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FOOD

AND HOW TO SAVE IT

BY

EDMUND I. SPRIGGS
M.D. F.R.C.P.

3rd Edition, including Compulsory Rations.

LONDON :
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JULY, 1918.



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Food Units
or Calories.

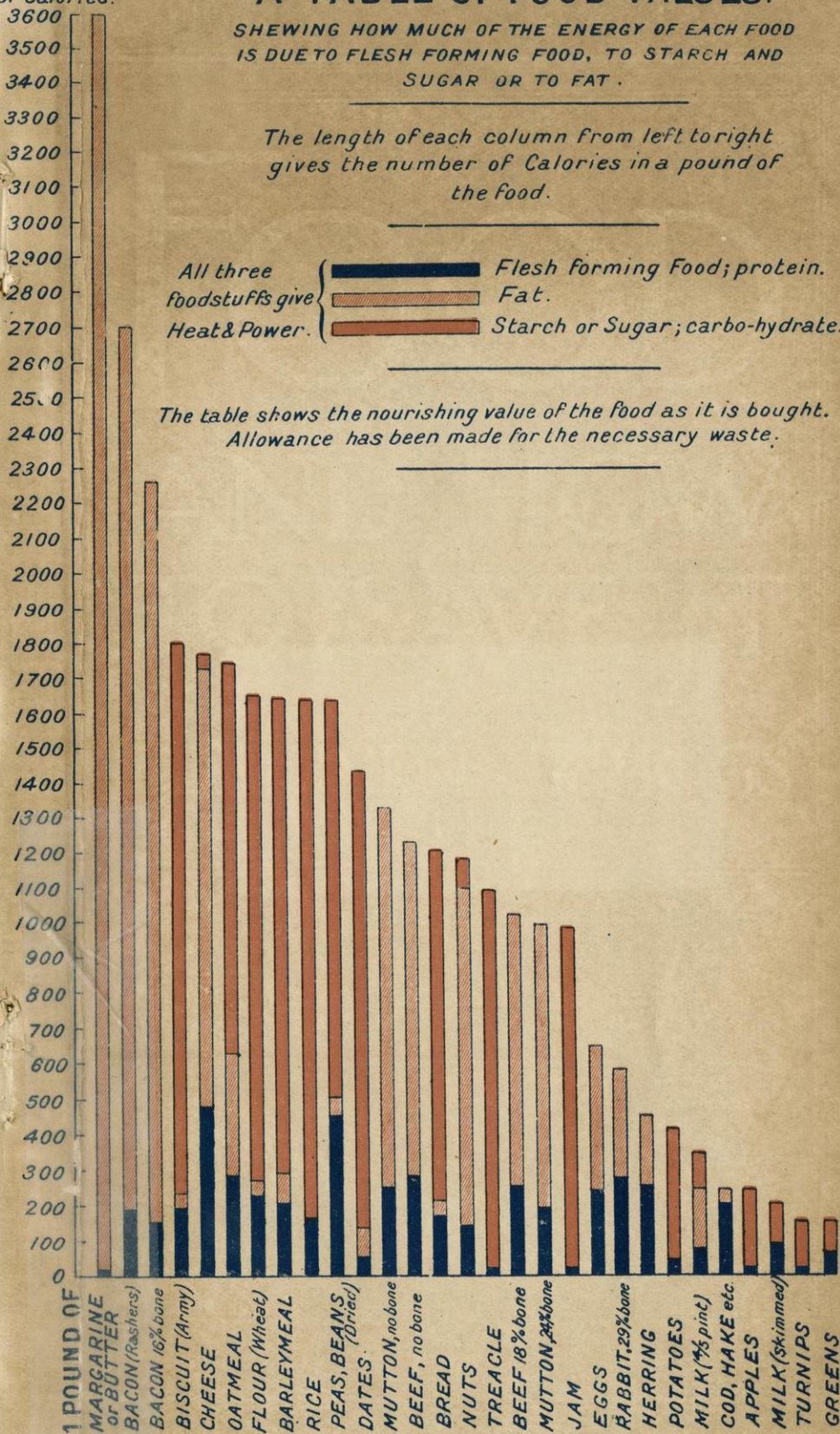
A TABLE OF FOOD VALUES.

SHOWING HOW MUCH OF THE ENERGY OF EACH FOOD
IS DUE TO FLESH FORMING FOOD, TO STARCH AND
SUGAR OR TO FAT.

The length of each column from left to right
gives the number of Calories in a pound of
the food.

All three foodstuffs give Heat & Power. {
 Flesh forming Food; protein.
 Fat.
 Starch or Sugar; carbo-hydrate.

The table shows the nourishing value of the food as it is bought.
Allowance has been made for the necessary waste.



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BY THE KING.

A PROCLAMATION.—GEORGE R.I.

We, being persuaded that the abstention from all unnecessary consumption of grain will furnish the surest and most effectual means of defeating the devices of Our enemies, and thereby of bringing the war to a speedy and successful termination, and out of Our resolve to leave nothing undone which can contribute to these ends or to the welfare of Our people in these times of grave stress and anxiety, have thought fit by and with the advice of Our Privy Council to issue this Our Royal Proclamation, most earnestly exhorting and charging all those of Our loving subjects, the men and women of Our Realm who have the means of procuring articles of food other than wheat and corn, as they tender their own immediate interests, and feel for the wants of others, especially to practise the greatest economy and frugality in the use of every species of grain:

And we do for this purpose more particularly exhort and charge all heads of households to reduce the consumption of bread in their respective families by at least one-fourth of the quantity consumed in ordinary times; to abstain from the use of flour in pastry, and, moreover, carefully to restrict, or wherever possible to abandon, the use thereof in all other articles than bread:

And We do also, in like manner, exhort and charge all persons who keep horses to abandon the practice of feeding the same on oats or other grain, unless they shall have received from Our Food Controller a licence to feed horses on oats or other grain to be given only in cases where it is necessary to do so, with a view to maintain the breed of horses in the national interest:

And We do hereby further charge and enjoin all Ministers of Religion in their respective churches and chapels within Our United Kingdom of Great Britain and Ireland to read, or cause to be read, this Our Proclamation on the Lord's Day for four successive weeks after the issue thereof.

Given at Our Court at Buckingham Palace this Second day of May in the year of Our Lord One thousand nine hundred and seventeen, and in the Seventh year of Our Reign.

GOD SAVE THE KING.

NOTE.

The food situation has changed rapidly during the last few months, and will doubtless continue to do so. Most of the contents of this booklet will, nevertheless, hold good. The figures in the chapters on the rations must, of course, only be taken as applying to the allowances in force at the present time.

July, 1918.

PREFACE TO FIRST EDITION.

This little book is made up, with some alterations, of articles which were published by the Ministry of Food between February and May.

The writer is indebted to the staff of the Ministry for advice and help; also to Mr. A. B. Weir, B.Sc., who has made many analyses of foods; and especially to Miss Margaret Ledingham, who has prepared every diet and dish mentioned.

In most cases Professor Atwater's figures for the composition of foods are used, as given in the report of the Committee of the Royal Society on the Food Supply of the United Kingdom, or in Bulletin 28 of the U.S. Department of Agriculture. The allowances for waste in the preparation of certain foods are those in Appendix IB of the Committee's report. For other foods the waste was determined separately. The coloured diagram of food values is adapted and enlarged from a plate in Dr. Hutchison's "Food and Dietetics."

July, 1917.

E. I. S.

PREFACE TO SECOND EDITION.

The chapters have been revised and rearranged and new diet schemes drawn up, in accordance with changes in the food supply, particularly the increase in the amount of potatoes available, and with the issue by the Director of Food Economy of a new scale of voluntary rations.

January, 1918.

E. I. S.

PREFACE TO THIRD EDITION.

The extension of Compulsory Rationing to include meat, fats and some other foods as well as sugar has made it necessary to re-cast the diets and make other alterations. A chapter has also been added on meatless dinners. In the preparation of this edition the writer has been especially indebted to the Director of Education of the Ministry of Food, Prof. Starling, C.M.G., F.R.S. The design for the cover was kindly supplied by Mr. Robert Donald.

July, 1918.

E. I. S.

FOOD AND HOW TO SAVE IT.

I.

Ever since the war began all British people have been asking—What can I do to help? To our young men the answer was clear. They have added new and glorious pages to the history of our nation, and are protecting us against the greatest peril of this age. To many millions of men and women came the call to work; night and day they labour to equip our Army and Navy; or they take the places of those who have gone out, and do a thousand things they never did before. To everyone else in these islands comes a call to save the food. Here is the chance for all. Women and men, fit and unfit, gentle and simple, can do their bit, and may at length forgive themselves a little that they are not in khaki or in blue.

We have suffered no privations in this country yet which can be compared with those of our enemies, or indeed of our gallant Allies. But the time has come to tighten our belts and take a larger share in the food economy of the nations which are fighting for the freedom of the world. To this end it is necessary, first, that the food of the country shall be controlled and distributed for the good of the whole; and, secondly, that each household shall use its portion to the best advantage.

The object of rationing, therefore, is not to deprive anyone of food, but to make sure that food is divided up fairly according to need. If everyone co-operates with the Food Controller there is and there will be enough food to enable us all to do our work and defeat our foes. For we have to see to it that the soldiers and workers have food for their needs, and that our allies are not starved.

Every piece of food unwisely bought, wastefully cooked, or carelessly eaten is a loss to our nation and a gain to our enemies.

There is no one who would wilfully harm his country at this time, but we have lived so long in plenty that we have not learned as a nation how to avoid waste, or how to make the best use of our food materials.

It is clear that we ought all to know what food is made of and how much is required, so that we may arrange our diets wisely. We must discuss a very little simple science. But let no one be afraid of that. Science is just knowledge, and knowledge is for all; the day when it was limited to a few people is gone by. It is by knowledge and care in the home, that is, by organized common sense, that we can all have enough food to keep well and do good work.

There are three scientific words in this little book—namely, calories, protein and carbohydrate. These are used whenever there is much speaking or writing about food. Their meaning is explained on pages 6, 8 and 9.

The food we eat warms us and supplies the power for everything we do. It also gives material to make good the wear and tear of our bodies. The more work is done the more food is needed.

If all foods were equal we should just have to supply a given weight of any one to satisfy the needs of the body. But foods are not equal. Some are much more valuable than others. For example, a pound of bacon has ten times the nourishment of a pound of bananas.

We must, therefore, enquire what food is, and then we shall learn what foods are best worth buying, and how one food can be replaced by another.

II.

WHAT FOOD IS.

When coal burns heat is given out, and if the heat is used in a suitable engine it can be turned into power. The engine will not work without the coal. With more coal it will do more work. It will also do more work with good coal than with bad coal, because good coal gives out more heat, or, as we say, it has a higher fuel value. Everything which can be burnt has its own fuel or energy value; that is to say, a definite weight of the substance gives out a fixed quantity of heat when it is completely burnt. It does not matter whether it is burnt quickly or slowly. In the end the same amount of heat, or other form of energy, is set free.

The heat which is yielded when coal burns can be measured in a suitable instrument by finding out how warm it can make a given quantity of cold water. The amount of heat which is needed to make a pint and three-quarters of water one degree hotter is called a Calorie.*

Heat can be changed into other forms of energy. When the kettle boils the original force of the coal, which was chemical force, is first turned into heat, then used to convert water into steam, and, lastly, made to do work in lifting the lid. The same coal in a suitable engine can be made to do almost any kind of work, and the amount of work which it does can be reckoned in calories.

Just as the coal is burnt on the fire so food is burnt in our bodies. It is burnt more slowly, of course, and there is no severe heat, but the same process is going on in each case, with the same result, warmth. Further, the food produces power for all our actions, and the amount of power at our command depends upon the energy or fuel value which our meals give.

The fuel value of our food can be measured in calories by the analytical chemist just as surely as the weight of food can be measured in pounds.

The number of calories (or food units) in a pound of food tells us the amount of nourishment it contains.

Heat value, energy value, caloric value, and food value all mean the same as fuel value.

In ordinary circumstances, the greater part of our food goes to keep us warm, three-quarters of it or more. Most of the rest is used for work. The heart muscle and the breathing muscles are always moving, but they do not use a great deal of food; it is when hard work such as lifting heavy weights or digging for long hours is done that the muscles need a large supply of power. Energy is also needed, though much less, for the chemical changes which go on in the body, such as the digestion of food.

* A Calorie is the amount of heat required to raise a kilogramme of water through one degree Centigrade. For example: if a kilogramme of water, that is a pint and three-quarters, at the temperature of the room, say 15° Centigrade, is put on the fire and raised to the boil, that is to 100° C., the energy of the burning coal has raised the water through 85 degrees; therefore, 85 calories of energy have been used. The amount of heat which was needed to boil the kettle, namely, 85 calories, would be produced in our bodies by an ounce of meat or a third of an ounce of butter, or a little more than an ounce of bread. Strictly speaking the word Calorie should be spelt with a capital C, as when spelt with a small c it denotes, in physical science, a small calorie, one thousand of which make up one large calorie, kilocalorie, or Calorie. In modern writings on food, however, the word calorie is understood to mean a large calorie whether spelt with a small or a large initial letter.

Whatever kinds of food a man eats he needs on the average about 3,000 of these food units or calories in a day. To get this, it is sometimes necessary to buy food of a greater value, because there is a loss in preparing the food, and there are parts of it which cannot be chewed or digested. Good housekeeping and cooking should, however, make this loss very small. 3,400 calories is a full quantity, as bought, for a man doing muscular work. Very hard workers need more, but those of us whose occupations are not laborious need much less. Indeed, always excluding those doing heavy muscular work and certain others, to be mentioned later, there is a very large number of people for whom 2,500 calories or less is enough.

III.

FOOD VALUES.

The following list gives the food value in calories in a pound and in an ounce of ordinary foods.

Those which come first contain the most nourishment.

	Calories in a pound.	Calories in an ounce.		Calories in a pound.	Calories in an ounce.
Dripping	4,186	262	Cream	1,094	68
Lard	4,006	250	Lamb, no bone	1,080	68
Butter	3,604	225	Syrup	1,072	67
Margarine... ..	3,566	223	Beef, average, 18% bone	1,000	62
Suet	3,425	214	Mutton, 24% bone	993	62
Chocolate	2,853	178	Sardines	952	59
Bacon, no bone	2,708	169	Jam and marmalade	945	59
Bacon, 16% bone	2,275	142	Tinned and salted fish	794	50
Sausage	2,130	133	Salmon (fresh)	732	46
Pork	1,873	117	Poultry, game	701	44
Sugar	1,823	114	Salmon (tinned)	680	42
Biscuit (Army)	1,810	113	Eggs	624	39
Cheese	1,777	111	Liver	585	37
Oatmeal	1,732	108	Rabbit	557	35
Ham	1,670	104	Grapes	450	28
Macaroni	1,665	104	Herrings	438	27
Flour (wheat)	1,651	103	Potatoes (cooked in skins)	400	25
Cornflour	1,650	103	Plums	371	23
Tapioca, sago	1,642	103	Milk (400 cal. 1 pint)	325	20
Arrowroot	1,642	103	Green peas and broad beans	314	20
Barleymeal	1,642	103	Bananas	298	19
Rice	1,631	102	Fruit (fresh)	296	18
Beans, peas and lentils	1,626	102	Tripe	270	17
Rye	1,625	102	Parsnips	242	15
Fat beef, no bone	1,620	101	Artichokes, Jerusalem	241	15
Maizemeal	1,609	100	Fish—cod, hake, &c.	228	14
Currants and raisins	1,536	96	Apples	219	14
Honey	1,520	95	Strawberries	180	11
Figs (dried)	1,475	92	Beetroot	174	11
Dates (dried)	1,421	89	Skim milk (212 cal. 1 pint)	170	11
Apples (dried)	1,350	84	Carrots	159	10
Mutton, no bone	1,306	82	Oranges	158	10
Tinned beef	1,280	80	Turnips	127	8
Fruit, preserved (no sugar)	1,237	77	Greens	124	8
Beef, average, no bone	1,219	76	Onions	116	7
Bread	1,200	75	Pickles	110	7
Nuts	1,165	73	Tomato	106	7
Prunes (dried)	1,134	71	Rhubarb	105	7

This is the most important list in the book. It should be studied carefully and referred to again and again. See also the coloured diagram inset between pages 12 and 13.

The figures give the food value of foods as they are bought. Full allowance has been made for waste matter such as the peelings of carrots and turnips, the stones of dates and plums, the skin and bones of fish, and the bones of butcher's meat, rabbits and fowls. The allowance for the bone in meat is an average as the proportion varies so greatly. The amounts of bone in some representative joints will be found on page 25. There are also differences in the digestibility of foods. With careful preparation and cooking these are small in most cases. No allowance has been made on their account.

It is easy to see from the figures how much more valuable some foods are than others. Especially nourishing are butter, margarine, bacon, cheese, oatmeal, wheaten flour, barley flour or meal, and beans.

Milk is also a most valuable food, though, because of the water it contains, it comes low down in the list. It is, indeed, hardly fair to compare a liquid food with solids. Half a pint of milk gives 200 calories—that is as much heat value as two ounces of fat beef, nearly three ounces of bread, over five ounces of rabbit, or two large eggs.

An average egg weighs two ounces and gives about 80 calories. A duck's egg is worth 110 calories. Seagull's eggs are very good, especially boiled; each one gives about 20 calories.

An average herring weighs six to eight ounces. Its food value is about 160 calories. A bloater has the same value, a kipper a little less because it has no roe.

With the aid of the table a simple addition sum will tell how much energy is being bought with a given quantity of food. The housewife should not be afraid of the word calorie. If the value of purchases is added up roughly in calories, the arithmetic will be found to be easier than that which is needed to balance the weekly books. There is no one so experienced that a knowledge of food values will not help her to buy to greater advantage.

IV.

FLESH-FORMING FOOD.

The first need of our daily diet is that it shall contain enough food. But this is not all. It would be easy, for instance, if we only had to consider quantity, to suppose that a pound of margarine, or two pounds of cornflour, each of which has a food value of over 3,000 food units or calories, would feed a man for a day. But no one could live on such a diet. The reason for this is that there are three kinds of foodstuff and a proper diet must contain some of each of them.

The three foodstuffs are flesh-forming food, called protein, starches and sugars, called carbohydrate, and fat.

In times of plenty there is enough of each of these in any ordinary mixed diet. We do not have to think of them until it becomes necessary to arrange the diet, either of an individual or of a nation.

Flesh-forming food or protein.—The living part of our bodies, and of all animals and plants, is made of protein. Protein differs from other foodstuffs in containing nitrogen. Nitrogen is part of all live matter.

There is plenty of it in the air and in the earth, but in forms which we cannot use. It is the plant which takes it from the earth and the air, and builds it up into protein. The animal eats the protein of the plant, and builds it into his own flesh. As living bodies are always changing, protein is always being broken down, and its nitrogen passed out of the body and lost.

We see then that protein is essential. We must have it. We die if we do not get it. It is needed for repair and for growth. It is the flesh-forming body-building food.

Many foods contain protein. Those which contain enough of it to be of value in the diet are:—

<i>Food</i>	<i>Percentage of protein.</i>	<i>Food</i>	<i>Percentage of protein.</i>
Cheese	25	Eggs	12
Beans, peas and lentils (dried)	24	Wheat flour	11
Meat	15 to 20	Barleymeal	10
Oatmeal		Bread	9
Nuts (shelled)	15	Peas and beans (fresh, shelled)	7
Fish	10 to 17	Milk	3

The most important flesh-forming foods in daily life are meat, fish, cheese, eggs, bread and milk. Other foods which contain a good deal of protein are peas and lentils, nuts, oatmeal, wheaten flour and barleymeal. It is easy to see that there are several foods which can replace meat in the diet. We can, indeed, do without meat, though we are not asked to do so. There is, however, no need for a healthy person to eat meat more than once a day.

The amount of protein which a man should have in his daily food is about 3 to 4 ounces.

So many of the foods we eat contain it that if a man gets enough food of sufficient variety he generally gets enough protein. It is only when he is obliged to live almost entirely on foods containing very little protein, such as potatoes or rice, that he is likely to go short of body-building food.

V.

STARCH, SUGAR AND FAT.

Starch and sugar, called carbohydrates, form more than half of our food, and supply most of the heat and power of our bodies. We get them, with the exception of milk sugar, from the vegetable kingdom. As with protein so with carbohydrate, plants make it for themselves from the air and the earth. Their green leaves are silent engines, and the light of the sun is the force they use. Animals cannot do this. They depend upon plants for their food. We may, it is true, eat other animals, but these in their turn had eaten plants. So that, in the end, the only way man can produce food, animal or vegetable, is by tilling the earth.

Hence, there is an eternal procession of matter from the earth and air to the plant, from the plant to the animal, and from the animal to the earth and the air again.

Here is a list of the foods which can supply carbohydrate, those containing most being put first:—

	<i>Percentage of Carbohydrate.</i>		<i>Percentage of Carbohydrate.</i>
Sugar	98	Beans, peas and lentils (dried)	60
Cornflour	89	Syrup	57
Arrowroot	88	Bread	53
Tapioca, sago	83	Potatoes	19
Rice	79	Peas and beans (fresh, shelled)	17
Flour	75	Bananas	14
Barley flour or meal ...	73	Nuts (shelled)	13
Maize meal	68	Fresh fruit	12
Dried fruits	65	Milk	5
Oatmeal	60		

Bread, flour, oatmeal, potatoes and sugar are the chief foods in this list. But there are several others of great value, especially rice, dried peas and beans, fruits and milk.

It is especially urgent for those in comfortable circumstances and of sedentary occupation to save bread, flour and all kinds of corn. The workers require a good supply of carbohydrate if they are to work with vigour. Much of the world's work in the past has been done by the underfed, whose want of go has often been due to want of food. But to-day we want energetic labour in every branch of national work. Now the extra food which labourers need is mainly supplied in the form of bread, because bread is the cheapest food. Hence the well-to-do should use as little of it as possible.

If oatmeal or barley meal porridge is on every breakfast table, the amount of bread eaten at that meal will be much lessened. Potatoes must be eaten at least twice a day; at dinner they should replace bread entirely. Oatcake should also be eaten at tea-time. It is a very nourishing food. Puddings made with flour, rice or the corn flour of maize, and preserved fruits are other good foods which owe their value mainly to starch and sugar. Sugar may be saved by taking none in tea or coffee, so that the whole allowance can be used in cooking to make other foods nice.

Fat.—The third kind of foodstuff, fat, is an important source of energy, because its fuel value is more than twice as great as that of protein or starch. An ounce of it gives 264 calories, whereas an ounce of protein or carbohydrate gives 116 calories. On this account, although fat is dear, it is good economy to get a fair amount of it in the diet, so far as supplies allow.

The following are the chief foods which furnish fat:—

	<i>Percentage of Fat.</i>		<i>Percentage of Fat.</i>
Dripping	99	Pork	40
Cacao or cocoa butter...	99	Cheese	30
Lard	94	Mutton	27
Butter	85	Beef	20
Margarine	84	Eggs	9
Suet	82	Salmon	9
Bacon	60	Herrings	5
Nuts (shelled)	45-60	Milk	4

Of these, butter, margarine, dripping, bacon and other meat, cheese and milk supply the bulk of the fat in our food.

Fat can replace starch foods, and here again the well-to-do may help those who are less fortunate by taking their share of butter and of such foods as eggs and salmon, so as to need less bread and margarine. Cheese should be restored to its old place as a staple food for all classes, but must be used sparingly at present, because the supply is limited and the workers need it most.

Children need a good deal of fat, which can be best given to them as margarine and in milk. In schools every effort should be made to balance any saving of flour and meat by an increased amount of other foods, and especially of milk. One pint of milk is equal in food value to four ounces of flour or over five ounces of bread or beef.

The coloured diagram inset between pages 12 and 13 shows at a glance the comparative values of common foods. It shows also how much of the energy of each food is due to flesh-forming food, to starch and sugar or to fat.

VI.

A BALANCED DIET.

An ordinary diet should contain per day 3 to 4 ounces of protein, 2 to 3 ounces of fat, and a pound of carbohydrate. A diet which gives such proportions is a properly balanced diet.

These quantities can be supplied by very simple foods. Bread and meat alone, for example. This was the food of Hercules. "His dinner was roast meat and a great Dorian loaf in a basket, a meal to satisfy a delving hind. At the close of day he would take a meagre supper that needed no fire to the cooking."* It is the main food of our soldiers to-day, except that biscuit, which contains the same foodstuffs, sometimes takes the place of bread.

It is our part to eat bread with care, so as to leave the more for those who fight and delve for us.

A pound and a half of bread and 3 pints of milk is also a balanced diet for a man; or a pound of bread, 3 oz. of margarine, and 3 pints of milk.

Oatmeal and milk, the food of the Scottish labourer, give a well-balanced diet in the proportions of a pound of meal and 3 pints of milk.

With potatoes and milk, the staple foods of Ireland, it is difficult to get a proper diet for an adult, because the potato is poor in food value and in flesh-forming material as compared with oatmeal or bread. Even three pounds of potatoes and 3 pints of milk require the addition of half a pound of bread and two or three herrings to give full value for a man.

A pound and a quarter of beans and half a pound of bacon give a full diet which is rather richer in flesh-forming food and in fat; it contains $5\frac{1}{2}$ oz. of protein, 4 oz. of fat and three-quarters of a pound of carbohydrate.

Milk contains a good share of all the three foodstuffs. It is a perfect food for infants, but not for grown-ups, because the amount which a man would have to take to satisfy his daily needs without other food is too large, over 7 pints. He would also be getting a larger proportion of protein and fat than is needed for anyone who is not growing.

We see, therefore, that we need a mixed diet because foods differ not only in their food values, but also in the foodstuffs they contain.

* Theocritus. Idyll XXIV. A. Lang

The greater variety there is in the diet, the more certain we are to get the different materials which the body needs.

Some fresh foods such as fresh vegetables, fruit, fresh milk or meat should form part of the diet. They contain substances necessary for growth and health, which have been called vitamins. With an ordinary mixed diet there is no fear of lack of these substances. It is only when babies are fed entirely on prepared foods, or adults entirely on preserved foods or polished rice, that harm results from their absence.

Here are two examples of a day's food, each containing enough food value and body-building material, but not exceeding the Food Controller's allowance.

Diet 1. The first is a very simple diet of a value of 3,200 calories, sufficient for a man doing ordinary industrial or other manual work. His allowances per week are (July, 1918):—meat, $1\frac{1}{4}$ lb.; bacon, $1\frac{1}{2}$ lb. (including his supplementary ration of bacon in Class D); margarine, 5 oz.; lard, 2 oz.; sugar, 8 oz. To this we add: bread, 7 lb.; other cereals, 12 oz.; potatoes, 7 lb.; fish, 1 lb.; jam or syrup, 3 oz.; apples, 2 lb.; milk, $3\frac{1}{2}$ pints (if obtainable); cheese, 7 oz.; greens and other vegetables, 4 lb.

This yields 3,266 calories per day, with $3\frac{1}{2}$ oz. of flesh-forming food, $3\frac{3}{8}$ oz. of fat, and 1 lb. of starch and sugar.

It may be distributed among the meals as follows:—

Breakfast.—Porridge (1 oz. oatmeal); milk, $2\frac{1}{2}$ oz.*; bread, 6 oz.; bacon, 3 oz. (on 6 days a week) (or at supper); on the other day fish, 4 oz.; sugar, $\frac{1}{4}$ oz.; tea.

Dinner.—Meat, 4 oz. (on 5 days a week); bacon, 3 oz. (on 2 days a week); potato, 12 oz.; milk pudding (rice, or sago, &c., $\frac{1}{2}$ oz.; milk, 5 oz.; sugar, $\frac{1}{4}$ oz.); apple, 4 oz.; greens, $\frac{1}{2}$ lb.

Tea.—Bread 4 oz.; margarine, $\frac{1}{2}$ oz.; jam or syrup; tea; milk, 1 oz.; sugar, $\frac{1}{4}$ oz.

Supper.—Bread, 6 oz.; cheese, 1 oz., or fish; margarine, $\frac{1}{2}$ oz.; potato, roast, 4 oz.; cocoa; milk, $1\frac{1}{2}$ oz.; sugar, $\frac{1}{4}$ oz.

Diet 2. The following diet of 2,500 calories is ample for most business men. It contains the Controller's allowance of $1\frac{1}{4}$ lb. of meat and $\frac{1}{2}$ lb. of bacon for men unoccupied or on sedentary work; also 5 lb. of bread per week. The amount of the other cereals, fat and sugar is the same as in Diet 1.

Breakfast.—Porridge (1 oz. oatmeal); milk, $2\frac{1}{2}$ oz.; bread, 4 oz.; bacon, 2 oz. (on 3 days a week; on the other days 2 herrings at 3 to the pound); sugar, $\frac{1}{4}$ oz.; tea.

Dinner.—Meat, 4 oz. (on 5 days a week); bacon, 2 oz. on 1 day; fish or other meatless dish on one day; potato, 12 oz.; greens, 8 oz.; milk pudding (rice or sago, &c., $\frac{1}{2}$ oz.; milk, 5 oz.; sugar $\frac{1}{4}$ oz.); apple, 4 oz.

Tea.—Bread, 3 oz.; margarine, $\frac{1}{2}$ oz.; tea; milk, 1 oz.; sugar, $\frac{1}{4}$ oz.

Supper.—Bread, 4 oz.; margarine, $\frac{1}{2}$ oz.; jam or syrup; potato, roast, 4 oz.; cocoa; milk, $1\frac{1}{2}$ oz.; sugar, $\frac{1}{4}$ oz.

This gives $3\frac{1}{2}$ oz. of flesh-forming food, $2\frac{3}{8}$ oz. of fat, and over $\frac{3}{4}$ lb. of starch and sugar per day.

* Two tablespoonfuls measure one ounce.

A woman on ordinary industrial work or in domestic service would in many cases eat rather less.

It need hardly be said that variety in the preparation of dishes is of much importance, and that the taste and attractiveness of these or any meals will depend chiefly upon the way they are cooked and served.

VII.

WHO NEEDS MORE FOOD AND WHO LESS.

In Chapter I. it was stated that our food warms us, supplies the power for all we do, and gives material to make good the wear and tear of our bodies. It follows that the amount of food needed will differ greatly in different persons, according to the warmth needed, the work done, and the material required to replace losses. It is, therefore, important to show what the conditions are which decide how much food any one of us ought to have.

Work and activity are of prime importance. If a man is working hard with his muscles he needs a great deal more food than when he is resting.

There are no exceptions to this rule. A man may by grit or pluck work hard for a little while on a low ration, but he is living on himself and very soon his work will fail. A man lying down all day, or reclining quite still in a low chair, only uses half the energy, measured in calories, of a man working. It follows that workers save energy by resting as much as they can in their spare time. All movements, whether useful or not, burn up food; hence restless folk are likely to consume more than those who only move about when there is something definite to be done.

Large people need more food than small.

Build is of even more importance than actual weight. People who are **well covered need much less food than thin people.** The greater part of our food is used up in keeping the body warm. Now the more our outline is like that of a sphere, the smaller our surface becomes as compared with our weight, and the less heat we lose from it. To be fairly plump is, therefore, an economy in food. Those who have too large a store of fat can save food by living upon it. They need the same amount of meat as other people, but very little fat or starchy foods.

Everyone needs more food in cold weather. Soldiers exposed to cold, workers in cold countries and Arctic explorers, commonly eat half as much again as ordinary folk. The best way of increasing the food in severe cold is by adding fat. Food is saved by wearing warm clothes.

Careful experiment has failed to show that those doing continuous mental work need more food than other sedentary workers. The energy used in thought cannot be represented at present in terms of food.

Children need plentiful food for three reasons; their surface is large compared to their weight, they are growing, and they are generally very active. A child of six may need two-thirds as much as a grown-up. A girl of thirteen needs as much as her mother and a boy of thirteen may eat more than his father.

Women take four-fifths as much as men because they are smaller. Mothers nursing their babies must have much more food than they would otherwise eat, as the milk which the baby takes may be of the value of 500 to 1000 calories in the day. Expecting mothers also need rather more, though nothing like so much as when they are nursing.

We may now sum up in figures the amounts of food which different people need according to age, sex and occupation.

	<i>Food Units or Calories per day (rough average).</i>
Children, aged 6	1,600
" " 8	1,800
Women, including those engaged in business, and girls over 13	2,000 to 2,500
Women, continuous light work, munition workers, 'bus conductors	2,600
Men, including those in sedentary businesses... ..	2,300 to 2,800
Boys over 13	3,000
Women, gardening and farm workers, heavier munition work	2,800
Men, light continuous work, shop assistants, plumbers	3,000
Men, muscular work	3,500
Men doing continuous heavy work, iron workers, soldiers on active service	3,900 or more.

By looking at this list a fair idea will be obtained as to who ought to have more food and who can do with less, especially if the build of the person concerned is allowed for. Thus a tall thin person may need 200 or 300 calories more than is set forth, whilst a plump person will need less.

VIII.

LITTLE SAVINGS.

"MONEY LITTLES MAK' A MUCKLE."

There are various small economies, already practised in many households, which, if extended to the whole nation, will make our supply of food go much further.

The first step towards the saving of food in the home is that the housewife should attend herself to every detail. If any part of the household management be left to others, whether shopping, the arrangement of meals, or the methods of cooking, there will, as a rule, be waste. Every penny spent should, of course, be put down and week compared with week. It always costs more not to keep accounts.

Three meals a day are enough for healthy people. It is a good thing to get hungry before a meal, because we produce better digestive juices if we have an appetite. When a good meal is taken, the active part of its digestion is not over for four or five hours. Hence, if more food is eaten before the end of that time, the digestion of the new meal and of the remains of the former one must go on together. Healthy folk should, therefore, give up all intermediate food, such as bread and butter with early tea, and mid-morning lunches. Many people would also be the better for not taking food at afternoon tea. If any extra little meals are needed, as for old people, or for children's supper, they should not contain any of the protein foods such as meat, potted meat, cheese or egg. Tea should not be drunk more than twice a day. Workers ought always to have a good breakfast.

Meals should not be hurried and all food must be carefully chewed. If food is swallowed before it is properly broken up by the teeth, the digestive juices may not be able to dissolve it, and in that case it will be wasted. Further, the actual digestion of starchy foods begins in the mouth.

It is generally better to drink after all the solid food has been eaten. If we keep drinking during a meal we are apt to eat more than we need.

Meat should be carefully carved and served. Whenever possible the carver should separate the meat from the bone, so that no bones remain on the plate to be thrown away. No one should accept a larger portion of meat or of any food than will be eaten. This applies not only to the home, but to hotels, restaurants, canteens, camps and ships.

There is no excuse at the present time for any food whatever being left on a plate.

Except for an occasional roast joint, the best way of cooking meat is to stew it, especially if the meat is fried first; or a rabbit, for example, may be baked in the oven before putting it in the stewpot. Both the flavour and the nourishment are then preserved, and the less digestible kinds of meat are softened. Vegetables can be cooked separately and then added to the stew before it is taken off the fire.

If bread is made at home it should not be eaten until two days after the baking, or more, if kept well covered in a bread pan or crock. Bread or cake should not in these days be cut up beforehand, but should be cut on the table according to the needs of each person. No pieces of bread ought to be left over. Breadcrumbs must not be thrown away but dried in the oven, and passed through the mincing machine or crushed with the roller. They may then be used for frying, for puddings, or served in minced meat, or mixed with a little milk and parsley to make a stuffing for boned joints.

Everything left over from the meal should be carefully covered and used.

Fat is a valuable food and none of it ought to be allowed to go down the sink. Any pieces of suet or fat bacon can be used for dumplings, suet pudding or oatcake. All fat left upon dishes, with bacon rinds, should be collected and melted in a jar in the oven, passed hot through muslin or a sieve and put in the oven again in a jar with a little water. The clarified fat rises to the top and may be used for pastry, puddings or frying.

Potatoes should be fried with breakfast bacon to take up all the fat.

Greens and potato left over make an excellent dish if fried together in dripping. So do potatoes, turnips and parsnips when boiled in stock.

All bones should be boiled at least twice for stock, to which any gravy left from meals should be added. Cereals such as pot barley, rice, sago, and tapioca, also dried beans and lentils, should be soaked for 12 to 24 hours in water. The water contains nourishment, and should be used for the cooking or saved for making soup. Grittiness in a pudding can often be avoided by boiling the steeped cereal for a little before mixing it into the pudding dish. Greens should be boiled for a minute or two and then the water thrown away: it contains the unpleasant taste of cabbage water. The greens are then put in a little fresh water and cooked. The second water contains salts and other matter from the greens and should not be thrown away but used for making soup.

IX.

BREAD AND CEREALS.

The various kinds of corn are known as cereals. The chief of them is wheat. We have become accustomed to eat bread made from the inner two-thirds of the wheat grain, the outer third having been given to animals. But at the present time it is important to use as much as possible of the grain for human food, so that wheat flour is ground to contain four-fifths or more of the whole grain. This is an advantage, not only because we get more food, but because the part of the grain which was formerly rejected contains valuable flesh-forming material and salts. Further, it is necessary to use the flour of other cereals as well as wheat in making bread. Careful experiments by different observers have shown that if properly mixed and baked the bread made from wheaten flour mixed with the flour of other kinds of corn, such as oats, barley, rice and maize, though darker in colour, is as nutritious and healthy as bread made entirely from white wheaten flour.

The benefit to the nation from the use of war bread may be stated briefly as follows:—

Since a great part of our cereals comes from abroad the delivery of bread to each household involves the buying of corn abroad and its transport to this country. Such corn has to be paid for in money or in credit, and each payment lessens our wealth at a time when every penny is needed to help us in our struggle; and all that we borrow will have to be paid back after the war. But more than that, wheat brought across the sea involves at the present time a loss of our sailors' lives and of ships, owing to the frequent sinkings by submarines. The ships are urgently needed to bring soldiers from America to France. The use of home-grown cereals to dilute wheat flour reduces these losses by about 12 per cent. A further reduction is made by grinding all the wheat to a 90 per cent. standard, for this alone, as the figures of a Royal Society Committee show, gives a gain of 10 per cent. of nourishment, and even when allowance is made for the use of millers' "offal" to feed animals, there is still a gain of 9 per cent. of nourishment. That is to say, by using war flour we save in all at least one pound in each 5 that are spent, one wheat-ship in each 5 sunk, and 1 life of each 5 that are sacrificed to give us our daily bread.

No one must eat more bread than he needs, and no bread whatever must be wasted, thrown away, or given to animals. All cereals, including oatmeal, barley meal, rice, cornflour, maize meal, and macaroni must be used with great care, as must also tapioca, sago, dried peas, beans and lentils.

The various kinds of corn can be used also in making bread at home, so that the same amount of bread contains less wheat. This is an advantage so long as other cereals are available and can be diverted from less essential uses. The cost is greater, but if adopted by those who can afford it, more of the cheaper wheat flour will be left for the needy.

Bread is especially valuable as food for busy workers, because, once made, it does not require cooking. For this reason all those who have time to cook or are able to have meals prepared for them should use less bread, replacing it to a great extent by potatoes, oatmeal, barley meal or rice.

Oatmeal is the most nutritious corn we have. One pound gives 1,732 calories, whereas a pound of flour gives 1,651 calories. Further,

oatmeal contains 15 per cent. of the flesh-forming protein and 8 per cent. of fat, against wheat flour 11 per cent. of protein and only 1 per cent. of fat.

A horse eating 10 lb. of oats a day consumes food which would supply a man for five days.

The disadvantage of oatmeal is that it does not, alone, make good bread. The reason why wheat flour gives the best bread is that when it is mixed with water a sticky substance called gluten is made. The dough rises because small bubbles of gas are formed all through it; when it is baked the sticky gluten holds these little cavities open, so that they do not collapse as the bread cools, but keep it spongy. Flours which do not contain gluten will make biscuits, but not spongy bread.

If, however, oatmeal is mixed with wheat flour, we get the double advantage of the gluten in the wheat and the protein in the oatmeal. Half oatmeal and half flour will make bread, but one-third oatmeal is recommended for daily use, as flour already contains a proportion of other meals. The ordinary method of baking gives excellent loaves, as follows:—

Recipe for making bread with flour and oatmeal.—

9 lb. of flour, $4\frac{1}{2}$ lb. of oatmeal, and 3 oz. of salt are put in a bowl. Make a hole in the middle and add water. Sprinkle a little sugar upon 4 oz. of yeast and stand it in a pint of water before the fire till it froths to the top of the water. Mix it in with the flour and water. Knead thoroughly for half an hour. Set in front of the fire to rise for one hour. Divide into loaves of 2 lb. each, knead each loaf a little, put into a tin and set before the fire for another half hour. Bake in a fairly brisk oven for an hour.

The $13\frac{1}{2}$ pounds of flour and meal give about $17\frac{1}{2}$ pounds of a nice bread which is of higher food value than ordinary bread and contains more of the body-building protein.

Owing to the scarcity of yeast, it is better at the present time to use $2\frac{1}{2}$ oz. of yeast, in which case the bread takes longer to rise. A convenient way is to make the dough the last thing at night and put it on the rack of the range, care being taken to see that the fire has become low. In the morning the dough should be ready to put into the oven. Or yeast may be replaced by vinegar and soda, as described on the next page.

A rather moister, filling, but palatable loaf may be made as follows:—

Sprinkle 2 lb. of oatmeal into a pan containing 4 quarts of boiling water, and boil, stirring, for half an hour, to make stiff porridge. When the porridge is cool enough mix it into 6 lb. of wheat flour with $1\frac{1}{2}$ oz. of yeast, prepared as above, using more water as required. Knead thoroughly for 20 minutes. Set in front of the fire to rise for half an hour, and again for 20 minutes after dividing into loaves. Bake an hour and a half.

4 lb. of this bread takes $2\frac{1}{4}$ lb. of wheat flour.

Oatmeal porridge and oatcake should be used much more generally. Many people do not like porridge because it is often made badly. If properly cooked it is a delicious jelly.

Recipe for porridge.—Raise 2 quarts of water to the boil. Then sprinkle in gradually through the fingers 5 ounces of oatmeal, stirring so that no lumps can form. Boil an hour, still stirring most of the time. Add $\frac{1}{2}$ oz. salt after the first half hour.

Another plan is to soak the oatmeal for 12 hours first; it will then require to be boiled for half-an-hour only.

This is enough for 5 people if other food such as bacon, egg, or fish is eaten. If the porridge is the main dish twice the quantity or more should be made.

Fuel can be saved by cooking in a hay-box after the first 15 minutes, as described on pages 49 and 50.

Barley flour or meal also makes excellent porridge which may be used as a pleasant change.

Recipe for oatcake.—Take 3 lb. of oatmeal. To each pound take one tablespoonful of melted dripping or other cooking fat, and pour into the meal, mixing with the hand. Then add gradually 1 pint of warm water in which a dessertspoonful of salt and a dessertspoonful of bicarbonate of soda have been dissolved. Make into a dough. Roll out thin, cut into cakes, and put on the girdle or baking tin which has been warmed. Cook over a red fire for 15 to 20 minutes, turning the cakes once. Near the end of cooking move the girdle a little away from the fire.

Oatmeal may also replace wheat flour in thickening sauces and gravies.

Barleymeal.—It is an error to suppose that barley is only fit for feeding animals and making beer. It is good human food. Its fuel value is close to that of wheat flour. If the whole grain is ground after the husk has been removed a nutritious barley flour or barleymeal is obtained. At a time of shortage like the present, the grinding of the husk with the meal for the use of pigs is inexcusable. Barley-meal is scarce in many parts, but where it can be had it should be used. With one-third barleymeal and two-thirds flour a spongy, nutty-tasting loaf may be obtained. The whole barley grain, known as unpearled or pot barley, makes very good soup and puddings. It is better than pearl barley, in making which the outer part of the grain is ground away.

Barley-meal makes good porridge which can often be taken by those with whom oatmeal porridge does not agree. Barley scones may be made of half flour and half barleymeal. Pancakes of the same proportion of flour and meal are excellent.

Rice is not grown in this country, but it is imported from other parts of our Empire, and is a most valuable food. It does not save shipping to use rice, but so long as stocks are available it should be eaten. One-third rice and two-thirds flour make good bread. A spongier loaf is made if the whole rice is boiled first, then strained, and mixed in with the flour, using in the mixing the water in which it was boiled. Unpolished rice, such as was formerly given to fowls, should always be used. It is more nutritious and makes nicer food whether in bread or puddings. If rice flour or ground rice is used, it is mixed with the wheat flour in the usual way. The loaves will be closer and whiter than the loaves made with boiled rice, and those who like white bread may prefer them. The food value of the rice loaves is not inferior to the others. They contain, however, less protein, and on this account are not suitable for needy households, but only for homes where meat, fish, cheese, milk and eggs form a good part of the diet.

All of these breads may be made without yeast by kneading into the dough a teaspoonful of vinegar and a teaspoonful of soda to the pound of flour or meal. The bread is closer and shorter than that made with yeast, but quite good.

Maizemeal, also imported, is a nourishing food, though its heat value is a little lower than that of the other meals. It contains more fat than any corn except oats. A third of maize and two-thirds of flour make a

nutritious loaf, but the taste differs more from that of ordinary bread than is the case with oatmeal, barleymeal or rice. Various flours are prepared from maize, however, which taste well, and are useful in cooking. Flaked maize makes nice puddings. Maizemeal may be mixed with oatmeal to make porridge.

Eye contains some gluten, though less than wheat. It makes a close bread, which was formerly one of our staple foods.

Excellent bread may also be made with flour and potato, as described in the next chapter.

In the following table, the value of 1 lb. of bread, which is equivalent to about $\frac{3}{4}$ lb. of flour, is compared with that of $\frac{3}{4}$ lb. of the different cereals. It gives in the first column the food values, and the other columns show the amounts of starch, fat and body-building material which each contains. The value of the pulses—peas, beans and lentils—is shown for comparison:—

Comparative Values of 12 oz. of different cereals.

—	Food units or calories.	Starch.	Fat.	Body-building material or protein.
1 lb. bread (=12oz. flour) ...	1,200	ozs. 8 $\frac{1}{2}$	ozs. $\frac{1}{4}$	ozs. 1 $\frac{1}{2}$
Oatmeal	1,299	7 $\frac{1}{4}$	1	1 $\frac{3}{4}$
Tapioca	1,238	10 $\frac{1}{2}$	—	—
Cornflour	1,234	10 $\frac{3}{4}$	—	—
Barley meal	1,232	8 $\frac{3}{4}$	$\frac{1}{4}$	1 $\frac{3}{4}$
Sago	1,226	9 $\frac{1}{2}$	—	1
Rice	1,223	9 $\frac{1}{2}$	—	1
Maize meal	1,158	8	$\frac{1}{2}$	1
Peas, beans, lentils (dried) ...	1,219	7 $\frac{1}{4}$	—	3

Oatmeal gives the highest food value. Hence, if porridge and oatcake are used, the housewife will score, for the list shows that $\frac{3}{4}$ lb. oatmeal gives 1,299 food units or calories, whilst 1 lb. bread gives 1,200. Ninety-nine extra food units are thus obtained with the oatmeal, an increase of 8 per cent., whilst the gain of body-building protein is still greater, namely, 24 per cent. The same applies as regards calories, though in lesser degree, to the other cereals. It is important, however, to keep up the supply of the body-building protein, and from this point of view peas, beans, lentils and oatmeal are the best, as they give more of it than bread; next comes barley meal, which gives nearly the same amount as bread, whereas the others give less.

X.

POTATOES.

The potato is one of our most valuable foods. It keeps well for many months when properly stored, is easy to cook, and is well digested by healthy folk. It is also easy to grow and gives a great return of nourishment for each acre cultivated. For example, 100 acres of average crop of potatoes gives enough food value to supply 450 people for a year, whereas 100 acres of wheat feeds 200 people; 100 acres of hay, after being turned into meat, gives a year's food value for 15 people

only. The potato has the disadvantage that it is not a good food for transport because of its weight, as four-fifths of it is water. Methods of slicing and drying potatoes have been used abroad but not to any extent in this country. The manufacture of potato flour on a large scale would give a food which could be carried more conveniently from place to place and stored for long periods, though it could never be such an important food as wheat flour.

The potato contains 15 to 20 per cent. of starch, about $2\frac{1}{2}$ per cent. of nitrogenous matter, of which a part is protein, and some salts; it also contains some of the substances known as vitamins, small quantities of which are needed for proper growth. The rest of its weight is water. The amount of nitrogenous matter, which we need for building and repairing our flesh, is in a form that the body can make very good use of, but there is not much of it, and there is no fat, or only traces, so that we must look to other foods for these materials. The foodstuff we need most of, however, to give us warmth and power, is starch, and this the potato supplies abundantly. It is, therefore, able to form a large part of the human diet. Men have, indeed, lived on potatoes alone, eating 6 lb. or more a day, and have kept well. This shows how wonderfully the body can fit itself to circumstances when driven by need, but must not be used as a reason for feeding on potatoes alone; for proper health other foods, such as fish, meat, margarine, and milk, must be eaten with them.

If potatoes are peeled raw some of the food is cut off with the peel; if they are then soaked and boiled a good part of the nitrogenous matter goes into the water. We have seen that there is little enough body-building stuff to begin with and it is clear that it should not be wasted. Potatoes must, therefore, always be boiled, steamed, or baked in their skins, for if cooked in any of these ways none of the food is lost. Boiled potatoes are much more floury if after they are done the water is drained away and the saucepan put by the fire, with the lid partly off to let the steam escape, shaking the pan occasionally to prevent the potatoes from sticking to it. There should also be a small hole in the cover of the serving dish. For frying potatoes fat is needed; if it can be had this is a good way to use it, for chip potatoes are a concentrated food; a good deal of the water has been driven off in the drying and the added fat has a high value.

A pound of raw potato, if waste is kept low by cooking in the skins, yields about 400 food units or calories, the same roughly as a pint of milk, 1 lb. of herring, or 5 oz. of bread or meat: if wastefully prepared and cooked the value may fall as low as 320 calories to the pound. The floury cooked potato yields about 450 calories a pound on an average.

Every worker, indeed every healthy person, and every child over 12, should eat a pound of potatoes a day if possible. This is four fair-sized potatoes. Of these two or three may be eaten as a vegetable, and the rest cooked in other ways.

When there is bacon at breakfast, potatoes left over should always be fried with it.

Potatoes can be made into bread or scones and used for a large variety of dishes. One part of potato with three parts of flour makes nice bread.

Potato bread.—Put 6 lb. of flour into a bowl and make a hole in the middle. Stand 4 oz. of yeast with a small pinch of sugar in a pint of water before the fire till it froths to the top of the water. Take 2 lb. of cooked and mashed potatoes. Potatoes left over may be used but must be warmed up. Mix the warm mashed potato into the yeast, then pour

it into the hole in the flour and work into a dough, adding gradually 2 quarts of water. Knead thoroughly for half an hour. Set in front of the fire to rise for an hour. Divide into eight loaves and bake for an hour and a half.

Yeast will be saved if $2\frac{1}{2}$ oz. only is used, in which case the bread takes longer to rise. It may be made last thing at night and left on the rack of the range after the fire is low. In the morning the dough should be ready to put into the oven.

These loaves have a good taste. It is better to make a small quantity at a time, enough for two or three days only, as potato bread does not keep so well as ordinary bread. Small loaves are better than large ones because they give more of the pleasant tasting crust. Although potato contains much less starch and protein than flour, when the bread is made with these proportions and baked in small loaves rather more water is driven off, so that the loaf contains as much body-building protein as ordinary bread; it yields 1,170 calories to the pound, that is, nearly the same amount of nourishment as ordinary bread.

A good loaf can also be made with more potato, one part to two parts of flour, or even half and half; but the bread tastes of the potato and is not so nice as when it is made with one part of potato to three of flour.

Potato scones.—Take $\frac{1}{2}$ lb. of cooked and mashed potatoes, add a little salt, and knead in as much flour as it will take (about $1\frac{1}{2}$ oz.), using two or three teaspoonfuls of milk to make a stiff dough. Roll out thin on a floured board. Cut into rounds and prick with a fork. Bake on a hot girdle or baking tin for about five minutes, turning when half cooked. When baked, butter the scones with butter, margarine or dripping if available, roll up, and serve hot. The batch gives over 600 calories.

Potatoes may also be used for a great number of dishes, of which the following are a few:—Fish cakes, rissoles, kedgeree, Irish stew, hot pot, shepherd's pie, sea pie, vegetable pie, soufflés, salads, soups, potato sanders, potato rolls, potato cheese, potato fritters and potato pie.

Potato sanders.—Take 1 lb. of boiled potatoes, and while hot work into them, by mashing, 3 oz. of flour to make a stiff paste. Roll this out and cut in six squares. Soak 2 oz. of breadcrumbs in a little water, squeeze them dry and make into a forcemeat with half an onion, which has been soaked in boiling water, $\frac{1}{2}$ oz. of chopped parsley or herbs, and a little nutmeg; add seasoning. Put some of the forcemeat into each square of potato paste and roll like a sausage roll. Bake in a hot oven for 20 minutes. The batch gives about 770 calories.

Potato cheese.—Mash 1 lb. of boiled potatoes while hot, adding 2 tablespoonfuls of milk, 3 oz. of grated cheese, pepper and salt, and $\frac{1}{2}$ oz. of cooking fat. Grease a pie dish with $\frac{1}{2}$ oz. of cooking fat, and strew it thickly with breadcrumbs; fill with the potato and cheese, and bake for half an hour in a good oven. Turn out and serve very hot. An excellent dish. Food value about 1,050 calories, with over an ounce of protein.

Potato fritters.—Mix 4 oz. of flour and 8 tablespoonfuls of milk to a batter. Dip into it 1 lb. of slices of uncooked potato, and fry in boiling fat. This dish must be served very hot. Food value, 900 calories, with 1 oz. of protein.

Potato rolls.—Make a potato paste with flour as in potato sanders. Cut another pound of potatoes up small and add a small turnip, a small onion, half a stick of celery, all chopped, with parsley, herbs and seasoning to taste, and $\frac{1}{2}$ oz. of cooking fat. Roll out the paste rather thin, and cut it in six squares. On each put as much of the mixture as it

will hold, then wet the edges and fold up like a sausage. Bake for about $\frac{3}{4}$ of an hour. Food value about 1,400 calories the batch. Ordinary dough may be used for the paste.

Potato pie.—Slice 1 lb. of potatoes, 2 sticks of celery, and 1 small onion, then mix with 2 oz. of sago, rice or tapioca, seasoning to taste, and 1 oz. of dripping. Put in a pie dish, adding water or stock. Cover with potato paste (made as for potato sanders), or ordinary pastry if desired. Bake in a moderate oven for 1 hour. Food value of dish, with potato paste, 1,640 food units or calories, with $1\frac{1}{4}$ oz. of body-building material. If there are any meat remnants they should be put in: quite a small quantity will improve the taste of the pie.

Potato salad.—This is a good way of using cold potatoes. They are sliced up and served with dressing. A salad dressing without oil may be made with the yolk of an egg (hard-boiled or raw), a tablespoonful of vinegar, and a pinch of pepper, salt, and mustard. If oil is available, use two teaspoonfuls of salad oil and two of vinegar and the raw yolk of an egg. Two teaspoonfuls of dried yolk of egg may be used if no fresh egg can be had.

XI.

OTHER VEGETABLES.

Other vegetables have lower fuel values than the potato. A fair helping of them is half a pound, weighed raw. This is the weight of an average sized carrot, two-thirds of a parsnip or a quarter of a turnip.

The following list shows the number of calories which half a pound of the ordinary vegetables gives. The second column gives the number of calories bought for a shilling at the price named:—

	Calories in a helping of half a pound.	Calories bought for 1s. at the price named per lb.
Potato	200	1d. 4,800
Parsnip	121	1½d. 1,936
Jerusalem artichoke	120	3d. 964
Beet	87	3d. 696
Carrot	79	2d. 954
Turnip	63	1½d. 1,016
Greens	62	3d. 496
Onion	58	10d. 139
Tomato	52	2s. 3d. 47
Rhubarb	52	1½d. 840

The parsnip, Jerusalem artichoke and beet are the most nourishing after the potato. Next to them come the carrot and turnip. The potato, of course, gives much the best value for money at the prices named: after it comes the parsnip, the turnip, the artichoke, and the carrot. The supplies of all vegetables are short in the spring, the least scarce as a rule being carrots, onions and turnips. There are larger stocks of turnips than of the others, because the swede turnip is grown in quantity to feed animals, and usually keeps good to the end of April or longer. Although its food value is less than a third of that of the potato, it is by no means to be despised; and as potatoes get scarce it is a good plan to serve them mashed with an equal part of parsnip or turnip.

* The prices quoted in this little book are an average of those in the cheaper shops in the United Kingdom in June, 1918. See page 42.

Carrots are especially valuable because they can be used in so many different ways, not only as a vegetable but to form the basis of puddings and sweet dishes. As a vegetable boiled carrots can be cut up and baked with potatoes and onions, mixed with porridge, onion and parsley and fried, baked with rice and onion, made into a hotpot with beans and used in numerous other dishes.

Carrot and bean hotpot.—Soak $\frac{1}{2}$ lb. of haricot or butter beans and boil in the same water; add 6 carrots and any other vegetables, potatoes, greens, celery, onion, Jerusalem artichokes and turnips—all cut up into small pieces—add also mixed herbs, spice, salt, pepper, and 4 pints of cold water. Simmer gently for 3 hours. Sprinkle in chopped parsley before serving.

When carrots are used for sweets and puddings, a purée may be made by boiling the peeled carrots and mashing through a sieve. This is used for mixing with fruit for marmalades, jams and puddings, or, as a basis for a mould with cornflour and sugar and any flavouring desired. Such puddings are excellent and most people would not suspect that they were made largely of carrots. If a few apples, a little jam, and the white of an egg are available, the following specially nice pudding may be made:—

Carrot and Apple pudding.—2 carrots are made into purée, mixed with a pint of custard (from custard powder) and put into a basin. 4 apples are cooked, passed through a sieve and laid on next, and then a layer of jam; whisk the white of an egg, mix with a very little sugar and pour over the top. Brown with a salamander or in the oven.

The cooking of vegetables must be thorough, because if the starch grains are not broken up by heat many of them will escape digestion. But with the usual way of boiling there is a great loss of food. With potatoes the loss can be prevented by boiling or steaming them in their skins. Cabbage, however, loses a third of its food in boiling. If carrots are cut up and boiled in a fair amount of water a quarter of the food they contain passes into the water. A bushel would lose the equivalent of a pound of sugar, that is over 1,800 calories, nearly enough to feed a small person for a day. Other vegetables also lose heavily.

If vegetables are steamed or if they are baked there is no loss. The Jerusalem artichoke, parsnip, and onion are excellent when baked in fat and the fat adds greatly to the food value of the dish.

Failing baking or steaming vegetables should be boiled or stewed in a saucepan, just covered with water, and the water used for making soup; or they may be stewed in stock. Less of the food value passes into the water if the boiling is rapid. Another plan is to use the water in which onions or artichokes have been stewed for making a white sauce in which to serve them. Turnips and onions should be scalded first to remove the strongest part of the taste, as already recommended for greens on page 15, by plunging them into boiling water for a couple of minutes.

FRUIT.

The food value of fresh fruits, except nuts, is, like that of vegetables, comparatively low because they contain a large proportion of water. In order of nutritive value grapes come first, then plums, bananas, apples, strawberries and oranges. The solid matter of fruits, however, is of much value as food, and great care should be taken to see that all fruit is used in some form and that none is allowed to go bad. Fruit which

cannot be used and will not keep should be made into jam if sugar is available; if not it may be bottled; or made into a massa or paste which can be preserved for a long time.

Recipe for fruit massa or paste.—Cut up the fruit, including pips, cores or skins, and boil gently with just enough water to cover it until it is soft enough to pass through a sieve or cloth. Sieves made with brass wire must not be used. If sugar can be had it may be added at this stage. The half liquid mass is allowed to simmer slowly and gently until fairly thick jam is formed. It is then poured or ladled out into well-greased baking trays to a depth of about $\frac{1}{4}$ to $\frac{1}{2}$ inch. Put the trays into a very slow oven until they are quite firm and yet pliable, so that the layer of paste can be rolled up like thick cardboard. If still rather moist the rolls can be dried further in the linen airing cupboard or over the kitchen range. Store in paper bags or cardboard boxes.

In doing tomatoes, spices may be used such as pepper, allspice, cayenne. Cinnamon or cloves may be added to bananas, apples, or pears according to fancy, or, as above-mentioned, sugar.

The tomato paste can be used to make soups, the other pastes to make puddings, pies, or even jam later on.

Another way of preserving fruits is to dry them.—For example, full-sized ripe plums may be put in the linen airing cupboard, taking out the trays to cool occasionally. It is better not to have too high a temperature at the beginning or the plums may melt and burst. Time may be saved by doing the first heating in an ordinary oven, provided that it is not allowed to get hotter than about 60° C. (140° F.). When they are fairly well dried a higher temperature, about 100° C. (212° F.), may be used, but is not necessary. The big Victoria plums do not dry so well as other varieties. The trays in which they are dried should have canvas, muslin or wire gauze at the bottom, but not paper.

Grapes, apples, broad and green beans, &c., can be dried in the same way.

XII.

MEAT.

The value of meat as a food lies in the fact that it contains much digestible body-building protein and energy-giving fat. If properly cooked and chewed little or none of it is wasted. Hence meat, though its cost is high, is economical from a digestive point of view.

Although meat is an important food, we can live and work quite well without it, as the flesh-forming material and fat it contains can be supplied by other foods (see Chapter IV.). No healthy person ought to eat meat at the present time more than once a day.

Lean meat, such as very lean beef or the flesh of the rabbit, is about one-fifth protein, one-tenth fat, and the rest water; it gives 40 calories to the ounce, or 640 to the pound. If there is more fat attached to the meat or lying between the fibres, the food value is much greater. Thus a pound of average mutton gives 1,306 calories, whilst fat bacon gives 2,708 in a pound, that is four times the food value of lean meat.

The cheaper kinds of meat contain as much of the flesh-forming protein as the dearer; and they are, if reasonably cooked, quite as digestible.

The amount of meat which can be bought for any sum of money depends partly upon how much bone must be taken with it. This varies with the condition of the animal: the fatter it is the smaller is the proportion of bone. A whole side of beef, as sold by the butcher, will

contain about 18 per cent. of bone, half a sheep 24 per cent., and half an average pig 16 per cent. One-fifth of the total weight, or 20 per cent., may be taken as an average for different kinds of meat. There is, of course, much difference between various joints. Here is a list showing the quantity of meat and of bone which was obtained in a number of purchases. The price charged is given and in the last column the actual cost of the meat, after taking away the bone, is estimated. Some pieces which have no bone are included for comparison.

—	Weight.	Bone.	Percentage of bone.	Price.	Cost of meat without bone.
	lb.	lb.		per lb.	per lb.
Ox heart... ..	4	0	0	0 11	0 11
Flank of mutton ...	1½	¼	17	1 6	1 9½
Ox liver	11	0	0	1 0	1 0
Ox tongue (with root)...	7	0	0	1 11	1 11
Shoulder of mutton ...	5	¾	15	1 6	1 9½
Leg of mutton	7½	1	13	1 10	2 1¼
Ox tail	2½	¾	30	1 0	1 5¼
Sirloin of beef	14	2¾	20	1 7	2 0
Rabbit (tame)	1½-2	½	33-25	2 0	2 10
Shin of beef	10½	5	49	1 4	2 7½
Fowl	2½-3½	¾	33-21	1 9	2s. 7½d.-2s. 2½d.

The meat of large joints costs the most, though it must be remembered that it contains more fat, and that the bones bought with it are useful for soup. The cheapest are the heart, the ox liver, the ox tail and the shoulder and flank of mutton. If rabbits or fowls are bought by the pound, the thin ones are, of course, dearer, because they contain as much bone as the fat ones.

Pieces which contain gristle as well as bone and give good stock on boiling are economical. A shin of beef, for example, of 10 lb., in addition to the cooked meat will give a great deal of stock. A sheep's head, costing 1s. 3d., and giving with the tongue and brain over a pound of meat, gives also stock which with the meat will make two pounds of potted meat. A whole ox head at 7s. or 8s. is a good purchase for large families or institutions. It gives ten pints of good stock, which with the meat upon it makes 16 pounds of excellent potted meat jelly, equal in food value to eight pounds of meat.

Ox heart or any cheap pieces of beef can be used for making sausage roll. This is a good plan for using up material at canteens.

Recipe.—Take 1½ lb. of ox heart or any bits of beef, ½ lb. of odd pieces of bacon or ham, as fat as possible (or proportionately larger quantities); mince, and mix with a breakfast-cup of crumbs, made from left over crusts of bread, baked and crushed, a teaspoonful of black pepper, a teaspoonful of salt, a pinch of cayenne and a dessertspoonful of vinegar. Take four tablespoonfuls of milk and moisten, mixing well with the hand. Form into rolypoly shape, dust with flour, tie into a cloth, and boil for 2½ hours. Serve cold.

Tripe is a very digestible food; a pound and a half contains as much protein as a pound of beef.

Those who can afford it should always buy the ordinary joints, and not the cheaper pieces.

The cooking of meat makes it palatable and destroys any germs or parasites it may contain: it does not make it more digestible. When meat is roasted, baked or fried, there is a loss of weight because a good

deal of the water is driven off. The meat served may only weigh a half to two-thirds of what it weighed raw. But there is no loss of food value, unless, of course, it is so charred as to be destroyed, or so tough that it cannot be chewed. The gravy contains hardly any food, though its pleasant taste helps the appetite. The same is true of meat extracts. When meat is stewed or boiled some of the flavour and salts and a little fat and protein pass into the water, which is used as broth. The food value of the broth, however, is small, and if it is to form an important part of a meal, it should be thickened with flour or barley flour, and whole barley, potatoes and other vegetables added. The best way to cook odd pieces of meat is to fry or bake them a little first and then stew them. By this plan the flavour is preserved and all the tougher parts are made more digestible. Another good way is to braise meat with vegetables.

Meat which has been kept for several weeks in cold storage is as nutritious as fresh meat. Tinned meat, unless it is very lean, is rather more nutritious, weight for weight, than fresh meat, because some of the water has been driven off in its preparation. For the same reason dried meats, such as smoked bacon, have a high food value.

Meat must not now be used to make beef tea, because when that is done the nourishing part of the meat is left behind as tasteless shreds, whilst the beef tea itself, though it tastes good, has but little food value. The real use of beef tea is not to feed the sick, but to comfort, satisfy and stimulate them; for these purposes its place may be taken by a mixture of meat extracts and boiling water or barley or rice water, with seasoning to taste. Food value may be added by mixing in some of the dried and powdered milk which is sold.

XIII.

FISH.

In these days everyone should buy fresh fish so far as means allow. It is a valuable and digestible substitute for meat and eggs, and, as it will not keep, is wasted if not used directly it is offered for sale. There is always less fresh fish in the spring, quite apart from war conditions, because fish leave their feeding grounds then and do not return till June or later. As summer arrives catches improve and the cost should become lower.

Fish, like meat, is nearly all protein and water with a variable amount of fat. The most nourishing fish are those which contain the most fat, namely, the salmon and turbot. Next come the herring and mackerel. The hake, cod and haddock come last, containing less than 1 per cent. of fat.

The food value of an ounce of lean beef, 50 to 60 calories, is given by an ounce of salmon or turbot, not reckoning bones or skin, or an ounce and a half of herring or mackerel, or three ounces of cod, hake or haddock. As sources of the body-building protein, however, the last named are just as good as more expensive kinds, for the flesh of all fish contains nearly as much protein as meat. In comparing the two, reckoning must be made for the waste in buying. With joints of meat the proportion of bone is not on the average more than a quarter of the whole. With fish, the head, bones, fins and skin often come to nearly half the weight. When this is allowed for it is found that the protein contained in 1 lb. of meat is got by buying $1\frac{1}{2}$ lb. of fish.

The following table is drawn up to show which fish give the best value for money at the prices named. In these purchases the proportion of waste was ascertained. In some cases, as the table mentions, the fish were bought already skinned and headed, and in these the only waste to the buyer was the bone. The third column shows the estimated cost of the eatable part of the fish, and the last column the food value obtained for a shilling:—

	Percentage of waste.	Price per lb.	Cost per lb. of Fish without waste.	Food value for ls. Calories.
		<i>s. d.</i>	<i>s. d.</i>	
Sprat	0	0 6	0 6	1,320
Herring (salted)... ..	30	0 7	0 10	921
Herring (fresh)	30	0 7	0 10	751
Bloater	35	0 9	1 1 $\frac{3}{4}$	597
Mackerel	50	0 8	1 4	483
Catfish, rock turbot or rock salmon (bought skinned and headed).	22	1* 3	1 7 $\frac{1}{2}$	454
John Dory (bought skinned and headed)	14	1 3	1 5 $\frac{1}{2}$	448
Salmon	23	3 0	3 10 $\frac{1}{2}$	315
Haddock	45	1 3	2 3 $\frac{1}{2}$	277
Cod	49	1 3	2 5 $\frac{1}{2}$	259

The sprat, the salted herring and the fresh herring give much the best value. Two herrings, or three small ones, give 400 calories, and contain 2 oz. of protein; this, when added to that in the bread taken, gives nearly all the protein which an adult needs in the day. A great number of salted herrings were formerly exported but should now be eaten at home. They must be soaked in water three days, the water being changed four or five times each day; or, better still, left in a basin in the sink, with the tap dripping slowly, for a day or more; after that they should be raised to the boil two or three times, changing the water. They may then be boiled and are excellent served with potatoes, rice or beans, and margarine or butter. They are nicest cooked with potatoes as follows:—Take a small ring of skin off each potato, place in a fairly large pot, put the prepared herrings on the top, and boil together until the potatoes are cooked. If the salt has been properly soaked out, the herrings are also quite good baked, grilled, or dipped in oatmeal and fried.

A bloater gives the same amount of nourishment as a fresh herring. A kipper is worth a little less, as it has no roe. Weight for weight the food value of dried fish is greater than that of fresh fish because water has been driven off: thus the dried herring and mackerel can replace the same weight of meat.

Next in order of cheapness come the mackerel, the catfish and John Dory. Many people do not eat the catfish, which is also called rock salmon or rock turbot. It is, however, excellent and wholesome. Its ugly head, with large strong jaw, used, we are told, for dislodging limpets and mussels, is perhaps the cause of the prejudice; and the fishmonger often sells it beheaded and skinned, and sometimes by another name.

The other fish are dearer, when the amount of food they give and the price paid for it is taken into account. The more costly salmon and turbot should be bought by those who can afford them. The salmon, indeed, gives better value than the haddock or cod at present prices. The tinned salmon is equal in nourishment to the fresh fish. The sardine has a high food value, partly due to the oil in which it is packed.

Margarine or butter should, if possible, be eaten with fish, especially with those which are poor in fat, such as the haddock and cod.

The great amount of gristle in the cod's head gives much stock when well boiled, which can be made into a nourishing fish soup, useful for large families and schools. For example, a large cod's head and shoulders gave 7 quarts of stock, of a value of over a thousand calories. To it was added 1 pint of milk, 4 oz. of rice, 1 oz. of barley flour, 4 oz. of onion and $\frac{1}{2}$ oz. of parsley. This made 8 quarts of soup, each pint of which was worth 120 calories.

Cod's roe, which can be bought separately, is rich in body-building material. It is nice eaten with seasoning and potato, and better still if some sprats are cooked with it.

Great care should be taken that fish remnants are not wasted but made into kedgerree, curry, fish cakes or fish custard.

Kedgerree.—Boil 6 oz. of rice for twenty minutes and strain thoroughly. Melt 2 oz. of cooking fat in a pan and add 12 oz. of pieces of fish broken up small, two hard boiled eggs (if available) chopped up, the rice, and salt and pepper. Cook for ten minutes, stirring all the time. The dish gives over 1,400 calories. If divided between four people, each of whom eats with it 2 oz. of bread and $\frac{1}{2}$ oz. of margarine, everyone will get 620 calories, or two-thirds of a good meal.

Curried fish.—Melt $\frac{1}{2}$ oz. dripping in a pan and add 1 teaspoonful of curry powder. Break up 1 lb. of fish remnants and mix in the pan with 2 oz. of rice, $\frac{1}{2}$ pint of fish stock (or skim milk) and seasoning to taste. Cook for 10 minutes, stirring all the time, and serve with boiled rice. Food value of whole dish, 700 calories.

Fish cakes.—Boil 3 oz. rice for 20 minutes; drain well, and mix with 12 oz. of broken up fish in a basin, adding pepper, salt and parsley. Bind together with 1 egg and $\frac{1}{4}$ pint of milk, and divide into six cakes. Fry in fat till brown. Each cake has a value of 100 calories.

Fish custard.—Put 1 lb. of broken up fish in a greased pie-dish. Sprinkle with pepper and salt. Beat up 1 egg and $\frac{1}{4}$ pint of skim milk, and pour over the fish. Bake in a moderate oven 20 minutes. Food value of whole dish, 360 calories.

XIV.

CHILDREN'S MEALS.

Children's Meals.—The feeding of babies does not offer any special difficulty in wartime, so long as milk can be had. Perhaps the danger of unwise feeding is as great as that of lack of food. The only right food for an infant is its natural food. Any mother who can feed her baby and does not is using the food of others, and is not doing the best for her child. It is remarkable how seldom babies which are fed by their mothers are brought to doctors or hospitals. The reason is that, compared with other children, they seldom get ill. Cow's milk, even when diluted and modified according to the age of the baby, is inferior to human milk; but it is the only other suitable food. Hence the importance of keeping up the milk supply for the sake of infants and young children.

Children under 18 months should receive a pint and a half of milk a day, except, of course, while they are being fed by their mothers. From

18 months onward they should get a pint a day. The main foods of children over five years old are milk, bread, porridge (of oatmeal, barley flour, or ground maize and oatmeal mixed), oatcake, puddings, eggs, butter or margarine, dripping, meat, bacon fat, fish, fresh vegetables and fruit.

The most likely foodstuff to be short is the fat, supplied in milk, butter, margarine, dripping, suet puddings and bacon; children should get a fair amount of some of these daily. Margarine should be given with bread in preference to syrup or jam. Bacon should be fried with bread or potatoes to take up the fat, or a good deal of it will be left in the frying pan or the dish.

A little fruit, fruit juice or well-cooked fresh vegetables must be provided.

Three meals a day are enough for healthy children, with a slice of bread and butter and some milk at bedtime. Meat or fish should be given at the mid-day dinner only. Older children, living the more strenuous school life, may have fish, egg or bacon at breakfast also, but can do quite well without it if porridge, or oatcake, and milk is taken. Children ought always to have a good breakfast. Breakfast and dinner should be their chief meals. The third meal, tea, should not be eaten until four hours after dinnertime, and should not include any meat or protein foods; sleep is better if this meal, however plentiful, is quite plain. A convenient division of the bread is to give some at breakfast, but only after porridge or oatcake has been eaten, little at dinner, or none if there is a nourishing pudding and no soup, and most at tea. Sugar need not form part of every meal. Except for infants, it is not an absolutely necessary food, because we can and do make sugar in our bodies from the starch we eat.

Care must be taken to see that children eat slowly, chewing all food, whether soft or hard. Any decayed, loose or tender teeth must be put right. Every meal should end with a piece of crust, oatcake or a biscuit to cleanse the teeth and prevent decay.

Children should drink at the end of their meal, after all the solid food is eaten, and, if they are thirsty, between meals. Before the age of five or six years no tea or coffee should be given. After that milk and water may be just flavoured at breakfast and tea. At dinner water only should be drunk, or water flavoured with fruit juices.

Children should be taught to eat all ordinary plain foods such as porridge, bread and butter, plain puddings, and peculiar tastes should be discouraged, though with reasonable tact and sympathy. If a child is to grow up healthy such simple foods must form the chief part of its diet, and it will learn to take them without difficulty if no others are offered at the same time. A child may be seriously handicapped when it is ill if it has not been brought up to eat, for example, milk pudding.

Nothing whatever should be eaten between meals.

Both at home and at school, the fare must be varied both as regards the food and the way it is cooked, so that the child cannot tell what is likely to be given on any one day. This uncertainty helps appetite, and good digestion waits on appetite. It is easy to forget in what a great number of ways plain foods may be served. Variety needs care, but does not necessarily mean expense.

The following are some of the plain dishes from which choice may be made to get variety at the three meals of the day:—

Breakfast: Porridge, milk, oatcake, bread, margarine, butter or

dripping. One of the following dishes may be added: Eggs, boiled, poached, scrambled, fried, French, curried or scalloped; fish, grilled, fried, baked or boiled; fish cakes, scallops, potted herrings, sardines, bloater paste; occasionally sausage or bacon; nuts, fresh or dried fruits.

Dinner: Two courses, one of them being the chief protein dish of the day of meat or fish, or sometimes eggs, cheese or nut dishes, with potatoes and fresh vegetables, either cooked or as various salads; and the other course a pudding. Soup may be added or on certain days replace the meat course: in the latter case the soup should contain plenty of vegetables and be eaten with bread or dumplings.

Meats: Roast, baked, braised, stewed or boiled, stuffed, salted, minced, curried, potted, jellied; as pies or puddings, shepherd's pie, Irish stew, hot pot, rissoles; liver, minced, fried, stewed or curried; stuffed heart, oxtail.

Fish as mentioned under breakfast, also: boiled cod and egg or parsley sauce, fish pie with curried beans, fish cream with curried shrimps; stuffed haddock; tomatoes stuffed with shredded fish.

Dishes for dinners without meat or fish: Curried eggs, cheese on toast, macaroni cheese, cheese pie, curried nuts, chestnut stew, haricot beans and lentil dishes, pease pudding, savoury pies, vegetable pies, savoury omelettes.

Puddings: Rice, ground rice, flaked rice, semolina, tapioca, maize, corn-flour, sago, farola, bread crust or bread and butter, suet, raisin, currant, ginger, spice, cabinet, college, castle, date, fig, roly with jam, treacle or syrup; fruit puddings, carrot and fruit puddings, pancakes, junket, blanc-mange, stewed fruits, roast apples, fritters.

Puddings and fritters usually made with flour are excellent made with part or all barley flour or cornflour.

Soups: Meat, fish, gravy, Scotch broth, oatmeal, pea, lentil, haricot bean, rice, potato, mixed vegetable, leek, spinach, tomato, celery, carrot, turnip, parsnip.

Tea: Bread, oatcake, margarine, dripping toast, currant bread, potato scones, barley scones, rice cakes, gingerbread made with oatmeal, syrup, jam, sandwiches of cress, tomato, lettuce, radish; green and fruit salads; stewed fruit.

The amount of food eaten by children must be controlled but not unduly restricted. The rations are liberal for most children, but they are not intended to deprive any child of the food needed for proper growth. If bread can be made at home and barley meal or oatmeal are obtainable, the mixtures of these with national flour, described on pages 17 to 19 will give wholesome and nourishing bread. Cereals will be used for puddings so far as they can be had and means allow. In some schools the diet contained too much starchy food, such as bread, and in these an increase of the protein foods, such as fish and beans, will be an advantage. The amounts of food needed each week in schools of children mostly over thirteen years old will be similar to those given on pages 47 to 49.

The housekeeping for children both at school and at home calls in these days for much skill and a study of food values. Improvement in cooking and the rigid avoidance of waste can alone save a good deal. The food should not be changed suddenly without making sure that the new diet is sufficient as compared with the old. There is a simple way of finding out whether children are getting enough, and that is by weighing them once a month. The average weight should increase slowly.

Everyone will agree that the greatest care must be taken to give our children the food they need, whoever else goes short. Upon them will lie the duty of holding what has been won by the blood of the brave. They must be fit, in body and mind, to make peace more glorious than war by the right use of our dear bought freedom.

XV.

MEATLESS DINNERS.

The chief use of meat is to supply flesh-forming material, though that is not its only use, for the amount of fat in most meats is also valuable; it is probably because of the high food value of the fat that many people feel more satisfied after a meat meal than they do after a meal of fish. When we have, therefore, to replace meat by other foods we must aim at supplying, in the first place, the same amount of flesh-forming material or protein, and in the second place, a food value equal to that which the meat would have given.

If four ounces of beef, weighed raw, without bone, is taken as an average helping for a man, we may compare in the following table the amounts of other foods, which would give, roughly, the same quantity of flesh-forming material as the beef. The last column gives the food value supplied.

Table showing the quantities of other foods which give the same amount of flesh-forming material as four ounces of beef:—

Food.	Weight.	Flesh-forming material or protein.	Fat.	Calories.
		oz.	oz.	
Beef (no bone)	4	$\frac{2}{3}$	1	304
Cheese	$2\frac{1}{2}$	"	$\frac{3}{4}$	266
Beans, peas and lentils (dried)...	$2\frac{1}{2}$	"	$\frac{1}{4}$	255
Salmon	$3\frac{1}{2}$	"	$\frac{1}{3}$	162
Nuts (shelled)	4	"	2	680
Oatmeal	4	"	$\frac{1}{3}$	432
Herring	$4\frac{1}{2}$	"	$\frac{1}{4}$	125
Eggs	5 (2 large ones)	"	$\frac{1}{2}$	195
Cod or hake	6	"	—	84
Bread	$6\frac{3}{4}$	"	—	500
Peas and beans (fresh shelled)...	$8\frac{1}{2}$	"	—	236
Milk	1 pint	"	$\frac{3}{4}$	400

The table shows that the amount of flesh-forming material contained in 4 oz. of beef is given by $2\frac{1}{2}$ oz. of cheese, or of beans, also that the total food value of the cheese or beans is not far short of that of the beef. Two large eggs or $3\frac{1}{2}$ oz. of salmon give the same protein, though fewer calories. Of other fish about 6 oz. is needed and the food value is low. 4 oz. of nuts (shelled) give as much body-building stuff as the same weight of beef, and more than twice the food value. 4 oz. of oatmeal also supply the same protein, but that amount when cooked is bulky. The table shows how valuable milk is as a substitute for meat for children and invalids: a pint gives more calories than a quarter of a pound of beef, the same amount of protein and nearly as much fat.

It appears that the most useful foods for meatless dinners are nuts, cheese, beans or lentils, oatmeal, eggs, fish and milk. Of these beans, fish and eggs do not contain much fat, and will be less satisfying on that account; as much butter, margarine or lard as can be spared should be served with them.

A dinner of fish is much more satisfying and its taste greatly improved if oatmeal balls are served with the white sauce as well as potatoes.

Recipe for oatmeal balls.—Oatmeal, 1 lb.; chopped onions, 4 oz.; suet, dripping or any kind of fat, 2 oz.; boiling water, $\frac{1}{2}$ pint; salt, 2 teaspoonfuls.

Pour the boiling water over the oatmeal, cover and soak for 30 minutes; then add the onion, suet and salt. Mix thoroughly, make into balls, and fry in a shallow frying pan (greased) for half an hour. Or bake on a greased tin in a moderate oven half an hour.

Oatmeal balls may also be dropped in boiling water or stock and boiled for half an hour.

The food value of the dish is 2,184 calories, and it will form a large part of a good meal for six persons.

If a little mincemeat is available it can be made good use of in an **Oatmeal Pudding.**—Oatmeal, 8 oz.; chopped onions, 4 oz.; suet, 1 oz.; mince (any kind), 2 oz.; boiling water, 5 oz.; pepper and salt.

Pour the boiling water over the oatmeal, cover, and soak for half-an-hour. After soaking add the onions, suet, mince, salt and pepper. Mix thoroughly. Pour the mixture into a greased cloth, and boil steadily for an hour. Or the pudding may be placed on a greased tin and baked 1 hour in a moderate oven. It may also be made without mince.

The food value of the dish is 1,230 calories; without mince 1,100 calories.

Nuts may be cooked with cheese, or in puddings or pies. A good way to serve them is in a nut shape.

Recipe for nut shape.— $\frac{1}{2}$ lb. of mixed nuts, 4 tablespoonfuls of rice, 2 tablespoonfuls of breadcrumbs, pepper and salt.

Mix together the rice, nuts, crumbs and seasoning, and bind with a little flour and milk. Put in a well-greased mould and steam for an hour. When ready, turn out, and serve with a little sauce.

This is an excellent and satisfying dish for two or three people. Its food value is 970 calories.

Cheese must be used with great care, as most of what we have is needed for the workers. It can be prepared in many forms. A recipe for potato cheese is given on p. 21.

Beans, peas and lentils should be used regularly whenever they can be obtained. They should be soaked for 24 hours and must be cooked thoroughly. They may be served in many ways. Here is one which can be especially recommended:—

Baked Haricot.—Haricot beans, 8 oz.; brown breadcrumbs, 3 oz.; 3 chopped onions; 3 teaspoonfuls of salt; 3 tablespoonfuls of soaked tapioca.

Strain off the water in which the beans have been soaked, make up to 4 pints, and boil; add the beans and onions, and boil three-quarters of an hour or more until they are soft. Then pass them through a sieve and add the breadcrumbs, tapioca and salt, also pepper, &c., if desired. Bake three-quarters of an hour in a greased dish.

The food value of the dish is 1,200 calories.

XVI.

THE RATIONS.

(July, 1918.)

The foods rationed at present are meat, including bacon; fat, including butter, margarine and lard; and sugar. Definite quantities of these are allowed to each person.

The meat ration.

Everyone over 6 years of age receives 4 coupons a week for meat. Of these three only can be used for ordinary butcher's meat.

The other coupon, or, if desired, all four coupons, can be used to buy bacon, ham, suet, kidneys, tongue, skirt, sausages, tinned or potted meat, poultry, rabbit, hare, game, or horseflesh.

The weight of each kind of meat which can be bought for a coupon is varied from time to time by the Food Controller according to the supplies. At present the three coupons for butcher's meat allow nearly 7 oz., including bone, to be bought for each—that is altogether about 20 oz. per week. The other coupon, or, if desired, all four coupons, will each get 8 ounces of bacon or 12 ounces of ham, or 12 ounces of sausage (containing over two-thirds of meat), or 1 lb. of sausage (containing less than half meat), or 7 ounces of tongue, kidneys, skirt, or suet, or 1 lb. of venison, or $1\frac{3}{4}$ lb. of horseflesh.

Nearly all these kinds of meat are sold according to a fixed scale of cost, every retailer having a schedule which tells him how much can be charged for each kind and for each joint.

One coupon also allows the purchase of a whole fowl up to 2 lb., or a whole rabbit up to $1\frac{1}{2}$ lb. With two coupons a fowl may be bought up to 3 lb., a duck up to $4\frac{1}{2}$ lb., or a rabbit of any weight over $1\frac{1}{2}$ lb. A fowl of 4 lb. or a duck or goose of 6 lb. needs three coupons; fowls over 4 lb. or hares need four coupons; and larger geese or turkeys four or more according to weight.

With game, 3 plover or pigeon, 2 woodcock, or 1 partridge or grouse go to a coupon. A pheasant or wild duck requires two coupons.

The coupons can also be used for getting meat meals at canteens, restaurants, hotels and clubs. Half a coupon gets the meat for one meal as a rule, though sometimes a whole coupon is required. At such eating places every coupon or half-coupon can be used for any kind of meat, so that people taking meals out daily may get all the week's allowance of meat in the form of butcher's meat. This is not entirely an advantage, however, for we shall see that the food value of the Controller's allowance of butcher's meat per coupon is much less than the value obtained from other kinds of meat.*

The quantities of meat without bone and of cooked meat which may be bought on each coupon are rather smaller, so as to allow for the bone or for the loss of weight in cooking.

* It appears likely that still more liberal rations of "other meat" will be allowed in the near future.

Certain kinds of meat are not rationed at present and may be obtained without coupons. These include—some joints of bacon, tripe, sheep's and calves' heads, the feet of oxen, sheep and pigs; and the sausages, brawn and tinned or potted meats made from such kinds of meat; also certain joints of horseflesh, the meat of goats and kids, pigeons, rooks, meat pastes containing less than one-third of meat, and dripping. Wild pigeons and young rooks make excellent pies, and those who can get these birds will no doubt make full use of them.

The following table shows the amount of body-building material and the number of calories obtained for the three coupons of butcher's meat.

3 Coupons of Butcher's Meat, including Bone.

(July, 1918.)

Meat.	Per week.	Body-building food or protein.	Fat.	Calories.
	oz.	oz.	oz.	
Beef	20	2.4	3.6	1,250
Mutton	20	2.0	3.8	1,241
Pork	20	2.0	8.0	2,341

The following values are obtained with one coupon, if used for buying other rationed meats.

1 Coupon of "other" Meat, including Bone (if any).

Meat.	Per week.	Body-building food or protein.	Fat.	Calories.
	oz.	oz.	oz.	
Bacon	8	.7	4.0	1,137
Ham	12	1.7	4.0	1,252
Fowl	16	2.4	1.6	701
Rabbit	16	2.2	1.1	557
Sausage (not less than $\frac{2}{3}$ meat)...	12	1.6	5.3	1,596
Suet	8	.4	6.6	1,712

When it is remembered that only one coupon is used for obtaining these values, as compared with three coupons in the previous table, it becomes clear that much more food is got by using coupons for "other meat" than for butcher's meat.

The tables show that the larger allowances of sausage, bacon and ham, as would be expected, give much the best value for each coupon; next come pork, fowls, rabbits, and last beef and mutton. Probably many people will buy butcher's meat up to the limit of the three coupons allowed. But any who feel that they need more meat food would be well advised to use three, or even all four, coupons for bacon, ham and rabbit, or, if means allow, for fowls.

Children under 6 may receive half the above quantities of meat.

Supplementary rations.

An extra meat ration is allowed to all men engaged wholly or mainly on bodily labour, to women doing heavy muscular work, and to boys aged 13 to 18 years. The men entitled to this extra ration are put into three classes, called D, E and F. Those engaged in ordinary bodily labour are in Class D; heavy agricultural workers are in Class E; and very heavy industrial workers in Class F. Heavy women workers also receive more, but as all women are receiving the same rations as men, though they do not need so much, extra rations are given only to those doing work similar to that of the men in Classes F and E.

At the present time these bodily workers, that is, all the men and the women doing heavy work, receive the same extra ration, namely, 2 coupons a week for any meat except beef, mutton and pork. Most of them will take the extra coupons out as bacon. As a coupon now allows $\frac{1}{2}$ lb. of bacon to be bought, that means an extra pound of bacon a week for each worker, giving over 300 calories a day.

Boys from 13 to 18 are allowed one coupon for any other meat than butcher's meat. If this is used for bacon they will get, therefore, an extra $\frac{1}{2}$ lb. a week.

Sick folk in hospitals are allowed extra food, also certain invalids and expectant mothers outside hospitals, on a medical certificate.

The fat ration.

This includes butter, margarine and lard. Five ounces of butter and margarine and two ounces of lard are allowed per head per week to grown-ups and children alike.

The food value supplied is shown in the following table. The figures for suet and dripping, which contain over 80 per cent. of fat, are put here in brackets for comparison:—

Values of fat ration.

	Calories.	Fat.
5 oz. of butter give	1,125	oz. 4 $\frac{1}{4}$
5 oz. of margarine give	1,115	4 $\frac{1}{4}$
2 oz. of lard give	500	2
(2) oz. of (suet) give	(428)	(1 $\frac{1}{2}$)
(2) oz. of (dripping) give	(524)	(2)

Dripping and lard give the most energy per ounce, whilst butter and margarine are not far behind and are about equal in food value.

Vegetarians may have an extra ration of fat in place of meat. Jews who, on religious grounds, do not eat bacon are also allowed extra fat.

Fats have a high food value and for that reason are very important foods. They must be used with great care.

Dripping, olive or salad oil, cottonseed oil, cacao or cocoa butter and other fats and oils are not rationed, and if available may be used for cooking. Cocoa butter has a chocolate taste which is no disadvantage if it is used for making puddings and sweets. When it is used for other dishes the taste can be much lessened by heating the butter in a white

enamelled pan over the fire until a white smoke is seen. Keep at the same temperature for five minutes. Cool and leave to set. The process may be repeated.

For cooking, grate the cocoa butter in the same way as suet. For pastry it is better to use a mixture of salad oil and cocoa butter.

Bacon fat and suet from the meat ration will also be used in cooking.

Pure tasteless liquid paraffin, such as is used for a medicine, is suggested as a good substitute for oil in salads. It has, however, no food value.

The sugar ration.

Everyone is apportioned half a pound of sugar a week. This gives 912 calories, or 130 calories a day.

Table of rationed foods.

The following table shows the food value which different people can obtain from the Controller's rations if it be supposed that the meat coupons are used entirely for butcher's meat and bacon.

	Butcher's meat. oz. per week.	Bacon. oz. per week.	Butter or Margarine. oz. per week.	Lard. oz. per week.	Sugar. oz. per week.	Calories.	
						per week.	per day.
Men doing bodily labour or women doing hard mus- cular work.	20	24	5	2	8	7,198	1,028
Boys 13 to 18	20	16	5	2	8	6,051	864
All others over 6 years of age.	20	8	5	2	8	4,914	702
Children under 6	7	8	5	2	8	4,198	600

The last column gives the calories per day which these rationed foods supply. A glance at the figures shows how the ration is adjusted to meet the physical needs of different classes. If all important foods were rationed a closer adjustment would be required; but as most foods, including potatoes, bread and other cereals and pulses are not rationed, there is enough food to make up everybody's diet to the total quantities needed.

Milk.

Milk is not rationed in the sense that meat, fats and sugar are, and everyone may buy it when it is available; but it should not be used by the general public until those who need it most are supplied. These are infants, children, expectant and nursing mothers, and sick people. In districts in which a priority scheme is in force infants not being fed by their mothers are to have priority for a pint and a half of milk daily up to the age of 18 months. After that they should receive a pint daily until they are 6 years old. Expecting mothers have priority for a pint daily and nursing mothers for a pint and a half daily. Invalids can receive extra milk on a medical certificate.

XVII.

FOODS WHICH ARE NOT RATIONED.

Although meat, butter or margarine, lard and sugar are important items, yet the main part of the daily meals is made up from other foods.

The following list gives in the first column the number of food units which each class requires, and in the second column the amount which the rationed foods give. The last column shows the number of calories per day to be supplied from non-rationed articles of food:—

	Total Food Units or Calories needed per day (average).	Calories per day supplied by Controller's ration (round figures).	Percentage of total needs supplied by the ration.	Calories per day to be supplied from other foods.
1. Men doing continuous heavy industrial or agricultural work.	3,600	1,000	28	2,600
2. Men on other continuous bodily work.	3,200	1,000	31	2,200
3. Men unoccupied or on sedentary work.	2,600	700	27	1,900
4. Women doing heavy industrial or agricultural work.	2,800	1,000	36	1,800
5. Women on ordinary industrial work or domestic service.	2,400	700	29	1,700
6. Women unoccupied or on sedentary work.	2,200	700	32	1,500
7. Nursing mothers (including 1½ pints of milk daily and two meat coupons weekly).	3,000	1,400	47	1,600
8. Boys, 13-18	3,000	900	30	2,100
9. Children aged 8	1,800	700	39	1,100
10. Children aged 5 (including 1 pint milk).	1,500	1,000	66	500

A comparison of columns 1 and 2 shows that the Controller's rations will give about 30 per cent., or roughly, one-third, of the total food requirements of each class of worker. In column 4 the food values which, on the average, the non-rationed foods must supply, are expressed in food units or calories. It appears that round about 2,000 calories a day need to be furnished by other foods for adults. Heavy workers need rather more, but others less. Indeed, with the priority allowance of milk, nursing mothers get over 40 per cent. of their needs from rationed foods, without reckoning the extra meat and fat they get by eating the baby's ration of those foods, as it does not, of course, consume them itself. Young children also get a liberal allowance, over 60 per cent. of what they require, if they are given a pint of milk a day to drink and in puddings.

The quantities of the non-rationed foods which will be required differ, therefore, to a certain extent, in each class, but not greatly. The variations in the rations are adjusted to fit the needs of each kind of worker with reasonable accuracy.

* The foods which are not rationed include all the foods in the table on p. 6 except meat, butter, margarine, lard and sugar.

The cereals are, of course, the most important. Although bread and other cereals, namely, oatmeal, barley meal, rice, cornflour, maize meal and macaroni are not rationed at present, particular economy is needed in their use, for we are told that the food supply of the whole world is short.

The amounts of bread which different people need vary, of course, with their work, build and other circumstances, as described in Chapter VII. The following figures may be taken as a fair weekly average for the poorer classes:—

Men on very heavy industrial work or on agricultural work, 8 lb.; men on ordinary industrial or other manual work, 7 lb.; men unoccupied or on sedentary work, 4 lb. 8 oz.; women on heavy industrial work or on agricultural work, 5 lb.; women on ordinary industrial work or in domestic service, 4 lb.; women unoccupied or on sedentary work, 3½ lb.; children, 13 to 18 years, 6 lb.; 9 to 12 years, 4½ lb.; 6 to 8 years, 3½ lb.; 0 to 5 years, 3 lb.

These figures are liberal, and now that the ration of butter and margarine has been increased many people will find that they need less bread.

It must be remembered that if bread is to continue unrationed, all those who can should replace it by other foods. (*See* Chapters IX and X.). Bread with a little fat is a complete diet; owing to its artificial cheapness it is the most economical food which can be bought and is essential for those who have to support life on a small wage. All other classes should try to reduce the above quantities to two-thirds or half, eating instead potatoes, oatmeal, barley-meal, rice or maize, whenever these can be had. The voluntary reduction of bread-eating is still an important factor in enabling the Ministry to continue its policy of leaving bread unrationed.

Fish is especially valuable because it can supply the body-building protein instead of meat. Everyone who can afford it ought to buy fresh fish. Dried fish should also be used freely. Dried herring and mackerel give the food value of an equal weight of meat.

Of the vegetables, the **potato** is by far the most important. It should be used as a vegetable, also for making bread and scones, and for many other dishes (*see* pp. 20-22). Those having a store of potatoes should see that the ones which do not keep well are used first. Next in food value after the potato comes the parsnip, and then, in order, come the Jerusalem artichoke, beet, carrot, turnip, cabbage, onion, tomato and rhubarb.

Beans, peas and lentils, known as the **pulses**, are valuable foods because of the large amount of body-building material they contain. They should be used whenever they can be got and are particularly helpful for meatless days.

Eggs are nutritious and rich in protein, but are expensive at present, and the supply is limited. Powders made by drying eggs without adulteration have a food value as high as the eggs from which they were prepared.

Milk is, of course, of the greatest value as a food. It should be given to children and invalids, whilst healthy adults, if they use milk at all, should use as little as possible, say, a quarter of a pint a day, or rather more if porridge is an important part of the diet.

Cheese is another very nourishing food, containing a high proportion of fat and protein. At the present price it gives more than twice the body-building material for the money that meat does, when bone is

allowed for, and much more food value than any meat. Unfortunately there is not enough of it to go round, and it should, therefore, be left for those who are poorer, and for heavy workers.

Fresh fruits are important to health, but their natural food value is not great. The dried fruits are valuable foods, especially currants and raisins, figs, dates and prunes. All these, however, are imported, and can only be had in small quantities, and at a high price.

Jam, marmalade and honey are not rationed, and should be used, though, of course, with great care, when they can be obtained. Owing to the short supplies and the needs of the Navy and Army, not more than 3 or 4 ounces a week should be bought for each person. In the following diets 3 ounces a week is allowed.

XVIII.

HOW TO MAKE UP THE CONTROLLER'S ALLOWANCE.

We have seen that the Controller's rations supply about one-third of the food we need, leaving two-thirds to be made up from the non-rationed foods; also that potatoes and fish are the two non-rationed foods which it is most important to make full use of at the present time.

Every worker, indeed every healthy person, and every growing child over 12, should eat a pound of potatoes a day if possible. This is four fair-sized potatoes. Of these two or three may be eaten as a vegetable, and one (or two) used in making potato bread, potato scones, pies or other dishes.

Here is an example of a diet which has actually been eaten. The quantities of the non-rationed foods in this diet are suitable for any man or woman doing light work, that is in classes 2, 3 or 5.

Diet 3. A diet taken by a man doing sedentary work.

From the Controller's ration was taken per day:—Meat, 3 oz. (on 6 days a week); bacon, 2 oz. (on 4 days a week); margarine, $\frac{1}{2}$ oz.; sugar, 1¹ oz. These supplied 711 food units or calories.

He was also served:—

	<i>Calories.</i>
Bread, 10 oz. (including flour reckoned as bread) ...	750
Oatmeal, 1 oz.	108
Rice (or barley meal), $\frac{3}{4}$ oz.	75
Potato, 1 lb.	400
Fresh fish, $\frac{1}{2}$ lb. (one good-sized herring, kipper or bloater, or 4 oz. of tinned salmon would give about the same nourishment)	114
Greens $\frac{1}{2}$ lb.	62
Apples, $\frac{1}{2}$ lb.	110
Jam, $\frac{1}{2}$ oz.	30
Milk (for use with tea and porridge only), 7 oz. ...	140
Value of non-rationed food	1,789
„ „ rationed food	711
Total	2,500

The meals were as follows:—

Breakfast.—Bread, 3 oz.; porridge (from oatmeal, 1 oz.); fresh haddock, 4 oz.; milk, 5 oz. (for porridge and tea); sugar, $\frac{1}{2}$ oz.

Dinner.—Meat, 3 oz.; bacon, 2 oz.; flour, $1\frac{1}{2}$ oz. (= 2 oz. bread); potatoes, $\frac{1}{2}$ lb. $\frac{1}{2}$ oz. of fat bacon was cut off, rendered, and the fat worked into paste with the flour and a tablespoonful of water. The meat, bacon (cut up), and potatoes were put into a basin with pepper and salt and half a cup of water, covered with the paste and baked (or steamed) for two hours. The meat, when cooked with bacon, turns a reddish colour, but the dish is excellent and satisfying. Greens, $\frac{1}{2}$ lb.; bread, 1 oz. A pudding followed of apple, 4 oz.; rice, $\frac{3}{4}$ oz.; sugar, 1 teaspoonful. The apples were sliced thinly in a dish, the rice added, and the sugar sprinkled over. Water was put in and the dish baked one hour.

Tea.—Bread, $2\frac{1}{4}$ oz.; jam, $\frac{1}{2}$ oz.; milk, 2 oz.; sugar, $\frac{1}{4}$ oz.; tea.

Supper (or lunch).—Bread, 2 oz.; fish, 4 oz.; potatoes, 8 oz.; margarine, $\frac{1}{2}$ oz.; an apple, 4 oz.; sugar, $\frac{1}{4}$ oz.

In this case, as a matter of fact, $1\frac{3}{4}$ oz. of the allowance of bread was not eaten. That would give 132 calories, so that the food value of the diet on this particular day was less by that amount, and worked out at 2,500 - 132 = 2,368 calories. The man was, of course, doing right in saving bread rather than any other food.

On the days on which there was no bacon more fish and oatmeal would be eaten.

Any household containing people not doing heavy work would get enough food by following such a scheme as that given above.

The weekly food for four people would be:—

(1) The Controller's rations, also:—

(2) Bread, 14 lb.; flour, 3 lb.; oatmeal, $1\frac{3}{4}$ lb.; rice or barley meal, $1\frac{1}{2}$ lb.; potatoes, 2 stone; fresh fish, 7 lb.; 2 dozen herrings, kippers, or bloaters; tinned salmon, $2\frac{1}{2}$ lb.; greens, parsnips, turnips, or other vegetables, 14 lb.; apples, 14 lb.; jam, marmalade or syrup, $\frac{3}{4}$ lb.; milk, 10 pints.

For very hard workers, a considerable addition must be made. The rationed foods, with the extra bacon, give them 1,000 calories, but more non-rationed foods must also be eaten. Bread would be saved if another half pound or more of potatoes were added, more vegetables, when available, and some cheese (say, 3 oz.). These yield over 500 calories. Sedentary women workers will need less than is set forth above. Thus, a woman clerk of average build would get enough food if she took in the day, in addition to her Controller's allowance—

	<i>Calories.</i>
Bread, $\frac{1}{2}$ lb.	600
Oatmeal, $1\frac{1}{2}$ oz.	162
Two kippers or bloaters, or cheese, 3 oz.	320
Potato, $\frac{3}{4}$ lb.	300
Greens or turnip, $\frac{1}{2}$ lb.	62
Apples, $\frac{1}{2}$ lb.	110
Syrup, $\frac{1}{2}$ oz.	33
Milk, $\frac{1}{4}$ pint	100

1,687

The housewife should vary the diet as much as she can, because variety helps the appetite. Circumstances also will often compel a change, because the same foods cannot always be had. When buying it is of great importance to keep in mind so far as possible which foods are the most nourishing. The list on page 7 gives the food values of a pound and of an ounce of ordinary foods. In the following list the comparative values of the non-rationed foods are shown in a different way.

A list of equivalent food values of the non-rationed foods.

The given weight of the food in every case has the same food value—that of a pound of bread—1,200 calories.

Cheese, 10 oz.; oatmeal, 11 oz.; wheat flour, barleymeal, rice, macaroni, beans and peas (dried), lentils, currants, raisins, honey, 12 oz.; dried figs or dates, 13 oz.; dried apples, 14 oz.; prunes, nuts (shelled), 1 lb.; syrup, 1 lb. 1 oz.; sardines, 1 lb. 4 oz.; tinned and salted fish, 1½ lb.; salmon, tinned or fresh, 1¾ lb.; 15 eggs; grapes, 2½ lb.; potato, 3 lb.; herring, fresh, 3 lb. 2 oz.; plums (fresh), pears (tinned), 3¼ lb.; milk, 3 pints; bananas, pears, 4 lb.; parsnips, artichokes, 5 lb.; fresh fish, 5 lb.; apples, 5½ lb.; strawberries, 6½ lb.; beetroot, 6¾ lb.; carrots, oranges, 7½ lb.; turnips, greens, 9½ lb.; onions, tomatoes, 10½ lb.; rhubarb, 11 lb.

Do not conclude, after reading this list, that fresh fish is a poor food because 5 lb. of it are needed to give the same food value as one pound of bread. In the first place, the weight here given allows for the waste of the skin, fins and bones, and represents only 2½ lb. of the actual flesh of the fish as eaten, or, with herring, which is especially nourishing, still less. Secondly, we do not buy fish for its food value alone, but because, like meat, it supplies body-building material. Indeed, a meal of fish, with potato to supply starchy food, some margarine to give fat, and some fresh greens, is a meal containing all the foodstuffs that the body needs.

XIX.

WHAT FOODS GIVE THE BEST VALUE FOR MONEY?

The cheapness of food depends not only upon the price per pound, but upon the food value which can be bought for any sum of money.

Half a pound of cheese, for example, costing 8*d.*, gives 888 calories, or 111 for a penny; a pound of cabbage gives only 124 calories, but the whole pound can often be bought for a penny. A penny spent on barley meal at 6½*d.* a pound gives 253 calories. Hence barley meal is the cheapest of the three, next the greens, and last the cheese, though it must be remembered that cheese contains more of the flesh-forming protein, and of fat.

With the aid of the table on page 7, and a knowledge of prices, it is easy to find out what are the cheapest foods. To get the number of food units which can be bought for a shilling, multiply the number of calories in a pound by twelve and divide by the price per pound in pennies.

For example, bacon gives 2,275 calories in a pound. At 2*s.* 6*d.* per lb., that is 30 pence, a shilling will buy $2,275 \times 12 \div 30 = 910$ calories.

In the following list those foods which give the most food value at the prices given are put first. Prices are always varying so that at one time one food is cheaper and at another time another. The prices here given are in most cases an average of those in the cheaper shops in the United Kingdom in June, 1918. They do not apply to any particular place. All the references to the cost of food in this little book are based upon them, unless otherwise stated.

TABLE SHOWING THE FOOD VALUE OBTAINED FOR A SHILLING AT THE PRICES NAMED.

Food.	Price per pound	Calories for a shilling.	Food.	Price per pound.	Calories for a shilling.
	<i>s. d.</i>			<i>s. d.</i>	
Oatmeal (Scotland) ...	0 4	5,196	Bacon (16 per cent. bone)	2 6	910
Rice	0 4	4,893	Rhubarb	0 1½	840
Oatmeal (England) ...	0 4½	4,890	Nuts	1 5	822
Potato	0 1	4,800	Beef (tinned)	1 7	808
Margarine	1 0	3,566	Herring	0 7	751
Peas, &c. (dried) ...	0 6	3,252	Beetroot	0 3	696
Sugar	0 7	3,125	Cream (per pint) ...	2 0	680
Barley meal	0 6½	3,032	Rabbit (wild)	0 10	668
Dates (dried)	0 6	2,840	Mutton (24 per cent. bone).	1 6	662
Lard	1 6½	2,564	Liver	1 0	585
Dripping	1 9	2,392	Honey	2 9	553
Suet	1 6	2,283	Beef (18 per cent. bone)	2 0	509
Tapioca	0 10	1,980	Prunes (dried)... ..	2 3	504
Parsnip... ..	0 1½	1,936	Greens	0 3	496
Sausage... ..	1 2	1,826	Bananas	0 8	447
Cornflour	0 11	1,795	Poultry (game) ...	1 9	400
Milk (skim) (per quart)	0 3	1,760	Sardine... ..	2 6	381
" (whole) "	0 6	1,600	Plums (bottled) ...	1 0	371
Butter	2 4	1,545	Salmon (tinned) ...	2 4	272
Cheese	1 4	1,333	Tripe	1 0	270
Macaroni	1 4	1,249	Salmon (fresh) ...	3 0	244
Arrowroot	1 4	1,232	Eggs (per doz.) ...	3 10½	242
Syrup	0 10½	1,225	Onions	0 10	139
Apples (dried)... ..	1 3	1,080	Apples (cooking) ...	1 9	125
Jam	0 11	1,031	Pickles	1 6	73
Turnip	0 1½	1,016	Tomato... ..	2 3	47
Artichoke, Jerusalem ...	0 3	964			
Carrots	0 2	954			

The list shows that at present prices oatmeal, rice, potato, margarine, dried peas, sugar, barley meal, sausage, milk, cheese, and syrup are among the foods which give the best value for money. A shilling spent on most other available foods buys fewer calories. With those named, therefore, the allowance can be made up at the lowest rate. The figures will vary as prices alter, but a calculation, as shown on p. 41, can be made for any change of price.

Skim milk is only obtainable in the country where butter is being made. It is a cheap and valuable food, and when it can be had should be used by man and not given to young animals. Buttermilk also has a good food value.

Here are two diets in which the cheapest foods are used. The heat values of the foods are put down; they are from the table on p. 7. Bread is taken at 9*d.* a lb. Flour at 1*s.* 4*d.* for 7 lb.

Diet 4. Simple diet for heavy worker. 3,700 calories per day.

The Controller's allowance gives him per week three meat coupons (1½ lb.), and, with his supplementary ration, three coupons for other meat. He takes these for sausage. The purchases then are:—

	Per week.		Calories.
Meat—Beef	1½ lb.	equal	1,250
Sausage	2½ lb.	"	4,792
Margarine	5 oz.	"	1,115
Lard	2 oz.	"	500
Sugar	½ lb.	"	911

He also takes:—

	Per week.		Calories.
Bread	6 lb.	equal	7,200
Flour	1 lb.	"	1,651
Other cereals—Oatmeal	1½ lb.	"	2,598
Rice	5 oz.	"	510
Milk	1 quart	"	800
Potato	10½ lb.	"	4,200
Greens and other vegetables	3½ lb.	"	434
			<hr/>
Per week			25,961
Per day			3,709

On 4 days he gets ¼ lb. butcher's meat or bacon, the other ¼ lb. being regarded as bone for soup, and a little suet. An extra pound or more of oatmeal might be taken with advantage instead of an equal quantity of bread.

On 3 days he gets 6 oz. sausage for dinner, and on 3 days there is also sausage for supper:

The diet gives per day 4½ oz. of protein, 4½ of fat, and 1 lb. 2 oz. of carbohydrate.

The cost, including tea, cocoa and a little pepper, salt and mustard, is about 9*s.* 5*d.* a week.

The following is an example of the meals for one of the days from such a diet:—

Breakfast.—Porridge, from oatmeal, 2 oz.; skim milk, 7 oz. (or 4 oz. new milk); bread, 6 oz.; margarine, ½ oz.; tea; sugar, ½ oz.

Dinner.—Bread, 2 oz.; meat, 4 oz., made into a pudding with 1½ oz. flour and a little lard; potato 1 lb. (4 good-sized potatoes); greens, ½ lb.; rice, ¾ oz., boiled with skim milk, 7 oz., or new milk, 4 oz., and sugar, 1 teaspoonful.

Supper.—Soup from bones; potato, ½ lb.; bread, 5 oz.; margarine, ½ oz.; cocoa; skim milk, 6 oz., or new milk, 2 oz.; sugar, ½ oz. On 2 nights a week he takes porridge or oatmeal pudding, and on 3 nights sausage.

Diet 5. Diet for sedentary woman worker. 2,400 calories per day.

	Per week.	Calories.
Meat	1½ lb.	1,250
Sausage	¾ lb.	1,597
Margarine	5 oz.	1,115
Lard	2 oz.	500
Sugar	8 oz.	911
Bread	3 lb.	3,600
Flour	6 oz.	618
Peas, dried	5 oz.	510
Rice, sago	7 oz.	714
Milk	1 quart	800
Potato	7 lb.	2,800
Syrup	3 oz.	201
Greens, turnips, &c.	3½ lb.	434
Cheese	1 lb.	1,777
Per week		16,827
Per day		2,404

The meals, especially the dinner, would, of course, be varied. Here are one day's meals:—

Breakfast.—Bread, 3½ oz.; syrup; margarine, ½ oz.; tea; sugar, ½ oz.; milk, 1 oz.

Dinner.—Meat pudding as in Diet 3 (p. 40) but with half the flour, or sausage; potato, ¾ lb. (3 good-sized ones); greens or turnips, &c., ½ lb.; pudding of 1 oz. rice (or sago), 3 oz. milk, and a teaspoonful of sugar; a small piece (⅔ oz.) of cheese.

Supper.—Pea soup (with bone from meat); potato, 4 oz.; bread, 3 oz.; cheese, 2 oz.; margarine, ½ oz.; cocoa; milk, 1 oz.; sugar, ½ oz.

The diet gives per day 2¾ oz. of protein, 3¼ oz. of fat, and ¾ lb. of carbohydrate.

The cost, including tea, cocoa, and a little pepper and salt and mustard, is about 8s. per week.

This diet is given as an example of a cheap diet without oatmeal. If, however, ¾ lb. of oatmeal were bought instead of 1 lb. bread, a more satisfying breakfast would be obtained of porridge, provided that milk, skim or new, could be had to take with it. As in Diet 3, only 4 oz. of meat is reckoned per day on three days, leaving 4 oz. for bone and a little suet for cooking. On three other days she may cook sausage for dinner.

XX.

MORE EXPENSIVE DIETS.

Our aims in choosing diet must be, first: to see that only what is needed is taken, and no scrap wasted. This applies to everyone. Secondly: to make the best use of the available foods. This leads at once to the consideration that it is not in the national interest for everyone to buy what is cheapest. Those who can afford it, should, subject, of course, to the fixed allowances, continue to buy their ordinary foods, so that the dearer foods may be used as well as the cheaper.

In the two following examples of how the diet may be made up, attention is paid to these points and not to cost, though all the foods are of the simplest. The meat is taken as beef with 18 per cent. of bone. There is no cheese.

Diet 6. A dearer diet for a skilled industrial worker (Class D) earning good wages. 3,200 calories per day. No milk is included.

The Controller's ration gives him $1\frac{1}{4}$ lb. of butcher's meat a week (three coupons), 1 lb. of bacon (two coupons), and 7 oz. of tongue (1 coupon).

—	Per week.	Calories.
Meat	1 $\frac{1}{4}$ lb.	1,250
Bacon	1 lb.	2,275
Tongue	7 oz.	532
Margarine	5 oz.	1,115
Lard	2 oz.	500
Sugar	8 oz.	911
Bread	6 lb.	7,200
Flour	$\frac{3}{4}$ lb.	1,238
Other cereals—rice	7 oz.	714
Dried peas, beans	7 oz.	714
Potato	10 $\frac{1}{2}$ lb.	4,200
Jam	3 oz.	177
Fresh fish (or herring 1 lb.)	2 lb.	456
Fruit (plums)	1 lb.	371
Fresh vegetables (artichoke, parsnip)	3 $\frac{1}{2}$ lb.	843
Pickles	$\frac{1}{4}$ lb.	28
Per week		22,524
Per day		3,218

This contains $3\frac{1}{2}$ oz. of protein, 3 oz. of fat, and nearly $1\frac{1}{4}$ lb. of carbohydrate per day.

The cost, including tea, cocoa, salt, &c., is about 13s. per week. Of this, 2s. 6d. is for bacon.

The following example is given of the meals of one of the days of the week:—

Breakfast.—Bread, 5 oz.; bacon or tongue, 3 oz. (5 days a week); tea; sugar, $\frac{1}{2}$ oz.

Dinner.—Meat or bacon, 4 oz. (six days a week); potatoes, 1 lb.; parsnips, artichokes or greens, $\frac{1}{2}$ lb.; boiled rice and fruit and sugar, 1 teaspoonful (or a pudding made with flour, and a little fat bacon and flavouring).

Tea.—Bread, 4 oz.; margarine, $\frac{1}{2}$ oz.; tea; sugar, $\frac{1}{2}$ oz.

Supper.—Pea soup; bread, 4 oz.; fish, 5 oz.; potato, $\frac{1}{2}$ lb.; margarine, $\frac{1}{2}$ oz.; jam.

The pickles would come in for cold meat. The peas would be used for pease pudding on a meatless day as well as for soup. Some rice could also be cooked for curry.

Diet 7. An expensive diet for a man doing sedentary work or unoccupied. 2,600 calories. $\frac{1}{4}$ pint of milk per day is included.

With one coupon available for "other meat" and one of the butcher's meat coupons a chicken of 3 lb. is bought. With the two remaining

“ butcher’s meat ” coupons he gets 10 oz. of steak, which, as it contains no bone, counts more, and is roughly equivalent to 13 oz. meat with bone.

The week’s food is then :—

—	Per week.	Calories.
Meat—Poultry or game	3 lb.	2,103
Steak	10 oz.	760
Lard... ..	2 oz.	500
Butter	5 oz.	1,125
Sugar	8 oz.	911
Bread	4 lb.	4,800
Flour	6 oz.	618
Beans or peas (dried)	10 oz.	1,020
Macaroni	7 oz.	728
Potato	7 lb.	2,800
Milk	1 quart	800
Fresh fish	2 lb.	456
Fresh fruit (apples)	2 lb.	438
Eggs	7	546
Honey	3 oz.	285
Vegetables—Artichokes, &c.	1 lb.	241
Spinach, cabbage	1 lb.	124
Per week	18,255
Per day	2,608

This contains $3\frac{3}{4}$ oz. of protein, $2\frac{1}{3}$ oz. of fat, and over $\frac{3}{4}$ lb. of carbohydrate per day.

The cost, including tea, 2 oz. a week, cocoa, 2 oz., and pepper, salt, &c., is about 19s. 2d. per week, of which 5s. 3d. is for poultry.

One of the day’s meals is as follows :—

Breakfast.—Bread, 3 oz.; an egg or fish, 3 oz.; marmalade; tea; milk, 1 oz.; sugar, $\frac{1}{4}$ oz.; butter, $\frac{1}{2}$ oz.

Dinner.—Chicken, 7 oz., or steak, 4 oz.; potato, 12 oz. (3 good-sized ones); beans, macaroni; a pudding made with flour, a little suet, a teaspoonful of sugar and ginger.

Tea.—Bread, 3 oz.; butter, $\frac{1}{2}$ oz.; honey; tea; milk, 1 oz.; sugar, $\frac{1}{2}$ oz.

Supper or lunch.—Bread, 3 oz.; fish pie or cold meat with potato, 4 oz.; vegetables, 5 oz.; stewed fruit.

Three ounces of milk are not apportioned and could be used towards a pudding. Some of the beans or peas would be used on a meatless day.

XXI.

FAMILY BUDGETS.

In the following Weekly Budgets the total amount of food bought in a week for a family is given on three different scales of expense. Similar meals have been taken by actual households. The amount of meat, fat, and sugar is within the Controller’s allowance in each case.

It should be pointed out that examples of diets, such as are found below, must not be followed too closely. Meals should always be varied as much as possible, both from day to day and week to week.

Diet 8. Plain diet. 6 persons. 2,700 calories. (Cost 9s. 0d. per head per week.)

The food is for a family of 6, the father a heavy worker, the mother a domestic worker, a boy of 15 in munition works, a girl of 11, a boy of 8, and a boy of 6.

Enough will be supplied if the father gets 3,700 calories, the mother 2,400, the boy of 15 3,000, the girl of 11 2,200, the boy of 8 2,200, the boy of 6 1,600. The family will need, therefore, about 15,100 calories a day, or an average of about 2,500 calories each. The father receives two supplementary coupons for "other meat," and the boy one coupon. 12 coupons are used for butcher's meat, and buy 5 lb. Of the 15 other coupons 5 buy 2½ lb. of bacon, and 10 buy 7½ lb. of sausage (*see* p. 33). The family also receives 1 lb. 14 oz. of margarine, ¾ lb. of lard, and sugar 3 lb. weekly. The father will eat more than 1 lb. of potato a day. Potato is also used for scones, pies, &c.

Sausage and bacon are the cheapest meats and rice and oatmeal are much the cheapest cereals. 4 lb. of flour is used for cooking. Milk will be obtained for the children, though not so much as is required for children under 5. Half-a-pint a day is assumed for the child of 6, leaving just over ¼ pint each for the others. The children of 8 and 11 would receive more than their share of this.

Purchases.—Bread, 25 lb.; flour, 4 lb. 2 oz. (= 5½ lb. bread); oatmeal (for porridge three times a week), 1½ lb.; rice for puddings, 2 lb. 6 oz.; butchers' meat, 5 lb. (including some suet); sausage, 7½ lb.; bacon, 2½ lb.; 1½ lb. of tripe, which is not rationed, was also bought; margarine, 1 lb. 14 oz.; lard, ¾ lb.; sugar, 3 lb.; potato, 42 lb.; milk, 6 quarts; greens or fresh vegetables, 14 lb.; jam or syrup, 1 lb.; cocoa, 4 oz.; tea, 8 oz.; curry, 2 oz.; herring, 3 lb.; cheese, 1¼ lb.

The diet contains per head per day 2½ oz. of protein, 3¼ oz. of fat and ¾ lb. of carbohydrate.

Daily fare.—*Breakfast*: Porridge, three times a week (or daily if more oatmeal and less rice is taken), bread, margarine, tea, sugar, milk. *Dinner*: Potato, greens. *Tea* should only be taken if supper must be late. It includes bread, golden syrup, tea, sugar, milk. Those taking only three meals eat these foods at dinner or supper. *Supper*: Bread, margarine, potato, tea or cocoa, milk, sugar.

Other dishes.—(Breakfast, dinner, tea and supper are shortened to B., D., T. and S.)

Sunday.—D. Boiled beef, carrots, treacle pudding. S. Cold bacon.

Monday.—D. Boiled sausages, rice pudding. S. Herring, cheese.

Tuesday.—D. Bacon, ginger pudding. S. Tripe.

Wednesday.—D. Broth, potted meat. S. Curried mince, cheese.

Thursday.—D. Broth, bacon. S. Sausage.

Friday.—D. Herring, boiled rice and syrup. S. Cheese.

Saturday.—D. Broth, sausage, onions. S. Potted meat.

There was no meat on Friday.

The next diet is for 4 adults. It is more varied and costs 4s. 4d. per week more. There are no children in the family, so milk is restricted to 1 pint a day for all.

Diet 9. Medium diet. 4 persons. 2,500 calories. (Cost 13s. 4d. per head per week.)

The father is a sedentary worker; the mother a domestic worker; one daughter a machinist in a mill, another daughter a typist. Sufficient food will be supplied if the father gets 2,500 calories; the mother and typist, 2,400. The machinist, if tall and active, might eat

2,700. If the father is also a large and active man he would need more, and should make up by eating extra potatoes. Between them they have 16 meat coupons, of which 12 are available for butcher's meat, buying 5 lb. The remaining 4 are used—2 for ham (1½ lb.), and two for a rabbit. They will eat about the following quantities of bread:—Father, 4½ lb.; mother, 4 lb.; machinist, 4 lb.; typist, 3½ lb. Total = 16 lb. Each one gets 4 oz. margarine and ½ lb. sugar.

Purchases.—Bread, 13 lb.; flour, 2¼ lb. (= 3 lb. bread); tapioca, ½ lb.; macaroni, ¾ lb.; peas, &c., ½ lb.; cornflour, ¼ lb.; oatmeal, 2 lb.; meat, 5 lb.; ham, 1½ lb.; one rabbit; margarine, 1¼ lb.; lard, ½ lb.; sugar, 2 lb.; potato, 2 stone; milk, 7 pints; greens, 4 lb.; carrots, 3 lb.; beetroot, 1 lb.; turnip, 4 lb.; syrup, ¾ lb.; apples (dried), 1 lb.; cocoa, 8 oz.; curry, ¼ oz.; tea, 8 oz.; kippers, 10; herrings, 10; fresh fish, 3 lb.; tinned salmon, 2 lb.; eggs, 4.

This contains per head per day 3¼ oz. of protein, 2½ oz. of fat and ¾ lb. of carbohydrate.

Daily fare.—*Breakfast.*—Bread, margarine, marmalade, tea, sugar, milk. *Dinner.*—Potatoes, other vegetables. *Tea* (if supper is late).—Bread, oatcake, jam or jelly, tea, sugar, milk, potato scones, plain cake. *Supper.*—Bread, potato, cocoa, margarine, jelly, jam or syrup.

Other dishes.

Sunday.—B. Ham. D. Stuffed beef, treacle pudding. S. Tinned salmon.

Monday.—B. Boiled eggs. D. Broth, herring, milk pudding.

Tuesday.—B. Kippers. D. Lentil soup, cod, potato, ginger pudding. S. Cold meat.

Wednesday.—B. Ham. D. Broth, boiled beef, turnips, apple and tapioca pudding. S. Curried beef and macaroni.

Thursday.—B. Herring. D. Cold meat roll (made of pieces of beef), beetroot, castle pudding. S. Fish.

Friday.—B. Ham. D. Rabbit, apple pudding. S. Tinned salmon.

Saturday.—B. Kippers. D. Broth, pease pudding, cornflour and jam. S. Fish, tapioca and jam pudding.

There was no meat on Saturday.

The third diet contains more expensive foods, bought with the object of leaving the cheaper foods for the more needy. The amounts are for a household of eight people, including children and servants. Tea is given as a separate meal because it is the third meal of the day for the children, the supper being the third meal for the grown-ups.

Diet 10. More expensive diet. 8 persons. Average 2,450 calories. (Cost 16s. 6d. per head per week.)

The household consists of father, sedentary worker (say 2,500 calories); mother and mother's sister (2,300 each); 3 children, boy of 14 (3,000), boy of 11 (2,400), and girl of 8 (1,800); two servants (2,400 each).

The diet gives about 60 calories each a day over this estimate.

Thirty-three meat coupons are available, as the boy of 14 gets an extra one. Twenty-four of them get 10 lb. of butcher's meat. The

other 9 are used—3 for fowls (4 lb.) and 6 for bacon (3 lb.). The amount of bread required will be about as follows:—The father, $4\frac{1}{2}$ lb.; the mother and her sister, $3\frac{1}{2}$ lb. each; servants, 4 lb. each; boy of 14, 6 lb.; boy of 11, $4\frac{1}{2}$ lb.; girl of 8, $3\frac{1}{2}$ lb. The Controller's allowance also gives them 4 lb. of sugar, 3 lb. of butter, and 1 lb. of lard. The equivalent of 6 lb. of this bread is taken as flour (= $4\frac{1}{2}$ lb. flour).

Purchases.—Bread, $27\frac{1}{2}$ lb.; flour, $4\frac{1}{2}$ lb.; rice, sago, $1\frac{3}{4}$ lb., flaked maize, $\frac{1}{4}$ lb., pease meal, 4 oz., lentils, 2 oz., oatmeal, 2 lb., macaroni, 1 lb., cornflour, 4 oz.; fowl, 4 lb., meat, 10 lb., bacon, 3 lb.; butter, $2\frac{1}{2}$ lb.; lard, 1 lb.; sugar, 4 lb.; milk, 13 quarts; potato, $3\frac{1}{2}$ stone; salmon, 7 lb., other fish, 5 lb., sardines, 3 lb.; eggs, 14; parsnips, 2 lb., greens, 2 lb., turnips, 3 lb., onions, 1 lb.; jam, 1 lb.; honey, $\frac{1}{2}$ lb.; apples, 2 lb.; tea, $\frac{3}{4}$ lb.; coffee, $\frac{1}{2}$ lb.; cocoa, 2 oz.; tinned and dried fruits, 2 lb.; oranges, 3 lb.; salad, 6d. worth.

The diet contains per head per day 3 oz. of protein, $2\frac{3}{4}$ oz. of fat, and $\frac{3}{4}$ lb. of carbohydrate.

Daily fare.—At *breakfast*, bread, tea or coffee, porridge, milk, syrup, sugar and butter are served. At *dinner* potatoes, at *supper* bread, butter and potatoes. At *tea*, bread, butter, jam or honey, tea, sugar, potato scones, oatcake. Dinner is put at mid-day, as it is economical to cook one hot meal for both children and grown-ups. If dinner is in the evening the supper dishes may be used at lunch.

Other dishes.

Sunday.—B. Fish. D. Macaroni soup, chicken, salad, pancakes (with orange and sugar). T. Gingerbread, plain cake. S. Sardines, rice mould, peaches.

Monday.—B. Bacon. D. Soup, meat, brussels sprouts, Yorkshire pudding, apples. T. Gingerbread. S. Soup, fish pie.

Tuesday.—B. Bacon. D. Fish soup, cold meat, turnips, fig pudding. T. Rice cake. S. Sardines on toast, blanc-mange, stewed dried apples.

Wednesday.—B. Eggs. D. Soup, fish, macaroni, parsnips, spice pudding. T. Gingerbread. S. Potato pie (*see* page 22), chocolate blanc-mange.

Thursday.—B. Bacon, honey. D. Cold beef, turnip, flaked maize pudding. T. Buns. S. Salmon, apple sago.

Friday.—B. Fried haddock, honey. D. Salmon, date pudding. T. Gingerbread. S. Sardines, preserved fruits.

Saturday.—B. Bacon. D. Soup, shepherd's pie, rice pudding, stewed figs. S. Pease pudding, oranges.

There was no meat on Friday.

XXII.

THE HAYBOX.

Much fuel may be saved by putting foods in a haybox to finish their cooking. Further, the dish needs no attention while in the box and cannot be overcooked. The nourishing value is not impaired, and those who have had experience in this method of cooking testify that the flavour of the foods is excellent.

The following details are taken from The "Pudding Lady's" Recipe Book, by Miss Florence Petty:—

A HAYBOX MADE WITH NEWSPAPER.

Requirements:—

- 1 wooden or tin box with lid. Size 18 × 14 × 12 in.
- 18 large newspapers.
- 1 or 2 saucepans or casseroles with well-fitting lids.
- 1 or 2 small pillow cases or large brown paper bags.

Instructions for making:—

Line the bottom and sides of the box with a thick layer of the newspaper or brown paper.

Fill with tightly packed balls of newspaper.

Leave room for one or two saucepans or casseroles.

Each must be surrounded on all sides and underneath by a thickness of 4 in. of the balls of newspaper. The paper should be so tightly packed that, on removing the saucepan, the walls of newspaper surrounding it remain solid.

Fill a small pillow case, cushion cover or paper bag with tightly packed balls of newspaper, so that, when full, the pillow is 4 in. thick.

Instructions for use.—When the contents of the saucepan are thoroughly boiling, take it straight from the fire with the lid on and place in the box. Put the pillow quickly over the saucepan and shut the box. Do not open it till the dish is cooked, otherwise the saucepan must be brought to the boil again and placed in the box. If left overnight, food requires reheating before serving. A midday meal can be taken to work in a small box made as above.

TIME TO ALLOW FOR VARIOUS DISHES.

General rule.—Most dishes require about three times as long as they would if cooked in the ordinary way.

TIME TABLE.

Dish.	Time on Fire.	Time in Box.
Bacon (boiled)	45 minutes.	3-4 hours or all night.
Beef or mutton (boiled)	1 hour.	4-5 hours.
Fowl	1 hour.	3 hours.
Fruit (fresh)	5 minutes.	2 hours.
„ (dried)	5 minutes	3-4 hours.
	(after soaking all night).	
Haricot beans	20 minutes.	2 hours.
Lentil soup	15 minutes.	2 hours.
Porridge	10-15 minutes.	4 hours or all night.
Stews (meat or vegetable)	15-20 minutes.	3-4 hours.
Vegetables and rice	5-10 minutes.	2 hours.

Other Uses.

For cleaning tins and saucepans.—Boil for five minutes with soda and leave (with lid on) all night in box.

For keeping butter cool in summer.—Put butter or margarine in a jar. Cover with lid and keep in box.

For keeping water hot overnight.—Pour boiling water in heated jug. Cover with lid and place in box.

To keep tea hot.—Pour from leaves into heated jug with a lid, and place in box.

To keep food hot for late comers.—Put in hot jar or casserole, or leave in saucepan in which cooked—lid on in each case—and put quickly in box.

XXIII.

COMPOSITION OF FOODS.

The figures refer to foods as bought, all necessary waste being allowed for except as mentioned. The figures are given to the nearest whole number; hence, if the proportion of any foodstuff is less than one-half per cent., it is not recorded.

Food.	Protein per cent.	Fat per cent.	Carbo- hydrate per cent.	Calories per lb.	Calories per oz.
CEREALS :					
Wheat flour	11	1	75	1,651	103
Bread	9	1	53	1,200	75
Biscuit (Army)	10	1	85	1,810	113
Oatmeal	15	8	60	1,732	108
Barleymeal	10	2	73	1,642	103
Rice	8	—	79	1,631	102
Maizemeal	9	4	68	1,609	100
Rye	12	1	72	1,625	102
Millet	10	3	67	1,559	97
Macaroni	13	1	74	1,665	104
Tapioca	—	—	88	1,650	103
Sago	9	—	78	1,635	102
Cornflour	—	—	89	1,650	103
Arrowroot	—	—	88	1,642	103
MEAT :					
Beef, fat, no bone	17	31	—	1,620	101
Beef, average, no bone	15	22	—	1,219	76
Beef, tinned	26	19	—	1,280	80
Beef, average, 18% bone	12	18	—	1,000	62
Liver	20	5	—	585	37
Tripe	12	1	—	270	17
Mutton, no bone	13	25	—	1,306	82
Mutton, 24% bone	10	19	—	993	62
Lamb, no bone	15	19	—	1,080	68
Bacon, no bone	10	60	—	2,708	169
Bacon, 16% bone	8	50	—	2,275	142
Ham	14	33	—	1,670	104
Pork	10	40	—	1,873	117
Horseflesh	19	10	2	812	51
Sausage	13	44	—	2,130	133
Suet	5	82	—	3,425	214
Dripping	—	99	—	4,186	262
Lard	2	94	—	4,006	250
POULTRY, RABBITS :					
Fowl, 27% bone	15	10	—	701	44
Eggs	12	9	—	624	39
Rabbits, 29% bone	14	7	—	557	35
FISH :					
Cod, hake, &c.	10	1	—	228	14
Herring	13	5	—	438	27
Bloater	16	4	—	448	28
Salmon	17	10	—	732	46
Tinned and salted fish	20	10	—	794	50
Tinned salmon	20	7	—	680	42
Sardines	24	12	—	952	59

COMPOSITION OF FOODS—*continued.*

Food.	Protein per cent.	Fat per cent.	Carbo- hydrate per cent.	Calories per lb.	Calories per oz.
DAIRY PRODUCE :					
Milk	3	4	5	325	20
Skim milk	3	—	5	170	11
Cream	3	23	4	1,094	68
Butter	1	85	—	3,604	225
Margarine	1	84	—	3,566	223
Cheese	25	30	2	1,777	111
VEGETABLES :					
Beans, peas and lentils (dried)	24	1	60	1,626	102
Beans (in pods)	5	—	15	371	23
*Potato	2	—	19	400	25
Peas (in pods)	4	—	10	258	16
Parsnip	1	—	11	242	15
Artichoke	1	—	11	241	15
Beetroot	1	—	8	174	11
Carrot	1	—	7	159	10
Turnip	1	—	6	127	8
Greens	2	—	4	124	8
Onion	1	—	5	116	7
Tomato	1	—	4	106	7
Rhubarb	1	1	4	105	7
FRUIT :					
Apples	—	—	11	219	14
Plums	1	—	19	371	23
Nuts	6	22	5	1,165	73
Grapes	1	2	19	450	28
Bananas	1	—	14	298	19
Strawberries	1	1	7	180	11
Oranges	1	—	8	158	10
Currants and raisins	3	2	75	1,536	96
Figs (dried)	4	—	74	1,475	92
Dates (dried)	2	2	69	1,421	89
Apples (dried)	2	2	66	1,350	84
Prunes (dried)	2	—	59	1,134	71
Jam and marmalade	1	—	50	945	59
SUGAR, &C.					
Sugar	—	—	98	1,823	114
Syrup	1	—	57	1,072	67
Honey	—	—	81	1,520	95
Chocolate	15	50	25	2,853	178
Cocoa	20	25	40	—	—

* It is assumed that the potato is cooked in its skin. With more wasteful methods the food value of the potato as bought is lower than the figure here given.

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