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## HONEY AS A FOOD

BY L. B. CRANDALL

The number of beekeepers in Connecticut has been increasing slowly for a number of years past until it is now about 2,000. Of this number about fifty are women. These beekeepers have about 10,000 colonies of bees.

According to reports made to the U. S. Department of Agriculture, the average amount of honey produced per colony in Connecticut is about 40 pounds. This will give a total annual production of 400,000 pounds. The average is small, for good beekeepers get nearly 100 pounds per colony in a fair season. The honey produced in Connecticut does not begin to supply the needs of the people of the State. Connecticut cities are among the best markets in the country and our beekeepers could supply a much larger proportion of the honey consumed here if they had the bees and gave them good care. There are nectar bearing flowers enough in Connecticut to produce a much larger honey crop than we get in an average season.

Connecticut honey is as good in flavor and quality as that produced in any other state in the Union. In fact, many persons have expressed a preference for our honey over that produced in other sections. We produce more honey from sumac than any other state and there is not better honey anywhere than sumac honey.

## BEES AND FRUIT

If bees stored in an average year barely enough honey to keep themselves, we could not afford to do without them. They are the most important agency for the pollenization of fruit trees. Other insects that meet this need are not numerous enough at the time fruit trees bloom to properly do this work. If it were not for the bees we could produce only a fraction of the fruit crops which we gather annually. Undoubtedly some sections of the state would have more apples to sell each year if the bee population of those sections was increased.

## HONEY FED THE ANCIENTS

Honey was the first important sweet known to man, and was in use thousands of years before cane sugar became known. It was in common use in the old world when Joseph was sold into Egypt. Honey is the nectar of flowers which has been gathered, stored and ripened by the bees. When nectar is taken from the flowers, it consists of cane sugar and water—from fifty to eighty per cent water. The bees take this thin sap into their hives and evaporate the water to twenty percent. Nearly all the cane sugar is changed into dextrose (grape sugar), and levulose (fruit sugar). Honey contains about seventy-five percent of these invert sugars. This process of evaporation and inversion is called "ripening" the honey. There is less than two percent of cane sugar left in well ripened honey of good quality. Ripe honey will not ferment if stored in a reasonably dry place.

Besides the invert sugars and a small amount of cane sugar, honey contains small amounts of the mineral salts which the body needs for its full development. The most important of these are: Lime, iron, sodium, sulphur, manganese, potassium, magnesia, phosphoric acid, etc.

## A PREDIGESTED FOOD

The human body can digest only a certain amount of cane sugar. If more than this amount is eaten, the excess must be eliminated through the kidneys. Invert sugars are in a form which the body can readily absorb without taxing the

kidneys. These sugars are practically predigested. For this reason honey is taken up by the body without taxing the digestive organs. Persons suffering from impaired digestion can use honey freely when granulated sugar would act like a poison in their systems.

### A BALANCED FOOD

Honey contains natural minerals which the body needs. Granulated sugar has been so refined that these minerals which the raw sugar contained have been removed. If we could get raw sugar and would use it for the greater part of our sweetening, we would be in much better health. However, raw sugar is not inverted or predigested, so, even then, it would not be as good for us as honey.

It is especially important for growing children to eat honey in preference to granulated sugar, or candies made from it since they must have the mineral salts found in honey. If people would substitute honey for a large part of their sugar requirements, they would be in much better health with less cost.

### FOOD SCIENTISTS INDORSE HONEY

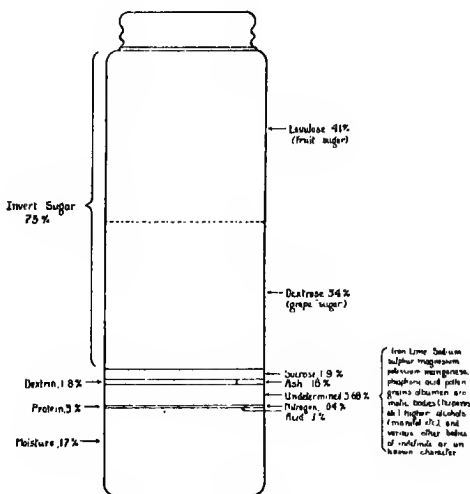
The fact that honey is a better food than sugar is not the opinion of beekeepers alone. Doctors who have made a study of foods in relation to disease are of the opinion that a more general use of honey instead of sugar would allay many of the ills which are due to digestive disorders. Also many investigators indorse honey as a better food for man than sugar in its refined form. These men are very strong in their condemnation of glucose and other inferior sweets used so generally now in cheap candies. These candies are especially bad for children, since a free use of them universally upsets their digestions, causing sour stomach, sick headaches and similar troubles.

Alfred W. McCann, in his book, "The Science of Eating," has this to say about honey as a food:

"Sugar in the forms in which Nature prepares it is an important element of diet. But, as we consume it today, sugar is not a natural, but an artificial product. With the excep-

tion of honey there is no concentrated sugar in nature. Very dilute sugar exists in ripe fruits and vegetables, principally in their juices. It is not astonishing that since the abnormal increase in the consumption of sugar, the last generation has recorded a fifty per cent increase in diabetic affections. There are good reasons to believe that honey does not conduct itself in the body like refined cane sugar or beet sugar and it is probable that maple sugar differs in like manner. Davidoff observed that honey was tolerated by the diabetic to whom sugar in any other form was poison. Well will it be for us as a nation when we reduce our consumption of cane sugar and give more attention to the use of honey and maple sugar."

One Pound of Honey



In another place he has this to say respecting the use of glucose:

"Glucose, now used in the manufacture of many commercial foods, including nearly all the candies on the market, is a mineral-free carbohydrate of artificial origin."

Doctor C. C. Miller, who was the largest producer of comb honey in this country, and also a graduate physician, writes the following about honey as a food:

“Formerly honey was the principal sweet and it was one of the items sent as a propitiatory offering by Jacob to his unrecognized son, the chief ruler of Egypt, 3,000 years before the first sugar-refinery was built.

“It would be greatly for the health of the present generation if honey could be at least partially restored to its former place as a common article of diet. The almost universal craving for sweets of some kind shows a real need of the system in that direction, but the excessive use of sugar brings in its train a long list of ills. Besides the various disorders of the alimentary canal, a fatal disease of the kidneys is credited with being one of the results of sugar-eating.

“Now in the wonderful laboratory of the bee-hive there is found a sweet that needs no further digestion, having been prepared fully by those wonderful chemists—the bees—for prompt assimilation without taxing stomach or kidneys.”

In this connection, Prof. A. J. Cook of California says:

“If cane sugar is absorbed without change, it will be removed by the kidneys and may result in their breakdown; and physicians may be correct in asserting that the large consumption of cane sugar by the twentieth-century man is harmful to the great eliminators—the kidneys—and so a menace to health and long life. There can be no doubt but that in eating honey our digestive machinery saves work that it would have to perform if we ate cane-sugar and in case it is over-taxed and feeble this may be just the respite that will save it from breakdown. We all know how children long for candy. This longing voices a need and is another evidence of the necessity of sugar in our diet. Children should be given all the honey at each meal time that they will eat. It is safer and will largely do away with the inordinate longing for candy and other sweets and in lessening the desire will doubtless diminish the amount of cane-sugar eaten.”

Prof. P. B. Hawk of Jefferson Medical College carried out some tests to determine the digestibility of honey. A normal man was given forty grams of whole wheat bread alone and the contents of the stomach were analyzed every fifteen minutes to determine the acid and pepsin content and a record was kept of the findings. Later the experiment was repeated



by adding twenty grams of honey to the bread. Professor Hawk thus describes what he found:

"An examination of the chart will show that the bread with honey was digested and left the stomach as quickly as the bread alone. Similar pepsin values were obtained and while there was a slight depression of acidity such as always follows the ingestion of food containing much sugar, digestion was completed as soon as with the bread alone, although the addition of the honey had practically doubled the food value from the energy standpoint.

"The use of honey with bread and in similar ways would, therefore, appear to be generally preferable in the case of children to the eating of candies. Honey serves to make the highly nutritious bread far more palatable, leading to a greater consumption of body-building foods instead of depressing the appetite, as is likely to be the case with candies which are eaten between meals. At the same time honey furnishes the body very considerable amounts of energy in the most available form. The high place given to it in the diet is therefore well deserved."

#### BUYING HONEY

By far the great majority of the people in the United States consider honey as a luxury, to be eaten in small quantities and only on state occasions. That this idea is erroneous has been set forth in the foregoing pages of this bulletin. People should use honey more generally and in large quantities.

The cheapest way to buy honey is in the wholesale packages, the case of twenty-four or thirty-two sections for comb honey, and the sixty pound can for extracted honey. In this way the producer saves the cost of putting up his honey in small containers and the consumer saves paying for a lot of small jars and cans which are of very little use to him after the honey is eaten. The most expensive way to buy honey is in the half-pound jars and by the single comb.

#### THE STORAGE OF HONEY

Comb honey may be kept in good condition for many months, if it is kept in a moderately warm room which is reasonably dry. If the temperature of the air in the room



changes a good deal, moisture will collect on the face of the comb and be absorbed by the honey. This moisture will thin the honey slightly and may cause it to ferment. The room temperature should not vary through a wide range for the best success in keeping comb honey.

Extracted honey may be kept in any place which is convenient so long as the cans are kept tightly closed. It is best, however, to keep all honey where the temperature does not vary too much.

### THE CANDYING OF HONEY

Eastern comb honey will not candy ordinarily if kept where the temperature does not vary too much. A warm attic makes a good place in which to store comb honey. Extracted honey is much more likely to candy than comb honey. It is not known exactly why this is so, but it is thought that the agitation of the honey during the process of extracting and straining has a mechanical effect upon it which helps the crystals to form. It is a fact, at any rate, that most extracted honeys, candy or crystallize at the beginning of cold weather in the fall. This does not indicate anything wrong with the honey, but is the natural result of changing temperatures. A wide range between day and night temperatures when the thermometer drops below freezing at night and up to seventy degrees or above during the day, will cause extracted honey to candy very rapidly.

After the honey has hardened in the cans, it is easier to ship by freight or express since there is not much chance for leakage. Candied honey will keep indefinitely if the cans are tightly capped when first filled and are not disturbed. This is a good way to keep extracted honey as it can be reliquified at any time that it is wanted for use.

### RELIQUIFYING HONEY

Candied honey is easily reliquified by simply placing the can in hot water for a few hours. The water should not be hotter than 135 degrees F. as a higher temperature will drive off the fine distinctive flavor of the honey. All honeys have flavors which are derived from the small amounts of the es-

sential oils which give flowers their odors. These oils are very volatile and can be driven off by heat. If it is the plan to use the honey within a week or two after it is reliquified, it will not be necessary to heat it longer than is sufficient to melt all the crystals so that the honey will take on a clear appearance. If, however, it is desired to make the honey stay in the liquid form for two or three months, the honey should be held at 130 to 135 degrees F. for two or three days. If the cans were filled completely when the honey was put up, it will be necessary to take some out before the cans are heated, as the honey expands somewhat when heated and will overflow.

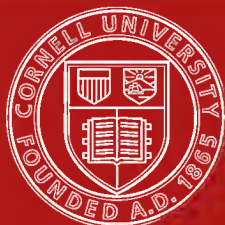
#### HONEY SPREAD AND HONEY BUTTER

Many people like to use the candied honey without melting as a spread on bread and warm biscuits. Used in this way, it is delightful. Children, especially, like sandwiches made with candied honey. Another way of using honey for a spread is to work together equal parts of candied honey and good dairy butter. The butter adds fat to the carbohydrate, and so supplements its good qualities. Honey and cream make another fine combination for use on bread.

Mr. Allen Latham, Norwichtown, Connecticut, has developed an excellent confection which he calls "Honey Butter". It is made by occasionally stirring a batch of extracted honey as it is beginning to candy in the fall. This stirring seems to break up the crystals so as to make a smooth paste which is as fine in texture as the best fondant made by an expert confectioner, and having the flavor of fine honey.

#### HONEY CHOCOLATES

Another way to use candied honey which produces a fine confection, is to cut the can from a cake of honey which has hardened in the can so it will stand alone. Cut this into half-inch cubes, and dip these into melted chocolate. This involves some technical knowledge of how to handle chocolate.



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