escape from the peel than from the pulp at all times, though the difference in amount is quite small. The jelly-substance is shown in Figs. 5, 6 and 7, those being photographs taken through the microscope of the cells in question, separated from the surrounding pulp and treated so as to demonstrate the nature of the substance and, in Figs. 9 and 10, the escape of the tannin, which in photographs appears as a dark granular mass. The jelly structure is seen in Fig. 5 in the manner of its breaking when pressed. When treated with weak alkali (soda, for example) jellies will swell more than they do in water. In Fig. 6 are seen two protruding masses of the jelly. When treated with alkali they swelled up to the size shown in Fig. 7. This jelly has been shown to be chemically closely related to cellulose.[1] The non-astringency in the banana when ripe is therefore due to the formation of a sort of vegetable leather which cannot give up the tannin (except in very minute amounts and therefore not perceptible to the taste) and which, like true leather, cannot decay. I have kept these curious bodies for eight years in water, and, while the pulp with them has decayed, they themselves have remained in their original condition without change.

In the process of cooking, which itself renders an unripe banana edible, in spite of the tannin present, this substance escapes from the tannin cells and is taken up by the swollen starch. This alone makes the fruit, when thoroughly cooked, non-astringent.

The increase in sweetness, it need scarcely be said, results from the above described increase in sugar, especially cane sugar.

The odour of the unripe fruit is difficult to describe. It is certainly not a pleasant one. In the ripening rooms it is quite noticeable. Gerber[1] investigated the changes which result in aroma, that which is characteristic of "banana oil"[2] or more properly speaking, amyl acetate. At a low temperature (55 degrees) no aroma is developed, while at 85 degrees ethyl- and amyl-alcohol are formed in small amounts, together with acetic,[3] formic and valerianic acids. These together, being volatile, accompanied by a small amount of citric and of malic acid, commonly found in fruits, combine to give the full complement of flavour and aroma. It is important to know, and this should be known by the consumer, that the full aromatic qualities of the fruit are not developed as quickly as the change from starch to sugar. Bananas are as a rule eaten too soon, and furthermore they are frequently kept in too cool a place for the proper development of the aroma. I have found that when a hand of fruit was kept for two or three days in a quite warm place a fruit was obtained which far excelled that newly purchased.

"Condition" of Green Fruit after Transportation

There remains to consider briefly the behavior of green fruit, when received by the wholesale merchant off the cars. The test for condition of fruit in cold weather consists in breaking a fruit in two and observing the exudation of sap.

In fruit which has been cooled, as previously described, I found, in fact, that there was a cessation of active exudation, much earlier than normally. There was, however, an exudation of

[1] Clark, Ernest D. Notes on the Chemical Nature of the "Tannin-masses in the fruit of the Persimmon." Biochemical Bulletin, 2: 412-418, April, 1913.

[1] Ann. de Sci. Nat. Ser. VIII (Bot.), 1896, p. 4.

[2] This is not the flavouring "extract," of which methyl perlargonate is also a constituent.

[3] The amyl alcohol and acetic acid probably form the ester (the above mentioned amyl acetate), which Tallarico in the paper cited holds to be in part responsible for the blackening in the very ripe fruit.