our become slightly yellow in one to two days, and fully yellow in five to seven days, most frequently in six, maintaining this colour with little change for about seven days. The colour then changes to brown, and finally black.[2]

Mr. H. C. Gore[3] has properly adopted these periods as convenient ones for delimiting stages of ripening, which is of course a gradual process. Those conversant with the handling of the fruit in ripening chambers will recognize the general validity of regarding the fully yellowed banana as "ripe" and the brown condition as "fully ripe." In the following account these terms are used in this sense.

It may be of practical importance to know that the rate of colour (as of other) changes is also affected by previous exposure to low temperatures. I exposed a lot of green fruits to a temperature of 29 degrees for three hours. The internal temperature of the fruit fell to 33 degrees and remained steadily at that point. Several fruits were then kept in a suitable vessel, together with samples which had not been chilled, at a room temperature of about 68 degrees. The green colour did not fully disappear from the chilled fruit in ten days, while the controls changed promptly in a few days. It would be interesting and probably practically worth while to experiment in this direction carefully, making use of various temperatures, and watching the subsequent effects upon the rate, not only of the colour changes but also of the more important physiological changes. This because the question of refrigeration is one which has been and is much to the fore, as a large part of the technic of transportation.

[2] According to Tallarico (Arch. Farm. sperim, 7 : 27-48, 1906), these later colour changes are quite complicated.

[3] Changes in Composition of Peel and Pulp of Ripening Bananas. Jour. Ag. Res., U. S. Dept. Agri. 3 : 187-203, 15 Dec., 1914. I have drawn on Mr. Gore's results in this paper.

Mechanical Qualities

The texture of the ripe fruit depends on two chief factors: the amount of water present, and the extent to which the cellular elements are dissociated. The fruit when received by the wholesale merchant is normally quite full of water, and its tissues are of a maximum consistency and may be snapped in two. The brittleness depends in some measure on the continuity of the cellulose structure, but chiefly on the water content.

The amount of water in the pulp is indeed so great that the banana is literally too big for its skin. If a green fruit be split part way with a sharp knife, the edges of the wound will gape apart and it will require a considerable amount of pressure to bring the cut surfaces together. Or if a thin slice be cut, the pulp will become saucer-like. It is thus demonstrated that much pressure and tension is exerted by the pulp on the inner surface of the skin. During ripening there is a net loss of water, amounting, when the fruit is kept in a humidity chamber, to 3 to 4.5 per cent of the original weight in five to seven days, and to 8 to 10 per cent in thirteen days,[1] whereby the turgidity of the fruit is much reduced. This loss is probably less than occurs ordinarily in ripening rooms (where, however, the humidity is kept up by various means), and especially after the fruit has been placed on sale, which is after the fourth day of hanging. The more water loss, of course, the smaller the fruit, and, beyond a certain limit of size, the lower the price it will command, even though the food value and flavour remain unimpaired. The most interesting feature in this connection, as Gore has been able to show, is that, while the peel loses water, the pulp

[1] Gore, in the paper cited.