

## C. CAPILLARY TUBE.

TIME.	TEMP.	RESULT.
30 min.	113°C	Growth.
1 hr.	113°C	"
1.30 min.	115°C	"
2 hrs.	114°C	"
2.15 min.	116°C	"
2.30	115°C	"
2.45	115°C	no growth.
3 hrs.	115°C	"

From these experiments it is evident that to kill the spores of this bacillus a temperature of 113° to 116° C for two and a half to two and three quarters of an hour was necessary. MacKenzie\* in his experiment on the thermal death point of the spores in wax, found that they were killed by a temperature of 100° C, for two and a half hours.

The above experiments were again repeated with both clover and buckwheat honey and with the same results as above.

The vitality of the spores taken from dead larvæ is as a rule somewhat less than that of spores taken from comparatively young cultures.

## ADULTERATION OF HONEY.

Before Senator Mason's Pure Food Committee, Chicago.

The early part of the session was not unlike a convention of beekeepers. Up till nearly noon the committee was hearing statements from bee raisers as to the adulterations of honey. George W. York, editor of the American Bee Journal, said to the committee this practice was being carried on at the present to an alarming extent. It was not the bee-keepers he said who were doing this, but the jobbers almost exclusively. The only adulterant he knew of that was used was glucose, which he did not consider particularly injurious to the health, but the fact that the jobbers were resorting to fraudulent methods, in his mind, was ample proof that some legislation is necessary to protect the beekeepers. The object of adulterating honey was solely for pecuniary purposes. Glucose, he said, was worth probably 1 cent a pound while pure

honey in the liquid was worth 7 or 8 cent. Only in the liquid form, he thought, was there any adulteration. That honey which is bought in the comb is almost always reliable, because there is no way for manufacturers to successfully imitate the work of the busy little insects in making combs. Some jobbers, he said, put some honey in the comb into a glass jar and poured glucose over it, giving it an appearance as if the honey had run out of the comb into the jar. The presence of comb in such quantities of liquid honey was in itself, witness stated, ample proof that it had been adulterated, for no "first-class" beekeepers ever put up liquid honey mixed with the comb.

Senator Harris asked witness if any attempt ever was made to feed bees with glucose in order to make the product larger. Mr. York told of an instance where a colony of bees was taken into Mississippi and an attempt was made to feed them with glucose. The result was that the whole colony died. It would be useless to try his experiment, he said, because bees would not eat glucose.

## NO PRESERVATIVES ARE USED.

Witness said no preservatives were used in honey; that there was a great possibility of honey granulating, but so far as he knew there was nothing done to prevent this, excepting to abstract the honey from the comb and put it on the market in this form. He quoted a statement from one of the adulterators of honey, who told him the honey he put on the market for his customers contained seven-eighths glucose and one-eighth pure honey, which he considered really was glucose adulterated with honey, rather than the reserve.

The only aid the bees are given in making honey, according to Mr. York, was the furnishing by the owners of a base for the combs. These manufactured bases are the size of the box which contains the honey-comb, and are placed in the middle of the cell to help out the insects, as well as to guide it in making perfectly straight tiers of cells. These bases are made of beeswax, and are perfectly pure, according to witness. There had been experiments made, he said, with a mixture of paraffin and beeswax, but the former had proved too susceptible to heat and would not answer the purpose at all.

Mr. York was followed by Mrs. N. L. Stowe of Evanston, who is first vice president of the Chicago Beekeeper's Association. Mrs. Stowe has kept eighty swarms of bees and her knowledge of the

\*MacKenzie: Experiments on Foul Brood. Report of the Agricultural College for Ontario, 1892.