W1.35:10-411, c.2
Document Reserve
NON-CIRCULATING

TM 10-411

WAR DEPARTMENT

TECHNICAL MANUAL

BAKING MANUAL FOR THE ARMY COOK

5 October 1943

NTSU LIBRARY
AUTHENTICATED U.S. GOVERNMENT INFORMATION GPO

TECHNICAL MANUAL
No. 10-411

WAR DEPARTMENT,
WASHINGTON 25, D. C., 5 October 1943.

BAKING MANUAL FOR THE ARMY COOK

		Paragraphs
Section I.	General	1–2
II.	Bread	3–4
III.	Hot rolls	5–12
IV.	Sweet rolls and coffee cakes	13–24
V.	Quick breads	25–29
VI.	Pies, crusts, and fillings	30–39
VII.	Cakes and icings	40–45
VIII.	Cookies	46–51
		Page
APPENDIX I.	Fried foods	87
II.	Table of weights and measures	109
INDEX		111

SECTION I

GENERAL

	Paragraph
General	1
Lard in the Army kitchen	2

1. *General.*—The instructions and illustrations in this manual give, step by step, the proper methods for making a large number of baked products. Those products which demand especially careful preparation are discussed in detail. In addition, illustrations of many finished products cooked by deep-fat frying and pan frying (see app. I) will suggest ways of adding variety to the Army mess.

2. *Lard in the Army kitchen.*—*a.* Lard has many important uses in the preparation of food. In the past decade more lard has been used than any other shortening. This may be attributed to a greater appreciation of the outstanding qualities of lard. Being a natural fat, lard is easily digested and it also adds to the food value of the diet, as it is a rich source of unsaturated fatty acids which are essential to good nutrition. Lard imparts a distinctive, appetizing flavor to the products in which it is used. It possesses superior shortening properties and frying value.

b. The use of lard in baked products gives the maximum shortening value which can be obtained from a given quantity of any of the plastic fats; also, lard may be incorporated in any mix with the utmost ease and rapidity because it is easily workable over a wide range of temperature.

c. Lard has been used as the shortening agent and frying medium in the development of the formulas and methods given in this manual. Government issue flour and other ingredients were used in the development of all formulas for baked products. For best results the formulas should be followed carefully.

d. War lard.—The shortening needs of the Army have been studied to find out what type of lard would fill these needs best. Out of this study has come the development of new lard specifications which provide a product especially adapted to the requirements of the Army. This lard is designated as "war lard."

(1) Type I contains hydrogenated lard flakes made from pure lard. It is for use only in the United States, and is not carried overseas. A small percentage of these flakes (approximately 4.6 percent) in war lard will prevent it from melting at the relatively high temperatures in Army mess kitchens, or in temporary, unrefrigerated storage. The addition of lard flakes increases the "creaming"

quality of lard, and does not reduce its digestibility, plasticity at low temperatures, and content of unsaturated fatty acids.

(2) Type II, for use overseas, contains flakes and a small amount of lecithin, an antioxidant which gives the lard still greater stability. Lecithin, a substance soluble in fats, is found in soya beans, egg yolks, and other products. Type II war lard will keep about twice as long as Type I.

(3) War lard is packaged and stored as follows:

Packaged lard

Type I	Type II
1-lb. and 4-lb. cartons for mess kitchens. 50-lb. coated metal containers, 57-lb. tubs, and 400-lb. drums for post bakeries.	5½-lb. tin for mess kitchens. 37-lb. tin for bakeries, etc.

Storage of lard

(Refrigerated storage preferred)

Type I	Type II
Can be stored— 8 months at 30°–40° F. 5 months at 40°–60° F. 3 months at 60°–70° F. 1 month at 70°–80° F. (If temperature is over 80° F., use promptly.)	Can be stored— 1 year below 50° F. 8 months at 50°–60° F. 4 months at 60°–80° F.

SECTION II

BREAD

	Paragraph
Army bread-making	3
Formulas	4

3. *Army bread-making.*—Bread usually is procured from the post or the field bakery, but sometimes it may be necessary to make it in the Army kitchen. Breads of all types may be made easily by the Army cook.

a. Fermentation.—In making bread, the fermentation procedure recommended for hot rolls (see par. 7c) is suitable. It is important to give attention to proper mixing and fermentation of the dough, because bread is often made inedible by neglect of a few major points. Be sure to keep the dough *young*. If it becomes *old* or overfermented, the resulting bread will be sour.

b. Timing and temperature.—The two most important considerations in successful bread-making are timing and temperature. The dough temperature should be carefully controlled. In summer, use cold water; in winter, use warm water. The dough temperature should be 80° F. for best results.

4. *Formulas.*—The following formulas should be used in making white bread, whole wheat bread, and rye bread:

WHITE BREAD

(Makes about 20 loaves—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Flour	15	0	12 No. 56 (qt.) dippers	Dissolve all ingredients except flour and lard in water.
Yeast	0	6	⅓ cake	
Salt	0	4	7 mess spoons	
Sugar	1	0	½ No 56 (qt.) dipper	Add flour and lard and mix well. When mixed, the dough should be smooth and elastic. A 10-minute mixing period is required.
Lard	1	0	½ No. 56 (qt.) dipper	
Evaporated milk	0	14	1 can	
Water (variable)	8	8	4 No. 56 (qt.) dippers	Keep dough out of drafts. Allow to stand for 2 hours, until fully risen. Punch well and allow to stand 20 minutes. Cut into loaves of desired size; mold them evenly and place in greased pans. Proof (let rise) to double volume. After proofing, bake at 425° F. approximately 30 to 40 minutes, depending on loaf size.

100 PERCENT WHOLE WHEAT BREAD

(Makes about 20 loaves —serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Whole wheat flour	15	0	12 No. 56 (qt.) dippers	Dissolve all ingredients except flour and lard in the water.
Yeast	0	6	⅓ cake	
Salt	0	4	7 mess spoons	
Sugar	1	0	½ No. 56 (qt.) dipper	Add the flour and lard and mix well. When mixed, the dough should be smooth and elastic. A 10-minute mixing period is required.
Lard	1	0	½ No. 56 (qt.) dipper	
Evaporated milk	0	14	1 can	
Water (variable)	8	8	4 No. 56 (qt.) dippers	The dough temperature should be 80° F. Keep the dough out of drafts. Allow it to stand for 2 hours, until it is fully risen. Punch well and allow to stand 20 minutes. Cut it into loaves of proper size; mold them evenly and proof (let rise) to double volume. After proofing, bake at 425° F. for 35 to 40 minutes.

NOTE.—White and whole wheat bread is easier to make than 100 percent whole wheat bread. For this bread, use only one-third whole wheat flour and two-thirds white flour.

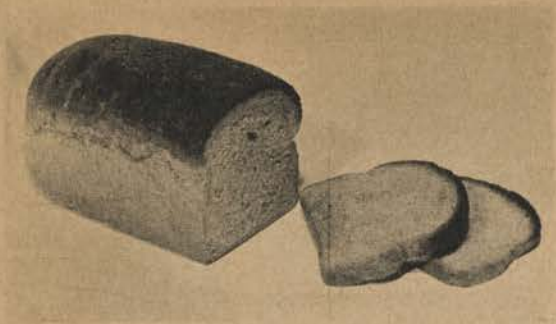


Figure 1.—Loaf of whole wheat bread.

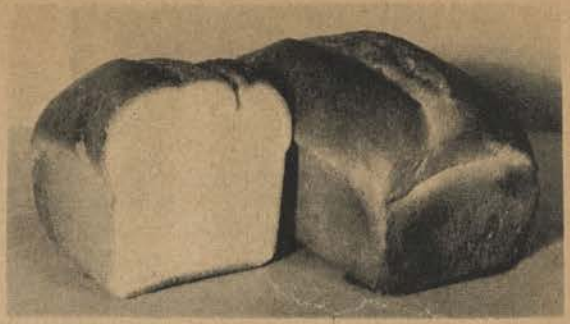


Figure 2.—Loaf of white bread.

RYE BREAD

(Makes about 20 loaves—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
White flour	12	0	10 No. 56 (qt.) dippers	Dissolve all ingredients except flour and lard in water. Mix in flour and lard until a smooth dough is obtained. Keep dough cool.
Rye flour	3	0	2¼ No. 56 (qt.) dippers	
Salt	0	4	7 mess spoons	
Lard	0	4	8 mess spoons	
Sugar	0	3	6 mess spoons	
Yeast	0	4	¼ cake	Allow to rise once. This requires approximately 1½ hours. Punch or stretch and allow to stand for 20 minutes.
Caraway seed (optional).	0	½	1½ mess spoons	
Water (cool)	8	8	4 No. 56 (qt.) dippers	Divide and mold into loaves of desired shape and size.
				Place loaves on sheet pans or other shallow pans which have been sprinkled with corn meal. Allow 6 inches of space between loaves. Proof (let rise) for 30 to 40 minutes, then cut loaves across the top with either a sharp knife or a razor blade.
				Wash loaves by brushing with water in which a small amount of starch has been boiled (2 mess spoons starch to 1 No. 56 dipper water). The starch will produce a glossy crust. Place in oven and bake at 425° F. for 35 to 45 minutes.



Figure 3.—Loaf of rye bread.

a. Potato rye bread.—One No. 56 dipper of mashed, cooked potatoes may be added to the rye bread dough. This will produce a shorter loaf with a richer flavor.

b. Sour or "nippy" rye bread.—If a sour loaf of rye bread is desired, add one pound of old dough which has been allowed to sour. This is accomplished by holding a piece of bread dough or roll dough in a warm place for 24 hours.

SECTION III

HOT ROLLS

	Paragraph
General	5
Ingredients	6
Mixing the basic dough	7
Parker House rolls	8
Sandwich buns	9
Plain rolls	10
Finger rolls	11
Butter biscuits	12

5. *General.*—*a.* No highly developed skill is required in making hot rolls. With the aid of the formulas and illustrations in this manual, any cook with a reasonable amount of practice should be able to produce tasty rolls with a minimum of effort.

b. Proper planning is essential. For best results it is desirable to have the hot breads coming from the oven at mealtime.

c. Although the amount of labor actually expended in making rolls is small, the lengthy time required by the dough is often discouraging. It is necessary only to set up a timetable to schedule rolls for any meal. Assuming that rolls are to be served at 6:00 PM, a typical timetable of operation is as follows.

	P. M.
Assembling of ingredients	1:45
Mixing of dough	2:00
Punching of dough	3:40
Dividing and make-up	4:00
Rising or proofing	4:30
Place in oven	5:30
Remove from oven	5:50
Place on table	6:00

d. In the above table only 45 minutes are required for the actual labor of mixing and make-up. The remainder of the time is consumed in fermentation, proofing, and baking. The process requires a total of 4½ hours.

6. *Ingredients.*—The ingredients used for breads and rolls of nearly all types are procurable in every mess kitchen. Sugar, salt, yeast, lard, flour, and water are the materials required. Milk is of some importance to the food value and flavor of the finished product, although its use is optional. Formulas for yeast rolls differ widely, ranging from water rolls which contain only flour, salt, yeast, and water, with small or even optional amounts of sugar and lard, to the richest of sweet rolls which contain sizable percentages of lard, milk, sugar, and eggs, in addition to the required amounts of flour, yeast, salt, and water. One gallon of liquid, either water or milk, should make enough rolls to serve 100 men.

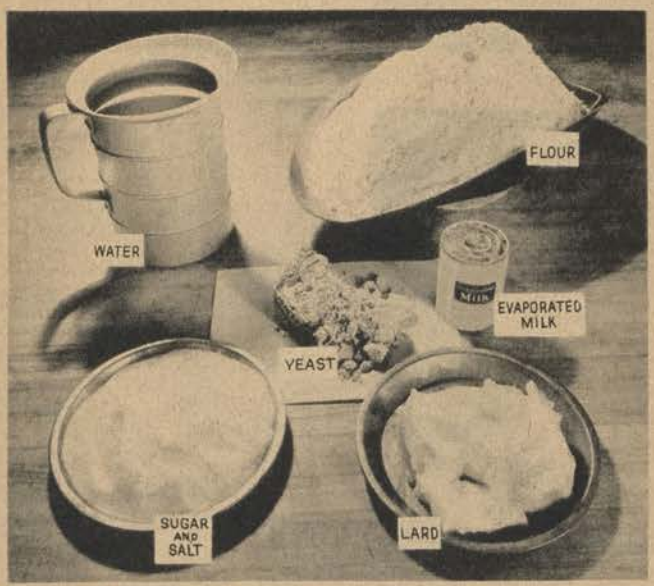


Figure 4.—Ingredients for hot rolls.

BASIC DOUGH FOR HOT ROLLS AND BUNS

(Enough for 100 servings)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Flour	14	0	11 No. 56 (qt.) dippers	Dissolve yeast, sugar, and salt in the water. Combine with other ingredients and mix either by hand or by machine until a smooth dough is obtained. Dough temperature should be 78°–82° F. Give one rising of 1¾ hours. Punch well. Let rest 20 additional minutes and take to the work bench.
Yeast	0	8	½ cake	
Salt	0	4	6 mess spoons	
Water	8	8	4 No. 56 (qt.) dippers	
Evaporated milk	0	14	1 can	
Sugar	1	0	½ No. 56 (qt.) dipper	
Lard	1	14	1 No. 56 (qt.) dipper	

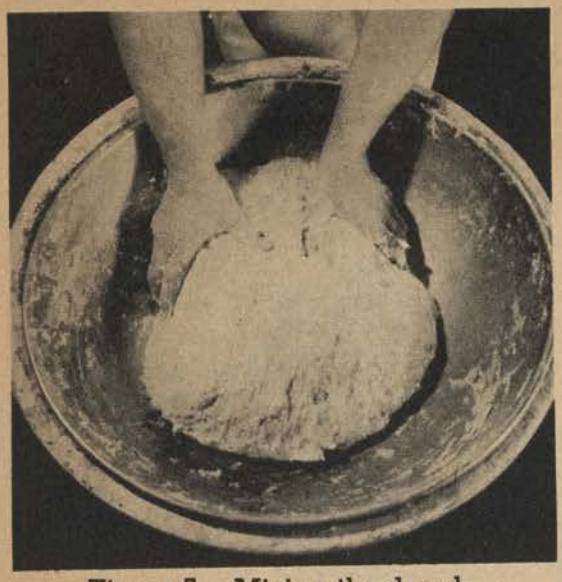


Figure 5.—Mixing the dough.



Figure 6.—A properly mixed dough.

7. *Mixing the basic dough.*—First, dissolve the yeast, salt, and sugar in the water. Second, add the milk, flour, and lard. The lard should be in a soft or semisolid condition. Third, mix the dough, either by hand or machine, until it is smooth and pliable. If under-mixed, it will be short and will appear lumpy. A properly mixed dough will clean up the mixing bowl, that is, it will pull from the surface and not be sticky. The temperature of the dough is important. If too hot, the dough will ferment too rapidly and the rolls will become sour or *yeasty*. If too cold, the rolls are likely to be heavy and tough. A temperature of 78° to 82° F is recommended. In the summer, use of ice water may be necessary to control dough temperature.

a. Finished dough (before fermentation).—The finished dough should be smooth and pliable. Best results are obtained when the temperature is controlled. The best working temperature is between 78° and 82° F.

b. Aging or fermenting the dough.—After the dough has been mixed, a fermentation or aging period is required. The amount of time needed is determined by the amount of yeast used, by the temperature of the dough, and by the strength of the flour. Fermentation time is shortened by large amounts of yeast and by warm dough. It is lengthened by cool dough and smaller amounts of yeast. An old dough will make a pale, sour-tasting roll. Keep the dough on the young side for best results. Average fermentation time is 1¾ hours.

c. Testing for punching time.—Insert the hand into the dough to a depth of approximately three inches. If the dough puckers or recedes at the point of the insertion, it is ready for punching. If the dough feels tight and does not recede,

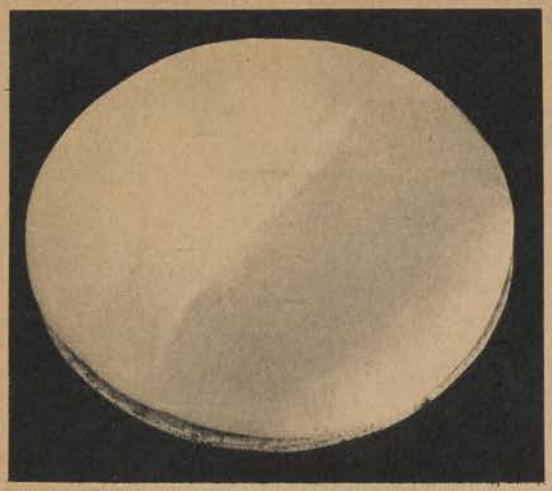


Figure 7.—Aging the dough.



Figure 8.—Testing for punching time.



Figure 9.—Basic dough ready for make-up.

longer fermentation should be given. Punching consists either of a vigorous stretching or punching of the dough with the hands and arms to eliminate the gas which has formed during fermentation.

d. Recovery period after punching.—After the punching process let dough stand approximately 15 to 20 minutes. The dough is then ready for the work bench, where it may be made up into the desired shape or type of roll. The dough shown in figure 9 has stood 20 minutes after punching. It is ready for make-up into any type of soft roll or bun.

8. *Parker House rolls* (makes about 300 rolls—serves 100 men).—Use the basic dough formula (par. 7). One gallon of dough should make 300 Parker House rolls.

a. Dividing the dough.—After the recovery period, the dough is ready for division into pieces. The best method for dividing the dough is to cut it into pieces of approximately 3 to 4 pounds each, and then to roll



Figure 10.—Dividing the dough.



Figure 11.—Rounding rolls.



Figure 12.—Resting period.



Figure 13.—Creasing rolls.

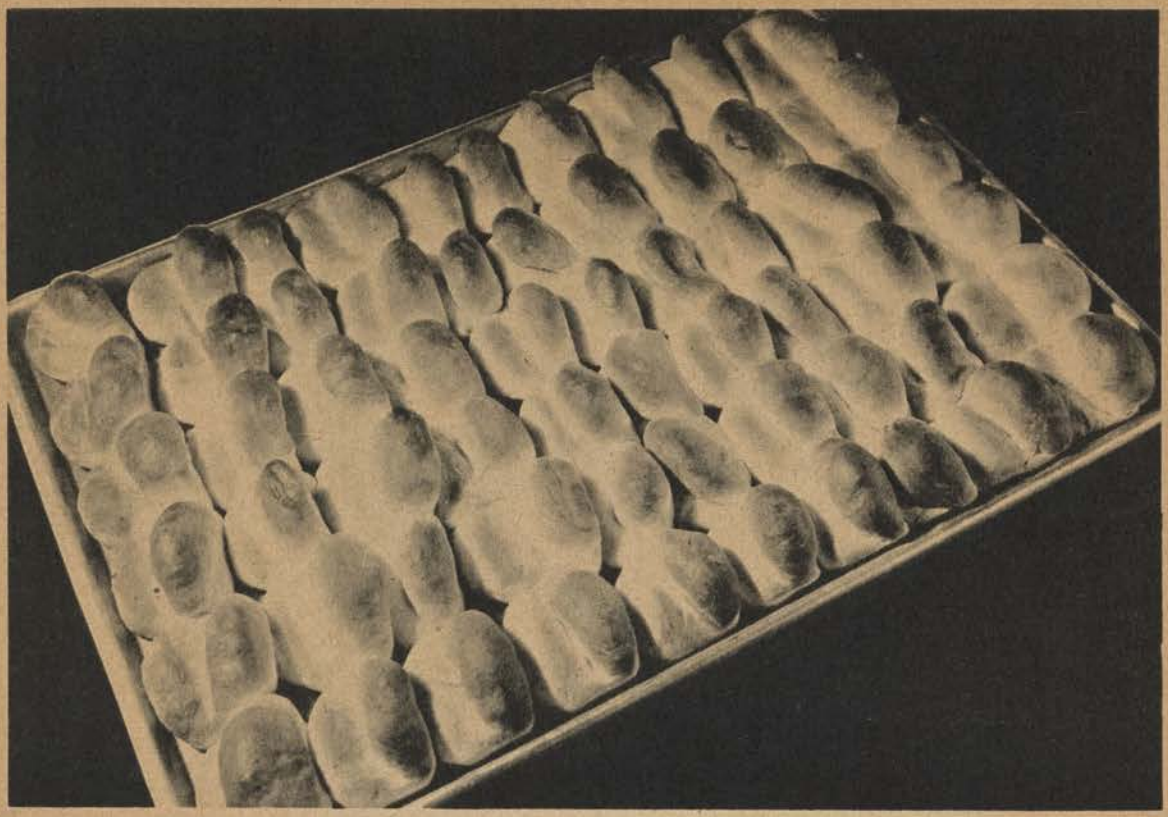


Figure 14.—Finished rolls.

each piece into elongated strips 1½ inches in diameter. The strips may then be divided into rolls by cutting with a scraper or knife into pieces about 1 inch thick. A weight of 1¼ to 1½ ounces is suitable for the average Parker House roll. It should be remembered that the average baked roll will be about double the size of the dough piece.

b. Rounding the rolls.—Round the pieces of dough into balls about the size of a golf ball by the simple process of rolling them with a circular motion against the work bench.

c. Resting period.—Allow the rounded rolls to rest for a period of 10 to 15 minutes. Then grease or oil them by brushing with either melted lard or butter.

d. Creasing the rolls.—Place the rolls greased side up and crease them across the center with a small rolling pin. (A piece of a broom handle makes an excellent rolling pin for this purpose). Then fold the rolls on the crease made by the rolling pin and place on the pan so that the folded portion will be visible on the baked roll. They may also be creased by pressing with the heel of the hand and then folding.

e. Proofing and baking.—Parker House rolls should be proofed until nearly double in volume and then baked for about 20 minutes in a hot oven (425° to 450° F.). The crease in the rolls (fig. 14) has been exaggerated for the purpose of illustrating the method more clearly. For best results all hot rolls should be baked rapidly, but in no case should they be over-baked. The ideal crust color is a golden brown. Both top and bottom crusts should be examined before removing from the oven, to make sure that the proper baking has been obtained.

9. *Sandwich buns* (makes about 200 buns—serves 100 men).—Use the basic dough formula (par. 7) for making sandwich buns.

a. Forming the buns.—Divide the dough into pieces of suitable size (a little larger than for Parker House rolls) and round into buns by means of a rolling circular motion while pressing the dough piece against the work bench. Space the buns on a



Figure 15.—Forming sandwich buns.

greased baking pan, allowing 1½ to 2 inches between the buns.

b. Flattening the buns.—Allow the rounded pieces of dough to proof for 10 to 15 minutes. Then flatten the dough pieces, producing a bun of a larger diameter and less thickness. Care should be taken not to force the finger into the dough, as this produces cavities or holes.

c. *Proofing and baking.*—After the sandwich buns have been flattened, allow them to proof to double volume, then bake for about 12 to 15 minutes in a hot oven (425°–450° F.).

10. *Plain rolls* (makes about 300 rolls—serves 100 men).—Use basic dough formula (par. 7).

a. Forming the rolls.—Divide and round as for Parker House rolls. Place the rounded pieces of dough on greased sheet pans or other shallow pans, spacing them about one-half inch apart. The pan should be fairly well filled with rolls.

b. Plain rolls proofed and ready for



Figure 16.—Flattening the buns



Figure 17.—Finished sandwich buns.

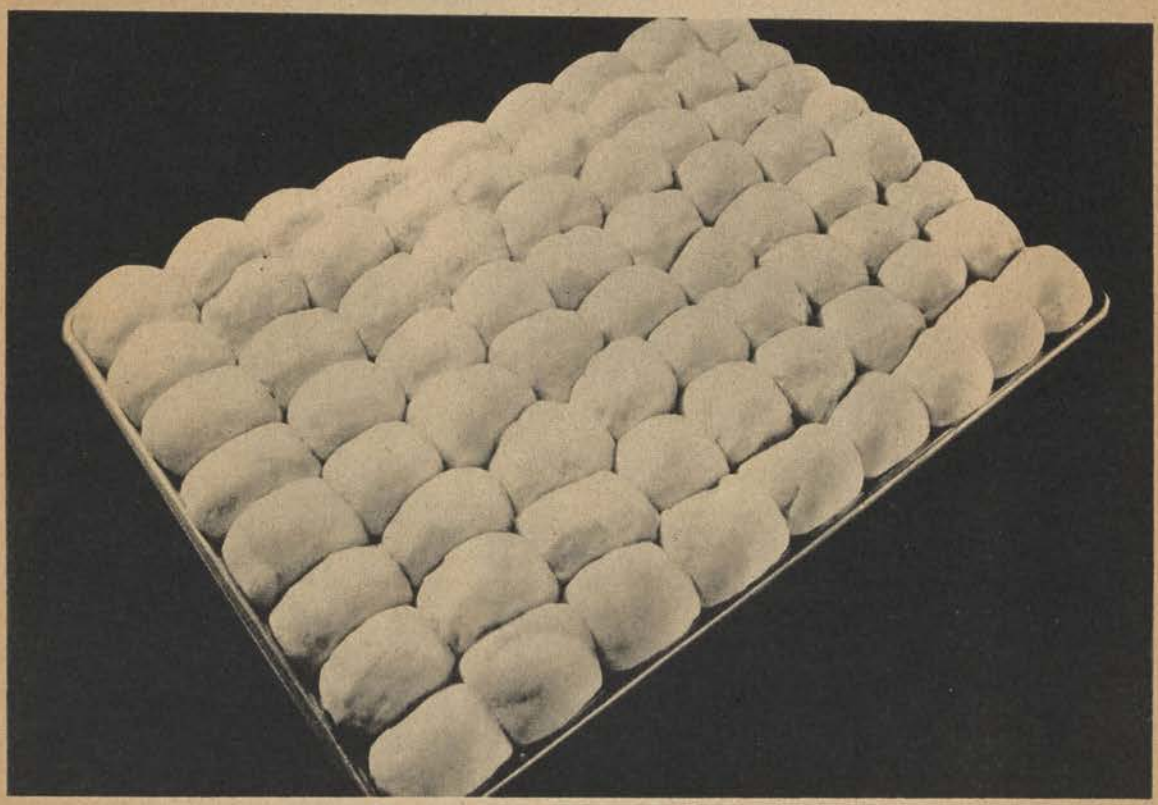


Figure 18.—Rolls ready for oven.

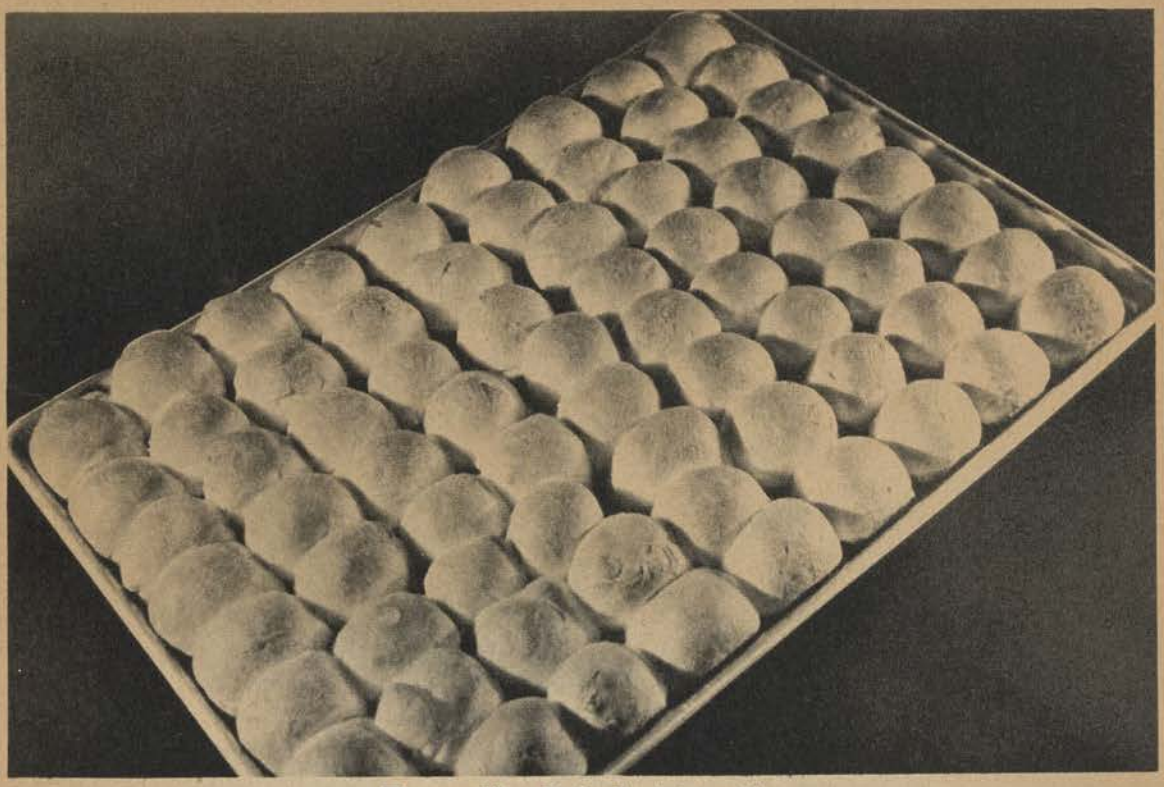


Figure 19.—Baked plain rolls.

oven.—Allow rolls to rise or proof until nearly double in size. This proofing period will require nearly 1 hour, under normal conditions. If over-proofed, the rolls will appear blistered and will fall when placed in the oven. The rolls should be carefully handled after proofing because jarring or rough treatment will cause them to fall.

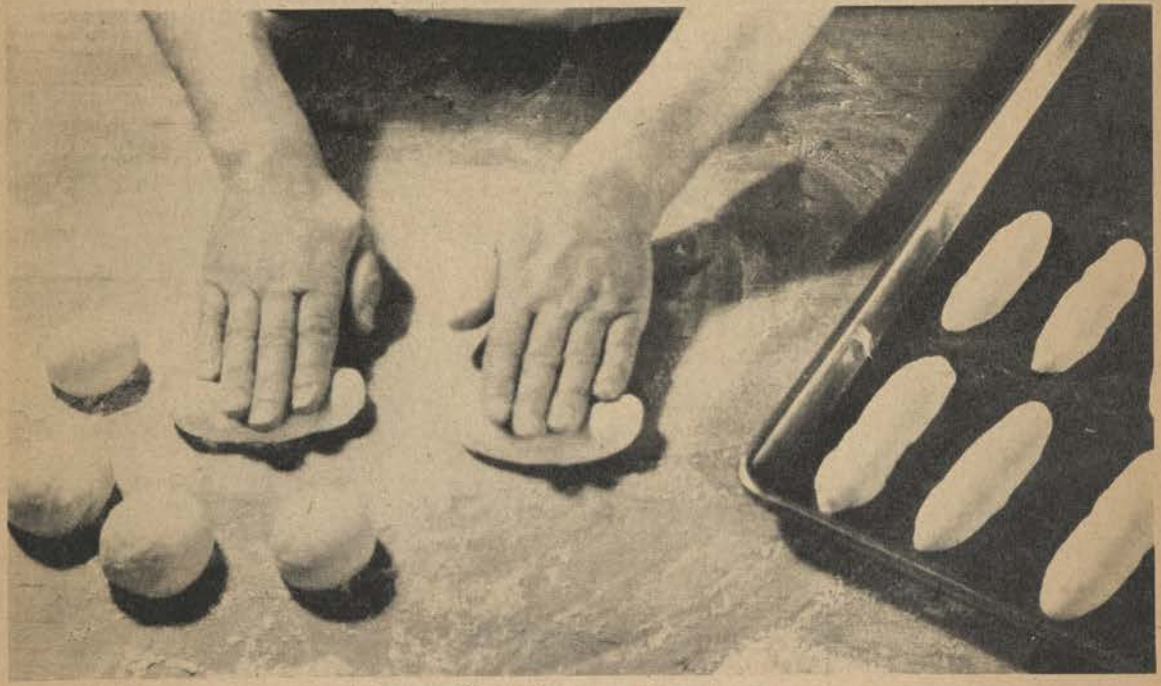


Figure 20.—Shaping finger rolls.



Figure 21.—Finished finger rolls.

They should be protected from drafts during the proofing period to prevent the formation of an unsightly crust.

c. *Baking the rolls.*—Bake for about 20 minutes in a hot oven (425°–450° F.). The rolls should be baked quickly and to a golden brown. If the oven is too hot, the rolls will take on too much color before the bottom is baked. If the oven is not hot enough, the rolls will be tough and lacking in color.

11. *Finger rolls* (makes about 250 rolls—serves 100 men).—*a. Shaping the rolls.*—Use basic dough formula. Scale or divide the dough into pieces weighing from $1\frac{1}{2}$ to $1\frac{3}{4}$ ounces. Instead of rounding as for plain rolls and Parker House rolls, roll the dough pieces into an elongated shape, approximately 4 to $4\frac{1}{2}$ inches long.

The rolls should be spaced about one-half

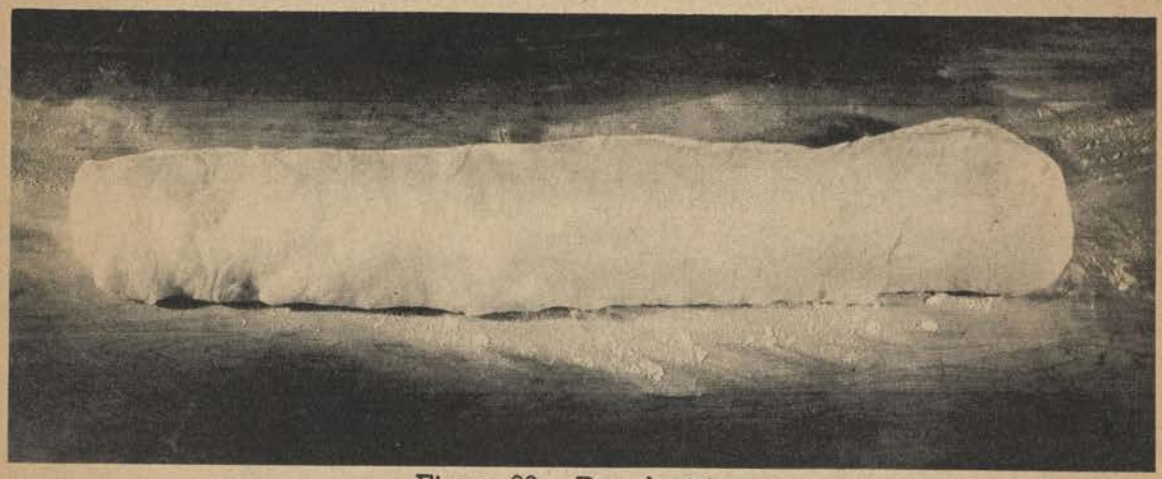


Figure 22.—Dough strip.

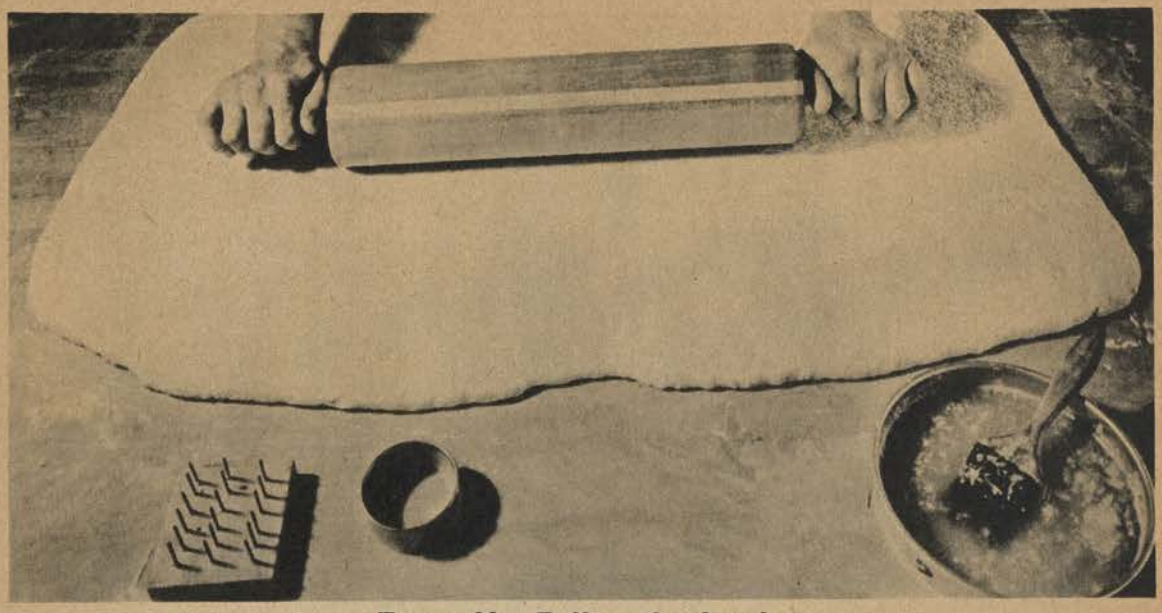


Figure 23.—Rolling the dough.

inch apart and should be proofed to double volume before baking. Bake in a hot oven (425°–450° F.) for about 15 minutes or to a golden brown.

b. Finished rolls.—The finger rolls should be baked in a hot oven in order to obtain a soft, tender product. Different bakers will produce rolls of varying shapes, some preferring a short blunt roll and others preferring them long and thin. These rolls sometimes are called wiener rolls.

12. *Butter biscuits* (makes about 250 biscuits—serves 100 men).—This is one of the most popular rolls and requires little or no skill to make. Use the basic dough formula (par. 7). This will make one gallon of dough and should produce 250 butter biscuits.

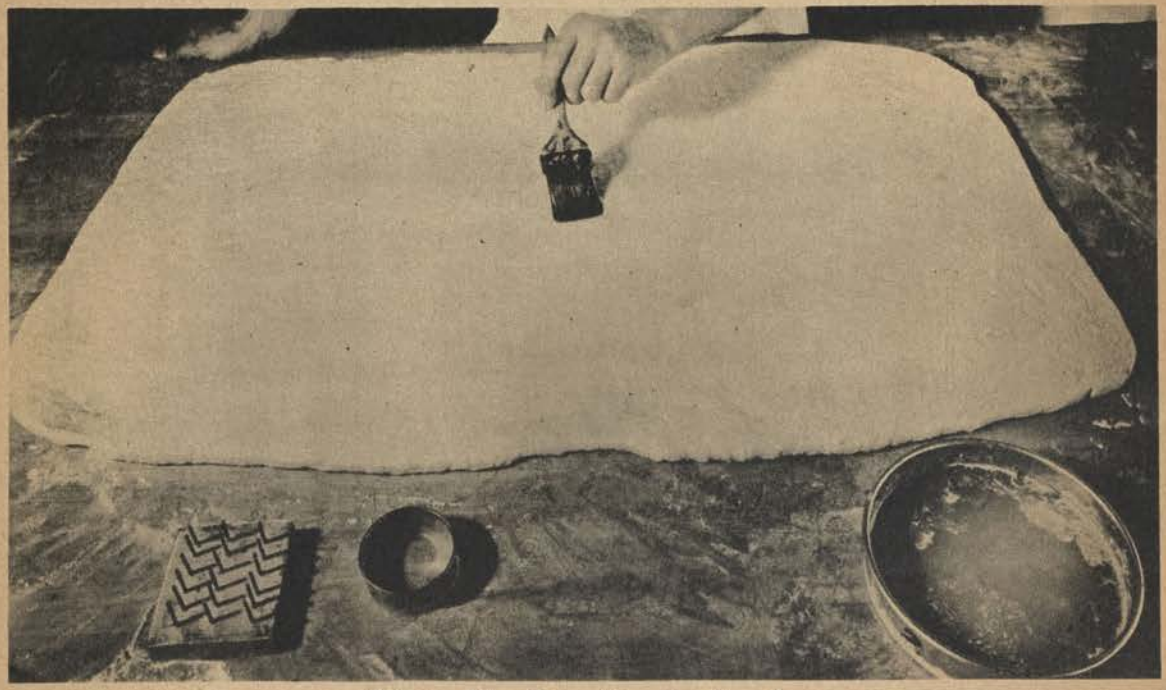


Figure 24.—Greasing the dough.

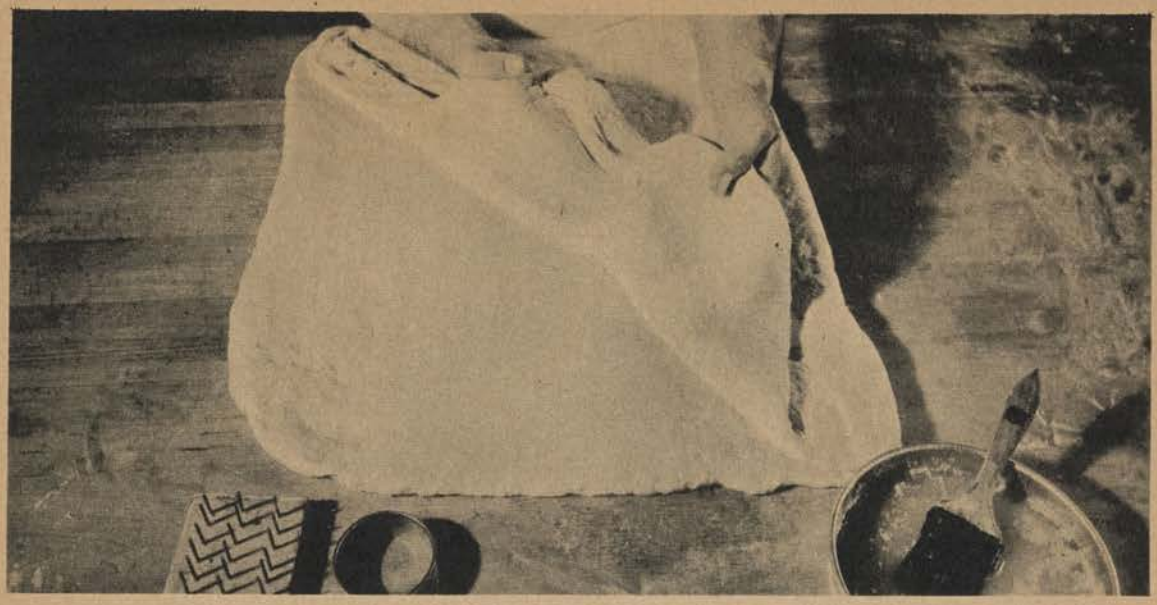


Figure 25.—Folding the dough.

a. Forming the dough strip for butter biscuits.—Divide the basic dough into four pieces of approximately equal size. Shape each piece into an elongated form and allow to rest on the work bench for 15 to 20 minutes so that the dough will soften up and roll more easily.

b. Rolling the dough.—With a large rolling pin, roll the dough to a thickness of approximately one-fourth inch. Care is required to keep the dough piece of uniform shape and thickness.

c. Greasing the dough.—Grease the dough with either melted butter or melted lard. Be sure sufficient fat is used to produce a well-greased surface; otherwise, the finished biscuit will not pull apart as desired. A brush is convenient for greasing the dough, but clean gauze or the hand may be used.

d. Folding the dough.—Fold the greased dough to make two layers.

e. Docking the dough.—Dock (prick)

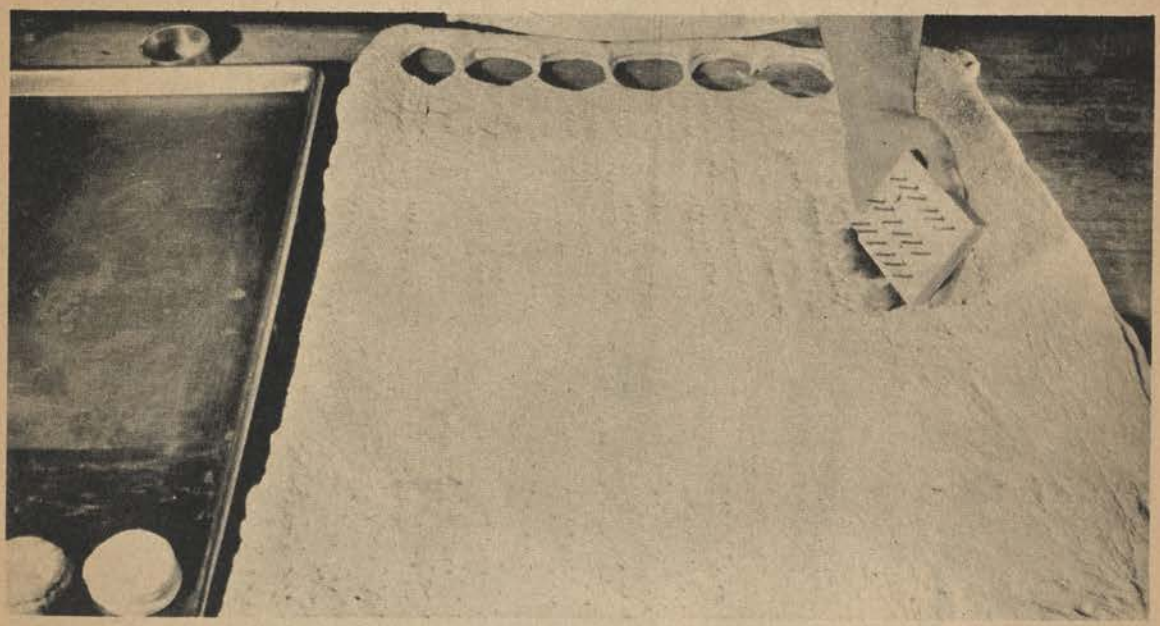


Figure 26.—Docking the dough.

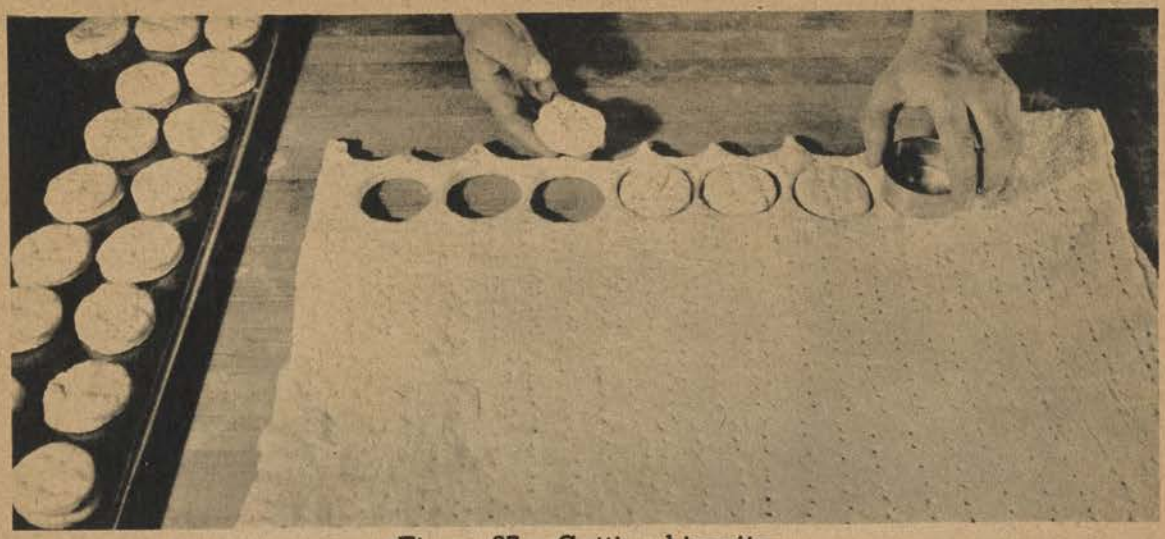


Figure 27.—Cutting biscuits.

the dough either with a fork or with a regular docker. A docker may be made by driving nails through a piece of wood. The docker should be forced completely through the dough. Unless this is done, the top layer of the butter biscuits will slide off during baking.

f. Cutting the biscuits.—Cut the biscuits with a biscuit cutter and place close together on a baking pan. The biscuits should nearly touch each other. Proof until nearly double in volume (about 30 to 40 minutes).

g. Finished butter biscuits.—Biscuits should be baked in a hot oven (425°–450° F.) to a golden brown color, about 15 to 20 minutes.

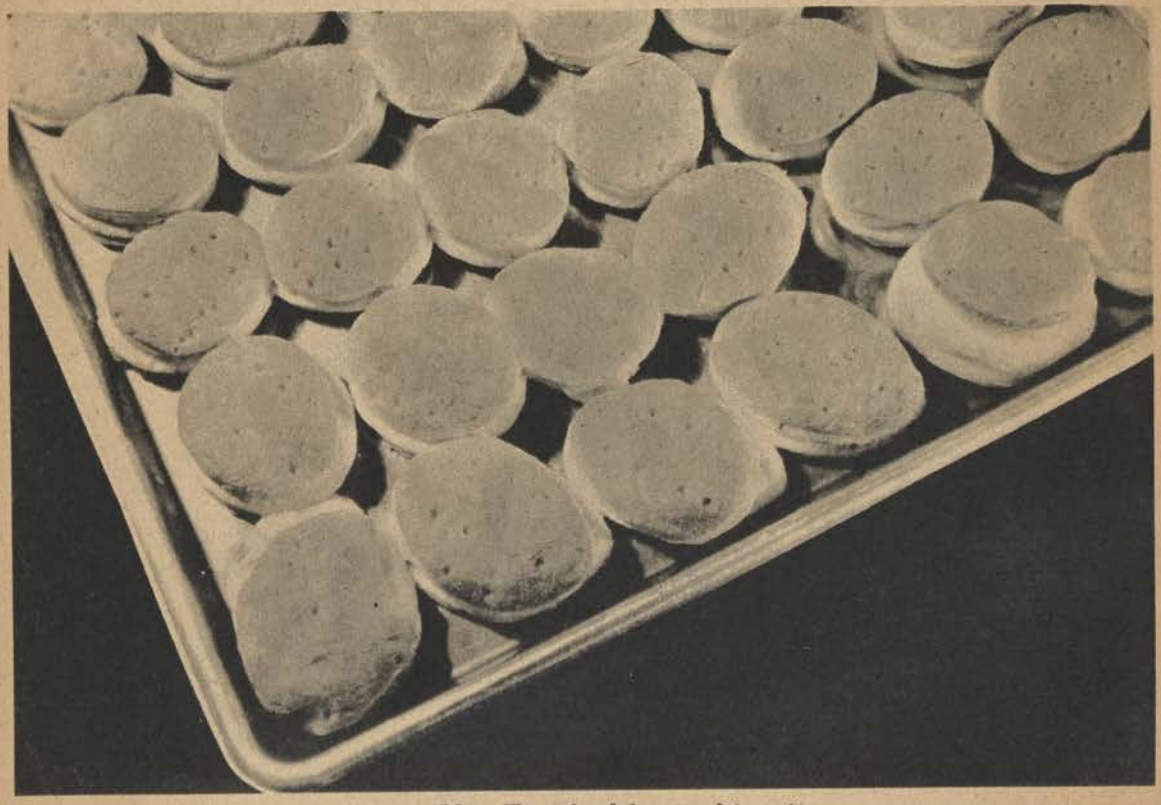


Figure 28.—Finished butter biscuits.

SECTION IV

SWEET ROLLS AND COFFEE CAKES

	Paragraph
General	13
Ingredients	14
Mixing basic sweet dough	15
Sugar twists	16
Cinnamon rolls	17
Sugared snails	18
Butterfly rolls	19
Fruit coffee cake	20
Streussel coffee cake	21
Old-fashioned coffee cake	22
Butter-cinnamon coffee cake	23
Yeast-raised doughnuts	24

13. *General.*—*a.* Contrary to popular belief, the making of sweet doughs does not require unusual skill. Rolls of almost any kind may be easily made in the average Army mess kitchen.

b. The richness of the dough used for sweet rolls and coffee cakes makes these products highly desirable as concentrated energy food. This richness gives to the finished product palatability superior to that of yeast raised goods produced from the average regular roll or bread formula.

c. The sweet dough is remarkable in that it is adaptable to so many baked items. Dozens of assorted rolls and coffee cakes can be made from a basic formula. Fruits, nuts, spices, etc., can be used in some type of sweet rolls or coffee cake.

14. *Ingredients.*—All ingredients necessary for preparation of the sweet rolls and coffee cakes described in this section are included in Government issue supplies.

a. Sweet yeast-raised doughs, which are used for sweet rolls and coffee cakes, contain more sugar and lard than the plain doughs. Eggs are also used when obtainable. Eggs add richness, and produce superior texture and volume in the finished product. Dried (powdered) whole eggs, in proportion, may be substituted for fresh eggs, if desired. One-half ounce (two mess spoons) of dried (powdered) whole egg is equivalent to one fresh egg.

b. The mixing and fermentation procedure in making sweet dough is described in paragraph 10. The dough temperature (80° F.) should be controlled if possible. Since most items made from sweet dough are rolled with a rolling pin, the dough should be slightly softer than that for plain rolls. This will promote easier handling.

BASIC DOUGH FOR SWEET ROLLS AND COFFEE CAKES

(For 100 servings)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar	4	0	2 No. 56 (qt.) dippers	Cream or rub together.
Lard	4	0	2 No. 56 (qt.) dippers	
Salt	0	5	8 mess spoons	
Step 2: Eggs	3	0	30 eggs or 1½ No. 56 dippers.	Add and cream until well mixed.
Step 3:				
Yeast	1	8	1½ cakes	Dissolve yeast in water and milk. Then add to above. Stir until well distributed.
Evaporated milk	1	12	2 cans	
Water	6	8	3 No. 56 (qt.) dippers	
Flavor			To taste	
Step 4: Flour	16	0	13 No. 56 (qt.) dippers	Add flour to above and give a thorough mixing. Dough temperature should be 78° to 82° F. Allow to rise or ferment 1½ to 2 hours. Punch or stretch and take to the work bench after 15 minutes of additional fermentation.

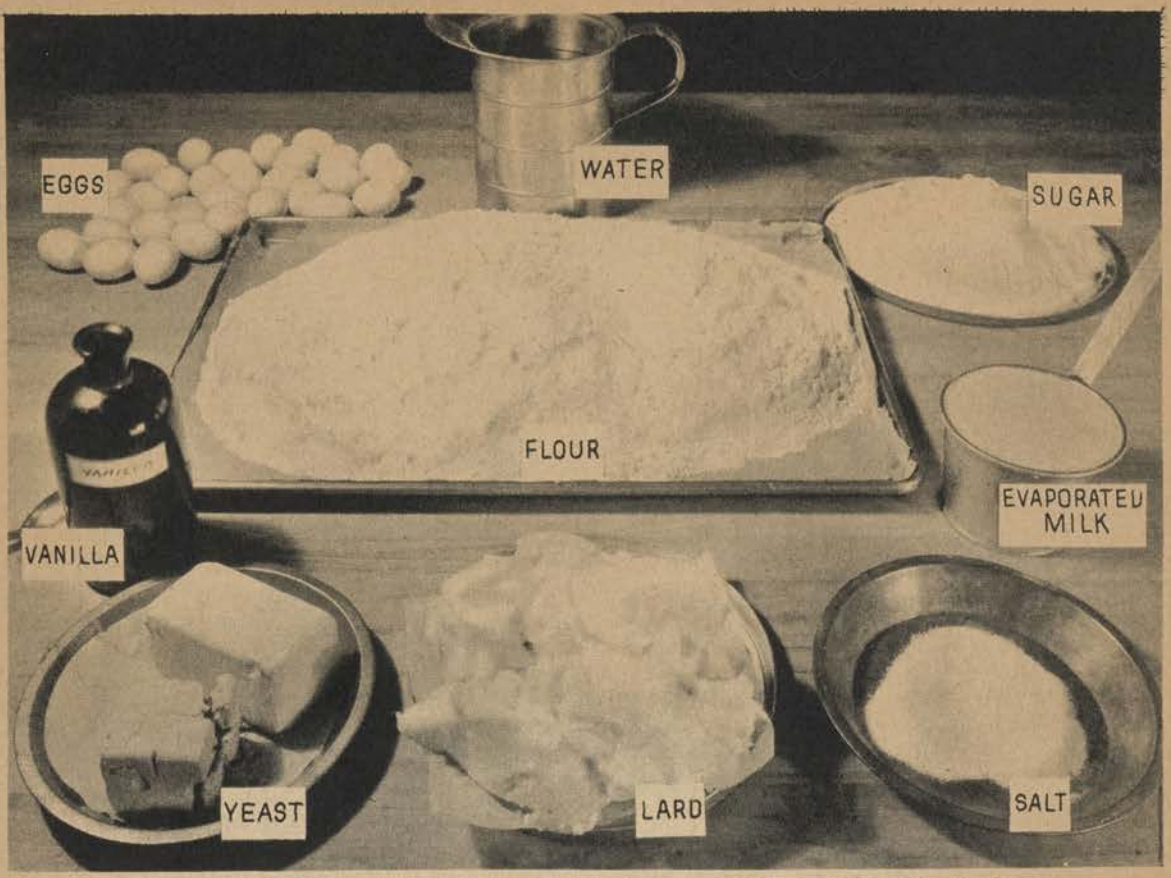


Figure 29.—Basic dough ingredients for sweet rolls and coffee cakes.

15. *Mixing basic sweet dough—a. Creaming lard, sugar, and salt.*—Cream the lard, sugar, and salt to a smooth paste. Be sure that all lumps have been worked out of both lard and sugar during the creaming process.

b. Adding the eggs.—Add the eggs to the creamed lard and sugar and mix in, a few at a time.



Figure 30.—Creaming lard, sugar, and salt.



Figure 31.—Adding eggs.

c. *Adding the milk, water, and yeast.*—After the eggs have been thoroughly mixed into the lard and sugar, add the milk and water in which the yeast has been dissolved, and mix thoroughly. Flavors, such as vanilla extract, mace, nutmeg, and lemon extract, are suitable for sweet doughs and should be added at this stage, if used.

d. Adding the flour.—Add the flour all at one time, and then mix until a smooth dough is obtained.

e. Dough mixed and ready for fermentation.—The consistency of the dough influences the ease of rolling during make-up. It is desirable to have the dough soft and somewhat sticky at this stage. The dough temperature should be between 78° and 82° F. If it is cooler than this, it will be slow in



Figure 32.—Mixing milk, water, and yeast.



Figure 33.—Mixing in flour.

fermenting. If warmer, it is likely to ferment so rapidly it will be difficult to make up into finished rolls before it becomes too old.

f. Fermenting and punching the dough.—Sweet doughs should be fermented as all other yeast-leavened doughs. Allow to stand for 1½ to 2 hours, until it has reached the volume that will recede when punched with the hand. If the dough feels lively and full of gas at this stage, it is a good sign and indicates that it will be ready for the work bench after 15 to 20 minutes rest. If the dough is heavy and lifeless, it should not be punched at this time, but should be allowed to stand for additional fermentation.

16. *Sugar twists* (makes about 250 sugar twists—serves 100 men).—Use the basic sweet dough formula (par. 14) in mak-

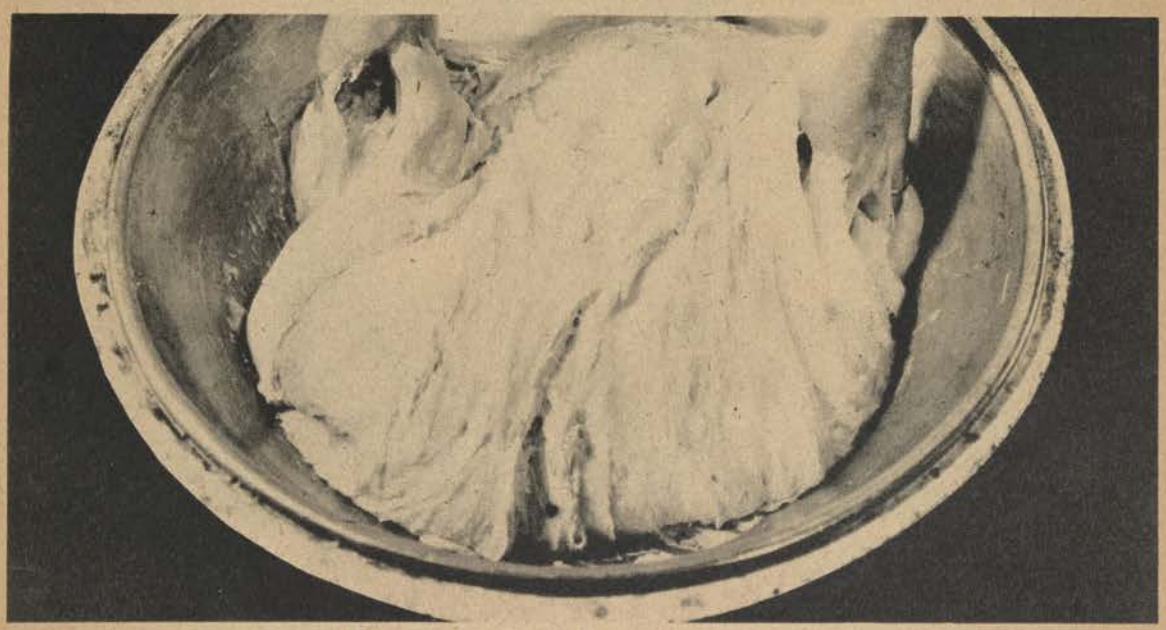


Figure 34.—Ready for fermentation.



Figure 35.—Punching the sweet dough.

ing sugar twists.

a. Folding dough.—Divide dough into seven pieces of equal size. Form into oblong shapes and allow 10 to 15 minutes recovery



Figure 36.—Folding dough.



Figure 37.—Forming sugar twists.

period: Roll each piece into a long thin sheet similar to that used for cinnamon rolls. Grease well with melted lard and cover with sugar (brown sugar preferred) which may be mixed with spices. Any type of dried fruit, which has been chopped into small pieces, may be added. Fold the dough, forming three layers.

b. Forming the twists.—Cut the folded dough strips crosswise with a knife or scraper into pieces approximately 1 inch wide. Then roll these pieces so as to produce a twisted effect.

c. Completing the twists.—The twist



Figure 38.—Completing twists.



Figure 39.—Baked sugar twists.

is completed by rolling the dough piece in one direction with the left hand and in the opposite direction with the right hand.

d. Proofing and baking.—Proof the twists (let rise) to double volume, as indicated for all other rolls, and bake in a hot oven (400°–450° F.) about 15 to 20 minutes, or until a golden brown on top and bottom. They may be served either plain or finished with a water icing.

17. *Cinnamon rolls* (makes about 250 rolls—serves 100 men).—Use basic sweet dough formula (par. 14) in making cinnamon rolls.

a. Rolling the dough.—After fermentation, take the finished sweet dough to the work bench and divide into seven pieces of equal size. Form into oblong shapes and allow 10 to 15 minutes recovery period. Roll each piece with a heavy rolling pin into a sheet about 1/4 inch thick and 16 inches wide.

b. Applying sugar, cinnamon, and raisins.—Grease the rolled dough sheet with either melted lard or melted butter, making sure it is completely greased from edge to edge. Apply the cinnamon and sugar mixture. Use two mess spoons of cin-

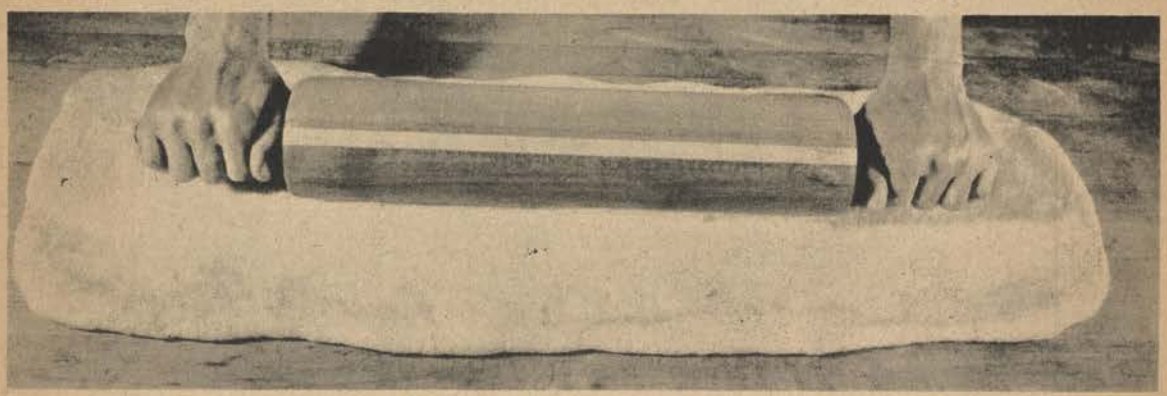


Figure 40.—Rolling dough.



Figure 41.—Adding sugar, cinnamon, and raisins.

namon for each No. 56 dipper of sugar. This mixture should be lightly scattered over the dough. Raisins or other fruits may be applied, if desired.

c. *Forming the rolls.*—Roll or coil the dough sheet. The rolling should be done in such manner that a fairly tight roll will be formed. If too loose, it will be difficult to pick it up without damage. Cut the cinnamon rolls to a thickness of approximately



Figure 42.—Forming rolls.



Figure 43.—Baked rolls.



Figure 44.—Iced cinnamon rolls.



Figure 45.—Greasing dough.



Figure 46.—Sugaring the snails.

three-fourths of an inch. Place them rather close together on a heavily greased baking sheet or other shallow pan. After panning the rolls (placing rolls in pan), flatten them slightly with the hand, if cutting was not accurate.

d. Proofing and baking.—Proof the cinnamon rolls, as recommended for all other rolls; that is, they should be allowed to double in size. Bake in a hot oven (400°–450° F.) for about 20 minutes, or to a golden brown top and bottom.

e. Icing.—Cinnamon rolls may be iced with a plain water icing. The icing is made by mixing together:

12 lbs. (9 No. 56 dippers) powdered sugar.
2 lbs. (1 No. 56 dipper) warm water.
1 coffee cup table syrup.
2 mess spoons vanilla.



Figure 47.—Baked and iced snails.



Figure 48.—Forming dough strip.

18. *Sugared snails* (makes about 200 snails—serves 100 men).—Use basic sweet dough formula (par. 14) in making sugared snails.

a. Greasing the dough.—Roll a portion of the sweet dough into a sheet much wider than for cinnamon rolls. Grease heavily with melted lard, using a brush, clean gauze, or hand. Then cover with either granulated sugar or with a cinnamon-sugar mixture.

b. Sugaring the snails.—Coil the rolls in exactly the same manner as recommended for cinnamon rolls; then cut into pieces of uniform size, about 1 inch in thickness. Place one cut surface of the roll in granulated sugar. Enough pressure should be applied to the roll while it is in the pan of sugar to assure the adherence of a liberal amount. Then invert the rolls and place them on a greased pan with the sugared side on top.

c. Proofing and baking.—Proof the sugared snails to double volume. Then bake in a hot oven (400°–450° F.) for about 15 to 20 minutes, or until nicely browned on the bottom. The rolls may be served plain or may be iced with water icing.

19. *Butterfly rolls* (makes about 250 rolls—serves 100 men).—Use basic sweet dough formula (par. 14) in making butterfly rolls.

a. Forming dough strip.—Roll out sweet dough pieces into a wide sheet. Grease with melted lard and cover with sugar and cinnamon mixture. Raisins may be added, if desired. Roll in a coil as for cinnamon rolls.

b. Creasing rolls after cutting.—Cut into pieces about 1¼ inches thick. Crease each piece across the center with a small rolling pin. (A piece of broom handle will make an ideal pin for this purpose.) Enough pressure should be applied to make a deep crease in the dough piece.

c. Forming the butterfly.—Place creased



Figure 49.—Creasing rolls.



Figure 50.—Forming butterfly rolls.

dough piece on the pan in such manner that the open ends of the roll will be up and the bottom of the roll in contact with the surface of the pan. They should be far enough apart in the pan to prevent their sticking together.

d. Proofing and baking.—Give the rolls normal proof and bake in a hot oven (400°-450° F.) for 15 to 20 minutes, or until golden brown. They may be served either iced or plain. A jelly topping is also suitable for butterfly rolls.

20. *Fruit coffee cake* (makes eight or nine large sheet cakes—serves 100 men).—Use basic sweet dough formula (par. 14) in making fruit coffee cake.

a. Rolling the dough.—Use a piece of sweet dough weighing approximately 4 pounds. It must be sufficiently large to cover the pan after rolling. Form the dough in an oval shape and then roll with a large rolling pin to a thickness of one-half inch.

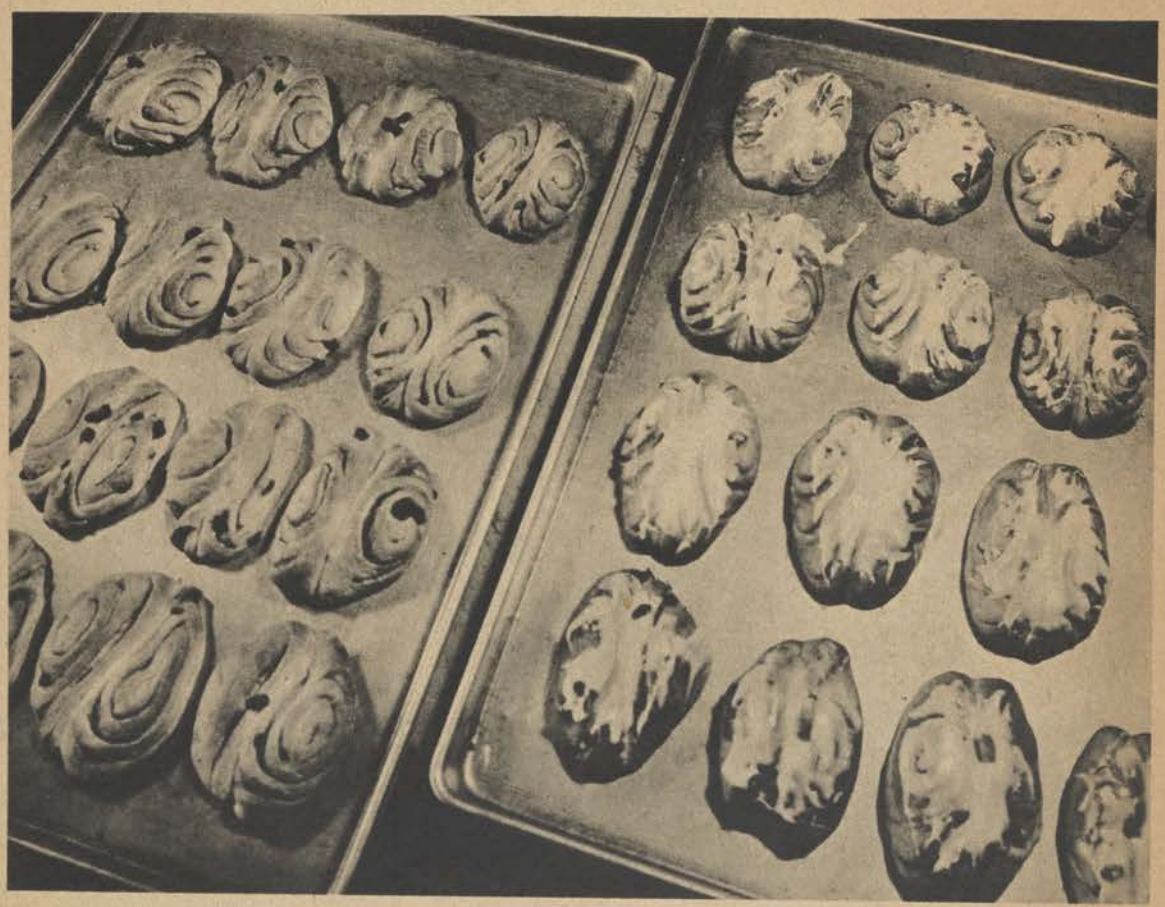


Figure 51.—Plain and iced butterfly rolls.



Figure 52.—Coiling dough on rolling pin.

b. Panning the dough.—Coil the rolled dough sheet around the rolling pin. Pick up rolling pin and dough and place on the baking sheet. Then uncoil the dough sheet by reverse action.

c. Covering with pie filler.—Any type of thickened pie filler may be used for fruit coffee cake. Apples, cherries, and apricots, as well as all kinds of canned fruits, may be used simply by first preparing them as for pie filler. The fruit should be placed over the dough sheet before it is proofed.

d. Proofing and baking.—Only a small amount of proof (about 15 to 20 minutes) should be given to coffee cakes of this type. If over-proofed, the weight of the fruit will cause cake to fall. If properly proofed, however, the dough will bake without falling. Bake at 400° F. for about 30 minutes, or until a golden brown bottom is obtained. The finished coffee cake may be served either plain or with water icing.

21. *Streussel coffee cake* (makes eight or nine large sheet cakes—serves 100 men).—

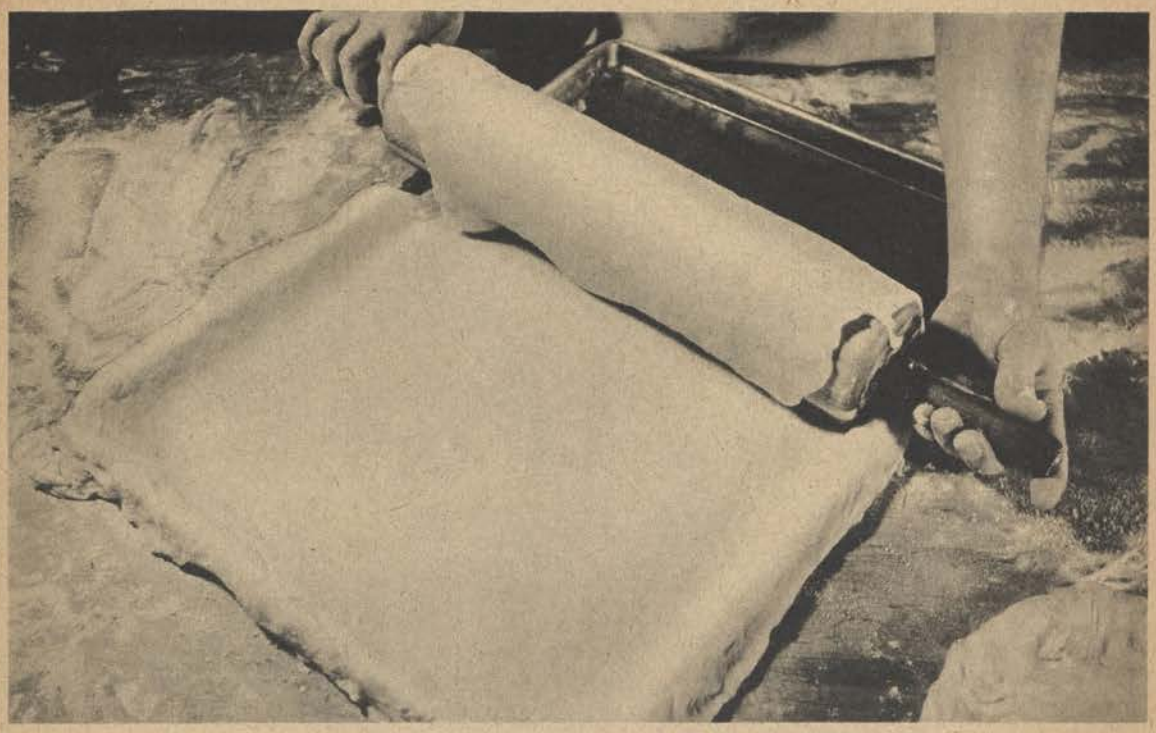


Figure 53.—Panning dough.

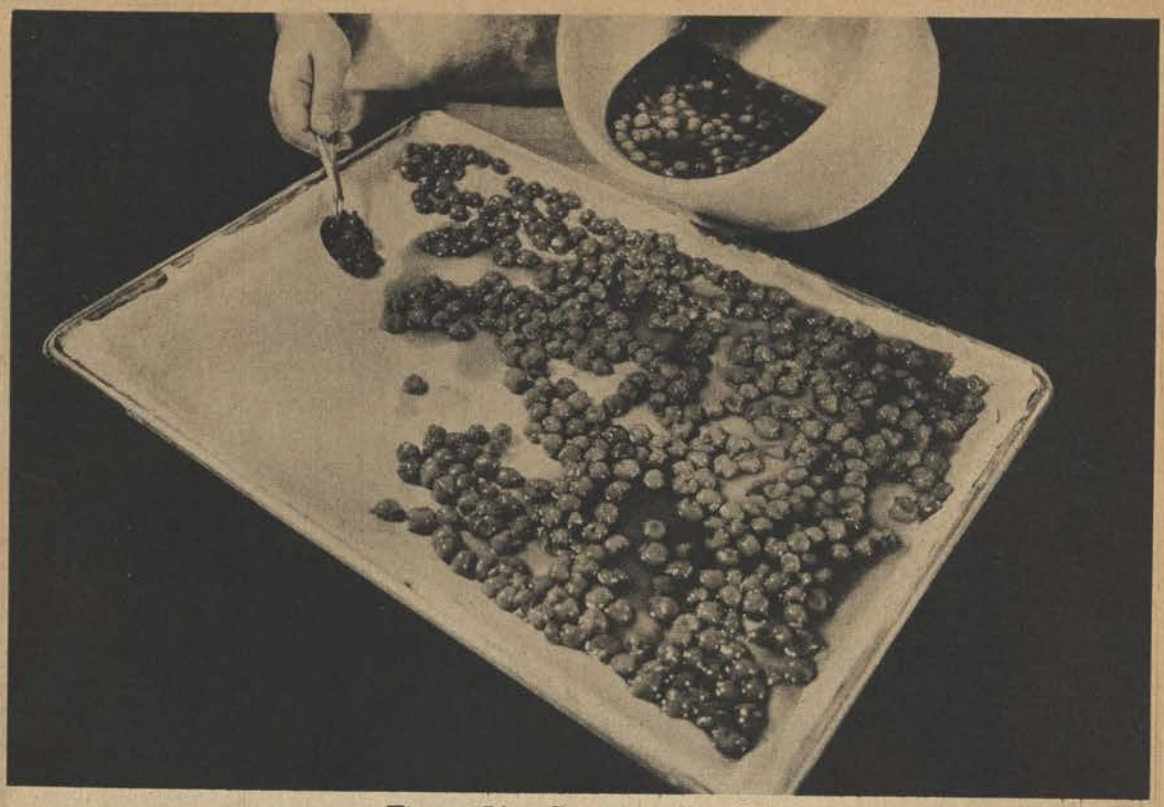


Figure 54.—Covering dough.

Use basic sweet dough formula (par. 14) in making Streussel coffee cake.

a. Forming the dough sheet.—Roll out 4 pounds of sweet dough into a sheet approximately one-half inch thick. Place in a baking sheet or other shallow pan, following the direction for panning fruit coffee cake. Then dock (prick) the dough sheet with a fork to prevent blisters, and grease with melted lard.



Figure 55.—Finished coffee cake.



Figure 56.—Dough sheet.

b. Making the Streussel.—Prepare Streussel topping according to the following formula:

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Sugar	2	0	1 No. 56 (qt.) dipper	Cream slightly sugar, butter, lard, and salt.
Butter	1	0	½ No. 56 (qt.) dipper	
Lard	1	0	½ No. 56 (qt.) dipper	
Salt	0	½	1 mess spoon	
Honey or table syrup	0	6	8 mess spoons	Add honey or syrup and flour. Blend to a crumb-like mixture.
Flour	4	0	3 No. 56 (qt.) dippers	



Figure 57.—Applying Streussel.

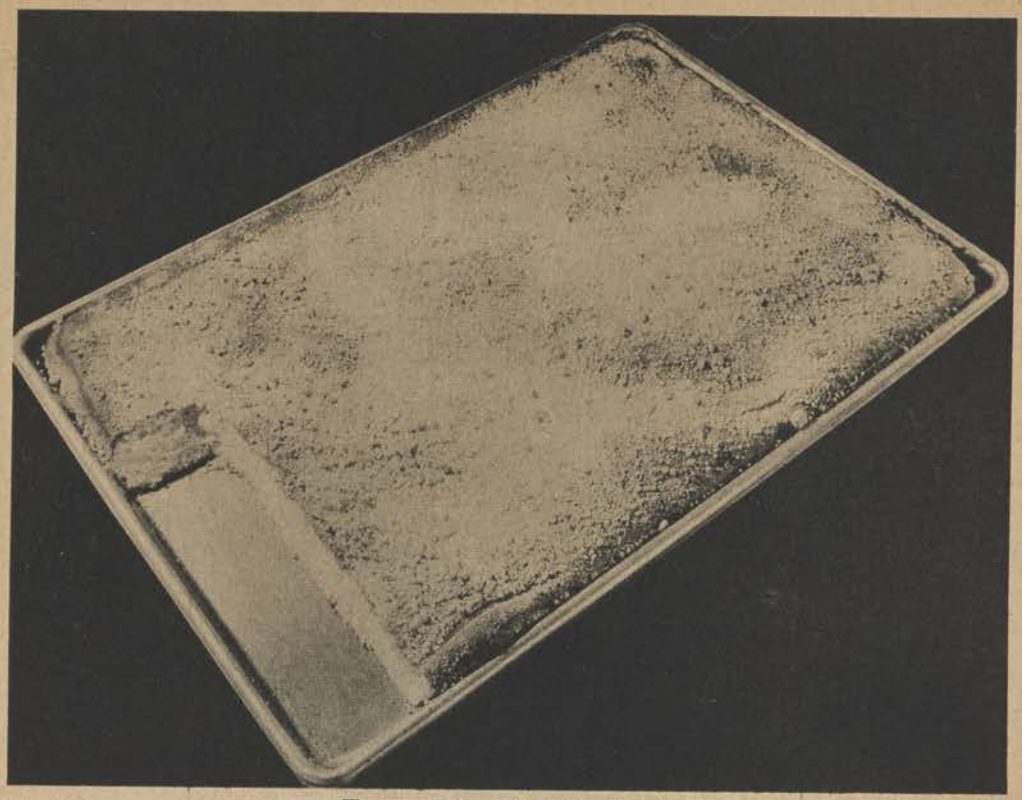


Figure 58.—Finished cake.

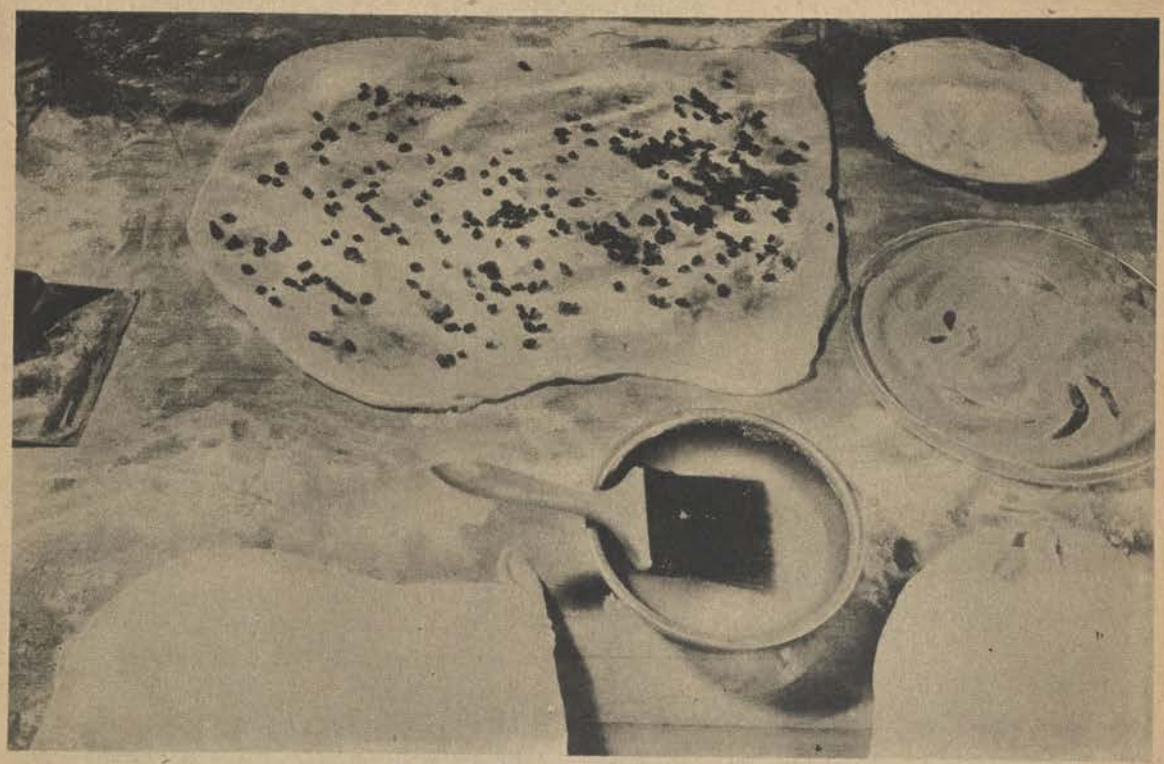


Figure 59.—Ready for coiling.

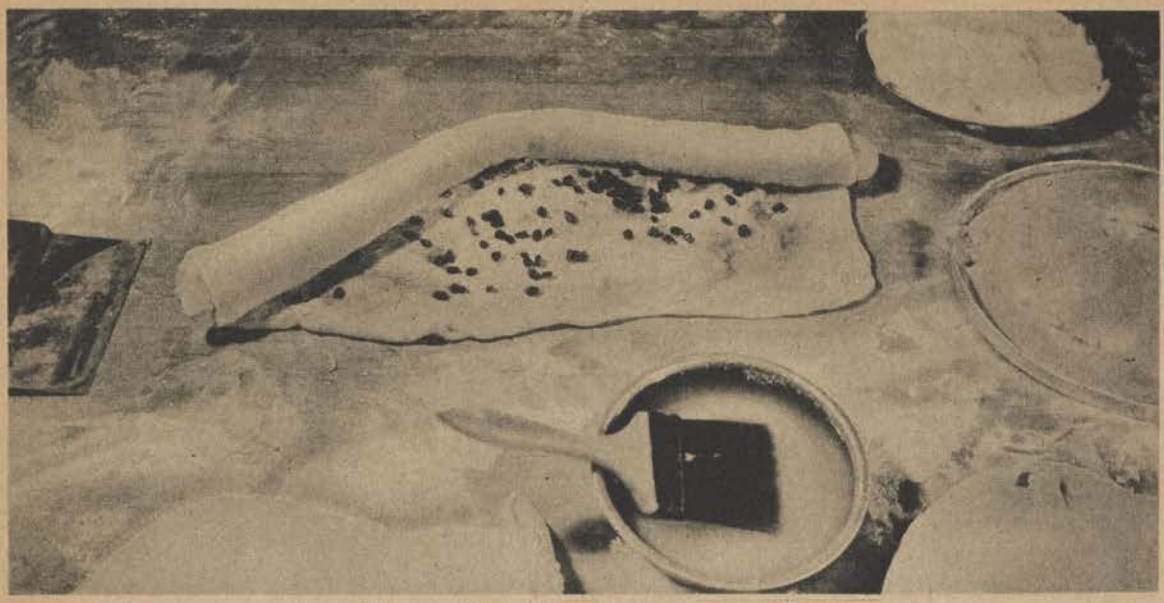


Figure 60.—Forming a loose coil.

c. *Applying the Streussel.*—Sprinkle Streussel over the sheet of dough. Care should be taken to apply it uniformly. If too much Streussel is applied in some spots, sinking will occur. Give a short proof of about 15 to 20 minutes. Bake at 400° F. for about 30 minutes, or until golden brown on top and bottom. When baked, place a pan over the top of the coffee cake and turn upside down until cool. This will prevent sinking of cake under weight of Streussel.

d. Finished Streussel coffee cake.—The finished coffee cake may be served either plain or iced, or may be dusted with powdered sugar.

22. *Old-fashioned coffee cake* (makes about 35 cakes—serves 100 men).—Use basic sweet dough formula (par. 14) in making old-fashioned coffee cake.

a. Rolling the dough.—Divide sweet dough into 7 pieces of equal size. Form into oblong shapes. Allow 10 to 15 minutes recovery period. Roll each piece into a sheet about one-fourth inch thick and 16 inches wide. Grease thoroughly with melted lard. Cover with a liberal quantity of sugar and dried fruit.

b. Coiling the dough.—Coil the dough sheet into a loose coil.

c. *Forming the coffee cakes.*—Cut the rolled strip of dough into pieces approximately 8 inches in length. Split them with a knife or scraper. This splitting will result in an opening of the roll and the formation of a wide coffee cake. Place a liberal amount of sugar and melted butter in the split before baking.



Figure 61.—Forming cakes.

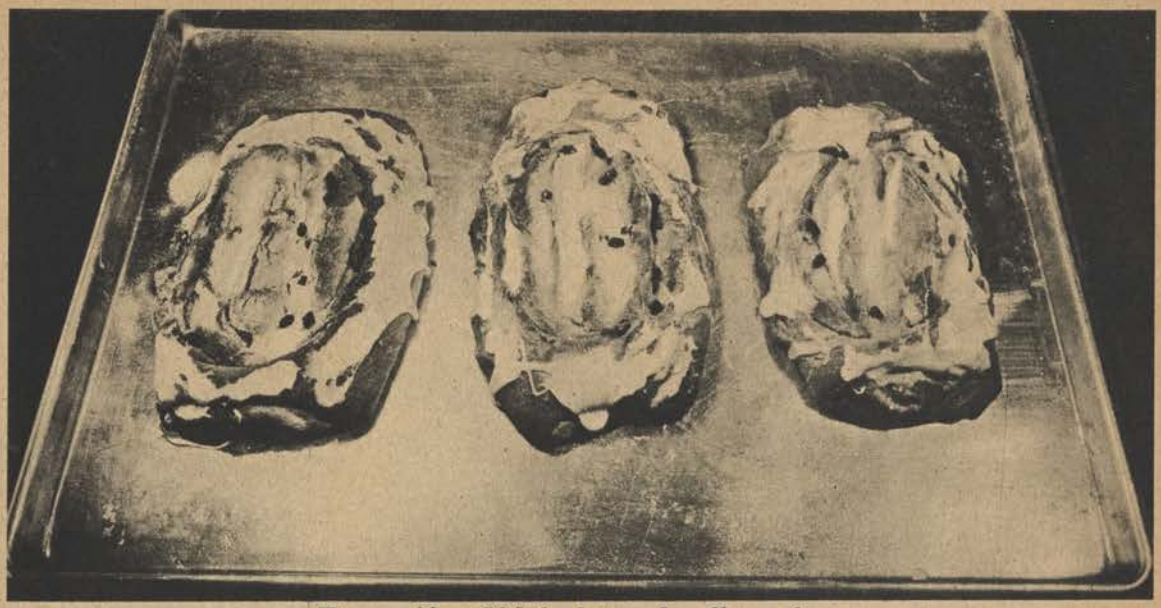


Figure 62.—Old-fashioned coffee cakes.

d. Proofing and baking.—Give normal proof and bake in medium hot oven (400° F.) for about 25 to 30 minutes, or until a golden brown top and bottom. Cakes should be covered with water icing after it is cool.

COFFEE CAKES

23. *Butter-cinnamon coffee cake* (makes eight or nine large sheet cakes—serves 100 men).—Use sweet dough formula (par. 14).

a. Spreading the topping.—Form a sheet of sweet dough as for fruit coffee cake. Place in pan and trim edges. About 4 pounds of dough is required for one sheet. With spatula or knife spread a butter-cinnamon topping evenly over the entire dough sheet.

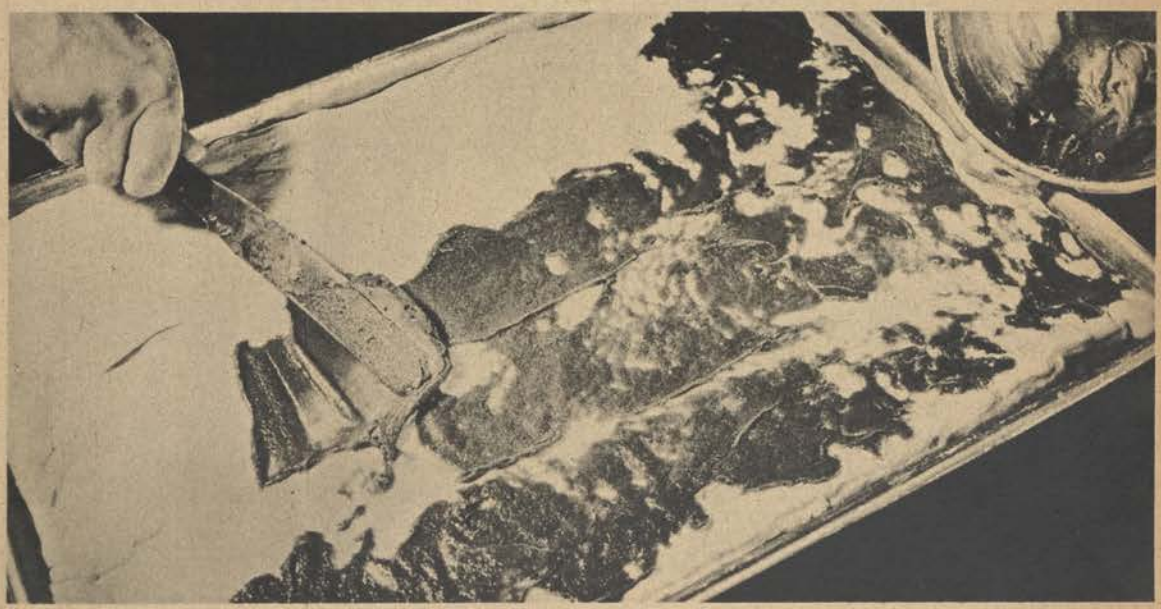


Figure 63.—Spreading the topping.

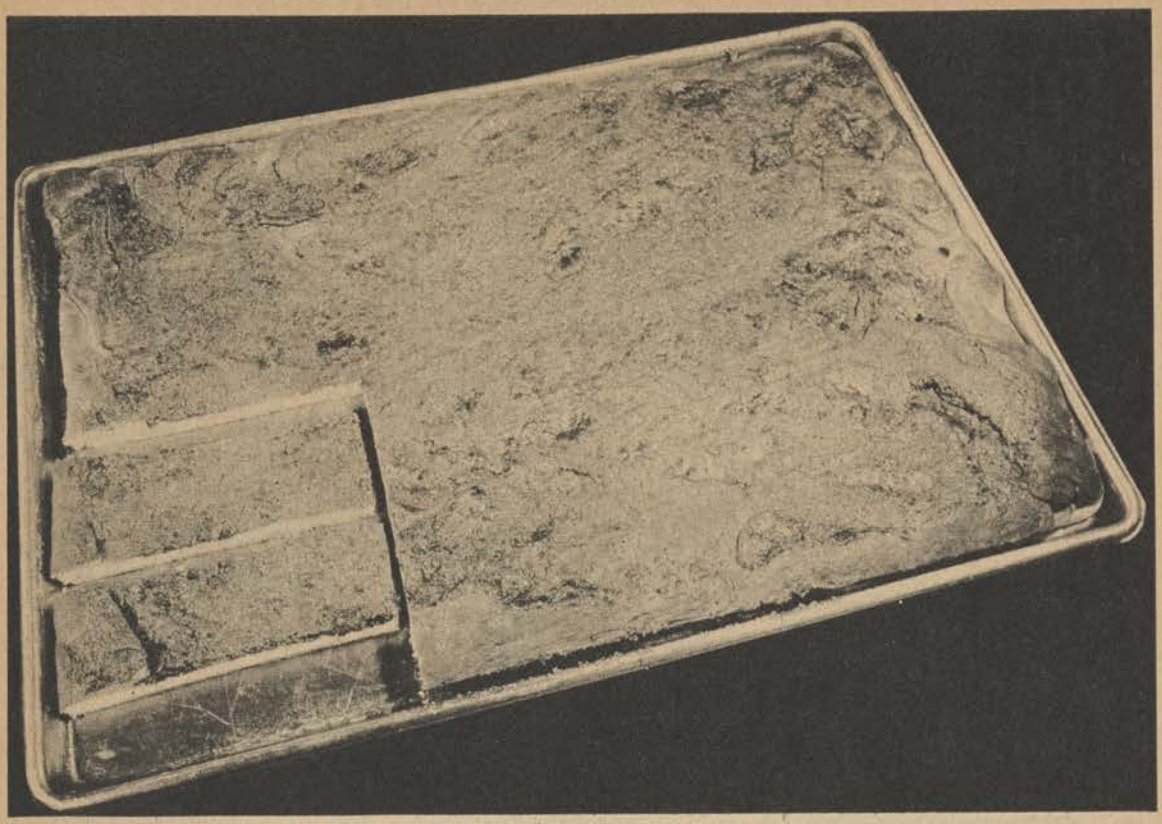


Figure 64.—Butter-cinnamon coffee cake.

BUTTER-CINNAMON TOPPING

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Cinnamon	0	1¼	6 mess spoons	Cream sugar, cinnamon and butter. Add salt and eggs. Add flour and vanilla. Cream lightly.
Sugar	2	0	1 No. 56 (qt.) dipper	
Butter	1	0	½ No. 56 (qt.) dipper	
Salt	0	¼	½ mess spoon	
Eggs	1	0	10 eggs or ½ No. 56 dipper.	
Flour	0	6	24 mess spoons	
Vanilla			To taste	

b. Baking.—Bake at 400° F. for about 25 minutes. If the oven is too hot, topping is likely to become bitter.

24. *Yeast-raised doughnuts* (makes about 300 doughnuts—serves 100 men).—Use sweet dough formula (par. 14).

a. Rolling the dough.—Divide sweet dough into 7 pieces. Let rest 15 to 20 minutes. Roll each piece into a sheet one-half inch thick.

b. Cutting.—Cut with doughnut cutter. Place on cloth-covered pans and proof for about 30 minutes. Before rolling next piece add scraps left from preceding piece.

c. Frying.—After doughnuts have risen, place on screen, if available, and lower into frying kettle. Fry in deep lard at 350°–360° F. to a golden brown on under side, turn and brown second side.



Figure 65.—Yeast-raised doughnuts.

SECTION V

QUICK BREADS

	Paragraph
General	25
Baking powder biscuits	26
Corn bread	27
Muffins	28
Griddle cakes	29

25. *General.*—*a.* There is a wide variety of baked products in which baking powder is the leavening agent. These are commonly called quick breads and include biscuits, corn bread, muffins, and griddle cakes. Essentially the same ingredients are used in all of these products. The batters and doughs from which they are made are mixtures of flour and liquid of varying proportions. Other ingredients, such as lard, eggs, and flavoring materials, are added to provide tenderness, texture, and distinctive flavor.

b. A batter is a mixture of such consistency that it can be beaten or stirred. Batters are designated as pour and drop batters. A pour batter is thin enough to pour; a drop batter is dropped from a spoon.

c. A dough contains a greater proportion of flour than liquid, and is of such consistency that it can be kneaded or handled. There are both soft and stiff doughs. Biscuits are usually made from soft dough.

26. *Baking powder biscuits.*—*a. Ingredients.*—In making baking powder biscuits, there are very few ingredients used, consequently each ingredient is of great importance. This being the case, extreme care should be used when weighing or measuring the ingredients. Flour furnishes body to the biscuit so that it will hold its shape; lard furnishes tenderness, flavor and food value; salt brings out flavor; and baking powder raises the biscuit and tenderizes the finished product. Milk gives color and food value and, like water, imparts the necessary moisture to the baked biscuit.

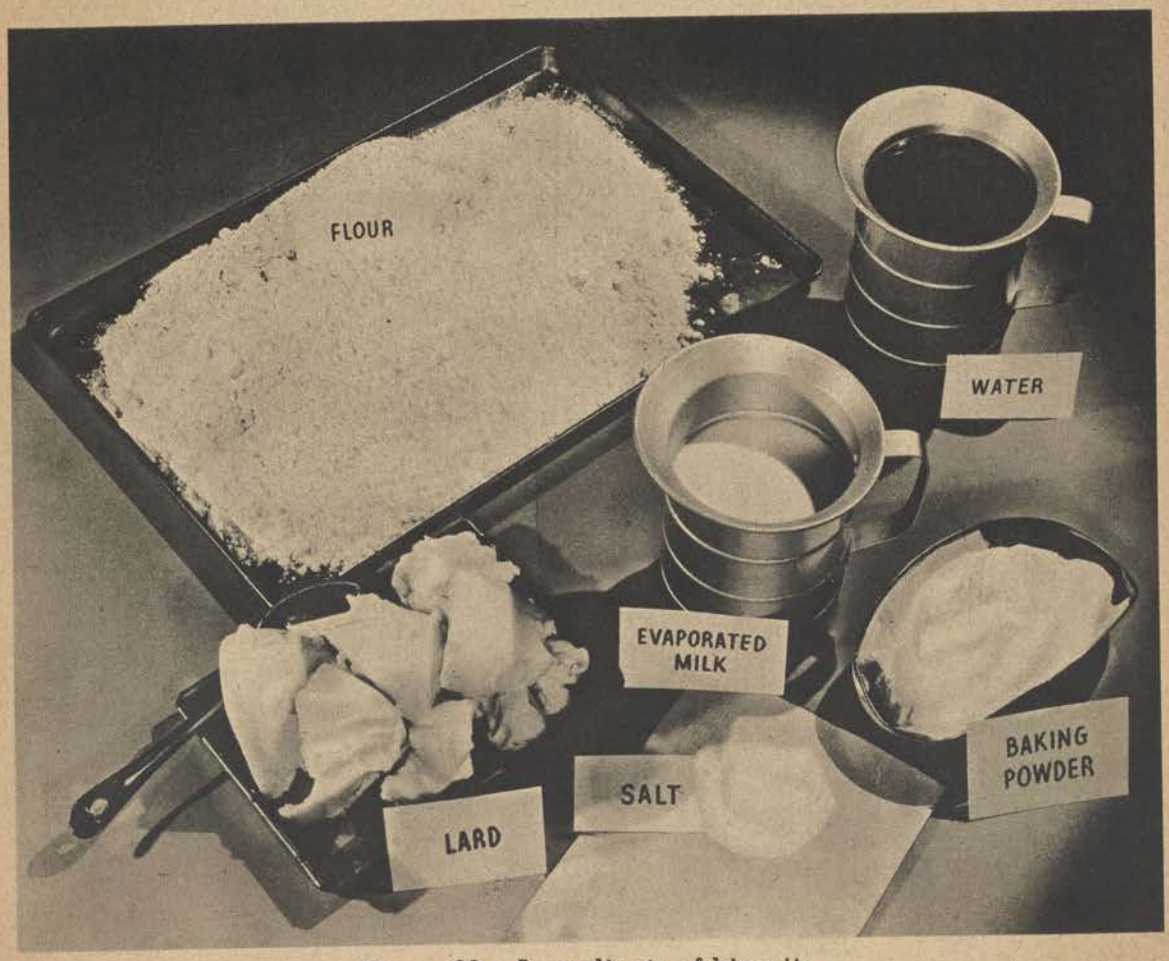


Figure 66.—Ingredients of biscuits.

BAKING POWDER BISCUITS

(Makes about 300 biscuits—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Flour	18	0	14½ No. 56 (qt.) dippers.	Sift together three times. If sifter is not available, blend thoroughly.
Salt	0	4	6¼ mess spoons	
Baking Powder	1	2	½ No. 56 (qt.) dipper	
Step 2: Lard	4	8	2¼ No. 56 (qt.) dippers	Add in pieces and blend until an even distribution is obtained.
Step 3:				
Evaporated Milk	5	4	6 cans	Add and mix until smooth. Roll out to ½-¾ inch thickness.
Water	8	8	4 No. 56 (qt.) dippers	

b. Mixing.—(1) *Sifting or blending dry ingredients.*—After scaling (weighing or measuring), mix flour, baking powder, and salt thoroughly so that when these ingredients are sifted an even distribution will be obtained. Sifting of the dry ingredients insures a well-blended dough with a minimum amount of mixing. This is a definite aid in producing light, tender biscuits.

(2) *Blending in the lard.*—Add lard to the dry ingredients and blend thoroughly, but do not mix to a paste. The pieces of lard should be worked until they are quite small, and in so doing a large amount of the flour will become covered with the fat. This condition is an aid to obtaining a tender biscuit, both in the crumb and crust.

(3) *Adding the liquid.*—Add the liquid, pouring it over as large a surface of the ingredients as possible, so that very little mixing of the dough need be done. Hold back a portion of the liquid and use it only if necessary. After the milk and water have been added to the blended dry ingredients and lard, mix dough very lightly. Additional handling or mixing will cause the biscuits to be tough.

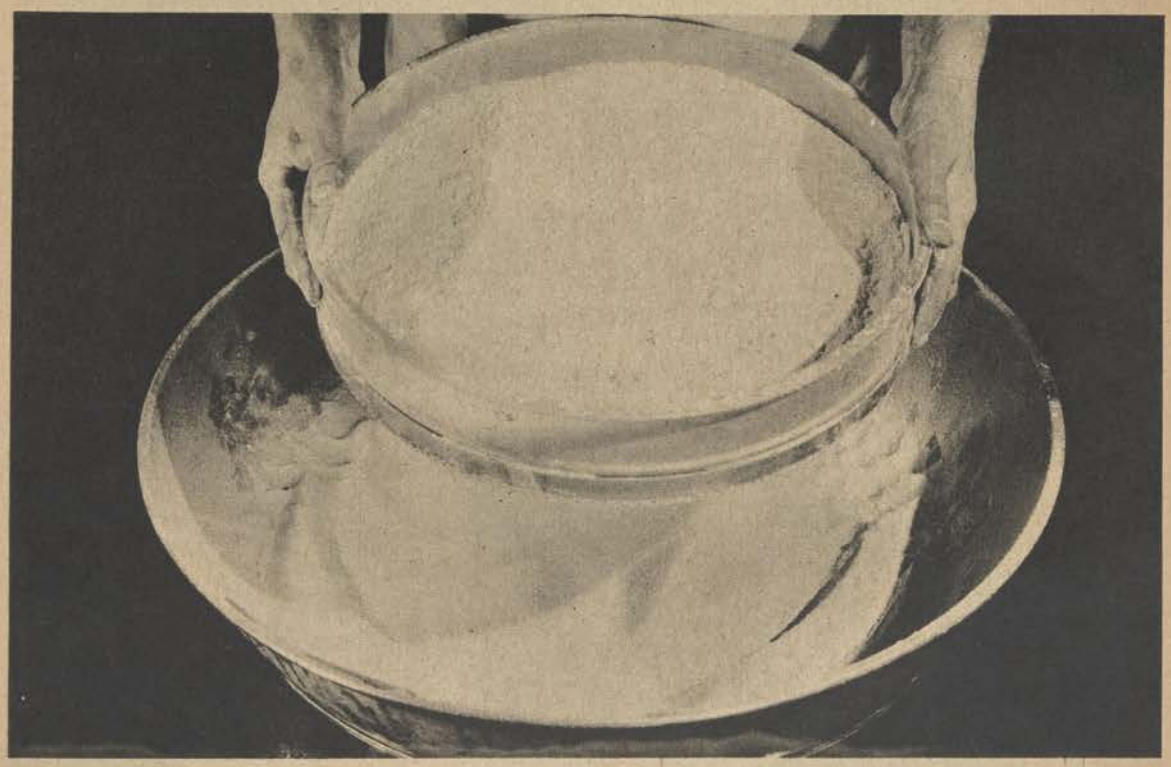


Figure 67.—Sifting ingredients.



Figure 68.—Blending in lard.

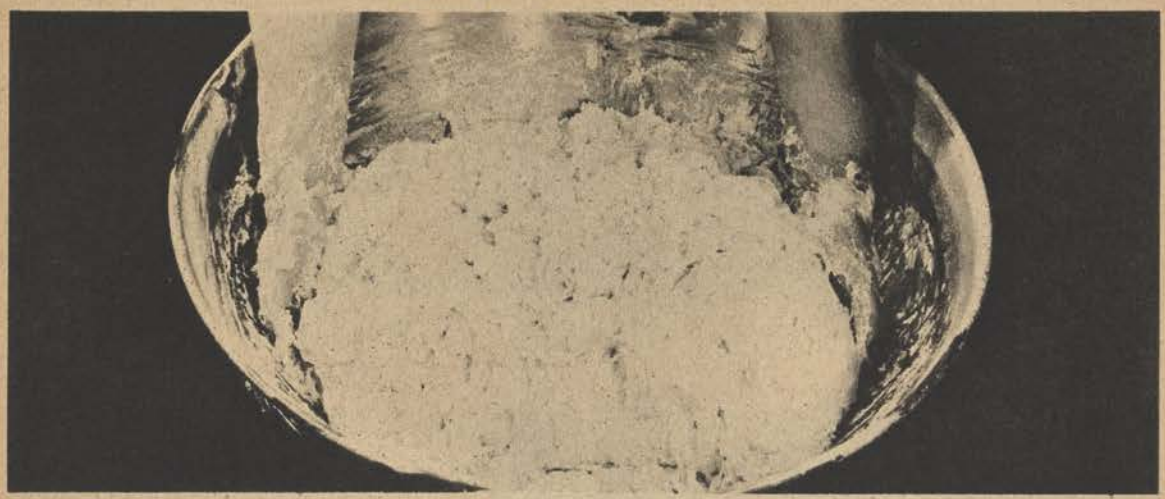


Figure 69.—Mixing dough.



Figure 70.—Rolling, cutting, panning.

(4) *Rolling, cutting, and panning.*—When the dough is mixed, place it on the work bench and roll out about one-sixth of it to the desired thickness with as little rolling as possible. The dough should be half the thickness desired in the finished biscuit. The dough should be of a uniform thickness so that the finished biscuits will be the same size and will bake evenly. Cut with biscuit cutter, placing all scraps with next piece of dough before rolling. Place the cut pieces adjoining each other so that the sides will bake lightly.

(5) *Baking the biscuits.*—Bake the biscuits at 425°–450° F., for about 15 minutes. To give more color to the top crust, the biscuits may be washed with water or milk before baking.

This type of baked goods is most palatable when served hot, and will fit well into the menu in several different ways, as a portion of the main meal or as part of the dessert.

27. *Corn bread.*—*a. Formula.*

CORN BREAD

(*Serves 100 men*)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Granulated sugar	3	4	1½ No. 56 (qt.) dippers	Blend thoroughly.
Lard	1	0	½ No. 56 (qt.) dipper	
Salt	0	2½	5 mess spoons	
Step 2: Eggs	4	0	40 eggs or 2 No. 56 dippers.	Add slowly and mix well.
Step 3:				
Evaporated milk	5	4	6 cans	Mix together and add to above.
Water	8	8	4 No. 56 (qt.) dippers	
Corn meal	8	12	6⅓ No. 56 (qt.) dippers	
Step 4:				
Flour	7	0	5½ No. 56 (qt.) dippers	Sift or blend thoroughly and add to above, mixing until smooth.
Baking powder	1	5	¾ No. 56 (qt.) dipper	



Figure 71.—Hot biscuits.

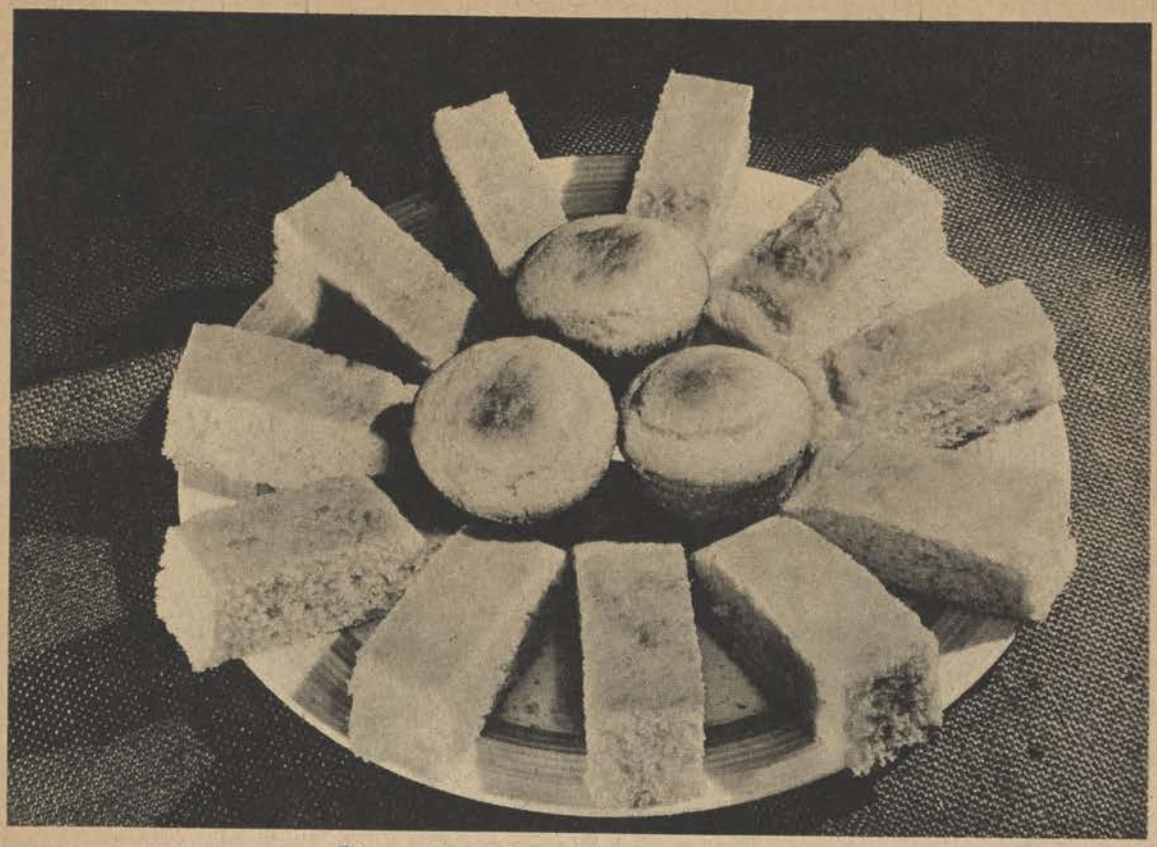


Figure 72.—Corn bread and muffins.

b. Mixing.—Blend the sugar, lard, and salt thoroughly. Add the whole eggs slowly and mix until smooth. Add the milk and water with corn meal. Blend flour and baking powder well. Sift three times, if sifter is available. The sifting helps to produce a batter which is uniformly leavened. Add flour and baking powder to the corn meal and egg mixture and mix until smooth. Corn bread batter should be slack (pour batter) so that it will be moist and tasty when baked. Bake in shallow pans or cup cake pans at 400° F. until golden brown, top and bottom. The batter will double in volume during baking.

28. *Muffins.—a. Formula.*

PLAIN MUFFINS

(Makes about 300 muffins—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Granulated sugar	10	0	5 No. 56 (qt.) dippers	Cream together thoroughly.
Lard	6	0	3¼ No. 56 (qt.) dippers	
Salt	0	7¼	12 mess spoons	
Step 2: Eggs	3	0	30 eggs or 1½ No. 56 dippers.	Add slowly and mix until smooth.
Step 3:				
Evaporated milk	6	2	7 cans	Blend, add to above, and mix.
Water	6	6	3 No. 56 (qt.) dippers	
Step 4:				
Flour	15	0	12 No. 56 (qt.) dippers	Blend well or sift 3 times, add to above and mix until smooth. Do not mix more than necessary.
Baking powder	0	14	½ No. 56 (qt.) dipper	



Figure 73.—Plain muffins.

b. Mixing.—Blend well the sugar, lard, and salt. Add the whole eggs slowly and mix until smooth. Add milk and water mixture. Blend baking powder and flour, sift three times, and stir into the milk and egg mixture. In the final stage, when the flour and baking powder are added, mix as little as possible to insure light, tender muffins. Over-mixing will cause the muffins to be tough and low in volume. Place an equal amount of batter in each individual cup so that an even bake may be obtained. Bake at 375° F. for about 15 minutes, or until a delicate crust is formed.

29. *Griddle cakes.—a. Formula.*

GRIDDLE CAKES

(*Serves 100 men*)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Granulated sugar	1	8	¾ No. 56 (qt.) dipper	Mix together thoroughly.
Salt	0	2	3 mess spoons	
Eggs	2	8	25 eggs or 1¼ No. 56 dippers.	
Step 2:				
Lard (melted)	3	0	1½ No. 56 (qt.) dippers	Blend and mix into above.
Evaporated milk	9	10	11 cans	
Water	14	0	6½ No. 56 (qt.) dippers	
Step 3:				
Flour	15	0	12 No. 56 (qt.) dippers	Blend well or sift three times, add to above, and mix until smooth. Bake on hot, slightly greased griddle.
Baking powder (double action).	1	6	¾ No. 56 (qt.) dipper	

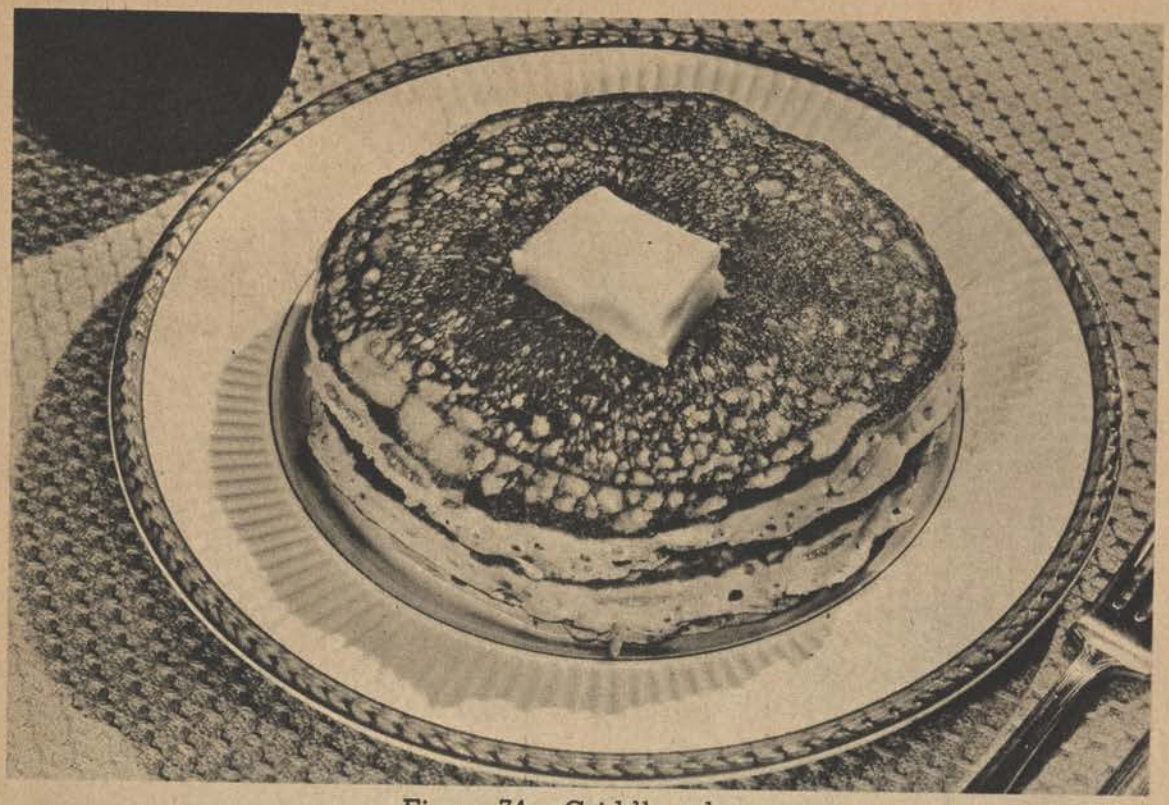


Figure 74.—Griddle cakes.

b. Mixing.—Add sugar and salt to the whole eggs and mix until thoroughly dissolved. To this mixture add melted lard, evaporated milk, and water. (The lard is melted to obtain a uniform blend.) When these ingredients are thoroughly mixed, add the flour and baking powder which have been sifted together three times. The ingredients should be mixed sufficiently to obtain a smooth batter; however, over-mixing tends to cause the finished product to be tough. The griddle should be greased lightly and should be hot for best results in frying griddle cakes. Turn cakes when bottom is golden brown.

SECTION VI

PIES, CRUSTS, AND FILLINGS

	Paragraph
General	30
Control of temperature in pie-baking	31
Pie crust	32
Mixing the dough	33
Two-crust pie	34
One-crust pie	35
Baked pie shell	36
Pie fillings	37
Cobblers	38
Pie faults and remedies	39

30. *General.*—A pie is a combination of crust and filling. The quality of the finished pie will depend on the quality of each of these component parts; the pie will be good only if both the crust and filling are good. As the crust and the filling are made separately, methods of making them will be described separately in this section.

31. *Control of temperature in pie-baking.*—The importance of the right oven temperature in pie-baking is emphasized throughout the instructions. Following are some of the points to be considered in attaining the best results.

a. Pie crust browns at a lower temperature if sugar or a similar caramelizing ingredient is added.

b. Two-crust pies should be baked in a hot oven (425° to 450° F.).

c. Custard type pies should be baked at 400° to 450° F.

d. A pie shell should be baked at 400° to 450° F., until a golden brown.

e. An excessively hot oven causes the pie crust to shrink.

f. Underbaked bottom crust results from insufficient heat in bottom of oven.

g. Low oven temperature may cause the filling to boil out.

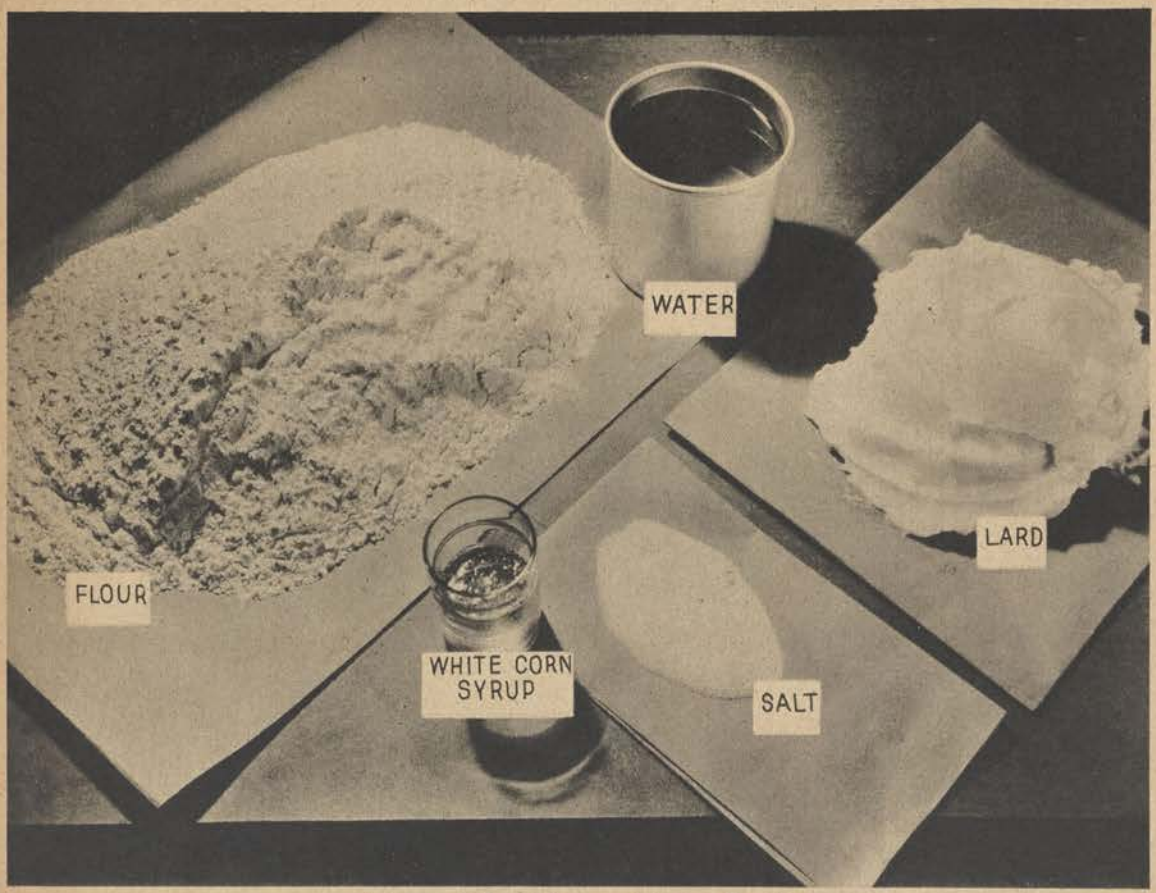


Figure 75.—Pie crust ingredients.

32. *Pie crust.*—*a.* A good pie crust can be made from flour, lard, water, and salt. Usually, however, other ingredients are added to impart certain characteristics to the crust. Baking powder sometimes is used to make a lighter and more tender crust. Glucose (white corn syrup), invert sugar, honey, dried milk, and granulated sugar lower the caramelization point (temperature at which browning occurs) and result in a crust with more color. In other words, when any of these materials are added, the crust browns at a lower temperature. The use of these materials is especially recommended when the bottom crust fails to brown properly. If glucose or white corn syrup are not available, an equal weight of granulated sugar may be substituted.

b. Lard produces a tender crust. If the pie dough is mixed properly, the tenderness of the crust will depend on the amount of lard used. The amount of lard normally used varies from ½ to ¾ pound to each pound of flour; ¾ pound of lard per pound of flour makes a very rich pie crust.

c. Basing the percentages on flour as 100 percent, the various ingredients of pie dough should fall within the average range:

Ingredients	*Percent*
Flour	100
Lard	50 to 75
Salt	3 to 4
Water	20 to 50
Baking powder	0 to 1
One of the following:	
Dried milk	0 to 5
Invert sugar or honey	0 to 5
Glucose (white corn syrup)	5 to 10
Granulated sugar	5 to 10

The combined weight of water and lard should equal 95–100 percent based on the weight of flour. That is, as the lard is increased, the water is decreased and vice versa.

d. The following table of ingredients will make eighteen 9-inch pies and will serve 100 men.

Ingredients	Two-crust pie: Weight (Pounds)	Two-crust pie: Weight (Ounces)	Two-crust pie: Approximate volume	One-crust pie: Weight (Pounds)	One-crust pie: Weight (Ounces)	One-crust pie: Approximate volume
Flour	7	8	6 No. 56 (qt.) dippers	5	0	4 No. 56 (qt.) dippers.
Lard	4	8	2½ No. 56 (qt.) dippers	3	0	1⅝ No. 56 (qt.) dippers.
Sugar	0	6	12 mess spoons	0	4	8 mess spoons.
Water	3	0	1½ No. 56 (qt.) dippers	2	0	1 No. 56 (qt.) dipper.
Salt	0	4	6½ mess spoons	0	3	5 mess spoons.

PIE DOUGH

Ingredients	Weight (Pounds)	Weight (Ounces)	Approximate volume	Method
Step 1:				
Flour	7	8	6 No. 56 (qt.) dippers	Rub together to a fine crumb the size of a pea.
Lard	4	8	2½ No. 56 (qt.) dippers.	
Step 2:				
Water	3	0	1½ No. 56 (qt.) dippers.	Dissolve the sugar and salt in the water.
Sugar	0	6	12 mess spoons	Add to above and mix just enough to form a dough.
Salt	0	4	6½ mess spoons	

33. *Mixing the dough.*—*a. Blending lard with flour.*—Weigh or measure the flour and lard and put in a mixing bowl. Rub the lard into the flour. Continue rubbing the flour and lard between the fingers and palms of the hands until all the lard particles are reduced to the size of a small pea. The way the flour and lard are mixed determines the tenderness of the finished pie crust and the way it will shrink in the oven. If the lard and flour are not mixed enough, a tough crust that shrinks excessively in the oven will result. If a mealy crust is desired the lard and flour will



Figure 76.—Blending lard with flour.

require more thorough mixing than for a flaky crust.

b. Adding liquid to lard and flour mixture.—Weigh or measure the water, sugar, and salt, and dissolve the sugar and salt in the water. This is then added to the lard and flour mixture. It may be necessary to vary the amount of water due to difference in flour strength.

c. Mixing in the liquid.—Mix together with the hands just enough to make a smooth dough. The liquid must be incorporated evenly into the lard and flour mixture. If the dough is not mixed enough, there will be raw spots in the bottom crust of the finished pies. If the dough is over-mixed, the pie crust will be tough. The most satisfactory results will be obtained if the dough is used immediately.

34. *Two-crust pie.—a. Dividing the dough.*—Place a canvas cloth or towel on the work bench and dust with flour. Then place the pie dough on the dusted cloth. Cut off a piece of dough and roll it into a strip about 3 inches in diameter. Cut into pieces about 8–9 ounces in weight.



Figure 77.—Adding water, sugar, and salt.



Figure 78.—Mixing dough.



Figure 79.—Dividing dough.



Figure 80.—Rolling dough.



Figure 81.—Placing in pan.

b. Rolling out dough.—To roll the bottom crust, dust a piece of dough with flour and roll it out 3/16-inch thick and slightly larger than the pie pan.

c. Placing lower crust in pan.—Fold the rolled-out dough in half and place in the pie pan. Be sure that the crust fits the pan smoothly so that there are no air pockets under the dough.

d. Washing rim of lower crust.—Wash the outer rim of the bottom crust with water or egg wash. This is done to stick the top and bottom crusts together. A good egg wash can be made by mixing thoroughly ½-pint of eggs (about 5 eggs) and ½-pint of water. A brush may be used or a clean cloth may be folded and dipped into the wash.

e. Filling and covering the pie.—Place about 2 pounds of filling, or one No. 56 dipper, in the bottom crust. (See fillings for

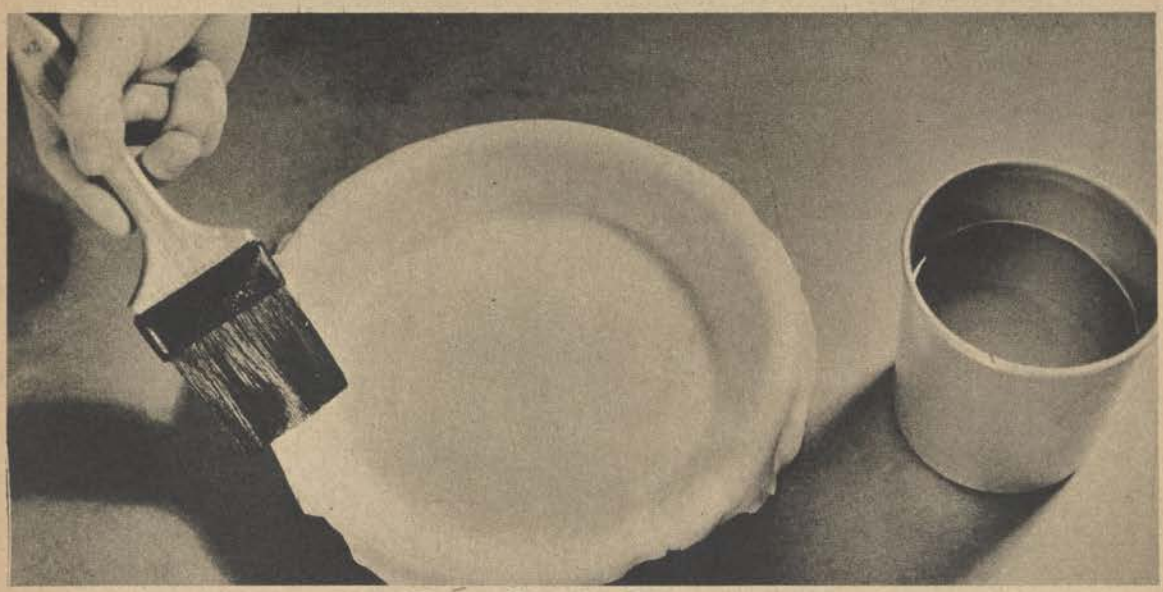


Figure 82.—Washing rim.



Figure 83.—Placing top crust.

2-crust pies, pages 41–44.) Roll out the top crust exactly the same as the bottom crust but dock (prick) it in several places to allow for the escape of steam in baking. Fold the top crust in half and place over the filling. Finish covering the pie.

f. Removing excess dough.—Remove excess dough by pressing with the hands against the rim of the pie pan. If desired, the rim of the pie may be crimped with the forefinger and thumb or with a fork. This is not absolutely necessary, but it helps to seal the two crusts together. The excess dough should be used as part of the dough of the bottom crust for the next pie. Do not use scraps for top crust—always use fresh dough.

g. Baking pie.—Bake the pie in a hot oven (425°–450° F.) for 40–45 minutes. The pie should be removed from oven just as filling begins to boil.

35. *One-crust pie.—a. Lining pan.*—Fit the crust smoothly into the pan, being sure all air has been pressed out. Crimp



Figure 84.—Removing excess dough.



Figure 85.—Baked pie.

the pie dough around the edge of the pie pan between the thumb and forefinger, building the crust higher, thus making it possible to use more filling and produce a deeper pie.

b. Adding custard filling.—Place pans lined with dough for one-crust pies in the oven. Pour in filling, made according to one of the formulas for custard-type pies (par. 25). A 9-inch pie requires approximately one No. 56 dipper of filling.

c. Baking custard-type pie.—Bake in a hot oven (400°–425° F.) for 35 to 40



Figure 86.—Building rim of pie.

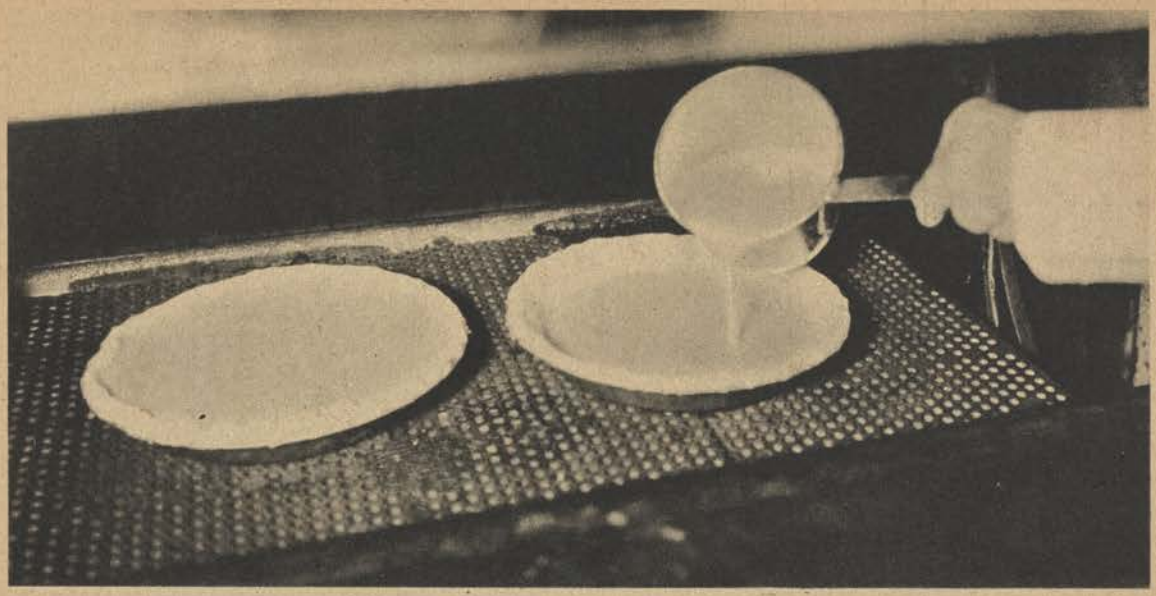


Figure 87.—Adding custard filling.

minutes, or until center of the pie filling has risen level with the pie crust. At this point, remove immediately from the oven.

36. *Baked pie shell—a. Docking the dough.*—Roll the dough to a thickness of 3/16-inch. Dock (prick) the dough with a fork. By docking the dough, a crust is produced which is uniform and free from blisters. Fit the crust smoothly into the pie pan.

b. Removing excess dough and baking pie shell.—Remove the excess dough with the palm of the hand. Or it may be done



Figure 88.—Baked custard pie.



Figure 89.—Docking dough for pie shell.



Figure 90.—Removing excess dough.



Figure 91.—Filling shell.

while building up the rim of the pie shell with the thumb and forefinger to produce a thicker pie. Bake in a hot oven (400°–450° F.) for 8 to 12 minutes, or until golden brown.

c. Filling the baked pie shell.—Pour in one No. 56 dipper of filling made according to one of the formulas for soft cream pies (par. 25).

d. Placing meringue on pie.—Make meringue according to formula below. Spread immediately on top of pie, being sure that it touches the rim on all sides to prevent shrinkage. The meringue should be approximately $\frac{3}{8}$ to $\frac{1}{2}$ inch in thickness. Approximately 5 to 6 ounces of meringue, or enough to cover nicely, are required for each pie. Place pies in hot oven (450° F.) and bake for about 6 to 7 minutes, or until meringue is a delicate brown.

MERINGUE

(Enough for twenty 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Egg whites	3	0	1½ No. 56 (qt.) dippers	Place in container and whip until stiff.
Salt	0	⅛	¼ mess spoon	
Step 2:				
Sugar	4	10	2 No. 56 (qt.) dippers	Slowly add sugar and continue whipping until light. Add flavoring. Spread about ¼ inch thick on top of pie. Bake at 450° F. for 6 to 7 minutes, or to a delicate brown.
Vanilla			To taste	



Figure 92.—Placing meringue on pie.

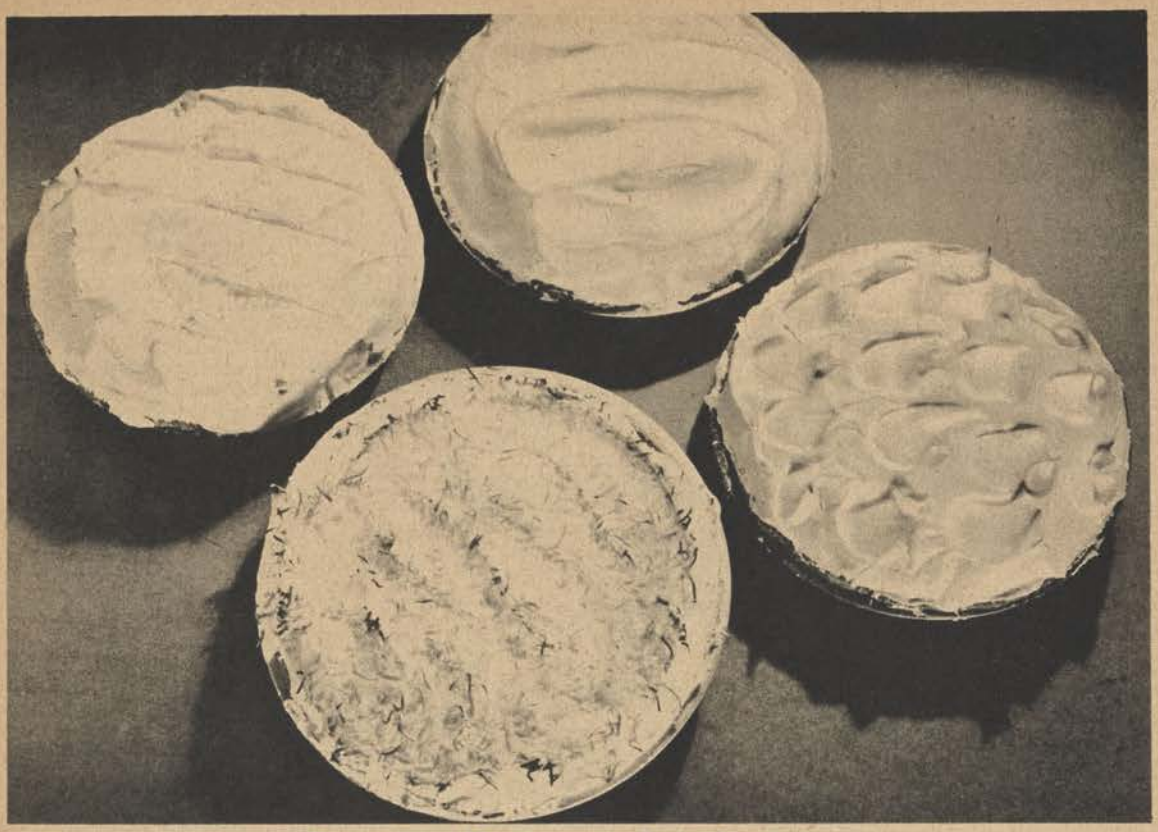


Figure 93.—Toppings on baked soft pies.

37. *Pie fillings.—a. Types.*—There are essentially three types of pie fillings. These are:

(1) Fruit fillings.

(2) Custard fillings which are placed in the unbaked pie shell and the two baked together.

(3) Soft fillings which are cooked separately and are poured into the baked shell.

b. Fruit fillings.—(1) Directions are given below for the preparation of fillings for a number of fruit pies. There are several general rules which, if learned, will aid in preparing other fruit pies.

(2) The procedure in preparing a fruit filling consists, first, of separating the juice from the fruit, thickening the juice with cornstarch, adding sugar and salt to the thickened juice, and finally adding the fruit.

(3) If the filling is to be held for any length of time, it is best to place it either in a crock or wooden container. Fillings tend to pick up metallic flavors if stored in metal containers.

(4) The amount of starch necessary to produce the desired thickening depends upon several factors. First, all fruits are acid and acid tends to liquefy the starch; therefore, the more acid the fruit, the more starch required to thicken the juice. Second, more starch will be required for the juicier fruits. Third, when more sugar is used, more starch will be required. As a general rule, the amount of starch necessary is 5 to 6 percent of the total syrup; the juice, water, and sugar should total 94 to 95 percent.

(5) All of the directions for fillings include chilling the fillings in the refrigerator before they are placed in the pie. The filling should be chilled as rapidly as possible. This preserves the natural color of the fruit. The use of a cold filling also increases the time before the filling boils in the oven. There is, therefore, less chance for the filling to boil over before the crust is baked.

(6) As a general rule, 2 to 3 pounds of sugar should be used for one No. 10 can of fruit, depending on the acidity of the fruit. The more acid fruits take more sugar.

PINEAPPLE PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1: Pineapple (grated).	26	0	4 No. 10 cans	Drain off juice into container. Place on the range and bring juice to a boil.
Step 2:				
Cornstarch	1	2	7/8 No. 56 (qt.) dipper	Mix cornstarch and water until smooth. Add slowly to boiling juice and stir until mixture boils again. Then remove from fire.
Water	2	4	1 1/8 No. 56 (qt.) dippers.	
Step 3:				
Sugar	8	0	4 No. 56 (qt.) dippers	Add sugar and salt to juice mixture and stir to dissolve sugar. Then add fruit and place in crock or wooden container. Put in refrigerator to cool before using.
Salt	0	1/4	1/2 mess spoon	

PEACH PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1: Peaches (solid pack).	25	12	4 No. 10 cans	Drain juice from peaches into container. Place juice on the range to boil.
Step 2:				
Cornstarch	0	12	5/8 No. 56 (qt.) dipper	Mix cornstarch and water together until smooth. Then add starch mixture slowly to boiling juice. Stir until the juice again comes to a boil. Remove from fire.
Water	1	8	3/4 No. 56 (qt.) dipper	
Step 3:				
Sugar	10	0	5 No. 56 (qt.) dippers	Add sugar and salt to juice mixture and stir to dissolve the sugar. Then add fruit and mix until well blended. Place in crock or wooden container. Put in refrigerator to cool before using.
Salt	0	1/4	1/2 mess spoon	

MINCEMEAT PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1: Beef	3	0	2 No. 56 (qt.) dippers	Cook in water until tender. Let cool and grind.
Step 2: Beef suet (ground).	2	0	2 No. 56 (qt.) dippers	Add to cooked beef.
Step 3:				
Brown sugar	5	0	3 No. 56 (qt.) dippers	Boil raisins about 15 minutes. Drain off water and add with the balance of ingredients to beef mixture. Mix thoroughly. Use 1 No. 56 dipper of filling to each 9-inch pie. Mincemeat will be better if prepared two or three days before using.
Raisins	5	0	3 1/2 No. 56 (qt.) dippers	
Apples (chopped)	10	0	8 No. 56 (qt.) dippers	
Apple cider	5	0	2 1/2 No. 56 (qt.) dippers	
Molasses	2	0	3/4 No. 56 (qt.) dipper	
Lemons (juice and rind)			4 lemons	
Cinnamon (ground)	0	3	12 mess spoons	
Cloves (ground)	0	1	4 mess spoons	
Mace (ground)	0	1	4 mess spoons	
Allspice	0	1	4 mess spoons	
Ginger	0	1	4 mess spoons	
Salt	0	3	5 mess spoons	
Water	3	0	1 1/2 No. 56 (qt.) dippers.	
Brandy flavor (optional).	------	------		

RAISIN PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Raisins	20	0	13 No. 56 (qt.) dippers	Boil slowly for 15 minutes.
Salt	0	2	3 mess spoons	
Sugar	12	0	6 No. 56 (qt.) dippers	
Water	24	0	11½ No. 56 (qt.) dippers.	
Step 2:				
Cornstarch	1	12	1⅜ No. 56 (qt.) dippers.	Mix together and add to the boiling raisins. Stir and bring back to a boil.
Water	3	8	1¾ No. 56 (qt.) dippers.	
Step 3:				
Lemons (juice and rind).			12 lemons	Add to raisin mixture and mix thoroughly. Let cool. Use 1 No. 56 dipper of filling to each 9-inch pie.
Cinnamon (ground)	0	2	8 mess spoons	
Butter	1	0	½ No. 56 (qt.) dipper	

CHERRY PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1: Sour cherries	25	12	4 No. 10 cans	Drain juice from cherries into container and put on the range to boil.
Step 2:				
Cornstarch	1	4	1 No. 56 (qt.) dipper	Mix cornstarch and water together. Add slowly to boiling juice. Stir and bring back to a boil.
Water	2	8	1¼ No. 56 (qt.) dippers	
Step 3:				
Sugar	12	0	6 No. 56 (qt.) dippers	Remove juice from fire, add sugar and salt and stir until sugar is dissolved. Add fruit, place in crock or wooden container and place in refrigerator to cool.
Salt	0	¼	½ mess spoon	

APRICOT PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1: Apricots	25	12	4 No. 10 cans	Drain off juice of apricots into a container. Place on range to boil.
Step 2:				
Cornstarch	1	4	1 No. 56 (qt.) dipper	Mix water and cornstarch together until smooth, then slowly add cornstarch mixture to boiling juice, stirring until juice again comes to boil. Then remove from fire.
Water	2	8	1¼ No. 56 (qt.) dippers.	
Step 3:				
Sugar	12	0	6 No. 56 (qt.) dippers	Add sugar and salt to juice mixture and stir to dissolve the sugar, then add the fruit and mix well. Place fruit mixture in crock or wooden container. Place in refrigerator to cool before using.
Salt	0	¼	½ mess spoon	

APPLE PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Apples (solid pack)	21	0	3 No. 10 cans	Drain juice from apples into container. Add water. Place on range and bring to a boil.
Water	4	8	2¼ No. 56 (qt.) dippers.	
Step 2:				
Cornstarch	0	15	¾ No. 56 (qt.) dipper	Mix cornstarch and water together until smooth, then slowly add to boiling juice and stir until juice again comes to a boil. Remove from fire.
Water	1	14	1 No. 56 (qt.) dipper	
Step 3:				
Sugar	9	0	4½ No. 56 (qt.) dippers.	Add sugar, butter, cinnamon, lemon juice and salt to juice mixture and stir to dissolve sugar and melt the butter. Then add the fruit and mix well. Place in crock or wooden container and place in refrigerator to cool before using.
Butter	0	12	⅜ No. 56 (qt.) dipper	
Cinnamon	0	¼	1 mess spoon	
Lemons (juice)	0	4	3 lemons	
Salt	0	¼	½ mess spoon	

c. *Custard-type pie fillings.*—Custard-type pie fillings usually are made by placing sugar, salt, and spice in a mixing bowl, adding the eggs and stirring briskly with a wire whip to dissolve the sugar and cut up stringiness of the eggs. The milk is then added and stirred well; and last the melted butter is added. This filling should be allowed to set long enough to work off the foam which has been developed during mixing. Otherwise, if the pie shells are filled and baked right away, an undesirable surface will result on the finished pie. In making pumpkin pie, the pumpkin is added after the eggs have been mixed with the sugar. Making soft pies during the hot summer months is not recommended, as they are very perishable and may result in food poisoning.

PUMPKIN PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Brown sugar	6	8	3¾ No. 56 (qt.) dippers.	Sift or blend dry ingredients together.
Cinnamon	0	1½	6 mess spoons	
Mace (optional)	0	½	2 mess spoons	
Salt	0	1½	2½ mess spoons	
Ginger	0	½	2 mess spoons	
Step 2: Eggs	3	8	35 eggs or 1¾ No. 56 dippers.	Add eggs to dry ingredients and mix thoroughly.
Step 3: Pumpkin	13	0	2 No. 10 cans	Add pumpkin to egg mixture. Stir in thoroughly to obtain uniform mixture.
Step 4:				
Evaporated milk	6	8	7 cans	Mix milk and water together and stir into pumpkin mixture. Place in refrigerator before using.
Water	6	14	3¼ No. 56 (qt.) dippers.	

TEXAS STATE COLLEGE FOR WOMEN LIBRARY

CUSTARD PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar	6	0	3 No. 56 (qt.) dippers	Sift or blend dry ingredients together.
Cornstarch	0	1½	4 mess spoons	
Salt	0	¾	1¼ mess spoons	
Step 2: Eggs	7	2	70 eggs or 3½ No. 56 dippers.	Add eggs to dry ingredients and mix thoroughly.
Step 3:				
Milk (½ evaporated milk and ½ water).	24	0	11 No. 56 (qt.) dippers.	Mix together and add slowly to egg mixture. Mix thoroughly. Place unbaked pie shells in oven and pour in each 1 No. 56 dipper of filling.
Vanilla			To taste	
Butter (melted)	0	6	12 mess spoons	
Nutmeg (optional)			To taste	

d. Soft cream pie fillings.—In making this type of filling, the milk or other liquid, and the sugar are placed in a kettle and brought to a boil. Then the cornstarch is mixed in a little water until smooth and free from lumps. Next the eggs are stirred into the cornstarch until a smooth paste is obtained. The egg and cornstarch mixture is then poured slowly into the boiling liquid, stirring constantly until the mixture is thick. Care must be taken not to scorch the filling; consequently, it must be stirred constantly while adding starch and eggs. The filling should be made far enough in advance so that it will cool thoroughly before being poured into the baked pie shells.

LEMON PIE FILLING

(Enough for eighteen 9-inch pies)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Water	16	8	8 No. 56 (qt.) dippers	Bring water, lemon juice and rind, sugar and salt to a boil.
Lemon (juice and grated rind).	1	14	30 lemons	
Sugar	10	0	5 No. 56 (qt.) dippers	
Salt	0	2	3 mess spoons	
Step 2:				Mix cornstarch and water together. Add egg yolks and beat until smooth. Add to boiling water, juice and sugar and cook until thick, stirring constantly. Remove from fire. Place in crock or wooden container. Cool in refrigerator before filling pie shells. Top with meringue and bake until a delicate brown.
Cornstarch	1	14	1½ No. 56 (qt.) dippers	
Water	3	8	1¾ No. 56 (qt.) dippers	
Egg yolk	5	0	2½ No. 56 (qt.) dippers	

COCOA CREAM PIE FILLING

(*Enough for eighteen 9-inch pies*)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar	8	0	4 No. 56 (qt.) dippers	Sift or blend dry ingredients together.
Cocoa	1	0	1⅛ No. 56 (qt.) dippers	
Salt	0	1	1½ mess spoons	
Step 2:				
Evaporated milk	10	0	11 cans	Add milk and water to dry ingredients and bring mixture to a boil.
Water	6	6	3 No. 56 (qt.) dippers	
Step 3:				
Cornstarch	1	8	1⅛ No. 56 (qt.) dippers	Mix cornstarch and water together until smooth. Then add eggs and beat until smooth. Add this mixture to the boiling milk, cocoa and sugar, stirring until thick, then remove from fire.
Water	3	0	1½ No. 56 (qt.) dippers	
Eggs	5	0	50 eggs or 2½ No. 56 dippers.	
Step 4:				
Butter	0	8	¼ No. 56 (qt.) dipper	Add butter and vanilla. Stir until uniform mixture is obtained. Let cool and fill baked pie shells. Top with meringue and bake until delicate brown.
Vanilla			To taste	

CREAM PIE FILLING

(*Enough for twenty 9-inch pies*)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Milk (½ evaporated milk and ½ water).	28	0	12½ No. 56 (qt.) dippers.	Bring milk, sugar and salt to a boil.
Sugar	7	0	3½ No. 56 (qt.) dippers.	
Salt	0	1½	2½ mess spoons	
Step 2:				
Milk (½ evaporated milk and ½ water).	1	12	⅞ No. 56 (qt.) dipper	Mix milk and cornstarch together and add eggs. Mix thoroughly. Add slowly to boiling milk. Stir constantly and bring back to a boil. Remove from fire.
Cornstarch	2	10	2 No. 56 (qt.) dippers	
Eggs	6	2	60 eggs or 3 No. 56 dippers.	
Step 3:				
Butter	0	14	½ No. 56 (qt.) dipper	Add butter and vanilla to egg mixture and let cool to lukewarm. Place 1 No. 56 dipper of filling in each baked pie shell. Top with meringue and bake to a delicate brown.
Vanilla			To taste	

38. *Cobblers.*—*a.* A cobbler is nothing more than a large pie. The same crust and fillings which are used in ordinary pies can be used to make cobblers. The Army baker may quite often find himself in a situation where it is impossible to make small pies, but he may be able to make cobblers without difficulty.

b. To make a cobbler, use a regular sheet cake pan or other shallow pan. Roll out 3½ pounds of pie dough to the size of the sheet cake pan. Roll dough around the rolling pin and place on the pan. Wash the edges of the dough, as when baking ordinary pies. Place 6 to 6½ No. 56 dippers of pie filling in the pan. Dock the crust before placing it on the cobbler. This is necessary so that the vapor which develops during baking may escape.

c. Place the cobbler in a hot oven (400°–425° F.) and bake from 55 to 60 minutes. One cobbler of this size will make approximately 56 servings, obtained by dividing it in 8 portions lengthwise and 7 portions across the width of the pan. It will require only two cobblers of this type to serve one hundred men.

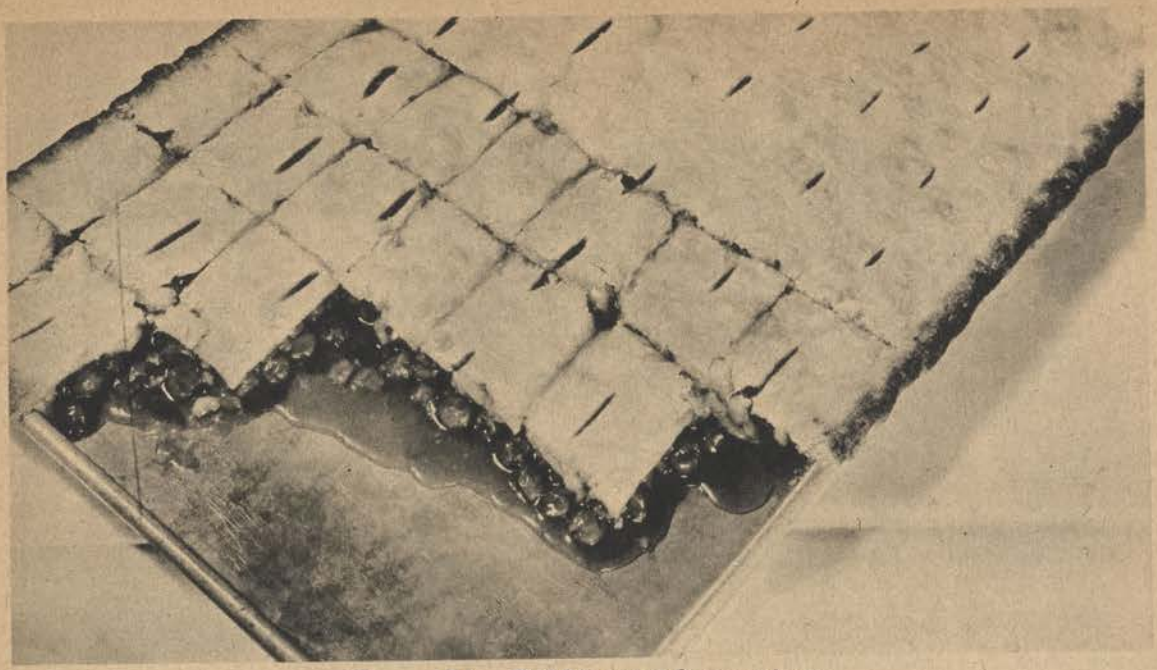


Figure 94.—Cobbler cut for serving.

39. *Pie faults and remedies.*—Many of the difficulties encountered in making good pies may be overcome by careful handling in mixing and by following a few simple rules in baking the pies. The information given below tells how to correct the common faults in pie making.

a. Shrinkage of pie crust during baking.—(1) One of the principal causes of shrinkage is improper coating of the flour with lard. When the flour is improperly coated, it takes on water readily during the mixing period. This allows the gluten of the flour to develop and results in shrinkage of the crust in the oven.

(2) An excessively hot oven also causes the crust to shrink.

(3) Shrinkage also results when an excessive amount of water is used. The pie dough becomes soft and requires extra mixing to obtain a smooth dough. As a result, some of the gluten in the flour is developed which causes shrinkage during baking.

(4) Freezing the dough causes a separation of water and flour which, in turn, will cause shrinkage during baking.

b. Tough crust.—(1) A tough crust will result if insufficient lard is used in the pie dough.

(2) A tough crust may be due to improper coating of the flour with lard.

(3) Another common cause of tough crust is excessive mixing after the water has been added to flour and lard.

(4) Toughness may be caused by the use of excessive amounts of water.

(5) A strong flour tends to cause a tough crust.

(6) As a general rule, the factors which cause shrinkage also produce tough crusts.

c. Doughy spots on bottom of crust.—(1) Doughy spots will result if the pie dough is not mixed enough to produce a smooth dough. If the water is added in a streaky manner, the spots containing an excessive amount of moisture will bake more slowly and will be doughy when the rest of the pie is completely baked.

(2) Mixing cold dough with warm dough often results in doughy spots. This might happen if some old dough, left over from a previous batch and held in the refrigerator, is mixed with freshly made pie dough.

(3) Doughy spots might be caused by water in the piepan. Any water in the pan will prevent the rapid baking of the bottom crust; be sure that piepan is dry.

d. Underbaked bottom crusts.—(1) The lack of heat in the lower part of the oven is a common cause of underbaked bottom crusts.

(2) If a hot filling is used, there is a marked

tendency for the filling to boil more quickly. If this happens, the pie is often removed from the oven before the bottom crust is thoroughly baked, on the assumption that it is done.

(3) Under certain baking conditions, if the crust does not contain caramelizing (browning) material, such as sugar, a soggy bottom crust may result.

(4) Underbaked bottom crusts may result if wet piepans are used.

(5) Excessive moisture in the dough prolongs the baking period and this gives the filling a chance to boil out before crusts are baked.

e. *Fillings boiling out.*—The boiling point of pie fillings is determined by the percentage of sugar in the finished fruit mixture. The more sugar in the mixture, the higher will be the boiling point. Consequently, the sweeter the pie, the longer the time it can stay in the oven without boiling out.

(1) Boiling out may be caused by using too hot a filling. The colder the filling, the longer will be the time required for the filling to heat and boil out; therefore, there is less chance of boiling out if the filling is cold when placed in the pie.

(2) A long baking period in a relatively slow oven allows the filling to be heated to the boiling point before the crust is properly baked. A low oven temperature, therefore, is a cause of boiling out. If it is necessary to use a slow oven, the amount of caramelizing material (such as sugars) in the pie crust should be increased. This tends to make the crust brown faster. The crust should be sufficiently brown just before the filling reaches the boiling point. At this point the pie will be sufficiently baked and should be removed from the oven.

SECTION VII

CAKES AND ICINGS

	Paragraph
Functions of ingredients	40
Factors which cause a cake to rise	41
Devil's food cake	42
Other cakes	43
Cake faults and remedies	44
Icings	45

40. *Functions of ingredients.*—Cake is baked batter made from sugar, eggs, shortening, milk, flour and chemical leavening mixed together in such a way as to produce a fluffy, fine-grained baked product. In order to make cakes satisfactorily it is first essential that the action of the ingredients used be known. A brief discussion of the ingredients follows:

a. Sugar in batter and in baked cake.—There are two sources of sugar commonly used in cake: one, the sugar cane; the other, the sugar beet. Either cane or beet sugar works equally well in cake making. It is possible to get several different granulations, as well as powdered sugars. In making cake, it is necessary to dissolve the sugar completely, therefore a fine granulated sugar is best. Sugar has several functions in cake making.

(1) Sugar is used to sweeten the cake.

(2) Since sugar crystals are perfect cubes, the sharp corners of these cubes have a tendency to help cut air into the cake batter during the mixing period, thus helping to make the cake light.

(3) Sugar controls the consistency of the batter; the more sugar used, the softer the batter will be.

(4) Sugar has a tenderizing effect on the gluten developed in the flour, and thus should be classified as a tenderizing ingredient.

(5) Sugar helps retain the moisture in the finished cake.

(6) Sugar helps control the color of the crust in the finished cake.

(7) Sugar adds food value.

b. Shortening.—Lard may be used with excellent results as the shortening in cake making. It contains a considerable amount of low-melting-point fatty acids which have the effect of producing very moist, tender cakes of good flavor and keeping qualities. The functions of shortening in cake batter are explained briefly below.

(1) Shortening makes the cake tender because it has a softening action on the gluten developed in the flour during mixing of the cake batter.

(2) Shortening helps to incorporate air in the batter by taking on air during the mixing period. The amount of air incorporated in the batter governs the fineness of grain, as well as the tenderness, and helps to control the volume of the finished cake.

(3) Shortening helps to emulsify the liquids added to the cake batter.

(4) Shortening increases the keeping qualities of the finished cake.

(5) Shortening may or may not add flavor. If shortening such as butter or lard is used, flavor is added. A neutral shortening does not affect the flavor.

(6) Shortening adds food value to the finished cake.

c. Eggs.—Eggs add structure to the finished cake. Contrary to the common belief, eggs do not cause a cake to rise. It is the air that has been whipped into them. The action of eggs in cake is as follows:

(1) To help build the structure of the cake; this structure helps to carry the tenderizing ingredients, such as sugar and shortening, and chemical leavening.

(2) To add moisture to the finished cake.

(3) To add color. Whole eggs and yolks definitely add color to the finished cake.

(4) To help bind the other ingredients together, causing an even distribution of the ingredients. This even distribution produces a smooth batter which is essential to producing a good cake, for if the batter separates, the results obtained in the finished cake will not be satisfactory.

(5) To add food value to the cake.

d. Liquid milk.—Milk plays a prominent part in cake making, especially in white and yellow layer cakes. In devil's food cake, the milk solids are not so desirable, due to the fact that they lower the caramelization point of the cake batter, and have a tendency to affect the crust color of the finished cake. If

the color of the finished cake is not important, then milk can be used very satisfactorily, but it is much easier to obtain a red color in devil's food cake without the use of milk solids. The following are the functions of milk in cake-making:

(1) To control the consistency of the finished cake batter.

(2) A certain amount of milk is necessary to dissolve the sugar which is added to the cake. If the sugar is not dissolved, a spreading action from the sugar results during the baking period, causing the structure of the cake to overstretch and the finished cake to collapse in the center. When too little milk is used in the cake batter, there is not enough liquid to develop properly the gluten in the flour and thus obtain the desired structure. Based on the flour as 100 per cent, the combined weight of the eggs and liquid milk in white and yellow layer or sheet cakes should be 20 to 30 per cent more than the percentage of sugar. In devil's food cake, it should be 40 to 60 per cent more than the percentage of sugar.

(3) To impart color to the crust. By regulating the amount of milk solids in the cake batter, the crust color of the cake can be controlled, because milk solids contain a high percentage of lactose (milk sugar) which caramelizes at approximately 270° to 275° F. This caramelizing temperature is well below that used in baking cake.

(4) To improve the keeping qualities of the finished cake, because milk solids help to retain moisture.

(5) To add food value to the cake.

(6) To add flavor to the cake.

e. Flour.—Flour helps to furnish the cell structure of the finished cake. This is brought about by mixing the flour with the liquids used in making the cake. This develops the gluten or protein in the flour. The flour also contains a high percentage of wheat starch, therefore, it is desirable to use as little flour as possible in producing satisfactory cake.

f. Salt and flavoring.—(1) Salt is used in cake to bring out the flavors which are added to the batter. If a cake seems too sweet, a slight addition of salt will tone down sweetness, or vice versa.

(2) Flavoring materials are added to give a cake a predominant flavor. Often a blend of flavors produces a very desirable finished flavor.

41. *Factors which cause a cake to rise.*—There are three factors which cause a cake to rise:

a. A chemical leavening, such as baking powder, soda and buttermilk, or soda and an acid of any kind, is used to control the volume of the finished cake. During the baking period, the baking powder gives off carbon dioxide gas and the gelatinous material in the cake, such as the egg and the gluten developed in the flour, holds this gas and causes the cake to rise. When baking is done at high altitudes the amount of leavening should be reduced because of decreased atmospheric pressure.

b. Air which is incorporated in the batter has a leavening effect. When the air is warm, it has a tendency to expand, and this expansion causes the cake to rise. The air mixed into the cake batter carries the vapor which is developed during the baking period and allows it to circulate through the cake and out through the top crust. If the cake batter does not contain enough air and does not rise properly, this vapor cannot work through the cake properly during the baking period. It finally will work out through the bottom of the cake and build up pressure, forcing the cake up and causing a pocket on the bottom. It is apparent, therefore, that a certain amount of air in the cake batter is necessary. The air in layer cake is responsible for 40 to 50 percent of the finished cake volume.

c. Vapor pressure also causes the cake to rise. The reason this is called vapor pressure, rather than steam, is that during the baking period the inside of a cake never reaches a temperature of over 208° to 210° F., and steam is developed at 212° F.

42. *Devil's food cake. — a. Ingredients.*—The ingredients necessary for making three sheets of devil's food cake are shown in figure 95. Sheet cake pans, or other shallow pans, about 18 by 24 inches, are used. This amount of cake will serve one hundred men. The formula below for a devil's food cake is used as an example of the method for mixing all cakes given in this manual.

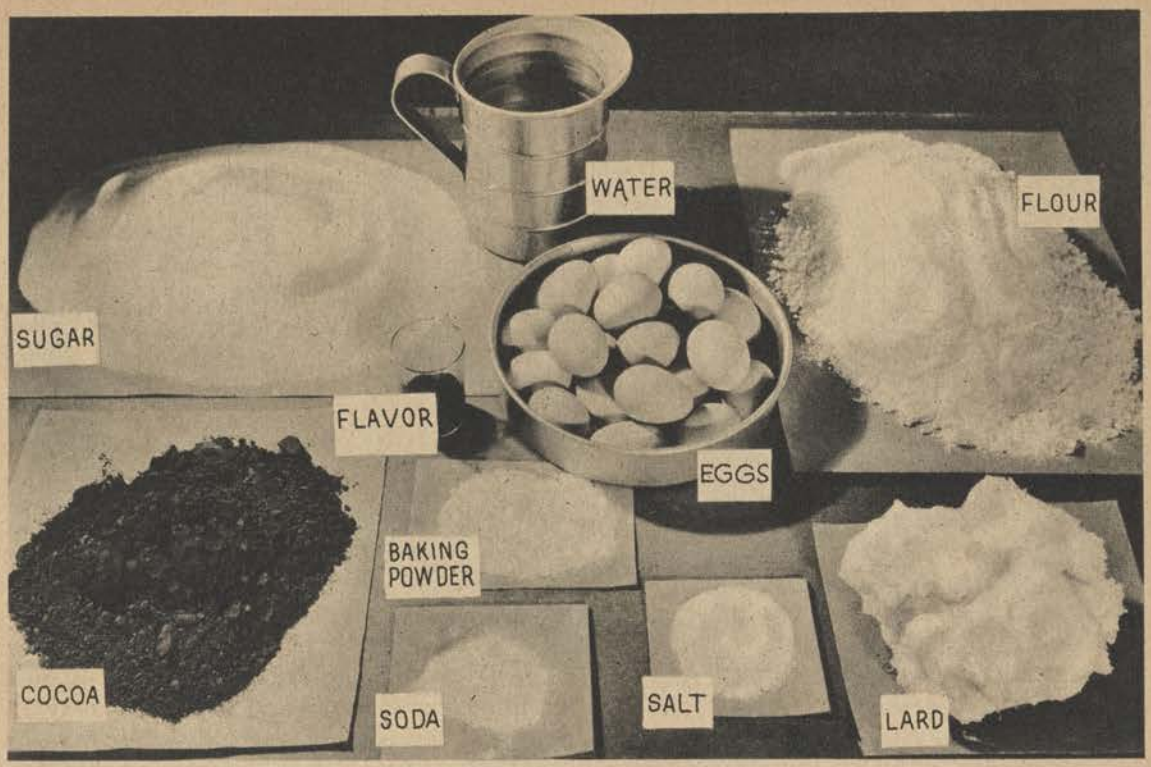


Figure 95.—Ingredients, devil's food cake.

DEVIL'S FOOD CAKE

(Makes 3 sheet pans—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Flour	2	6	2 No. 56 (qt.) dippers	Place in mixing bowl and cream until light.
Lard	2	6	1⅜ No. 56 (qt.) dippers.	
Step 2:				
Sugar	5	4	2½ No. 56 (qt.) dippers.	Add to above and mix thoroughly. Scrape down mixing bowl to insure a smooth batter.
Flour	1	10	1¼ No. 56 (qt.) dippers.	
Salt	0	2	3 mess spoons	
Soda	0	1	2 mess spoons	
Baking powder	0	2½	5 mess spoons	
Cocoa	1	0	1⅛ No. 56 (qt.) dippers.	
Water	2	0	1 No. 56 (qt.) dipper	
Step 3: Eggs	3	4	33 eggs or 1½ No. 56 dippers.	Add to above in three parts, creaming until smooth after each addition of eggs.
Step 4:				Add to above and mix thoroughly. Measure out the batter into 3 greased and flour-dusted or paper-lined sheet cake pans. It takes about 3 to 4 No. 56 dippers of batter per pan. Bake 28 to 30 minutes at 380° F.
Water	1	10	¾ No. 56 (qt.) dipper	
Vanilla			To taste	

b. Mixing.—(1) *Creaming flour and lard.*—Place equal parts of flour and lard in the mixing bowl and cream until light and fluffy. By coating the flour with the lard the eating quality of the finished cake is improved. Also, some air is incorporated into the mixture, thus adding to the lightness of the cake.

(2) *Adding liquid and incorporating air.*—Add the sugar, the balance of the flour,



Figure 96.—Creaming flour and lard.

the salt, baking powder, soda and cocoa. Then pour in part of the liquid (water), using approximately 9½ ounces for each pound of flour. Mix the dry ingredients to wet them thoroughly and continue creaming until light and fluffy. This is essential, as most of the air incorporated in the mixing is worked into the cake batter at this period.

(3) *Scraping down the bowl.*—Scrape down the bowl after adding the liquid, as this assures a smooth batter and an even distribution of ingredients.

(4) *Adding the eggs.*—Stir eggs to obtain uniform mixture and add to the creamed mass. The eggs are usually added slowly in three or four parts. Cream until smooth after each addition of egg. The mixing bowl should be scraped down thoroughly at this period also. In this step some of the sugar begins to dissolve.

(5) *Adding remaining liquid.*—Add the balance of the liquid (water) and the flavoring. Scrape the mixing bowl down thoroughly and mix until a smooth batter



Figure 97.—Adding liquid.

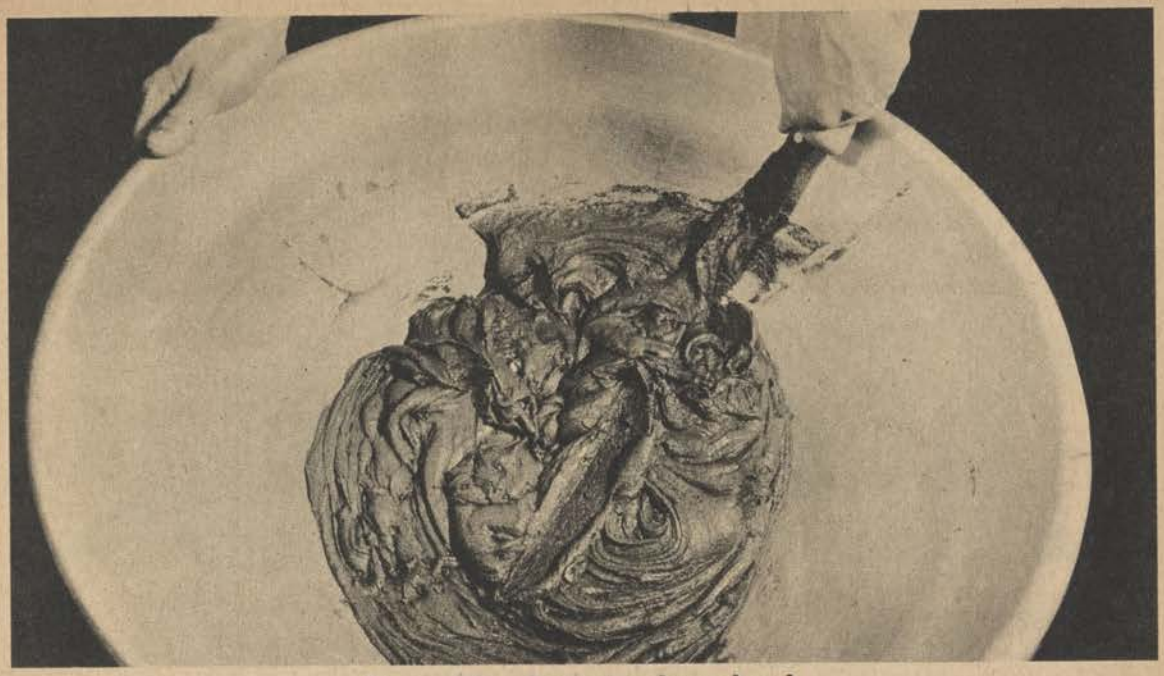


Figure 98.—Scraping down bowl.



Figure 99.—Adding eggs.

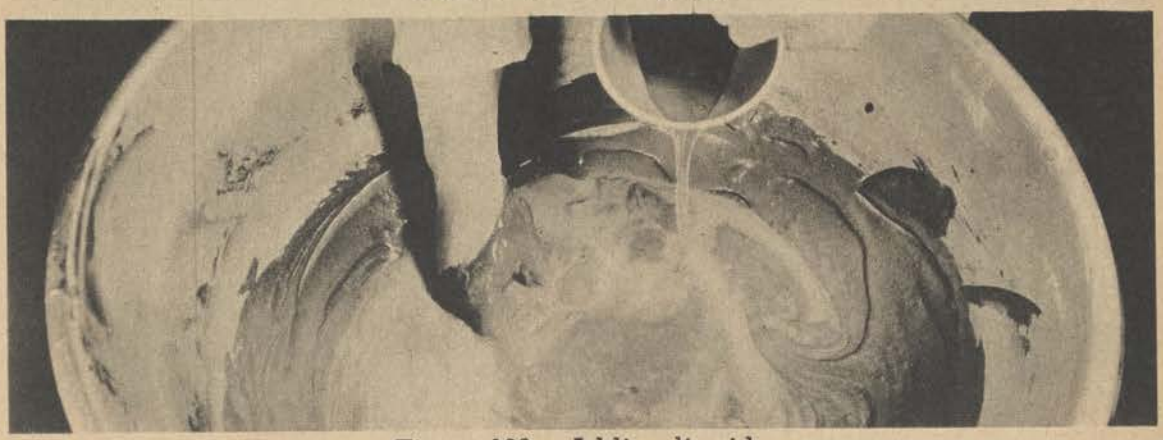


Figure 100.—Adding liquids.

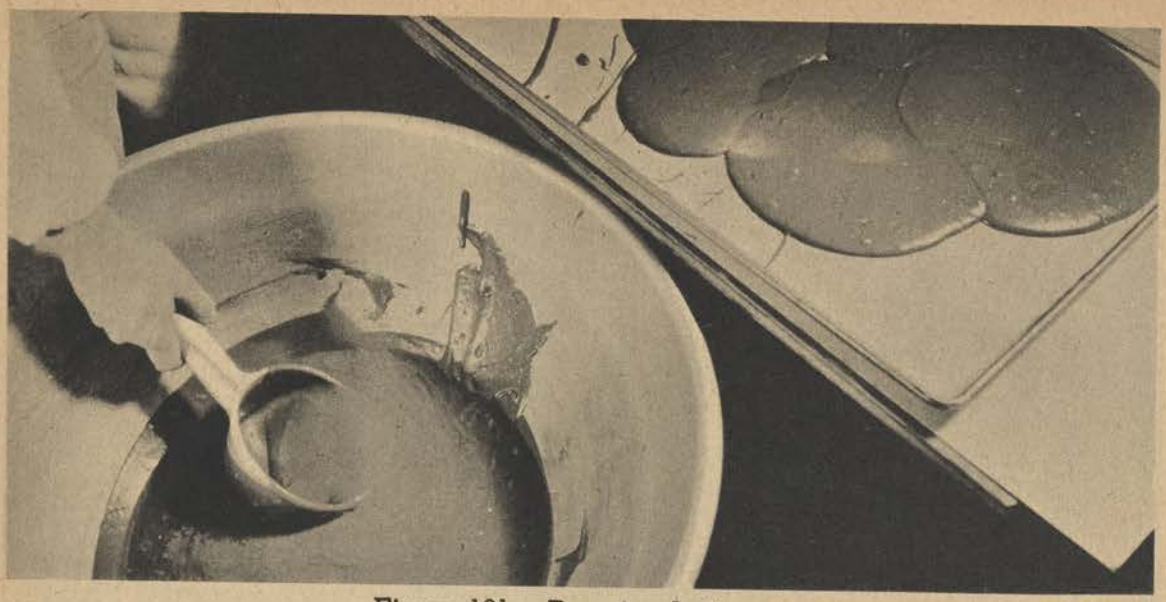


Figure 101.—Panning batter.

is obtained. At this stage some of the gluten in the flour is developed. This retains the gas and helps to improve the volume of the finished cake. The sugar is thoroughly dissolved in this step.

(6) *Panning the cake batter.*—Grease three sheet cake pans, or other shallow pans, and line with paper or dust with flour. Divide the cake batter into three equal parts. This will be approximately three to four No. 56 dippers of batter for each sheet cake pan.

(7) *Spreading cake batter in pan.*—Spread batter evenly and be sure that it covers the four corners of the pan. This size sheet cake should bake 28 to 30 minutes in a moderate over (380° F.). Better results are obtained by double panning each cake. This is done by placing the sheet cake pan in another pan before putting into the oven. This helps to protect the cake from the bottom heat and prevents blistering.



Figure 102.—Spreading batter.

43. *Other cakes.*

YELLOW LAYER CAKE

(Makes 3 sheet pans—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Flour	2	0	1½ No. 56 (qt.) dippers	Place in mixing bowl and cream until light.
Lard	2	0	1⅛ No. 56 (qt.) dippers	
Step 2:				
Sugar	6	8	3¼ No. 56 (qt.) dippers	Add to above and mix until smooth. Keep sides of mixing bowl scraped down thoroughly during mixing. Cream until light.
Flour	3	10	3 No. 56 (qt.) dippers	
Salt	0	2¾	4½ mess spoons	
Baking powder	0	4	8 mess spoons	
Milk (½ evaporated milk and ½ water).	2	13	1¼ No. 56 (qt.) dippers	
Step 3: Eggs	3	15	40 eggs or 2 No. 56 dippers.	Add to above in four parts. Cream until smooth and light after each addition of eggs.
Step 4:				
Milk (½ evaporated milk and ½ water).	1	4	½ No. 56 (qt.) dipper	Add to above and mix well. Measure out 3 to 4 No. 56 dippers of batter into each greased and flour-dusted or paper-lined sheet cake pan. Bake 28 to 30 minutes at 380° F.
Vanilla			To taste	

WHITE LAYER CAKE

(Makes 3 sheet pans—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Lard	2	7	1⅓ No. 56 (qt.) dippers.	Cream until light.
Flour	2	7	2 No. 56 (qt.) dippers	
Step 2:				
Sugar	6	9	3¼ No. 56 (qt.) dippers.	Add to above and mix thoroughly.
Flour	3	9	2¾ No. 56 (qt.) dippers.	
Salt	0	3	5 mess spoons	
Baking powder	0	4½	9 mess spoons	
Milk (½ evaporated milk and ½ water).	3	0	1⅓ No. 56 (qt.) dippers.	
Step 3: Egg whites	4	8	2 No. 56 (qt.) dippers	Add to above in 3 portions and mix thoroughly after each portion of egg whites is added.
Step 4:				
Milk (½ evaporated milk and ½ water).	0	9	¼ No. 56 (qt.) dipper	Add to above and mix thoroughly. Place batter into 3 pans and bake at 380° F., for about 28 to 30 minutes.
Vanilla			To taste	

FRUIT CAKE

(Makes 9 or 10 cakes—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Lard	1	4	⅔ No. 56 (qt.) dipper	Cream until light.
Flour	1	4	1 No. 56 (qt.) dipper	
Step 2:				
Sugar	3	0	1½ No. 56 (qt.) dippers.	Add dry ingredients to the above. Add milk in two portions and mix thoroughly after each portion is added.
Flour	1	12	1⅜ No. 56 (qt.) dippers.	
Salt	0	1½	2½ mess spoons	
Soda	0	½	1 mess spoon	
Cinnamon	0	1½	6 mess spoons	
Mace (optional)	0	½	2 mess spoons	
Milk (½ evaporated milk and ½ water).	2	4	1 No. 56 (qt.) dipper	
Step 3: Eggs	1	8	15 eggs or ¾ No. 56 (qt.) dipper.	Add eggs to above in two portions and mix thoroughly after each portion is added.
Step 4: Molasses	0	14	⅓ No. 56 (qt.) dipper	Add molasses to above and mix thoroughly.
Step 5:				
Raisins	10	4	7 No. 56 (qt.) dippers	Wash fruit thoroughly and slice or dice in medium-size pieces, add the nuts and mix thoroughly. Add to the above batter and mix until all fruit and nuts are thoroughly coated with batter.
Dates (pitted)	4	8	3 No. 56 (qt.) dippers	
Pecan pieces	4	8	4½ No. 56 (qt.) dippers.	
Red cherries (candied).	2	4	1½ No. 56 (qt.) dippers.	
Sliced pineapple (candied).	2	4	1½ No. 56 (qt.) dippers.	
White figs (dried)	1	8	1 No. 56 (qt.) dipper	
Ginger root (candied).	0	12	½ No. 56 (qt.) dipper	

Note.—Bake in 9 or 10 bread pans (10½ x 4½ x 3 inches) lined with greased paper. Measure out about 4 pounds or about 1¾ No. 56 dippers into each pan. Bake at 350° F., for about 2½ hours. Other candied fruits such as orange peel, lemon peel, citron, etc., can be substituted for the above fruits. Cut each cake into sixteen servings.

GINGER BREAD

(Makes 3 sheet pans—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Flour	2	6	2 No. 56 (qt.) dippers	Place in mixing bowl and cream until light.
Lard	2	6	1⅜ No. 56 (qt.) dippers.	
Step 2:				
Sugar	2	6	1⅛ No. 56 (qt.) dippers.	Add to above and mix until smooth. Scrape down sides of mixing bowl and cream until light.
Flour	3	10	3 No. 56 (qt.) dippers	
Soda	0	1¼	2½ mess spoons	
Baking powder	0	2¾	5½ mess spoons	
Salt	0	1¼	2 mess spoons	
Cinnamon	0	1	4 mess spoons	
Cloves	0	¾	3 mess spoons	
Ginger	0	¾	3 mess spoons	
Water	3	0	1½ No. 56 (qt.) dippers.	
Step 3: Eggs	2	6	24 eggs or 1⅛ No. 56 dippers.	Add eggs to above in four parts. Cream until light after each addition of eggs.
Step 4:				
Molasses	4	12	1½ No. 56 (qt.) dippers.	Add to above in four parts and mix until smooth. Measure 3 to 4 No. 56 dippers into each greased and flour-dusted pan. Bake 28 to 30 minutes at 380° F.
Water	0	4	8 mess spoons	

44. *Cake faults and remedies.*— The inexperienced baker may encounter certain difficulties in making cake. These may be overcome, however, with practice and by using a good formula, good ingredients, and care in mixing and baking. Some of the causes for cake failures and suggestions for avoiding them are—

a. Cakes which fall in the center.— Factors responsible for cakes falling in the center:

(1) Too much baking powder will cause a cake to dip in the center. To guard against this, check the formula to be sure that the amount of baking powder given is correct. In the average layer cake the baking powder should be 5 to 6 percent, based on the weight of the flour as 100 percent. If over 7 percent is used, the cake will collapse in the center. Decrease the baking powder if the amount called for is found to be excessive. Too much baking powder may be detected by tasting the cake, if one is experienced in cake work.

(2) An excess of sugar will cause the cake to dip in the center. The combined percentage of egg and milk should exceed the percentage of sugar by 20 to 30 percent in white and yellow cake, and by 40 to 60 percent in devil's food cake. Even the proper amount of sugar will be excessive if too little liquid is used or too much sugar may be added by mistake. This will show in the form of white spots on the top of the cake; also on tasting the cake, it will be very sweet.

(3) Too much air incorporated in the batter will cause a cake to dip in the center; however, this will happen very rarely. In this case, the grain will be very compact, especially tight on the bottom and open on the top, and the cells of the cake will be very fine.

b. Cakes which peak in the center.— There are several reasons why cakes peak in the center.

(1) An excessive amount of structure-building material, such as eggs.

(2) Too little sugar in the batter. The formula should be checked to see if the proportion of sugar is correct. Based on flour as 100 percent, the sugar may vary from 100 to 120 percent.

(3) Too little baking powder. The formula should be checked to see if this ingredient is in the proper proportion. The baking powder may vary from 5 to 6 percent, based on flour as 100 percent.

(4) Excess of eggs, excess of milk, or excess of eggs and milk combined. The combined percentage of the eggs and milk should be 20 to 30 percent more than the percentage of sugar.

(5) A hot oven. This can be detected by looking at the bottom of the cake to see if it is too brown. Darkness around the edges of the cake and the smoothness with which it lets go or shrinks away from the pan during the baking period are other signs of too hot an oven.

c. Cakes which are too tender.—A cake which is too tender will be very flat on top. It will rise excessively in the oven and will tend to break away from the sides of the pan, leaving considerable crust hanging to the sides. This will give a rough finished side to the cake. Furthermore, the cake usually has a coarse grain. This can be corrected as follows:

(1) Check the oven temperature. Most layer or sheet cake formulas are developed to be baked at 380 F. A low oven temperature will cause a cake to be too tender.

(2) If the oven temperature is correct, check the percentage of baking powder. Excessive baking powder will cause the cake to be too tender. The baking powder should be 5 to 6 percent, based on flour as 100 percent. In the case of devil's food cake, the combined percentage of baking powder and soda should be approximately this figure.

(3) Excess sugar will cause the cake to be too tender. Check the ratio of sugar to moisture to see that there is enough moisture to dissolve the sugar. The combined percentage of eggs and milk should be 20 to 30 percent more than the percentage of sugar in the case of yellow and white layer cakes; and 40 to 60 percent more in the case of devil's food cake.

(4) Check the ratio of eggs to shortening. The percentage of eggs should always exceed the percentage of shortening in a cake. There should be at least 10 percent more eggs than shortening, and it may run as high as 35 percent. If fewer eggs than this are used, very crumbly, tender cake will be produced.

d. Cake shrinkage.—Shrinkage of the cake may occur in the oven or after removal from the oven. The following factors affect the shrinkage of cake in the oven:

(1) If the percentage of milk added to the batter is too high, shrinkage will result. When the cake is cut heavy streaks usually will appear along the bottom.

(2) The temperature of the oven is important. An excessively hot oven will cause the cake to peak and crack on the top, and can be verified by examining the bottom crust which will be dark. A hot oven produces very smooth edges on the finished cake. Too low an oven temperature will cause the cake to flatten out, being very flat on top and with ragged edges where the crust has clung to the pan as the shrinkage takes place.

(3) Certain characteristics of a cake during baking indicate that it may shrink after removal from the oven. These include excessive puffing; entire lack of structure; and an underbaked appearance at all times. The two principal causes of shrinkage in a cake after it is removed from the oven are—

(*a*) Too high a percentage of shortening. All flours have certain shortening-carrying properties. An excessive amount of shortening, which makes the gluten in the flour elastic, causes it to over-stretch during the baking period. On removing the cake from the oven the vapor escapes, causing an almost complete collapse of the structure of the cake. This will occur within the first 3 or 4 minutes after the cake is out of the oven. Less shortening may be used in making cake when the flour contains a poor quality gluten.

(*b*) The type of flour used. Short patent flours produce the finest cakes, straight flours the next best, and clear flours the least desirable. A bleached flour has greater moisture and shortening-carrying properties. A poorly bleached or an unbleached flour will carry only about two-thirds the amount of shortening as a flour which is well bleached. A green flour (one which has not had the proper aging) also will cause shrinkage. The baking properties of a cake flour can be measured by its performance in yellow layer cake which contains high percentages of sugar, liquid, and shortening.

e. Pockets in bottom of cake.—Pockets in the bottom of a cake are the result of several conditions.

(1) Lack of air in a cake batter prevents the vapor from working out properly and it collects at the bottom of the cake, forming a pocket. This can be corrected by increasing the leavening or by incorporating more air into the batter. The latter may be accomplished by longer creaming or by whipping the egg whites with some of the sugar—anything to increase the lightness of the finished batter.

(2) An excessive amount of milk in the batter may cause a pocket to form, even though the correct amount of chemical leavening has been used and sufficient air incorporated in the batter.

(3) A pocket may be caused by too much heat in the bottom of the oven. If it is not possible to adjust the baking conditions of the oven, the cake may be double-panned (first pan placed in a second). A slight increase in baking powder also will help under these conditions.

f. Cake which is too dry.—Several factors are responsible for a cake being too dry.

(1) A dry cake results when there is too little moisture in the batter. The percentage of baking loss is the same in cakes which are scaled the same weight, baked in the same size pans for the same period of time and at the same temperature. In other words, the baking loss is in the crust or the exposed surface. The inside of the cake after baking will test within one percent of the actual moisture content of the cake batter. The ratio of the eggs and milk to sugar should be checked in the formula to be sure that the amounts given are the same as specified in this section.

(2) Excessive baking powder will produce a cake with coarse grain, which will have a tendency to dry out rapidly. This may be corrected by reducing the baking powder slightly or by increasing the milk slightly.

(3) The type of shortening used will influence the degree of dryness. A cake made with lard usually is moist and tender.

g. Control of temperature.—(1) If the oven temperature is too low, the cake will be

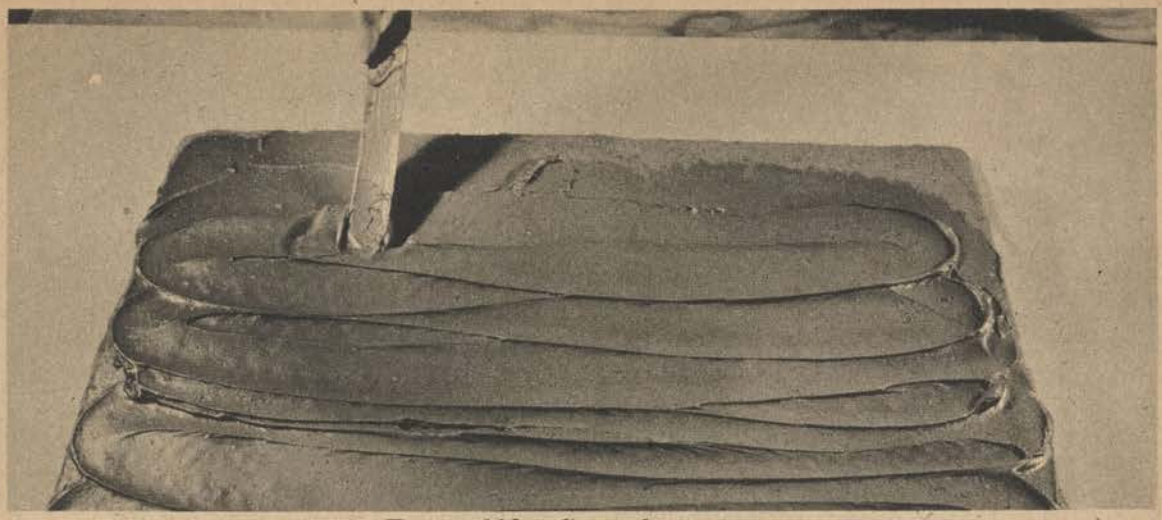


Figure 103.—Spreading icing.

excessively tender.

(2) If the oven is too hot, the cake may peak in the center.

(3) Shrinkage is caused by an excessively hot oven.

(4) Too low a temperature also causes shrinkage.

(5) Too hot an oven causes very smooth edges on the finished cake.

(6) Too low a temperature causes the cake to flatten out on top.

(7) Too low a temperature causes ragged edges on the finished cake.

(8) Too much oven heat may cause pockets in bottom of cake.

45. *Icings.*—Icings bring out the fine flavors developed in the cake. A good icing greatly improves a poor cake.

a. Icing the cake.—When the cake is cool, it is ready for icing. Place a paper over the top of cake, put a pan over the paper and turn the cake completely over and into the second pan. Lift off the original pan and remove paper sticking to the bottom of cake. Place three pounds, or 1 No. 56 dipper of icing on each cake. Spread evenly.

b. Cutting the cake.—By dipping a sharp knife into hot water, a clean cut can be made. To obtain pieces 2 inches square, make twelve cuts lengthwise and nine crosswise of the cake. If larger pieces of cake are desired, make six cuts in length and six cuts in width. This gives a serving 4 inches long by 3 inches wide. If cut this way, there will be a total of 108 pieces from three sheet cakes.

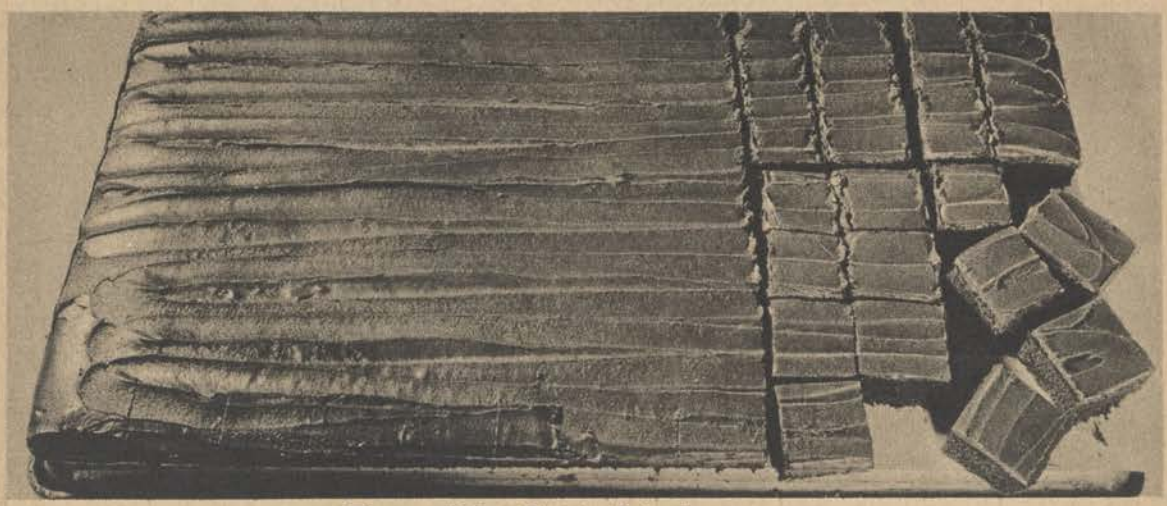


Figure 104.—Cut in 2-inch squares.

c. Formulas.

WHITE ICING

(Enough for three sheet cakes)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar (powdered)	1	2	¾ No. 56 (qt.) dipper	Cream until light.
All butter or lard, or ½ and ½.	1	2	½ No. 56 (qt.) dipper	
Step 2: Syrup	3	0	1¼ No. 56 (qt.) dippers.	Add to above and mix thoroughly.
Step 3: Sugar (powdered).	3	12	2½ No. 56 (qt.) dippers.	Add to above and mix thoroughly.
Step 4:				
Hot water	0	3	1½ mess spoons	Dissolve salt in water and add to above. Mix thoroughly.
Salt	0	½	1 mess spoon	
Vanilla			To taste	

SYRUP

Sugar (granulated)	1	12	⅞ No. 56 (qt.) dipper	Mix until clear, or until all sugar is dissolved.
Hot water	0	10	⅓ No. 56 (qt.) dipper	
Glucose or syrup	0	10	¼ No. 56 (qt.) dipper	

WHITE FUDGE ICING

(Enough for three sheet cakes)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar	9	8	4¾ No. 56 (qt.) dippers.	Stir until mixture starts to boil, then boil without stirring to 238° F., or until soft ball forms in cold water. Remove from fire. Do not stir.
Milk (½ evaporated milk and ½ water).	3	12	1⅞ No. 56 (qt.) dippers.	
Vinegar (45-grain)	0	6	8 mess spoons	If 90-grain vinegar is used, one-half the amount called for in formula is required.
Salt	0	¼	½ mess spoon	
Step 2:				
All butter or lard, or ½ and ½.	0	12	⅜ No. 56 (qt.) dipper	Add to above and cool to lukewarm. Then beat until stiff. Thin down with simple syrup (2 parts sugar and 1 part hot water).
Vanilla			To taste	

COCOA ICING

(Enough for three sheet cakes)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Cocoa	0	9	⅔ No. 56 (qt.) dipper	Place melted butter in mixing bowl and add cocoa. Mix thoroughly.
All butter or lard, (melted) or ½ each.	1	2	⅝ No. 56 (qt.) dipper	
Step 2: Syrup*	2	10	⅞ No. 56 (qt.) dipper	Add to above and mix thoroughly.
Step 3: Sugar (powdered).	4	8	3¼ No. 56 (qt.) dippers.	Sift and add to above. Mix until smooth.
Step 4:				
Hot water	0	2	4 mess spoons	Add to above and mix until smooth.
Salt	0	¼	½ mess spoon	
Vanilla			To taste	

SYRUP

Sugar (granulated)	1	6	2/3 No. 56 (qt.) dipper	Place in mixing bowl and mix until clear or until sugar is dissolved.
Hot water	0	10	1/3 No. 56 (qt.) dipper	
Glucose or syrup	0	10	1/4 No. 56 (qt.) dipper	

COCOA FUDGE ICING

(Enough for three sheet cakes)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar	9	8	4 3/4 No. 56 (qt.) dippers.	Stir until mixture starts to boil, then boil without stirring to 238° F., or until a soft ball forms in cold water. Remove from fire. Do not stir. If 90-grain viengar is used, 1/2 the amount called for in formula is required.
Cocoa	1	0	1 1/8 No. 56 (qt.) dippers.	
Milk (1/2 evaporated milk and 1/2 water).	3	12	1 3/4 No. 56 (qt.) dippers.	
Vinegar (45-grain)	0	6	8 mess spoons	
Salt	0	1/4	1/2 mess spoon	
Step 2:				
All butter or all lard or one-half of each.	0	12	3/8 No. 56 (qt.) dipper	Add to above and cool to lukewarm. Beat until stiff. Thin down with simple syrup (2 parts sugar and 1 part hot water).
Vanilla			To taste	

SECTION VIII

COOKIES

	Paragraph
General	46
Ingredients	47
Molasses cookies	48
Fruit bars	49
Oatmeal, raisin, and pecan cookies	50
Faults and remedies	51

46. *General.*—*a.* Cookies are always popular and should be very satisfactory as summer desserts for the Army. Unlike most other desserts, cookies will keep almost indefinitely and can be made ahead of time and used as needed. This is a decided advantage to the Army cook.

b. Cookies fall into two general classifications—the soft type and the hard, brittle type. The proportion of sugar and moisture determines whether the cookie will be soft or brittle; the more sugar and the less moisture, the more brittle the cookie.

c. Soft batter cookies may be dropped by hand in pieces the size of a walnut on a greased and flour-dusted pan. Stiff batter cookies may be rolled out in long strips and cut into pieces of about the same size. Then these pieces are placed on the pan and flattened before baking.

47. *Ingredients.*—*a.* A study of cookie-making shows that the ingredients used will vary as follows, based on the flour as 100 percent.

Ingredients	*Percent*
Sugar	40 to 70
Lard	20 to 40
Salt	1½ to 2
Soda	0 to 1½
Baking powder	0 to 5
Molasses	0 to 40
Eggs	0 to 25
Liquid milk	0 to 40
Oatmeal	0 to 30
Fruit—raisins	0 to 100
Spices	To taste
Flavor	To taste
Flour	100

b. For the brittle-type cookies made by hand, as in the Army, the combined percentage of eggs and milk should be 25 to 35 percent, with the sugar varying from 50 to 60 percent under normal conditions. In the soft-type cookies, the sugar will run approximately 40 percent and the moisture (eggs and milk) will be approximately 60 to 65 percent.

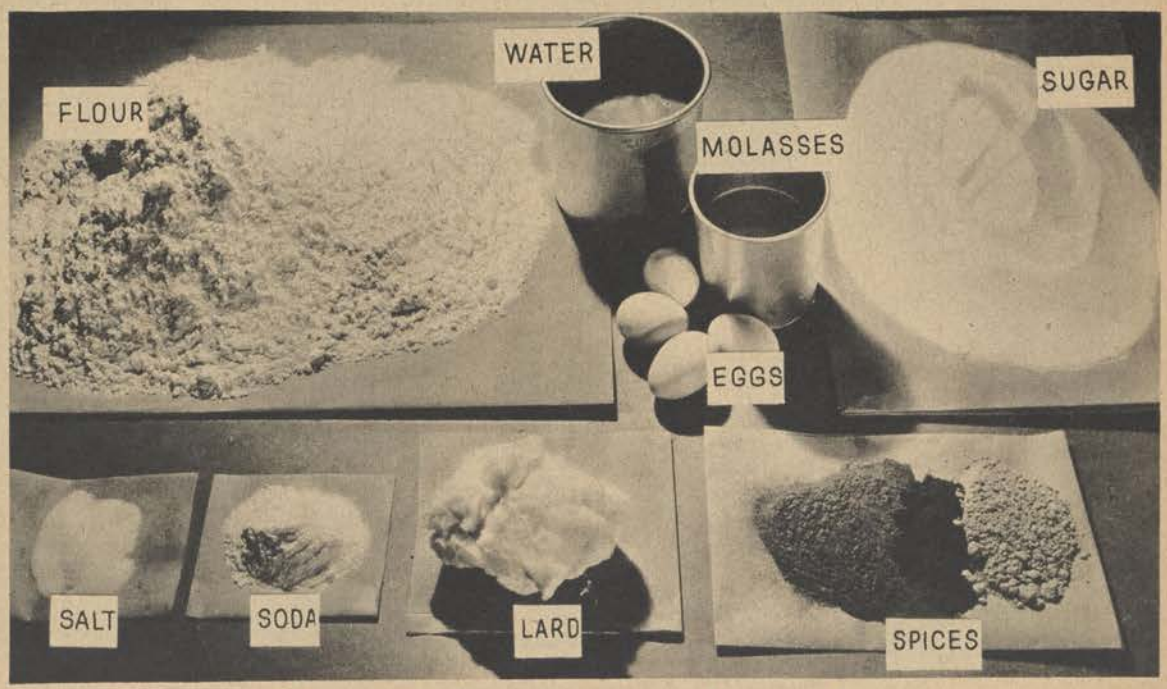


Figure 105.—Ingredients for molasses cookies.

48. *Molasses cookies.—a. Formula.*

MOLASSES COOKIES

(Makes about 24 dozen cookies—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar	4	0	2 No. 56 (qt.) dippers	Place sugar, salt and lard in mixing bowl and cream until light.
Salt	0	1	1½ mess spoons	
Lard	1	0	⅝ No. 56 (qt.) dipper	
Step 2: Eggs	0	8	5 eggs or ¼ No. 56 dipper.	Add eggs slowly to above and cream until light.
Step 3: Molasses	3	0	1 No. 56 (qt.) dipper	Add molasses to above and cream until light.
Step 4:				
Water	1	0	½ No. 56 (qt.) dipper	Dissolve soda in water and add to above. Stir into creamed mass.
Soda	0	2	4 mess spoons	
Step 5:				
Ginger	0	1	4 mess spoons	Mix flour and spices together, add to above and mix into a smooth dough. Form dough into strips 1¼ to 1½ inches in diameter. Cut into pieces size of a walnut. Place on greased pans. Flatten to 3 inches in diameter. Wash with egg wash and bake at 380°–400° F. for about 14 minutes.
Cinnamon (ground)	0	1½	6 mess spoons	
Cloves (ground)	0	½	2 mess spoons	
Flour	7	0	5¾ No. 56 (qt.) dippers.	

b. Mixing dough.—Molasses cookies, made according to the formula given above, are used as an example of the general procedure followed in mixing cookie dough.

(1) *Sugar, salt and lard in mixing bowl.*—Place the sugar, salt and lard in a mixing bowl and cream together until light and fluffy.

(2) *Mixing in the eggs.*—Add the eggs slowly and cream until light and fluffy, scraping down the sides of the mixing bowl to insure a smooth mixture.



Figure 106.—Sugar, salt, and lard mix.



Figure 107.—Adding eggs.

(3) *Adding the molasses.*—Add the molasses and cream into the sugar and the lard mixture to obtain a smooth creamy mass.

(4) *Adding the liquid.*—Add the soda to the water or the liquid milk, as the case may be, and dissolve. Then add liquid to the creamed mass and stir to obtain a uniform mixture. Too much stirring at this point will dissolve the sugar and prevent proper spreading of the cookies during the baking period. If the formula calls for fruit or oatmeal, it is added at this time.

(5) *Adding flour and other ingredients.*—Add the flour, spices and baking powder (if used) along with any other flavors



Figure 108.—Adding molasses.



Figure 109.—Adding liquid.



Figure 110.—Adding flour.



Figure 111.—Greasing pan.



Figure 112.—Dividing dough.

desired. Mix thoroughly until a smooth dough is obtained, scraping down the bowl to see that all the flour is mixed smoothly into the dough.

(6) *Greasing pan.*—Grease the pans lightly. It requires about 15 pans (18 by 24 inches) for a batch of cookies to serve 100 men. A brush or a clean cloth dipped into melted lard may be used for greasing the pans. If the pan is greased too heavily, the cookies will spread too much and the edges will be thin instead of rounding up as they should in baking.

(7) *Dividing the dough.* — Place the cookie dough on a floured cloth. This may be either canvas or a clean towel. Cut off a piece of dough and form it into a roll about 1¼ to 1½ inches in diameter. Cut into pieces weighing approximately one ounce, or the size of a walnut.

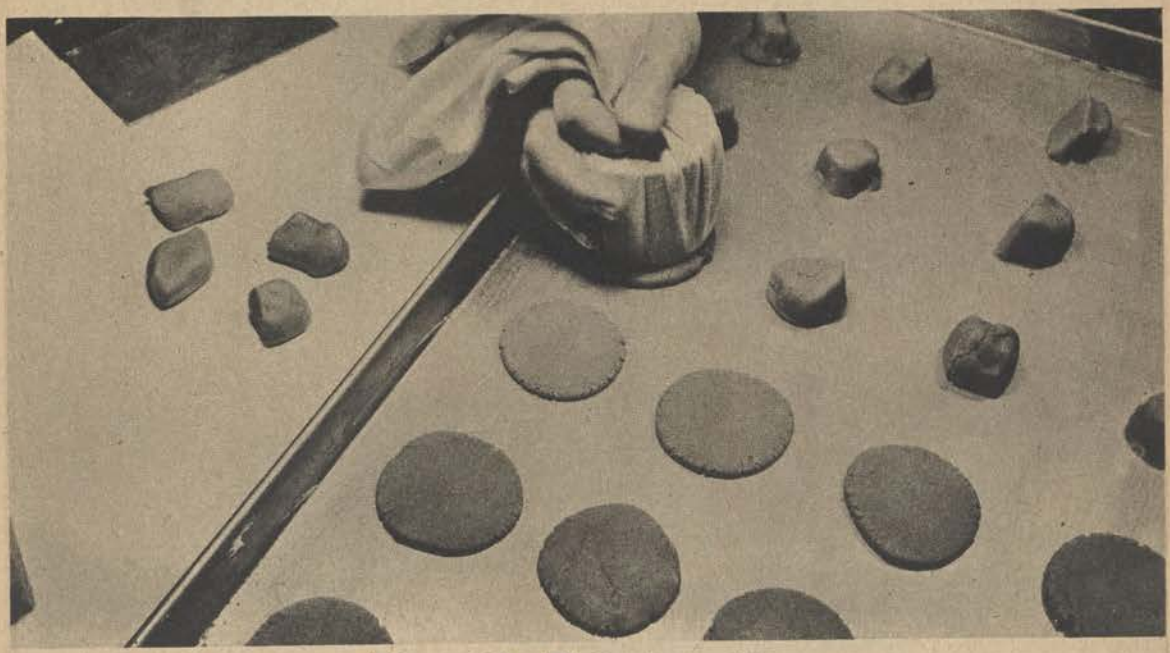


Figure 113.—Flattening cookies.

(8) *Flattening the cookies.*—Place the pieces of cookie dough on the pan, having 5 to 6 pieces the long way and 4 across. Then take a scale weight or a small tin can, wrap a clean wet towel around it, and flatten the cookies out until 3 inches in diameter. After flattening the cookies, they may be washed with equal parts of molasses and water or equal parts of egg and milk. This tends to give the cookies a shine or gloss and the finished product more "eye appeal." The cookies are then placed in a moderately hot oven (380°–400° F.). It takes from 12 to 15 minutes to bake cookies of this size.

49. *Fruit bars.—a. Formula.*

FRUIT BARS

(Makes about 20 dozen fruit bars—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar	2	8	1¼ No. 56 (qt.) dippers.	Place ingredients in mixing bowl and cream until light.
Salt	0	1¼	2 mess spoons	
Cinnamon	0	1¼	5 mess spoons	
Ginger	0	⅝	2½ mess spoons	
Soda	0	1¼	2½ mess spoons	
Lard	1	12	1 No. 56 (qt.) dipper	
Step 2:				
Eggs	1	9	16 eggs or ¾ No. 56 dipper.	Blend eggs and molasses. Add to above in three parts and cream until light after each addition of egg and molasses mixture.
Molasses	2	8	⅞ No. 56 (qt.) dipper	
Step 3:				Add flour and fruit to above and mix to a smooth dough. One dipper of dough makes enough for 2 rolls the length of the sheet cake pan. Flatten with fingers until ½ inch thick. Wash with egg wash and bake at 380°-400° F., for 18 to 20 minutes. When cool, cut 12 cookies to the strip.
Raisins (seedless) or other fruit.	3	12	2½ No. 56 (qt.) dippers.	
Flour	5	0	4 No. 56 (qt.) dippers	

b. Forming dough strip for fruit bars.—Filling one No. 56 dipper full of fruit bar dough (made according to formula above) and dividing it in half will give an idea of the amount of dough needed for one strip. Roll these pieces out about 22 inches in length to fit a sheet-cake pan. If a shorter pan is used, less dough must be used for dough strip.

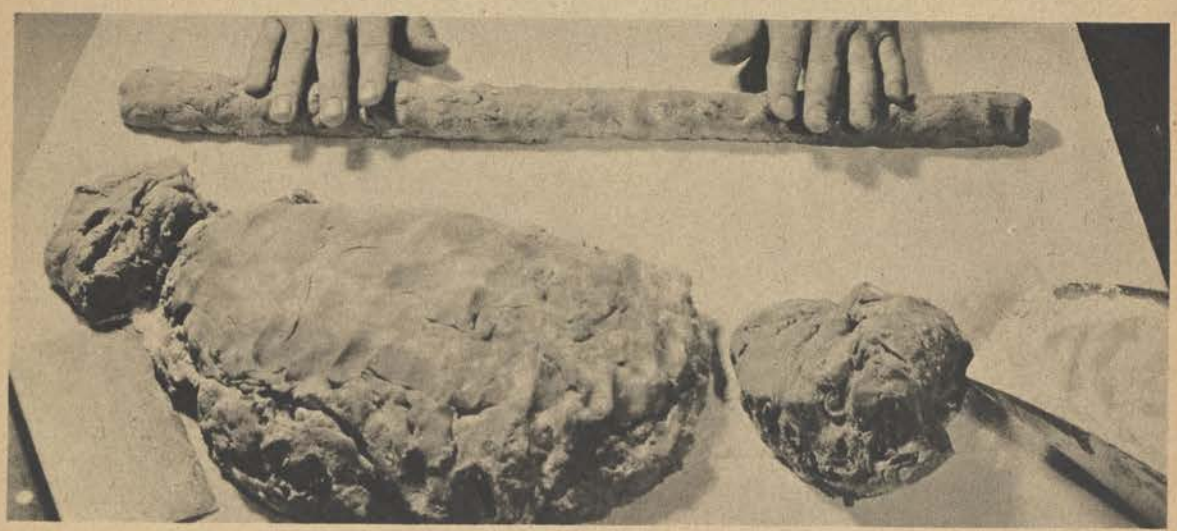


Figure 114.—Forming dough strip.

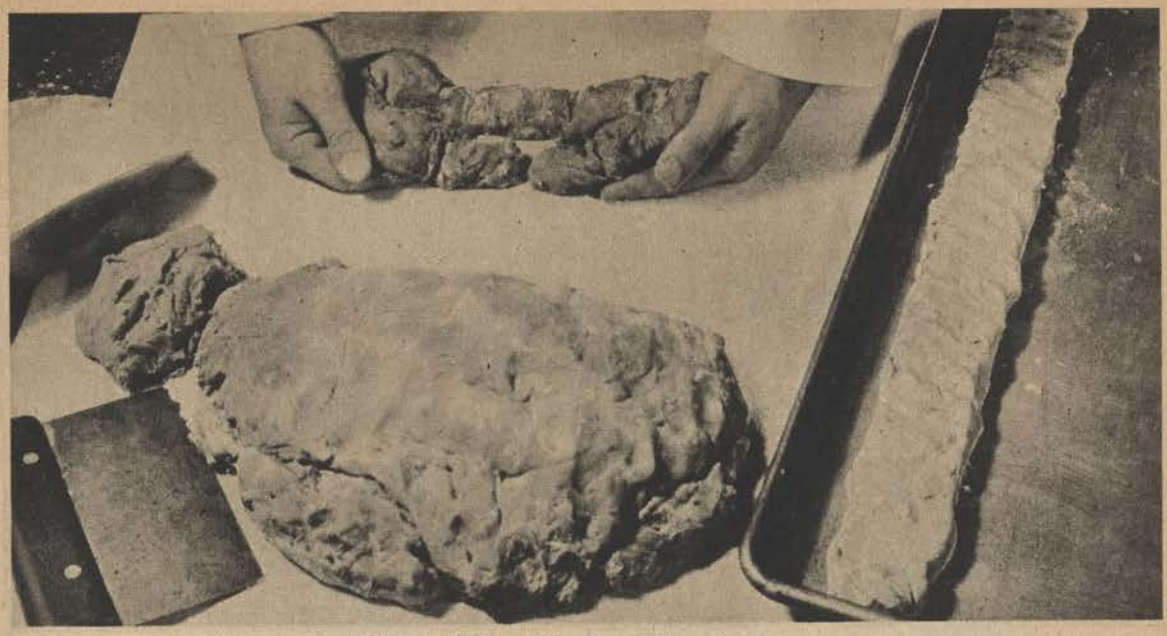


Figure 115.—Placing strips in pan.

c. Placing dough strips in pan.—After the fruit bar is rolled out to the desired length, fold the two ends to the center. It can then be picked up easily and placed on the pan. One sheet cake pan will hold three strips.

d. Flattening the fruit bars to desired thickness.—Flatten the dough strips with the fingers to one-half inch in thickness. This will make the fruit bars uniform in width. Fruit bars may be washed with egg wash, if desired. Bake at 380°–400° F. for about 20 minutes.



Figure 116.—Flattening bars.



Figure 117.—Cutting bars.

e. Cutting baked fruit bars.—When cool, cut across the baked strip to make bars about two inches in width.



Figure 118.—An assortment of popular cookies.

50. *Oatmeal, raisin, and pecan cookies.*

OATMEAL COOKIES

(Makes about 24 dozen cookies—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar	5	0	2½ No. 56 (qt.) dippers.	Place in mixing bowl and cream until light.
Lard	2	3	1¼ No. 56 (qt.) dippers.	
Cinnamon	0	1¼	5 mess spoons	
Salt	0	1¾	2¾ mess spoons	
Soda	0	2½	5 mess spoons	
Step 2: Eggs	0	10	6 eggs or 3/10 No. 56 dipper.	Add eggs to above in three parts. Cream until light after each addition of eggs.
Step 3:				
Water	2	0	1 No. 56 (qt.) dipper	Mix together and add to above. Mix thoroughly.
Raisins (ground)	1	4	⅞ No. 56 (qt.) dipper	
Vanilla			To taste	
Step 4: Oatmeal	2	3	2⅞ No. 56 (qt.) dippers.	Add oatmeal to above and mix thoroughly.
Step 5:				Blend flour and sugar and add to above; mix until smooth. Make dough into rolls about 1½ inches in diameter and cut into pieces size of a walnut. Place on greased and flour-dusted pans and flatten to 3 inches in diameter. Wash with egg wash and bake at 380°–400° F., for about 18 minutes.
Flour	5	0	4 No. 56 (qt.) dippers	
Sugar	0	6	⅛ No. 56 (qt.) dippers	

RAISIN DROP COOKIES

(Makes about 24 dozen cookies—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar	5	0	2½ No. 56 (qt.) dippers.	Place in mixing bowl and cream until light.
Lard	2	0	1⅛ No. 56 (qt.) dippers.	
Salt	0	4	6½ mess spoons	
Glucose or syrup	1	10	⅝ No. 56 (qt.) dipper	
Lemon extract			To taste	
Vanilla			To taste	
Step 2: Eggs	1	12	18 eggs or ⅞ No. 56 dipper.	Add in three parts creaming well after each addition of eggs.
Step 3:				
Eggs	1	0	10 eggs or ½ No. 56 dipper.	Mix eggs, milk and corn syrup together, add to above and mix thoroughly.
Milk (½ evaporated milk and ½ water).	2	0	1 No. 56 (qt.) dipper	
Glucose or syrup	1	8	½ No. 56 (qt.) dipper	
Step 4: Raisins (seedless).	3	0	2 No. 56 (qt.) dippers	Add raisins to above and mix thoroughly.
Step 5:				Blend flour and baking powder together, add to above and mix until smooth. Drop batter, the size of a walnut, on greased and flour-dusted pans. Drop 16 to 18 per sheet-cake pan. Bake at 380°–400° F. for 15 minutes.
Flour	8	0	6½ No. 56 (qt.) dippers.	
Baking powder	0	4	8 mess spoons	

PECAN COOKIES

(Makes about 24 dozen cookies—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Brown sugar	4	0	2¼ No. 56 (qt.) dippers.	Place in mixing bowl and cream until light.
Lard	2	8	1⅜ No. 56 (qt.) dippers.	
Butter	1	0	½ No. 56 (qt.) dipper	
Salt	0	1	1½ mess spoons	
Soda	0	2½	5 mess spoons	
Cocoanut (shredded).	2	8	3 No. 56 (qt.) dippers	
Step 2:				
Eggs	1	8	15 eggs or ¾ No. 56 dipper.	Add vanilla to eggs and then add to above mixture in three parts and cream until light after each addition of eggs.
Vanilla			To taste	
Step 3:				Add flour and nuts to above and mix until smooth. Make dough into rolls about 1½ inches in diameter. Cut into pieces about the size of a walnut. Place in greased pan and flatten to about 3 inches in diameter. Wash with egg wash. Bake at 380°–400° F. for about 15 minutes.
Flour	5	0	4 No. 56 (qt.) dippers	
Pecans or other nuts (chopped).	1	8	1½ No. 56 (qt.) dippers.	

51. *Faults and remedies.—a. Why cookies stick to pan.*—(1) Cookies will stick if pans are not greased sufficiently.

(2) If the pans are not properly cleaned the cookies may stick.

(3) When excessive caramelizing materials, such as milk solids, milk and/or sugars, are used the cookies brown (caramelize) at a low temperature, causing them to stick.

(4) Excessive heat in bottom of oven causes the cookies to burn on the bottom, with the result that the cookies will stick.

b. Why cookies spread.—(1) When the formula contains a high percentage of sugar and the cookies are baked at a high temperature, excessive spreading will result. Cookies of this type usually contain very little moisture and most of the sugar is in the crystalline state (has not been dissolved) in the cookie. When it heats in the oven, the sugar melts, thus giving a spreading action.

(2) Too much baking soda will cause excessive spreading.

(3) Greasing the pans too heavily also will cause spreading. This will result in thin edges on the cookies.

APPENDIX I

FRIED FOODS

1. *General.*—There are two general methods for the preparation of fried foods: deep-fat frying and pan-frying. Both methods are popular in the Army kitchen and are in constant use. Lard is adapted to either method of frying. Some foods are best when fried in deep fat, the fat in the kettle being sufficiently deep to completely cover or float the food; other foods are best when pan-fried in smaller quantities of fat. For example, all sea foods, except large pieces of fish, croquettes, doughnuts, and French-fried potatoes are far superior when fried in deep fat. Other foods (particularly those lacking in tenderness and moistness) such as round steak, liver, large chickens, large chops, hashed brown potatoes, etc., should be pan-fried.

a. Foods adapted to deep-fat frying:

Croquettes.
Fritters.
Vegetables (batter covered or breaded).
Sea foods (breaded, excepting large, whole fish).
Chops (breaded).
Cutlets (breaded).
Chickens (small, disjointed fryers, or precooked, steamed fowl. *Never* deep-fat fry large pieces unless precooked).
Doughnuts.
French-fried potatoes.
French toast.

b. Foods adapted to pan-frying:

Potatoes.
Chicken.
Large fish.
Steak.
Vegetables (not breaded or batter covered).
Beef or pork liver.
Meat specialties (kidneys, sweetbreads, etc.).
Eggs.
Ham.
Bacon.

2. *Deep-fat frying.*—*a. Suggestions.*—The following suggestions should be helpful in the successful preparation of foods by this cookery method:

(1) Keep equipment clean.

(2) Use a thermometer if possible.

(3) See that the grease turnover is relatively rapid. Do not hold it in the kettle more than three days.

(4) Avoid overheating. All fats will smoke at ordinary frying temperatures after about two hours' use. Care should be taken never to fry at a temperature higher than required by the particular food being fried. All fried foods have a better flavor if not fried at too high a temperature.

(5) Taste the fat and the fried foods every day to see that the flavor of the fat is still satisfactory.

(6) Discard off-flavored fat and start with fresh lard.

(7) Precook large pieces of meat, large chickens, etc., before breading. Finish in deep fat at 360°–370° F.

(8) In frying raw, wet foods, such as potato chips, dry them as much as possible before placing them in the hot fat. This can be accomplished by allowing the water to drain off, or the water can be removed with dry towels. This will conserve heat and make for improvement through more uniform frying temperatures.

(9) Always keep the frying kettle filled to the proper level with lard.

(10) Excessive breading should be avoided because it results both in inferior food products and in contaminated frying fat.

(11) A hood located over the frying unit and equipped with a satisfactory exhaust fan will make the entire kitchen more comfortable.

(12) Serve fried foods as soon as possible. They are best immediately after removal from the frying fat.

(13) Potatoes used for frying purposes should be kept out of the refrigerator and away from cold storage. Storing the potatoes at 70° to 80° F. for one week helps to obtain a more even color and a better flavor in the fried product.

(14) Strain the frying fat several times each day when frying clams, oysters, and other highly breaded foods. The fat should always be strained after each day's work.

(15) When doughnuts are fried there is a deposit of dusting flour and small dough particles in the hot frying fat. If these particles are allowed to remain in the fat, they will become scorched and will give off unpleasant flavors and odors. Occasionally cinnamon rolls are deep-fat fried. This results in a lowering of the quality of the frying fat because absorption of cinnamon immediately produces dark and bitter flavor.

(16) Never salt fried foods over kettle.

(17) Do not hold the frying fat at high temperatures when it is not in use. This is not only fuel consuming but it unnecessarily breaks down (impairs quality of) the frying fat.

(18) Frying equipment, including wire baskets, thermometers, kettles, or valves on kettles, should not contain brass, copper or white metal, as these metals are injurious to the fat.

b. Care and use of deep-fat fryers.—The fryers which have been installed in some mess kitchens are constructed on a scientific principle which practically assures good products. Heat is applied above the bottom of the cooking vessel. This results in having hot fat above the heating unit and much cooler fat below the heating unit. All sediment and particles drop into the lower portion of the fat, thus preventing burning which hastens the "break down" of the fat. The thermostat should keep the fat at a constant temperature. Too much food should not be placed in the fryer at one time because this results in lowering the temperature too much, and the fried product will be greasier than necessary.

(1) *Before using fryer.*—Fill the kettle with cleaning solution such as is used in dishwashers. Set thermostat to 250° F. Boil for 10 minutes. Rinse several times with clean, hot water and dry thoroughly. ***Caution:*** Unless cleaning solution is completely removed from kettle, the frying fat will be quickly ruined.

(2) *How much fat to use.*—Fill kettle with fat to a level just high enough to cover food being fried.

(3) *How to clean the fryer.*—Below are given instructions for cleaning the fryer.

(*a*) The fat should be drained from the fryer into a container, strained through a cheesecloth, or put to one side and allowed to settle. Clean the fryer thoroughly and replace the strained or settled fat in it.

(*b*) Fill the frying kettle with water, heat to boiling point, and add from 3 ounces to 1 pound (depending on the size of fryer) of good cleaning compound.

(c) After boiling for about 25 minutes, turn off the burner and allow to stand overnight, if possible.

(*d*) Drain and refill with water. Boil and drain.

(e) Refill with water, heat, and add from two spoons to one cup of vinegar, depending on the size of the fryer. Stir and allow to stand a few minutes before draining. Refill with water and drain. Wipe dry.

(4) *Reuse of fat.*—Put strained fat into kettle and add enough fresh fat to bring it to proper level. There should always be enough fat to allow the temperature to remain reasonably constant during use.

Good care and intelligent use of a fryer insures its longer life, prolongs frying life of the fat, and assures fried products of better flavor and quality.

(5) *Directions for deep-fat frying.*—Set thermostat of deep-fat fryer at the temperature given in the formula being used. When the fat has reached this temperature, place the food in wire basket, then lower into the fat. When browned and properly cooked, lift up basket, allow food to drain in order to remove excess fat.

c. *Lard as a frying fat.*—(1) The clarity, whiteness, and goodness of lard are evident the minute it is melted in the frying kettle. Lard will withstand temperatures necessary for deep-fat frying for long periods of time. It has foam resistance. If strained and kept free from food particles, lard will retain its natural flavor.

(2) All frying fats will smoke if heated to extremely high temperatures. The automatic frying kettles are usually thermostatically controlled in order to eliminate this danger. Lacking a thermostat, a deep-fat frying thermometer should be used to check the temperature of the fat. A thermometer



Figure 119.—Lard.

also can be used to check the thermostat occasionally to see that it is working properly. Careful control of the frying temperature is recommended. This will pay big dividends in the form of fresher frying fat and better tasting products.

3. *Croquettes.*—Croquettes offer a tasty and efficient way of using left-over meats and vegetables of all kinds. They are formed by first chopping or grinding the left-overs, and then mixing the ground or chopped meat with suitable seasoning materials.

a. Ingredients.—Materials such as spices, salt, pepper, celery, and onions are used to add flavor and give variety. Eggs and flour are used to give body and firmness to the finished croquettes. Fried in deep lard to a golden brown, the finished product sbould be flavorful and crunchy. The ingredients used for making croquettes to serve one-hundred men are shown in figure 119.

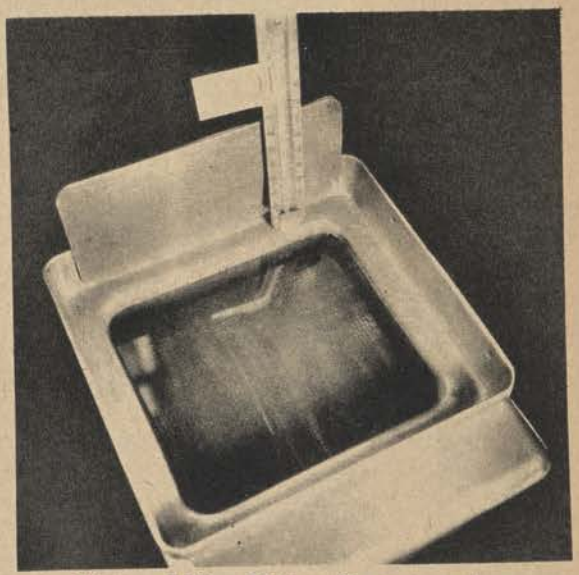


Figure 120.—Using thermometer.

b. Preparing croquettes.—(1) *Cooking onion-vegetable seasoning material.*—First, fry the onions, celery, green peppers, and other materials of this type in a shallow

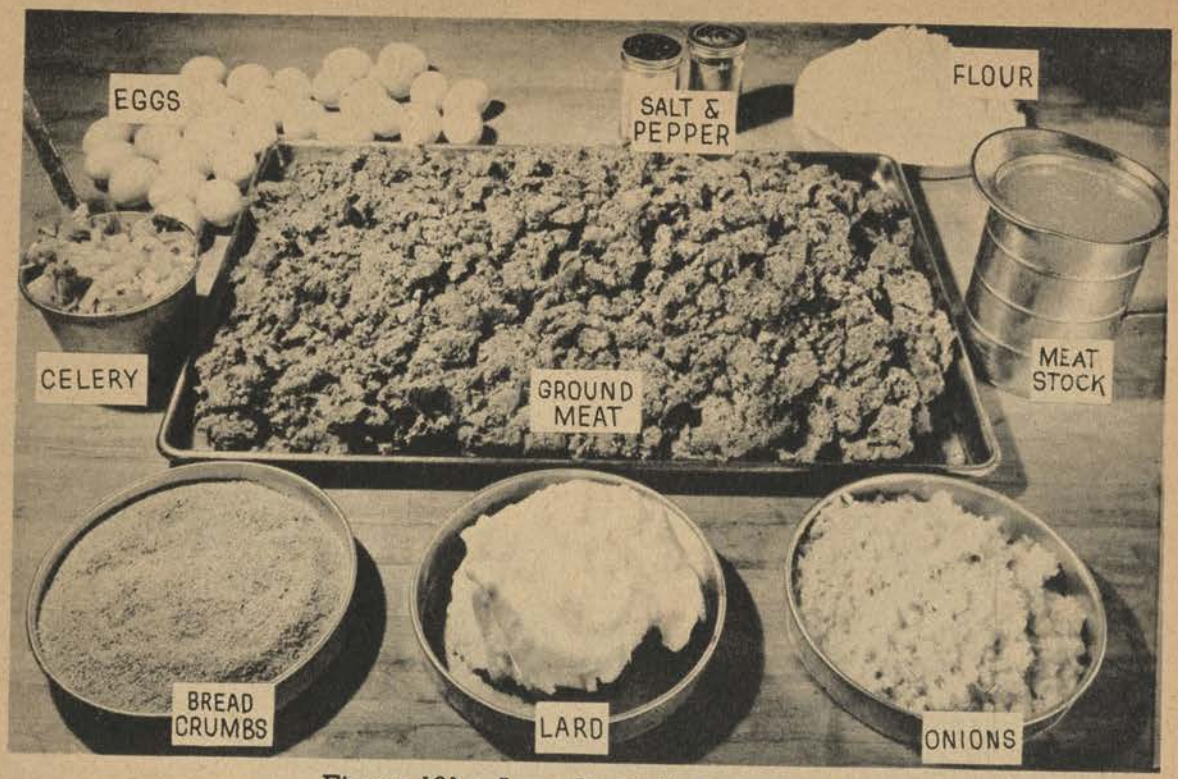


Figure 121.—Ingredients for croquettes.

pan containing the required amount of lard. Add spices, if any, at this stage. The onions should be fried until they begin to brown and become tender.

(2) *Stirring in the flour.*—Add flour gradually and stir into the fried vegetable mixture. Next add the liquid (meat stock or water) and cook the entire mass until a smooth cream-like gravy is produced.

(3) *Adding the eggs.*—Pour the stock into a large mixing bowl or dish pan and stir with a large wooden paddle until it begins to cool. Add the bread crumbs and then the eggs. Beat thoroughly to secure proper distribution.

(4) *Adding the chopped meat.*—Add the chopped meat to the stock mixture and then mix until an even distribution is

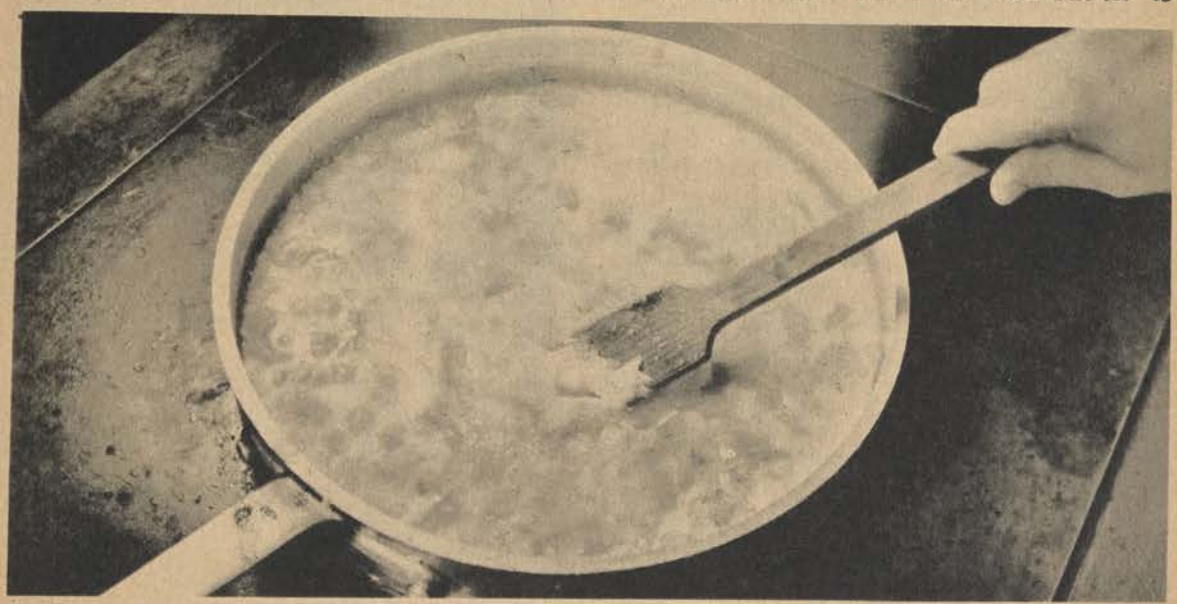


Figure 122.—Seasoning for croquettes.



Figure 123. Stirring in flour.



Figure 124. Adding eggs.



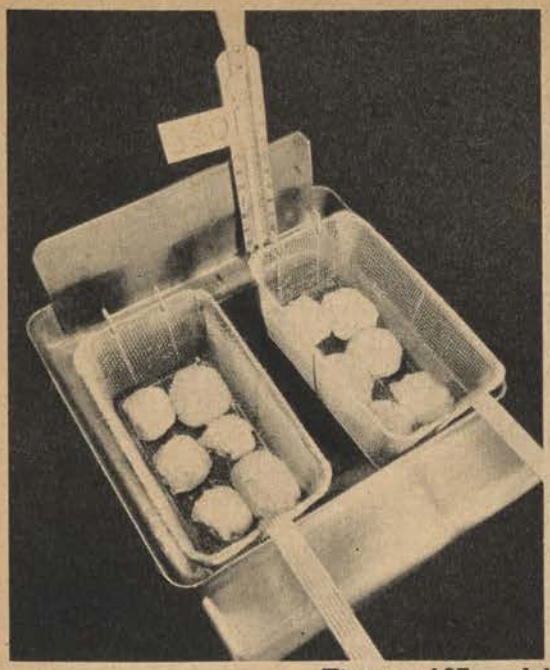
Figure 125.—Adding meat.

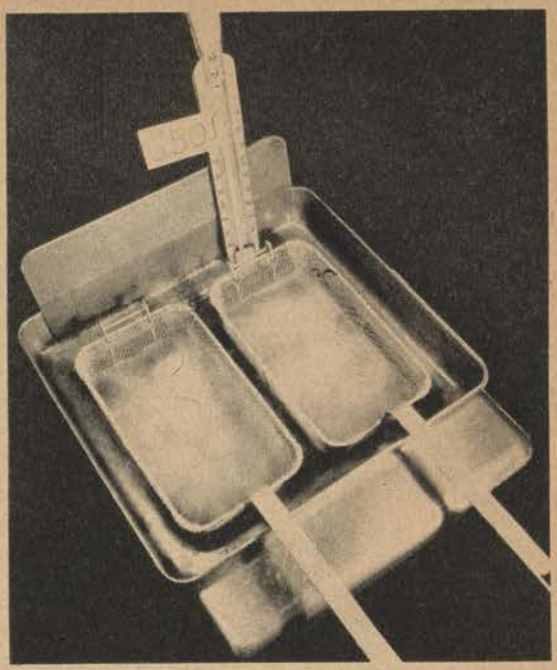
obtained. The croquette mixture is highly perishable and should be refrigerated unless it is used immediately after mixing. Never allow it to stand around the kitchen unless under refrigeration.

(5) *Forming and breading croquettes.*—Various shapes and sizes may be given to croquettes. Many chefs differentiate between different kinds by means of the shape. Fish croquettes are usually formed into flat cakes; ham and other meats into cylinders, and chicken into cones. First, form the croquette in the desired shape. Roll in flour. Dip in egg and milk mixture



Figure 126.—Forming croquettes.





Figures 127 and 128.—Frying croquettes.

made from one 14-ounce can milk, one 14-ounce can water and ten eggs. Roll in bread crumbs or corn meal.

(6) *Frying croquettes.*—Heat the deep lard to a temperature of 350° F. Shake all excess crumbs or meal from the croquettes and then place them in wire baskets for immersion in the hot lard. Lower the baskets in the lard and allow to fry until golden brown. This will require 12 to 15 minutes.

(7) *Finished croquettes.*—Golden crusted, crispy croquettes, made with properly seasoned meats or sea foods and breaded and fried in deep lard will turn left-overs into main course items.



Figure 129.—Finished croquettes.

c. Formulas.

BEEF OR VEAL CROQUETTES

(Makes about 250 croquettes—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Beef or veal (cooked and chopped fine).	25	0	16 No. 56 (qt.) dippers.	Season veal with salt and pepper. Fry onions in lard until brown and tender. Mix in the flour. Add the stock and cook for a few minutes. Cool, add the eggs and bread crumbs and mix well. Stir in chopped veal and store in refrigerator until ready for use. When mixture is cold, shape into croquette and bread as follows: Roll in flour. Dip in egg and milk mixture. Roll in crumbs. Fry in deep lard at 350° F. until brown, about 12 to 15 minutes.
Salt	0	2	3 mess spoons.	
Pepper	0	½	2 mess spoons.	
Lard	2	8	1¼ No. 56 (qt.) dippers.	
Onions (chopped fine)	5	0	3½ No. 56 (qt.) dippers.	
Flour	2	0	1¾ No. 56 (qt.) dippers.	
Meat stock	4	0	2 No. 56 (qt.) dippers.	
Eggs	3	0	30 eggs or 1½ No. 56 dippers.	
Bread crumbs	5	0	5 No. 56 (qt.) dippers.	
Mace (optional)	0	¼	½ mess spoon.	
Egg and milk mixture:				
Eggs	1	0	10 eggs or ½ No. 56 dipper.	
Milk	0	14	1 can.	
Water	0	14	1 can.	

LAMB CROQUETTES

(Makes about 250 croquettes—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Lamb (cooked and chopped fine).	25	0	16 No. 56 (qt.) dippers.	Season lamb with salt and pepper. Fry onions in lard until tender and brown. Mix in flour. Add stock and cook a few minutes. Remove from fire and cool partially. Add bread crumbs and eggs and mix thoroughly. Stir in chopped lamb and refrigerate until needed. When mixture is cold, shape into croquettes. Roll in flour. Dip in egg and milk mixture. Roll in crumbs. Fry in deep lard at 350° F. until brown, about 12 to 15 minutes.
Salt	0	2	3 mess spoons.	
Pepper	0	½	2 mess spoons.	
Lard	2	0	1 No. 56 (qt.) dipper.	
Eggs	3	0	30 eggs or 1½ No. 56 dippers.	
Onions (chopped fine)	0	12	¾ No. 56 (qt.) dipper.	
Garlic clove (optional)			1 clove.	
Flour	2	0	1¾ No. 56 (qt.) dippers.	
Lamb stock	4	0	2 No. 56 (qt.) dippers.	
Bread crumbs	5	0	5 No. 56 (qt.) dippers.	
Egg and milk dipping mixture:				
Eggs	1	0	10 eggs or ½ No. 56 dipper.	
Milk	0	14	1 can.	
Water	0	14	1 can.	

CHICKEN CROQUETTES

(Makes about 200 croquettes—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Chicken (cooked and chopped fine).	16	0	11 No. 56 (qt.) dippers.	Season chicken with salt and pepper. Fry onions in lard until tender and brown
Salt	0	2	3 mess spoons.	Mix in flour. Add stock and cook a few minutes. Remove from fire and cool partially.
Pepper	0	½	2 mess spoons.	
Butter or lard	2	0	1 No. 56 (qt.) dipper.	
Eggs	2	8	24 eggs or 1¼ No. 56 dippers.	Add bread crumbs and eggs and mix thoroughly. Refrigerate until needed.
Onions (chopped fine)	4	0	3 No. 56 (qt.) dippers.	When mixture is cold, shape into croquettes.
Flour	1	8	1 No. 56 (qt.) dipper.	
Chicken stock	4	0	2 No. 56 (qt.) dippers.	Roll in flour. Dip in egg and milk mixture. Roll in crumbs.
Bread crumbs	3	0	3 No. 56 (qt.) dippers.	
Egg and milk mixture:				Fry in deep lard at 350° F. until brown, about 12 to 15 minutes.
Eggs	1	0	10 eggs or ½ No. 56 dipper.	
Milk	0	14	1 can.	
Water	0	14	1 can.	

HAM CROQUETTES

(Makes about 200 croquettes—serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Ham (cooked and chopped fine).	25	0	16 No. 56 (qt.) dippers.	Season ham with salt and pepper. Fry onions in lard until tender and brown.
Salt	0	2	3 mess spoons.	Mix in flour. Add stock and cook a few minutes. Remove from fire and mix in eggs and bread crumbs. Add chopped ham and refrigerate until ready for use.
Pepper	0	½	2 mess spoons.	
Mace (optional)	0	¼	1 mess spoon.	
Parsley (chopped—optional).	0	2	½ cup.	When mixture is cold, shape into croquettes.
Lard	2	0	1 No. 56 (qt.) dipper.	Roll in flour. Dip in egg and milk mixture. Roll in crumbs.
Eggs	3	0	30 eggs or 1½ No. 56 dippers.	
Onions (chopped fine)	5	0	3½ No. 56 (qt.) dippers.	Fry in deep lard at 350° F., until brown, about 12 to 15 minutes.
Flour	2	0	1¾ No. 56 (qt.) dippers.	
Ham Stock	10	0	5 No. 56 (qt.) dippers.	
Bread Crumbs	5	0	5 No. 56 (qt.) dippers.	
Egg and milk mixture:				
Eggs	1	0	10 eggs or ½ No. 56 dipper.	
Milk	0	14	1 can.	
Water	0	14	1 can.	

4. *Meat, chicken and fish.*

BREADED VEAL CUTLETS

(Serves 100 men)

42 pounds boneless veal cutlets, cut about ⅜ inch thick.
Salt and pepper, to taste.
Flour.
Egg and milk dipping mixture—
20 eggs.
1 No. 56 (qt.) dipper evaporated milk.
1 No. 56 (qt.) dipper water.
Bread crumbs.

Roll cutlets in flour. Dip in egg and milk mixture. Cover with bread crumbs. Fry in deep lard at 350° F., approximately 7 to 10 minutes or until tender and golden brown.

BREADED PORK CHOPS

(Serves 100 men)

60 pounds regular pork chops or 50 pounds semi-boneless chops or 45 pounds boneless chops, cut about ⅜ inch thick.
Salt and pepper, to taste.
Flour.
Egg and milk dipping mixture—
20 Eggs.
1 No. 56 (qt.) dipper evaporated milk.
1 No. 56 (qt.) dipper water.
Bread crumbs.



Figure 130.—Chicken croquettes.



Figure 131.—Ham croquettes.



Figure 132.—Lamb croquettes.



Figure 133.—Breaded veal cutlets.

Roll chops in flour. Dip in egg and milk mixture. Cover with bread crumbs. Fry in deep lard at 350° F., for approximately 7 to 10 minutes, or until tender. Cook to a golden brown. Pork tenderloin or pork cutlets may be fried by the same method.



Figure 134.—Breaded pork chops.



Figure 135.—Fried chicken.

DEEP-FAT FRIED CHICKEN

(Serves 100 men)

50 chickens, weighing about 2 pounds each.
Salt and pepper, to taste.
Flour.
Egg and milk dipping mixture—
  20 eggs.
  1 No. 56 (qt.) dipper evaporated milk.
  1 No. 56 (qt.) dipper water.
Bread crumbs.

Disjoint and wash chicken. Salt and pepper well. Roll in flour. Dip in egg and milk mixture. Cover with bread crumbs. Fry in deep lard starting at 350° F., and allowing temperature to drop to 325° F. Fry for 15 to 20 minutes.

Note: Unless very small, young chickens are used, it is best to precook by simmering in water until tender.



Figure 136.—Fried oysters.



Figure 137.—Fried scallops.

DEEP-FAT FRIED OYSTERS
(Serves 100 men)

4 gallons large oysters
Salt and pepper, to taste
Flour
Dipping mixture
  16 eggs
  1 No. 56 (qt.) dipper oyster liquid
Bread crumbs or corn meal

Drain oysters and season. Roll in flour. Dip in egg mixture. Cover with bread crumbs or corn meal. Fry in deep lard at 360° F. for approximately 3 minutes, or until golden brown. Do not fry too slowly or too long.

DEEP-FAT FRIED SCALLOPS
(Serves 100 men)

4 gallons scallops
Salt and pepper, to taste
Flour
Egg and milk dipping mixture—
  10 eggs
  1/2 No. 56 (qt.) dipper evaporated milk
  1/2 No. 56 (qt.) dipper water
Bread crumbs

Wash and drain scallops. Season. Roll in flour. Dip in egg and milk mixture. Roll in bread crumbs. Fry in deep lard at 350° F., for approximately 4 minutes or until golden brown.



Figure 138.—Fried fish.

DEEP-FAT FRIED FISH FILLETS
(Serves 100 men)

35 pounds fish fillets
Salt and pepper, to taste
Flour
Egg and milk dipping mixture—
10 eggs
1/2 No. 56 (qt.) dipper evaporated milk
1/2 No. 56 (qt.) dipper water
Bread crumbs or corn meal

Cut fillets into portions of desired size. Season. Roll in flour. Dip in egg and milk mixture. Cover with bread crumbs or cornmeal. Fry in deep lard at 350° F., about 7 to 10 minutes or until golden brown. Small, whole fish may be fried by the same method. Both the frying temperature and the time are variable, according to thickness of fish.



Figure 139.—Banana fritters.

5. Fritters.

BASIC FRITTER BATTER
(For dipping fritters, French toast, etc.)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Flour	4	0	3 1/4 No. 56 (qt.) dippers.	Beat the eggs thoroughly with the sugar, milk, water, salt and baking powder. Stir in the flour and mix until smooth.
Sugar	1	0	1/2 No. 56 (qt.) dipper.	
Eggs	2	0	20 eggs or 1 No. 56 dipper.	
Milk (1/2 evaporated milk and 1/2 water).	4	0	2 No. 56 (qt.) dippers.	
Baking powder	0	1	2 mess spoons.	
Salt	0	1/2	1 mess spoon.	

BEEF, HAM, LAMB OR VEAL FRITTERS
(Serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Meat (cooked and chopped fine).	20	0	14 No. 56 (qt.) dippers.	Brown onions and peppers in the lard. Add the milk and flour and cook to a creamy consistency. Cool partially, then beat in the eggs, a few at a time. Add the chopped ham, salt and pepper. Divide into balls the size of an English walnut. Fry in deep lard at 360° F., until golden brown.
Lard	1	0	1/2 No. 56 (qt.) dipper.	
Eggs	6	0	60 eggs or 3 No. 56 dippers.	
Flour	3	0	2 1/2 No. 56 (qt.) dippers.	
Onions (chopped)	2	12	2 No. 56 (qt.) dippers.	
Green Peppers (chopped fine).	2	12	2 No. 56 (qt.) dippers.	
Milk (1/2 evaporated milk and 1/2 water).	4	0	2 No. 56 (qt.) dippers.	
Salt			To taste.	
Pepper			To taste.	

BANANA FRITTERS
(Serves 100 men)

100 bananas
Basic fritter batter

Split bananas in half, lengthwise, and dip each piece in the basic fritter batter. Fry in deep lard at 360° F., until nicely browned.

PINEAPPLE FRITTERS
(Serves 100 men)

3 No. 10 cans sliced pineapple
Basic fritter batter

Drain pineapple slices and dry on a clean cloth. Dip in basic fritter batter and fry in deep lard at 360° F., until nicely browned.



Figure 140.—Pineapple fritters.

FRENCH TOAST

(Serves 100 men)

20 loaves bread, two days old
Egg and milk dipping mixtures—
20 eggs
1 No. 56 (qt.) dipper evaporated milk
1 No. 56 (qt.) dipper water

Slice cut bread into $\frac{3}{8}$-inch slices. Dip into egg and milk mixture just long enough to wet the slices. Drain off excess milk then drop slices into deep hot lard (340° to 350° F.) and fry until bread becomes brown. Raisin bread also may be used. French toast is also made by frying the bread in an open pan containing melted lard about $\frac{1}{4}$ inch deep, turning the bread slices to brown both sides. This is much slower than the deep-fat frying method. Serve the French toast with maple or corn syrup, or with butter.



Figure 141.—French toast.

6. *Cake doughnuts.*

CAKE DOUGHNUTS

(*Makes about 300 doughnuts—serves 100 men*)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Step 1:				
Sugar (granulated)	5	8	2¾ No. 56 (qt.) dippers.	Mix thoroughly.
Lard	1	8	¾ No. 56 (qt.) dipper	
Salt	0	2	3 mess spoons	
Step 2: Eggs	4	0	40 eggs or 2 No. 56 dippers.	Add to above and mix until smooth.
Step 3:				
Evaporated milk	1	12	2 cans	Blend and add to above.
Water	2	0	1 No. 56 (qt.) dipper	
Step 4:				
Flour	14	0	11 No. 56 (qt.) dippers	Blend well or sift 3 times and add to above, mixing until smooth. Cut out with a doughnut cutter after rolling to ½-inch thickness. Fry at 360° F., for 3 to 4 minutes.
Baking powder	0	14	½ No. 56 (qt.) dipper	

a. Richness.—A rich dough will soak more fat than a leaner dough. Unless the cook is careful in weights and measures, fat absorption will vary from batch to batch. It is recommended, therefore, that extreme care be taken when measuring ingredients. Small variations in sugar content will appreciably affect the fat absorption.

b. Dough temperature.—If dough temperature is too warm, the product will be tough and knotty and not symmetrical. It is recommended that cool water be used in mixing dough.

c. Frying temperature.—Fat absorption is affected by the frying temperature. A low frying temperature will mean a slow cook and a grease-soaked doughnut. A high frying temperature will brown the crust too fast and will cause cracks on the surface. A temperature of 360–370° F., is recommended. This should be carefully controlled.

d. Sugaring the finished doughnut.—If coating with sugar, the doughnut should be cooled first. If coated while warm, the sugar will melt into the doughnut.

e. Flavor of doughnut.—Since absorbed frying fat represents nearly 20 percent of the weight of the finished doughnut, it is essential that the frying fat have a desirable flavor.

f. Toughness of doughnut.—Toughness may be caused by variations in flour strength. This may be overcome by increasing slightly, the amounts of either sugar or lard in formula. If doughnut is too tender and thereby becomes grease-soaked, reduce the sugar or fat slightly.

7. *Fried potatoes and other vegetables.*—There are several products obtained by cooking potatoes in deep fat. The essential difference between them is the way in which they are cut for frying. These include French-fried, Long Branch and Julienne potatoes, and potato chips. French-fried potatoes are cut the long way of the potatoes into strips about ⅜- to ½-inch square. Long Branch potatoes are cut in strips about ¼-inch, and Julienne about ⅛-inch, thick. Potato chips are cut into thin even slices.

For best results select uniform No. 1 potatoes. Always keep potatoes at room temperature for several days before frying. Potatoes which are taken directly from cold storage will be dark brown, soggy, and sometimes bitter when cooked.

FRENCH-FRIED POTATOES

(*Serves 100 men*)

Peel and cut 40 pounds potatoes. Wash and soak the potatoes in cold water for 2 or 3 hours. This will remove surface starch and prevent the pieces sticking together.

a. One-stage method: Drain well and



Figure 142.—French-fried potatoes.

dry between clean cloths. Place the potatoes in a wire basket and lower into the deep-fat fryer. Have the lard heated to 350° F. at the start of the frying process. The temperature of the lard will be about 320° F., immediately after putting in the potatoes. Fry until a golden brown and tender, about 10 minutes.

b. Two-stage method: A second method of preparing French-fried potatoes is known as the two-stage method, and can be used to advantage if two deep-fat fryers are available. The first step is called blanching, the potatoes being partially cooked at a low temperature of 300°–320° F. In the second step, the blanched potatoes are immersed in deep lard at a temperature of 370° F., just long enough to brown.

The one-stage method is recommended. The two-stage method is convenient for short-order preparation, because the potatoes can be blanched ahead of time.

POTATO CHIPS
(Serves 100 men)

Wash, peel, and slice 25 pounds potatoes into thin even slices. Place in cold water, stir, drain, and dry as well as possible. Place in a wire basket. Fry at 340° F. Stir well during frying to insure an even colored chip. When fried allow the potatoes to drain thoroughly and add salt to taste.



Figure 143.—Potato chips.



Figure 144.—French-fried onions.



Figure 145.—French-fried carrots.



Figure 146.—French-fried tomatoes.



Figure 147.—French-fried eggplant.

FRENCH-FRIED ONIONS
(Serves 100 men)

25 pounds Bermuda onions
5 No. 56 (qt.) dippers milk (½ evaporated milk, ½ water)
2 No. 56 (qt.) dippers flour
Salt and pepper, to taste

Peel onions. Cut into slices and separate slices into rings. Soak rings in milk and then roll them in seasoned flour. Shake off excess flour. Fry in deep lard at 360° F., until golden brown.

FRENCH-FRIED CARROTS
(Serves 100 men)

40 pounds carrots
2 No. 56 (qt.) dippers flour
Egg and milk dipping mixture—
10 eggs
½ No. 56 (qt.) dipper milk
½ No. 56 (qt.) dipper water
Salt and pepper, to taste
Bread crumbs

Clean carrots and boil in salted water until tender. Cool quickly in cold water and drain well. Roll in flour. Dip in egg and milk mixture. Roll in bread crumbs. Fry in deep lard at 350° F., until golden brown.

FRENCH-FRIED TOMATOES
(Serves 100 men)

40 pounds medium size tomatoes
Salt and pepper, to taste
2 No. 56 (qt.) dippers flour
Egg and milk dipping mixture—
10 eggs
½ No. 56 (qt.) dipper milk
½ No. 56 (qt.) dipper water
Bread crumbs

Cut tomatoes in thick slices. Season. Cover carefully with flour. Dip in egg and milk mixture. Cover with bread crumbs. Fry in deep lard at 360° F., for approximately 2 minutes, or until golden brown. Do not overcook.

FRENCH-FRIED EGGPLANT

25 pounds eggplant
30 eggs
2½ No. 56 (qt.) dippers milk (½ evaporated milk and ½ water)
4 No. 56 (qt.) dippers flour
Salt and pepper, to taste

Peel eggplant. Cut into slices. Dip into batter made with eggs, milk, flour, and seasoning. Fry in deep lard at 350° F., until tender and golden brown.

TABLE OF TIMES AND TEMPERATURES FOR DEEP-FAT FRYING

Product	Temperature	Time
	Degrees F.	*Minutes*
Croquettes	350	12–15
Breaded cutlets and chops	350	7–10
Chicken (small, raw and disjointed)	325	20–25
Chicken (precooked or steamed)	350	7–10
Chicken (in batter, precooked)	365–375	7–10
Oysters	360–375	3
Scallops	360–375	4
Fish fillets	350–370	5–7
Perch and smelts	365–375	5–7
Fritters	365–375	4–5
French toast	350–360	2–3
French-fried potatoes (one operation)	350	10–12
French-fried potatoes (two operations)	Blanch at 320	10–12
	Finish at 360	1
Julienne potatoes	325–335	4–8
Potato chips	325–350	5–6
Breaded vegetables	350	4–6
Doughnuts	360	3–5

8. *Pan frying and braising.*—*a.* Pan frying differs from deep-fat frying in that smaller quantities of fat and lower temperatures are used. Pan frying is used to cook thinly sliced beefsteaks, vealsteaks and chops, pork chops, liver, and chicken. The procedure is to brown the meat quickly in lard and then reduce the temperature and continue to cook in an uncovered pan until done. Certain vegetables also are cooked by pan frying.

b. Braising means to brown meat in a small amount of lard, then cook slowly in a small amount of liquid. The liquid may be the meat juices, meat stock, milk, or water. It should be remembered that braising usually is a slow process requiring long cooking time for best results. Attempts to rush the process will result in failure.

BEEF POT-ROAST
(Serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Boneless beef	42	0		Season beef with salt and pepper, and sear in a deep iron pan, using lard to brown. When well browned on all sides, cover the pan, after adding the stock or water. Braise in 350° F., oven for approximately 3 hours. Keep pan covered. During the last hour of cooking, add all of the chopped vegetables.
Lard	4	0	2 No. 56 (qt.) dippers	
Onions (chopped)	5	0	3½ No. 56 (qt.) dippers.	
Celery (chopped)	3	0	3 No. 56 (qt.) dippers	
Carrots (canned)			1 No. 10 can	
Salt			To taste	
Pepper			To taste	
Beef stock (or water)	8	0	4 No. 56 (qt.) dippers	

BRAISED KIDNEYS
(Serves 100 men)

Ingredients	Weight		Approximate volume	Method
	Pounds	Ounces		
Beef or pork kidneys	40	0		Slice kidneys and wash in cold water, then dry well, season and brown in lard. When brown, add a small amount of water, cover and simmer until tender. Add the Worcestershire sauce. Peel and cut onions into slices, brown in lard and then add to the kidneys.
Onions	5	0	3½ No. 56 (qt.) dippers.	
Lard	4	0	2 No. 56 (qt.) dippers	
Salt			To taste	
Pepper			To taste	
Worcestershire sauce (optional).			1 bottle	

BRAISED BEEF, LAMB OR PORK LIVER
(Serves 100 men)

35 pounds beef liver
2 No. 56 (qt.) dippers lard
3 No. 56 (qt.) dippers flour
Salt and pepper, to taste

Cut liver into ⅜-inch slices. Season with salt and pepper. Dip in flour and brown in lard, using bake pan on top of range. Reduce the temperature, add small amount of water and cover the pan and cook until tender, about 20 minutes.

FRIED ONIONS
(Serves 100 men)

50 pounds onions
Salt, to taste
2 No. 56 (qt.) dippers lard

Peel and slice onions. Season to taste with salt and pepper. Fry in lard until tender and nicely browned. Use pan or griddle. Stir occasionally while frying.

LYONNAISE POTATOES
(Serves 100 men)

40 pounds potatoes
6 No. 56 (qt.) dippers onions (chopped)
Salt and pepper, to taste
2 No. 56 (qt.) dippers lard

Boil potatoes in jackets. Cool, peel, and slice crosswise. Wash and slice the onions and add to the potatoes. Season with salt and pepper. Spread in a layer 2 inches deep in bottom of a well-greased baking pan. Cook for 15 minutes in a quick oven (400°-450° F.). Green peppers may be added, if they are available.

HASHED BROWN POTATOES
(Serves 100 men)

40 pounds potatoes
Salt and pepper, to taste
2 No. 56 (qt.) dippers lard

Boil potatoes in jackets. Cool, peel, and chop into small dice. Season with salt and pepper to taste. Fry in lard until nicely browned. These may be fried on top of range or in broiling oven.

HOME FRIED POTATOES
(Serves 100 men)

40 pounds potatoes
Salt and pepper, to taste
2 No. 56 (qt.) dippers lard

Boil potatoes in the jackets. Cool, peel, and slice crosswise. Season with salt and pepper to taste. Fry on top of range until nicely browned.

APPENDIX II

TABLE OF WEIGHTS AND MEASURES

Expressed in Terms of No. 56 or Quart Dipper and Mess Kit Spoon
(Approximately 64 Mess Spoons Equal One No. 56 Dipper)

Ingredients	Average weight per No. 56 (qt.) dipper		Average weight per mess spoon
	Pounds	Ounces	Ounces
Almonds (blanched)	1	7	
Apples (solid pack)	1	15	
Baking powder	1	14	1/2
Baking soda			1/2
Bread crumbs (dry, ground)	1		
Broken bread (dry)		5 1/4	
Broken bread (untoasted)		5	
Butter (solid packed)	2		
Cake batter	2	4	
Cake flour (not sifted)	1	4	1/4
Celery (chopped)	1		
Cherries (canned)	2	4	
Cherry pie filling	2	8	
Cinnamon (ground)			1/4
Cocoa		14 1/2	1/4
Cocoanut (shredded)		14	
Corn meal	1	6	
Cornstarch	1	4	1/3
Cream of tartar			1/3
Dates (pitted)	1	8	
Egg whites	2	2	
Egg yolks	2	4	
Eggs, whole (approximately 10 per pound)	2	2	
Eggs, whole (dried)		14	1/4
Egg yolk (dried)		12	1/4
Extracts	2	2	1/2
Flour (not sifted)	1	4	
Meat (cooked, chopped)	1	8	
Meat (ground raw)	2		
Milk (evaporated)	2	4	
Milk (1/2 evaporated milk and 1/2 water)	2	4	
Milk (dried, skimmed)	1	6	
Molasses	3		
Nutmeg			1/4
Oatmeal		12	
Onions (chopped)	1	6	
Pecans (chopped)	1		
Pepper			1/4
Raisins (dry, seedless)	1	8	
Rice (uncooked)	2		
Rice (cooked)	1	12	
Salad oil	2		1/2
Salt			5/8
Shortening (hydrogenated)	1	14	
Shortening (lard, solid packed)	1	14	1/2
Sugar, brown (lightly packed)	1	12	
Sugar (granulated)	2		1/2
Sugar (powdered)	1	6	
Syrup	2	12	2/3
Water	2	2	1/2

Under certain conditions it is more expedient to furnish dried whole eggs to the Army cook instead of the customary fresh shell eggs. This product is prepared from the finest quality shell eggs and represents the solid portion of the egg, with only the shell and water removed.

One hundred pounds of liquid shell eggs after removal from the shell would consist of 26 to 27 pounds of egg solids and 73 to 74 pounds of water. This water is removed when the eggs are dried.

When substituting dried whole eggs for liquid whole eggs, the Army cook should

bear in mind that it is necessary to replace the water which has been removed from the egg solids. Dried eggs should be reconstituted with water (dissolved in water) in exactly the same proportion of solids to water as was the original content. It is recommended that a solution of the dried eggs and water be made a few minutes prior to the use of the product. The dried eggs should never be reconstituted several hours before their intended use, because the dried product will begin to spoil after it has been dissolved in water in exactly the same manner that a fresh egg will begin to spoil after it has been removed from the shell.

Formula for Preparing One Dipper of Whole Eggs from Dried Whole Eggs: If scales are available, weigh 9½ ounces dried whole eggs into a container. Add 24½ ounces of water and stir until smooth. If scales are not available, measure ⅔ No. 56 (qt.) dipper dried whole eggs and ¾ No. 56 dipper water. Stir until smooth.

Use cold water for dissolving dried whole eggs. Hot water will ruin them.

Do not allow the dissolved whole eggs to stand longer than 30 minutes before use.

The dried egg powder varies in density. If packed tightly in a measuring cup, different results will be obtained than when the product is packed loosely. For this reason the use of scales is recommended, whenever available. If scales are not available, the product should be packed loosely in a cup.

INDEX

	Paragraph	Page
Baked pie shell	36	52
Banana fritters	App. I	100
Beef:		
Braised	App. I	107
Pot-roast	App. I	107
Beef fritters	App. I	100
Braising	App. I	106
Bread:		
Army bread-making	3	3
Biscuit	12, 26	14, 37
Butterfly roll	19	27
Corn bread	27	40
Hot rolls	5, 12	5
Rye	4	4
White	4	3
Whole wheat	4	3
Buns, sandwich	9	9
Cake:		
Devil's food cake	42	64
Factors which cause a cake to rise	41	64
Faults and remedies	44	71
Fruit	43	70
Functions of ingredients	40	63
Ginger bread	43	70
Formulas:		
Bread:		
Baking powder biscuit	26	38
Corn bread	27	40
Hot rolls	6–12	5
Rye	4	4
White	4	3
Whole wheat	4	3
Butter-cinnamon topping	23	35
Cakes:		
Devil's food	42	64
Fruit	43	70
White layer	43	69
Yellow layer	43	69
Chicken, fried	App. I	98
Croquettes:		
Beef or veal	App. I	94
Chicken	App. I	95
Ham	App. I	95
Lamb	App. I	94
Ginger bread	43	70
Griddle cakes	29	42
Icings:		
Cocoa	45	74
Cocoa fudge	45	75
Syrup	45	74, 75
White	45	74
White fudge	45	74
White layer	43	69
Yellow layer	43	69
Carrot, French-fried	App. I	106
Cinnamon roll	17	23
Cobbler	38	60
Coffee cake:		
Butter cinnamon	23	34
Fruit	20	28
Old-fashioned	22	33
Streussel	21	29
Cookies:		
Faults and remedies	51	86
Fruit bars	49	82
General	46	77
Ingredients	47	77
Molasses	48	78
Oatmeal	50	85
Pecan	50	86
Raisin drop	50	85
Corn bread	27	40
Croquettes	App. I	89
Deep-fat frying	App. I	87
Doughnuts	24, App. I	35, 102
Eggplant, French-fried	App. I	106
Fermentation	3	3
Finger rolls	11	13
Fish fillet, fried	App. I	100
Meringue	36	54
Muffins	28	41
Oysters, fried	App. I	99
Pie crust	32, 34, 35	46, 47, 50
Pie dough	32, 33	46
Pie filling:		
Apple	37	58
Apricot	37	57
Cherry	37	57
Cocoa cream	37	60
Cream	38	61
Custard	37	59
Lemon	37	59
Mincemeat	37	56
Peach	37	56
Pineapple	37	56
Pumpkin	37	58
Raisin	37	57
Scallops, fried	App. I	99
Streussel topping	21	31
French-fried potatoes	App. I	102
French toast	App. I	101
Fried food (*see also* various names)	App. I	87
Fritters	App. I	100
General	1, 2	1
Ginger bread	43	70
Griddle cakes	29	42

	Paragraph	Page
Ham fritters	App. I	100
Hot rolls	5–12	5
Icing:		
Cakes	45	73
Cinnamon rolls	17	26
Icings:		
Formulas. (*See* Formulas.)		
Kidney, braised	App. I	107
Lamb fritters	App. I	100
Lard, uses	2	1
Liver, lamb or pork	App. I	107
Meat, chicken, and fish	App. I	95
Meringue	36	54
Muffins	28	41
Onions:		
French-fried	App. I	106
Fried	App. I	107
Pan frying	App. I	87
Parker House rolls	8	7
Pie baking	31	45
Pie crust	32, 39	46, 61
Pie faults and remedies	39	61
Pie filling. (*See* Formulas.)		
Pineapple fritters	App. I	100
Pork chops, breaded	App. I	95
Potatoe chips	App. I	103
Potatoes:		
French-fried	App. I	102
Hashed brown	App. I	107
Home fried	App. I	107
Lyonnaise	App. I	107
Rolls (*see also* Formulas):		
Butterfly	19	27
Cinnamon	17	23
Finger	11	13
Parker House	8	7
Plain	10	10
Storage, lard	2	1
Sugared snails	18	27
Sweet rolls	13–16	17
Table of weights and measures	App. II	109
Temperature, control in pie baking	31	45
Timetable, hot rolls	5	5
Tomatoes, French-fried	App. I	106
Veal cutlets, breaded	App. I	95
Veal fritters	App. I	100

[A. G. 300.7 (27 May 43).]

By order of the Secretary of War:

G. C. MARSHALL,
Chief of Staff.

Official:

J. A. ULIO,
Major General,
The Adjutant General.

Distribution:

R and L (3); IC 10 (20).

(For explanation of symbols see FM 21–6.)

U. S. GOVERNMENT PRINTING OFFICE: 1943

NTSU LIBRARY

UNT LIBRARIES DENTON TX 76203
1001899181