

A New Maple Product.

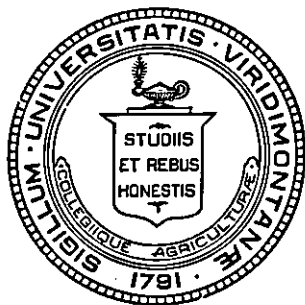
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University of Vermont and State Agricultural College  
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A NEW MAPLE PRODUCT

By RICHARD W. SMITH, JR.



**A mixture of pure maple sugar and pure cream carrying from 68 to 75 percent butterfat has many uses, as "shortening," in candy making, as sandwich spread, on waffles, etc. It is readily made and even more readily eaten. It has distinct commercial possibilities. It is somewhat perishable. Directions for making it appear on page 8.**

# BULLETIN 364: A NEW MAPLE PRODUCT

By RICHARD W. SMITH, JR.<sup>1, 2</sup>

## INTRODUCTION

If pure maple sugar and cream containing an extraordinarily high amount of butterfat are mixed, the semisolid mass which forms on cooling is a delectable combination.<sup>3</sup> It is made from two Vermont products which, at the moment, sell at relatively low prices and are produced in excess of demand. Furthermore, since cream makes up four-fifths of the product, it may very well become an important surplus outlet for Vermont dairymen, so be it consumers learn how good a thing it is. It should be especially popular in the farm home where both maple sugar and cream are produced and where "sweet-tooths" are not always satisfied; and it possesses distinct commercial possibilities in Vermont hotels, restaurants, tourist homes and roadside stands as well as among urban consumers.

This product has many uses. Its butterfat content is high and it can replace, partially at least, the various shortening agents and sugar in pies, cakes and other pastries. The candy maker will find it valuable. It furnishes an ideal sweet sandwich filling and is extremely palatable on saltines and French toast. Children will straightway forget good old "bread and butter and sugar" when this mixture is at hand. If allowed to freeze, a better than ordinary maple mousse results. It is most appetizing when spread on waffles where it combines the advantages of butter and maple syrup.

The combination of extraordinarily heavy sweet cream and maple sugar or syrup had not heretofore been made, so far as the writer is aware. Consequently, several trials were made in order to determine what maple products to use, the optimum butterfat content of the cream, and the best proportions in which to combine the two, their prime purpose being the development of a method for making a product which could be used by farm homemakers under average farm conditions or, for that matter, by anyone else and which may be offered for sale under some circumstances to good advantage.

The high butterfat cream was secured by separating whole milk at 100° F. with a No. 17 De Laval separator equipped with so-called

<sup>1</sup> Professor of Dairy Manufacturing.

<sup>2</sup> The writer is indebted to the Station Chemist for suggestions as to the development of the project.

<sup>3</sup> To Mr. C. L. Reisner of the DeLaval Separator Company should be ascribed the idea of making this combination.

"Home Dairy Spread" tinware. When necessary this cream was standardized with skimmilk. Its butterfat content was determined by diluting it with an equal weight of water, making the test in the usual Babcock fashion and doubling the reading.

The securing of cream containing so high a butterfat content is not dependent upon the use of the special tinware employed in these trials. Tracy<sup>1</sup> describes it in detail. The De Laval equipment was used in our trials but does not have to be used, as is pointed out later. Tracy found that satisfactory results could be secured with a large power separator using the regular equipment. He states that the viscous cream would not flow through the cream spout of a small separator. Similar results were attained with the small machine used in these trials, although cream containing 67 percent fat was separated without the special tinware when the rate of inflow was lessened. On the other hand, the owner of a De Laval separator who contemplates manufacture in a large way will probably find it advisable to purchase this special device. However, careful regulation of the inflow and a cream cover so designed as to allow the viscous cream to flow freely enables the separation of this high butterfat cream without much difficulty. Several trials were run using a No. 4 McCormick-Deering separator in which the rate of inflow was decreased fully four-fifths. The times required to run through 20 pounds of milk at 100° F. and the butterfat percentage in the resulting creams were as follows: 100 seconds, 32.5 percent; 135 seconds, 60 percent; 210 seconds, 68 percent; 440 seconds, 73.5 percent; 490 seconds, 71 percent; 500 seconds, 71 percent. As the inflow decreased the fat percentage increased. Efficient separation occurred in all cases, no skimmilk test exceeding 0.02 percent. Anyone who knows how to run a cream separator can soon determine whether or not his particular mechanism will deliver such thick cream.

The maple products used were secured on the open market, being standard maple syrup, maple cream, "Cary's 512" and maple sugar. They were mixed with the cream immediately after its separation in small enamel bowls with spoons, special precautions being taken to avoid whipping or the incorporation of air. The mixtures were made up on a parts-by-weight basis.

The quality of the finished products was judged by University and Station staff members and by several patrons of the University dairy sales room. The ideal product was held to be one which could be spread easily without running, possessing a smooth velvety body without salviness and a delicate maple flavor. A considerable number

<sup>1</sup> Tracy, P. H., How to Make Honey Cream, Ill. Sta. Bul. 387 (1933).

of trials were made before the optimum conditions were determined.

I. Eight trials were made in which the following combinations were used:

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|---|---|
| (1) 75 parts cream—25 parts maple syrup | (5) 75 parts cream—25 parts Cary's 512  |
| (2) 60 parts cream—40 parts maple syrup | (6) 60 parts cream—40 parts Cary's 512  |
| (3) 75 parts cream—25 parts maple cream | (7) 75 parts cream—25 parts maple sugar |
| (4) 60 parts cream—40 parts maple cream | (8) 60 parts cream—40 parts maple sugar |

The cream contained 66 percent butterfat and was at 92° F. at the time of mixing. The maple syrup "Vermont Fancy," of excellent flavor, was at 72° F. when mixed with the cream. The maple cream was a good example of that product as manufactured in Vermont. It had an ideal, soft, smooth body and a good maple flavor. This soft sugar was heated in a double boiler until it reached a pouring consistency, 144° F. in these trials, and was then mixed with the cream. "Cary's 512" is a very dark, concentrated syrup prepared for use in flavoring ice cream. While it might be used in making this new product on a commercial scale, it would not be available on the average farm. It was at 72° F. when mixed with the cream. The maple sugar was a rather dark, year-old product of good flavor. It was broken up to as fine a consistency as possible before use. A rolling pin proved to be a good crusher, but a food chopper worked poorly.

The eight mixtures—together with a check sample of cream—were held in a refrigerator at 42° F. for approximately 24 hours.

*Results.*—None of the mixtures was deemed satisfactory. They were too soft. The maple sugar mixture was the most viscous, followed in order by "Cary's 512," maple cream and maple syrup. The check sample of cream stood up well, which would indicate that the several maple products too greatly diluted its butterfat content. The maple sugar mixture possessed the best maple flavor. When syrup was used the maple flavor, even in the 60-40 mixture, was too faint. "Cary's 512" imparted a rather strong caramel or burnt flavor.

II. The purpose of these trials was to ascertain the minimum amount of sugar that could be used to get a desirable maple flavor. The following mixtures were made:

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|---|---|
| (1) 85 parts cream—15 parts maple sugar | (3) 85 parts cream—15 parts maple sugar |
| (2) 80 parts cream—20 parts maple sugar | (4) 80 parts cream—20 parts maple sugar |

The cream tested 66 percent butterfat and was at 86° F. when mixed with the maple sugar. The sugar used in trials (1) and (2) was new crop, light colored and of excellent flavor; that used in the (3) and (4) trials was a year-old product, rather dark and of good though strong flavor. The several samples as well as a check sample

of cream were held at 42° F. for at least 24 hours before examination.

*Results.*—(1) and (3) were slightly more viscous than (2) and (4), but none was firm enough to be considered ideal. They would hardly be suited to the various uses for which the mixture is intended. The maple flavor in (1) was faint; in (2) satisfactory; not strong enough in (3) but slightly better than (1) and very satisfactory in (4).

III. A series of trials was made in an attempt to better the body while maintaining a desirable flavor, the following combinations being made:

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|---|---|
| (1) 60 parts cream—40 parts maple sugar | (5) 80 parts cream—20 parts maple sugar |
| (2) 65 parts cream—35 parts maple sugar | (6) 80 parts cream—20 parts maple syrup |
| (3) 70 parts cream—30 parts maple sugar | (7) 80 parts cream—20 parts maple sugar |
| (4) 75 parts cream—25 parts maple sugar |   |

The cream used in the first six trials was standardized to 75 percent, in the seventh to 80 percent butterfat. In all cases it was mixed with the maple sugar or syrup at 92° F. The sugar used was a new crop product, the syrup "Vermont fancy" of excellent flavor. The samples were held as before.

*Results.*—In all seven trials the body was very firm, in fact the judges felt that it was almost too firm. Undissolved gritty sugar was present in the six trials in which it was used, although the same methods of mixing were employed as in the other experiments.

The flavor of trial (6), in which maple syrup was used, was much too faint to be satisfactory. The other six products exhibited a marked "fatty" or "salvy" flavor that was highly unpleasant and almost entirely covered up the delicate maple flavor desired; and, as is pointed out, the sugar was gritty.

IV. Further trials were made using maple sugar as the source of flavoring as follows:

- |   |   |
|---|---|
| (1) 80 parts cream—20 parts maple sugar | (4) 80 parts cream—20 parts maple sugar |
| (2) 75 parts cream—25 parts maple sugar | (5) 75 parts cream—25 parts maple sugar |
| (3) 60 parts cream—40 parts maple sugar | (6) 60 parts cream—40 parts maple sugar |

The cream used in (1), (2), and (3) was standardized to 70 percent butterfat, in (4), (5), and (6) to 71.5 percent. All creams were at 94° F. when mixed with the maple sugar. The sugar was a last year's product of medium light color and fine flavor. All samples were held for approximately 24 hours at 42° F.

*Results.*—The body of (1) was the nearest to ideal of any made in the several trials. It was sufficiently firm and possessed excellent spreading characteristics. Number (2) was somewhat softer and tended to be slightly sticky. Trial (3) was the softest and would doubtless be considered too soft by most consumers, although it would

not flow readily. Numbers (4), (5), and (6) were judged for body in the order named with (4) very slightly firmer than (1), (5) firmer than (2), and (6) firmer than (3). The difference between (1) and (4) was too slight to be of appreciable importance.

The maple flavor was uniformly very satisfactory and, as might be expected, was intensified as the percentage of maple sugar used was increased. Samples (4), (5), and (6) were criticized as showing a slight tendency toward "fatty" flavor but it was not objectionable.

V. As a further check on the previous results two trials were made as follows:

(1) 80 parts cream—20 parts maple sugar    (2) 80 parts cream—20 parts maple sugar

The cream in (1) tested 74 percent and in (2) it was standardized to 70 percent butterfat. The maple sugar was the same as that used in IV.

*Results.*—It was practically impossible to distinguish between the two lots. Both approached the ideal in body and flavor very closely and were considered very satisfactory products.

Twenty additional trials were made further to substantiate the foregoing results. They confirmed the conclusion above indicated that the butterfat content of the cream should not drop below 68 percent nor exceed 75 percent. Within this range it seems always possible to make a desirable product. These further trials also showed that breed exerted no appreciable effect on the finished product. As might be expected, the maple butter made with cream from mixed herd milk and from Jerseys and Guernseys was higher in color than that made when either Ayrshire or Holstein milk was used. The light colored high-grade sugars gave milder maple flavors than the darker ones.

#### SUMMARY

When pure maple sugar and pure cream carrying from 68 to 75 percent butterfat are commingled a toothsome product is made, one which has many uses, as "shortening," in candy making, as sandwich spread, on waffles, etc. It is readily made and even more readily eaten. It has distinct commercial possibilities. The extremely rich cream is secured either by using a device especially constructed for that purpose or by very greatly cutting down the rate of inflow of milk to the separator.

The cream should contain from 68 to 75 percent of butterfat. The product is too soft if it tests less than 68 percent and is apt to have a "fatty" or "salvy" flavor if it contains more than 75 percent.



Pure maple sugar should be used rather than syrup. A medium to dark colored sugar will impart a more pronounced flavor than will the lighter and higher grades.

The cream and sugar should be mixed 80 parts to 20 by weight. The cream should be at about 90° F., and the sugar broken into very fine particles.

Care should be taken in the mixing to make certain that all of the sugar is dissolved.

The mixture should be promptly placed in a refrigerator and held there until solidified, preferably for at least 24 hours and should be kept cold until it is consumed. It may not "keep" indefinitely unless refrigerated at low temperatures.

### DIRECTIONS

Separate the milk at 95° to 100° F. Use De Laval "Home Dairy Spread" tinware or, as an alternative, cut the rate of inflow very greatly, thus securing an extremely heavy cream. It must test between 68 and 75 percent butterfat, 71 to 74 percent being best. Such cream will barely run from the cream spout. It should be clearly understood that a cream containing less than 68 or more than 75 percent of fat will not make a satisfactory product.

Crush pure maple sugar—preferably a dark-colored sugar—into very fine particles—a rolling pin works well.

Mix eight parts by weight of warm cream (90° F.) and two parts by weight of crushed sugar.

Stir thoroughly in order to completely dissolve the sugar. Do not stir too long or too vigorously lest butter granules be formed.

Pour the mixture into jelly jars, tumblers or paper cartons and place in a refrigerator.

The mixture is ready for eating as soon as it solidifies. It should be kept cool until it is consumed. It should not be made up in large quantities as it does not always keep well unless refrigerated at low temperatures.