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UNITED STATES FOOD ADMINISTRATION

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The Day's

FOOD

in

WAR and PEACE



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UNITED STATES DEPARTMENT OF AGRICULTURE  
WOMAN'S COMMITTEE, COUNCIL OF NATIONAL DEFENSE



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## THE FIVE FOOD GROUPS AND THEIR USES.

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Anyone who tries to plan meals to meet the needs of the body will find the task made easier by thinking of the common food materials as grouped under five heads and then making sure that the day's diet includes something from each group, and not too much from any one group.

The five groups are as follows:

(1) **FRUITS AND VEGETABLES.** Without these there is danger that the diet may be lacking in mineral matter and other substances needed in the making of tissues and for keeping the body in health.

(2) **MILK, CHEESE, EGGS, MEAT, FISH, AND DRIED LEGUMES** (peas, beans, etc.). Without these there is danger that the diet may be lacking in protein, an indispensable tissue builder.

(3) **CEREALS** (wheat, oats, rye, corn, barley, and rice) and their products; potatoes, sweet potatoes. Without these the diet would contain practically no starch, the cheapest kind of body fuel.

(4) **SUGAR**, molasses, sirups, honey, and other sweets. Without these the diet would be lacking in sugar, valued as body fuel and for its flavor.

(5) **FATS** (butter, lard, meat fat, and olive, peanut, cottonseed, and other fats and oils). Without these the diet might be lacking in fat, which has a high value as body fuel and gives to food an agreeable quality commonly called "richness."

# THE FIVE FOOD GROUPS AND THEIR USES

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The five groups are as follows:

- (1) **FRUITS AND VEGETABLES.** Without these the diet may be lacking in mineral matter and the substances needed in the making of tissues and for keeping the body in health.
- (2) **MILK, CHEESE, EGGS, MEAT, FISH AND BIRDS.** Without these there is danger that the diet may be lacking in protein, an indispensable constituent of tissues.
- (3) **CEREALS** (wheat, oat, rye, corn, barley, and rice) and the products of potatoes, sweet potatoes. Without these the diet would contain insufficient starch, the chief source of body fuel.
- (4) **SUGARS** (sugar, honey, and other sweets). Without these the diet would be lacking in energy, a chief source of body fuel and of the behavior of the body.
- (5) **FATS** (butter, lard, meat fat, and olive, peanut, cottonseed, and other fats and oils). Without these the diet might be lacking in fat, which has a high value as body fuel and gives to food an agreeable quality commonly called "taste".

## INTRODUCTION.

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IDA M. TARBELL,

*Woman's Committee, the Council of National Defense.*

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No finer piece of practical work was ever put up to the American woman than that assigned her in the national campaign for food control. There are no two questions about the necessity for scientific handling of our food supply. All that is needed to prove the point is to apply the multiplication table. We must so use our food that we keep all of our people abundantly nourished. At the same time, we must release for the Allies in Europe sufficient quantities of those foods which are necessary for their health and which can only be obtained through us. The multiplication table shows that it can be done. But to do it means not only resolution—it means knowledge. Nothing is more needed at the moment than a clear understanding by all women of just how their part in this tremendous task is to be carried out.

It is not easy for the busy woman who is not in direct touch with the sources of scientific information on the subject of food to learn just what she ought to do and how to do it. She knows that she is not doing her part unless in place of those things that she gives up for the sake of the Allies, she provides her family with others which are equally nutritious. But where can she learn how to do this?

This set of lessons has been prepared for her. Their intelligent use will teach her how to readjust the family meals to meet the national needs.

The lessons have been planned and edited, at the request of the Woman's Committee of the Council of National Defense, by experts from the United States Department of Agriculture and from the United States Food Administration. A glance at the list of names attached to these different lessons will show that the editors have been able to rally to their help some of the best-known specialists in the country. It is only another of the many proofs that we are having that there is no talent so superior that it does not gladly turn all that it has to the use of the country.

It is believed that these lessons, with their lists of references and of carefully selected lantern slides by which they may be illustrated, will be of enormous educational value. What is taught here is not only good for war times; it is equally a contribution to peace. To learn to do every common thing in life in the most scientific manner is one of our high duties at the present moment, but learning to meet our great need now will do much to help us as a Nation in the future to do these common things in a finer and more comprehending way.



**HOW TO USE THE LESSONS.**

This course of lessons is intended to teach two things. First, it shows what the Food Administration asks this Nation to do to make sure that we and the Allies shall be sufficiently fed while war disorganizes agriculture and commerce and changes the food supply of the world. Second, it shows what kinds and quantities of food are needed for health, and how our common food materials may be combined to meet these needs most effectively. Unless we understand the first of these two things we can not do our immediate patriotic duty. Unless we understand the second we can not expect, either in war or peace, to get the best returns in health and comfort from the money we spend for food. If, in learning to adapt our food habits to war conditions we learn what good food habits really are, we shall know how to live more wholesomely and happily in ordinary times, and so shall have gained something of permanent value from our temporary difficulty.

The material in the lessons is arranged in a way which, it is hoped, will make it useful to different kinds of organizations and serve as a guide for formal or informal club programs, community lectures, practical demonstrations, and so on. Each topic can be covered fairly satisfactorily in one meeting, but it is very much hoped that some clubs will devote several meetings to each. For example, one meeting might be devoted to a talk or lecture based on the text given here and supplemented by material from the references. This might be illustrated by lantern slides or pictures, or these could be shown on another day. One meeting might be given to a practical demonstration of the dishes suggested and still another to an informal discussion of the subject and an exchange of practical experience among the members.

Though a trained leader is not necessary, in many cases, especially where demonstrations are to be made, the assistance of a person familiar with the subject matter and used to such work will doubtless add greatly to the value of the lessons. In almost every community there are found graduates of good schools of home economics who will undoubtedly be capable and willing to render such assistance. Their names can be obtained from the head of the home economics work in the local schools, from a local branch of the American Home Economics Association, or from the Home Economics Department of the State University or the State College of Agriculture, or other training schools.

In groups without a trained leader papers may be prepared in much the same way as is done with literary or artistic subjects, the text of each lesson serving as the basis for the paper, with supplementary material obtained from the pamphlets referred to, or one or more members may be appointed to take charge of the meeting. They should post themselves on the subject and give informal talks or lead discussions. General discussion of practical ways of applying the suggestions made in the lesson should prove especially interesting and helpful to women actually engaged in adapting the meals to changes in our food supply.

The lantern slides suggested for use in connection with each lesson are made from negatives in the possession of the United States Food Administration and the United States Department of Agriculture. They may be ordered from the Section of Illustrations of the United States Food Administration. State leaders can, perhaps, help in the arrangement of dates so that one set of slides can be used in several communities. In ordering slides at least three weeks must be allowed for a set to be made in Washington, and to this must be added the time needed for transmitting the order and delivering the slides.

Small prints made from the same negatives as the slides can be obtained. These may be used in projectoscopes and similar lanterns or may be displayed in any other convenient way. They should be ordered from the Section of Illustrations of the United States Food Administration, Washington.

The government publications referred to in connection with each lesson are divided into two groups: (a) Those distributed free of charge and (b) those sold by the Government at a nominal price. In ordering those on the "free" list, it should be remembered that, although the Government will cheerfully send them out as long as the supply lasts, the editions are limited and copies should, therefore, not be ordered unless they are actually needed. The United States Food Administration publications and the United States Food Leaflets may be ordered through the Federal Food Administrator of each state. United States Department of Agriculture publications for free distribution may be obtained from that department, Washington, D. C. Those for which a price is quoted must be purchased from the Superintendent of Documents, Washington, D. C. There is no charge for postage on these publications.

Aside from these publications of the United States Government, many states issue similar ones for local use. These are often very valuable. Information regarding them may be obtained from the Director of Extension at the State College of Agriculture or from the State University.



The general equipment needed for demonstration consists of:

(1) A table at which the demonstrator works. An ordinary kitchen table 2x4 feet and of comfortable working height is desirable.

(2) A stove. A three-burner gas plate or oil stove, with a portable oven for baking, usually proves sufficient. It may be placed at the right of the work table.

(3) A table or movable cupboard for supplies and clean implements. This is most conveniently placed behind and to the left of the work table.

(4) A table for soiled dishes, etc. This may be placed behind the worker at the right.

(5) If the food prepared is to be sampled by the audience, a small extra table for serving is convenient, though not necessary. It may be placed at the left in front of the supply table.

Each demonstrator should arrange with those in charge of the meeting for the supplies and the cooking and serving dishes required by the recipes she plans to work out.

The recipes given are merely suggestive. More than can be used at a demonstration have been given, to afford opportunity for selection. It is especially desirable that the demonstrator use foods that are locally available, and that she emphasize the urgent need of saving transportation. In the later lessons especially there is an opportunity to show the use of the vegetables and fruits that are at hand, and the different ways of using those that have been canned and dried at home.

## LESSON I.

Our problem is to feed the Allies and our own soldiers abroad by sending them as much food as we can of the most concentrated nutritive value in the least shipping space. These foods are wheat, beef, pork, sugar, and fats.

Our solution is to eat less of these and as little of all foods as will support health and strength. All saving counts for victory.

The situation has become critical. There is not enough food in Europe, yet the soldiers of the Allies must be maintained in full strength; their wives and children at home must not face famine; the friendly neutrals must not be starved; and, finally, our own Army in France must never lack a needed ounce of food.

There is just one way in which all these requirements can be met. North America must furnish the food. And we must furnish it from our savings because we have already sent our normal surplus.

England, Ireland, France, Italy, and Belgium have always depended upon imports for a great part of their food supplies. Distant markets are now, because of the submarine, only partially accessible. America offers the nearest and safest route. A ship can make two journeys from England to the United States in the same time as one to Argentina, and three to the United States in the same time as one to Australia.

The available supply of food is less than ever before. Many million men have changed from sedentary workers to soldiers, and soldiers need more food. Millions of women are doing harder work and need more food. The very fact that these people are now engaged largely in manual pursuits decreases production and makes greater the need of importing food.

The Allies are making every effort to reduce waste, and they ask us to meet only their absolutely imperative needs.

If we are to maintain a continuous supply of food to them, we must reduce our consumption of wheat, meat, fat, and sugar, and we must lessen waste.

Food is wasted if it is eaten when it is not needed as well as when it is thrown away.

Conservation is a moral issue. It is intemperance to waste food.

Conservation means national saving of all resources.

High prices are conservative by reducing the standard of living of the majority.

Real conservation lies in the equitable distribution of the least necessary amount, and in this country we must obtain it as a voluntary service, not alone a contribution of food to the Allies, but a contribution to lower prices.

Increased production is an absolute necessity.

If this democracy has not reached such a stage of development that it has in its people the self-denial, voluntary self-denial, willingness to sacrifice, to protect its own institutions and those of Europe from which our own were bred, then it deserves to go down and take another form of civilization.

We hold it in our power, and ours alone, to keep the wolf from the door of the world. This duty is wider than war—it is as wide as our humanity.

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The Allies are making every effort to reduce waste and they are as to meet our needs absolutely imperative needs.

If we are to maintain a continuous supply of food to them, we must reduce our consumption of wheat, meat, fat, and sugar, and we must

be careful that it is eaten when it is needed as well as when it is thrown away.

Conservation is a moral issue. It is imperative to waste food.

Conservation means national saving of resources.

## FOOD AND THE WAR.

HERBERT HOOVER.

I have been asked to review the reasons why we are pleading with the American people for stimulation of our food production, for care, thought, and economy in consumption and in the elimination of waste.

Food is always more or less of a problem in every phase of its production, handling, and consumption. It is a problem with every farmer, every transporter and miller, every householder. It is a problem with every town, state, and nation. And now, very conspicuously, it is a problem with three great groups of nations, namely, the Allies, the Central Empires, and the Neutrals; in a word, it is a great international problem.

The question of who wins the war is the question of who can endure the longest, and the problem of endurance, in a large degree, is a problem of food supply and the ships to carry it.

The food problem to-day of our own Nation, therefore, has as its most conspicuous phase an international character. A sufficient and regular supply of food for the maintenance of the great field armies of the fighting Allies and of their no less great armies of working men and working women in the war industries, and finally for the maintenance of the women and children in the home, is an absolute necessity, second to no other, for the successful prosecution of the war for liberty.

The Allies are dependent upon us for food and for quantities larger than we have ever before exported. They are the first line of our defense, and our money, our ships, our food supply, and even our lifeblood must be of a common stock. If we can not maintain the Allies in their necessities, we can not expect them to remain constant in war. If their food fails, we shall be left alone in the fight, and the western line will move to the Atlantic seaboard. It is thus a matter of our own safety and self-interest to send them food. It is more than this—it is a matter of humanity that we give of our abundance, that we relieve suffering.

In normal pre-war times England, Ireland, France, Italy, and Belgium were, to a large degree, dependent upon imports for their food supplies. They yearly imported over 750,000,000 bushels of grain, together with vast quantities of animal and fat products. Belligerent lines have cut off their supplies from Russia, Bulgaria, and Roumania, and the demands of Germany on surrounding neutrals and their new needs, have reduced the supplies from those quarters. The voyage from Australia is three times as long, and, therefore, requires three times as many tons of shipping as is required from North Atlantic ports. It is also more dangerous because of the longer exposure to submarine attack. Because of the continuous destruction of shipping these great markets are now only partially accessible, and the more remote markets will be increasingly

restricted until our own new ships are available to help. Beyond this, again, much food is lost at sea—perhaps 10 per cent of the actual shipments—and America offers the nearest and safest route.

Of no less concern than the inaccessibility of markets, and the losses at sea, is the decrease of production among the Allies. If 40,000,000 men are taken out of productive labor and put into war and war work, there can only be one result—that is, diminution in the production of food. Another cause of this diminution is the lessening in the amount of fertilizer which is available, through shortage of shipping and losses at sea, and the consequent reduction in the productivity of the soil itself. In France the enemy has occupied over 3,000,000 acres of agricultural land. In 1917 the decrease in production stood out in more vivid silhouette than ever before.

Add to this the present necessity of increasing the daily ration of other millions of men turned from sedentary occupations into those of strenuous physical labor, resulting in a marked increase of consumption, and this deficiency between the food needs and the food production of the Allies becomes greater than ever, with consequent large increase in the food quantities imperatively needed from the United States if the allied armies are to be able to "carry on." North America is thus called upon, by both allies and neutrals, for quantities of food far beyond its usual exports.

How great the burden upon the United States may be made clear by a few figures: During the last three-year period before the war we averaged an annual export of 120,000,000 bushels of grain and 500,000,000 pounds of animal products and fats. From July, 1916, to July, 1917, we exported over 400,000,000 bushels of grain and 1,500,000,000 pounds of animal products and fats, and from July, 1917, to March, 1918, the amount was 224,000,000 bushels of grain and 926,500,000 pounds of animal products and fats.

As the causes of Europe's shortage grow in intensity our load will become of still greater weight.

Our wheat situation is to-day<sup>1</sup> the most serious situation in the food supply of the whole allied world. We have had a stock taking in the early days of March, and we find that our harvest was less than it was estimated. There is also another and more bitter difficulty in the delays of shipping, in the growing scarcity of ships, which has thrown a larger burden upon the American people in feeding the Allies than we had expected. We had all expected that the Argentine supply would be available in Europe before this time. Those supplies will not arrive in quantity for another two months, and even then will be less than we had hoped. The consequence is that the supply of breadstuffs in Europe is at its lowest ebb. There is but one source of replenishment, and that is the United States.

The Allies are making every possible effort to reduce consumption and eliminate waste. Most of the principal staples are dealt out to the public under restriction of one kind or another. Fines and even imprisonment are levied on persons who throw away stale bread. But despite all these efforts, there is not such a reduction in national consumption as one might expect. Besides the men in the trenches and the men working 10 to 11 hours daily in the shops, millions of women have been drawn into physical labor, and all of these require more food than they required under normal conditions in pre-war times. There is one feature of all the efforts toward conservation in Europe that stands out vividly—the non-working population is in large part composed of the old, the women, and the children; they are the class upon which the

<sup>1</sup>March 30, 1918.



incidence of reduction largely falls. The people in war work are in national defense, and they must have the first call on all supplies. Therefore, any failure on our part in supplying food will fall upon the class toward which our natural sympathies must be the greatest. There is a point below which the supply can not fall and tranquility be maintained.

If we are to ship to the Allies the amount that is necessary to give even the minimum of the bread supply to their people we must cut our own consumption by one-half, at least until next harvest. The limit that we propose on allied shipment is simply the limit of our exporting power. It may occur that we must reduce the wheat consumption of the United States more than one-half. We intend to ship the wheat and flour from here, willy-nilly, but it is not a simple problem of taking breadstuffs from the people.

Every shipment of grain—every shipment of wheat—that we can send from our ports, is a shipment saved from the Argentine. Every ship can do double the duty from our ports that it can do from the Argentine. Every time that we send a shipment, we save two ships from the Argentine. Every time we save a ship we save building a ship. Every time we save a ship we save the transport and the supply of one regiment of American soldiers. The Allies have asked us to send reinforcements, larger and faster than we had expected. If we are to do this we must draw the ships from the Argentine service and put them into American ports.

We are asked why we do not ship corn, why we wish to ship wheat. No corn can be shipped across the Atlantic for two months after the first of April, because that is the germinating season for corn and it will not stand shipment.

Wheat is a durable grain. From the point of view of interallied feeding, wheat is absolutely vital. It is the one grain that will serve. Up to this time the Allies have used some 30 to 40 per cent of corn in their bread. Their bread has been as nothing compared to the bread that we have had in this country, either in palatability or luxuriousness. After this, if they are to be fed, they must be fed on wheat-based bread, or on none at all.

Now, in this period of extreme difficulty in Europe, the time when the morale of the civil population of our allies is at its lowest ebb, it is not for us to say, "You can wait two months and then you can eat corn." It is for us to say, "You shall receive every single grain of wheat that our ports can handle."

Our population has lived before this on corn. For three years the Southern States lived and put up a good fight with no wheat. For periods of four and five years at a stretch no wheat was known to the people of New England. There is no reason why we should insist on having the most luxurious grain at this time, when it is our only transportable grain.

If we consider our own supplies, we find that we have enough of corn. We have a great surplus of potatoes, vegetables, fish, and poultry. These latter commodities, however, do not lend themselves to shipment, either from bulk or other reasons. Owing to the limitation of shipping, we must confine our exports to the most concentrated foodstuffs—grain, beef, pork, fats, and sugar.

The logical and sensible first step in adapting our supplies to allied needs is to substitute corn, potatoes, vegetables, fish, and poultry for those staples we wish to export. The proportion of vegetables in our national diet is low, and it will not only do no harm to increase it but, in fact, will contribute to public health.

Besides substitution, the other great means of increasing our exportable surplus is to cut out waste—the gospel of buying in smaller quantities, serving smaller portions, cleaning the plate, and using our food wisely in economy. There are a hundred avenues of saving—if we inspect the garbage can.



There are other features of food conservation that are of national importance. One of them lies in the whole problem of national saving. Wars are paid for out of the savings of a people. Whether we meet that expenditure now or after the war, we shall have to pay it some day from our savings. The savings and power of a people lie in the conservation of commodities and of productive labor. If we can reduce the consumption of the necessary commodities in this country to a point where our laborers can turn to the production of war materials; if we can secure that balance and get to the point where we can free our men for the Army, we shall have solved one of the most important economic problems of the war. If we are to carry on this war, and carry it on without economic danger, we must meet a major portion of its expense now during the war from the savings which we make at the present time.

Conservation has other bearings as well. There are the great moral questions of temperance, self-denial, and self-sacrifice. We have been a most extravagant and wasteful people, and it is as truly intemperance to waste food as it is to take unnecessary drink.

This year, in order to maintain the Allies in war, we must make even further efforts to increase the export over last year, and it is obvious not only that we can not do so without conservation, but that unless we do have conservation, we must expect higher prices.

It is often said that high prices are themselves a conservation measure. It is true high prices reduce consumption, but they reduce it through the methods of famine, for the burden is thrown onto the class of the most limited means, and thus the class least able to bear it. There is no national conservation in robbing our working classes of the ability to buy food. High prices induce conservation by reducing the standard of living of the majority. They work no hardship on the rich but they discriminate against the poor. Real conservation lies in the equitable distribution of the least necessary amount, and in this country we can only hope to obtain it as a voluntary service, voluntary self-denial, and voluntary reduction of waste, by each and every man, woman, and child according to his own abilities; not only a contribution of food to the Allies but a contribution to lower prices. We have and will retain sufficient food for all our people. There is no economic reason why there should be exorbitant prices. We are not in famine.

It is obvious that our people must have whatever food is necessary and must have it at prices which they can meet from their wage. If we are to have ascending prices, we must have ascending wages. But as the wage level rises with inequality, it is the door leading to strikes, disorder, to riots, and defeat of our national efficiency. We are thus between two fires—to control prices or to re-adjust the income of the whole community. The verdict of the whole of the world's experience is in favor of price control as the lesser evil.

One illusion in the mind of the public I am anxious to dissipate. The Food Administration, through its own authority and the cooperation of other Government agencies, can accomplish a great deal, but it is limited in its authority to the area of commerce between the producer and the retailer. In this area we can only regulate the flow of trade, hold it to moderate profits, and excise speculation. This is an economic step short of price control, except where we can accomplish this control by indirect means.

The Food Administration has no power to fix prices except through the control of export buying, the power to buy and sell certain commodities, and the further power to enter into voluntary agreements with producers.

We have asked all to join us as voluntary workers, as we have to effect by a democratic movement the results which autocracy has only been able to effect by law and organization. Indeed, we feel there is a service here greater than

the actual saving and the actual practical result. There is the possibility of demonstrating that democracy can organize itself without the necessity of autocratic direction and control. If it should be proved that we can not secure a saving in our foodstuffs by voluntary effort, and that as a result of our failure to our country we are jeopardizing the success of the whole civilized world in this war, it might be necessary for us to adopt such measures as would force this issue; but if we come to that unhappy measure, we shall be compelled to acknowledge that democracy can not defend itself without compulsion; that is autocracy, and is a confession of failure of our political faith.

If we can secure allegiance to this national service in our 20,000,000 kitchens, our 20,000,000 breakfast, lunch, and dinner tables; if we can multiply an ounce of sugar or fats or what not per day by millions, we shall save what must be saved. If we save an average of a pound of flour per week for each one of us, we save 125,000,000 bushels of wheat per annum. If we add an equal amount of saving on the part of the 200,000 manufacturing, wholesale, and retail establishments of the country, we can increase our exports to the amounts absolutely required by the allies. It is this multiplication of minute quantities—teaspoonfuls, slices, scraps—by millions that will save the world. Is there anyone in this land who can not deny himself or herself something? Who can not save some waste? Is not your right to life and freedom worth this service?

### HOW YOU CAN HELP.

Remember that the situation is constantly changing. Watch for orders. Adapt your food habits to present needs. Until the next harvest—

*Eat less wheat.* Reduce wheat consumption to the very minimum. Use instead corn, oats, rice, barley, and potatoes.

*Eat less meat.* Use fish and other sea food, poultry, and rabbits instead of much pork and beef, because they can not be shipped in compact form like meat and are more perishable. Use beans, cheese, and nuts.

*Eat less fat.* Use all fats carefully. Waste none. We use and waste two and a half times as much fat as we need.

*Eat less sugar.* If you eat half as much sweet as before you are still eating more than the Englishman or Frenchman.

*Use milk freely.* Do not waste a drop.

*Eat plenty of fruits and vegetables.*

*Do not hoard food.* Hoarding food in households is both selfish and unnecessary. The Government is protecting the food supply of its people.

Remember that the requests of the Food Administration are for a minimum of saving. Do more if you can.

## RECIPES WITH SUGGESTIONS FOR DEMONSTRATION.

### VICTORY BREADS.

This name may be given to any bread which contains at least 25 per cent<sup>1</sup> of some wheat flour substitute. Satisfactory and palatable yeast breads may be made containing 50 per cent substitutes. Whenever this can be increased it should be done. Since 100 per cent substitutes are more easily used for quick breads, these should largely replace yeast breads while the shortage of wheat continues.

In giving a bread demonstration such substitutes should be chosen as are most available in the particular locality. If yeast bread is to be made, a bread recipe in common use, and the kind of yeast that is familiar, should be chosen. It is more helpful to show how a familiar rule may be modified than to give new recipes.

Each locality has different substitutes for wheat. At least part of the substitutes used in this lesson should be cereals that are easily available, though it may be worth while to use one to help create a demand even though it can not be had in abundance at the time.

In general, wheat flour may be replaced by an equal weight of any substitute flour.

#### EQUIVALENT MEASURES.

1 cup bread flour	}	1 $\frac{1}{3}$ to 1 $\frac{1}{2}$ cups barley flour.
or		1 $\frac{1}{8}$ cups ground rolled oats.
1 $\frac{1}{8}$ cups pastry flour.	}	1 cup (scant) corn flour.
		$\frac{7}{8}$ cup rice flour, buckwheat, coarse corn meal.

#### WEIGHT OF EQUAL MEASURE OF DIFFERENT FLOURS.

- 1 cup wheat flour (bread) (113 grams)=approximately 4 ounces.
- 1 cup wheat flour (pastry) (100 grams)=approximately 3 $\frac{1}{2}$  ounces.
- 1 cup barley flour (76 grams)=approximately 2 $\frac{2}{3}$  ounces.
- 1 cup buckwheat flour (133 grams)=approximately 4 $\frac{2}{3}$  ounces.
- 1 cup corn flour (109 grams)=approximately 4 ounces.
- 1 cup corn meal, coarse (130 grams)=approximately 4 $\frac{2}{3}$  ounces.
- 1 cup corn meal, fine (125 grams)=approximately 4 $\frac{1}{2}$  ounces.
- 1 cup hominy grits (134 grams)=approximately 4 $\frac{3}{4}$  ounces.
- 1 cup oats, rolled (75 grams)=approximately 2 $\frac{2}{3}$  ounces.
- 1 cup ground rolled oats (98 grams)=approximately 3 $\frac{1}{2}$  ounces.
- 1 cup rice flour (131 grams)=approximately 4 $\frac{2}{3}$  ounces.

<sup>1</sup> This amount of substitution was required on April 14, 1918. It may be increased later.

## YEAST BREADS.

50 per cent wheat flour.	} By weight.
38 per cent wheat flour substitute.	
12 per cent potato (1 to 4 basis).	

From various experiments it was at first thought that in yeast breads not more than one-fourth of the wheat flour could be satisfactorily replaced by substitute flours without materially changing the lightness and palatability of the loaf. Work in the experimental kitchen of the Home Conservation Division of the Food Administration and of the Department of Agriculture has shown that a 50 per cent substitution, or perhaps a still greater one, may be made if the method is slightly modified.

1. Potato is used as one-fourth of the substitute on the 1 to 4 basis (i. e., three-fourths of the weight of the potato is reckoned as water).
2. The dough is made much stiffer than ordinary bread dough.
3. In some cases the best results has been obtained with four risings.

The recipes given will make an 18 to 19 ounce loaf.

## GROUND ROLLED OATS BREAD.

Made from rolled oats run through a food chopper.

$\frac{1}{2}$ cup liquid.	1 teaspoon salt.
$\frac{1}{2}$ cake compressed yeast.	1 teaspoon fat.
1 tablespoon sirup.	$1\frac{1}{3}$ cups (4 $\frac{3}{4}$ ounces) ground oats.
$\frac{3}{4}$ cup (6 ounces) mashed potato.	$1\frac{1}{2}$ cups (6 ounces) wheat flour.

DIRECTIONS.—Make a sponge of the liquid, yeast, sirup, mashed potato, and enough of the ground oats to make a batter. Allow to rise until light (about one hour), and then add the salt, fat, and remainder of the oats and the flour. The dough must be much stiffer than ordinary-bread dough.

Knead thoroughly and allow to rise until double in bulk. Knead, mold into a loaf, and, when double in bulk, bake 50 minutes to 1 hour. Begin in a moderately hot oven (400° F.). After 15 to 20 minutes, lower the temperature slightly (to 390° F.) and finish baking.

If dry yeast is used, make the sponge with  $\frac{1}{8}$  to  $\frac{1}{4}$  cake and allow it to rise over night. If liquid yeast is preferred, substitute  $\frac{1}{4}$  cup for  $\frac{1}{2}$  cake of the compressed yeast and reduce the liquid in recipe to  $\frac{1}{4}$  cup.

## CORN MEAL BREAD.

$\frac{1}{2}$ cup liquid.	1 teaspoon salt.
$\frac{1}{2}$ cake compressed yeast.	1 teaspoon fat.
1 tablespoon sirup.	$1\frac{1}{8}$ cups (5 ounces) corn meal.
$\frac{3}{4}$ cup (6 ounces) mashed potato.	$1\frac{3}{4}$ cups (7 ounces) wheat flour.

Follow the directions for rolled oats bread.

Rice flour bread may be made by using 1 cup (4 $\frac{3}{4}$  ounces) of rice flour and  $1\frac{1}{2}$  cups (6 ounces) of wheat flour. Buckwheat bread will use  $1\frac{1}{8}$  cups (5



ounces) of buckwheat and  $1\frac{3}{4}$  cups (7 ounces) of wheat flour. Barley bread will need  $1\frac{3}{4}$  cups ( $4\frac{3}{4}$  ounces) of barley flour and  $1\frac{1}{2}$  cups (6 ounces) of wheat flour. Corn flour bread may be made with  $1\frac{1}{4}$  cups ( $4\frac{3}{4}$  ounces) of corn flour and  $1\frac{2}{3}$  cups ( $6\frac{3}{4}$  ounces) of wheat flour. In each case all the other ingredients are the same, and the same method is used as for rolled oats bread.

### BAKING POWDER LOAF BREADS.

#### BARLEY AND OAT BREAD.

50 per cent barley flour. } By weight.  
50 per cent ground rolled oats. }

1 cup liquid.	4 teaspoons baking powder.
1 tablespoon fat.	1 teaspoon salt.
4 tablespoons sirup.	$1\frac{1}{8}$ cups (5 ounces) barley flour.
2 eggs.	$1\frac{1}{2}$ cups (5 ounces) ground rolled oats.

*Directions.*—Mix the liquid, melted fat, sirup, and egg. Combine the liquid and well mixed dry ingredients. Bake immediately as a loaf in a moderately hot oven ( $400^{\circ}$  F.) for one hour or until thoroughly baked. The fat may be increased to 4 tablespoons. Nuts, raisins, or dates may be added if desired.

#### CORN FLOUR AND BUCKWHEAT BREAD.

50 per cent corn flour. } By weight.  
50 per cent buckwheat. }

1 cup liquid.	4 teaspoons baking powder.
4 tablespoons fat.	1 teaspoon salt.
4 tablespoons sirup.	$1\frac{1}{4}$ cups (5 ounces) corn flour.
2 eggs.	1 cup (5 ounces) buckwheat.

Follow the directions under "Barley and oat bread."

To make oat and corn flour bread substitute  $1\frac{1}{4}$  cups (5 ounces) of corn flour for the barley flour in barley and oat bread. This bread is particularly good with the addition of raisins and nuts, since it is somewhat dry. For rice and barley bread use 1 cup (5 ounces) of rice flour in place of the ground rolled oats in the barley and oat bread.

#### BOSTON BROWN BREAD.

1 cup corn meal.	1 teaspoon salt.
1 cup oatmeal.	2 cups sour milk.
1 cup buckwheat or barley flour.	$\frac{3}{4}$ cup molasses.
1 teaspoon soda.	Raisins if desired.
2 teaspoons baking powder.	

*Directions.*—Mix dry ingredients, add milk and molasses, and steam 3 hours or bake 45 minutes to 1 hour in moderate oven. One teaspoon soda may be added if a dark bread is desired.

## LESSON II

### REFERENCES.

#### United States Food Administration:

Ten Lessons on Food Conservation—Lessons I and II.

Available in every public library.

Bulletin No. 6, Food, an International Problem.

Bulletin No. 7, The Present Campaign.

War Economy in Food, with Suggestions and Recipes for Substitutions in the Planning of Meals.

Order from the Federal Food Administrator in your state.

#### United States Department of Agriculture:

Farmers' Bulletin No. 955, Use of Wheat Flour Substitutes in Baking.

Kitchen Card. Save Wheat—Use Wheat Substitutes. Measurements of Substitutes Equal to One Cup of Flour.

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

Farmers' Bulletin 641, pp. 20-23, Food Production and Requirements of Various Countries. Price, 5 cents.

Order from the Superintendent of Documents, Washington, D. C.

#### United States Food Leaflets:

No. 20. Wheatless Breads and Cakes.

Order from the Federal Food Administrator in your state.

Much interesting information regarding the world's food situation is contained in Vol. LXXIV (November, 1917) of The Annals, the official organ of the American Academy of Political and Social Science. This may be purchased for \$1 from the Academy, Thirty-sixth Street and Woodland Avenue, West Philadelphia Station, Philadelphia, Pa., or may be consulted in any large library.

The Ten Lessons on Food Conservation were prepared for the use of teachers' institutes in the summer of 1917 and give a statement of the Food Administration's program at that time. Bulletins Nos. 6 and 7 give simpler discussions of the food situation and general ways of meeting it. "War Economy in Food" is prepared primarily for housekeepers and contains many practical suggestions. Farmers' Bulletin 641 includes a brief statement of the food supply of the principal nations prior to 1914.



## LANTERN SLIDES.

The Reaper—French Women Harvesting Grain in Reconquered District of Somme.

French Women Threshing.

Poverty Forces a Mother to Dispose of Six Children.

A Crippled Hero of France Still Doing His Bit.

German Prisoners at Work in England.

A Belgian Schoolhouse is used as a Center for the Allotment of Wheat.

Women and Children of Brittany, France, Praying Before the Statue of Christ for a Plentiful Supply of Sardines.

If Each Person Saved Each Week.

Not What We Give but What We Share.

Save the Grains and Share the Bushels.

Distributing Bread Tickets—Belgium.

France's Crippled Veterans Do "Double Bit."

Wheat Ready for Shipment to Europe. Saving your Slice a Day Makes this Possible.

Getting Ready the City Soup.

America's Part in Feeding the World. Exports of Corn.

The Sentinel.

Save the Wheat for the Fighters.

Map of Wheat Routes of the World.

Italian Appeal for Food Conservation.

Polish Appeal for Food Conservation.

Belgian Appeal for Food Conservation.

They are Giving All.

Will You Help the Women of France?

Victory is a question of Stamina.

Eat Only What You Need.

## LESSON II.

Food must furnish us with the materials out of which the body is built and kept in repair and those needed for the work of the muscles.

A healthful and palatable diet contains foods from each of five groups.

Food groups.	Purposes.	Amount needed daily by a man at moderate muscular work.
No. 1.—Fruits and vegetables.....	To give bulk and to insure mineral and body-regulating materials.	1½ to 3 pounds.
No. 2.—Medium-fat meats, eggs, cheese, dried legumes, and similar foods, milk.	To insure enough protein.....	8 to 16 ounces (4 ounces of milk counting as 1 ounce).
No. 3.—Wheat, corn, oats, rye, rice, and other cereals, potatoes, sweet potatoes.	To supply starch, a cheap fuel, and to supplement the protein from Group 2.	8 to 16 ounces (increasing as foods from Group 2 decrease).
No. 4.—Sugar, honey, sirup, and other foods consisting chiefly of sugar.	To supply sugar, a quickly absorbed fuel, useful for flavor.	1½ to 3 ounces.
No. 5.—Butter, oil, and other foods consisting chiefly of fat.	To insure fat, a fuel which gives richness.	1½ to 3 ounces.

Food is the fuel of the human machine, and our bodies need different quantities according to our age, size, and occupation.

Foods that supply fuel are protein, that we think of chiefly as a building food; fats; and carbohydrates, the latter including starches, sugars, and cellulose or woody fiber.

The same amount of food fuel (calories) can be bought at very different prices, depending upon the kind of food we choose.

The cereals, or breadstuffs, are almost the cheapest fuel foods and furnish some building material as well. This is why bread has been called "the staff of life." Other cereals are just as good as wheat.

We can not safely choose our food simply as fuel. We need it also for building the body and keeping it in good repair.

Though milk is not so cheap as cereals as a fuel food, it is one of the best and cheapest foods for building and repairing.

Meat, chiefly a building food, is a very pleasant addition to our diet, but it is safer to cut down on meat than on milk.

Fruits and vegetables are also economical for keeping the body in repair, though most of them are not cheap fuel foods.

## FOOD FOR A DAY.

DR. GRAHAM LUSK, *Cornell Medical School.*

We all learned in the nursery that—

Some like it hot, some like it cold,

Some like it in the pot, nine days old.

This old-time tale shows how people have always liked different kinds of food. We also remember the domestic economy of Mr. Jack Spratt and his wife, who, on account of diverse tastes, "licked the platter clean," an old story which means the same as "the gospel of the clean plate."

People used to think that if they ate the right amount of the kinds of food which agreed with them, and if they were reasonably careful in its use, that was all there was to it; but nowadays the statesmen and scientists are telling us we must think of other things besides.

For the war has upset the world's food supply so that we must share our abundance with our less fortunate allies. Scientists have discovered the ways in which food nourishes the body, and say we must be sure to provide different kinds of food to meet all these different needs, as well as to consider how much it costs or how good it tastes.

Our food must furnish us with the materials out of which the body is built, in order to keep it in proper repair, and with those needed for the work of the muscles. The work of the muscles may use up much more food than building and regulating the body do, and in this lesson we are going to think of the amount of food for a day needed for this purpose. We must never forget the other uses of food, however, or that the best way of making sure that the body gets all the kinds of materials it needs is to take something every day from each of the five groups of food materials given on page 19.

If Mother Goose had been born later in the history of the world she would undoubtedly have made a rhyme about calories, so that from early childhood we would have learned that our lives are dependent upon the fact that we burn up food in our bodies, and that this burning of food gives us heat (or calories) to keep our bodies warm, and also gives our muscles the power to work, just as burning coal drives the steam engine. Everyone ought to know that food is the fuel of the human machine and that the same amount of burning power (or calories) can be bought at very different prices. The laboring man, who does the hardest work, is the greatest consumer of food. He really needs to know the relative cost of the different fuels he eats and with which he does his work. But he has not been at all likely to get any information on the subject.

We can measure the amount of power in a fuel by burning it and finding out how much heat it gives off. We measure the heat by noticing how much it

can warm water. A calorie has been fixed as the unit for the measure of heat, just as a pound is the unit of measure of weight. A calorie is the quantity of heat required to warm a pint of water 4° F.

When we buy a pound of potatoes, peel, boil, and then eat them, we have taken fuel which can burn up in the body and yield 300 calories; or if we eat a pound of bread it will yield 1,200 calories; or a pound of roast beef will yield 1,200 calories; a pound of butter 3,600 calories.

Our bodies need different quantities of food fuel, depending upon the occupation. The number of calories required in different occupations has been given as follows:

*Calories in food needed per day when the workday is eight hours.*

Women.		Men.	
Occupation.	Calories.	Occupation.	Calories.
Seamstress.....	1,800	Tailor.....	2,500
Seamstress (with sewing machine)....	2,000	Bookbinder.....	2,700
Bookbinder.....	2,200	Shoemaker.....	2,800
Housemaid.....	2,300-2,900	Metal worker.....	3,200
Washerwoman.....	2,600-3,400	Furniture painter.....	3,300
		Carpenter.....	3,300
		Farmer.....	3,500
		Stonemason.....	4,500
		Man sawing wood.....	5,400

Boys over 12 need as much food as their fathers do, and perhaps girls over 12 need as much as their mothers, although this is not certainly known.

How can we make all this of any use?

A table is given showing the cost per pound of several foods, the cost per 1,000 calories, as well as the calories in a pound of the food.

*Cost of foods and of energy supplied by them.*

(Prices of July, 1917, in New York City.)

[The list of foods given is, of course, incomplete. There are more complete lists, such as is given by Atwater and Bryant in "The Composition of American Food Materials," Bulletin 28, office of Experiment Stations, U. S. Department of Agriculture, 1906.]

	Price per pound in cents.	Calories in 1 pound.	Cost of 1,000 calories in cents.
GROUP I.— <i>Vegetables and fruits.</i>			
Vegetables:			
White potatoes.....	4.0	310	12.9
Turnips.....	2.5	125	20.0
New Beets.....	5.0	170	27.6
Onions.....	6.0	205	29.3
Spinach.....	3.3	110	30.0
Green peas.....	10.0	255	39.2
Lima beans.....	10.0	236	40.0
Cauliflower.....	6.0	140	42.9
Carrots.....	8.0	160	50.0
String beans.....	10.0	180	55.6
Squash.....	8.0	105	76.2
Lettuce.....	7.0	75	89.4
Celery.....	15.0	70	214.0
Fruits:			
Fresh (in season)—			
Bananas.....	6.0	260	23
Apples.....	5.0	220	23.7
Oranges.....	10.0	153	65
Dried—			
Prunes.....	10.0	1,190	8.4
Apples.....	15.0	1,350	11.1
Peaches.....	15.0	1,205	12.5
Apricots.....	20.0	1,290	15.5



## Cost of foods and of energy supplied by them—Continued.

	Price per pound in cents.	Calories in 1 pound.	Cost of 1,000 calories in cents.
GROUP II.—Foods rich in protein.			
Milk (grade A).....	13.0	650	20.0
Roast beef (rib).....	26.0	1,220	23.4
Buttermilk.....	9.0	340	26.5
Lamb chops (loin).....	43.0	1,300	32.7
Lamb chops (rib).....	38.0	1,080	34.9
American cheese.....	38.0	997	38.0
Young codfish (fresh).....	12.0	325	39.0
Chicken (roasting).....	32.0	772	41.3
Eggs.....	45.0	183	44.7
Beef steak (round).....	34.0	675	50.4
GROUP III.—Cereal foods.			
Corn meal, in bulk.....	6.0	1,655	3.6
Hominy, in bulk.....	6.0	1,650	3.6
Broken rice, in bulk.....	6.0	1,630	3.7
Oatmeal, in bulk.....	7.0	1,860	3.8
Samp, in bulk.....	7.0	1,680	4.2
Rolled oats, in package.....	8.0	1,825	4.4
Macaroni, in package.....	8.0	1,665	4.5
Wheat flour, in bulk.....	8.0	1,620	4.6
Malt breakfast food, in package.....	8.0	1,656	4.8
Farina, in bulk.....	10.0	1,685	5.9
Cracked wheat, in bulk.....	10.0	1,680	5.9
Pearl barley, in package.....	10.0	1,650	6.0
Barley flour, in bulk.....	10.0	1,630	6.1
Whole rice, in bulk.....	10.0	1,630	6.1
Breadstuffs:			
Gingersnaps.....	12.0	1,892	6.3
Graham bread.....	10.3	1,255	8.2
White bread.....	10.3	1,215	8.5
Rye bread.....	10.3	1,180	8.7
Graham crackers.....	18.0	1,955	9.2
Soda crackers.....	18.0	1,925	9.4
French rolls.....	14.0	1,300	10.8
Uneda biscuit.....	24.0	1,934	12.4
GROUP IV.—Fats.			
Cottonseed oil.....	31.0	4,227	7.3
Oleomargarine.....	30.0	3,525	8.5
Peanut butter.....	25	2,825	8.8
Butter.....	43	3,605	11.9
Olive oil.....	51	4,227	12.1
Bacon.....	37	2,725	13.8
Bacon, sliced, in jars.....	65	2,725	23.8
Cream (extra heavy, 40 per cent.).....	65	1,725	37.7
GROUP V.—Sugars.			
Granulated sugar.....	8.0	1,790	4.5
Corn sirup.....	8.0	1,400	5.7

<sup>1</sup> Each.

It would make a good game for some of the bright, older children of the family to calculate how many calories had been bought for the money spent, for example, for the following:

	Calories.	Cost.
Bread (pound).....	1 × 1,200 = 1,200	\$.10 <sup>1</sup> / <sub>2</sub>
Potatoes (pounds).....	2 × 310 = 620	.08
Butter or substitutes (pound).....	3 × 325 = 1,080	.10
Apples (pounds).....	1½ × 220 = 330	.07½
Milk (pint).....	1 × 325 = 325	.07
	3,583	.43
Cost per 1,000 calories.....		.11

This would provide enough food for the father of a family during a day if he were a hard-working farmer, or for his "growing boy," who was helping do "chores" about the farm. Or it would provide enough for a carpenter or a painter of a building, or a washerwoman at hard work.

The diet contains no meat. The head of the house grumbles, not because he needs meat, but because he likes it. The whole idea of such a dietary may be revolting to his soul. This, however, does not prove that the food is bad; it only proves that different people like different things. He would be quite right to complain if he did not have at least one food from the group of foods depended on for protein, but the milk provides this necessary building material.

So if the intelligent young person who wants to know will make a list of the things the family has bought during a week and write after these the quantities in pounds, the number of calories, and the cost, he or she can estimate how much the family is paying for 1,000 calories, and then see whether the bills can not be reduced by substituting cheaper articles for the more expensive.

Perhaps the calculation might look like this:

*Cost and caloric value of the food for a week for a family of five persons.*

	Pounds.		Calories per pound.		Total calories.	Cost.
Beef soup meat.....	4	×	1,110	=	4,440	\$1.04
Codfish.....	1	×	325	=	325	.12
Eggs.....dozen..	1	×	83	=	1,000	.45
Fats of various kinds.....	1	×	3,525	=	3,525	.30
Milk.....quarts..	21	×	650	=	13,650	2.73
Cheese.....	$\frac{1}{2}$	×	1,994	=	997	.19
Bread.....	12	×	1,215	=	14,600	1.22
Macaroni.....	1	×	1,665	=	1,665	.08
Rice.....	1	×	1,630	=	1,630	.06
Oatmeal.....	3	×	1,860	=	5,580	.21
Sugar.....	2	×	1,790	=	3,580	.16
Corn sirup.....	2	×	1,500	=	3,000	.11
Beans.....	2	×	1,605	=	3,210	.32
Carrots.....	4	×	160	=	640	.32
Onions.....	4	×	205	=	820	.24
Potatoes.....	15	×	310	=	4,650	.60
Apples.....	4	×	220	=	880	.20
Prunes.....	2	×	1,190	=	2,380	.20
Cocoa.....	$\frac{1}{2}$	×	2,260	=	1,130	.15
Tea.....	$\frac{1}{2}$	×	.....	=	.....	.20
Coffee.....	$\frac{1}{2}$	×	.....	=	.....	.15
Dates.....	1	×	1,416	=	1,416	.15
					69,118	9.20
Cost per 1,000 calories.....						13

This food supply would be only just sufficient if the father were a clerk, the son at school most of the day, and the wife were thin but well able to do her work. If, however, the father were a laborer, the son an active newsboy, the wife a hard-working woman of good size, and the whole family excellently nourished, about 30 per cent more food would be needed. Let us consider the following values as being the calories needed per day:

	Calories per day.	
	Clerk's family.	Laborer's family.
Father.....	2,500	3,500
Mother.....	2,200	3,000
Son (14 years old).....	2,500	3,000
Daughter (10 years old).....	2,000	2,500
Child (5 years old).....	1,400	1,700
Cost per day, at 12 cents per 1,000 calories.....	10,600 \$1.38	13,700 \$1.73



We are told to "eat, drink, and be merry," and the world is a better place if we can be merry, so no one is ever going to "eat calories" instead of the food that he likes. The great help that calories can give us, when we understand them, is that we can find out whether things we like are cheap or are dear for the nourishment they give.

So far we have spoken chiefly of the energy we get from food. Now, let us consider a little the other ways in which food serves the body.

The body is not only a machine which must be fed with fuel, but it is a machine that is always wearing out and always repairing itself. Thus, the bones are constantly wearing away, so lime salts, which are abundant in milk and in greens like cabbage and beet tops, are taken in the food. Also, the body loses every day a little iron, which belongs to a substance which makes the red color of the blood, so we take green leaves, like spinach, which contains much iron, or the yolks of eggs, as well as meat itself, in order to build up the blood anew.

And there is a wear and tear on the muscles and other organs of the body, due to the breaking down of the protein framework of which they are built, so we take protein foods with which to replace the worn-out parts. It is curious that hard muscular work does not cause any increase in the amount of destruction going on in the framework of the muscles.

There is still another problem to be considered, for if we give an animal a mixture of purified food substances, pure protein, pure starch, purified vegetable fat, and a mixture of salts made up like those in milk, the animal will surely die. But if one substitutes butter fat for purified fat and adds the salts of milk in their natural solution, the animal lives and thrives. Happy, wealthy, and wise the family with three acres and a cow! The unknown substances which give to milk this life-saving power are also present in green leaves, like cabbage and beet tops, in fresh vegetables, and from the green feed eaten by cattle it passes into the milk and into some parts of the animal's body.

In some parts of the world whole nations are starving to death. In most countries of the world people are short of food. In America we have more food than in any other land, and we must therefore be careful in our abundance, saving it to the utmost for others while at the same time conserving the safety of our own people.

## **RULES OF SAVING AND SAFETY.**

Let no family buy meat until it has bought for five persons 3 quarts of milk, the cheapest protein food and indispensable for little children. Farmers should try to increase the milk supply until it is large enough to allow all to follow this rule.

Eat meat sparingly, rich and poor, laborer and indolent alike. Meat does not increase the muscular power. In general, much more meat is used than is right, for to produce it requires much fodder, which might better be used for milk production.

Eat corn bread. It saved our New England ancestors from starvation. If we eat it we can send wheat to France. Eat oatmeal.

Eat sirup on cereals. It will spare the sugar. Eat raisins in rice and other puddings, for raisins contain sugar.

Eat fresh fish.

Eat fruit and vegetables. These are too bulky to ship to the Allies. A salad made with olive, cottonseed, peanut, or corn oil and cabbage, lettuce, or beet tops, is excellent food, serving many of the same purposes as milk.

Use foods grown near by. This saves transportation.

## **RECIPES, WITH SUGGESTIONS FOR DEMONSTRATION.**

### **ONE-DISH MEALS.**

The demonstration for this lesson may illustrate what have been called "one-dish meals," in which representatives of each of the different food groups are combined in one recipe. Other similar combinations may be added to those given or substituted for them. A group of women should be able to suggest many similar recipes. Some of the Italian, Bohemian, and other national dishes are good illustrations of this type of labor-saving meal, as well as some familiar in different sections of our own country, such as the New England "boiled dinner" or the chicken "gumbo" of the South.

In this lesson it would be well to weigh out 100 calorie portions of as many foods as possible, being sure to include typical representatives of the different groups. It is only by seeing such portions again and again that one learns to estimate the fuel value of what one is eating.

## NUTRITIOUS VEGETABLE SOUPS.

These soups may be made in a great variety of combinations using the following ingredients and proportions:

Ingredients.	Proportions for 1 quart of soup.
Vegetables: Beans—black, kidney, lima, navy, pinto, soy; peas—dried, split, cow; corn—dried, canned.	2 cups cooked ( $\frac{1}{2}$ to 1 cup uncooked, according to the amount each increases in bulk).
Whole grains: Oats, barley, rice, corn, kafir corn, feterita.	2 tablespoons to $\frac{1}{2}$ cup.
Thickening: Corn flour or rice flour.....	2 tablespoons.
Seasonings: Condiments—Salt, pepper, celery salt, chili pepper, catsup, vinegar. Flavor vegetables—Onion, celery, carrot, okra, tomato.	To taste.
Fat.....	1 to 3 tablespoons (may be omitted).

## GENERAL DIRECTIONS.

Cook dried vegetables and grains after soaking 8 to 10 hours. Many prefer not to use the water in which beans and peas are soaked. The water from cowpeas is never to be used. If two or more are to be used, they may be cooked together. (Exception: Do not cook cowpeas with other vegetables. Use a large amount of water to extract the strong flavor.) Add the carrot, celery, etc., cut fine and browned in the fat if this is used, and the tomato or corn and seasonings, being careful to blend to secure a good flavor. Thicken. Cook all together, two hours in a double boiler, or from one-half to one hour in a pressure cooker. This operation is very essential in order to blend and to develop the proper flavor. To secure the right amount, reduce by boiling or add water, whichever may be necessary.

The following combinations are suggested as two of the many that might be made:

## BLACK BEAN AND KAFIR CORN.

$\frac{1}{2}$ cup black beans.	2 teaspoons salt.
$\frac{1}{4}$ cup kafir corn.	Pepper.
$\frac{1}{2}$ cup tomatoes.	Water to make 1 quart soup.
2 tablespoons oats.	
3 tablespoons flour (rice or other substitute).	

## NAVY BEAN AND FETERITA.

$\frac{1}{2}$ cup navy beans.	2 teaspoons salt.
$\frac{1}{4}$ cup feterita.	2 saltspoons celery salt.
2 tablespoons onion.	Pepper.
3 tablespoons flour (rice or other substitute).	Water to make 1 quart soup.

Where kafir corn and feterita are not available, barley, oats, or rice may be substituted in the same proportions. The soups may also be made without any whole grains, but the amount of thickening would need to be slightly increased.

## COMBINATION SOUP.

(2 quarts. Using many varieties.)

- |                    |                              |
|--------------------|------------------------------|
| ¼ cup navy beans.  | 1½ cups corn (canned).       |
| ¼ cup soy beans.   | 1½ cups tomatoes.            |
| ¼ cup black beans. | ¼ cup flour.                 |
| ¼ cup cowpeas.     | 2 teaspoons salt.            |
| ½ cup kafir corn.  | Water to make 2 quarts soup. |

## SAVORY STEW.

- |   |                        |
|---|------------------------|
| 1 pound meat.   | Parsley or soup herbs. |
| 2 tablespoons of fat from the meat.   | 1 teaspoon salt.       |
| 4 medium potatoes or 1 cup of barley,<br>rice, or hominy grits, or both potato<br>and cereal. |                        |

Onions, carrots, green peas, or beans, turnips, or cabbage—any two or more of these.

*Directions.*—Cut the meat in small pieces and brown it in the fat. Add the cereal, the seasoning, and 1½ quarts of water. Simmer till the cereal is nearly done, then add the vegetables and continue cooking till they are tender adding more water if needed. The fireless cooker may be used.

This stew may be made into a savory meat pie by omitting the potato in it and instead lining a baking dish with mashed potato, pouring in the stew, covering it with mashed potato, and browning it in the oven.

## TAMALE PIE.

- |                       |                       |
|-----------------------|-----------------------|
| 2 cups corn meal.     | 1 pound chopped meat. |
| 6 cups boiling water. | 2½ teaspoons salt.    |
| 1 tablespoon fat.     | ¼ teaspoon pepper.    |
| 1 onion, chopped.     | 2 cups tomatoes.      |

*Directions.*—Add corn meal and 1½ teaspoons of salt to boiling water, boil 5 minutes, and cook over hot water 45 minutes. Melt fat, add onion, and cook until browned. Add chopped meat, and, if raw, stir until red color disappears. Add 1 teaspoon salt, pepper, and tomatoes to the meat. If convenient, a green or red pepper cut in strips may be added. Eighteen ripe olives and 30 raisins will improve the flavor and give interest to the dish, but are not necessary. Grease a baking dish, put in a layer of corn meal mush, pour in the meat mixture, cover with the mush and bake one-half hour.

## STUFFED CABBAGE.

- |  |                       |
|--|-----------------------|
| 1 small head cabbage.                        | 1 cup stock.          |
| 2 tablespoons vegetable oil or other<br>fat. | 2 cups water.         |
| 1 cup rice.                                  | Salt.                 |
| ½ pound mutton.                              | Pepper.               |
|  | 2½ cups tomato sauce. |

*Directions.*—Scoop out the center of a small head of cabbage (saving the material removed for salad). Parboil the cabbage until tender. Heat the oil, add rice, and when this has been partially browned add the mutton cut into small pieces. When well browned add stock, water, seasonings; cover and steam until the rice is soft and the meat tender. Drain the cabbage; fill the center with the cooked meat and rice; remove to the saucepan. Pour tomato sauce around the cabbage and cook it in the sauce for about 10 minutes. Serve with sauce.



## SCOTCH BROTH.

- |                          |                        |
|--------------------------|------------------------|
| 1 cup Scotch barley.     | 1 medium-sized carrot. |
| 1 tablespoon oil.        | 1 cup cooked beans or  |
| 2 medium-sized potatoes. | 1 cup cooked corn.     |
| 2 medium-sized onions.   | 1½ teaspoons salt.     |
| 1 medium-sized turnip.   | ¼ teaspoon pepper.     |

Soak barley overnight in 3 quarts water; simmer one hour. Heat oil, add chopped vegetables, cook 2 minutes, add to barley, and slowly cook until vegetables and barley are tender. Add more salt and pepper if necessary; 1 tablespoon peanut butter improves the flavor. If too thick, more water may be added.

## REFERENCES.

### United States Food Administration:

Ten Lessons in Food Conservation, Lesson IX.

Available in every public library.

War Economy in Food.

Order from the Federal Food Administrator in your state.

### United States Department of Agriculture:

Farmers' Bulletin 142, Principles of Nutrition and Nutritive Value of Foods. (Price 5 cents.)

Order from the Superintendent of Documents, Washington, D. C.

Farmers' Bulletin 808, How to Select Foods: I. What the Body Needs.

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

### United States Food Leaflets:

No. 1, Start the Day Right.

No. 3, A Whole Dinner in One Dish.

No. 4, Choose Your Food Wisely.

Order from the Federal Food Administrator in your state.

Lesson IX of the "Ten Lessons" gives a brief summary of the theory of nutrition as modified by recent research. Farmers' Bulletin 142 is more comprehensive though less recent and includes tables of composition, dietary standards, etc. Farmers' Bulletin 808 is a simpler and much briefer statement in accord with the reliable recent theories. "War Economy in Food" gives practical suggestions and recipes for putting the Food Administration's program into practice in the home. Certain statements in this have been modified by later rulings. The United States Food Leaflets are extremely simple, four-page leaflets including recipes for inexpensive dishes.

## LANTERN SLIDES.

- Retail Food Expenditures. Total \$4,500,000,000.
- Average Income and Expenditures of 2,567 Workingmen's Families—1901.
- A Day's Ration for a Family of Five.
- A Day's Food for a Family of Five.
- A Day's Food as It Comes from the Market.
- Five Food Groups.
- "A Day's Food." Are You Planning an Adequate Diet? Wars are Won or Lost in the Kitchen.
- Well Chosen Meals. Breakfast.
- Well Chosen Meals. Supper or Lunch.
- Well Chosen Meals. Dinner.
- Breakfast With Too Much Protein.
- Lunch or Supper With Too Much Protein.
- Dinner With Too Much Protein.
- Chart Showing Composition of Protein-rich foods.
- Different Foods Yielding the Same Amount of Protein.
- Breakfast with Too Much Fat.
- Lunch or Supper with Too Much Fat.
- Dinner with Too Much Fat.
- Chart Showing Composition of Foods Rich in Fat.
- Breakfast with Too Much Carbohydrates.
- Lunch or Supper with Too Much Carbohydrates.
- Dinner with Too Much Carbohydrates.
- Chart Showing Composition of Cereal Foods.
- Chart Showing Composition of Foods Rich in Sugar.
- Chart Showing Composition of Fruits and Vegetables.
- Clean Up Your Plate.

### LESSON III.

Wheat is not an indispensable article of diet.

The six most common cereals—wheat, rye, barley, oats, corn, and rice—are very similar 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.



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

DR. ALONZO E. TAYLOR,

*United States Food Administration, and the War Trade Board.*

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.

<sup>1</sup>“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 ( $\frac{1}{2}$ 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	1 $\frac{1}{2}$ ounces.
Sweets.....	From 3 ounces down to	1 $\frac{1}{2}$ ounces.”

<sup>1</sup> 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<sup>1</sup> 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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<sup>1</sup> 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?

10½ OUNCES OF WHEAT FLOUR USED BY EACH PERSON.

<i>Breakfast.</i>	Wheat Flour oz.
Cream of wheat.....	3
Rolls or toast (3 slices).....	2
<i>Luncheon.</i>	
Cream of chicken soup.....	1½
2 crackers.....	¼
Macaroni and cheese, made with cream sauce.....	1½
2 slices bread.....	1½
1 piece of cake.....	¾
<i>Dinner.</i>	
Tomato soup with croutons.....	1½
Baked fish with dressing.....	} ½
Scalloped potatoes.....	
Asparagus on toast.....	¾
Lettuce salad, with wheat wafers... .	1½
1 slice bread.....	¾
Pie.....	1
<b>Total.....</b>	<b>10½</b>

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

### WHEATLESS MENU.

<i>Breakfast.</i>	
Hominy grits.	
Rolled oat and rice flour muffins.	
<i>Luncheon.</i>	
Clear chicken soup, with barley.	
Rice and cheese.	
Buckwheat cakes with sirup.	
<i>Dinner.</i>	
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. Croustons 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 cup peanut butter.
1 teaspoon salt.	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 eggs.
3 pints water.	1 pint of milk.
2 teaspoons salt.	1 pint of corn meal.
2 tablespoons fat.	

*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.	1¾ 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.	¾ 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. Cereals 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.

## LESSON IV.

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Fat and sugar are both fuel foods rather than building foods. They are also both used to make other foods more palatable.

There is a shortage of fat for several reasons: Animal production has fallen off in all the warring countries; less than usual is imported from distant lands because of lack of tonnage; and very large quantities are used in the manufacture of munitions. We must use our supply of food fat carefully and intelligently.

An ounce of fat yields more than twice as much energy for the work of the body as an ounce of the other food fuels.

There is practically no difference in the way in which different kinds of fat are digested.

Some animal fats, especially milk fat, contain little-known but very important substances without which the body can not grow or recover from injury as it should. These are not found in vegetable oils (olive, cottonseed, or peanut oil). We should make sure that children and invalids have some animal fat, preferably from milk.

As a nation we ordinarily use much more fat than we need, and we waste much more than we should. We can therefore cut down our consumption from  $3\frac{1}{2}$  to 2 ounces per person per day without any danger to ourselves, and by so doing release what the Government wishes to send to the Allies.

There is a sugar shortage among the Allies because the great sugar-beet districts of Europe are either in the hands of the enemy or cut off by fighting lines. The supplies from Asia and Australasia can not be obtained for lack of ships. Therefore the West Indies, North America, and Hawaii must supply not only themselves but the Allies as well.

The principal reason for using sugar is that we like its taste and it makes other foods more palatable. It does not supply any necessary substance which we can not get equally well elsewhere.

The only advantage of sugar as a food fuel is that it is a quick-burning fuel, and gives its energy to the body more quickly than other kinds.

The United States is one of the greatest sugar-eating nations in the world. We would be better off in purse and health if we ate less. If we cut down our use of candy, sweet drinks, sweet cakes, and desserts it will be an advantage to ourselves as well as a help to the Allies with whom we share our supply.

## CONSERVATION OF FAT AND SUGAR.

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Fats and sugars are both things that we use as much to make our food taste good as to give nourishment that we can not obtain elsewhere. They are both things which we, as a Nation, use much more freely than most other peoples, and more freely than we need for either health or comfort.

In 1917 the total amount of sugar used in the United States averaged 83 pounds for each person. Part of this was used in the manufacture of non-edible products, probably from 55 to 60 pounds went directly into the households as sugar, and the rest was eaten in the form of candy, sweet drinks, bakery goods, condensed milk, and other commercially canned foods. It is safe to say that the average American consumes between 3 and 3½ ounces of sugar a day, twice as much as that ordinarily used by the Frenchman. Only the Englishman exceeded this use before the war.

Sugar is scarce among the Allies because the great sugar-beet fields of northern France and Belgium are in the hands of the Germans, and the cane sugar which England usually imports from India and other distant lands can not be obtained for lack of ships. If the Allies are to have sugar it must come mainly from America; and this means that we must share our supply with them. They do not ask for enough to bring their supply up to what it was before the war, but merely for enough to make their food fairly palatable. We can give them this if we cut down our own use to 1½ ounces (3 tablespoons) instead of 3 ounces a person a day.

Our use of fats is even more generous as compared with that of other countries. Where an American ordinarily consumes 3½ ounces a day, an Englishman uses 3¼, a Frenchman 1½, and a German 2¼. With all the changes which war has made in the world's food supply, these figures have changed very greatly, particularly in Europe.

The fats which are obtained from domestic animals (butter, lard, suet, tallow, for example) are produced there in very much smaller amounts than usual, because there are not enough feed and labor available to keep up the usual number of cows and pigs and sheep and there are no vessels to bring in supplies from Australia and South America. The vegetable fats and oils are made chiefly from the seeds of plants growing in warm countries (olive, cotton seed, peanut, for example), and these can not be imported as usual for lack of ships. To make the situation worse, fats are needed not only for food but also for making glycerine and other compounds used for munitions and for various other industrial purposes, including the manufacture of soap.

Every patriotic person is willing to make the sacrifice required to release any needed fats and sugars for the Allies and for our fighting forces, but the practical difficulty before the housekeeper is to know how to do it without unnecessary trouble and discomfort. The problem may seem easier to her if she understands clearly how these two groups of foods are used in the body and what substitutions may be made without seriously changing the healthfulness and attractiveness of the diet.

### FATS.

There are several unusual things about the value of fats as food.

To begin with, fats are a much more concentrated body fuel than protein, starch, and sugar. An ounce of fat yields the body more than twice as much heat or energy for the work of the muscles as does an ounce of any of the others. When we put butter on our bread we add about twice as many calories to its energy value as if we spread it with an equally thick layer of rich jam. If we finish a hearty meal with pastry rich with fat, we are much more likely to eat more than we need than if we choose fruit instead. On the other hand, if a person is undernourished, adding fat or oil to his diet builds up the energy value of the food without making it seem too much.

There is another interesting difference between the food value of certain kinds of fat and that of most other foods. The fat in milk and eggs and, to a less extent, pork, suet, and other meat fats contain minute amounts of a recently discovered substance which is extremely important. Without a sufficient amount of this substance young animals are not able to grow as they should and older ones do not keep in health or recover from disease or injury. No really satisfactory name has been found for this substance. It is known in the laboratory as "fat-soluble A." We do not yet know exactly how much there is in the different food materials or how much the body needs, but it is safe to say that it is most abundant in the fat of milk and eggs and entirely lacking in the vegetable oils.

Curiously enough, the only vegetable foods in which it has been found in adequate amounts are the green leaves, like those of lettuce, spinach, dandelion, and turnip tops. This seems to indicate that the vegetables need it for their growth just as animals do, and that the herbivorous animals get their supply from the leaves they eat, passing it on to their young in the milk or storing it in certain parts of their own bodies. Omnivorous animals, like men, get theirs either from the green leaves or from the organs and fats of the animals they eat. The plants are able to construct the substance for their own needs, but animals can not do so. They must have it supplied in their food.

The practical point is that we must not allow both of these sources to be absent from our diet. Healthy grown persons may safely do with only a very little of the foods containing the fat-soluble A, and may substitute vegetable fats for butter and suet, providing they occasionally use milk or cheese or eat liberally of the leaf vegetables. More is needed by growing children and older persons who are recovering from wasting disease, wounds, or other injuries. This is one of the reasons why in Germany, where milk and butter are scarce and food control is rigid, children and invalids are allowed more generous amounts than others.

There are distinct differences in the special growth-promoting properties of the margarines which are now on the market. Some are prepared from the more oily portion of beef fat, this being churned with milk. These butter sub-



stitutes have in some degree the value of butter fat. Others are prepared entirely from vegetable oils. These and the nut margarines serve only as energy-producing foods and can not replace milk fats, egg fats, or the fats contained within the liver or other internal organs of animals. Milk fats and egg fats must be supplied especially in the diet of children.

Except for the fat-soluble A, there is no difference in the food value of different kinds of fat. All yield equal amounts of energy and are digested with practically the same ease and completeness. Scorched fats, such as are found in foods which have been fried at too high a temperature, sometimes prove troublesome and have given fried foods the reputation of being indigestible, but this is probably due to the poor cooking rather than to the fat itself. If we follow the request of the Food Administration and avoid fried foods to save fat we shall also escape whatever inconvenience of this sort there may be.

Although fats do not usually cause any digestive disturbances, they do remain in the stomach longer than the other nutrients, and this seems to have a most interesting effect on the sensation of hunger. That sensation begins to be felt after the stomach has been empty for a time. If there is little or no fat in the meal the sensation begins more quickly, and this probably explains why a diet poor in fat seems so unsatisfying and why one rich in fat seems "hearty." One of the most common complaints against the present German civilian diet, in which the fat is very low, is said to be that it does not "stay by," even though its energy value is high enough.

Because of the general shortage of fats among the Allies, it is necessary for us to share our supply with them. If we do not, their health and their fighting strength are bound to suffer. The Food Administration, therefore, asks us to use our fats with care and thrift. It is estimated that in order to meet the situation fully the average American consumption ought to be reduced nearly one-half; that is, to not more than a pound per person per week.

Probably not all of the  $3\frac{1}{2}$  ounces, which the statisticians estimate to be the average amount used, is actually eaten, and by using fats more carefully we can actually eat as much though we buy less. For example, we can save all the fat trimmings from meat, render them as our grandmothers did, and use them in cooking. Chicken fat, which is often thrown away, is excellent in cooking, especially in cake making.

When there is a shortage of animal fats we can substitute those from vegetable sources. Fortunately there are many wholesome and relatively inexpensive oils now on the market which might be used much more freely than they now are. Moreover, the production of vegetable oils can be more easily and quickly increased in an emergency than the production of the animal fats.

The fact that some fats are solid and some oily does not affect their comparative wholesomeness, but it does make a practical difference in the way we use them. Sicilian peasants may enjoy eating olive oil with their bread, but most Americans prefer a stiffer "spread." The butter substitutes made principally of vegetable oil are treated in such a way as to give them the consistency of butter, and usually have a little milk added for flavor. They are perfectly wholesome, and, if they are sold for what they are, are entirely unobjectionable.

In substituting one fat for another in cookery, one has to make allowance for differences in their composition and behavior. Butter, for example, is about one-eighth water and so it takes a little more butter than lard or oil to shorten a mixture. The following table shows in what proportions the fats may be substituted one for another in cooking:

Material.	Equivalent.
1 cup (16 tablespoons) oleomargarine.....	1 cup (16 tablespoons) butter.
1 cup commercial fat compound.....	1 cup butter.
1 cup chicken fat (clarified).....	1 cup butter.
1 cup goose fat.....	1 cup butter.
1 cup fat from beef and mutton (clarified).....	1 cup butter.
2 cups, 5 tablespoons suet, chopped.....	1 cup butter.
14 tablespoons lard.....	1 cup butter.
14½ tablespoons hardened vegetable fat.....	1 cup butter.
1 cup cream, whipping (40 per cent).....	6 tablespoons butter.
1 cup cream, thin.....	3 tablespoons butter.
1 ounce (1 square) cooking chocolate.....	1 tablespoon butter.

In making pastry with oil instead of hardened fat the oil itself helps to make a soft, workable mixture, and less water is needed.

### SUGAR.

To the average person sugar means the sweet, crystalline, or powdered material obtained from sugar cane or sugar beets. The chemist thinks of it as including milk sugar, or lactose, dextrose, glucose, and various compounds, some of which resemble table sugar in chemical composition rather than in appearance or flavor. Among the common foods rich in sugar we include not only ordinary sugar but also such products as sirup made from sorghum, maple sugar, corn, etc., honey, foods like candy, very sweet cakes or puddings in which sugar is the principal ingredient, and dried fruits, such as raisins, dates, figs, etc., in which the sugar naturally present has become so concentrated by the drying that it makes them very rich in that nutrient.

Most of the cane and beet sugar used in the United States is in the form of white, refined sugar, but some is in the form of the less refined brown sugars, and some in that of molasses and table sirup, both of them by-products of the refining process. Since refined sugar is more concentrated and less liable to fermentation than brown sugars, molasses, and sirups, it is the form in which sugar is chiefly shipped to Europe in these days of scarce tonnage. We do not help the situation much by using brown sugar in the place of white, because the brown sugar might equally well be refined and shipped as white. We do help, however, when we use for our sweetening the molasses or table sirup which are by-products of the refining, or the corn, maple, or sorghum sirup, the honey or any other kinds of sugar not made from beet or sugar cane and not so desirable for shipping.

There are two reasons for using sugar: First, the flavor is very pleasant both by itself and combined with other foods; and, second, it is (when not used too freely) easily digested, and the energy stored in it can be more quickly made available for the work of the muscles than that from almost any of our common foods. This explains why it is so popular with athletes and others undergoing great muscular exertion. Aside from this quickness of digestion, sugar is no better as a source of energy than any of the other energy-yielding foods.

The danger of eating too much sugar is not merely that of overloading the body and forcing it to go to the trouble of stowing away a surplus in the form of body fat; if taken in large amounts at one time it is liable to cause indigestion, and if used too often it spoils the appetite for other things. This is especially dangerous in the case of children, whose appetite for sweets is often stronger than for the less highly flavored foods which they need for building

their bodies and keeping them in good working order. Moreover, if they depend too much on sugar to make their food taste good, they fail to cultivate the appreciation of the more delicate flavors in other foods and thus lessen their sources of wholesome enjoyment in diet.

The common custom of serving sweets at the end of a meal is a sensible one because then they do not interfere with the appetite for other things and are less likely to be eaten in excessive amounts. It is a bad habit for persons who get all the food they need at their meals to eat candy or other sweets between meals, because it overloads the body with food, prevents the digestive organs from getting their proper rest, and often hinders the healthful enjoyment of the next meal. The danger is, of course, especially great for persons who take little exercise or who have delicate digestions.

Most persons in the United States eat much more sugar than they need and four times as much as was allowed by the French food controllers in 1916.

The sugar which the average person consumes daily in this country is used partly to sweeten coffee, tea, cereals, and other foods at table, partly in cooking cakes, puddings, and other desserts, and partly in the candies, ice creams, beverages, and other sweet foods consumed between meals. In trying to decide how it would be easiest to reduce the total amount as the Food Administration requests, it is a good plan to think over the general quantities which we are in the habit of using in each of these three ways and to decide where the reductions can be made with least inconvenience. In so doing, it may help if one remembers that 2 tablespoons or 6 teaspoons of granulated sugar, or about four full-sized lumps, weigh 1 ounce.

Many of us quite thoughtlessly put more sugar into our tea and coffee than we really wish, often leaving part undissolved in the bottom of the cup. Many of us also could quickly come to enjoy less highly sweetened food if we would only try for a week or so. Cereals could be sweetened with sirup, honey, or maple sugar instead of ordinary sugar, or served with dried fruits to give the sweet flavor. Most persons crave less sugar with cereals if the latter are carefully cooked and salted to their taste. Probably by taking thought we could reduce the amount of sugar we use on the table without more than a few days' discomfort at most.

In families where frosted cakes or very sweet puddings and sauces are freely used the sugar used in cooking could be considerably reduced by leaving off the frostings and choosing recipes which call for less sugar. Sirups and honey might often be used instead of sugar in cooking. Better still, sweet fruits, both fresh and dried, might be used instead of the cakes and puddings to give the sweet flavor at the end of the meal.

As for the sugar-rich foods eaten between meals, giving them up for patriotic reasons would bring a direct reward in better health and money saved. If one must "munch" between meals, such things as pop corn, peanuts, or nuts might be used instead of sweets. If the craving for sweets is too strong to be resisted, or when some special occasion seems to justify their use, dried fruits and confections made from them can be used instead of those made from sugar; or if candy is used, let it be made of molasses, sirup, or chocolate rather than sugar, and taken in the place of dessert instead of between meals.

## TO SAVE FAT.

Use all the fat you buy. Save the drippings. Try out the meat fat.

Bake, boil, and broil more—fry less. Avoid deep-fat frying.

These fats may be used for shortening:

For biscuits, muffins, cakes, pies—

Vegetable oils, such as cottonseed, corn, peanut.

Hardened vegetable fats.

Chicken fat.

Margarine.

Beef drippings.

For sautéing or warming up vegetables—

Vegetable oils and fats.

Drippings.

Chicken fat.

Savory fat.

For salad dressing—

Olive or other vegetable oil.

Chicken fat.

Sour cream.

For white sauce, cream soups, and on vegetables—

Chicken fat.

Savory fat.

Margarine.

Serve butter on the table in small pats or pieces; this saves plate waste. Put any left on the plate into a "butter cup" kept for that purpose and use it for special cookery.

Do not put more dressing on the salad than will be eaten.

Try reducing the amount of fat in your recipes, or do not use those that contain much fat. If you use pies, make one-crust pies. Use a potato crust for meat pies.

Use fruit or other simple desserts in the place of pies, pastries, and cake and other dishes rich in fat. Use ices made from fruit that you have canned.

Observe a voluntary ration of not more than a pound of fat a week for each adult, with half that amount for each child under 10 years of age. This includes all fat—that eaten with meat and used for cooking, as well as butter and cream eaten at the table.

Butter is more than four-fifths fat. About  $1\frac{1}{2}$  ounces of butter (2 tablespoons and 1 teaspoon) will give 2 tablespoons of fat, or 1 ounce.

Bacon is three-fifths fat. Five or six thin slices of bacon,  $1\frac{3}{8}$  ounces, are needed to give 1 ounce of fat.

Ordinary cream is about one-fifth fat. Two-thirds cup of thin cream will give 1 ounce of fat.

Remember that soap is made from fat, and so is to be used carefully. Send non-edible fat to the soapmaker.



## TO SAVE SUGAR.

Do not leave sugar in the bottom of tea, coffee, or cocoa cup. Stir it well.

Use sirup, honey, maple sugar, raisins, or dates to sweeten breakfast cereals.

Use molasses, maple sirup, or sirups made from sorghum and corn for part of the sugar used in cooking.

Leave the sugar out of bread; epicures think the sweetening spoils the delicate flavor.

Make your cakes without frosting. Choose recipes that contain the least sugar. Often they are better than those that have more.

In using sirup instead of sugar in cake, 1 cup of sirup will take the place of 1 cup of sugar and one-fourth cup of liquid. In almost any cake recipe sirup may be used for half the sugar.

Use fruits, fresh, dried, or preserved, for dessert in the place of "made dishes" rich in sugar. The preserves and jellies put up in the summer will furnish sweets for the winter's meals. Use fruit sirups.

Bake apples or pears with a little water for several hours until a rich sirup forms. If more sweetening is desired add a little honey or molasses.

Cook dried prunes without sugar in the water in which they were soaked until the liquid is almost boiled away. If more juice is wanted add water to the sirup. The long, slow cooking is necessary to develop a rich flavor.

Cut down on the use of candies and sweet drinks; they are pleasant luxuries, not necessities. Use fruits, nuts, or pop corn if you must eat between meals; or, if you must have candies, choose only those made with a small amount of sugar.

Use no more than  $1\frac{1}{2}$  to 2 ounces of sugar (3 to 4 tablespoons) a day for each person.

This includes all that is used in cooking as well as that used at the table.

1 tablespoon of sugar weighs  $\frac{1}{2}$  ounce.

1 cube of sugar weighs  $\frac{1}{4}$  ounce.

$1\frac{1}{4}$  level teaspoons of sugar is equal to 1 cube.

## RECIPES, WITH SUGGESTIONS FOR DEMONSTRATION.

This lesson should show how less sugar and fat may be used, either by lessening the amount in a particular dish or by choosing dishes that contain a small amount; how sirups may be substituted for sugar, or dried fruits used in its place; how all the fat that comes into the household may be utilized.

### SPONGE CAKE.

Using no wheat and no fat.

The old-fashioned rule for sponge cake was: Use the weight of the eggs in sugar and half the weight in flour. This is carried out in these cakes. The substitute flours take the place of an equal weight of pastry flour.

### BARLEY SPONGE CAKE.

1½ cups barley flour (3½ ounces).	1 tablespoon lemon juice.
1 cup sugar (7 ounces).	½ teaspoon salt.
4 eggs (7 ounces).	

For corn flour sponge cake use 1 cup of corn flour, (3½ ounces) in place of the 1½ cups of barley flour; and for rice flour cake use ¾ cup of rice flour (3½ ounces).

The following combination is especially good.

### OAT AND CORN FLOUR CAKE.

½ cup oat flour (2½ ounces).	4 eggs (7 ounces).
¼ cup corn flour (1 ounce).	1 tablespoon lemon juice.
1 cup sugar (7 ounces).	½ teaspoon salt.

*Directions.*—Separate whites and yolks. Beat the yolks until thick and light lemon color. Beat sugar into the stiffened yolks, and add the lemon juice and salt. Fold in alternately the stiffly beaten whites and flour. Bake in an ungreased pan for 35 to 40 minutes. Start in a moderate oven (365° F.), and when about half done raise the temperature to that of a moderately hot oven (400° F.).

The texture and color of these cakes is excellent. The corn cake is especially tender. In the rice and corn flour cake use extra lemon juice to cover up the tendency toward a starchy taste.

### "BUTTER" CAKE.

Using no wheat flour and with sirup in place of part of the sugar.

Different combinations may be made using this general rule ½ cup fat, ¾ cup sugar, 1 cup sirup, 3 eggs, ¾ cup milk, 6 teaspoons baking powder, ½ teaspoon salt, 10 ounces flour, with the addition of chocolate (using less fat), spices, raisins or nuts.

Two rules are given.

## SPICE CAKE.

100 per cent barley flour.

$\frac{3}{8}$ cup fat.	1 teaspoon salt (or $\frac{1}{2}$ teaspoon according to the fat used).
$\frac{3}{4}$ cup sugar (about $4\frac{3}{4}$ ounces).	
1 cup sirup ( $11\frac{1}{2}$ ounces).	
3 eggs.	
$\frac{3}{4}$ cup milk.	
1 teaspoon vanilla.	
$\frac{1}{2}$ teaspoon ginger.	
6 teaspoons baking powder.	$\frac{1}{2}$ teaspoon cloves.
	1 teaspoon allspice.
	$3\frac{3}{4}$ cups barley flour (10 ounces).
	1 cup raisins.

*Directions.*—Cream the fat, sugar and egg yolk. Add the sirup and mix well. Add alternately the liquid and the dry ingredients sifted together. Add the flavoring and fold in the well beaten egg whites. Bake for one hour in a moderate oven ( $350^{\circ}$  F.). After 20 minutes raise the temperature somewhat (to  $400^{\circ}$  F.).

In place of the barley flour 1 cup of rice flour (5 ounces) and 1 cup of buckwheat (5 ounces) may be used.

## CHOCOLATE CAKE.

50 per cent rice flour, 50 per cent barley flour.

$\frac{1}{2}$ cup fat.	$1\frac{1}{8}$ cups rice flour (5 ounces).
$\frac{3}{4}$ cup sugar (about $4\frac{3}{4}$ ounces).	
1 cup sirup (about $11\frac{1}{2}$ ounces).	
3 eggs.	
$\frac{3}{4}$ cup milk.	
1 teaspoon salt.	
	1 teaspoon cinnamon.
	1 teaspoon vanilla.
	2 squares chocolate.

*Directions.*—Cream the fat, sugar, and egg yolk. Add the sirup and mix well. Add alternately the liquid and the dry ingredients sifted together. Add flavoring and the chocolate melted with a small portion of the sirup. Fold in well beaten egg white. Bake about one hour, starting in a moderate oven ( $350^{\circ}$  F.). After 20 minutes raise the temperature somewhat (to  $400^{\circ}$  F.).

In place of the rice and barley flour  $1\frac{1}{2}$  cups of buckwheat (8 ounces) and  $\frac{1}{2}$  cup of ground rolled oats (2 ounces) may be used.

## SCOTCH OAT CRACKERS.

2 cups rolled oats.	$1\frac{1}{2}$ tablespoons fat.
$\frac{1}{4}$ cup milk.	
$\frac{1}{4}$ cup molasses.	
	$\frac{1}{4}$ teaspoon soda.
	1 teaspoon salt.

*Directions.*—Grind or crush the oats and mix with the other materials. Roll out in a thin sheet and cut in squares. Bake for 20 minutes in a moderate oven. This makes 3 dozen crackers.

## OATMEAL BETTY.

2 cups cooked oatmeal.	$\frac{1}{2}$ cup corn sirup.
4 apples cut up small.	
$\frac{1}{2}$ cup raisins or dates or other dried fruit.	

*Directions.*—Mix and bake for one-half hour. Serve hot or cold.

## TO RENDER FAT.

"Every particle of fat should be used."

Run through the meat chopper trimmings of fat from meat, or cut chicken fat up fine, and heat it in a double boiler until completely melted. Strain the fat through a moderately thick cloth. The particles left may be used as "scrapple." The fat, after straining, should be carefully heated, to make sure that it is free from moisture.

Fat rendered in this way may be used in the various ways. If possible, use some of it for the recipes demonstrated in this or other lessons.

Savory fat may be made by adding to the fat, before rendering, a slice of onion, a bay leaf, thyme, marjoram, sage, or other seasonings, salt and pepper. This may be used in warming over vegetables, in cooking meat, and in the meat-saving dishes such as are given in the next lesson.



## REFERENCES.

### United States Food Administration:

Lessons in Food Conservation—Lesson VI.

Available in every public library.

### United States Department of Agriculture:

Farmers' Bulletin 535, Sugar and Its Value as Food.

Farmers' Bulletin 653, Honey and its Uses in the Home.

Circular of Extension Work, South, A 89, Jelly Making.

Circular of Extension Work, North and West, Ext. N., Making Jelly with Commercial Pectin.

Order from the Department of Agriculture.

Bul. No. 469, Fats and Their Economical Use in the Home. Price 5 cents.

Yearbook Separate 639, Apple Sirup and Concentrated Cider. Price 5 cents.

Order from the Superintendent of Documents, Washington, D. C.

### United States Food Leaflets:

No. 13, Use Fats Carefully.

No. 14, Save Sugar.

Order from the Federal Food Administrator in your state.

The Lessons on Food Conservation give a statement of the Food Administration's program as regards sugar and fat, and give figures for their consumption in different countries, also a table of equivalents for other fats as substitutes for butter in cooking. Farmers' Bulletin 535 is a simple discussion of the nutritive value of sugar. Farmers' Bulletin 653 and Department of Agriculture Bulletin 469 include recipes as well as discussion. The other publications consist chiefly of recipes. The United States Food Leaflets are extremely simple four-page leaflets and include inexpensive recipes.

## LESSON V.

### MEAT AND MEAT SUBSTITUTES IN WAR TIME.

#### LANTERN SLIDES.

Portions of Foods Containing the Same Amount of Sugar.

Sugar Beets—Map, Sugar Production of the World.

Typical Beet.

Typical Beet Plant.

Hoeing Beets in Colorado.

Steam Traction Engine Hauling Wagons.

Sugar Cane. Cane Field in Louisiana.

Cane Press.

Honey—Map.

Honey.

Save the Sugar.

Several Ways to Save Sugar. Which is Your Way?

Sugarless Candy? Certainly. Use Corn Sugar.

France Has Less Sugar Than We. We Must Divide.

Candy.

Destruction of Sugar Refinery in Belgium.

Food Equivalent as in Fat.

Composition of Some Common Fatty Foods.

One-third of an Ounce of Fat.

Remember Jack Spratt!

Save Butter by not Serving too Much to Each Person.

Every Spoonful of Drippings is Valuable in Cooking.

Save the Fat to Feed the Soldiers.

Suet Has Many Uses in Cooking.

Economy in Use of Fat—Do Not Serve Too Much to Each Person.

Three Fat Rich Meals.

## LESSON V.

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Meat is not actually necessary, though it is desirable as part of the diet. Fully as satisfactory protein or body-building material may be obtained from milk, eggs, cheese, and fish. Part of the protein needed may come from legumes (beans of various kinds, peas, and lentils), from nuts, or from cereals (oats, corn, barley, etc.).

There is about 1 ounce of protein in 1 quart of milk, or 4 eggs, or 6 ounces to one-half pound of medium fat meat, or one-fourth pound of cheese, or 6 ounces of dried navy beans, or three-fourths pound of bread (12 medium-sized slices).

A man at moderate muscular work is believed to need about  $3\frac{1}{2}$  ounces of protein a day, and a family consisting of father, mother, and three small children about 12 ounces a day.

Many eat more protein food than is necessary, and still more eat too much meat.

Meat is liked because of its pleasant flavor and desirable texture. When other foods are used in place of meat they are more acceptable if they have this same texture and flavor.

One of the most satisfactory ways to lessen the use of meat is to extend its flavor by blending it with rice or other cereals, potato, or some other food of mild flavor. Stews or casserole dishes with vegetables and the use of meat gravies for seasoning are other illustrations of extending flavor.

Poultry can not be as easily shipped as beef or pork; and since it can not be profitably shipped to the Allies, it may be used in place of red meats.

We have not begun to use our fish supply. We might utilize nearly 70 kinds of salt-water and nearly 30 kinds of fresh-water fish.

Cheese, cottage cheese, and skim milk are good body-building foods. One pound of cottage cheese has as much protein as  $1\frac{1}{4}$  pounds of sirloin steak.

If beans and peas are used in place of meat, a small amount of milk, eggs, or other animal foods should also be included in the diet.

Cereals, such as wheat, corn, rye, oats, and barley contain body-building material in an inexpensive form. If these are used freely, less meat is needed.

## MEAT AND MEAT SUBSTITUTES IN WAR TIME.

DR. C. F. LANGWORTHY,

*Office of Home Economics, Department of Agriculture.*

The war emergency means, among other things, that the United States and her associates in the war must unite their food resources. Since the surplus food is in our country, where production can go on without the great interruptions and disturbances which it must meet across the water, it means that food must go from us to them.

Meat and the fats which are derived from it are foodstuffs which we must provide. We can do this if we are willing to make the wisest possible use of all that we have, and to depend more on fish and other sea foods, on milk and cheese, on eggs, and on beans and peas—foods which we have always used to some extent in the place of meat. The kinds of meat of which we are especially asked to be sparing at present are pork, pork products, and beef.

That man has teeth and a digestive tract well fitted to handle meat, and that meat has always been a part of man's diet is not surprising, since the conclusion of science is that it is food which has formed the digestive tract and not the digestive tract which has dictated the diet. On the other hand, race experience and laboratory experiment have shown that much as we like meat we can omit it from the diet without danger if we provide proper foods in its place.

### REASONS FOR LIKING MEATS.

We like meat because in cookery it develops a flavor which is very pleasing, as anyone who has passed along a street and got the odor of broiling beefsteak will testify, and because it is one of the easiest foods to make palatable. When we think that meat cooked over coals on a pointed stick is looked upon as a delicacy, and that meat simply boiled in salted water is very acceptable and yields a broth which we like, we know that even simple cookery gives good results. When we recall further that meat may be combined in countless ways with vegetables, grains, seasoning herbs, and other foods, we realize that there are practical reasons as well as dietetic ones for using it.

### FOOD VALUE.

Meat contributes to the diet protein, which the body needs to build and repair its own tissues, and fat that helps supply the body with the power to perform its work. Meat also contains iron, as we might guess when we recall that the red color of the blood is due to iron. It also contains some other necessary mineral salts; recently discovered substances essential to normal growth and health and the regulation of body processes; and certain flavoring bodies.



## WAYS IN WHICH WE CAN SAVE MEAT AND YET HAVE GOOD MEALS.

First of all comes proper selection. Wise buying means the choice of kinds or cuts suited to the needs of the family as regards quantity and preference, so that waste of such foods may be reduced to a minimum. Chops, for example, should be chosen of such size that either one or two will make a desired serving, not a little more than one; roasts should be of a proper size and with only the amount of fat that will be eaten or used.

All the meat paid for should be used. All the flavoring substances and food contained in trimmings and bones, for example, should be made into soup stock or gravy, or used in similar ways. Meat left from soup making still contains a large part of its food value, and should be used. It may be made palatable by proper seasoning, or by mixing with a little fresh meat. Broths and extracts have a legitimate place in the diet, but they contain only a small amount of protein. The choice of meat may occasionally include, too, such parts as might be wasted, as the heart—very acceptable when well cooked—or the liver.

Methods of cooking should be chosen that will avoid waste without sacrificing flavor. For instance, broiling in such a way that all the juice which drips from the meat can be saved is more economical than broiling over coals and letting the meat juice and fat drop into the fire and burn up. If meat has been broiled or roasted, the flavor of the browned juice and fat, which older cooks truly called the meat "essence," should be recovered by making gravy in the pan. If there is too large an amount of fat for this purpose it may be taken off and used as a separate fat in cooking other foods, for seasoning vegetables, or when clarified, for shortening. Then, too, it is possible to cook other foods in a pan with the meat and thus give some of the fat and the meat flavor to the potatoes, squash, or other vegetables cooked around the roast. Poultry, as well as other roasts, may be basted with its own fat instead of with butter or salt pork, and its fat may also be used in the dressing.

The use of gravies is an easy way to give a palatable meat flavor. Bread and gravy, potato and gravy, green vegetables and gravy, with a little meat, are often quite as acceptable as a larger portion of meat alone.

We can save meat without discomfort if we take unusual pains in the selection of the foods which accompany it. If our favorite vegetables are served in our favorite ways, we think less about the other articles in the meal. This principle should be followed always when we wish to use less of any particular food; for not only will the saving be unnoticed, but the change will be acceptable.

In serving meat at table care should be taken to suit the portions to the known appetites of the different members of the family, so that each may be satisfied and no meat remain uneaten on the plate. To accomplish the carving and serving of meat so that all uneaten meat as well as the bones remain on the platter for future use is worth the trouble it takes, for plate scraps are rightly regarded as not to be used again. When the meat is removed, rinsing the serving dish with a little hot water serves the double purpose of keeping the fat out of the dishwasher and saving the juice and fat for use in soups or in "warming up" or flavoring some other dish.

## EXTENDING THE MEAT FLAVOR.

Using a little meat to give flavor to a large amount of neutral or bland-flavored food is one of the most important ways of lessening the use of meat without lessening the palatability of the diet. This means the free use of

such dishes as meat pies, meat stews (making potato crusts for the pies and corn dumplings for the stews will save wheat), meat scalloped or cooked in a casserole with rice or vegetables, croquettes (baked in the oven to save fat), hashes (browned or not, as one wishes), soufflés, meat loaves, scrapple, and a great variety of others. In such cookery good seasoning is of first importance. Advantage should be taken of seasoning herbs, onions, garlic, celery, pimientos, or sweet peppers, tomatoes, lemon juice, curry, and other flavors.

The cuts of meat used in so extending the flavor would naturally be the cheaper ones, and it is often said that these cost so much more to cook than do the tender pieces, that from the standpoint of cost this is not economy. This is not true, if any care at all is exercised over the fuel. If a coal fire is kept up it might as well be used a long time as a short time. With a gas stove almost as much gas is used in the short process with its intense heat as in the longer one requiring only low heat. In one experiment broiling steak used 13 feet of gas; an equal amount of rib roast required 33 feet and a meat stew 25 feet, the fuel costing a little more than 1 cent for the steak, nearly 3 cents for the roast, a little more than 2 cents for the stew.

If one controls the ways in which it is purchased, the ways in which it is cooked, and the ways in which it is combined and served, one may cut down the amount of meat eaten without any feeling of dissatisfaction, but thought and intelligence are necessary to do this, and thought and intelligence we should be ready to give.

#### GELATIN AS A MEAT SUBSTITUTE.

The question is often raised as to the value of gelatin—a product made from such tissues as the skin, ligaments, and bones of sound animals by treatment with boiling water. Gelatin is also formed when meat is cooked down for soup until it will “jelly” when cold.

Until lately it was believed that gelatin was not a body-building protein, but recent experiments have shown that gelatin, like the protein in common legumes, can do part but not all of the building that must be done for the body by protein. This means that gelatin can not be used as the sole source of protein for the body, but that it must be supplemented by some other protein food such as a little milk or egg. It must be remembered, however, that a small amount of gelatin will thicken a large amount of liquid so that the “bulk” of a gelatin dish is not a measure of its food value.

#### POULTRY USED IN PLACE OF MEAT.

Poultry is usually, and rightly, classed with meat, for it is similar in flavor, texture, and food value. Since it can not advantageously be shipped to the Allies it may be used in place of the meats needed abroad, so far as market conditions and our available supply will allow.

Farm families and those who live in small towns should make special efforts to raise poultry for the home table as well as to increase the market supply.

Different kinds and grades of poultry are found in most markets, and in choosing between them the housekeeper should suit her purchase to her purse, with due regard to the size and needs of her family. As a rule it is wise to buy as large a fowl as can be used, since there is less waste in proportion to size than with a smaller one. As everyone knows, the stewed or fricasseed chicken “goes farther” than the roast or fried, because this method of cooking is one way of “extending flavor.” No particle of cooked chicken need be wasted. Combined with rice, scalloped with hominy, used in salad, or in

numerous other ways, a little will go a long way and a main dish unusually acceptable to everyone will be provided.

Very commonly rabbit raising for food purposes is discussed in connection with poultry raising. The possibilities of this minor food industry are worth consideration. Many families are already turning their attention to it as a way of adding to the home meat supply. Rabbits resemble other meats and poultry in food value and ways in which they may be prepared for the table. They may be stewed, fried, made in to pies, cooked with vegetables en casserole, and in other well-known ways.

In parts of the country where wild game is abundant, and may be killed legally, using it is a distinct contribution toward the saving of pork, beef, and mutton.

#### THE USE OF FISH AND OTHER SEA FOODS IN PLACE OF MEAT.

Whenever there is a shortage of meat the first food chosen to take its place is usually fish, if this is available. The food value of fish is so nearly like that of meat and it is cooked in so many similar ways that it is, even in normal times, a frequent substitute for meat and might now be more extensively used in this way. It is not needed for export to the Allies; grains available for human food are not required in its production, and there is every reason why fish should be for the present at least one of our chief staples.

In America we have hardly begun to utilize our fish supply. There are said to be available nearly 70 kinds of salt-water fish and more than 30 fresh-water varieties, yet the average person knows not more than a dozen. It is said that every year the fishermen of the Atlantic coast throw away about 10,000,000 pounds of fish that have a higher nutritive value than New England's famous cod. We are far behind many countries in our use of fish. Against our 18 pounds per person each year, England uses 65 pounds, Canada 57 pounds. On the other hand, Belgium has used only 17 pounds, and France only 14.

The use of fish should be distributed over other days of the week, not confined to Friday only—as it so often is. The market supply on other days would increase with the demand. New kinds of fish should be tried whenever possible and especial pains taken in preparing them for the table. Tile fish, gray fish, sable fish, burbot, carp (a fresh-water fish) are some of the newer varieties now on the market.

Frozen fish does not deserve the prejudice often felt against it. It is far better to buy it frozen and thaw it one's self, than to buy that which has been frozen and already thawed, for after thawing it deteriorates very rapidly.

Canned, salted, and smoked fish also may be used much more freely, while other varieties of sea food—oysters, clams, lobsters, crabs, scallops—may take the place of meat where they are available and their price will allow.

#### EGGS AS A SUBSTITUTE FOR MEAT.

Eggs are accepted as a substitute for meat almost without question whenever convenience leads us to so use them, and often, as at breakfast, they are given preference. Because they are the food storehouse of the newly hatched as well as the developing chicks we judge, and rightly, that they have a protein of high value for body needs.

Eggs not only furnish protein and mineral salts but the yolk contains an especially valuable fat that has a growth-promoting substance associated with it.

Whether cooked alone or used as ingredients of other dishes, eggs add materially to the food value of the diet. Besides being nutritious and palatable they have an advantage in that they may be served in a great variety of ways. Baked creamed eggs and eggs with cheese sauce are favorites with many. There is so little waste in eggs that they are often more economical as sources of protein than they seem. For example, eggs at 45 cents a dozen furnish protein as cheaply as beef at 30 cents a pound. Now is a good time to look over one's collection of recipes for directions for making savory egg dishes which can be used in place of meat dishes and please the family as well.

#### SKIM MILK, CHEESE, AND COTTAGE CHEESE.

Milk can be used to advantage in place of meat. Another lesson deals with it especially (see p. 66), so attention is paid chiefly to some of its products.

Cheese, because of the amount of protein it contains and because of its flavor, has long been used as a substitute for meat, but only lately has the value of cottage cheese been emphasized. There are many ways of using cheddar, Swiss, and other kinds of cheese as in cheese sauce, fondue, rabbits of different kinds and so on. Many ways for using cottage cheese can be suggested, also, such as cottage cheese and bean loaf, cottage cheese pie, and cottage cheese and nut roast. Cottage cheese contains a larger amount of protein than most meats—1 pound would be equal to 1½ pounds of sirloin steak—and it is much cheaper.

Skim milk is a common food the value of which has not been realized. The skimming or separating of milk removes chiefly the butter fat, and the skim milk contains practically all of the protein. It may well be used to add to the body-building material in the diet and lessen the amount of meat. A quart of skim milk would take the place of one-half pound of meat. It may be used to take the place of whole milk in almost any cooking process. Vegetable milk soups, cereals cooked in skim milk, custard made with the skim milk, will lessen the meat needed at the meal at which these are served and will be perfectly acceptable substitutes.

#### BEANS AND OTHER LEGUMES AS MEAT SUBSTITUTES.

In using beans and other legumes we have the choice of many varieties and many dishes; of such varieties as white and colored beans of different sorts, peas, cowpeas, lentils, soy beans, and peanuts (which belong to the legume family though we generally think of them with other nuts), and of such dishes as soups, purées or porridge, baked beans, peas or cowpeas, legumes cooked with cereals (for instance, cowpeas and rice, a favorite dish in parts of the South). To insure a sense of satisfaction with a meal in which legumes replace meat, the importance of good seasoning and proper cookery can hardly be over-emphasized. Sliced onion browned in a little fat and spread over the pan in which boiled beans are to be heated gives a savory flavor to what is otherwise a somewhat tasteless though very nutritious dish. Cakes made from boiled cowpeas, or cold baked beans, sliced like mush acquire an added flavor when browned in a pan with a little fat and are still more savory if served with a well-seasoned tomato sauce.

Recent investigation makes us think that some legumes, at least, supply protein less valuable to the body than that of animal foods; but this merely means that along with the protein from the legumes the diet should contain a small amount from milk, eggs, or other animal foods.



## MUSHROOMS, VEGETABLES, AND NUTS SERVED AS MEAT.

Mushrooms and other edible fungi are often spoken of as meat substitutes, and in fact, a statement to the effect that mushrooms and beefsteak are of equal value is not infrequently found in print. From the standpoint of composition and food value there is no warrant for such a statement, the mushroom being more like the turnip or carrot in composition than it is like meat. From the standpoint of flavor and the methods which can be employed in cooking them, and to some degree at least from that of the texture, mushrooms and some other edible fungi do give to the palate a sense of satisfaction akin to that which we get from meat.

The same thing is true of a number of other vegetable foods which may be used in somewhat the same way. When these are used as meat substitutes care should be taken to make them resemble meat in flavor or texture. Thus the taste of browned fat which one gets from fried eggplant suggests meat. Nuts in the form of nut loaves, etc., make an acceptable meat substitute, not only because they are rich in protein, but also because their texture is firmer than that of most vegetable foods.

## CEREALS USED AS A SOURCE OF PROTEIN.

Cereal grains constitute one of the most important food groups, and although we do not think of them in any way as akin to meat or usable in place of it, it is nevertheless true that we depend upon them to supply a great deal of the protein of our diet. Dietary studies in a large number of American families have shown that meat, fish, dairy products, eggs, and legumes furnished in round numbers 51 per cent of the total protein and that cereal foods furnished about 43 per cent besides contributing in a very important way to the mineral and starch needs of the body.

If these suggestions are followed it should not be difficult to use and supplement our meat supply so as to make that which is available provide for the Allies without depriving ourselves of food which gives a varied, pleasing, and adequate diet. As a general guide to the amount of protein food to be used, we may remember that the 12 ounces of protein needed daily by a family consisting of father, mother, and three small children may be obtained from 2 quarts of milk and 1½ pounds of such protein-rich foods as meats, eggs, cheese, and legumes.

## USING AND SAVING MEAT.

Eat less meat. In place of part of what you have been using, use milk, eggs, cheese, fish, beans, and nuts. One cup of milk or 1 egg will take the place of one-eighth pound of meat.

Be careful in buying. Choose cuts of such size that there will be no waste.

Use all the meat paid for, including trimmings and bones.

Try out the fat of poultry and meat. Use it and drippings in place of other fat.

Serve small portions to avoid plate waste.

Do not throw away a particle of meat.

Use soup meat for meat loaf, croquettes baked in the oven, or meat pies. If well seasoned or mixed with a little fresh meat it will be acceptable. It has high food value.

Be especially sparing of pork.

Use mutton and lamb rather than beef and veal.

Help create a demand for different varieties of fish.

Do not ask for fresh fish at a time and place where it is not possible for it to be on the market. You will get frozen fish that has been thawed. It is safer to buy it frozen and thaw it yourself just before using.

Remember there is little waste in eggs and that they are a valuable food. Use them as the main dish of the meal rather than in cakes and desserts.

More poultry and eggs should be raised. Do what you can to increase their production.

Wheat and other cereals contain protein, though in less amount than meat. Cheese is one-third protein. When cereals and cheese are used let them take the place of both meat and bread.

Use shelled green peas, green beans, green cowpeas, green soy beans as meat savers.

One-half pound of shelled peas or beans (2 cups), or 1 egg and one-fourth pound of peas or beans (1 cup), or 1 cup of skim milk and one-fourth pound of peas or beans will take the place of a generous serving of meat.

## RECIPES, WITH SUGGESTIONS FOR DEMONSTRATION.

One of the best ways of saving meat is extending its flavor. A small amount may be combined with a large portion of mild flavored material like potato or cereals of various kinds. Since many people eat more meat than they need this is a perfectly legitimate way to satisfy the appetite.

Recipes are given also for dishes showing various substitutes for meats and for cooking one of the less known fish.

### HOT POT OF MUTTON AND BARLEY.

1 pound mutton.	4 potatoes.
½ cup pearly barley.	3 onions.
1 tablespoon salt.	Celery tops or other seasoning herbs.

*Directions.*—Cut the mutton in small pieces, and brown with the onion in fat cut from meat. This will help make the meat tender and improves the flavor. Pour this into a covered saucepan. Add 2 quarts water and the barley. Simmer for 1½ hours. Then add the potatoes cut in quarters, seasoning herbs, and seasoning, and cook one-half hour longer.

### POTTED HOMINY AND MEAT.

5 cups cooked hominy.	2 cups carrots.
2 tablespoons fat.	1 teaspoon salt.
2 tablespoons corn or rice flour.	½ pound dried beef.
2 cups milk.	2 cups of cooked fish may be used in
4 potatoes.	place of the beef.

*Directions.*—Make a sauce of the fat, flour, and milk, and cook until it thickens. Cut the potatoes and carrots in dice and mix them with the hominy and meat. Put in the baking dish in layers with the sauce, having the top layer of sauce. Bake an hour.

### BEEF HEART.

Cut in slices ½ inch thick, soak in salt water 1 hour, roll in corn meal, brown on both sides in hot fat, add water, cover pan, and cook slowly until tender. Serve with brown gravy thickened with rice flour or barley flour.

### BOILED FOWL WITH RICE.

(An Italian recipe.)

A fowl suitable for boiling.	1 egg.
Salt and pepper.	2 tablespoons chicken fat.
½ pound rice.	½ cup to 1 cup grated cheese.

*Directions.*—Cut up the fowl and boil until it is tender. Wash the rice and blanch it by letting it come to a boil and cook a few minutes in salted water. Finish cooking it in the broth from the boiled fowl, adding the broth a little at a time to be sure the rice is not too wet when it is done. Be careful not to cook it too long. Season with cheese and fat and add the egg yolk to bind it just as it is taken from the fire. Serve as a border around the fowl.

## PEA SOUFFLÉ.

3 tablespoons rice flour or corn flour.	3 eggs.
3 tablespoons fat.	1 teaspoon salt.
1 cup skim milk.	$\frac{1}{8}$ teaspoon pepper.
1 cup mashed cooked peas (any kind).	Few drops of onion juice.

*Directions.*—Make a white sauce from flour, fat, and milk. Mash the cooked peas to a pulp. Beat whites and yolks of eggs separately. Mix vegetable pulp, seasonings, sauce, and well-beaten yolks. Fold in stiffly-beaten whites, put in greased baking dish and bake in slow oven until firm. Lima beans, split peas, cowpeas, or fresh or canned green peas may be used.

## BAKED CHEESE AND CORN.

2 tablespoons fat.	$\frac{1}{8}$ teaspoon pepper.
1 tablespoon red or green pepper.	1 cup cooked corn.
2 tablespoons corn starch.	1 cup cheese.
2 cups skimmed milk.	1 teaspoon tomato catsup.
1 teaspoon salt.	2 eggs.

*Directions.*—Melt the fat, add pepper, corn starch, milk, salt, and pepper, cook 5 minutes, add corn, cheese, and catsup, mix well, add yolks of eggs slightly beaten and the whites beaten until stiff. Turn into a greased dish and bake 30 minutes.

## MINUTE RABBIT.

1 pint milk.	1 teaspoon mustard.
3 tablespoons minute tapioca.	$\frac{1}{2}$ teaspoon salt.
1 cup cheese.	Pepper or paprika to taste.
1 egg well beaten.	

*Directions.*—Scald the milk in a double boiler, and when hot add the minute tapioca; cook 15 minutes; add the cheese cut into small pieces. Stir constantly till the cheese is melted, add the well-beaten eggs mixed with a little cold milk, the mustard, salt, and pepper. If desired, this may be turned into a baking dish, and baked until brown.

## TILEFISH WITH CHEESE SAUCE.

Place in a baking dish a piece of tilefish that has been boiled in salted water containing sliced onion, a carrot, a tablespoon of vinegar, a piece of bay leaf, and a little thyme. Make a white sauce, using half milk and half water in which the fish was boiled, thickening it with rice or corn flour and using some of the fat rendered as in the last lesson. Stir into the sauce 2 tablespoons of grated cheese for each cup. Pour over the fish and brown in a hot oven.



## REFERENCES.

### United States Food Administration :

Ten Lessons in Food Conservation, Lesson V.

Available in every public library.

War Economy in Food.

Order from the Federal Food Administrator in your state.

### United States Department of Agriculture :

Farmers' Bulletin 391, Economical Use of Meat in the Home.

Farmers' Bulletin 487, Cheese and Its Economical Uses in the Diet.

Farmers' Bulletin 526, Mutton and Its Economical Uses in the Diet.

Farmers' Bulletin 824, How to Select Food: III. Foods Rich in Protein.

Year Book Separate 623, Supplementing our Meat Supply with Fish.

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

Bul. 467, Food Value and Uses of Poultry. Price, 5 cents.

Bul. 471, Eggs and Their Value as Food. Price, 5 cents.

Order from the Superintendent of Documents, Washington, D. C.

### United States Department of Commerce, Bureau of Fisheries :

Economic Circular No. 11, Canned Salmon: Cheaper than Meats and Why, Including Fifty Tested Recipes.

Economic Circular No. 12, Sea Mussels: What They Are and How to Cook Them; with Eighteen Recipes.

Economic Circular No. 13, Commercial Possibilities of the Goosefish: A Neglected Food; with 10 Recipes.

Economic Circular No. 18, Oysters: The Food that has not "Gone Up."

Order from the Bureau of Fisheries, Washington, D. C.

### United States Food Leaflets :

No. 3, A Whole Dinner in One Dish.

No. 5, Make a Little Meat Go a Long Way.

No. 8, Instead of Meat.

No. 17, Use More Fish.

Order from the Federal Food Administrator in your state.

Lesson V of the "Ten Lessons" discusses briefly the world's supply of meat and the food value of meat and meat substitutes. United States Department of Agriculture Bulletins 467 and 471 discuss the general value of poultry and eggs as human food. The remaining references all include practical suggestions and recipes.

## LESSON VI MILK AND ITS PRODUCTS.

### LANTERN SLIDES.

Foods Containing an Equal Amount of Protein.

Meal in which Protein is Supplied Chiefly by Meat and Cereals.

Food Material Containing Equal Amounts of Protein.

Meal in Which Protein is Supplied by Meat and Cereal and by Eggs and Milk.

Constituents of Meat.

Meat, Fresh and Cured.

Produce more—Eat Less Beef.

Why it is Necessary to Eat Less Meat.

The Composition of Poultry as Compared with Other Food.

The Energy Value of Poultry as Compared with Other Food.

Poultry—Map.

Colony of Chicks in Orchard.

Baby Chicks.

Boning a Chicken.

Rack of Dressed Poultry.

Capons Ready for Shipping.

Delivering Poultry to Town.

Train of Live Poultry Cars.

Group of Meat Substitutes.

Composition of Fish.

Composition of Eggs and Cheese.

Nuts and Nut Products.

Legumes and Corn.

Eat More Cottage Cheese, You'll Need Less Meat.

Feed the Slacker.

Save the Products of the Land.

## LESSON VI.

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Although milk is seven-eighths water, it is one of our most important foods. No other food has as great a variety of the materials which the body needs. It is indispensable for little children and of great value to everyone.

The tissue-building protein found in milk is in an especially valuable form.

In the fat of milk are found little-known but very important substances without which the body can not grow or recover from injury as it should. The only other foods which compare with milk as a source of these substances are the green leaf vegetables, such as spinach, chard, or lettuce.

Milk contains more of lime (calcium) than any other common food. Without it, the diet is almost sure to be lacking in this important building material.

Unless great pains are taken to keep milk clean, it is likely to carry bacteria which cause it to spoil. If infected with disease germs it may spread diseases such as typhoid fever, diphtheria, and scarlet fever.

Keeping milk cool prevents the bacteria from increasing. This is necessary not only to help make the milk safe, but to keep it from souring.

Butter is chiefly the fat of the milk, with some water and a little of the curd and salts.

Cheese is a valuable tissue-building and fuel food, which should be classed with such foods as meat or eggs, rather than as a pleasant accessory to the diet.

Skim milk contains most of the protein and lime of the whole milk and is far too valuable to waste, though it should not take the place of whole milk for little children.

For many good reasons such as higher costs of feed and labor, the price of milk has been rising lately, but even now its increase is relatively less than many other foods. It is an economical food when we consider all the materials it provides for the body. It is much safer to lessen expenditure for meat than for milk, especially for children.

## MILK AND ITS PRODUCTS.

DR. LAFAYETTE B. MENDEL, *Yale University.*

Few if any foods surpass milk in value as a component of the ordinary diet. No other food has so great a variety of the nutrients which the body needs to build its tissues and keep it in good working order; and some of these nutrients are of an especially desirable quality. For little children milk is indeed indispensable.

Milk is about seven-eighths water, yet there is no greater mistake than to think of it as a beverage rather than a food. The other eighth, made up of solids that are dissolved or suspended in the water, is so valuable that milk is rightly classed with bread and meat as one of the mainstays of our diet.

The most abundant of the solids in milk is called milk sugar. This is much less sweet in taste than some sugars, such as cane sugar, maple sugar, and honey, and is thought by many to be somewhat more easily utilized in the body than the familiar table sugar. When milk sours part of this sugar is changed into lactic acid.

Next to the sugar the most abundant constituent in milk is the fat, present in tiny globules that tend to rise to the top as the milk stands and the cream forms. Usually milk contains about  $3\frac{1}{2}$  or 4 per cent of fat, and 5 per cent of sugar.

Like other sugars and fats, these constituents of milk provide energy for the body, much as gasoline provides motive power for an engine. By energy we mean power to work, and heat.

Third in abundance are the proteins, that, like the sugar and fat, can furnish energy, but which have special importance in building and renewing the tissues of the body. One of these, called casein, is familiar in the form of the milk curd that separates from the whey when the milk sours; another is present in the whey. Among the different kinds of protein found in human food none is more valuable than that in milk, though many other foods (especially lean meat, fish, eggs, dried peas, and beans) contain protein in greater amount. The proteins form a little less than  $3\frac{1}{2}$  per cent of milk. Three, four, five is a good way to remember the proportion of the chief nutrients of milk—three parts of protein, four of fat, five of sugar.

The so-called mineral matters or salts are also important solid ingredients. Milk contains a little less than 1 per cent of these mineral matters, some of which play an important part in building the body and keeping it in good condition. The salts of lime or calcium are the most abundant and important, and there is no other common food from which lime salts can so readily be obtained.



Aside from the milk sugar, fat, protein, and mineral salts, there are in milk minute, and as yet unmeasured, amounts of certain newly discovered substances whose apparent importance for the welfare of the body has only recently become known. These have been called by various names, such as vitamins, accessory substances, growth determinants, food hormones or regulators of nutrition. By whatever name we call them, the important thing to remember is that without them the child seemingly can not grow normally and the adult can not keep in good health. This is indicated by experiments in physiological laboratories where young rats have been given diets which contain everything else that the animals are known to need, and yet they do not grow until some of these are added to their food. Physicians know that practically the same thing holds in the case of many sickly children. It is not known how much of these newly discovered substances is needed to keep us in health; but for the present the only safe course is to make sure that they are generously provided, and this can be done better by the use of milk than in any other way, since probably no one common food provides them as abundantly.

All these materials that milk supplies for building and renewing the body, for regulating its processes, and for furnishing energy, are in forms that can be readily digested and used. Moreover, clean, fresh milk can safely be used in its original state by most persons—often a great advantage in a busy household.

Milk used alone is by no means an ideal food for either the older child or the healthy adult, because, containing 87 per cent of water as it does, it is too dilute. In order to get the energy needed for his day's work a man using his muscles as much as a carpenter, for example, would need to drink about five quarts of milk, or 20 ordinary glassfuls, and a woman who did the cooking and ordinary housework for her family would need at least four quarts, or 16 glassfuls—decidedly more than most of us would care to use. If the man did heavier work, such as coal heaving, and the woman scrubbed floors or did heavy washing every day, each would need at least a pint more or perhaps a quart.

We should not on this account go without milk, but everyone, except little children, should endeavor to use milk in combination with more concentrated foods that yield a greater amount of energy, rather than by itself. It should be remembered, too, that milk takes the place of meat, fish, eggs, and other foods rich in tissue-building protein, and that when we use milk we need less of these. As a source of protein 1 glass of milk (one-half pint) might take the place of 1 large egg or 1 small serving of meat or fish ( $1\frac{1}{2}$  to 2 ounces) or one-third cup of baked beans.

It is unfortunate that a food as valuable as milk is one of our most perishable foods, and one which needs the most careful handling to keep it safe for use. We avoid dirty milk when we can see the dirt, but the existence of invisible dirt is sometimes forgotten. From the air, from contaminated water, from ill-cared-for utensils, from unclean hands the organisms called bacteria may find their way into the milk. Some of them are useful; without certain kinds, butter and cheese would not have their distinctive flavors. Some kinds cause milk to turn sour, though it still remains wholesome; others may form from it unwholesome, even poisonous products; still others may be disease germs that make milk a carrier of such maladies as infectious sore throat, diphtheria, typhoid fever, and tuberculosis. The only way to prevent danger is to see that everything connected with milk is kept as clean as possible and that neither the milk nor anything connected with it is handled by anyone who has come in contact with these diseases.

Milk should be chilled immediately and kept cool from the time it is drawn until it is used, since the bacteria that get into it multiply very rapidly in warm milk. These precautions are so necessary that nearly everywhere there are laws to enforce them.

Even with the greatest care it is almost impossible to have all the milk delivered in a great city in a sweet and wholesome condition; hence, to lessen the danger from spoiled or contaminated milk many municipalities require that all milk (except that from "certified" dairies) be pasteurized. To pasteurize milk it is heated to 145° F., kept at that temperature for 30 minutes, and then cooled rapidly. This treatment destroys any disease germs that may have been present and checks the growth of most of the other bacteria, so that the pasteurized milk keeps sweet longer than raw milk.

The price of milk has been increasing lately for various reasons, until in some places it sells for twice as much as it did ten years ago. Many families of limited income feel that it is now too expensive for them to afford, even for their children. A study made in New York City upon 2,200 families, all with children under 6 years old, showed that when milk went up to 14 cents a quart more than half of the families had substituted tea and coffee for milk and 120 families had stopped taking milk altogether, though in 25 of these there were babies under 1 year old. This situation is most unfortunate, for if milk is cut out of the diet the children may fail to get as much of the lime and the growth determinants as they need; and if these are lacking children can not develop into strong and healthy men and women.

In deciding whether any food is high or low in price, we must ask not merely how much we must pay for a pound or a quart, but how great is the return in actual food value. The following table may help to show how much protein and energy one can buy for 25 cents when food is at the prices given:

*Protein and energy purchasable for 25 cents from foods at certain assumed prices per pound.*

Material and price.	Protein.	Energy.	Material and price.	Protein.	Energy.
	Ounces.	Calories.		Ounces.	Calories.
Milk, at—			Cod, fresh, at—		
10 cents a quart.....	2½	1,575	15 cents a pound.....	3	350
12 cents a quart.....	2¼	1,315	20 cents a pound.....	2	265
18 cents a quart.....	1½	875	Cod, salt, at—		
Skim milk, at 5 cents a quart.	5½	1,650	10 cents a pound.....	7½	900
Full-cream cheese, at—			15 cents a pound.....	5	600
25 cents a pound.....	4½	1,995	White bread, at—		
35 cents a pound.....	3¼	1,425	5 cents a pound.....	6½	5,925
Cottage cheese, at 15 cents a pound.....	5½	835	5 cents for 12-ounce loaf (about 7 cents a pound).	4½	4,445
Eggs, at—			Rolled oats, at—		
25 cents a dozen.....	2¾	895	6 cents a pound.....	11	7,510
35 cents a dozen.....	2	640	10 cents a pound.....	6½	4,507
60 cents a dozen.....	1½	370	Corn meal, at—		
Beef (sides, medium fat), at—			6 cents a pound.....	6	6,721
25 cents a pound.....	2½	1,005	10 cents a pound.....	3¾	4,032
30 cents a pound.....	2	840			
35 cents a pound.....	1¾	720			

These figures mean that in buying milk at 12 cents a quart one gets protein as cheaply as in meat at 25 cents a pound, or eggs at 35 cents a dozen, or fresh cod at 20 cents a pound; and one gets energy more cheaply than from any of these other materials. Even at 18 cents a quart milk would be almost as cheap a source of protein, and a cheaper source of energy, than meat at 35 cents a pound; it would be a cheaper source of both protein and energy than eggs at 60 cents a dozen. Because of these facts dietitians advise families who must make every penny count to buy less meat rather than less milk.

When milk is compared with cereal foods the story is a different one. Wheat, corn, oats, rice, and other cereals are by far the cheapest sources of energy, but they are lacking in lime and in other nutrients which are contained in milk. Milk and cereals together make a remarkable combination; "bread and milk" is justified not only by experience but by theory.

Milk products should be thought of as including not only cream, butter, cheese, skim milk, buttermilk, and whey, but also milk in the condensed, evaporated, and powdered forms.

Cream is prized highly for its "rich" flavor and the pleasant consistency it gives to other foods. Its chief nutrient is fat, and the amount of this may vary from 18 to 20 per cent in ordinary "single" cream to 40 per cent in very thick "double" cream. About 5 quarts of milk are required to make 1 quart of single cream, and 10 quarts for 1 of double cream. The widespread use of cream is comparatively recent. If an actual shortage develops those who are accustomed to using it freely ought to forego this dietary habit, because the milk from which it is obtained is needed for use as such. For most families it is much better economy, both of money and of milk, to use "top milk" instead of cream on cereals, in coffee, and on puddings. If the milk is reasonably rich to begin with, what is left after the top has been poured off is suitable for cooking or drinking.

Butter is made up mainly of the fats of milk, with a little protein and some salt. These fats, amounting to nearly seven-eighths of the whole, yield energy rather than building material to the body. In other words, butter is a good fuel food. There is at present no reason for believing that it is more readily digestible than any other clean, carefully prepared edible fats. However, it contains more of the growth determinants than such vegetable fats as olive oil, cottonseed oil, corn oil, or peanut oil, and on this account can not be replaced by them readily.

Most of the protein, milk sugar, and the greater part of the lime of the milk are found in skim milk or in buttermilk, left from butter making. Hence these have food value not ordinarily recognized, and they should never be wasted.

One of the most valuable milk products is cheese, with its many varieties. Cottage cheese made from skim milk is a wholesome substitute for meat. One might pay 15 cents a pound for it and buy protein three times as cheaply as from beef at 25 cents a pound, thereby also obtaining the lime which is so hard to provide without milk or milk products. Ordinary American "full cream" cheese is made of whole milk, and contains nearly all of the solid ingredients of the milk except the small amounts that are drained off from the curd in the whey. It is a concentrated food that even at present prices is an economical source of protein.

If the water is removed from milk it can not easily spoil, for bacteria need moisture for their growth. Condensed, evaporated, and powdered milks are in the main simply skim milk or milk of low fat content from which more or less of the water has been driven off in one way or another. In some brands, especially the less thoroughly evaporated ones, sugar is added. Where good fresh milk can be obtained it is to be preferred to any of the dried kinds, but where it is scarce or inferior the dried milks are often very useful. These forms of milk can easily be transported and are less liable to spoilage. The low content of milk fat in most of these products must not be overlooked.

Unfortunately, with the difficulty in getting labor, the cost of supplies and many other causes, the milk production of the United States is not increasing as fast as the population. Not only should production be increased but there

should be the fullest use of all dairy products and by-products for human food.

Recalling that a quart of milk a day is recommended for every child from the time it is weaned until it is 3 years old, or even 6 years old, and that the Allies are now depending on us for part of their dairy products, we must realize how important it is for us to conserve and wisely distribute our milk supply and to conserve it by using every particle of it. Every effort must be made to stimulate greater production and a wiser use of milk.

### **WHAT WE CAN DO TO HELP THE MILK SUPPLY.**

We can use all milk and milk products carefully.

We can insist on buying clean, pure milk, and keep it in a clean, cool place, and in well-scalded dishes to prevent its spoiling.

We can use other fats, especially meat trimmings and "drippings" or vegetable fats, in the place of butter in cooking, when butter is scarce.

We can use "top milk" in the place of cream on cereals and desserts.

We can use skim milk, buttermilk, and whey in cooking.

We can use more cottage cheese made from skim milk.

We can make sure that children and sick persons have all the milk they need, even if some of the rest of us have less than usual.

We can encourage our farmers to increase the production of milk.

We can be willing to pay the price necessary to cover the cost of production and a reasonable profit.



## RECIPES, WITH SUGGESTIONS FOR DEMONSTRATION.

The Food Administration's early injunction "Save milk" has been sometimes misunderstood. The rest of the direction was not always read—"do not waste a drop of it." Milk is to be used. Children are to have an abundant supply. It is to be used freely by invalids and the sick, and all adults are to have some, varying with the supply. But every part of the milk must be used. It is a simple matter to use the cream and butter, but the skim milk is sometimes wasted or not used for human food. In this lesson especial emphasis should be laid on its value. A few recipes are given for its use. Many others will suggest themselves.

### DUCHESS SOUP.

½ onion.	1 teaspoon salt.
2 tablespoons fat.	Paprika.
1 tablespoon rice flour or 2 tablespoons sago or minute tapioca.	1 egg or 2 egg yolks.
1 quart milk.	¾ cup grated cheese.

*Directions.*—Cook the onion in the fat until tender but not brown. Remove the onion, add the flour, then the milk gradually, saving out ¼ cup. Cook until smooth and add seasoning. If sago or tapioca is used in place of flour, add it to the milk and cook 15 minutes. Pour the soup over the egg beaten with ¼ cup of cold milk. Add the grated cheese and serve immediately.

### COTTAGE CHEESE.

Use freshly soured clabbered milk, or clabbered buttermilk. Pour the milk slowly into a bag and allow it to drip, or heat over hot water until lukewarm (about 100° F.). Let stand a half hour, pour into a strainer lined with cheesecloth. Gather up the cheesecloth around the curd to form a bag, and let hang until the curd is free from whey. Moisten with a little butter, oleomargarine, or top milk. Salt to taste.

### PEANUT CHEESE BALLS.

Mix equal parts of peanut butter and fresh cream cheese, or homemade cottage cheese. Add a few grains of salt, and moisten with a little sweet cream if necessary. Shape into small balls. Serve with salad.

### COTTAGE CHEESE AND CELERY BALLS.

Mix equal parts of cottage cheese and finely chopped celery, form into balls, and serve on lettuce as a salad. Nuts may be used instead of the celery or with it, and the balls may be rolled in nuts.

## WHEY SALAD DRESSING.

Mix in the top of a double boiler 1 teaspoon each salt, sugar, and mustard, a few grains cayenne, and  $1\frac{1}{2}$  tablespoons rice flour; add 1 egg and mix again. Add  $1\frac{1}{2}$  tablespoons clarified chicken fat,  $\frac{3}{4}$  cup whey, and add  $\frac{1}{4}$  cup vinegar. Cook over boiling water until mixture thickens, stirring constantly. Strain and cool.

## IVORY JELLY.

$1\frac{1}{2}$ tablespoons granulated gelatin.		$\frac{1}{4}$ cup sugar.
$\frac{1}{2}$ cup cold skimmed milk.		$\frac{1}{4}$ teaspoonful salt.
$2\frac{1}{2}$ cups scalded skimmed milk.		$\frac{3}{4}$ teaspoonful cinnamon.

*Directions.*—Soak the gelatin in cold skimmed milk and dissolve in the scalded milk. Add sugar, salt, and cinnamon. Strain into mold and chill.

## MAPLE JUNKET.

1 quart skimmed milk.		$\frac{1}{4}$ cup cold water.
$\frac{3}{4}$ cup maple sirup.		1 teaspoonful vanilla or spice.
2 junket tablets.		

*Directions.*—Heat the milk until lukewarm (not more), add sirup and the tablets dissolved in the cold water. Pour mixture immediately into sherbet cups. Stand in warm room undisturbed until firm like jelly. Cool and serve.

## LEMON MILK SHERBET.

1 quart skimmed milk.		1 cup sirup.
$\frac{3}{4}$ cup lemon juice.		

Combine lemon juice and sirup, and gradually add the milk. If added too rapidly, or without constant stirring, the mixture will have a curdled appearance. Freeze. Grated pineapple may be added, lessening the lemon juice and sirup. Other sweetened fruit juices may be substituted for the lemon juice and sirup. The taste is a sufficient guide for quantity.

## INDIAN PUDDING.

5 cups scalded skimmed milk.		1 teaspoonful ginger.
$\frac{1}{2}$ cup Indian meal.		$\frac{1}{2}$ cup molasses.
1 teaspoonful salt.		

Pour skimmed milk slowly on meal, cook in double boiler 20 minutes, add molasses, salt, and ginger; pour into greased pudding dish and bake 2 hours in slow oven. Ginger may be omitted. Any ground cereal may replace the corn meal to vary the flavor.

## REFERENCES.

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Bulletin No. 13, The Food Value of Milk. Order from the Federal Food Administrator in your state.

### United States Department of Agriculture:

Office of the Secretary, Circular No. 85, The Agricultural Situation for 1918. Part II. Dairying.

#### Farmers' Bulletins—

No. 413, Care of Milk and Its Use in the Home.

No. 487, Cheese and Its Economical Uses in the Diet.

No. 712, School Lunches.

No. 717, Food for Young Children.

No. 824. How to Select Food. III. Foods Rich in Protein.

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

Bulletin No. 469, Fats and Their Economical Use in the Home. Price 5 cents. Order from the Superintendent of Documents, Washington, D. C.

### United States Food Leaflets:

No. 7, Food for Your Children.

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Order from the Federal Food Administrator in your state.

Farmers' Bulletin No. 413 is a practical discussion of the use of milk in the home. Farmers' Bulletin No. 824 discusses simply but accurately the food value of milk and cheese as sources of protein. Farmers' Bulletins 487, 712, and 717, and Food Leaflet, No. 7, include simple statements and recipes. Department of Agriculture Bulletin No. 469 gives practical directions for using other fats as substitutes for butter.

**LANTERN SLIDES.**

Relative Amount of Milk Used for Various Purposes in the United States.  
 Increase in Price of Some Cattle Feeds.

The Value of Clean Milk.

Multiplication of Bacteria in Uncooled Milk.

Kinds of Bacteria Found in Milk.

Misused Milk Bottles.

An Epidemic of Scarlet Fever Traceable to Milk.

A Dirty Cow, a Menace to Clean Milk.

Cows Are Hard to Clean When They Are Kept in a Dirty Yard.

Such a Stable Is Neither Sanitary Nor Comfortable.

Clean Milk Is Not Easily Produced in Such a Stable.

Clean Milk Should Not Be Handled in Such a Milk House.

A Clean, Well-lighted Stable.

Grooming Cows to Remove Dirt and Foreign Matter.

Clipping Long Hairs From the Udder, Flanks, and Belly.

Wiping the Cow's Flanks With a Damp Cloth Just Before Milking.

The Effect of Wiping the Cow's Flanks.

An Attractive and Inexpensive Milk House.

The Interior of a Good Milk House.

Milk Cans Airing Over a Pool of Liquid Manure.

A Sterilizer for Milk Utensils.

A Drying Rack for Milk Utensils.

An Easily Made Small-top Milking Pail.

The Small-top Pail Keeps Many Bacteria Out of the Milk.

Cooling Milk on the Farm.

Bottles Iced in the Case for Delivery.

Farmers Delivering Milk to Country Station.

Delivering Milk Under Difficulties.

Uses of Skimmed Milk.

Composition of Milk.



## LESSON VII.

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Fruits and vegetables are used in the diet to give pleasant flavor and varied texture.

They are important not only for this but because they give bulk and are laxative; because they contain valuable mineral salts, such as lime and iron; and because they furnish the dietary essentials sometimes called vitamins.

Fruits and vegetables are much alike in the kind of food material they contain.

Most fruits and vegetables contain a great deal of water. Watery ones like cabbage, celery, spinach, and berries have as much as 90 to 95 per cent. The starchy vegetables, such as potatoes, sweet potatoes, peas, beans, have much less, as do bananas and grapes.

Most fruits and vegetables have only a little protein. This is not true of beans and peas with their many varieties, and other members of the legume family, such as lentils. Fresh lima beans and green peas have 7 per cent protein. Dried legumes have from 18 per cent to 25 per cent. This is the reason why they may be used as meat substitutes, but they should not be used as the only source of protein.

Many fruits and vegetables contain a good deal of sugar or starch. Potatoes are about one-fifth starch, sweet potatoes have still more starch and sugar, green bananas are more than a fifth starch, most of it changing to sugar when they are ripe. Grapes are almost one-fifth sugar. Dried fruits, raisins, prunes, dates, figs, contain a great deal of sugar.

Starchy vegetables may be used in place of wheat. Fruits may be used in place of sugar.

The leafy vegetables have especial value. Like milk, though to a less extent, they can correct the deficiencies found in most other foods. They, as well as milk, may be called protective foods.

## FRUITS AND VEGETABLES.

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Fruits and vegetables are necessary for health because they supply certain needed substances that are not usually found in any other food materials. They should have a place in the diet of all those who have passed babyhood and no pains should be spared to obtain at least a small amount of them every day. When they are scarce or high priced this may make a serious problem for the housekeeper. On the other hand, when fruits and vegetables are abundant or cheap, they may be used in such large quantities that they save wheat, meat, sugar, and similar foods and they should be so used when, as at the present time, staple foods must be economized.

To understand these two different problems, the one presented by scarcity and the other by abundance, it is necessary to know something about what these foods contain.

### WHAT FRUITS AND VEGETABLES SUPPLY TO THE BODY.

To begin with, fruits and vegetables are more watery than most food materials. Even potatoes and bananas contain four times as much water as solid material, whereas wheat and other cereals contain eight or nine times as much solid material as water.

Fruits and vegetables, as a class, provide also a certain amount of starch and sugar which serve as fuel for the body and some protein which serves not only for fuel but also for body building. There are, however, many other foods which contain starch, sugar, and protein in much larger proportions than fruits and vegetables. Sugar or molasses contains far more sugar than grapes, one of the most sugary of the fruits; wheat contains far more starch than potatoes, the starchiest of the vegetables; meats and even fresh fish, which are comparatively watery, have a larger percentage of protein than fresh peas and beans, though these are conspicuous among the green vegetables for the protein they contain. It would, therefore, be quite possible for a person to omit fruits and vegetables from his diet without running the risk of not getting enough starch, sugar, and protein.

On the other hand, these foods contain certain materials in such abundance compared with the total amount of their solid matter that no other foods can well take their places. These materials include mineral substances, particularly iron, needed for building the tissues and fluids of the body, and certain mild vegetable acids useful in preventing constipation. There are also minute quantities of other substances which are now believed to be necessary for health, but which have not as yet been given any simple or popular name. It is now generally believed that, if fruits and vegetables are wanting, the diet is likely to be lacking in these important substances.

Those who best understand the subject of foods agree fairly closely about the amount of protein that a given person needs and even more closely as to the total amount of fuel he should obtain every day from his food. And

since the amount of protein, fat, starch, and sugar in different foods is also known, it is possible to estimate how much of the various foods should be eaten in order to supply the protein and fuel.

About the mineral substances and the other materials mentioned less is known. Neither the exact amount needed by the body nor the exact amount present in the various fruits and vegetables has been determined. It is quite impossible, therefore, to state the total number of pounds of fruits and vegetables which a person should eat per day or per week or the kinds which should make up the total.

Fortunately most people like fruits and vegetables and eat them as freely as they can afford. In times of plenty this is a safeguard. In times of scarcity, on the other hand, there is danger to health from lack of those substances which fruits and vegetables are best fitted to supply.

#### WHEN FRUITS AND VEGETABLES ARE SCARCE.

When fruits and vegetables are difficult to obtain, pains should be taken to use every portion. The juices should be saved so far as possible and care should be taken to avoid losses due to paring. Skins can often be made tender and edible and should not be removed, except when absolutely necessary.

The outer and tougher leaves of lettuce and the tops of radishes can be used in soup or can be cooked with other vegetables and served with meat. If there is enough of them, they can be cooked and used as greens.

In baking or steaming vegetables or in preparing them in a fireless cooker with little water there is less loss of juice than in ordinary boiling.

Vegetables are often prepared for meat or milk soups by boiling them in water and draining off the liquid. It is more economical to cook them in their stocks. In preparing milk soups the strained cooked vegetables are usually put through a sieve and then added to the milk. There are more economical ways which are worth considering in times of scarcity. If the vegetables are chopped very finely, they can be cooked in so little water that they need not be drained before the milk is added. Because the milk is not diluted much with water, this way of making soup offers a good opportunity to use skim milk, a good meat substitute the importance of which is not always appreciated. Another way is to serve the vegetables as such and use the water in which it was cooked in making the soup.

The outer leaves of lettuce, spinach, cabbage, and cress can be used in the above way. These vegetables are especially useful, particularly in the diet of the young, because they are rich in iron and also because they are now believed to be an important source of the unnamed substances spoken of above.

Celery tops can be used for flavoring soup and other dishes. If not needed at once, they can be dried. Leftovers of mushroom stems and skins, parsley, mint, and other flavoring herbs may be saved for later use in the same way.

All vegetables, except those which, like tomatoes, are very acid, can be baked in milk in the oven in the same way as potatoes. To prevent the milk from curdling when heated with the vegetables for a long time, the vegetables should be first dredged with flour and the heat should be kept very low. The same method may be followed with a double boiler, though this takes much longer.

Small amounts of leftover vegetables, like asparagus, beans, peas, cauliflower, or cabbage, may be put into a white sauce and served with omelet to make it "go further."

There is considerable loss in paring apples for making sauce or stewed apples. If the apples are cooked very slowly in a covered dish, the skins should be tender enough to eat. If strained apple sauce is liked the apples may be cut

into quarters and cooked till soft without either paring or coring, and rubbed through a strainer.

Pineapples can be cut up with very little waste, if they are first cut crosswise into thin slices. The skin can then be cut from the slices with scissors.

#### WHEN FRUITS AND VEGETABLES ARE ABUNDANT.

What has been said in the last paragraphs refers to the problem of making a small amount of fruits and vegetables go a long way so that the diet will not lack mineral substances and other body-regulating materials. The fact should not be overlooked, however, that there are no dietetic reasons why these foods should not be used in such large amounts that their protein, starch, and sugar will make it possible to economize on meat, wheat, and cane sugar. If they can be used near the place of their production, the cost of transportation will also be saved. There are few things that the householder can do that will effect greater saving of materials and labor needed elsewhere than to raise fruits and vegetables and to preserve them in times of abundance for use in seasons of scarcity.

When fruits and vegetables are to be used to save staples, new problems arise. Now the housekeeper, instead of giving her chief attention to the matter of saving the juices and the less attractive portions, must think of special ways of preparing and serving them so that they will be suitable substitutes for the foods that are to be omitted from the diet. This brings up questions of flavor and of texture.

Texture is a term which is properly used only of cloth, but sometimes applied to food for lack of a better word. The texture of foods is described by such words as hard, soft, brittle, crisp, oily, smooth, granular, coarse-grained, and fine-grained. In an attractive meal the foods served should be of different textures. They should neither be all soft, like milk toast and custard, nor all hard, like crisp rolls and nuts. Crisp, crusty rolls combine well with meat stews, and hard cookies with soft desserts. A few nuts in a cooked cereal are often acceptable because of the contrast in textures which they provide.

These problems of flavor and texture are very important when fruits and vegetables are to be used in place of meats, cereals, and ordinary sweets. The starch of potatoes can, to be sure, take the place of the starch of bread so far as nutrition is concerned, but the texture of potatoes is very different from that of bread, particularly from that of the crust. The protein of green peas and lima beans can be used in place of part of the protein of beef, mutton and pork to provide body-building material, but these legumes lack the flavor of meats as well as their texture and offer no substitute for the crisp brown crust of the well-cooked meat. The sugar of oranges, apples, plums, bananas, pineapples, berries, or melons can be used in place of cane sugar to provide fuel for the body but the sweet flavor of the sugar in fruits is often concealed by acids. It is difficult, therefore, to serve most fresh fruits so that they will take the place of sweets, without added sugar.

When fruits and vegetables are used for their more common purposes, i. e., when fruits are served as a first course at breakfast or with the cereal or are used for dessert at either of the other meals and when vegetables are used as side dishes with meat or for salads, there is no reason why they should be prepared in unusual ways even during the present food crisis. As a rule the simplest way of serving them is the best. The flavor of most vegetables is best preserved if they are served cooked in a little water and seasoned with a little butter, butter substitute, or cream. Many so-called salad vegetables, such as



tomatoes, radishes; celery, and cress, are acceptably served with salt or with salt and vinegar or lemon juice.

It is only when these foods are to take the place of other foods to which people have been accustomed and which have quite different textures and flavors that special problems arise. Several similar vegetables all cooked alike—boiled or stewed, for example—will not be a satisfactory substitute for a meal of meat and vegetables. On the other hand, fried egg plant with its crisp surface or a baked egg-and-vegetable omelet, for which recipes may be found in many cook books, combined with one mild flavored and one highly flavored vegetable—string beans with cauliflower, onions, or carrots, for example—make a very good combination. The crisp crust may also be obtained by covering a creamed vegetable with buttered bread crumbs and browning the dish in the oven. Such combinations have been acceptably served in good restaurants on meatless days. A baked omelet, one creamed vegetable, and one salad vegetable also make a good combination.

Generous amounts of creamed potatoes, or even of plain boiled or baked potatoes, eaten with salt, or of potato salad reduce very much the amount of bread needed at a meal. Creamed potatoes and potato salad may be greatly varied by combining with the potatoes another vegetable, particularly one of firm or crisp texture and distinctive flavor. Among these are beets, cucumbers, onions, celery, peas, beans, and cauliflower.

In the case of fruits a new problem arises. It is easy to use them with sugar, but not so easy to use them in place of sugar. The difficulty is to bring out their sweetness and at the same time make their skins tender.

A pound of fruit cooked with an ounce of sugar so that much of its water is driven off gives more of a sensation of sweetness than the same amount of material cooked with enough water to make a thin watery sauce, though it contains no more food. The thick rich sirup consists not only of the sugar which has been added, but also part of the natural sugar which has cooked out of the fruit itself.

Cooking with little water, however, is likely to leave the skin tough, while to remove the skins in the case of such fruits as apples and pears involves some waste, as has been already pointed out. If such fruits are steamed or cooked for a time in a covered dish until the skins are soft, the cover can be removed and the fruit cooked down to concentrate the sweet flavor.

#### COOKING DRIED FRUITS AND VEGETABLES.

Dried vegetables can easily be restored to their original size by being soaked in water. This may require 24 hours or even longer. Care should be taken to keep them in a cool place so that they will not spoil. After they have been soaked they can be cooked just as fresh vegetables are. They may not, of course, have all of their original flavor and for this reason special care should be taken in seasoning them.

Such dried fruits as apples, peaches, apricots, and berries, that must be cooked before they are eaten should be treated much like dried vegetables. They should be soaked until they regain their original volume and then cooked slowly without sugar until their skins are soft. This can be done in a covered dish on top of the stove, in the oven, or in a fireless cooker. The last is a very satisfactory method. If the fruits are to be used instead of sugar to give sweetness to the diet they should be cooked down after they are softened. The more they are cooked down the sweeter they taste.

Figs, dates, raisins, and some kinds of prunes are so soft that they can be eaten uncooked. They should, however, be carefully washed and are improved

by being scalded. A good way to do this is to put them, a few at a time, into a strainer and dip them into a pan of rapidly boiling water. This helps to clean them. If, after they have been taken from the water and drained, they are put into a covered dish or a warming oven, they will be considerably softened. Even a cheaper variety of raisins, if so prepared, make a good sweet to use with breakfast cereals in place of sugar.

#### REPLACING STAPLE FOODS WITH FRUITS AND VEGETABLES.

It is difficult to know how much of the other staples, such as meats, cereals, and sugar, can be safely replaced by fruits and vegetables in the diet unless one has an idea of the composition of the ordinary diet. Of course, rations, even those which provide all of the materials needed for health, vary greatly. In some meat is more conspicuous, in others, milk or cereals, or fruits and vegetables. The following combination of foods may, however, be taken as a fair example of the diet in an ordinary American home. It supplies all the materials needed for health in amounts sufficient for a family of two men and two women all at moderately hard work. So far as taste is concerned, this combination, if properly prepared, will make, not a rich diet (i. e., not one very generously supplied with fat, sugar, vegetables, eggs, etc.,) but on the other hand one not very plain.

1 quart milk (at least).

2½ pounds average-fat meat, fish, poultry, eggs, dried legumes, less ½ pound for each additional quart of milk used.

2½ pounds uncooked cereal. (The equivalent of 3¼ pounds of bread and 2 cups cooked cereal.)

4 to 5 pounds fresh fruits and vegetables.

7 to 8 ounces butter or other fat.

7 to 8 ounces sugar.

Four-fifths of the above amounts would be enough for a family of persons who lead sedentary lives and considerably more than the amounts mentioned would be needed by those who do hard work.

These foods might be served as follows:

#### FOR FOUR PEOPLE.

##### BREAKFAST.

4 medium-sized oranges, about 2 pounds.

1 cup rolled oats (measured raw), about 4 ounces.

Milk, 1 quart.

Toast, 8 slices, representing about 6 ounces of cereal.

Butter, 4 cubic inches, about 2 ounces.

Sugar, 4 level tablespoons, about 2 ounces.

##### DINNER.

Average-fat meat, fish, or poultry, 1½ pounds.

Potatoes, 4 medium-sized, 1½ pounds.

Tomatoes, or other vegetable, 1 pound.

Bread, 8 slices, representing 6 ounces of cereal.

Butter, 2 cubic inches, 1 ounce.

Fat used in cooking, 1 ounce.

Apple pudding and sauce or shortcake made with 2 cups flour, 2 tablespoons or 1 ounce fat, ¼ cup or 2 ounces sugar, 1 pound fresh fruit or 4 ounces of dried fruit.

## SUPPER.

Dried fish,  $\frac{3}{4}$  pound.

Or cheese,  $\frac{1}{2}$  pound.

Milk for soup, cocoa, or sauce on fish, 1 pint.

Lettuce or a vegetable for use with milk in soup, 4 ounces.

Rice, 1 cup, about 8 ounces.

Bread, 8 slices representing 6 ounces of cereal.

Fat in cooking or oil for salad, 1 ounce.

Butter, 2 cubic inches, 1 ounce.

Plain cake made with  $\frac{1}{2}$  cup or 4 ounces sugar, 1 egg, 4 ounces flour, 2 ounces fat,  $\frac{1}{4}$  cup milk.

If to the foods in the above meals there are added 4 more ounces of rolled oats,  $4\frac{1}{2}$  pounds potatoes (12 medium-sized),  $\frac{1}{4}$  pound dates,  $\frac{1}{2}$  peck peas (4 cups shelled) or its equivalent in canned peas, 3 pounds apples (8 medium-sized), and  $\frac{1}{2}$  cup corn meal, the bread can be omitted, the sugar reduced by 4 ounces, and the meat by  $\frac{1}{2}$  pound. The bills of fare could then be somewhat as follows:

## FOR FOUR PEOPLE.

## BREAKFAST.

4 medium-sized oranges, 2 pounds.

2 cups rolled oats (measured raw), 8 ounces.

Milk, 1 quart.

Potato cakes, using 4 potatoes ( $1\frac{1}{2}$  pounds) and  $\frac{1}{2}$  ounce fat.

Butter, 2 cubic inches, 1 ounce.

Dates, 4 ounces (12 to 16 dates).

## DINNER.

Average-fat meat, 1 pound.

Potatoes, 8 medium-sized, 3 pounds.

Tomatoes, 1 pound.

Peas,  $\frac{1}{2}$  peck.

Butter or other fat, 2 cubic inches, 1 ounce.

Pudding and sauce or shortcake made with 2 cups barley flour, 2 tablespoons or 1 ounce fat,  $\frac{1}{4}$  cup or 2 ounces sugar, 2 pounds fresh fruit or 8 ounces dried fruit.

## SUPPER.

Dried fish,  $\frac{3}{4}$  pound.

Or cheese,  $\frac{1}{2}$  pound.

Rice, 1 cup uncooked, about 8 ounces.

Butter or other fat, 2 cubic inches, 1 ounce.

3 cups milk

Apple Indian pudding: 3 pounds apples (8 medium-sized)  $\frac{1}{4}$  cup corn meal,  $\frac{1}{2}$  cup molasses, 1 ounce fat.

## USING FRUITS AND VEGETABLES.

Fruits and vegetables are not luxuries, but necessities. They are needed for health and consequently for efficient labor, including efficient patriotic service and efficient citizenship.

Use fruits and vegetables freely and give them to the children in healthful forms. Teach children to like them.

Use at the very least a pound a day of fruit and vegetables for each member of the family. Two medium-sized potatoes, one medium-sized apple, 10 string beans, and one large or two small pieces of celery would make up about a pound.

A rule that helps many people is, Do not spend more for meat and eggs together than for vegetables and fruit.

There is little danger of eating too much of these kinds of foods. Most people do not eat enough. When convenient, they can be substituted for other staple foods.

Save wheat by using more potatoes.

Save meat by using more beans and peas.

Save sugar by using more fruit, including berries and melons.

Do not let boiled rice, hominy, or macaroni take the place of green vegetables. Think of them rather as simple kinds of breads.

Do not throw away left over vegetables. Use them for soup or salad, alone or combined with other foods. Dry celery leaves and roots or similar portions of uncooked vegetables, and use them for seasonings or soup.

When vegetables are high priced, and must be used sparingly, think over what is their special value and make the most of them.

Cook them in simple ways for flavor.

See that they are crisp, since their texture gives them value. Wilted vegetables should be freshened even if they are to be cooked.

Since one value of vegetables is their bulk, use the harder portion as well as the tender.

Economize the juice since it contains valuable mineral salts. Use the water in which vegetables are boiled.

Wealth is that which satisfies needs; those who raise fruits and vegetables and those who use them wisely so as to satisfy the real needs of the body, both help to create wealth.



## RECIPES, WITH SUGGESTIONS FOR DEMONSTRATION.

One of the problems that confronts many housekeepers is the use of products that have been canned and dried, especially when these must be depended on for the chief source of this kind of food.

Of fresh fruits and vegetables one never tires and they may be served in the simplest ways without monotony; more skill and thought must be used to make the canned and dried fruits and vegetables as acceptable. Most of the recipes given are therefore for the use of such products.

### CREAM OF TOMATO SOUP.

1½ cups canned tomatoes.		¼ teaspoon sugar.
1 slice onion.		2 tablespoons butter, oleomargarine, or clarified fat.
1 clove.		1 tablespoon corn starch.
1 small piece of bay leaf.		1½ cups milk.
1 teaspoon salt.		
Paprika.		

*Directions.*—Cook the tomatoes and seasoning for 10 minutes. Rub together the corn starch and fat and stir into the boiling tomato. Boil for 3 minutes and strain. Allow to become very cold. When ready to use combine with the cold milk. Heat in a double boiler and serve. No soda is needed if this method is followed.

### CORN FRITTERS.

1 cup corn (canned).		½ teaspoon salt.
½ cup barley flour.		1 egg.
½ teaspoon baking powder.		

*Directions.*—Add the dry ingredients to the corn. Add the beaten egg and sauté in a small amount of hot fat.

### DRIED VEGETABLES.

Dried vegetables need long soaking and usually a short time for cooking. Long cooking hardens and toughens them. Corn, for example, soaked for a few hours in warm water in a warm, not hot, place and boiled only a few minutes, and served with a little milk and butter, is almost as delicious as fresh corn. Dried vegetables can be used for soups, salads, or in any way fresh vegetables might be used.

### DRIED FRUIT.

Many of the dried fruits, prunes and apricots for example, are better when cooked without sugar. Wash the prunes thoroughly and soak them 6 to 8 hours or over night, in water to cover. Cook them till tender in the same water, boiling down the water till it is a thick sirup. The sweetness and flavor will not be developed without this boiling down. If more juice is desired add water. A slice of lemon may be cooked with the prunes.

## JELLIED FRUIT SALAD.

Canned or cooked dried fruits may be served as salads in almost any combination. Prunes, apricots, peaches, and other fruits are good with cottage cheese. The juice from canned fruit used in this way may be made into fruit ices. The following rule uses part of the juice as well as the fruit.

1 tablespoon gelatin.	1 cup fruit juice.
$\frac{1}{4}$ cup cold water.	$1\frac{1}{2}$ cups fruit (cherries, peaches, plums, or other combinations).
$\frac{1}{4}$ cup lemon juice.	Sugar if needed.
$\frac{1}{8}$ teaspoon salt.	

*Directions.*—Soften gelatin in cold water. Mix lemon juice, sugar, salt, and fruit juice, bring to the boiling point and add softened gelatin. Cool, and as the mixture begins to thicken add the fruit cut in pieces. Turn into a mold and when firm turn out on a platter.

Jellied vegetable salad may be made in the same way, using boiling water in place of the fruit juice; either may be served with the following dressing:

## SOUR CREAM DRESSING.

1 cup sour cream.	1 teaspoon salt.
2 tablespoons lemon juice.	$\frac{1}{4}$ teaspoon pepper.
2 tablespoons vinegar.	1 teaspoon mustard.
1 scant tablespoon sugar.	

*Directions.*—Beat the cream with an egg-beater until smooth, thick, and light. Mix the other ingredients together and gradually add to the cream, beating all the while. The seasoning of this dressing may be modified to suit different vegetables. It may be seasoned highly with any kind of catsup, or the vinegar and mustard may be omitted for fruit salad.

## FRUIT ICES.

Fruit ices may be made from canned fruit. Rub fruit through a sieve, add juice and sweeten if necessary; or use juice left from fruit salad. Freeze.

## FRUIT GELATINS.

Gelatin dishes may be clear jelly, sponges, or bavarian creams. In preparing such dishes all that is necessary to know is the amount of gelatin needed for a given amount of liquid. This is usually given correctly on commercial gelatin packages. With very acid fruits, and in hot weather somewhat more is necessary than under other conditions. Soak the gelatin in cold water, add enough boiling water or fruit juice to dissolve the gelatin, sugar to taste, a speck of salt, and make up the required amount of liquid with fruit juice and cold water. Slices of the fruit or nuts may be added. Pour into a mold and set in a pan of ice water to harden. With a few fruits, such as uncooked pineapple and currants, gelatin will not harden.

To make a fruit sponge omit one-quarter of the liquid. When the jelly begins to harden, and is about the consistency of thick cream, beat into it the stiffly beaten whites of 2 or 3 eggs (for 1 quart of jelly). Beat slowly till the mixture thickens and will just pour, and pour into a mold.

For bavarian cream add 1 cup of whipped cream in place of the egg whites. Milk may be used in place of water for soaking and dissolving the gelatin.

## REFERENCES.

### United States Food Administration:

"Ten Lessons on Food Conservation—Lessons VII and VIII."

Available in every public library.

### United States Department of Agriculture:

#### Farmers' Bulletins—

No. 256, Preparation of Vegetables for the Table.

No. 293, Use of Fruit as Food.

No. 559, Use of Corn, Kafir, and Cowpeas in the Home.

No. 839, Home Canning by the One-Period Cold Pack Method.

No. 841, Drying Fruits and Vegetables in the Home, with Recipes for Cooking.

No. 853, Home Canning of Fruits and Vegetables as Taught to Canning Club Members in the Southern States.

No. 871, Fresh Fruits and Vegetables as Conservers of Other Staple Foods.

No. 881, Preservation of Vegetables by Fermentation and Salting.

Circular of Extension Work, South, A 89, Jelly and Jelly Making.

Circular of Extension Work, North and West, Extension N, Making Jelly with Commercial Pectin.

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

Bulletin 468, Potatoes, Sweet Potatoes, and Other Starchy Roots as Food.  
Price 5 cents.

Bulletin 503, Turnips, Beets, and Other Succulent Roots and Their Use as Food. Price 5 cents.

Yearbook Separate No. 582, Green Vegetables and Their Uses in the Diet.  
Price 5 cents.

Order from the Superintendent of Documents, Washington, D. C.

### United States Food Leaflets—

No. 1, Start the Day Right.

No. 9, Vegetables for Winter.

No. 10, Plenty of Potatoes.

No. 14, Dried Peas and Beans.

Order from the Federal Food Administrator in your state.

All of these publications, except Farmers' Bulletin 293 and the three for purchase, include practical directions. Farmers' Bulletin 853 describes the so-called "fractional sterilization" method of canning vegetables and fruits at home.

THE USE OF LOCALITY PRODUCTS AND THE  
DEVELOPMENT OF A NEAR BY FOOD SUPPLY

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- Homemade Drier.
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- Dried Snap Beans Sliced Before Drying.
- Cutting String Beans with Rotary Slicer.
- Potato Peeler.
- Interior of Potato Peeler.
- Dried Potato Strings, Passed Through Meat Grinder.
- Preparing Cooked Potatoes for Drying.
- Cutting Sweet Potatoes with Rotary Slicer (1).
- Cutting Sweet Potatoes with Rotary Slicer (2).
- Carrots Sliced and Dried.
- Spinach Dried.
- Dried Green Peas Run Through Meat Grinder.
- Drying Figs.
- Cartons for Dried Fruits and Vegetables.
- Types of Cookers with the Canned Products.
- Brother and Sister Canning Their Garden Products.
- Hot Water Bath Type of Canner.
- Potatoes of Different Grades, Losses in Peeling.
- Dish of Potatoes and Carrots.
- Roots and Succulent Vegetables.
- Composition of a Cabbage, and the Loss of Each Constituent on Boiling.
- Fruit and Fruit Products.
- Portions of Fruits and Vegetables Equal in Fuel Value.
- A Few Iron-rich Fruits and Vegetables.
- Experts Teaching Women and Some Men Economy in Food.
- A Lesson for the American Housewife from France.



## LESSON VIII.

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Vegetables, fruits, poultry, eggs, milk, and other dairy products, making up a substantial part of the average diet, may be produced in the majority of cases in territory close to most cities.

The increase of such production will help to relieve transportation conditions, tend to reduce prices, and will improve general business conditions by bringing farmers to town and bettering them financially.

In so far as a city has taken advantage of its opportunities to develop an economical food supply from its neighboring territory, it has taken the first step toward an efficient marketing system; in so far as it has neglected such development and ships in from a distance products which could be grown as economically near by, its marketing system falls short of being efficient.

As a preliminary to activities to stimulate near-by production of food, a careful study of conditions should be made. This should include the general system for handling foodstuffs locally, the agencies employed, the services performed, and the lack of proper marketing facilities, if such a lack exists.

Possible improvements may mean the establishment of farmers' wholesale or retail curb or shed markets, and, in the larger cities, municipal enclosed market buildings in which stall space is rented at a low figure to middlemen who deal in food products.

Producers should be encouraged to bring their surplus products into the city and easy and profitable marketing outlets should be provided for them. The farmers themselves should be freely consulted in regard to improvements in marketing facilities in the city, that would stimulate a greater local food production.

Successful farmers' markets have been found to furnish a dependable outlet for local producers, and to be especially effective in developing a near-by food supply. Their success is dependent largely on proper location, careful regulation, good business management, and the willingness of both producers and consumers to give them a fair trial when they are first established.

## THE USE OF LOCALLY-GROWN PRODUCTS AND THE DEVELOPMENT OF A NEAR-BY FOOD SUPPLY.

CHARLES J. BRAND,

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Naturally the most desirable source of the materials needed to feed the people of a city or town is the territory close by. Some commodities, including flour, sugar, some kinds of meat, and others that will be thought of by the housewife, are not, of course, produced in the neighborhood of many cities and in practically all cases must be shipped in by rail or water. Inasmuch, however, as about 25 per cent by weight of the diet of an average person consists of vegetables and fruits, it is apparent that a substantial part of the foods used by the average family can be produced in their season in truck gardens and on farms in close reach, by wagon or truck, of practically all communities. When poultry and some other meats, eggs, milk and other dairy products, and a large number of miscellaneous foodstuffs are added to this list, the possibilities of local production become still more important.

In so far as a city has taken advantage of its opportunities to develop an economical food supply from its neighboring territory, it has taken the first step toward an efficient marketing system; in so far as it has neglected such development and ships in from a distance products which could be grown as economically near by, its marketing system falls short of being efficient. Investigations have shown that, measured in this way, the marketing systems of a great many communities leave much to be desired. It is not unusual for cities to receive as low as 3 to 5 per cent of their annual supply of farm products from the surrounding country.

The direct results of the failure of cities to develop local food supplies often are shown even in normal times by the relatively higher prices for farm produce paid by consumers in these cities; by the lack of truck growing among many farmers who do not find a good outlet for such products; and in sluggish business conditions among merchants who cater to rural trade. These slow business conditions are due to the comparatively low buying power of farmers or to the fact that they seldom visit the city and are inclined to carry on business through other places.

Under the conditions created by the war there is still another and, in many ways, a more important result of the neglect of their logical source of food supply by cities and the reaching to distant territory for their commodities. Such a practice adds still more to the already staggering burden carried by the railroads and other transportation facilities. It is difficult to appreciate the tremendous burden which the country's transportation lines carry with reference to the distribution of foodstuffs. It may be better realized, however, when it is known that in the year past it is estimated that there were from 750,000 to 1,000,000 carloads of fruits and vegetables alone shipped, not to mention what was transported by express companies in less-than-carload lots. Neither

does this figure include cars of poultry, eggs, dairy products, and similar farm produce, much of which can be produced in greater abundance in nearly every locality.

It is, of course, desirable that as little interference as possible be brought about with the shipment of war supplies, fuel, ore, essential materials, and manufactured goods which are produced in great centers and which must be hauled considerable distances for distribution. It is especially important now, therefore, that any steps which can be taken to lessen the volume of freight hauled by transportation agencies shall be taken. If the large number of communities now neglecting their local sources of food supply could reduce their demands for shipped-in foodstuffs by only a few cars a week, the railroad congestion would be materially lessened.

#### THE NEED FOR STUDYING CONDITIONS.

Although it is easy to see that the development of a near-by food supply is desirable for many reasons, it is not a simple matter to turn the attention of a great community to the use of such foods as are grown in the immediate locality, especially a community which has long since lost the habit of depending on neighboring producers. The reasons for this, and the reasons why farmers often are unable to sell their products to advantage locally, vary greatly in different places, so the situation in each one should be studied separately. In many cities women's organizations are becoming interested in bettering marketing conditions and are taking up the study of the local conditions as the first step toward constructive action. The principal points with which they should become familiar are the general system by which foodstuffs are handled locally, the agencies engaged in the business, the services performed by each, and the lack of proper marketing facilities, if it exists.

#### THE LOCAL MARKETING SYSTEM.

If he sells locally, the farmer or truck grower may market his goods to consumers (individuals, hotels, restaurants), to retail dealers (grocers, fruit and vegetable dealers, hucksters, and pushcart men), to wholesale dealers, or to commission merchants. He may dispose of his products by delivering or peddling them to his buyers, or he may stand on a public market so that the buyers must come to him. Experience has shown that, in most cases, a good wholesale or retail public farmers' market, well located and under good business management, forms the marketing agency most satisfactory to all concerned and tends to encourage the greater production and utilization of foodstuffs grown near by. Such markets are simply conveniently located places, usually established and controlled by the city authorities, in which the farmers may display their products and customers may buy them.

Although such markets have proven their value beyond doubt, a survey in 1915 of municipal marketing activities throughout the United States showed that out of 584 cities having a population of 10,000 or more, only 189, or about one-third, had municipal public markets of any kind, and many of these were so poorly managed that they were of little practical use.

Where conditions are favorable for farmers' markets and where they are properly established, well managed, and loyally supported by both retailers and consumers, a consistent development of the food supply in the surrounding country should follow, to the advantage of both townspeople and farmers. Another season such markets might furnish at least a partial answer to the question, what shall be done with the surplus of home-canned goods now on the shelves of many housekeepers.

In some places it may be found advisable to suspend the operation of farmers' markets during the coldest winter months, when local production is at low ebb. In other cities, potatoes, apples and other stored vegetables and fruits, dairy and poultry products, cured meats, home-canned goods, maple sugar, honey, and other foodstuffs from the farm will be brought in sufficient quantities to keep the market in operation during the off-season for fresh vegetables and fruits. Where the establishment of a farmers' market is contemplated, the winter will be found a good season to sound the sentiment of the local growers, consumers and retailers, regarding the proposition and to work up the necessary plans.

While a farmers' market does not require elaborate quarters, or extensive equipment, it can not be expected to spring into existence without aid. It can be built up only by concerted effort, and a large part of his effort must come from consumers and their organizations. Much personal work often is necessary to persuade the city government to act and to induce the growers to try out this method of marketing.

Housewives must realize that they will have to support a retail farmers' market if it is to be a success, and that to do this they will have to change their methods of buying. For example, housewives can not expect to telephone their orders to a public market or to have such a market furnish them the delivery service or credit which they have become accustomed to receive from the corner grocer. They will have to pay cash and carry their goods home, or pay for the delivery. In return, they will get more varied and fresher products, and when the supply is ample to meet the demand, the prices on the farmers' market should average lower than in established retail stores. When retail farmers' markets are first started, prices are often disappointingly high, due to the fact that the supplies offered are inadequate to meet the needs of the housewives who are present to buy. This condition will correct itself, however, as more farmers are attracted to the market with their loads. Both consumers and growers have to be patient until the supply and demand are properly adjusted.

The two items of credit and delivery have such an important bearing on the whole question of retail prices that it is worth while to speak of them in passing. The ordinary store, of course, does not offer these services unpaid but charges for them in fixing its prices. All customers, therefore, pay for them whether they wish them or not. Some retailers have adopted the "cash, nonfree delivery" system with great success. A few have gone a step further and developed what is sometimes called the "three-way system," in which the basic price is for goods only, minus all credit and delivery service. Customers who wish may open a charge account, but a small percentage will be added to their bills to cover the expense of carrying the account. Deliveries also are made on request, but the customer who demands delivery must pay a reasonable charge for it. In other words, those who wish credit and delivery service can buy it, and those who prefer to avoid its expense can do so, thus effecting a real, worth while saving. It should be only a matter of time before most customers will refuse to pay for such service unless they use it, and dealers will charge extra for it when it is supplied. Each housekeeper must consider the relative value of her own time, her strength, and her money, and determine for herself whether she should pay or carry.

#### USE OF LOCALLY-GROWN PRODUCTS IN SEASON.

Even where there is no farmers' market housekeepers can lessen the demand for goods shipped in from a distance by using more locally-grown foods when



they are in season. One difficulty is that they do not always know what home-grown products are available or where. Women's organizations can often be of assistance in encouraging the local newspapers to publish accurate information of this nature in such form that the housewives can make practical use of it.

#### STORAGE OF PRODUCTS GROWN NEAR BY.

Where certain local products are in plentiful supply and good home storage facilities are at hand, consumers may find it desirable to secure potatoes, beets, apples, turnips, cabbage, or other storable products for their winter supply. In good producing sections, at least, it is reasonable to expect that if one buys a product for storage from near-by territory at the time it is most abundant it can be secured at a lower price than when purchased later in smaller quantities from carlot shipments from distant sources. By securing locally-grown products for storage when conditions are favorable consumers often can help to relieve a glut of these products on the local market, can save money on their own purchases, and can assist in removing the necessity for shipping into the city such large quantities of foodstuffs by rail.

In most cases it will be found that fuller utilization of local supplies of foodstuffs can be brought about most satisfactorily through the methods outlined above. It may well be, however, that when local organizations study conditions in their communities, they will find that improvement may be brought about in numerous other ways.

## WAYS IN WHICH WOMEN CAN HELP WITH THE LOCAL MARKETING PROBLEM.

1. Study existing local conditions—not for the purpose merely of criticising, but rather for the purpose of trying to improve marketing facilities.

(a) Study the general system used for handling foodstuffs locally.

(b) Learn the various agencies engaged in the business and the service performed, as well as the costs assessed by each.

2. Cooperate intelligently with dealers, in endeavoring to improve marketing conditions and be willing to do your share to effect betterments. Consumers are largely responsible for expensive and wasteful retail marketing practices and they must help if such practices are to be eliminated.

3. Concentrate attention on the elimination of waste in home marketing.

(a) Curtail ordering by telephone as far as possible.

(b) Never ask unnecessary credit or delivery service.

(c) Encourage local grocers to adopt a system whereby a low cash price is placed on goods at the store and fair charges made for credit and delivery. This places the cost of credit and delivery on those who use it and gives the housewife who pays cash and carries her packages home a price concession for so doing.

(d) Develop the marketing habit—personally superintend the buying of foodstuffs.

(e) Study comparative food values and food substitutes.

(f) Do not get into the habit of asking for the “best” of everything. Usually one can find perfectly satisfactory goods among the less expensive grades, after a little experiment.

(g) Check up weights and measures of all purchases.

(h) Study the comparative advantages of “bulk versus package goods,” and when bulk goods of satisfactory quality offer a saving insist on your dealer carrying them in stock.

4. Work through your organizations to interest your newspapers in furnishing reliable, non-technical market news and market hints for housewives.

Such a service should keep you informed in regard to the supplies of products entering the market and the prices which your dealers pay, and offer suggestions as to the best time to can, preserve or store for winter use. In this service, special effort should be made to inform consumers ahead of time of impending gluts of certain products, so that plans can be made for utilizing them.

If such an arrangement can not be made through newspapers, try to arrange a substitute service whereby a committee of the organization will cooperate with local produce dealers and public market officials in securing and disseminating such information periodically.

## RECIPES, WITH SUGGESTIONS FOR DEMONSTRATION.

In this lesson especial attention should be given to local products. Often nuts, fruits, and berries that grow wild are not utilized, because it has been so much easier to obtain the cultivated ones even though they had to be transported. Locally grown vegetables have seemed less attractive than those brought from a distance. To-day we must adopt some of the usages of past generations, depend less on transportation and more on supplies that are at hand.

This lesson may be used to demonstrate canning and drying processes, using the materials grown in local gardens, or the wild ones in the vicinity; or, if studied in the winter or spring, plans may be made for planting the vegetables that have proved most useful, and the proper amount of space to be given to each. Co-operative and community drying and canning projects may be discussed.

Another use of the lesson would be to prepare one or more of the meals suggested in the last lesson, substituting for any materials transported from a distance another product raised in the locality.

The recipes given are chiefly for the most common and widely distributed vegetable in this country.

### VEGETABLE SOUPS.

Good vegetable soups may be made by finely chopping any vegetable or combination of vegetables and cooking in water with a little rice, barley, or tapioca for thickening. The chopping is most conveniently done with a food grinder. The following recipe calls for a combination of vegetables, which is only one out of many that might be made. Left-over vegetables may be used.

2 turnips.	6 tomatoes or 1 pint can of tomatoes.
2 potatoes.	2 sprigs parsley.
1 onion.	1½ teaspoons salt.
6 stalks celery with tips.	¼ teaspoon pepper.
2 carrots.	2 tablespoons rice.
1 quart water.	

*Directions.*—Wash and pare the vegetables and put them through the meat chopper, using the finest blade. Combine all the ingredients and cook until the vegetables and rice are soft. The water in which rice has been cooked may be used in preparing this dish instead of rice itself.

The soup for which the recipe is given above can be made with milk, providing no acid vegetables are used. This offers a good way in which to utilize skim milk which is often thrown away. It has the advantage over some other ways of making milk-vegetable soups of preserving all of the juices of the vegetables. The cooking should be done in a double boiler to prevent scorching and curdling, and the vegetables should be chopped very finely.

## POTATOES.

Ways of preparing to insure a minimum of loss.

Baked: Convert into stuffed potatoes, if desired.

Boiled in skins. While still hot remove peeling, and brown whole in a small amount of savory fat or vegetable oil.

"Stewed" potatoes: Cut pared potatoes in thin slices, barely cover with water and add salt and butter to season. Boil until slices are tender but still whole and just enough water left to make them juicy. No water should be poured off.

## BAKED POTATO DON'TS.

Don't have your oven too hot.

Don't have different sized potatoes.

Don't delay in getting them into the oven; they will not hurry when the time is short.

Don't fail to allow from 45 minutes to an hour for a medium-sized (6-ounce) potato.

Don't select potatoes that are too big.

Don't put them into your oven dripping with cold water.

Don't plan to serve them as a second course in a dinner, it is difficult to get them just right. Use them with the first course in a lunch or supper.

## BOILED POTATO DO'S.

Do select potatoes of uniform size.

Do wash and scrub thoroughly.

Do boil in the skin unless the potatoes are old and strong tasting.

Do soak the potato in cold water for several hours before cooking, if it is old and shrunken.

Do remove the thinnest possible layer of skin, if the potato must be pared, and drop into cold water.

Do cook in boiling salted water till tender.

Do drain thoroughly and pare immediately.

Do see that all steam is driven off, so that the potato is dry and mealy.

## VEGETABLE CUTLETS.

1 cup cooked rice.

2 cups cooked beans.

1 cup mashed potatoes.

1 tablespoon oil or savory fat.

2 tablespoons onion.

2 tablespoons cornstarch.

$\frac{1}{3}$  cup tomato.

$\frac{1}{2}$  teaspoon salt.

*Directions.*—Put the rice and beans through the meat chopper, mix with the potato thoroughly. Cook the onion in the fat, stir in the cornstarch and the tomato and salt. Combine the two mixtures, shape like cutlets, and bake  $\frac{1}{2}$  hour in a quick oven, basting twice with fat or oil.

## POTATO LOAF.

2 cups mashed potatoes.

4 tablespoons minced onion.

2 tablespoons green pepper or pimiento  
pepper.

$\frac{1}{2}$  cup canned tomatoes.

1 egg.

1 teaspoon salt.

$\frac{1}{3}$  cup ground peanuts.



*Directions.*—Mix the ingredients well together. Turn the mixture into a greased baking dish. Brush it over with melted drippings. Bake it in a moderate oven for 25 minutes.

#### BELGIAN BAKED POTATOES

Wash, pare, and cut into pieces as for French fried potatoes. Lay potatoes on an oiled pan, season with salt and pepper, and bake in a fairly hot oven until puffed, golden brown, and mealy.

#### POTATO PUDDING.

(Uses no wheat flour.)

1¼ cups mashed potatoes.	¼ teaspoon salt.
4 tablespoons fat.	½ lemon (juice and rind).
2 eggs, well beaten.	1 tablespoon sugar.
½ cup milk.	½ cup raisins and nut meats.

*Directions.*—Boil potatoes, mash, and add fat, eggs, milk, lemon juice, grated peel, and sugar. Beat all ingredients together and bake in greased dish ¾ hour or longer. Serve with top milk.

#### HUNGARIAN POTATOES.

1 quart cooked potatoes.	2 cups tomatoes.
3 tablespoons fat.	1 teaspoon salt.
1 tablespoon chopped onion.	¼ teaspoon paprika.
2 tablespoons parsley.	

*Directions.*—Brown onion slightly in fat and add to diced potatoes. Add remaining ingredients except parsley to potatoes and put in greased pan. Bake covered in a moderate oven 45 minutes. Sprinkle top with chopped parsley and serve.

#### BROWNE SWEET POTATOES.

Boil medium-sized sweet potatoes 45 minutes. Peel them and cut in halves lengthwise. Put them in a baking pan, baste with drippings, and season with salt. Cook them in a hot oven for 20 minutes.

#### CANDIED SWEET POTATOES.

Peel the potatoes and boil until about half done. Cut in lengthwise slices and lay in shallow greased pan. Pour over a sirup of half a cupful of crushed maple sugar, ¼ cupful of boiling water, and 2 tablespoonfuls of fat. Place in a moderate oven and baste frequently with sirup until potatoes are done and well candied.

## LESSON IX.

### REFERENCES.

United States Department of Agriculture:

Farmers' Bulletin No. 703, Suggestions for Parcel Post Marketing.

Farmers' Bulletin No. 830, Marketing Eggs by Parcel Post.

Yearbook Separate No. 636, Retail Public Markets.

Markets Document No. 6, Distribution and Utilization of the Garden Surplus.

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

United States Food Leaflets:

No. 10, Plenty of Potatoes.

No. 16, Fresh Vegetables.

Order from the Federal Food Administrator in your own state.

These publications give brief and simple discussions of the subjects, usually including practical suggestions. Other valuable articles, which will be found in most well-equipped libraries, are the Report of the Mayor's Market Commission of New York City, 1913; "Reducing the cost of food distribution," in volume 50, and "Production and marketing plans for next year," in volume 74, of the Annals of the American Academy of Political and Social Science. The "Annals" may be purchased for \$1 a volume from the American Academy of Political and Social Science, West Philadelphia Station, Philadelphia, Pa.

## LANTERN SLIDES.

- Crocks Holding Eggs in Water Glass.
- Preserving Eggs Water-Glass Method.
- Scales and One Dozen Eggs Weighing  $1\frac{1}{2}$  Pounds.
- Retailer's Wagon.
- Curbstone Commission House.
- Sweet Potato Storage House.
- Cabbage Storage on Ground.
- Method of Storing Cabbage in Outdoor Pits.
- Cellar for Storing Root Crop.
- Root Cellar.
- Cement Cellar.
- A Farm Cellar.
- Keep It Coming.
- Food Is Ammunition, Don't Waste It.
- How to Cut the High Cost of Living.
- Farmers Raise Food and Save It Too.
- Farmerettes.
- Community Drier.
- Community Kitchens.
- Garage Used as Local Market.
- "Farmers' Line" at Eastern Market, Washington, D. C.
- Portion of Faneuil Hall Market in Boston.
- Elk Street Market, Buffalo.
- Farmers' Retail Curb Market at Dubuque, Iowa.
- An Old Time Municipal Retail Market in Pittsburgh.
- One of Denver's "Neighborhood Markets."

## LESSON IX.

Simple, clean, wholesome food of the right kinds fed to children in proper quantities and combinations will go further than almost any other single factor in assuring them normal health and sturdy development.

There is a real danger in attempting food conservation in the feeding of children without such a knowledge of food as will show what changes may safely be made. For the sake of the Nation as well as the individual, children must grow up well and strong.

Milk is the most important food for children. Every child under 6 should have a quart of milk a day if possible. Without milk it is hard to get the right kind of material to build the body and to keep the child in health. Skim milk is better than no milk at all, but if it is used butter or other fat must take the place of the cream in the whole milk.

Children should have either fruit or vegetables, preferably both, every day. Very little children may be given orange juice; a year-old child may have spinach cooked and put through a sieve; 2-year-old children may have soups of vegetable pulp and milk; and a healthy child between 3 and 6 may have almost any vegetable that he will chew thoroughly. Potatoes may be used freely. Every child should be given some cereal, in the form of well cooked breakfast cereal, well baked bread, or simple desserts, every day.

Bread and butter, whole cereals, and whole milk give all that the body needs for growth; beside this, fruits and vegetables are needed to give bulk.

Children need fats; but they are better uncooked, except bacon. Older children who have one-third of a quart to a quart of whole milk daily may use a butter substitute in place of butter, if it is necessary.

Sugar and sweets are valuable fuel foods, but children are liable to eat too much of them. They should be used as dessert after a good meal instead of before it.

A young child may be considered well fed if he has plenty of milk, bread, and other cereal food; an egg once a day or its equivalent in flesh foods; a small portion each of carefully prepared fruits and vegetables, with a small amount of sweet food after his appetite for other foods is satisfied. If there is too much or too little of any of these, his diet is one sided.



## LESSON IX. THE CHILDREN'S FOOD.

By DR. RUTH WHEELER,  
*University of Illinois.*

The choice of food is an important factor in food conservation when adults are considered; it is far more important in feeding children. The needs of the growing body are complex and must be supplied abundantly, and yet overfeeding in every sense must be avoided. Nothing must be given which can not be easily digested and assimilated. Food is less truly wasted when it is thrown into the garbage can than when it is fed to a little body that can not use it but must, on the contrary, get rid of it as soon as possible to avoid illness. This is a double or a triple waste.

### FOOD NEEDS FOR GROWTH.

The child grows at the rate of from 4 to 10 pounds a year for the first 16 years of life. During this time he must have raw material from which to build tissue, especially (1) protein, (2) many minerals such as lime, salts, and phosphates for teeth and other bones, and iron, without which growth and development are impossible. He must have (3) fuel to keep the tissue factories going, as well as to generate heat and motion, for which purpose fats and carbohydrates are especially valuable. He must have (4) traces of two kinds of little-known substances which promote growth and prevent disease.

### GENERAL CHOICE OF FOOD.

The majority of children in this country in families of moderate income have diets containing all of these constituents. The purpose of this paper is to discuss various common foods as to their value for children and to indicate how one may judge whether a child is getting everything he needs and how to correct the diet if it is wrong. Decide on the food the child should have and then stick to it. Do not give tastes of other food.

*Milk.*—Milk contains all the food constituents necessary for growth except iron, of which it has very little. No proteins that have been studied are better for growth than milk proteins. No other food has so nearly perfect a balance of minerals for building the growing bones and other tissues. It contains both types of accessory substances. If it has a fault, aside from the small amount of iron, it is that it is too perfect—so completely digested and absorbed that there is no residue to assist in the daily evacuation of the intestine. On this account, cellulose vegetables should be fed—spinach and carrots especially, because they supply not only residue, but also iron. Iron may also be given in egg yolk or meat juice.

Since milk is so nearly perfect it is clear that it is the last food on which to economize. Every baby and young child should have a quart every day,

older children at least a third of a quart. Even adults are better off with a glass of milk a day either to drink or cooked in food. Diets containing no milk are almost always deficient in lime salts and this means among other things the danger of poor teeth. We should do what we can to increase the milk supply by encouraging more people to keep cows or milch goats, but in any case milk should be included in the dietary. It is not only indispensable for young children but, even at 15 cents a quart, it is one of the cheapest body-building foods. See that it is clean when delivered and keep it clean. Keep it cold until it is time to use it. If kept warm, it nourishes bacteria as well as children. If it is dirty, it will contain many bacteria, some of which may cause disease.

Skimmed milk is much better than no milk at all. The proteins and minerals are still present, but it has just one-half the fuel value of whole milk, and therefore there is no economy in its use unless it costs less than half as much as whole milk or some cheaper (and equally good) source of fat is used in place of the cream in whole milk. Unsweetened condensed milks and most dried milk preparations are better than no milk but far inferior to fresh milk for children. While part of the milk should be drunk, especially by little children, much of it may be fed in soups, custards, puddings, and similar dishes.

*Cereals.*—Cereals should be used not only as breakfast food and porridge for supper, but in dessert. From the end of the first year, or even earlier, cereals should form an important part of the child's diet, next to milk the most important part for the first five years at least. Cereals are rich in starch; the protein is good, especially when supplemented by milk; and the minerals in the whole grains are very valuable. With patience and persistence almost any child may be taught to eat them.

For children under 18 months it is generally wise to strain the coarser cereal preparations, such as rolled oats and others, and in all cases such food should be cooked a long time—at least three hours in a double boiler.

Other cereals than wheat may be used. Well-cooked corn, as hominy or corn meal porridge or mush, is as nutritious as farina or other wheat breakfast foods; oatmeal, strained for babies, is equally good and supplies considerable iron, though in large amounts it may form pasty stools and increase constipation, unless other dietetic measures, such as are spoken of later, are taken to prevent this; barley, rice, and tapioca are also valuable, especially as sources of starch.

Wheat is not superior to corn, nor to oats where this last grain does not cause constipation, nor to rye, except in bread. So far as we know now no other grain than wheat gives by itself a light fermented loaf. On this account for little children wheat may be saved in other ways and used in bread, though even here it may be mixed with other grains. Bread forms an important part of children's diet, dried out or toasted for the younger ones. Bread and butter, preparations of whole cereals, and whole milk, supply all the body's needs for growth. Such a diet does, however, lack the indigestible residue which is necessary to give bulk to the feces and prevent constipation, and this should be supplied by vegetables and fruits.

*Meat and eggs.*—Meat is unnecessary for little children. Authorities are not all agreed as to how soon it should be given. Even when the child is 6 or 7 years old, only a small portion once a day should be allowed. Milk and eggs are good protein foods for children. One egg (soft cooked) may be given daily and occasionally an additional one in custard or plain pudding. A very few children are made ill by egg white in any form. These children can sometimes take the yolk alone. When this, too, is impossible, it may be necessary to give beef broth or beef juice one to three times weekly, even to little children.

*Vegetables and fruits.*—Children need vegetables, even though most of them dislike such food. Potatoes are a class by themselves and should form an important part of the diet, well baked ones at first, then mashed, boiled, and finally cooked in various ways. They are rich in starch; their small amount of protein is of an especially valuable sort, and their minerals are alkaline, thus serving, with the minerals of milk, to balance the acid minerals of cereals and of eggs. Sweet potatoes are also good food and, like parsnips, beets, and many fruits, they supply considerable sugar.

With the exception of potatoes, all of the common vegetables contain somewhat large amounts of cellulose or indigestible residue, important to prevent constipation, from which so many ills may arise. If the food mass moves too slowly through the intestines bacteria are likely to multiply and form poisons which lead to sluggishness of mind and body, even if more obvious poisoning does not occur.

The minerals of all vegetables are valuable, but so soluble in water that large amounts will be lost unless the water in which they are cooked is served with the vegetables or in soup. Most vegetables are rich in lime salts and in iron. The greens, spinach above all, carrots, and the legumes, such as peas and beans and many of the green vegetables, as well as the whole grains already mentioned, contain so much iron that they are valuable in the anemia so common in babies and adolescent girls and useful preventives of this condition. If put through a sieve, all of these foods except legumes can be given to babies. Not only is it pleasanter and cheaper to take the iron in food than in tonics; it is far more efficacious.

The only vegetable foods particularly rich in protein are legumes and nuts, which are not sufficiently easy of digestion to be given safely to very young children. Beans are very often decomposed by bacteria in the intestine. Peas are less likely to cause trouble. Soups of lentils, peas, and beans may be given to young children, but not often.

Fruits, as well as vegetables, are valuable foods. Many of them contain sugar in a highly utilizable form, much less likely to cause indigestion than candy. They also contain considerable cellulose and certain of the mild fruit and vegetable acids which are of additional value. Orange juice, strained and at first diluted, should be given even to little babies if there is constipation or if for some reason boiled milk must be fed. It is a safe laxative and is said to prevent scurvy to which babies fed on boiled or pasteurized milk are believed by many to be liable. Strained prune juice is also a good laxative for babies; after the first year, the soft pulp may be given to healthy children. Most fruits should be cooked for little children. Bananas are easily digested if very ripe and may be given raw or baked.

*Fats.*—Fats are the most concentrated fuel foods. They are far better uncooked for children, who can digest fairly large amounts of butter and oils but little cooked fat, except bacon. Rich gravies and sauces, fried and sautéed foods and pastry, should never be given to children. The fats most readily digested are, first of all, that in whole milk, then cream, butter, olive oil (which is sometimes utilized by babies better than cream), and bacon. For older children who have a third of a quart of milk daily, butter substitutes, such as oleomargarine and nut butterine, are entirely satisfactory. For them there is little to choose between the principal food fats as fats, though the oils and the softer fats (those of lower melting point) may digest somewhat more thoroughly than the harder ones like beef and mutton fat. But if the milk supply is short, the choice of fat becomes doubly important. The almost unknown "essential accessory," whose presence in the food is one of the necessities for growth, is present in milk fat and so in butter, in less amount in oleomargarine

made from beet fat, but not at all, apparently, in butter substitutes made principally from nut oils.

*Sugar.*—Sugar and sweets, though valuable fuel foods, are dangerous for children unless carefully controlled. Because of their flavor, it is only too easy to eat too much of them. They are likely to cause digestive disturbances, to take away the appetite for other more valuable foods if eaten at the wrong time, and therefore indirectly to cause anemia and bad teeth. Obviously, they are entirely unbalanced foods, supplying only fuel and no building materials in any permanent sense of the word. They must, therefore, supplement and not replace other food. In moderation, as dessert after a good meal, they are in their proper place.

*Meals.*—In combining foods from these various classes into meals for older children, it is well to have, in the course of the day, something from each class: a protein food (milk, eggs, meat, legumes, nuts), a starchy food (cereals, potatoes), a cellulose vegetable (leaf vegetables, like cabbage, spinach, and other greens, salads, root vegetables other than potatoes), some fat and some sweet, and to see that iron and lime salts are supplied.

The amount of food given depends on the age, size, and activity of the child. Other things being equal, a fat child needs less food than a thin one, a quiet child less than an active one. During the pre-adolescent period (12 to 14 years for boys, 10 to 12 years for girls) children need far more food in proportion to their weight than at any other time in life after infancy. Boys of that age may need more food than their fathers, not only in proportion to weight, but absolutely.

As to the choice of these foods to be made for children of different ages, the first rule is, go very slowly in increasing either the amount or the variety of foods. For the first six years milk should be the chief food, a quart being given each child every day. At the beginning of the second year, a baby should have milk, well-cooked whole cereal strained through a sieve, dried or toasted bread, and one to three tablespoons orange or prune juice or pulp. In addition, he may have the yolk of an egg two or three times a week or beef broth with cereal in it if egg is not tolerated. The egg yolk is gradually given more frequently until the limit of one a day is reached. The strained pulp of well-cooked spinach or carrots, later that of green peas and of young beets, may be added, and toward the end of the year all these vegetables may be given unstrained. At any time the vegetables may be served in milk soups.

During the third and fourth year these same foods may be served in a larger variety of forms and a few others added. The quart of milk should still be given in one form or another; top milk may be used on the cereal; a whole soft cooked egg may be given at noon with the pulp of mashed vegetable or a milk soup containing the vegetable; dried peas or beans may be used in soup; a little butter may be put on the bread; and baked potato and butter and a simple dessert, such as junket, bread, or plain cereal pudding, or apple or pear, baked or stewed, may be added to the meal. Only large rapidly growing children are likely to need all of this every day. The evening meal may consist of milk toast or bread and milk or cereal and milk.

During the next three or four years the amount eaten gradually increases, but the character of the food is not materially altered. The pulp of raw fruits is introduced gradually and dried fruits properly cooked may be given. Vegetables may be creamed and potatoes boiled, creamed, or mashed. Bacon may be used and tender beef, lamb, and chicken in small amounts. Plain cookies and sponge cake 24 hours old may be given for dessert. All sweet foods should always come at the end of a meal.



## A DAY'S FOOD FOR CHILDREN.

These menus apply the principles just laid down. They give a choice of foods that will supply all the food needs of a child from 7 to 10 years old.

### BREAKFAST.

Orange or stewed prunes or baked or stewed apple.  
Oatmeal or other well-cooked whole cereal.  
Whole milk—on cereal and to drink.  
Toast.  
Butter.

### DINNER.

Soft cooked egg or small portion of tender meat.  
Potatoes, baked or mashed or boiled.  
Green vegetable; carrots, parsnips, onions, or spinach.  
Milk to drink or in soup made of the green vegetable.  
Bread, rice, or hominy.  
Butter or jelly.  
Pudding or plain stale cake or cookies or stewed fruit.

### SUPPER.

Cream soup, or milk on porridge, or rice, or milk toast.  
Bread and butter.  
Pudding or stewed fruit.

## RECIPES, WITH SUGGESTIONS FOR DEMONSTRATION.

With the recipes for children's food, that include milk, soups, a cereal, some simple desserts, and wheatless crackers, there are given directions for pasteurizing milk, since at times it may be necessary to do this in the household. All through the lesson there should be reiterated emphasis on the need of the care of children's food from the standpoint of cleanliness, and this should be especially applied to milk. Simplicity, thorough cooking, care in serving may also be taught better in connection with children's food than in any other lesson.

### CREAM OF VEGETABLE SOUPS.

<p><math>\frac{1}{4}</math> cup butter or clarified meat fat. <math>\frac{1}{4}</math> cup flour (rice or corn). 1 quart of milk, whole or skimmed. Mashed vegetable.</p>	<p>Water in which the vegetable was cooked. Salt.</p>
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**Directions.**—Melt the fat and stir into it the flour. When these are thoroughly mixed, add the cold milk gradually, stirring until the milk boils. Use this thickened milk as the foundation for any kind of cream of vegetable soup by adding enough of the mashed vegetable and the water in which the vegetable has been cooked to give the consistency of the thickened milk; or the water alone may be used with half the amount of milk. A desirable flavor can be obtained with as small a quantity as  $\frac{1}{2}$  cup of the vegetable stock and pulp, especially strongly flavored vegetables as onion, cabbage, and turnip. As much as 1 quart of the more delicately flavored vegetables may be used. Onion or other flavor may be added.

If the mixture is beaten thoroughly with an egg beater just before serving, an attractive lightness may be obtained.

Vegetables used in this way may be potatoes, carrots, turnips, onions, cabbage, cauliflower, spinach, asparagus, peas, beans, and corn.

#### NORWEGIAN PUDDING.

$\frac{1}{2}$ pound prunes or other fruit.	$\frac{1}{2}$ teaspoon cinnamon.
2 cups cold water.	$1\frac{1}{2}$ cups boiling water.
1 cup sugar.	$\frac{1}{3}$ cup cornstarch.
1 tablespoon lemon juice.	

**Directions.**—Cook prunes and remove stones; then add sugar, cinnamon, boiling water, and simmer 10 minutes. Combine cornstarch with enough water to pour easily. Add to prune mixture, cook until cornstarch is thoroughly done. Add lemon juice, mold and chill. Dried raspberries soaked in water for 5 or 6 hours and cooked for 20 minutes are particularly good in place of prunes.

#### DATE PUDDING.

1 package dates.	Speck salt.
1 pint milk.	

**Directions.**—Wash dates and cut in small pieces. Add milk and cook in double boiler until thick, about  $\frac{3}{4}$  hour.

#### CEREAL COOKED IN MILK.

$\frac{1}{3}$ cup of any coarse cereal, rice, corn meal, oatmeal, or barley.	1 quart milk, whole or skimmed.
	$\frac{1}{2}$ teaspoon salt.

**Directions.**—Put in the double boiler, stirring from time to time. Cook two hours or more. This may be served with dates or other dried fruit cut up in it; or  $\frac{1}{3}$  cup of brown, white, or maple sugar, sirup, honey or molasses may be cooked in it; or it may be thinned and used to pour over prunes or other cooked fruit in place of milk.

#### SOFT CUSTARD.

3 egg yolks.	$\frac{1}{8}$ teaspoonful of salt.
2 cupfuls of milk.	Flavoring.
$\frac{1}{4}$ cupful of sugar, honey, or sirup.	

**Directions.**—Heat the milk in a double boiler. Thoroughly mix the eggs and sugar and pour the milk over them. Return the mixture to the double boiler and heat it until it thickens, stirring constantly. Cool and flavor. If the custard curdles, remove it from the fire and beat with a Dover egg beater.

This custard may be served in place of cream on many kinds of dessert. The whites of the eggs may be beaten until stiff, sweetened slightly, and served upon the custard, either with or without cooking slightly over hot milk or water.

The custard may be made with the whole egg, 1 egg to 1 cup of milk, or 3 eggs to 1 quart, but it is more difficult to keep it from curdling.

Tapioca custard may be made by adding to the ingredients for boiled custard  $\frac{1}{4}$  cup pearl tapioca soaked in water for an hour, drained and cooked in the milk till transparent, before adding the egg. Less eggs may be used. After the custard is slightly cooled the stiffly beaten whites may be folded in.

Baked custards are made by mixing the ingredients given above, and baking in a moderate oven till firm. The easiest way to secure good results is to set the baking dish in a pan of water.

### TO PASTEURIZE MILK.

Set the bottles of milk in a pail with a perforated false bottom. An inverted perforated pie tin will do. Insert a thermometer in one of the bottles, by punching a hole in the cap or through the cotton plug. Fill the pail with water nearly to the level of the milk. Heat the water slightly until the thermometer registers 150° F. Change the thermometer from the milk to the water, add cold water till the temperature of the water is also 150°. Cover the kettle, keeping it as nearly this temperature as possible for 30 minutes; then cool, by running water into the pail. Remove the bottles and put them immediately on ice.

If no thermometer is at hand, the following method may be followed: Put a gallon (4 quarts) of water on the stove in a kettle with a perforated false bottom. When the water is boiling hard, remove the kettle from the stove to a table and allow it to stand uncovered for 10 minutes; then put the filled and loosely corked bottles into the water, cover the kettle, and allow it to stand covered for half an hour. At the end of this time remove the bottles, cool rapidly under running water, and put in the ice box until needed. Do not uncork the bottle from the time it is first closed until the baby is to be fed.

### RECIPES WITH SUGGESTIONS FOR DEMONSTRATION.

With the recipes for cereals, puddings, custards, and other simple desserts, and wheatless crackers, there are given a number of suggestions for the preparation of these articles. The suggestions are given in connection with children's food, but they are of general application. Simplicity, thoroughness, and care in serving are taught better in connection with children's food than in any other way.

## REFERENCES.

United States Department of Agriculture:

Farmers' Bulletin 712, School Lunches.

Farmers' Bulletin 717, Food for Young Children.

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

United States Food Leaflet No. 7, Food for Young Children.

Order from the Federal Food Administrator in your state.

United States Department of Labor. Children's Bureau:

Care of Children Series—

1. Prenatal Care.

2. Infant Care.

3. Child Care.

4. Milk the Indispensable Food for Children.

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

Farmers' Bulletins 712 and 717 include simple discussions and practical suggestions and recipes. The bulletins of the Department of Labor referred to are prepared by the Children's Bureau and give simple and reliable suggestions which any mother can follow; they include sections on food and nutrition. The Children's Bureau also publishes in its press series brief articles on the care of children which will be sent free on application to the bureau.



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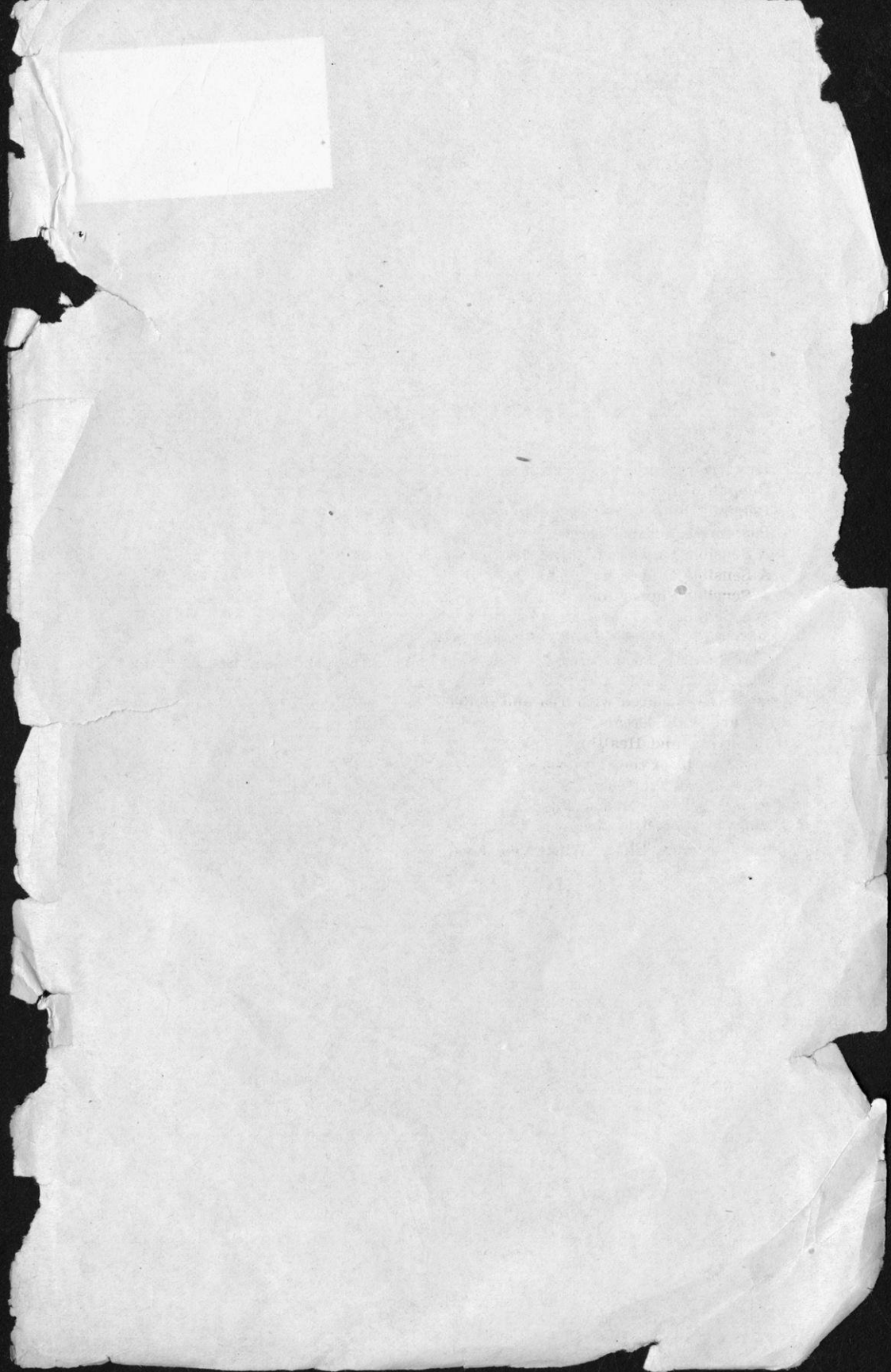


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### LANTERN SLIDES.

- Little Americans, Do Your Bit.
- How Every Child Can Help. Eat all the Food on Your Plate.
- Belgian Children.
- Belgian Children Fed by Belgian Relief Commission.
- Pasteurizing Milk.
- A Sensible Breakfast for a Child.
- A Sensible Dinner for a Child.
- A Sensible Supper for a Child.
- School Lunch.
- Nutritive Requirements at Different Ages.
- The Relative Food Value of Clear Soup, Meat Stew, and Bean Soup.
- The Race for Life.
- Milk as Compared with Tea and Coffee.
- A Variety of Cereals.
- Be Strong and Healthy.
- The Health of the Children.
- Wheat for Children.
- Enjoying a Wholesome Food.
- Taking His Bottle Correctly.
- Text—Simple, Clean, Wholesome Food.





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### LANTERN SLIDES

- Little Americans, Do You Eat?
- How to get Child Care Help - Eat all the Food on Your Plate
- Indian Children
- Belgian Children Fed by Belgians Better Connections
- Pasteurizing Milk
- A Suitable Breakfast for a Child
- A Spoonful of Sugar
- School Lunch
- Drinking Recommendations at Different Ages
- Comparative Food Value of Clear Soup, Meat Stew, and Bean Soup
- The Dinner Table
- How to Conserve with Tea and Coffee
- A Balanced Diet
- How to be Healthy
- The Health of Our Children
- What to Eat
- How to Cook
- Food and Nutrition
- Food and Nutrition