# LESSON III.

Wheat is not an indispensable article of diet.

The six most common cereals—wheat, rye, barley, oats, corn, and rice—are very similiar in food value.

Cereals make up from about one-third to one-half of the total food of a nation—one-third in the United States, one-half in France.

Wheat is just one of the cereals and there is no evidence that it is the most wholesome.

Wheat is best only because it makes the best yeast-raised bread.

Going without wheat is an inconvenience, nothing worse, for homes in comfortable circumstances in America.

Wheat is especially needed in Europe, and above all in France, because there over one-half of all the food consists of bread, baked outside of the home.

French homes have not baked bread for hundreds of years. They have neither ovens nor baking tins in their kitchens. They buy their bread from the bakery.

French bakers are already mixing as much of other cereals with wheat flour as is possible. The bread is not as good as usual, but it can be eaten. If their wheat supply is further reduced, they can not continue baking.

If French women can not buy baker's bread, they must substitute unfamiliar porridge and cakes which they must learn to make and their families must learn to eat.

The women of France, besides doing their own work, are doing the nation's work. They are carrying on practically all the agriculture. They may be seen in many parts of France hitched to the plow in the places of the horses which have been taken for military purposes. They are also caring for the old, the wounded, and the tubercular.

Not one slightest additional burden should be laid on the women of France. Far less should they be forced to add another hour to their long day of toil because we fail to send them wheat.

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# WHEAT, WHY TO SAVE IT AND HOW TO USE IT.

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Wheat belongs to the group of foods known as cereals. The six most prominent in the production of the world are wheat, rye, barley, oats, corn, and rice. In nearly every part of the world some form of cereal food makes up the greater portion of the diet. This has come about for several reasons: The cereal grains are easily grown, stored, and prepared for the table; they are both palatable and wholesome; they are on the whole the cheapest and best source of energy for our bodies; and they also furnish tissue-building and body-regulating materials.

When eaten in a mixed diet with fruits and vegetables and animal foods, the different cereal grains have practically identical food values. They contain about 70 per cent starch, from 7 to 12 per cent protein, and from 2 to 6 per cent fat. Oats is the richest in fat, rice the poorest in protein. They are lacking in lime but this is added when they are eaten with milk.

A pound of uncooked cereal yields practically 1,600 calories—one hundred calories for each ounce. Two pounds of flour would give enough energy to support for one day a man at moderately heavy work, though this would by no means be an ideal diet for the best maintenance of health.

If cereals are depended on chiefly, to the exclusion of meat, dairy products, and vegetables, it is necessary to use the whole grains because the inside of the grain is lacking in certain substances necessary to health. If, on the other hand, the diet contains a normal amount of dairy products, fruits, and vegetables, this is not necessary and the choice may depend on the taste of the individual.

[1] "The amount of material supplied by each of the different food groups in the daily diet of a man at moderate work may vary somewhat as follows and still conform with proper dietary habits in this country:

| | Rich and comparatively expensive diet. | Plain and comparatively cheap diet. |
|---|---|---|
| Cereals | From 8 ounces up to | 16 ounces. |
| Milk | 8 ounces (½ pint) | 8 ounces. |
| Meats, eggs, cheese, etc | From 14 ounces down to | 6 ounces. |
| (Use 2 ounces less for every additional half pint of milk.) | | |
| Fruits and vegetables | From 2 pounds down to | 1 pound. |
| Fats | From 3 ounces down to | 1½ ounces. |
| Sweets | From 3 ounces down to | 1½ ounces." |

[1] Unpublished material, Office of Home Economics, Department of Agriculture.

There are two principal ways of preparing cereals for the table. One is by baking into bread, the other cooking in water. The inhabitants of Europe and North America use their cereals mainly in the form of bread; most Orientals prefer theirs boiled, and use chiefly rice and corn.

The cereals differ more in their bread-making qualities than in their food value. The proteins of wheat, rye, and barley possess such physical properties that the flour prepared from them can be made into a dough that can be leavened or raised, and baked to form a palatable portable bread of excellent keeping qualities. Oats, corn, and rice may be cooked by boiling, but on baking they will yield cakes that are granular and will not hold together, and therefore can not be transported except in containers.

If we trace the history of the cereals among bread-making peoples, we find that barley and rye preceded wheat in importance. As a people rises in civilization, it first replaces barley with rye and then rye with wheat, since in whiteness of product, keeping qualities, standardization of baking, and in taste the breads rank in the order of wheat, rye, and barley. Under periods of food stress this is reversed, and a nation returns from wheat to rye and to barley, since the production of rye and barley in many sections of the world is easier and heavier than the production of wheat.

Cereals furnish from 30 to 50 per cent of the food of a people. We use a little over 30 per cent in our diet; in France grain supplies over 50 per cent of the food. Where cereal furnishes only 30 per cent of the food supply, the way it is prepared and the form in which it is supplied is not nearly so important as where it furnishes 50 per cent. In other words, France is more affected by the kind of grain available for consumption than are we and by its form of preparation, because cereals constitute a larger proportion of the French diet than of ours.

There is no mystical property in wheat as a food. The advantages of wheat lie in the external qualities of the bread, not in the characteristics that affect digestion of the bread. It must be clearly realized that the quality in wheat that we prize most lies in the peculiarities of its protein, the gluten that makes bread the most convenient form in which our use of cereals can be maintained.

Wheat is grown upon the fields of all of the Allies, rye and barley to a small extent in the United Kingdom and in France, oats to a considerable extent in the United Kingdom, France, and Italy, corn and rice to a notable extent in Italy. In the natural habits of the Allies, rye and barley are used only to a slight extent for food. Oats are employed as porridge and in cakes in the United Kingdom to a considerable extent; corn and rice are widely eaten in Italy. Wheat is consumed in Italy, partly in the state of bread, to a large extent in the state of pastes, such as macaroni and spaghetti.

The wheat crop of the Allies and of the United States in 1917 was a partial failure. There is a surplus of wheat in India and Australia, but it is unavailable on account of scarcity of tonnage. Last year the wheat crop of Argentina was a failure; the new crop has been in the markets since April, 1918. Our crops of corn, rye, oats, and barley were in excess of the average, and rice up to the normal.

The pre-war consumption of wheat by the Allies was, in round figures, 1,000,000,000 bushels annually. The allies will need to import this year about 600,000,000 bushels of grain for human use, and approximately as much more for domesticated animals. The total wheat crop of the allies in Europe does not represent over 400,000,000 bushels. The bread needs are about 1,000,000,000 bushels. Our exportable surplus of wheat, including that from Canada, on the basis of pre-war consumption, is not in excess of 140,000,000 bushels. Thus,

their wheat plus our exportable surplus on the basis of pre-war consumption would equal less than 600,000,000 bushels, leaving over 400,000,000 bushels to be secured elsewhere or covered by the use of other grains.

Now the bread of the Allies can not be made with so small a proportion of wheat as this would allow. If they are compelled to live upon cereals in the proportions named, it will mean that the consumption of bread will have to be reduced, and a great deal of cereal will have to be consumed in the form of oatmeal, rice, hominy, and corn meal, which can be boiled or baked into cakes but can not alone conveniently be baked into bread. On the other hand, if we reduce our wheat consumption sufficiently, it will be possible to increase our exportation 150,000,000 bushels, thus bringing the total wheat available to the allies to 700,000,000 bushels, and leaving only 300,000,000 bushels to be covered by the use of other grains. Then the Allies would be able to maintain their habits of bread consumption in large part, because bread can be made out of 70 parts of wheat flour with 30 parts of other cereals.

According to stocks, we have safely left for each month until the new crop arrives about 6 pounds of wheat flour per person, one-third of our normal consumption.

Is it asking too much of our people to request them to live on two-thirds oats, rice, barley, and corn, and one-third wheat in order that the Allies may have two-thirds wheat and one-third oats, rye, barley, rice, and corn? Let us visualize domestic habits there and here. In England, France, and Italy domestic baking of bread is uncommon. In France it is practically unknown. Their bread is prepared in bakeries. The houses are not equipped for the baking of bread, except to a very limited extent. In other words, the dependence on bakers' bread is almost absolute with the Allies. It will be no great hardship to ask the people of the United Kingdom to consume an added amount of oatmeal, corn, hominy, and rice, because they are already familiar with the cooking of these cereals. It will not be a hardship to ask the people of Italy to consume one-fourth of their cereals as corn and rice, because before the war these grains were staples in Italy, and certain classes, indeed, consume much more corn and rice than wheat. But it will be a hardship to ask the women of France to cut down their bread supply and replace it with other cereal preparations. It must, therefore, be our additional endeavor, while supplying the Allies with three-fourths of their cereals in the state of wheat, to grant a still larger proportion to the French people than to those of the United Kingdom and Italy, a division entirely in conformity with their natural habits.

It must be our endeavor to supply the French with their full bread ration. The bread ration of France is now—

| | |
|---|---|
| Children less than 3 years old | 3.5 oz. |
| Children from 3 to 13 years old | 7.0 oz. |
| Hard workers, 13 to 60 years old | 14.0 oz. |
| All others, 13 to 60 years old | 10.5 oz. |
| Over 60 years old | 7.0 oz. |

This bread does not correspond to the normal bread of the French people, but it is acceptable, and it does relieve the French housewife of the preparation of other cereal food for her family.

All of the men in France are engaged in transportation, manufacture of munitions, or military operations in a direct sense—all, unfortunately, except the hundreds of thousands who, stricken with tuberculosis or incapacitated by wounds, represent a heavy burden upon the women of France. The entire

agriculture of France is carried on by the women. Bread comprises half of the total food used. This bread the French woman buys. To reduce this ration means to compel her to spend from a half hour to an hour a day in the cooking of rice, oats, and corn, to which she is unaccustomed, the taste of which is unfamiliar to the members of her family, and for which she has not the fuel.

The American woman has the clear choice between assuming for herself at the most one hour's work per day or deliberately imposing this upon her French sister. There is no escape from this situation; the American woman must choose; she must assume this burden or place it upon the shoulders of the woman who is probably bearing the hardest load ever imposed upon woman in the history of the world.

How is the reduction of the consumption of wheat and the substitution with corn, rice, oats, and barley to be effected? The pre-war consumption of cereals in the North was about 12 ounces per person per day, 10 of this in the form of wheat flour. In the South the pre-war consumption of wheat flour was not in excess of 7 ounces per day, while the consumption of other cereals was 6 or 7 ounces. In other words, the people of the South for decades have done what is now being asked of the people of the North. Certainly, if this diet has been a matter of choice and natural selection with 20,000,000 people in our South it can not be regarded as a hardship for the 80,000,000 people elsewhere in the United States. At the most it involves the equivalent of two wheatless meals per day. The preparation of the other available cereals can be accomplished in many attractive ways. It is not even necessary to have a wheatless meal. The supplementary cereals can be combined with wheat in the form of a mixed flour bread to be used at all meals, particularly since over one-half of the bread consumed in America is baked in the home.

In order to know how much wheat flour she may justly use, let the American housewife multiply the number of persons in her family by six. This will give the number of pounds of wheat flour that may be used per month by the family if no other wheat products are eaten. With a degree of culinary ingenuity in planning, easily within the capacity of every American woman, it ought to be possible to serve the other cereals in such variety and in so many different ways as to make it entirely practical to use no more wheat flour than the stated figure without making the meals strange or unpalatable.

If the American women will daily visualize the situation of their sisters in the allied countries, especially of the women of France, the substitution of wheat for the other cereals will become not only a matter of duty but also an offering and an act of appreciation. We must not merely give in money. We must give in service, and there is no service within the gift of the American woman larger than the gift of a normal bread ration to the women and children of the allied countries.

Many Americans have already[1] felt it a duty to do more, to eat no wheat in any form until the new harvest. This will make the program safe. Will you not join them?

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[1] May, 1918.

# WHEN WHEAT IS SCARCE.

Use as little yeast bread as possible, since this can not be readily made without wheat flour.

Instead make quick breads with 100 per cent substitutes.

Graham and "whole wheat" flours are wheat. They save wheat only to the extent that a little more of the grain goes into the flour.

Use corn meal, oatmeal, barley flour, rice flour, or other substitute flours in place of wheat in making cake, muffins, gingerbread, cookies, and puddings.

Use rice flour, barley flour, corn meal, and oatmeal for pie crust if you make pastry at all. Make one-crust pies, like the New England "deep apple pie" or the English "tart." For meat pies use potato crust.

Use some preparation of oatmeal, corn meal, rice, or other cereal in the place of wheat for breakfast foods.

Use more hominy, rice, potatoes, sweet potatoes in place of bread, for luncheon, dinner, and supper.

Use rice, barley, or sago in soup instead of macaroni or wheat pastes.

Cut bread at the table to avoid slicing more than is needed.

Waste no bread. Toast partially stale pieces or freshen them by heating in a moderate oven. Use all left-over bits in cooking.

Do not use in any week more than 1½ pounds of wheat for each person in your family.

Compare your day's bill of fare with this.

Are you using as much wheat?

Then divide it by three or, better still, use this—

10¼ OUNCES OF WHEAT FLOUR USED BY EACH PERSON.

| *Breakfast.* | Wheat Flour oz. |
|---|---|
| Cream of wheat | 3 |
| Rolls or toast (3 slices) | 2 |
| *Luncheon.* | |
| Cream of chicken soup | ⅛ |
| 2 crackers | ¼ |
| Macaroni and cheese, made with cream sauce | 1½ |
| 2 slices bread | 1⅓ |
| 1 piece of cake | ¾ |
| *Dinner.* | |
| Tomato soup with croutons | ⅓ |
| Baked fish with dressing / Scalloped potatoes | ½ |
| Asparagus on toast | ⅔ |
| Lettuce salad, with wheat wafers | ⅛ |
| 1 slice bread | ⅔ |
| Pie | 1 |
| Total | 10¼ |

WHEATLESS MENU.

| *Breakfast.* | |
|---|---|
| Hominy grits. | |
| Rolled oat and rice flour muffins. | |
| *Luncheon.* | |
| Clear chicken soup, with barley. | |
| Rice and cheese. | |
| Buckwheat cakes with sirup. | |
| *Dinner.* | |
| Tomato soup with tapioca. | |
| Broiled fish. | |
| Mashed potatoes. | |
| Baked sweet potatoes. | |
| Asparagus. | |
| Lettuce salad, corn meal wafers. | |
| Gelatin pudding with figs, nuts, and bananas. | |
| Casava cakes or oatmeal macaroons. | |

## RECIPES—SUGGESTIONS FOR DEMONSTRATION.

No precept is so effective as example. Practical emphasis may be put upon ways of saving wheat by the actual preparation of dishes in which no wheat is used.

The use of other flours than wheat, and of rice water, tapioca, and sago for thickening, should be shown and attention called to barley, hominy, and rice as substitutes for macaroni and spaghetti. Croutons should be made of wheatless bread or omitted. Toast should not be served as a garnish.

The recipes given here are for biscuit, muffins, and corn breads, but others illustrating the suggestions given above might well be added. It is to be noted that at this time (May, 1918), rye is on the same basis as wheat and may not be used as a substitute.

Potatoes as a wheat substitute are given in another lesson. (See p. —.)

### PARCHED CORN MEAL BISCUITS.

1 cup yellow corn meal.
1 teaspoon salt.
1 cup peanut butter.
1½ cups water.

Put the meal into a shallow pan and heat in the oven until it is a delicate brown stirring frequently. Make nut cream by mixing peanut butter with cold water and heating. It should be the consistency of thick cream. While the nut cream is hot, stir in the corn meal, which should also be hot. Beat thoroughly. The mixture should be of such consistency that it can be dropped from a spoon. Bake in small cakes on a greased pan.

If preferred, these biscuits may be made with cream or with butter in place of peanut cream, and chopped raisins may be added, 1 cup being the allowance for the quantities given above.

### OWENDAW.

(A Spoon Bread.)

1 pint hominy grits.
3 pints water.
2 teaspoons salt.
2 tablespoons fat.
3 eggs.
1 pint of milk.
1 pint of corn meal.

*Directions.*—Boil the hominy grits with the salted water until the mixture thickens, then cook slowly over hot water or on the back of the stove until done. While hot mix in the fat and the 3 eggs beaten very light, the milk, and the corn meal. The batter should be the consistency of rich boiled custard. If too thick, add milk. Bake in an oven, hot at the bottom, until the batter is set, about one hour. Serve with a spoon from the dish. This bread should be soft and moist.

Two only out of the many rules for corn bread are given, since others may so easily be supplied. Wherever people are not thoroughly familiar with the cooking of corn meal, differences in the use of the various kinds—coarse and fine, white and yellow, so-called "water ground," and new process should be made clear.

### WHEATLESS MUFFINS.

(From combinations of different flours.)

The general proportion used in these muffins is 1 cup of liquid, 1 tablespoon of fat, 2 tablespoons of sirup, 1 egg, 4 teaspoons baking powder, 1 teaspoon of salt, 8 ounces of flour. The flour may be 50-50 by weight, or 75-25, or any other proportion desired. A combination of substitute flours seems to be more satisfactory than any one used alone. The weight of one cup of the different flours is given in Lesson I.

*Directions*—Add to the cup of milk the melted fat, sirup, and slightly beaten egg; sift the salt, baking powder, and flour together. Use a coarse sieve so that no part of the flour is wasted. When corn meal is used, *mix;* do not sift the ingredients. Combine the two mixtures, stirring lightly without beating. Bake in a hot oven (450° F.) for 20 to 30 minutes, depending upon the size of the muffins.

A lighter muffin may be made by using 2 eggs, omitting 1 teaspoon of baking powder.

### BARLEY AND OAT MUFFINS.

Barley, 50 per cent; oats, 50 per cent, by weight.

| | |
|---|---|
| 1 cup liquid. | 4 teaspoons baking powder. |
| 1 tablespoon fat. | 1 teaspoon salt. |
| 2 tablespoons sirup. | 1½ cups barley flour (4 ounces). |
| 1 egg. | 1⅛ cups ground rolled oats (4 ounces). |

Barley, 75 per cent, oats, 25 per cent, may be made by using 2¼ cups barley (6 ounces) and ½ cup ground rolled oats (2 ounces).

### RICE FLOUR AND OAT MUFFINS.

Rice flour, 25 per cent; ground rolled oats, 75 per cent.

| | |
|---|---|
| 1 cup milk. | 4 teaspoons baking powder. |
| 1 tablespoon fat. | 1 teaspoon salt. |
| 2 tablespoons sirup. | ⅜ cup rice flour (2 ounces). |
| 1 egg. | 1¾ cups ground rolled oats (6 ounces). |

Other combinations that have been tried are buckwheat with oats, barley, and rice; barley with rice and corn flour; oats with corn flour.

## BISCUIT—USING NO WHEAT.

### BARLEY BISCUIT.

| | |
|---|---|
| 4 cups barley flour. | 3 tablespoons fat. |
| 6 teaspoons baking powder. | 1¼ cups liquid. |
| 1 teaspoon salt. | |

*Directions.*—Sift the dry materials. Cut in the fat and add the liquid, slowly stirring with a knife. Roll out, cut into shape, and bake in a hot oven.

The color of these is somewhat dark, typical of barley; the texture and flavor are good. While they are not as light and fluffy as wheat biscuits, they are still a desirable and edible product.

## REFERENCES.

United States Food Administration:

Ten Lessons in Food Conservation, Lessons III and IV.

Available in every public library.

War Economy in Food.

Corn.

Until the Next Harvest.

Order from the Federal Food Administrator in your state.

United States Department of Agriculture:

Farmers' Bulletin 249, Cereal Breakfast Foods.

Farmers' Bulletin 565, Corn Meal as a Food and ways of Using It.

Farmers' Bulletin 559, Use of Corn, Kafir, and Cowpeas in the Home.

Farmers' Bulletin 807, Bread and Bread Making in the Home.

Farmers' Bulletin 817, How to Select Foods: II. Cereal Foods.

Circular of Extension Work, South, Partial Substitutes for Wheat in Bread Making.

Circular No. 110. Use Peanut Flour to Save Wheat.

Circular No. 111. Use Barley—Save Wheat.

Circular No. 113. Use Soy-bean Flour to Save Wheat, Meat, and Fat.

Order from the Department of Agriculture, Washington, D. C.

United States Food Leaflets:

No. 2, Do You Know Corn Meal?

No. 6, Do You Know Oatmeal?

No. 18, Rice.

No. 19, Hominy.

Order from the Federal Food Administrator in your state.

The sections on wheat and wheat saving in the "Ten Lessons on Food Conservation" include directions for making "emergency breads," as do also "War Economy in Food," Farmers' Bulletin 807, and the circular on Substitutes for Wheat. These were all written before the last ruling in regard to wheat. At present a greater substitution must be made. Farmers' Bulletin 249 describes different types of commercial breakfast foods and their nutritive value. Farmers' Bulletin 559 is of especial interest in regions where kafir or cowpeas are abundant. Farmers' Bulletins 565, 807, and 817 give simple discussions of their subjects, but include also recipes and practical suggestions. The United States Food Leaflets give extremely simple discussions and inexpensive recipes.

## LANTERN SLIDES.

Equal Weights of Wheat Prepared in Different Ways.
A Loaf of Bread and What Goes Into It.
Muffins Made of 50 per cent Soy Bean Meal.
Bread, Soy Bean 25 per cent, 75 per cent White flour.
Equal Amounts of Corn Products Showing Differences in Volume.
Equal Amounts of Oatmeal, Cooked and Uncooked, Showing Difference in Volume.
Save the Wheat. We Have Plenty of Corn and Oats. Eat Plenty of the Plentiful.
A Variety of Cereal and Cereal Products.
Equal Amounts of Rice, Cooked and Uncooked, Showing Difference in Volume.
Women on Top of Big Machine, with Grain.
Easy Ways to Save a Slice of Bread a Day.
Wheat Needs and Supplies. Diagram.
Corn Needs and Supplies. Diagram.
Oat Needs and Supplies. Diagram.
Price of Wheat and Flour.
The Distribution of Rice. Map of the World.
Rice. Map of the United States.
The United States Food Administration Says Eat More Corn.
Distribution of Barley in the World. Map.
Harvesting Winter Barley.
Map of Buckwheat.
Plot of Buckwheat.
Prize Patch of Corn.
Oats in the World. Map.
Harvesting Oats.
Crop of Oats.
Rice. Typical Canal Scene in Louisiana.
General View of Plantation.
Cutting Rice with Sickle.
Binders Cutting Rice.
Single Plant of Rice.
Chinese Laborers.
Bread Made with Different Flours:
- Bread Made with Rye Flour.
- Bread Made with Barley Flour.
- Bread Made with Oat Flour.
- Bread Made with Kafir Corn Flour.
- Bread Made with Corn Meal.
- Bread Made with Rice Flour.
- Bread Made with Graham Flour.

50-50 Biscuit.
100 Per Cent Biscuit.
Heroic Women of France (2 slides).
Wheat is Needed for the Allies.