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there is, besides, the increased danger that the product will spoil through fermentation. It is often desirable, however, for the bee-keeper to know the approximate percentage of moisture in his products in order to avoid the marketing of unripe honey which might exceed the limit for water allowed by the standards (25 per cent). The average water content of American honey, according to the average for 99 pure samples analyzed in the Bureau of Chemistry, is 17.59 per cent, so that there is above this a margin of more than 7 per cent in which the moisture of honeys may be allowed to fluctuate.

The accurate determination of moisture in honey in the chemical laboratory is a somewhat complicated process. A carefully weighed amount of the honey is evaporated at a temperature of about 160 degrees F. in a vacuum chamber until no more moisture is given off, and the loss in weight during the interval is calculated as water. For the bee-keeper such a method of determination is too involved and complicated; there is, however, a much simpler method by means of which the moisture content of a honey can be determined with ease and rapidity and with a fair degree of accuracy. This is by means of a specific gravity float or spindle. The liquefied honey is poured into a tall cylinder and immersed in hot water of 170 degrees F. temperature. The honey is stirred with a thermometer and as soon as the temperature has reached 160 degrees F. the spindle is lowered into the honey and allowed to come to rest. The point at which the surface of the honey cuts the graduation mark upon the spindle indicates the percentage of water in the honey.

For the accurate determination of glucose, cane sugar, and other adulterants, the bee-keeper will usually be obliged to resort to the services of a chemist. This is especially true as regards cane sugar, as there is no simple test for this substance which can be applied by the ordinary layman. As regards glucose and added invert sugar, however, there are certain simple colorimetric tests which can be easily and quickly carried out.

A good colorimetric test for the presence of commercial glucose or starch syrup in honey is that of Beckmann, by means of a dilute solution of iodine in potassium iodide. One part of the honey to be examined is dissolved in one part by volume of water in a test tube and shaken up with a few drops of the iodine solution. If the honey solution remains a pale yellow, commercial glucose is probably absent; if the solution is colored a red or purple, however, the presence of glucose syrup is clearly indicated. In making this test it is always best to carry out a comparative test under similar conditions, using a honey of known purity and adding the same number of drops of iodine solution. In this manner a reliable comparison of colors can be secured.

The adulteration of honey with invert sugar syrup is being practised to some extent in this country, though not as widely at present as in certain European countries. This syrup has in many respects the same composition as pure honey; it is deficient, however, in ash, albuminoids, and other constituents which occur in honey in small amounts. Through the action of the high temperature of boiling a small quantity of decomposition products of sugar is produced in this artificial honey which serves to dis-