

gathered very rapidly, some slowly, some gathered from honey-dew, some made by mixing honey with one-third or one-fourth glucose; some which the bees stored from pure cane syrup very rapidly—23 lbs. in one night—and extracted the next morning, and the same extracted after it was capped over. These were all sent by number, so that I alone knew just the source of each.

Each chemist detected the honey that was adulterated with glucose, and placed with this a sample of plant-louse honey. Thus, as glucose will be the common adulterant we may feel that this is practically satisfactory. If from 50 samples taken from very varied sources, only one (and that honey-dewy, that never could be sold as honey) was found which could not be distinguished from glucose, we see the chemists can detect this most common adulterant, and enable us to prevent the worst form of adulteration. It is interesting to note that Prof. Wiley—See Bulletin No. 13, p. 798—speaks of pine-tree honey (this is undoubtedly honey-dew) which was like honey adulterated with glucose. The honey-dew which I sent was not from pine-tree aphids, however. I also sent two other samples of honey dew—one from oak-galls, and the other from larch aphids, which were pleasant to the taste, and pronounced by the chemists as genuine honey.

The honey which was simply cane sugar rapidly stored—and, of course, as we know partially digested by the bees—was pronounced adulterated with cane sugar. But with these were included samples of the finest honey I ever saw—one from basswood, one from white clover, very fine, and one from horsemint, all of which I secured because they were gathered very rapidly. Thus we see the chemists can not surely detect adulteration with cane sugar, if the bees are required to digest or invert the sucrose. If the chemist puts the best quality of white clover and linden honey with honey stored from pure cane syrup, it stands to reason that we could feed our bees a syrup made of, say, one-third honey and two-thirds cane syrup, and the chemists could not detect it; nor could the consumer. I had each member of my class of forty in entomology taste of the honey from the cane syrup. All pronounced it fine, and not one suspected, even when asked, that it was any thing but genuine honey procured from the ordinary source, and normal in every way.

Thus we have proof of what I have long believed, that our best honey, if gathered rapidly, can not be told from honey stored from pure cane sugar syrup.

Three samples, one white clover, one golden-

rod, and one white sage, all fine and rapidly stored, are regarded as suspicious, as they deport themselves as do honeys with an abnormal amount of invert sugar. Three other samples, one smartweed, one black mangrove, and one horsemint, all peculiar in that they were very rapidly gathered, act as pure invert sugar; that secured by artificially reducing cane sugar. Thus six samples, all certainly genuine, and very excellent, would be pronounced as suspicious, though possibly not condemned as impure.

CONCLUSIONS.

1. We see, then, that the chemist can detect honey adulterated with commercial glucose from all genuine honey, except some from honey-dew, which is so rank that it would never go on to the market.

2. The chemist can not tell honey—even the very best—from that secured by feeding a syrup made of pure cane sugar.

3. Honey that is very rapidly gathered reports itself just as does that secured by feeding pure cane syrup; and so, if it be desirable to detect such adulteration, the chemist must revise his methods, as he is not as yet able to do so.

4. Cane sugar syrup fed to bees is inverted, and, when stored, is so like our best honey that chemical methods can not detect it.

5. Cane sugar syrup, unless fed to bees, could be easily told. The bees, by digesting the syrup, change it as they do the nectar which they gather from flowers, which is also cane sugar.

6. We know that honey is largely adulterated; but almost always, if not always, by feeding glucose. This can be detected. Thus we can successfully fight this evil. Prof. Wiley will help us. Let us declare the battle on.

7. I urged at the Detroit convention, in 1890, that the Bee-keepers' Union wage this warfare. It has done grand service. It can do this work. As a member and officer, I vote that it assume this added responsibility, and win yet grander laurels. Why not? It can crush the evil.

8. Bee-keepers do not adulterate. Dealers—wholesale dealers—do this. If bee-keeping dealers have done it, they, with all of their kin, should be exposed and punished. If we will we can down the enemy. *I vote yes.*

Ag't College, Mich., Sept. 3. A. J. COOK.

Gleanings comments on this article as follows:—[The result of the above analyses are indeed most valuable. If it is indeed true, that glucose adulteration can be readily detected, it is a grim fact that will make evil-doers tremble; for the courts of the various States will accept the evidence of competent chemists in regard to adul-