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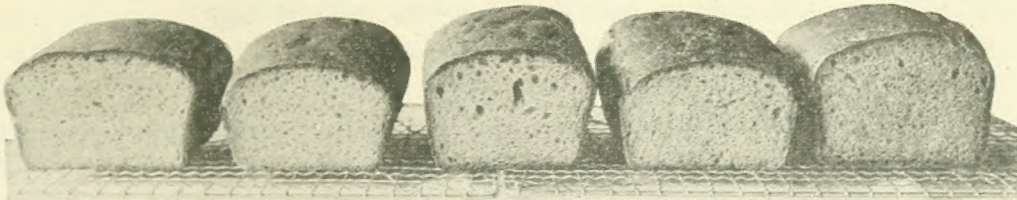
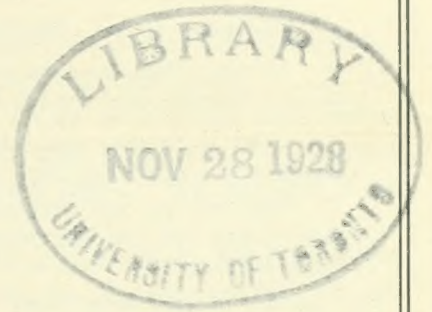
EXTENSION BULLETIN

SAVING WHEAT

BY

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Cornmeal breads made by five different methods

THE OHIO STATE UNIVERSITY, COLUMBUS, OHIO
AGRICULTURAL COLLEGE EXTENSION SERVICE

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FOREWORD

ON GUARD!

"Women of America, your country is at war against the world's mightiest military power!

"We entered it when all the nations holding Germany at bay were throwing in their man-power and money-power, spending their millions to end this war by winning it. And still Germany was not defeated.

"We entered it when, with their farm folks in the trenches, the fields of our Allies were being plowed and sown by the WOMEN. But there were not enough, tho they worked from dawn till dark.

"Those crops have been pitifully small. The usual outside sources of supply have been cut off, and our Allies must depend on us. The women will work and the soldiers will fight to the death, but against hunger they are helpless.

"Germany knows. She has said that if she can only starve England she will win.

"If our Allies have to yield to Germany because of hunger, America alone will have to shoulder the burden of winning the WORLD WAR.

"And so to save our Allies and their liberty and our own, we have pledged our youth, our wealth, our all.

"But we are not prepared to throw millions of soldiers into the field at once. Our money can not buy bread and meat in Europe for our Allies. There is little there to buy.

"We MUST give them food—REAL FOOD! They need wheat, meat, canned foods, fats. And tho thousands of tons of it will be sunk by submarines, still we must ship, ship, ship, until we have saved democracy with food.

"But how can we do this and feed ourselves when we must send our Allies 220,000,000 bushels of wheat this year, instead of the usual 88,000,000 bushels; when we are already sending them three times as much meat as we have sent them before? Moreover, cornmeal, of which we have more than enough, can't readily be shipped to Europe now because it spoils.

"Women of America, even as the women of France are guarding the fields day and night, your country calls to you to stand guard over the world's commissary. That commissary is the food supply of America. There is enough in it if **you** will guard it.

"Your task in this war is to guard food for the soldiers and home workers of our Allies. They are fighting for **YOU!**

"You can release shiploads of wheat for these fighters and workers by using less wheat flour in your homes and by using more cornmeal, by wasting not a crust or crumb of wheat bread.

"By eating less beef, mutton, and pork, and by eating more fresh and preserved or dried vegetables and fish, our supply of meat animals will do for us and our Allies.

"Likewise you are needed to stand guard and see that there is no waste in the world's supply of fats, sugar and milk in your homes. They are becoming scarcer. As they do, then we ourselves and our brothers on the firing lines and our sisters in the fields and munition factories will suffer.

"Three times a day—at each meal—think of America's glorious privilege: to feed the world while it fights its way to freedom. Then remember that you are standing guard, that the opportunity to win this war for humanity is yours."

—United States Food Administration.

SAVING WHEAT

The object of this bulletin is to suggest ways in which wheat flour may be conserved for our Allies and our soldiers by bringing into use the less well known flours and meals of other cereals.

Because so many of the world's producers are engaged in non-productive labor at this time, we are faced with a world shortage of wheat and other food products. It becomes necessary, therefore, for those who remain at home to make a greater and better utilization of all food supplies in order that the soldiers abroad may be fed on the kind of foods that are adapted to a soldier's life where he is. An army ill fed can not fight. We are sending thousands of our men across the ocean to fight for us, and those who remain at home must help to supply them with food. Truly a new and a large task is before us—a task in which the cooperation of every man and woman in America is asked.

The most necessary foods for our soldiers and our Allies are wheats, meats, sweets, and fats. Owing to the limitation of shipping we must confine our exports to these most concentrated foodstuffs. The foods which are not suited to transportation can well be consumed at home. In this way, we, who remain at home, can help and can fight by helping the fighter fight. We can serve by saving.

The question is often asked, why not ship other grains than wheat? For some time the wheat loaf has been the basis of life in Europe, with the exception of Italy. In addition to this reason for shipping wheat, we must send foods which our Allies and our soldiers can prepare and use with the greatest ease. Most of the bread is baked by bakers, and cornmeal is not adapted to loaf bread. Besides, we all know that cold corn bread is not palatable. The soldier must have good palatable food. France is also confronted with a fuel shortage, and must use those foods which require the least fuel in preparation. Since wheat is the only grain used by the French to any great extent, it is too much at this time to ask them to take up the additional burden which the use of new foods would necessarily involve. This is the task of the women and men of America. They must assume the burden of learning the method of preparation and use of rye, barley, cornmeal, oats, buckwheat, and soybean meal. They must make of these products good and appetizing dishes. "A difficult task," you say? "Yes, so is marching in France, so is dying in the trenches, so is living amid the unspeakable sights and sounds in the hospital."

It is not too much, then, to expect that we shall do our "best" to send wheat to our soldiers and to our Allies. Food will win the war.

Let us set for ourselves, therefore, the task of learning the preparation and use of other cereals than wheat. Just as we have had to learn that not everybody can have porterhouse or tenderloin steak all the time because there is not enough to go 'round, so now we must learn that not everybody can have wheat flour all the time for exactly the same reason. There is not enough to go 'round. And just as it was necessary to learn how to cook the tougher cuts of meat in order to make them palatable and appetizing, so it is now necessary to learn the preparation of the less well known cereals. The reason we do not like the products made of barley, cornmeal, oats, and buckwheat is due, largely,

to the fact that we do not know how to prepare them well. It requires greater skill and more careful manipulation to make a good product of these grains than it does from wheat, consequently, they have not come into such general use as has wheat. For this reason it is plain that a knowledge of the materials and practices employed in the making of a white loaf is quite necessary to the successful use of the grains suggested as substitutes. If the housewife does not understand the methods and practices for the making of a good loaf from wheat flour, it can hardly be expected that she will be able to secure a desirable loaf from the other cereal grains without practice.

We have now indicated briefly the situation of our wheat supply and the difficulties that are likely to arise in the use of these less well known cereals. It remains to give some information regarding the materials and the processes employed in the making of bread from the various grains produced in this country.

MATERIALS USED IN BREAD MAKING

The materials used to produce a loaf of bread are few. Some knowledge and understanding of the materials and processes employed in bread making is necessary in order to secure satisfactory results.

The essential ingredients for making a light loaf are **flour**, **yeast**, and **liquid**. Salt, sugar and fat are added mainly to improve the flavor.

FLOUR

The flour best adapted for bread making is that made from wheat. It has come into quite universal use because of its fine flavor and because of the ease with which a leavened loaf may be made from it.

Different varieties of wheat yield flours having different qualities. The two types of flour on the market are "hard" wheat flour and "soft" wheat flour. The value of a flour for baking bread depends on the amount and character of gluten, a tenacious and elastic substance which develops in the dough. Hard wheat yields a flour that has a granular feel, and, in general, a larger proportion of gluten than soft wheat. Advantage is taken of this difference by mixing hard and soft wheat flours in such proportions as will give a dough that is rich in gluten. A large part of the flour on the market consists of a blend of hard and soft wheat. Hard wheat flour, however, is more highly esteemed for bread making, altho a good bread can be made from the blended flours.

In addition to the various grades of white flour manufactured from wheat, are the products known as entire wheat, graham flour, bran, and the breakfast cereals.

Entire Wheat.—The flour of entire wheat is not made by grinding the whole wheat grain as its name might indicate. A part of the bran coats are removed before grinding. It is a bolted flour. An excellent loaf may be made of entire wheat flour without the addition of white flour.

Graham.—Graham flour is made by grinding or crushing the whole wheat grain. The bran is not removed. The product is coarse and unbolted. A yeast loaf is more satisfactory if some white flour or entire wheat flour is added.

Bran.—Bran consists of the outer covering of the wheat grain. A light loaf can not be made of it, since it is deficient in gluten. Its value in bread making is due chiefly to the bulk which it furnishes the system. If white

flour is added, the mixture is called graham flour. It is better to buy graham flour as such than to mix bran and white flour in the home.

Turning now to the less well known grains, a list of excellent bread flours and meals appears among them. Both quick breads and fermented (yeast) breads can be made from any of these cereals. A larger proportion of the flours from these cereals can be used in quick breads than is possible in fermented breads.

Rye.—Rye contains less gluten than wheat, and the nature of the gluten differs from that of wheat. As a result of this, the bread made from rye is apt to be rather moist and dense. For this reason, it is advisable to use one-third rye and two-thirds white flour or entire wheat flour when making the yeast loaf.

Barley.—Barley is comparatively poor in gluten, but it is fairly easily leavened. As human food it appears in this country chiefly in the form of "pearled" barley, used mainly in soups, and "patent barley flour" for infant feeding. A large number of mills are now manufacturing barley flour and it is rapidly coming into the market. It makes very satisfactory yeast and quick breads, pastry, dark cakes, doughnuts, fritters, griddle cakes, and waffles. It may also be used for thickening gravy and soups, and for breading chops and cutlets.

When mixed with one-third to one-half its weight of wheat flour a good, light loaf results. Quick breads may be made of a much larger proportion of barley, or of entire barley flour.

Oats.—Rolled oats and oatmeal are the chief products manufactured from this grain for human food. Mixtures of oatmeal and wheat flour make perhaps the least desirable loaf of any of the combinations in use. An unleavened bread known as oat cake is used in Scotland.

Buckwheat.—Buckwheat is not strictly a cereal, since the plant which bears it does not belong to the true grasses. From this grain is manufactured buckwheat flour, which is more popular as a food in the United States than elsewhere. It is used chiefly for pancakes, tho when mixed with white flour it makes a satisfactory loaf of yeast bread. It is not generally known that very satisfactory muffins and other quick breads can be made from buckwheat flour.

Corn.—From this grain is manufactured various food products which form staple articles of diet thruout the United States. Cornmeal is prepared by grinding the grain after the removal of the germ and husk. A corn flour is now manufactured to some extent. There is little difference except in flavor between the meal obtained from yellow corn and that from white corn. Owing to the absence of gluten, cornmeal can not be used alone to make the ordinary yeast bread, but it is often made into quick breads such as cornmeal gems, Johnny-cake, corn pone, etc. It is not an unusual practice to mix white flours with the meal when making these quick breads, but this is not necessary, since the bread may be held together by the use of egg and milk.

An appetizing and tasty yeast loaf can be made by using 20 percent of cornmeal. In view of the approaching scarcity of wheat, a greater use of cornmeal should be made.

Soybean Flour.—Soybean flour, or meal, is made by grinding well cleaned soybeans. This flour is especially high in protein, fat, and sugar. When used as a part of the flour in bread making, sugar and fat may be omitted. It

contains little or no gluten, and must be combined with wheat flour in order to make a light loaf. Larger proportions may be used in quick breads.

Rice.—Rice is the poorest of all the cereals in protein and fat. On the other hand, it has a large percent of starch. Because it is so deficient in gluten it is not adapted to bread making except as it is mixed with a large percent of wheat flour. Both for quick breads and raised breads a large percent of wheat flour must be used.

Potato.—The potato is classified as a tuber. It is rich in starch but deficient in gluten. A very light, spongy loaf can be made by using one-third potato and two-thirds white flour. A loaf made from this proportion of potato is especially attractive because of its bulk, flavor and color.

YEAST

Failure in bread making is often the result of failure to understand the nature of yeast. Yeast is a microscopic plant which reproduces by a process known as budding. During the bread making process yeast must be kept in an actively growing state. Like any other plant the conditions necessary for its growth are (1) food, (2) warmth, and (3) moisture. Heat kills it, and cold and lack of moisture retard its growth. For the growth of the yeast plant during which process carbon dioxide gas is produced for the leavening of the bread, certain nutrients must be supplied. These are found in the flours of the various cereals. The temperature best suited to the growth of yeasts is 25° to 30° C. or 70° to 90° F.

The yeasts feeding upon the materials in the dough cause fermentation, the production of carbon dioxide and alcohol. This carbon dioxide gas collects small bubbles thruout the dough and makes it "light." The gluten in the dough retards the escape of the gas until the heat of the oven hardens the former and drives off the latter when the bread is baked.

The forms of yeast used in bread making are dry, compressed, and liquid, any one of which makes good bread if properly handled. If dry yeast is used, it must first be started growing in a "sponge" and allowed to remain for several hours at the right temperature, or until the yeast has become very active, before a dough is made. Compressed and liquid yeasts are in an actively growing state and can be put directly into a dough. A liquid yeast is neither more nor less than dry or compressed yeast which has been planted in a liquid to which has been added sugar, flour, or potato as food for the yeasts. In other words, such liquid yeasts are merely thin bread sponges and are called by various names, namely, "magic," "spook," "witch," "starter," and "jug" yeasts. They are all the same. The yeast plant dies out quickly, due to the activity of other organisms. For this reason it is desirable to prepare a fresh "starter" each week. The use of liquid yeast is an economy, since more bread can be made from a given amount of yeast if this is first allowed to multiply in the "starter." One cup of liquid yeast is equivalent to one yeast cake.

It should be remembered that some spices possess antiseptic properties, and when used with yeast breads the spice should be added as late during the process as possible.

LIQUID

Milk, water, or potato water give good results; or half milk and half water is satisfactory. Whey is sometimes used, but may give an undesirable flavor to bread.

MAKING THE BREAD

Either one of two processes may be employed in making bread, namely, short process or long process. The difference is one of time. The former requires from 5 to 7 hours and the latter from 12 to 14 hours. Dry yeast or a small amount of compressed or liquid yeast is used in the long process method, since this gives time for the dry yeast to become active, or the small amount of yeast to multiply.

Temperature is an important factor in bread making. The proper temperature (25° to 30° C. or 70° to 90° F.) must be maintained thruout the sponge and dough stages so that the yeasts may be kept in an actively growing state. If the dough becomes chilled, the growth of the yeasts is retarded. If the dough is overheated, the yeasts are killed. In either case the result is poor bread.

If the vessel in which the sponge or dough is made is placed in a pan of water 30° to 35° C., or 86° to 95° F. it prevents cold drafts, especially in the winter, cooling the dough. Two dishpans serve very well for this purpose, one in which to put the warm water and the other to cover over all. The dough is thus surrounded by a warm moist bath, which is far better than warm dry air. This plan also prevents a crust forming on the dough. As the water cools it should be replaced with warm water. Setting sponge or dough near fire is a very ineffective method of maintaining the proper temperature. A vessel with straight sides, such as a gallon jar, retains warmth much better than a bowl with slanting sides, hence, shape of the vessel should be considered.

Too much emphasis can not be placed on the necessity of keeping sponge and dough warm—neither hot nor cold—thruout the bread making process.

If the short process method is used, to the fat, sugar, and salt in a vessel, add the scalded liquid. When lukewarm add the yeast which has been mixed with a little warm water. Add enough flour to make a dough which can be handled easily. Knead until the dough will stick neither to the hands nor board. It should be smooth and elastic to the touch. Grease the vessel slightly, return the dough to it, and set in a warm place until the dough doubles in bulk. Cover well to prevent formation of crust. Shape into a loaf without the addition of more flour, put into pan, and let double again and bake.

If the long process method is used, proceed as for short process except add only enough flour to make a batter—about 1½ cups to the cup of liquid. Beat until smooth and set in a warm place to rise. When the sponge is well fermented (usually overnight) add enough flour to make a dough which can be handled. Proceed as in short process.

BAKING THE BREAD

It requires not a little skill and practice, together with a good oven, to bake a good loaf. If suitable temperatures are maintained it requires 45 to 50 minutes to bake a pound loaf in a single pan. A loaf which has doubled in bulk should be put into an oven hot enough (200° to 220° C., or 392° to 428° F.) to check at once any further rising. A good loaf may also be had if it is put into an oven (180° to 200° C. or 324° to 392° F.) before it has quite doubled in bulk. For the first 10 minutes it is allowed to finish doubling in bulk; the heat of the oven is then gradually raised (200° to 235° C. or 392° to 455° F.) for the next 20 minutes, and gradually lowered to 200° C. or

392° F. for the remaining 15 minutes. When done, turn from the pan, and cool by turning the loaf across the top of the pan or upon a bread cooler. Do not cover with a cloth.

The time for baking rolls is 20 to 30 minutes in a medium hot oven (210° to 230° C. or 378° to 446° F.).



Well shaped loaves with good crust. The one on the left is a rice loaf; on the right, a potato loaf.

The single loaf pan, 8½ by 3½ by 3 inches, has much to commend it. It gives a loaf of uniform size and shape, surrounded by a nice crust. The single loaf weighing from ¾ to 1¼ pounds is not so likely to be underbaked as is a number of loaves baked together in one large pan. A tin pan seems to give the best results in common practice.

The illustration represents well shaped loaves with good crust. The one to the left is a rice loaf; to the right, a potato loaf. The crust of a rice loaf is not so smooth as that of a wheat loaf.

MEASUREMENTS

All measurements are level. To measure a level teaspoon, fill the spoon rounding full and level it off with the edge of a knife. To measure ½ teaspoon, cut 1 teaspoon in two lengthwise; to measure ¼ teaspoon, cut ½ teaspoon in two crosswise. Flour is sifted once before measuring. The following measures are only approximate.

| | |
|-------------------------------------|-------------------------------|
| 3 teaspoons=1 tablespoon. | 2 cups sugar=1 pound. |
| 16 tablespoons=1 cup (dry material) | 2 cups chopped meat=1 pound. |
| 12 tablespoons=1 cup (liquid). | 4 cups white flour=1 pound. |
| 1 cup=½ pint. | 2 tablespoons butter=1 ounce. |
| 16 ounces=1 pound. | 2 tablespoons sugar=1 ounce. |
| 2 cups butter=1 pound. | 4 tablespoons flour=1 ounce. |

ABBREVIATIONS

| | | |
|--------------|-------------|---------------|
| c.=cup | t.=teaspoon | T.=tablespoon |
| (2 c.=1 pt.) | | |

FERMENTED (YEAST) BREADS

LIQUID YEAST

| | |
|------------------|---------------------------------------|
| 2 c. water | 2 T. flour |
| 1 cake dry yeast | $\frac{1}{2}$ c. boiled mashed potato |
| 2 T. sugar | $\frac{1}{2}$ t. salt |

Soak yeast cake in one cup of water. Mix dry ingredients, add potato and one cup of water. Add soaked yeast and mix well. Set in a pan of warm water until fermentation is well started. The yeast will be ready to use in from 10 to 14 hours. Keep in stone vessel in cool place. One cup liquid yeast equals one yeast cake. This recipe is sufficient for eight to ten loaves, and if used while fresh makes better bread than the dry yeast.

In the recipes which follow, $\frac{1}{4}$ cup liquid yeast or $\frac{1}{4}$ cake compressed yeast is used to the cup of liquid. If liquid yeast is used, reduce the amount of milk or water $\frac{1}{4}$ cup. The recipe would then read $\frac{3}{4}$ cup milk or water and $\frac{1}{4}$ cup liquid yeast.

The recipe for white bread is given because it forms the basis for all other recipes in which the substitute flours are used. The directions are for the short process method, tho the long process may be used if desired.

WHITE BREAD

| | |
|-----------------------------|-------------------------------------|
| 1 c. liquid (milk or water) | 1 t. fat |
| $1\frac{1}{4}$ t. salt | 3 to $3\frac{1}{2}$ c. flour |
| 1 t. sugar | $\frac{1}{4}$ cake compressed yeast |

Scald milk. Cool one-fourth of it in which to blend the yeast. Pour the remainder over dry ingredients. When this has cooled sufficiently add the softened yeast. Add flour to make a medium stiff dough. Knead until smooth and elastic. Set to rise in a greased bowl in a pan of warm water. Let double in bulk and shape into loaf. Let rise again until loaves are almost, but not quite, double in bulk. Bake according to directions. This recipe makes one loaf.

RYE BREAD

Use recipe for white bread, except to substitute 1 to 2 tablespoons molasses for the sugar, and one-fourth to one-third rye flour for an equal amount of white flour.

BARLEY BREAD

Use recipe for white bread, except to substitute one-fourth to one-third barley flour for an equal amount of white flour.

In all dark breads molasses may be substituted for sugar.

RICE BREAD

| | |
|-------------------------------------|---|
| $\frac{1}{2}$ c. milk | 1 t. fat |
| $1\frac{1}{2}$ t. salt | $\frac{1}{4}$ c. rice (when cooked it measures $\frac{3}{4}$ c.) |
| 1 t. sugar | $2\frac{1}{4}$ c. flour |
| $\frac{1}{4}$ cake compressed yeast | |

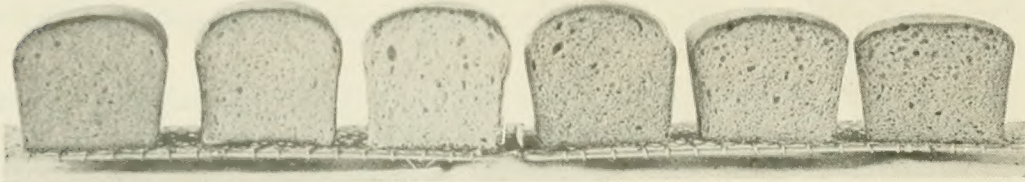
Wash rice and cook until tender in boiling water. Cook as dry as possible. Cool. To this add the salt, sugar, fat and milk in which has been moistened the yeast. Add flour to make a medium stiff dough. Knead until smooth and elastic. Proceed as for white bread.

POTATO BREAD

| | |
|--------------------------|-------------------------|
| 8 oz. uncooked potato or | 1¼ t. salt |
| 1 c. mashed potato | 1 t. sugar |
| 9 oz. flour (2¼ c.) | 1 t. fat |
| ½ c. milk | ¼ cake compressed yeast |

If the liquid yeast is used, use ¼ cup of this mixture and ¼ cup milk. If compressed yeast is used, soften it in a portion of the milk. To the other portion add salt, sugar and fat. Mix the mashed or riced potato and flour thoroly with tips of fingers. Add other ingredients and make a stiff dough. Knead until smooth. Proceed as for white bread.

For potato bread the dough must be quite stiff, since it softens as it ferments. Potato bread is good in color, bulk and texture. This recipe makes one loaf. With a little practice an excellent product can be made.



From left to right, loaves made of wheat flour, potato, rice, rye, barley and oats.

The illustration above, from left to right, represents loaves made of wheat flour, potato, rice, rye, barley and oats. Proportion one-third substitute to two-thirds wheat flour.

OAT BREAD

Use same recipe as for white bread, except to substitute one-fourth rye flour and one-fourth oat flour for an equal amount of white flour (or oatmeal may be used), as follows:

| | |
|--------------------------|--------------------|
| ½ c. rolled oats | ¾ c. boiling water |
| 1 c. rye or barley flour | ¼ c. milk |
| 1 c. white flour | 1¼ t. salt |
| ¼ cake compressed yeast | 1 T. molasses |
| or ¼ c. liquid yeast | 1 t. fat |

Pour boiling water over rolled oats and let stand until lukewarm. Add salt, molasses, fat, and yeast blended in the ¼ cup milk. Add the flours to make a stiff dough. Proceed as for white bread.

SOYBEAN BREAD

Use recipe as for white bread except substitute one-fourth to one-third soybean flour for an equal amount of white flour.

CORNMEAL BREAD

| | |
|-----------------|-----------------------|
| 2/3 c. cornmeal | ¼ c. water |
| 2 1/3 c. flour | ¼ c. compressed yeast |
| 1 T. sugar | 1¼ t. salt |
| 1 T. fat | |

Put the meal in a skillet and heat until it is a delicate brown, stirring constantly. Proceed in the manner given in directions for white bread.

Cornmeal bread may be made of the unparched meal, or the meal may be made into a mush. When the meal is made into a mush only enough water is used to make a medium stiff dough. Either long or short process method may be used.

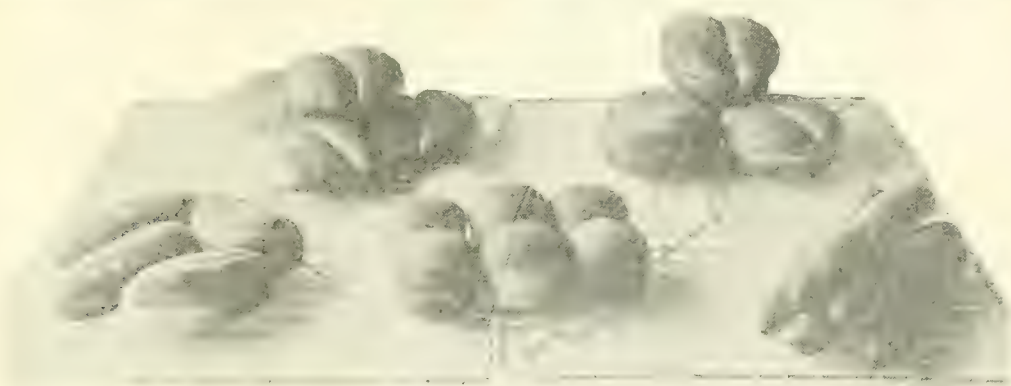
The illustration on title page shows varieties of cornmeal breads. From left to right, cornmeal made into a mush and cooked for 10 minutes; cornmeal mush allowed to come to boiling point; cornmeal scalded; cornmeal scalded before fat was added; raw meal, slack dough.

PARKER HOUSE ROLLS

Make a medium soft dough of either barley or rye flour, using same recipe as for the loaf. The sugar and fat may be increased, but this is not necessary. Let the dough double in bulk; knead down. Roll out to one-third inch in thickness. Cut with biscuit cutter; crease thru the middle of each piece with the handle of a knife or round handle of wooden spoon. Brush over with melted fat, fold one-half well over the other and set to rise. When double in bulk, bake about 20 minutes.

BREAD STICKS

Squeeze off small pieces of either barley or rye dough and roll under the hand into slender sticks 3 to 4 inches long and one-fourth to one-third inch in diameter. Put in greased bread-stick pans or on flat pans, let rise, and bake.



Attractive rolls may be made from any of the bread doughs.

TWIN ROLLS

Make a dough as for parker house rolls. Let double in bulk; knead 2 or 3 minutes. Squeeze off small pieces of the dough and mold in slightly oblong shape. Grease one side of each piece of dough and place together in a mold of a greased tin muffin pan. Let double in bulk, and bake.

Three small pieces of dough baked in a muffin mold are known as clover leaf rolls.

Good and attractive rolls may be made of any of the bread doughs, as shown in the illustration.

QUICK BREADS

Rye, barley, cornmeal, buckwheat, and in short, any of the cereals may be used in varying proportion for quick breads. Not so for yeast breads. It must be understood then, that as the supply of wheat flour, rye and barley decrease for home consumption, a greater use must be made of quick breads.

In the directions which follow, sweet milk and baking powder are specified for the reason that these are easy to handle. However, the use of sour milk with soda (1 cup sour milk, $\frac{3}{4}$ teaspoon soda) is recommended.

BISCUIT

| | |
|---|--------------------|
| 2 c. flour | 2 T. fat |
| $\frac{3}{4}$ to $\frac{7}{8}$ c. milk and water (equal parts) | 1 t. salt |
| | 4 t. baking powder |

Sift flour, baking powder, and salt. Work fat well into flour. Gradually add the liquid, mixing with knife to a very soft dough, just stiff enough to roll. Turn on a slightly floured board, roll to $\frac{1}{2}$ inch in thickness. Cut with small cutter and place on pan $\frac{1}{2}$ inch apart. Bake in hot oven 12 to 15 minutes.

DROPPED BISCUIT

Use recipe for baking powder biscuit, with the addition of more milk that the mixture may be dropped from a spoon without spreading. Drop by spoonfuls on a greased pan 1 inch apart. Bake in hot oven.

GRAHAM BISCUIT

| | |
|--------------------------------|--------------------|
| $1\frac{1}{2}$ c. graham flour | 1 c. liquid |
| $1\frac{1}{2}$ c. white flour | 3 T. fat |
| $1\frac{1}{2}$ t. salt | 4 t. baking powder |

Proceed as for wheat flour biscuit. If desired, the proportion of graham flour to white flour may be increased.

RYE BISCUIT

Use recipe for wheat flour biscuit, substituting 1 cup rye flour for 1 cup wheat flour.

BARLEY BISCUIT

Use recipe for wheat flour biscuit, substituting 1 cup barley flour for 1 cup wheat flour.

BUCKWHEAT BISCUIT

Use recipe for wheat flour biscuit, substituting 1 cup buckwheat flour for an equal amount of white flour.

MUFFINS

| | |
|--------------------|-----------------------|
| 2 c. flour | 2 to 4 T. fat |
| 1 c. milk | 1 egg |
| 2 T. sugar | $\frac{1}{2}$ t. salt |
| 4 t. baking powder | |

Cream fat; add sugar and egg well beaten. Sift baking powder with flour and add to this mixture, alternating with the milk. Bake in greased tin muffin pans 20 minutes. This recipe makes twelve muffins.

GRAHAM MUFFINS

| | |
|--------------------|--------------------|
| 1¼ c. graham flour | 1 T. molasses. |
| 1 c. flour | 1 t. salt |
| 1 c. milk or water | 2 T. melted fat |
| 1 egg | 4 t. baking powder |

Mix and sift dry ingredients; add milk gradually, well beaten egg and melted fat. Bake in greased tin muffin pans 20 minutes in hot oven.

Sour milk and soda may be used instead of sweet milk and baking powder.

RYE MUFFINS

Use recipe for graham muffins, substituting rye flour for graham flour.

BARLEY MUFFINS

Use recipe for graham muffins, substituting barley flour for graham flour.

OATMEAL MUFFINS

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|---------------------|------------------------|
| 1 c. cooked oatmeal | 1 t. salt |
| 1½ c. barley flour | ½ c. milk |
| 1 T. sugar | 1 egg (may be omitted) |
| 4 t. baking powder | 1 to 2 T. melted fat |

Sift together flour, baking powder, sugar, and salt. Add to this the oatmeal, milk, and well beaten egg. Beat thoroly. Add melted fat. Bake in greased muffin pans in medium hot oven.

RICE MUFFINS

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|------------------|--------------------|
| 2 c. flour | 1 c. milk |
| 1 c. cooked rice | 1 egg |
| 1 T. sugar | 2 T. melted fat |
| 1 t. salt | 5 t. baking powder |

Proceed as for oatmeal muffins.

BRAN MUFFINS

| | |
|--------------------|---------------------------|
| 1 egg | ½ t. salt |
| 1 T. molasses | 1 T. melted fat |
| ½ c. milk | ½ c. flour |
| 2 t. baking powder | 2/3 c. bran or bran flour |

Beat egg, add milk, molasses, salt and flour, and bran thru which has been sifted baking powder. Beat well. Add melted fat. The mixture should not be too stiff.

CORNMEAL GEMS

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|----------------|-----------|
| 1½ c. cornmeal | 1 t. salt |
| 1 c. sour milk | 2 T. fat |
| ¾ t. soda | 1 egg |

Mix dry ingredients. Add egg well beaten and the milk, then the fat. Pour into greased hot iron gem pans and bake in hot oven. May also be baked in a skillet.

CORNMEAL AND HOMINY BREAD

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|--------------------|---------------------|
| 1 c. cooked hominy | 1 c. white cornmeal |
| 1 c. milk | 2 eggs |
| 1 T. fat | 1½ t. salt |
| 3 t. baking powder | |

Mix ingredients well and bake in greased muffin tins.

CORNMEAL AND BARLEY WAFFLES

| | |
|-------------------|--------------------|
| 1½ c. water | 5 t. baking powder |
| ½ c. cornmeal | 1½ t. salt |
| 1½ c. milk | Yolks 2 eggs |
| 3 c. barley flour | Whites 2 eggs |
| 2 T. sugar | 2 T. melted fat |

Cook meal in boiling water 20 minutes. Add milk, dry ingredients mixed and sifted, yolks of 2 eggs well beaten, fat, and whites of eggs beaten stiff. Cook in greased waffle iron.

CORN PONE

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|----------------------|--------------------|
| 1½ c. white cornmeal | 1 c. boiling water |
| 2 T. milk | 1 t. salt |

Add salt to meal and scald with the boiling water, stirring well. Add enough milk to hold the ingredients together. When cool enough to handle, form into cakes by rolling into balls in the hands and flattening these down to about ½ inch in thickness. Have ready a pan well greased, place over fire and add the pones, dipping a little of the shortening over tops of pones. Leave the pan over the fire until the bread is browning slightly, then set in hot oven and finish baking from 30 to 40 minutes.

BARLEY WAFFLES

| | |
|--------------------|-----------------|
| 1 c. barley flour | 1 c. milk |
| ¾ c. white flour | Yolks 2 eggs |
| 3 t. baking powder | Whites 2 eggs |
| ½ t. salt | 1 T. melted fat |

Mix and sift dry ingredients. Add milk gradually, yolks of eggs well beaten, and fat. Beat well. Add whites of eggs beaten stiff. Cook on greased hot waffle-iron.

BUCKWHEAT PANCAKES

Make a sponge of buckwheat flour and water. To this add yeast in the proportion of ¼ cake to one cup of liquid. Let stand until well fermented (usually overnight). Add salt to taste, 1 to 2 tablespoons molasses, and ½ to 1 teaspoon soda dissolved in 2 tablespoons warm water. Cook as other pancakes.

Should the sponge be too thick it may be thinned by adding warm water. Very easy to make and very superior to baking powder cakes.

GINGERBREAD

| | |
|--------------------|---------------------------|
| ¼ c. fat | 1 t. cloves |
| ¼ c. sugar | ½ c. hot water |
| 1 egg | ½ c. New Orleans molasses |
| 1 T. ginger | 1 t. soda |
| 2 t. cinnamon | 1½ c. barley flour |
| 3 t. baking powder | |

Cream butter substitute and fat. Add sifted spices, egg well beaten. Put soda in bottom of measuring cup, pour in molasses, then hot water and stir well before adding to mixture. Add alternately liquid and sifted barley flour and baking powder. Bake in greased and floured muffin tins 15 to 20 minutes in medium hot oven.

BARLEY COOKIES

| | |
|------------------------------------|-------------------|
| $\frac{1}{2}$ c. butter substitute | 1 t. vanilla |
| 1 c. sugar | 1 egg white |
| $\frac{1}{4}$ c. milk | 1 egg yolk |
| 1 t. baking powder | 2 c. barley flour |

Cream butter substitute; add sugar gradually, and egg yolk. Beat well. Add alternately milk and flour sifted with baking powder and beaten egg white and vanilla. Roll into thin sheet, shape with cutter, and bake in hot oven about 10 minutes.

MOLASSES COOKIES

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|--------------------------------|----------------|
| 1 c. molasses | 1 T. ginger |
| $\frac{1}{2}$ c. fat | 1 T. soda |
| $2\frac{1}{2}$ c. barley flour | 2 T. warm milk |
| 1 t. salt | |

Heat molasses to boiling point, add shortening, ginger, soda dissolved in warm milk, salt, and flour. Roll thin and shape with round cutter. Bake.

OAT COOKIES

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|------------------------------|----------------------------|
| $2\frac{1}{2}$ c. cut oats | 2 eggs |
| $1\frac{1}{4}$ c. corn sugar | $\frac{3}{4}$ c. sour milk |
| $\frac{1}{2}$ t. nutmeg | $\frac{3}{4}$ t. soda |
| 1 t. salt | 2 c. dates cut fine |

Mix dry ingredients, add eggs and sour milk in which the soda has been dissolved; lastly add dates. Drop from spoon on buttered tin and bake.

Modify your recipes. Make them conform to food conservation by using one-fourth to one-half, and in some cases, all wheat substitute. Excellent cookies, gingerbread, and dark cakes may be made by using all barley flour.

Learn to use the substitute in your particular locality. It will save transportation and lessen the cost of food.

