Easily-constructed paraffin-wax dipper

by Andrew Matheson, Apicultural Advisory Officer, MAF, Nelson.

FOR A LOT of beekeepers, a paraffin wax dipper is an essential part of their outfit. Paraffin dipping is an excellent method of preserving hive equipment, and can be used for sterilising diseased gear if the permission of the local MAF apiary officer is obtained.

An article in the June 1978 "NZ Beekeeper" described a paraffin dipper designed and built by Mr Norman Finlay of Ohaupo, in the Waikato. This dipper had a hollow central core, from which the chimney protruded. This feature ensured even heating of the wax, as cold spots are a problem of many simple vat-type dippers. Another advantage was that less wax would initially be needed than for a vat type.

Following the publication of the article quite a few dippers were built to the same basic design, and these work very well. However, the type does have a couple of drawbacks. The height of the chimney is an unsatisfactory compromise between being low enough to lift boxes over, and high enough to keep smoke out of the operator's face.

The bath is limited in the quantity of odd-shaped gear it can handle at one time, e.g. floorboards, nuc boxes, etc. And finally, the welding is relatively complex, which makes it an expensive proposition for those who can't make their own.

Quite a number of beekeepers have shown interest in building a paraffin wax dipper, but want one that can be simply constructed, will easily accommodate different types of gear, and still ensure evenly heated wax. Such a type has been built by Mr Keith Detlaff of Ross, Westland.

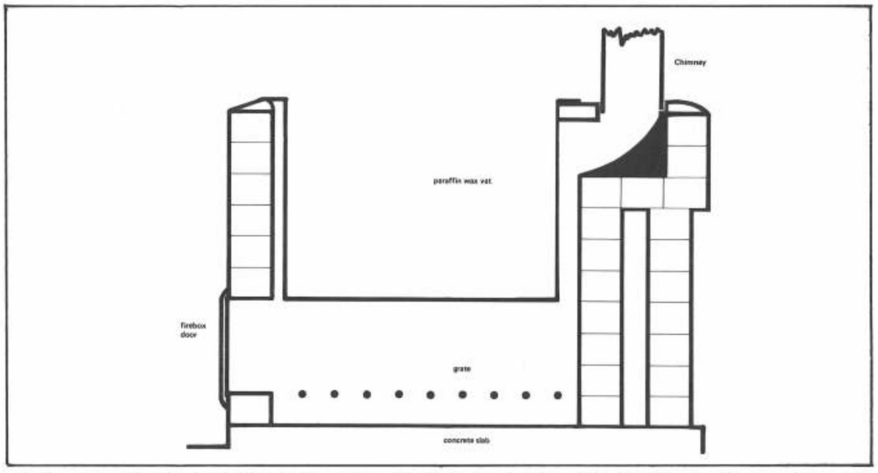
Keith's brother Basil, who keeps bees at Harihari, first modified an existing wax dipper by adding a double skin of brick to ensure even heating of all sides of the tank. Keith then built his own dipper from scratch, using a similar principle.

Its main features are

- a steel vat to contain the paraffin wax
- a brick surround to provide a double skin
- a long chimney
- a firebox door to enclose the fire.

The steel vat sits in the brick surround, supported by a 50 mm lip of 6 mm plate steel on all sides (see fig. 1). The actual tub is 635 mm long, 430 mm wide and 480 mm deep to the rim. The bottom is constructed of 6 mm plate steel, and the sides are 3 mm thick. In this case Keith made the sides out of one piece of steel which he partially cut and bent on three corners.

The fourth corner and the cuts were then welded together. This made use of some materials which happened to be available, but there is no reason why four separate pieces cannot be used for the sides.



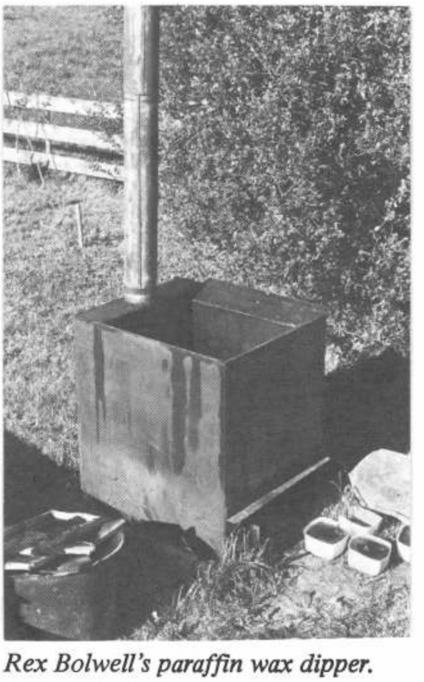
A longitudinal section of the wax dipper, showing the method of attaching the chimney.

The vat hangs inside the brick surround, with about a 32 mm gap on all sides to allow the fire to circulate. At the rear of the dipper there is an extension which accommodates the chimney (see diagram). The bricks sit on a concrete slab. Bricks were used because they radiate much less heat than a steel-walled firebox, which makes the job of wax dipping a lot more comfortable. The bricks also happened to be available and so all that was needed was a day's bricklaying work, which Keith did himself.

A grate is provided in the firebox, and while this is not essential, it does make managing the fire easier. For safety reasons, the firebox is enclosed by means of a door from an old copper, although a small hole must be chipped in the mortar below the door to allow air into the fire. The two-metre high chimney draws well, and keeps smoke away from those using the dipper. The damper is a relic of the chimney's previous service in a copper, and is never used there.

This wax dipper holds about 85 to 90 kg of paraffin wax, when filled to its normal operating level 125 mm below the rim. Paraffin is currently around $1.00/kg. The paraffin should be

Keith Detlaff's paraffin wax dipper ready for use.



Rex Bolwell's paraffin wax dipper.

heated to 160 degrees C, and it is a good idea to use an oven thermometer attached to a stick, rather than relying on guesswork. Hive equipment normally gets about five minutes immersion, although for sterilising diseased gear 15 minutes is required.

A temporary draining board made of corrugated iron is being used at the moment, but Keith does intend to make a more permanent arrangement in the future.

With this method the boxes are drained for a few seconds while more gear is put in the dipper, and then quickly scraped clean of any quantities of propolis or blistering paint. The boxes are immediately given two coats of acrylic paint which is drawn into the wood by the cooling wax, and dries almost instantly.

The cost of this unit is difficult to assess, as most of the materials were already available and Keith did all the work himself.

Mr Rex Bolwell of Riwaka had a wax dipper built for him, incorporating the same design principles. This unit was made entirely out of 3 mm plate steel, and was manufactured by local engineering firms. The cost of steel, cut and folded, was about $150, and the welding cost $70.

In this version the vat is 600 x 500 x 600 mm deep. which is deep enough to accommodate two full-depth hive bodies. There is 100 mm space between the vat and the outer skin, to allow for free circulation of flames. The vat is supported underneath by a length of 25 mm angle iron welded to the outer skin on each side. This is not welded to the vat, which simply sits on the support.

Other features of this model are the sloping lip at the top of the vat, a detachable chimney (again, about 2 m high), and a drain pipe at the bottom of the vat, which leads out through the outer skin. It is important that this is welded to the vat only and not to the outer skin, to allow for expansion of the metal. The drain pipe should be about 25 mm in diameter, with a simple threaded bung to seal it. Provision of a drain means that the paraffin can be removed and replaced with water, for melting out old combs.

The bottom of the vat is made of two thicknesses of 3 mm plate steel, to give extra strength and longer life. All joints are welded from both sides to reduce the risk of the vat bursting. The dipper sits directly on the ground, and the firebox is about 250 mm high. There is no firebox door at present. The vat is deep enough to accommodate two full-depth boxes and still leave an adequate safety margin at the top. The disadvantage of this depth is that it costs a small fortune to fill.

Nevertheless when it is full, a relatively small amount of wax is consumed in dipping hive equipment, probably only about five cents worth per super. Paraffin dipping is becoming increasingly common these days, and is a wise protection for expensive hive equipment.

Make sure your accountant does it right

FOR INCOME tax purposes beehives are regarded as plant.

The cost of hives bought by someone starting beekeeping and the cost of extra hives bought by an established beekeeper should be treated as capital. In other words, the cost of new hives is not deductible in calculating assessable income.

You cannot depreciate hives in your books, but first year depreciation in terms of section 112 of the Income Tax Act 1976 may be claimed in the year when the additional hives are first used. The rate at present is 25 per cent of cost.

If hives which have been subject to the first year depreciation allowance are sold, any depreciation recovered in the sale price will be added to the beekeeper's assessable income.

The cost of repairing or replacing hives which have become dilapidated is fully deductible.

This treatment has been in use for quite some years. It was described in the New Zealand Beekeeper issue of March 1976. However, some beekeepers have been using a standard value system incorrectly described in some reference books.

The Inland Revenue Department is currently asking beekeepers who are not following the current practice to make the necessary change.