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sugar shall not exceed 8 per cent. This would certainly condemn some of the genuine honeys displayed at St. Louis, to say nothing of a few European honeys of guaranteed purity, which contained 12 per cent. cane sugar.

So far as the work of the laboratory of the Inland Revenue Department is concerned, no sample of Canadian honey of guaranteed purity has ever been found to contain as much as 10 per cent. of cane sugar. A few samples of probable purity have yielded 10.35 per cent. We have no assurance that these were not made by bees that had access to sugar syrup as honey-making material. I am quite convinced that no honest apiarian will suffer if 10 per cent. of cane sugar be legalized as a maximum permissible in honey. If my suggestions be admitted, our definition of honey will now read:

Honey must be (1) made by bees (2) from the nectar and saccharine exudation of plants, (3) and must contain not more than 30 per cent. of water, (4) nor more than 10 per cent. of cane sugar (sucrose), (5) nor less than 60 per cent. of invert sugar.

The legal definition of honey for the United States, already referred to, takes cognizance of the mineral matters contained in honey. These appear as the ash in analytical results. Legal definitions in Germany also take note of the ash content of honeys. I find, however, such conflicting evidence regarding the ash of certified honeys that I am not able to come to any conclusion in the matter.

Honey known to be genuine has been found to yield only 0.05 per cent. of ash. The limit fixed for the United States is 0.25 per cent., or five times this amount.

The German standard is 0.1 per cent. It is easily apparent that a honey exposed to dust might take up sufficient mineral matter as an impurity to enable it to pass as genuine so far as a minimum of ash is concerned. For the present, at least, I am unable to advise the connection of ash as a means of judging the genuineness of honey.

Formic acid is always present in genuine honey, and as this acid is not present in the nectar of flowers, or in the other natural juices of plants, it must be introduced by the agency of the bee, but how is unknown. The well-recognized preservative property of formic acid suggests that its introduction by the bee is intended to give keeping quality to the honey. Other acids are also present in honey, particularly malic acid, and the result is that all honey has an acid reaction. But the total acidity of fresh honey is very small. Expressed in terms of formic acid, it amounts to from three-hundredths of 1 per cent. to nearly one-quarter of 1 per cent. Its great variation in amount, and the intrinsic difficulties of determination of formic acid, make it impossible to utilize this component of honey as a practical means of judging its genuineness.

Finally, honey always contains pollen grains characteristic of the flowers which furnished the nectar. Work done upon the honeys exhibited at St. Louis showed the number of pollen grains per gramme to vary from about 200 to as many as 5,000. The largest numbers seem to be found in honeys from leguminosæ and from the basswood; but there appears to be no constancy in this regard, as certain leguminous honeys showed only a few hundreds of grains per gramme. The principal use of examination for pollen lies in the discovery of entire absence of pollen characteristic of artificial honey, or in the presence of large numbers of pollen grains of the grass family (gramminæ), suggesting that the hay-loft has been drawn upon to furnish them.

There remains to be mentioned those odiferous principles, or compound ethers, which give the flowers their fragrance and to the honey made from them its characteristic odors and taste. In quantity these are too minute to permit of estimation, or even their identification in practicable samples of honey. Yet they are the ingredients upon which the real value of honey depends. Honey is a food, having real and important value as such.

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