I have described several of the factors that influence the baker's preference in shortenings for cake. There is then left the point that further distinguishes the baker's choice: that is the style of mixing procedure that he prefers. If he seeks to pursue the fat-shortening creaming method in which the flour or part of the flour is incorporated with the shortening, he may be anxious to make a cake with a high percentage of sugar. There are a number of shortenings on the market to which emulsifying agents have been added: the shortenings are designed to increase the emulsion-forming power of the fat which in turn permits the incorporation of large amounts of water and sugar into the fat without separation of the fat. In this procedure the flour or part of the flour is creamed into the fat and the eggs and liquid added gradually to form a rather thin batter after which the final flour is added. The baker desires in his modified shortening all of the qualities that I have previously mentioned and in addition he looks for a greater burden-carrying capacity. Normally the baker has no means of determining his preference as between brands except as shop tests may indicate. These may be influenced by the type of flour he has and to a less extent by other factors.

It is my observation that cakes made by the shortening-flour creaming procedure do not vary greatly in composition from well-made sugar-shortening types. With

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the introduction of the modified type of shortening there were some revolutionary methods recommended and claims made for their use which persuaded many bakers that these shortenings had many qualities not characteristic of the ordinary hydrogenated shortening. We observed that cake made with the modified shortening tends to have somewhat different characteristics in that it is relatively easy to obtain extremely fine grain in the cake and unusual uniformity. Characteristic of this type of cake is the more or less round formation of the cell structure as distinct from the more elongated cell structure of the sugar-shortening method which yields a more feather type of cake crumb.

I believe that the preference of the baker may in many cases be determined by the keeping qualities of the cake that he makes for his tests. It is quite possible that the melting point of the fats used will influence the amount of “setting up” that the cake structure evidences during the course of 36 hours. For other bakers, especially those who have some technical advantages, the nature of the shortening as is evidenced by plasticity tests will influence their choice. It may be presumed that the matters of crystal size, softening points and degree of hydrogenation are important factors in determining the suitability of shortenings, but it is not in the province of the baker to determine these factors; he relies on his shop tests to determine the properties that govern his choice.

Let us consider another shortening problem of the baker, namely, cream icings and fat cream fillings. Here the value of a shortening is determined very largely by its capacity to form a fat-water emulsion in which the water may be approximately 20%. Usually some sugar is used and sometimes egg as well. The shortening that will whip up into a firm, smooth, plastic mass is desired. In addition, it is quite essential that the cream have the quality of remaining homogeneous for a considerable time. Under commercial conditions, especially in the case of wholesale bakers, it is desirable that such a cream should hold its moisture for as much as six days. A cream that sweats out droplets of water is quite undesirable.

It is of particular interest to the baker that experience should prove that very often the shortening that will produce the best cake will not yield the best cream. For determining his choice of brands, the baker may make creams of several brands, using ample water and noting which yields maximum volume and least tendency to sweat. Of those brands that do not sweat under the conditions of the test, the one that yields the greatest volume will be chosen, other factors being equal. The other points are whiteness and freedom from taste; it being quite desirable here, as in cake making, that blandness of taste be a characteristic.

It so happens that some shortenings will whip to a light, smooth, creamy-textured mass that will support itself in a rather sharp angle cone. Others tend to lack smoothness at consistencies where they are sufficiently firm to support themselves, there being a tendency for the product to lack a completely homogenous structure. On the other hand, some products will absorb a large quantity of water in the creaming, make a smooth cream of good consistency but will bleed out moisture and shrink on standing.

It has been my experience that the best cream is often obtained from those fats which do not carry the added emulsifying agent. The reasons for the behavior of fats in this test are probably much more clear to you than to me.

Where the shortening is used in icing such as is known as “butter cream,” the choice of shortening may be conditioned upon the percentage used and upon temperature conditions prevailing. Under some conditions and with low fat icings it may be desirable to use a shortening that has a lower per cent of high melting fat. Under other conditions it is desirable to have a more firm fat. An experience which is always unpleasant is that of having an icing become streaky due to separation of fat and sugar in the finished product. The baker will choose the fat which has the least tendency to exhibit this fault.

There are quite a number of other uses for shortening which one has to consider in cataloging the baker’s requirements but for lack of time I will not dwell upon them. Suffice to mention several briefly.

For enrobing purposes the baker must resort to shortenings that are quite hard at room temperature. Here it is essential that the fat be quite firm at 90° F. but at the same time soft enough so that it will melt at body temperature. Further, such a fat must have a high sweat point or the finished product will not tolerate temperature variations. In this type of work heat is generally used and the setting properties are of considerable importance. A fat that sets unevenly will be dull and unattractive and if used in dark stock it may give rise to streaks and grayness.

Rolled-in pastry is another field where the baker seeks a shortening of specific properties. Butter is probably best from the standpoint of flavor, and flavor is vital, nevertheless other preparations find favor. In the preparation of such products it is essential that the shortening be quite firm and characterized by a definite toughness. If too firm it is undesirable because it will not spread in the pinning. If too soft it will run together between the sheets and will run out when rolled. Here is desired a butter or other shortening that at cool temperatures will be firm but not hard, tough but plastic. Such shortenings are worked at somewhat lower temperatures than cake work calls for; they should be of a nature that they will soften completely below body temperature.

Another place where the baker must select his shortening to fit special conditions is in preparing pie crust. Much pie crust is made using lard but hydrogenated shortening is quite commonly used. Where a mealy, rather dry crust is desired a firm hydrogenated product may be selected. Such a shortening should not have a high melting point nor should it become excessively hard on chilling. The vegetable shortenings yield a crust that does not grease-soak containers as readily as lard will. This is sometimes a consideration while on the other hand crust made with good lard has a characteristic flavor preferred by many bakers. In selecting a shortening for pie crust the nature of the fat selected may be conditioned by the character of the flour used. With a given flour one may select a relatively firm shortening to get much the same effect that would be obtained by using a very plastic shortening with a flour of different nature.

As you are all probably aware, pie crust attains its character as much by reason of the manner of assembling the ingredients as it does from the kind and proportion of materials. The nature of shortening called for will, therefore, be