



Eva Crane Trust

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EVA CRANE  
HONEY

*All the breath and the bloom of the year in the bag of one bee!*

Robert Browning: *Summum Bonum*.

HONEY shares with milk the distinction of being intended by nature for use solely as a food. It is made by the bees from nectar secreted by flowers, both for immediate use within the hive for feeding brood, drones, and the worker bees as yet too young to forage; and for building up a winter store of food for the hive.

A flourishing colony, containing say 50,000 bees, may need 400 lb. of honey each year, and honey taken by the beekeeper must be surplus to this amount. Pollen, of which about 40 lb. is used annually, provides protein for the developing brood.

The wax, which is secreted by young bees, is used simply to make the comb; it has no food value.

Nectar (secreted in varying amounts by different flowers) has been tasted by most of us in childhood when we had the patience to suck the tiny clover blossoms—as we grow older we are content that the bees do this for us. Twenty thousand flights of a bee are needed to collect a pound of nectar; and even this yields only a quarter of a pound of honey, because nectar contains so much water—about 80%, most of which is driven off by the bees' own labour within the hive.

The conversion of nectar into honey does not consist only in the evaporation of water. The other process, also carried out in the hive, is the 'inversion' of most of the cane sugars (sucrose), which forms the remaining 20% of the nectar, into about equal amounts of fruit sugar (levulose) and grape sugar (glucose or dextrose). The 'ripened' honey finally contains only about 20% of water, and about 40% each of levulose and dextrose: less than 2% of sucrose is left unchanged. In addition, there are very small amounts of substances mostly coming directly from the nectar: the essential oils, which give different honeys their characteristic and individual flavours; dextrans, gums, tannins, enzymes, esters, acids, yeasts, traces of vitamins; also such minerals as iron, calcium and phosphorus. The flavour and aroma of honey differ enormously according to the flowers from which the nectar is gathered, and its composition depends to some extent upon the soil in which the trees and plants grew, and even upon the weather when they were blooming.

A few abnormal honeys contain other substances, and various writers, beginning with Xenophon in 400 B.C., have described poisonous honey. These references mostly relate to regions round the Black and Caspian Seas, and it is probable that the poisonous honey is that from *Rhododendron ponticum*. There are also a few extremely bitter honeys, such as that from chinquapin (*Castanea nana*) which tastes 'like a mixture of quinine and cayenne pepper'!

In the British Isles surplus honey comes mainly from white clover, sainfoin and charlock; lime, hawthorn and sycamore; willow herb and field beans; and finally, in August and September, the famous heather honey is gathered mostly from ling (*Calluna vulgaris*). The fruit trees, many of which are quite good sources of nectar, mainly bloom too early in the year to provide a surplus honey crop: the rapidly increasing brood in May needs all the honey the bees can produce.

In the United States of America, sweet clover, white and alsike clovers, and alfalfa yield large crops, with sage and orange and buckwheat in some States. Australian honey is mostly gathered from trees and is strong, sometimes even pungent in flavour.

Honey for sale is usually blended, as this enables the beekeeper to offer a more uniform variety year after year, even though local and temporal conditions may considerably alter the relative abundance of different sources. One advantage of keeping one's own bees is, of course, that a variety of different honeys can be made available by extracting after each 'flow', and can be enjoyed separately instead of being mixed into a standard blend. The surplus honey available to the beekeeper in Great Britain is of the order of 50 lb. per colony, although some districts in Norfolk and Devon may yield considerably more; and in some of the northern States of America a yearly average of 120 lb. per colony is quite usual.

The colour of honeys has as wide a range as their aroma and flavour, and in general the darker honeys are more strongly flavoured. Clover honey is amber, or even white, with a mild, delicate flavour; sainfoin honey is lemon-yellow and mild; apple, lime and sycamore give greenish honey, while honeys from fruit blossom, buckwheat and ling are dark and strongly flavoured. Most important commercial honeys are from clovers or are clover blends; or ling, which is so different from other honeys that heather honey is almost invariably marketed separately.

Heather honey is unique among British honeys in that it is *thixotropic* (Greek 'thixis' to touch, 'trope' to change). The liquid honey sets to a jelly when left to stand, but becomes liquid again on shaking. It is so gelatinous that it cannot be extracted from the comb by the usual method of centrifuging, in which the combs are spun round rapidly in a special container and the honey forced out of them. For this reason sections are often used; but the honey may be extracted either by pressing the combs, by scraping them, or—a more recent method—by piercing the base of each cell with a precision-made perforator, after which most of the honey can be forced out of the cells by centrifuging. Manuka honey from New Zealand is also thixotropic, and it is interesting that both ling and manuka honeys contain exceptionally large amounts of protein (1–1½% for ling, ½–1% for manuka). Other honeys contain only about ¼%. Mr. Pryce-Jones has found that if this

protein be removed from ling honey this loses its thixotropic properties, which may be given to clover honey by adding to it the extracted protein from the ling honey. The problem of thixotropy is a very real one for beekeepers in moorland districts as it complicates the extraction of their main honey crop.

Honey is marketed in three principal forms: extracted or run honey, sections (usually 1 lb.), and bulk comb or chunk honey. In the United States three-quarters of the crop is sold as extracted honey. This method effects a great saving in wax as the combs are returned to the bees already 'drawn-out', i.e. with the cells intact except for the capping. For cut-comb honey the larger combs (3 or 5 lb.) are cut into sections and the honey drained from the outer cells. A thicker mid-rib is necessary for these than for the small sections, but its advantage lies in the fact that bees work much better in large combs than in small sections; indeed, in a bad season it may be very difficult to get the bees to fill and cap the small sections.

Almost all honeys granulate or crystallize on ageing. The ease with which granulation occurs depends upon the relative amounts of grape sugar and fruit sugar. Honeys with appreciably more fruit sugar than grape sugar, such as sage and apple, granulate much more slowly than those such as alfalfa or brassicas grown on a lime soil, which have as much, or nearly as much, grape sugar.

Granulated honey may easily be liquified by standing the container in hot-water (about 140° F.), and, after heating, recrystallization is much slower. Higher temperatures than 140° F. should not be used as they injure both the flavour and the colour of the honey.

The *size* of the crystals varies enormously in different honeys. They may be as large as a pea or so small that the honey has a creamy consistency. Finely grained honey is preferred and may be obtained even from the coarsely crystallizing varieties by liquifying the honey in bulk and 'infecting' it with a small quantity of honey of the desired texture. Satin honey is obtained by this method.

Honey will keep almost indefinitely in an airtight container—or, of course, in sealed combs. If it is left open to the air it loses its flavour and, even more disastrous, it absorbs moisture from the air and, in time, ferments, especially at temperatures around 60° to 80° F. Honey taken from the hive before it is fully ripened has too much water in it and will ferment very easily. The fermentation of honey to make mead is a controlled

process and will be the subject of an article in another number of this journal.

### *Cooking with honey*

Honey was, until a few generations ago, the principal sweet food available in temperate zones, and there was no sugar for sweetening cooked dishes. Now that sugar is cheap and plentiful (in peacetime!) even in countries where it is not produced, and honey comparatively scarce and expensive, one tends to avoid using honey instead of sugar except in cases where for some reason it is superior. Since the flavour of almost all honeys is impaired or even destroyed by heating above 150° F., it seems to me unreasonable to use it instead of sugar, for *cooked* dishes, except where it is locally very abundant. There are, however, many very valuable uses of honey in the kitchen economy, and my own maxim is to use honey *in* cooking, but not to cook it. In any case, high temperatures should be avoided. Heather honey is exceptional in that its flavour seems to survive almost any treatment, and I have boiled and baked with heather honey, and have recognized and enjoyed its flavour even when it was originally present in quite small quantities.

One property of honey which is an asset in certain types of cooking is its ability to absorb moisture from the atmosphere. It makes honey very suitable for fruit cakes and steamed puddings, which keep pleasantly moist if made with honey. It is not so satisfactory for biscuits, toffee or frostings except for immediate consumption, as they become soft very quickly.

Honey contains only four-fifths of its weight in sugar, but fruit sugar is sweeter than cane sugar, so that the difference is to some extent balanced out, and honey should replace an equal *volume* of sugar. Honey is heavier than sugar, so that a slightly greater weight of honey should be used. Although honey is only one-fifth water, experience shows that other liquids should be reduced by *more* than this amount when sugar is replaced by honey in a cake recipe. For example, in a recipe giving 1½ cups of sugar and 1 cup milk, use either 1½ cups honey and ½ cup milk, or ¾ cup each of sugar and honey and ¾ cup milk.

The ideal uses of honey, apart from the making of mead and honey vinegar (and eating from the comb or by the spoonful!) are:

- (1) as a spread on bread, toast, waffles, girdle cakes, etc., and on pancakes;

- (2) in sandwich fillings, with or without butter, mixed either with cream cheese, with grated orange peel, or with chopped nuts and raisins;
- (3) in cake fillings;
- (4) in sauces, particularly hard sauces, with either half or all the sugar replaced by honey;
- (5) in frozen desserts, and in meringues;
- (6) as a sweetening for junket, Swiss porridge (muesli), and carrageen mould;
- (7) in uncooked confections such as truffles.

Honey should, in general, be the only flavouring, but it does go very well with orange and lemon, and with rum.

The following recipes will indicate the results of my own experience. I have used heather honey for them, but no doubt other honeys would also be successful.

#### *Honey orange cake*

13 oz. self-raising flour	6 oz. candied orange peel
4 oz. butter or margarine	2 eggs
4 oz. honey	3 or 4 tablespoons milk
4 oz. sugar	

Cream together the butter, honey and sugar. Add the beaten egg and sieved flour alternately, and then the milk, mixing the ingredients well. Finally, mix in the orange peel (which may easily be candied at home). Bake for about an hour in a moderate oven (380° F.).

#### *Honey truffles*

2 oz. butter or margarine	1 oz. dried milk (dry)
2 oz. honey	Castor sugar
2 oz. cocoa	

Beat together the butter and honey, add the cocoa and dried milk and beat well. Leave overnight to harden, then roll into balls and coat with castor sugar.

#### *Honey filling for cakes*

1 oz. butter or margarine	2 tablespoons chopped nuts
2 tablespoons honey	or raisins
2     ,,     hot water	4 tablespoons dried milk (dry)

Mix together the honey and hot water, and beat in the butter. Add the dried milk gradually, beating continuously, and lastly the nuts or raisins.