Bees in box hives

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PREPARING BEESWAX FOR MARKET

By R. S. COLEMAN, Government Apiculturist

BEESWAX is an extremely valuable commercial product in these days, and no apiarist can afford to neglect this important by-product of the honey industry. Apart from the large quantities needed within the industry for the manufacture of foundation comb, beeswax has a wide variety of industrial uses. It is an important component of polishes and is widely used as a waterproofing agent and in the insulating of delicate electrical equipment.

The beekeeper anxious to produce clean bright beeswax needs simple equipment which need not be costly but he must keep in mind two basic principles.

The first of these is that the wax must not come into contact with any metal surfaces unless they are well-tinned or zinc-galvanised. Contact with iron, whether rusty or bright, gives the wax an irremovable dirty brown colour.

The second cardinal rule is that beeswax should be cooled very slowly after melting. If possible the wax should be kept in a molten condition for 12 hours. This will allow the dross to settle completely and give a clean block of wax.

The beekeeper gathers wax from three main sources, the cappings reducer, from the rendering down of old combs and from the salvaging of burr comb but the first-named source yields by far the greatest quantity.

Wax from cappings needs very little preparation but does benefit from suitable treatment before being sold. Melt the wax in water in a heavily-tinned container of a size suitable to the quantities of wax which have to be handled. Use rainwater if possible to keep the wax floating free of the bottom of the container and as a safety measure keep a bucket of cold water handy to pour into the wax if it shows signs of boiling over. If rainwater is not available care should be taken not to use water containing alkali. Beeswax is slightly acid in reaction and alkaline water may cause a spongy mass to form on the bottom of the blocks of wax. Frothing of the wax will denote over-heating, and over-heating for long periods is apt to spoil the colour and consistency. The level of the wax may be regulated by adding or removing water. Heat over a slow fire until the wax melts freely then keep the wax molten as long as possible over a small banked fire. This
allows ample time for dross to sink to the bottom or rise to the top and the clean wax may then be drawn off into tapered moulds. Smearing honey over inside surfaces of the moulds will prevent the wax from adhering tightly when cold.

**A WAX REFINER**

The following method of making a simple wax refiner was described in the Agricultural Gazette of N.S.W. (See Fig. 1.)

Obtain a 44-gallon drum of the heavy galvanised type, and remove the top with a cold chisel.

In the side of the drum, about two inches from the bottom, cut a hole to take a piece of one-inch galvanised piping about 11 inches in length. This is threaded at both ends and has a 90 degree elbow screwed on each threaded portion. Fit the rose of a watering-can to the elbow inside the drum and to the other elbow attach a piece of one-inch pipe about 33 inches long, terminating in a funnel.

Secure the long piece of piping by riveting and soldering a strap over the pipe about two inches from the top of the drum. Solder round the hole where the pipe passes through the drum in order to make it watertight at this point.

Fit a small low-pressure water tap near the bottom of the drum, and about 17 inches from the top of the drum fit a small honey-gate or similar type of tap. These, of course, should be soldered or fitted into position with suitable back-nuts. Make a wooden lid to cover the drum.

To use the refiner, fill the drum with water to the level of the wax tap (A). Heat over a small fire until the water boils and then draw portion of the fire so that the water does not boil furiously. Add the wax from the cappings reducer, or blocks of wax which require further refining, and stir regularly until all the wax is melted.

When all the wax is in a liquid state, withdraw the fire and allow the drum to stand for five minutes then skim the surface with a piece of gauze to remove any foreign matter lighter than the wax such as dead bees, chips from the frames, etc.

Next test the wax level by opening the wax tap and allowing a few ounces of the content to run out. If you have estimated your wax level correctly the wax will run out but if the water is too high, water or slumgum will issue. This can be rectified by running water out of the lower tap (B) until the correct level is obtained. Place the lid on the drum and cover with bags or similar material to conserve as much heat as possible for as long as possible. The longer the cooling period the more com-
plete will be the sedimentation process and the cleaner will be the sample of beeswax obtained.

The wax should be run off when a film commences to appear on the surface around the edge of the drum.

When the wax has been run into suitable moulds the moulds should be placed where they can cool slowly. If placed on cold concrete floors or in a cool draught of air the beeswax cools too quickly and contracts in the process, resulting in unsightly cracks appearing in the wax instead of the blocks merely shrinking away from the moulds.

When the wax stops running from the honey gate or wax tap slowly add boiling water through the funnel. This will build up the level and allow the wax to flow again. Continue to add water slowly at intervals until slumgum appears at the wax tap. The tap should be closed at this stage and the drum and contents allowed to cool. A thin layer of wax will remain on the surface of the water but this may be salvaged and treated again when larger quantities of wax have to be refined.

OLD COMBS

When salvaging wax from old combs, carefully remove all bee-wires as these are apt to discolour the wax. Soak the combs for 24 hours as this prevents the cocoons and larval casts, etc., in the combs from absorbing large quantities of wax which could not be forced out by the press. The wax is then melted down in a little water over a slow fire.

There are many methods of removing wax from old combs but the wax press is easily the most efficient. When using a press, hessian is placed in the press and the molten comb is then poured into the hessian which is folded over to form an envelope. Pressure is then applied until the wax stops running, the plate is screwed back, the hessian envelope opened and more molten comb is poured in. After two or three pressings, instead of pouring in more comb, boiling water is poured into the hessian envelope and pressure applied once more. This is repeated until only the slumgum remains in the envelope together with a negligible quantity of wax.

Where a press is not available the small beekeeper often melts down the comb and strains it through fly-wire but this leads to considerable wastage and is not recommended. A better method is to place the soaked comb in a hessian bag which is then boiled in a drum with a wooden grate between the bag and the bottom of the drum to prevent the bag from charring. Pressure is applied to the bag in order to squeeze out the wax which will float to the top of the water and may be removed when cold. Even this method wastes much
valuable wax, however, and for the small beekeeper I would recommend a device which I think was invented by Mr. L. R. Thomas of Ravensthorpe and subsequently described in "The Western Mail." (See Fig. 2.)

A seven-inch square board is cleated at the ends to prevent splitting and has a number of one-inch holes bored in it. A 30-inch length of 2 in. x 2 in. timber is then tapered so that the top end finishes about one inch square. This timber, which forms the handle, is screwed firmly to the square board and a number of small holes three inches apart are bored at intervals near the narrow end of the handle. This completes the pressure portion of the wax extractor.

To operate, cut away the top half of a sugar bag and stuff the lower half with old combs, cappings, pieces of wax, etc. Sew across the mouth of the bag very tightly, using a bag needle and twine, then place the bag of wax into a kerosene bucket to boil. The bucket should be a new one that is well-tinned. Insert the wooden pressure portion in the bucket and secure it by passing the wire pin through the lowest hole in order to keep the bag of wax below the surface of the water. As the wax melts, press the bag further down by altering the position of the wire pin but do not press the bag so far down that it touches the bottom of the tin. Reduce the fire when the water boils and allow the mixture to simmer gently for about ten minutes. Lift from the fire and push the pressure stick down to its limit. Allow to rise slowly then press it down slowly about half a dozen times never lifting it more than about three inches. Finally press it down hard to the bottom of the tin flattening the bag of slumgum as much as possible and pass the wire pin through the highest possible hole in the handle so that it will be held in this position.

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**SOLAR WAX EXTRACTOR.**

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**Fig. 3.**

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If this is done as recommended all the wax will now be floating on top of the water. Add boiling water until the bucket is more than three-quarters full then put it aside and allow to cool slowly.

At the end of the cooling period you will have a clean block of beeswax which will have set around the handle. A light tap will remove the handle leaving the block of wax with a square hole in the centre.

**BURR COMB**

The third source of saleable beeswax comes from the rendering down of burr comb. It is surprising what a large quantity of wax can be saved over a year by carrying a tin on the barrow and, after examining a hive, throwing the burr comb into the tin instead of tossing it away to become a breeding spot for wax moth.

This burr comb is best treated in a solar wax extractor. (See Fig. 3.) Primarily, this is a wooden box with a galvanised iron trough in the bottom and a glazed frame over the top, preferably two thicknesses of glass with a slide or space between them. The box is placed on a slant facing the sun and the wax is thrown on the top of the slope, usually over a sheet of perforated zinc or zinc-coated fly-wire to serve as a strainer. When melted by the sun the wax runs into a container at the bottom of the box. The temperature in a solar wax extractor reaches well over a 150 degrees F. and even when the shade temperature is not much over 70 degrees F., very high temperatures will be registered inside the extractor.

Another advantage of the solar wax extractor is that the wax is bleached as it runs down the slope, producing a light coloured product which brings high returns.

The best return for any product is received when it is marketed in an attractive form and beeswax is no exception. The small amount of trouble taken in making the wax attractive will be amply rewarded by increased prices.

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**BEES IN BOX HIVES**

*A Simple Transfer Method*

By A. KESSELL, Junior Technician, Apicultural Branch

The keeping of bees in other than properly appointed hives with standard frames is illegal in Western Australia as such hives make it almost impossible to inspect the swarms in order to check for disease. Nevertheless, beekeepers occasionally encounter swarms which have established themselves or have been established in fruit cases or other types of boxes or containers.

To transfer the bees to standard hives, smoke the box fairly heavily and move it to a position about six feet to one side of its original site. On the vacated site place a standard hive containing one or two drawn combs on one side.

Stand the box on its end and remove the bottom boards, after cutting free any comb which may be attached to them. Now tip the box until the combs are roughly vertical and smoke the bees heavily so that they move to the top of the box. Many will fly back to their old stand and enter the standard hive while the remainder will cluster on and between the combs at the top of the box.
Now carry the box to the hive and with a swift jerk throw the cluster of bees into the hive. With most of the bees out of the box, rip off one side, cut out the combs and brush the rest of the bees into the hive. During the whole of the transfer operation keep a look out for the queen bee and if she can be found place her in the frame hive to hold the bees there.

Put any comb containing honey into a basin for attention later, and cut the brood combs to such a size that they will fit into standard frames. Place these sections of brood comb into frames and tie in position with string, crossing the strings on the inside edges of the top and bottom bars. Place these frames immediately in the frame hive where the bees will fix the comb in the frame and eventually chew away the strings. These combs will not be wired of course, and after a brood has hatched should be removed as they will not stand much handling.

The combs containing honey may be melted in a cappings reducing or cleaned up by the bees in the hive. To do this place a queen excluder on top of the frames and cover it with a sheet of paper which is smaller than the excluder by about one inch all round. Dump the broken comb on top of the paper and place an empty super round it and then replace the lid.

In about three weeks the bees will have cleaned out all the honey and stored it below leaving the wax behind. This method stops any robbing and the honey is not damaged by heat.