is now that the advantage of wide spacing will be seen. The combs that have been widely spaced being thick, it will be both easy and pleasurable to uncap them.

How deep should we cut in removing the cappings? You will find it difficult trying to remove the bare cappings. Cut a little below them. If the combs have been spaced as recommended before in this, you may cut almost even with the top-bars. If they are thin, you will not be able to cut as deep, but any way, you should remove enough comb to hold the cappings together.

Don't extract with the pockets of the extractor hanging in such a manner that their ends come together (see illustration of wrong position), neither attempt to extract one comb at a time. In either case the extractor will bump and jolt in a miserable fashion. Put a comb in each pocket and see that they are exactly opposite each other. A few revolutions will be sufficient to throw out the honey from one side of each. After this is done, reverse the pockets so that the sides of the combs full of honey come toward the side of the extractor, and turn again. With a little practice the reversing can be accomplished without stopping the extractor, merely slowing it down. As soon as the combs



Two-frame reversible Cowan. Pockets in wrong position.

are extracted, pack them in an empty hive-body in a corner of the honey-house where they will be out of the way till evening. The reason for this will be explained a little further on.

The directions given here are for a two-frame Cowan extractor. In a Novice the *combs* and not the pockets are reversed; and in a four or six frame Cowan the chain gear keeps the pockets always in a right position toward each other. These big machines can also be reversed without stopping.

Keep the honey-gate of the extractor closed until the honey extracted reaches nearly to the bottom of the pockets, and then draw it off and throw it into the

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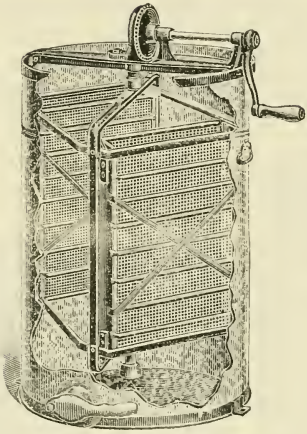


Two-frame reversible Cowan. Pockets in right position.

tanks. Don't attempt to strain it *before* putting it in, as this only entails additional and unnecessary work. Honey should always be allowed to get high enough to lubricate the bottom pivot of the extractor reel; otherwise this part should be oiled like the rest.

If you attempt to put the extracted combs on hives as soon as the honey is taken from them you will find that the bees will take advantage of the opportunity to enter the house every time the door is opened, and soon they will make the job of extracting very unpleasant for you. Besides this the combs put on will, in all likelihood, incite robbing, and you will thus have two jobs on your hands at once. We advise putting on extracted combs in the evenings, as the bees will have time to

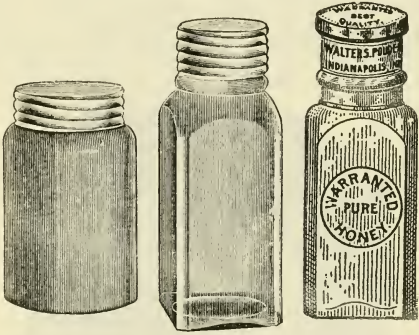
clean them during the night, and by morning the chances of robbing will be very remote.

If you have to do several extractings within a few days of each other, don't put the fresh cappings on top of that which is half drained; but before you begin to uncap, remove them from the uncapping-can and put them in a receptacle of some sort (one that won't leak); and when you are through with extracting the honey you have on hand, put them back in the can *on top* of the fresh lot. The honey must be drawn from the uncapping-can before it gets too full, and treated the same as that removed from the extractor, and the cappings rendered into wax when sufficiently dry.

6.—PACKAGES FOR EXTRACTED HONEY.

Now we have got our honey extracted and put into the storage-tanks, and the next thing that confronts us is to put it into suitable packages for market. But you may ask, "What is the necessity for putting the honey into tanks? Why not strain from the extractor and uncapping-can directly to the vessels in which it is to be sold?" Well, you will be better able to grade honey by putting it into tanks, but we advise using them chiefly as a means of settling the honey. You must remember that this, when taken from the extractor, contains particles of comb and other foreign substances. If you attempt to *strain* it then, you will find it a slow and tedious job; but twenty-four hours after remaining in the tanks the honey will precipitate, being of greater density, and the substances that are of lighter consistency will rise to the top. It can be then drawn off at the bottom without straining, although, to make

assurance doubly sure, it may be well to let it pass through a cheese-cloth strainer. This should be placed, not over the honey-gate, but into the hole in the honey-receptacle. If the honey be allowed to settle for some thirty-six hours, it will be quite clean, and the strainer



Glass Packages for Honey.

will not get foul. Of course, it should be drawn to within only about an inch of the honey-gate; if lower than this, straining will be an absolute necessity.

For local retail trade, honey-jars, tumblers, and Aikin's paraffined paper bags can be used (the latter for candied honey); but for shipping to the wholesale dealer or commission man, barrels of five-gallon tins should be used. In dry climates the wooden receptacles should never be used.

In procuring honey-packages, every precaution should be exercised to see that they are clean and sound. You may pick up second-hand barrels and tins at half-price very often, but you will, in nine cases out of ten, find it more profitable to use a good new article. Our honey-

clerk has just informed us that the quality of what was a truly fine article of clover honey just received has been seriously damaged by being shipped in a second-hand dirty cask. Unless you learn to do better than this you will always run the bee business at a loss, and, in fact, had better not touch it at all.

In using barrels, see that the hoops are driven on firmly before the honey is put into them, and, after filling, thoroughly examine, and, if necessary, recooper

AIKIN'S PAPER BAGS FOR CANDIED HONEY.

again; but don't soak a barrel with water to make it tight. Never attempt to ship a leaky barrel, hoping that the joints of the wood will swell in time and the honey stop leaking. Water and many other liquids may have this effect, but honey never causes a stave to expand. In fact, on account of its weight and peculiar consistency it will find a leak where hardly anything else can. Coating the inside of the barrels with par-

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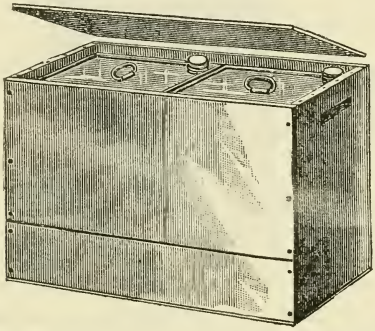
affine or wax will help matters greatly. Some use second-hand alcohol-barrels. These are usually well made, and contain a coating of some sort which prevents leakage. If one head be taken out, and they be thoroughly cleaned, they will answer the purpose well enough.

Fill each barrel to within about an inch of the bung-hole. Wrap the bung with burlap and drive it in as far as it will go without splitting the stave. If any of



Case with two 5-gallon cans.

it projects above, shave it off, so as to bring it level with the stave. When this is done, tack a strip of tin nearly over it; also put a few tacks around the hoops to prevent them from falling off, and your barrel of honey is ready for shipment.

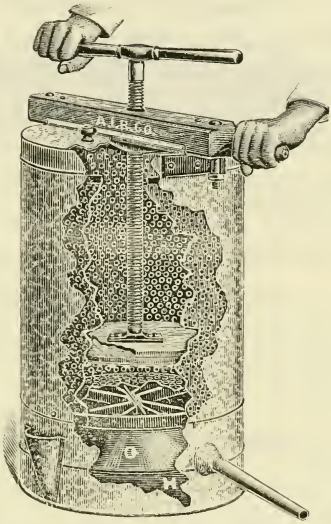
In some localities (such as California for instance) the climate is so warm and dry that it is next to impossible to make barrels work with any degree of satisfaction. In such places the sixty-pound square can

should be used. These are shipped generally two in a case. It is well to fill them nearly full and press against the sides in such a manner that the air is excluded and the honey comes up flush with the top of the holes. Then put on the corks and screw down the caps very firmly. This has a tendency to prevent bulging on the part of the tins. Tins are somewhat more expensive than barrels, but the difference in price is offset by the non-leakage of the former and the extra price obtained for the honey put up in them.

To sum up briefly the subject of honey-packages: For local retail of liquid honey, use glass jars or tumblers nicely labeled; for candied honey, use the Aikin paper bag; for dark honey sold for manufacturing purposes, use good barrels (where locality permits their use), and for the best grades use square cans.

RENDERING WAX AND HONEY WITH THE ROOT-GERMAN WAX-PRESS.

In some parts of the world—as, for instance, in Scotland and Germany—certain kinds of honey are so thick that bee-keepers waive the question of extracting, and squeeze it out of the combs with a press. We advise none of our readers to do this, but simply quote this to show that the squeezing of honey out of *pieces of broken comb* and half-drained cappings is practical. A wax-press of some sort is an absolute necessity in an apiary. Now, when cappings and broken pieces of dry comb are to be rendered, the solar wax-extractor is all right; but when bits of comb with honey are put into them, the market quality of the latter is destroyed. The Root-German wax-press takes away the difficulty.



The Root German Steam Wax-Press.

Place the combs or cappings in the basket, and squeeze out all the honey without the application of heat in any form, then melt the remainder of wax by generating steam in the compartment beneath.

Full directions for using are supplied with each machine; and if these be carefully followed, it ought to pay for itself easily by rendering into wax such refuse as would go to waste when other forms of wax-extractors are used.

THE A. I. ROOT CO., Medina, O.

April, 1904.

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