METHODS OF ATTAINING BEST TEXTURE IN CAKES

Thesis for the Degree of B. S.

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T H E S I S

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Methods of Attaining Best Texture in Cakes.

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by

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THESIS

Object- to determine by definite experiment the reason for many already adopted rules of cake making; to establish a series showing the proportions and relative costs necessary in butter cakes without eggs; butter cakes with eggs; and sponge cake without baking powder; and estimate the definite variations in materials when eggs are addedand when bread and pastry flour are used; and to determine the value of soda with sweet milk and chocolate; and cream of tartar with sugar and eggs.

Introduction.

In cake baking a coal range was used. Heat tested by oven thermometer. Butter cakes baked at 375 degrees. Sponge cake put in at 325 degrees heat increasing to 375 degrees.

Ingredients used the best.

Pillsbury's bread flour.

Pillsbury's prepared pastry flour.

Fresh Creamery Butter.

Fresh Eggs.

Fine granulated sugar.

Royal Baking Powder.

Baker's Chocolate.

Measurements.level.

Cup 1/2 pt. divided into thirds and fourths.

Tea spoon

Table spoon.

Earthen bowl.

Wooden spoon with slits.

All measurements are made before the cake is combined

Tins for baking deep oblong. No grease used. When cake is done it is turned upside down on wire gauze to cool.

Abbreviations.

Tablespoon- T.

Teaspoon - t

Cup . . . c.

Baking powder- B. p.

Cream of tartar c of t.

In working experiments 1/2 the recorded receipt was used. Each experiment worked three times.

Cost of materials for experiments.

(Estimated)

Butter 5 1/4 lbs. . .	at	.30 . . .	$1.05
Sugar (white) 7 lbs .	"	.03 . .	.[illegible]
Sugar (yellow) 3 1/3 lbs.	"	.05 . .	.13
Milk 4 qt.	"	.05 . . .	.[illegible]
Flour(pastry) 10 lbs.	"	. . . . .	.[illegible]
Flour(bread) 4 lbs.	"	. .02 . . .	.[illegible]
Baking powder 1/4 lb.	"	. . . . .	.10
Vanilla . . . 4 oz.	"	. ..05	.[illegible]
Cream of tartar			.[illegible]
Eggs. . . . 7 doz..	"	. ..30 . . .	1.40
	Total		3.85

Experiment I.

To determine	Method	Result.
Value of bread flour as compared with pastry flour for butter cake.	2/3 c. butter 2 c. sugar. 2 eggs. 1/4 t. salt. 1 c. milk. 3 c. flour. 3 t. B. p. 1. t vanilla	A. Heavy, rises high, solid, glazed surface. B. Light fine texture.
A. Bread flour.		
B Pastry flour.		

C.

Use of less amount of bread flour.	Same as B. - 6 T. flour to 1 c.	Not as fine and tender as B. Much lighter than A.

Cream butter, add sugar, cream well together, add well beaten eggs with salt, beat vigorously, add milk alternately with flour sifted with B.p., add vanilla last.

Experiment II.

Cake without egg.	6 T. butter 1 1/3 c. sugar 1 1/3 c milk 3. c. flour 1/4 t salt 6 t. B. p. 1. t vanilla	Rich, light, fine grained, white.

Experiment III.

Value of egg in place of some B.p- 1 egg for 1 t. B.p.	3/3 c butter 3 c. sugar 3 eggs 1/4 t. salt 1 c milk 3 c flour	Cake porous, rather coarse.

	3 t B.P.	
	1 t vanilla.	
	Cream butter, add sugar, add egg beaten slightly with salt, add flour sifted with B.p alternately with milk- vanilla.	
B.		
Value of beating yolks and whites separately.	Same as A.	
	Cream butter, add sugar, add well beaten yolk with salt, beat well, add flour sifted with B.p. alternately with milk, beat well, cut and fold in well beaten whites, add vanilla.	Very light, a trifle coarse, Evidently too much B.P.

Experiment IV.

To correct last experiment use I egg well beaten for 1 1/3 t B.P	Same as III, only using 1 1/3 t. B.P	Very light, fine, even, entirely satisfactory.

	3 t B.P.	
	1 t vanilla.	
	Cream butter, add sugar, add egg beaten slightly with salt, add flour sifted with B.p alternately with milk- vanilla.	
B.		
Value of beating yolks and whites separately.	Same as A.	
	Cream butter, add sugar, add well beaten yolk with salt, beat well, add flour sifted with B.p, alternately with milk, beat well, cut and fold in well beaten whites, add vanilla.	Very light, a trifle coarse, Evidently too much B.P.

Experiment IV.

To correct last experiment use I egg well beaten for 1 1/3 t B.P	Same as III, only using 1 1/3 t. B.P	Very light, fine, even, entirely satisfactory.

Experiment V.

Value of c of t in angel food.	A. 1 c. egg white 1/4 t salt I c sugar I c flour 3/4 t vanilla	A. Like omelet, not light and tender
	B. Use I t c of t Add salt to white of egg, beat till frothy, add c of t, continue beating, add sugar gradually, fold in floursifted five times, add vanilla.	B. Cake excellent, fine grained.

Experiment VI.

The value of c of t in boiled frosting. A. without c of t	A. I c sugar 1/3 c water I egg, white I t vanilla	A. This coats nicely, not smooth and creamy.
B. With c of t.	B. Same as A plus 1/3 t c of t Add c of t to sugar, add water, let boil slowly without stirring till it threads when dropped from spoon. Add while hot	B. Very satisfactory does not grain, soft inside, coats nicely.

to egg white beaten dry. Beat well, add vanilla, spread before cold.

Experiment VII.

A.
Value of soda in chocolate cake using white sugar.

1/2 c butter
1 c sugar(white)
2 eggs
1/2 c milk
1 t soda
2 c flour

Filling

1/2 c grated chocolate
1/2 c sugar (white)
1/2 c milk

A.
Moist, dark, soda taste.

B.
Soda with yellow sugar.

Using yellow sugar in place of white. For filling- dissolve chocolate, add sugar then milk, boil 1 minute. Let cool before adding to cake. Add chocolate filling before all flour has been added to cake.

B.
Lighter than A, dark colored, soda taste. Acid not sufficient to counteract alkali.

C Value of baking powder in chocolate cake with white sugar.	1/3 C Butter 1 C Sugar (white) 3 eggs 1/3 C milk 1 t D p 2 C flour. Filling. 1/3 C grated chocolate 1/3 C Sugar (white) 1/3 C Milk.	C Excellent light good texture and flavor.
D Baking powder with yellow sugar	Same as C only using yellow sugar in place of white	Good not as satisfactory as C.

Cost of cake without eggs, for summer and winter.

			Summer.		Winter.	
6 T butter	3/8 lb.	at	.15	.056	at .20	.075
1 1/2 c sugar	3/4 "	"	.06	.045	" .06	.045
1 1/2 c milk	3/4 qt.	"	.05	.037	" .05	.037
1 c flour	3/4 lb.	"	.02	.015	" .02	.015
1/4 t salt						
3 t B. P.		"	.001	.003	" .001	.003
1 t vanilla	1/3 oz.	"	.05	.005	" .05	.005
	Total.			.136		.180

Cost of butter cake for summer and winter.

3/8 c butter	1/8 lb.	at	.15	.05	at .20	.066
2 c sugar	1 "	"	.06	.09	" .06	.09
3 eggs	1/4 doz.	"	.15	.037	" .20	.050
1 c milk	1/4 qt	"	.05	.012	" .05	.012
2 c flour	3/4 lb.	"	.02	.015	" .02	.015
1 t vanilla	1/3 oz	"	.05	.005	" .05	.005
2 t B. P.		"	.001	.002	" .001	.002
	Total			.188		.254

Cost of angel food for summer and winter.

1 c whites of eggs 10/12 doz at .15 $0.125 @ .20 .166

1 c. sugar	1/3 lb.	at	.03	.03 @ .03	.03.
1 c flour	1/4 "	"	.03	.005" .03	.005
1 t vanilla	1/3 oz.		.05	.005" .05	.005
				.135 Total	.305

Conclusion.

Experiment I. Bread flour from spring wheat proves less desirable for use in cake making than pastry flour made from winter wheat, but the result may be improved when bread flour is used by taking a smaller measure of bread flour; as in 6-8 tablespoon. less to a cup or 1/4 cup less to flour to whole receipt.

Experiment II. Without eggs a light fine grained cake can be made which can be recommended to serve agreeably and economically for a layer cake or short cake when eggs are scarce or expensive.

Experiment III. To obtain cake of better flavor and texture eggs are added. Knowing that eggs will help to make the batter light 1/3 the baking powder (3 teaspoons) was omitted and one egg was substituted for each teaspoonful of baking powder omitted.

First eggs were beaten separately, the result was a light, porous cake.

Secondly, the eggs were beaten separately the whites being cut and folded in just before baking. The cake was much lighter and the coarse texture suggested that the result might be even better if less baking powder were used. This led to experiment IV.

Experiment IV. In this one egg took the place of 1 1/2 teaspoons of baking powder in the original eggless receipt. Therefore, three eggs were used and 1 1/2 teaspoons baking powder. The eggs beaten separately as has been proved desirable and whites carefully cut and folded in just before baking. The result being a cake of very light, fine, even texture, gave support to the fact that careful preparation and adding of eggs made it possible to use a very much smaller amount of baking powder than cake receipts usually call for,- just one-half the amount used in the accepted receipt with which the work started.

Experiment V. Sponge cake without baking powder was made to determine the value of cream of tartar in baking powder and the result showed that the cream of tartar made a cake of better grain and finer texture though not necessarily lighter than when cream of tartar was omitted.

Experiment VI. To prove the value of cream of tartar in boiled frosting- gives a smooth, creamy frosting. Without the cream of tartar the frosting is apt to be grainy to the touch if not in appearance.

Experiment VI. Use of soda in chocolate cake where sweet milk is used proved unsatisfactory and undesirable. Yellow sugar in no way proves preferable.

Relative costs of cakes. Angel Food or Sponge Cake show greater variation in price in summer and winter than butter cakes.

Comparison of cost is unsatisfactory as size of angel food and butter cake cannot be accurately estimated.

The cheapest cake for winter is the butter cake without egg.