

very well treated by the Warden and Council of the County of York, and we certainly owe them a vote of thanks.

The President put the motion, which, on a vote having been taken, was declared carried.

The President extended the vote of thanks to Mr. Evans, and asked him to convey the same to the County Council.

Mr. Evans: I will convey your thanks to the members of the County Council, and I can assure you you will always be welcome here.

HONEY—PURE AND ADULTERATED

An Address Prepared for the Annual Convention of the Bee-keepers' Association of Ontario

By A. McGILL, Chief Analyst,
Inland Revenue Dept., Ottawa.

(Continued from Page 476)

Cane Sugar Syrup.—We are compelled to fix from 8 to 10 per cent. of cane sugar as permissible in honey, because a few natural honeys are found to contain this amount. But the great majority of genuine honeys contain less than 2 per cent. of sucrose, and it therefore becomes possible for honey-packers to add about 8 per cent. of cane sugar to honey without any danger of being accused of adulteration. It is for this reason, much to be regretted, that exceptional honeys show 10 per cent. cane sugar. Perhaps it may be possible to improve some varieties of the honey bee so as to insure their ability to carry the inversion of naturally occurring cane sugar to completeness. In that case, the honey made by such variety of bee command a high price, as it could be guaranteed free from added sugar. At the present prices of honey I believe that the use of cane sugar syrup as raw material from which the bee may make honey is unprofitable. Hence, when we find excess of cane sugar in honey, we infer that it has been added by the manufacturer direct, and not through the agency of the bee. In some cases an acknowledgment of such addition is made (see No. 28,627

of Bulletin 122), but usually it is necessary to resort to chemical analysis to discover the fraud.

Fortunately, the detection and approximate estimation of added cane sugar is not difficult. The methods and apparatus are, however, too complex and delicate to permit of their being successfully used outside of the laboratory. A glance at the columns of any of our bulletins will show you how frequently honey is adulterated by the use of cane sugar syrup. The adulteration which is most difficult of detection, because of its practicable identity with the sugars of honey, is invert sugar. The manufacture of so-called "sugar-honey" or "Kunst-Konig" is a well-established industry in Germany, and is not unknown in other countries. Inversion of cane sugar is usually effected in this industry by the addition of minute amounts of tartaric acid, the quantity employed being so small that the resultant acidity is scarcely greater than is characteristic of true honey. Prolonged heating is necessary, in order to bring about a fairly complete inversion under these conditions, and it is partly because of this fact that we are able to discriminate between the invert sugar of genuine honey and the manufactured article. The levulose component of the invert sugar is partly destroyed at the high temperature needed for inversion, and there results a slight deficiency of this sugar as compared with the dextrose. But the difference is too small to furnish a safe guide to the analyst. In short, no trustworthy evidence of adulteration with invert sugar can be obtained from examination of the sugars contained in honey. We are, therefore, driven to depend upon delicate tests which may serve to detect minute traces of substances which are present in commercial invert sugar, but not in honey.

These tests are quite simple, and are easily supplied, for which reasons I have on the table some samples of honey, both natural and artificial, with the necessary reagents, and we can proceed to make a few demonstrations.

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1. Starch favorite ad you contain starch, and so far as a cerned. Bu tect its pre produced on tion of this effect of its
2. Glucose most frequen Bestmann's iodine, which quite distinct genuine hone; The alcohol this always la rup is very tely it is onl large addition maie.
- The two sam spectively 10 F of glucose syru the case of the marked.
- Other method polarimeter, an cept in a well-
3. Cane suga ted, is easily de 10 per cent. by 1 but the method, not be demonstra
4. Invert suga ed, this constitut honey, hence it is the adulterants largely used on ti substitute and ad of itself profitabl method not involv the question of would be even m now. We may as the fact that the our most useful inst is of no use here. methods which dep of copper from all