

# FOOD AND HOW TO SAVE IT

BY

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

[Reprinted from articles written for the Ministry of Food.]

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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 practice 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.

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## P R E F A C E .

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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 I B 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.

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# 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. And now comes a call to every man and woman in these islands to save the food. Here at last 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.

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 we can all have enough food to keep well and do good work.

There are only 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 5, 7 and 8.

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.

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.

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\* 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.

### 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	Syrup ... ..	1,072	67
Lard ... ..	4,008	250	Beef ... ..	1,039	65
Butter ... ..	3,604	225	Sardines ... ..	952	60
Margarine... ..	3,566	223	Jam and marmalade ... ..	945	59
Suet ... ..	3,425	214	Tinned and salted fish ... ..	794	50
Chocolate ... ..	2,853	178	Salmon (tinned) ... ..	680	43
Bacon ... ..	2,708	169	Salmon (fresh) ... ..	660	41
Sausage ... ..	2,130	133	Poultry, game ... ..	657	41
Pork ... ..	1,873	117	Eggs ... ..	624	39
Sugar ... ..	1,823	114	Liver ... ..	585	37
Biscuit (Army) ... ..	1,810	113	Nuts (in shells) ... ..	582	36
Cheese ... ..	1,777	111	Rabbit ... ..	557	35
Oatmeal ... ..	1,732	108	Green peas & broad beans	467	29
Ham ... ..	1,662	104	Grapes ... ..	449	28
Flour (wheat) ... ..	1,651	103	Herrings ... ..	373	23
Barleymeal ... ..	1,642	103	Plums ... ..	360	22
Cornflour (maize) ... ..	1,642	103	Milk (400 cal. 1 pint) ... ..	325	20
Rice ... ..	1,631	102	Potatoes ... ..	311	19
Beans, peas and lentils ... ..	1,625	102	Bananas ... ..	298	19
Rye ... ..	1,625	102	Fruit (fresh) ... ..	296	18
Fat beef ... ..	1,620	101	Tripe ... ..	270	17
Tapioca, sago ... ..	1,595	100	Preserved vegetables ... ..	244	15
Maizemeal ... ..	1,544	96	Parsnips ... ..	242	15
Currants and raisins ... ..	1,536	96	Artichokes ... ..	241	15
Honey ... ..	1,520	95	Fish—cod, hake, &c. ... ..	228	14
Figs (dried) ... ..	1,475	92	Apples ... ..	219	14
Dates (dried) ... ..	1,421	89	Strawberries ... ..	180	11
Prunes (dried) ... ..	1,400	87	Beetroot ... ..	174	11
Mutton ... ..	1,376	86	Skim milk (212 cal. 1 pint)	170	11
Apples (dried) ... ..	1,350	84	Carrots ... ..	159	10
Fruit, preserved (no sugar)	1,237	77	Oranges ... ..	158	10
Tinned beef ... ..	1,229	77	Turnips ... ..	127	8
Bread ... ..	1,176	74	Greens ... ..	124	8
Nuts (shelled) ... ..	1,165	73	Onions ... ..	116	7
Cream ... ..	1,094	68	Tomato ... ..	106	7
Lamb ... ..	1,080	67	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.

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 rabbits and fowls. No allowance is made, however, for the bone in butcher's meat as the proportion of this varies so greatly. The amounts of bone in some representative joints will be found on page 18. 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, 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.

An average herring weighs six to eight ounces. Its food value is about 160 calories. A kipper or bloater has the same value.

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 ... ..	15	Bread ... ..	8
Nuts (shelled) ... ..	15	Peas and beans (fresh, shelled) ... ..	7
Fish ... ..	10 to 15	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 beans, nuts, oatmeal and barleymeal. It is easy to see that there are several foods which can replace meat in the diet. We could, 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  $3\frac{1}{2}$  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 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	Syrup ... ..	57
Tapioca, sago, arrow- root ... ..	85	Bread ... ..	52
Rice ... ..	79	Potatoes ... ..	21
Flour ... ..	75	Peas and beans (fresh, shelled) ... ..	17
Barley flour or meal ...	73	Bananas ... ..	14
Maize meal ... ..	66	Nuts (shelled) ... ..	13
Dried fruits ... ..	65	Fresh fruit ... ..	12
Oatmeal ... ..	60	Milk ... ..	5
Beans, peas and lentils (dried) ... ..	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.

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

*Recipe.*—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.



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 31 and 32.

**Recipe for oatcake.**—Take 3 lb. of oatmeal. Melt 7 oz. of dripping, margarine or bacon 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 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.

If oatmeal or barley meal porridge is on every breakfast table, the amount of bread eaten at that meal will be much lessened. Oatcake should also be eaten at tea-time. Boiled rice, haricot beans, and unpearled or pot barley, served as vegetables or in stews, will take the place of part or all of the bread and potato formerly eaten at dinner; and in milk puddings made with rice or the corn flour of maize, and in preserved fruits we have nutritious foods. 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.

It is especially urgent for those in comfortable circumstances and of sedentary occupation to save bread and flour. 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. The same applies to potatoes, which are an essential part of the poor man's dietary. Hence the well-to-do should use as little of these foods as possible.

**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.

The following are the chief foods which furnish fat:—

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

Of these, butter, margarine, 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 plenty of such food as butter, eggs and salmon, so as to need less bread and potatoes. Cheese should be restored to its old place as a staple food for all classes.

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 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 3 to 4 ounces of protein, the same of fat, and just under 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 as little bread as we can, 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, gives 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 full diet for a grown man, 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.

Milk is the only food which contains 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.

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 weekly allowance of 4 lb. of bread, 2½ lb. of meat and ½ lb. of sugar.

\* Theocritus. Idyll XXIV. A. Lang.

The first is a very simple diet of a value of 3,000 calories, sufficient for a man doing ordinary work. Green food or any relishes available would be added. All the foods are weighed uncooked except the milk pudding.

It contains for each person per day:—

Bread, 9 oz.; meat,  $3\frac{1}{2}$  oz., bacon, 2 oz.; sugar,  $1\frac{1}{4}$  oz.; margarine,  $1\frac{1}{2}$  oz.; milk,  $\frac{1}{2}$  pint; oatmeal, 1 oz.; potato, 8 oz.; rice,  $\frac{1}{2}$  oz.; dried beans, 2 oz.; cheese, 2 oz.; jam, 2 oz.; apple, 4 oz.; and some greens.

This gives just over 3 oz. of flesh-forming food, over 4 oz. of fat, and 12 oz. of starch and sugar.

This may be distributed among the meals as follows:—

*Breakfast.*—Bread, 3 oz.; bacon, 2 oz.; porridge (1 oz. oatmeal); milk,  $2\frac{1}{2}$  oz.; sugar,  $\frac{1}{2}$  oz.; margarine,  $\frac{1}{2}$  oz.; tea.

*Dinner.*—Meat,  $3\frac{1}{2}$  oz.; potato, 8 oz. (or 2 oz. rice); beans or lentils, 2 oz.; milk pudding (rice, sugar, milk), 5 oz.; apple, 4 oz.

*Tea.*—Bread, 3 oz.; margarine, 1 oz.; tea; milk,  $2\frac{1}{2}$  oz.; sugar,  $\frac{1}{4}$  oz. (half an ounce of margarine might be replaced by 2 oz. of jam).

*Supper.*—Bread, 3 oz.; cheese, 2 oz.; cocoa; milk; sugar,  $\frac{1}{4}$  oz.

The following diet of 2,800 calories is ample for many business men or for a woman doing steady work. It contains for each person per day:—

Meat,  $5\frac{1}{2}$  oz.; bread, 9 oz. (including biscuit); sugar,  $1\frac{1}{4}$  oz.; fish, 6 oz.; butter,  $1\frac{1}{2}$  oz.; oatmeal, 1 oz.; 2 eggs; potato, 6 oz.; rice,  $1\frac{1}{2}$  oz.; stewed fruit, 4 oz.; cheese, 2 oz.; milk,  $\frac{1}{2}$  pint; apple, 4 oz.; bottled vegetables, 4 oz.

This gives 4 oz. of flesh-forming food, 4 oz. of fat, and  $10\frac{1}{2}$  oz. of starch and sugar.

This diet was distributed in the meals as follows:—

*Breakfast.*—Porridge (from 1 oz. oatmeal); butter or margarine,  $\frac{1}{2}$  oz.; bread, 3 oz.; 1 egg, or fish, 3 oz.; coffee; milk,  $\frac{1}{2}$  pint; sugar,  $\frac{1}{2}$  oz.

*Lunch (or Dinner).*—Meat,  $5\frac{1}{2}$  oz.; potato, 6 oz. (or rice,  $1\frac{1}{2}$  oz.); greens; milk pudding, 5 oz.; stewed fruit, 4 oz.; (sugar with fruit).

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

*Supper (or Lunch).*—Fish, 6 oz.; vegetables, 4 oz.; bread, 3 oz.; cheese, 2 oz.; butter,  $\frac{1}{4}$  oz.; 1 egg in custard; apple, 4 oz.

It need hardly be said 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.

The Food Controller's allowance supplies a part of our daily needs, but not all. Other foods must be added according to the requirements of each person. 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 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.

Large people need more food than small.



Build is even of 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.

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 eight needs half as much as a grown-up; a child of twelve three-fifths as much. A girl of sixteen needs as much as her mother and a boy of sixteen may eat as much as 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.

	Food Units or Calories per day.
Women, including those engaged in business, and girls over 13 ... ..	2,000 to 2,200
Women, continuous light work, munition workers, 'bus conductors ... ..	2,400
Men, including those in sedentary businesses, and boys over 16 ... ..	2,500 to 2,800
Women, gardening and farm workers, heavier munition work ... ..	2,800
Men, light continuous work, shop assistants, plumbers ... ..	3,000
Men, labourers, munition workers ... ..	3,500
Men doing continuous heavy work, iron workers, soldiers on active service ... ..	4,000 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 will need 200 or 300 calories more than is set forth, whilst a plump person will need less.

## VIII.

### LITTLE SAVINGS.

“ MONY 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 house-

hold 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 should always have a good breakfast.

Meals ought not to be hurried and all food should 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.

If the two-ounce rolls are used it may be noted that four of them in the day are within the Controller's allowance of bread, provided, of course, that no toast, pastry, or other bread or flour food is taken. Each roll that is not eaten saves an ounce and a-half of flour which may be used, if needed, for cooking.

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.

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. The water in which rice, sago, barley or lentils have been soaked contains nourishment, and should be saved for making soup. 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.

### HOW TO SAVE WHEATEN FLOUR.

There are three ways of saving wheaten flour and bread. The first is just to eat less of them, thus reducing the total quantity of food consumed. This must not apply to children or muscular workers, but may be followed without harm by a good many folk. Those who take a great deal of exercise for recreation will need less food if such exercise is reduced to moderate limits. The second way is to replace some flour or bread by the foods containing protein or fat, or both, such as fish, beans, lentils, margarine, nuts, cheese, eggs and milk. Less food will then be required in the form of carbohydrate, such as bread. This plan costs more, but should be followed by the well-to-do, including those earning good wages. The third way is to use other kinds of corn in making bread, 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, but it must be understood that all cereals, including oats, barley, maize, and rice, must be used with great care. As with the second way, 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.

Oatmeal is scarce and the price has risen greatly. It is, however, to be had more freely where oats are grown, and at less than the market price. 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 a food value 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 little 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 is recommended for daily use, as flour already contains, by order, a small pro-



portion of other meals. The ordinary method of baking gives excellent loaves, as follows:—

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 gives 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.

If one person eats 4 lb. a week of this bread, just over 2 lb. of wheat flour will be used out of the allowance of 3 lb. leaving about 1 lb. for cooking, a good deal of which can be saved. If the whole of the allowance of flour is used for making this bread it will yield, with the oatmeal, 6 lb. of bread per week for each person.

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 should be used daily as porridge and oatcake, and 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 flour 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. 4 lb. of this bread a week will use 2 lb. of flour out of the allowance.

Barley flour 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, much 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 a little 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. The taste is a little more different 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.

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

## X.

### POTATO SUBSTITUTES.

When potatoes are not to be had their place must be taken by other foods, as was the case before the potato was brought to this country. Any food giving the same fuel value will do, but the balance of our accustomed diet will be interfered with least if we can use a food which, like the potato, is mainly carbohydrate. Such foods are the cereals, pulses and vegetables.

Of the cereals, passing by bread, which we must spare, and macaroni, which is also made from wheat, the most useful is barley. When barley is milled the husk is taken off first leaving the whole grain, sometimes called pot-barley. This, when ground, gives barleymeal. With further milling or rubbing off of the outer part of the grain, a medium barley is made and last pearl barley, which is only the centre part of the barley-corn. The unpearled or pot barley contains all the nutritive matter and should be preferred.

An average helping of potato is six ounces, though those living chiefly on potatoes would, of course, eat much more. Six ounces of potato, weighed raw, gives 114 calories. A little over an ounce of barley will give about the same value and more protein. With barley at 4*d.* a pound the calories are also obtained more cheaply than with potatoes at 1½*d.* a pound. Just over an ounce of rice gives the same food value; or of dried peas or beans, which supply also three times the protein.

Other vegetables have lower fuel values than the potato, and the amount of them which would be required to give 114 calories is in most cases inconveniently large. 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 1/- at the price named. per lb.	
Potato ... ..	152	<i>d.</i> 1 $\frac{3}{4}$	2,132
Artichoke ... ..	120	8	361
Parsnip ... ..	121	1 $\frac{1}{2}$	1,936
Beet ... ..	87	3	696
Carrot ... ..	79	3	636
Turnip ... ..	63	1 $\frac{1}{2}$	1,016
Greens ... ..	62	2	744
Onion ... ..	58	4 $\frac{1}{2}$	309
Rhubarb ... ..	52	1 $\frac{1}{2}$	840
Tomato ... ..	52	10	127

The artichoke, parsnip and beet are the most nourishing after the potato. Next to them come the carrot and turnip. The parsnip and turnip give the best value at the prices named. The supplies of all vegetables are short in the spring, and some are not to be had at all, others only at a high price. The least scarce are 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.

If a small quantity of potato can be had it is a good plan to serve it mashed with an equal part of parsnip or turnip.

When we are obliged to replace nourishing foods by those which are less nourishing, it is clear that every care must be taken to lose none of the food value in preparing them for the table. 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 almost prevented by boiling 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 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, by plunging them into boiling water for a couple of minutes.

\* May, 1917.



## XI.

## MEAT.

The value of meat as a food lies in the fact that it contains much digestible body-building protein. 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.

The Controller's allowance of  $2\frac{1}{2}$  lb. of meat a week gives about an ounce of protein a day. The protein in the flour ration raises this to nearly two ounces, and that in other foods will easily make up the  $3\frac{1}{2}$  to 4 ounces a day which an adult needs. With the allowance, there is no fear of protein shortage, so long as the total amount of food is sufficient.

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 1,390 calories, whilst fat bacon gives 2,708 in a pound, that is four times the food value of lean meat. Bacon, even at *1s. 8d.* a pound, gives more heat value for the money than any other kind of meat. But we need meat most for its body-building material; the energy value of the fat can be supplied in other foods. Now 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.

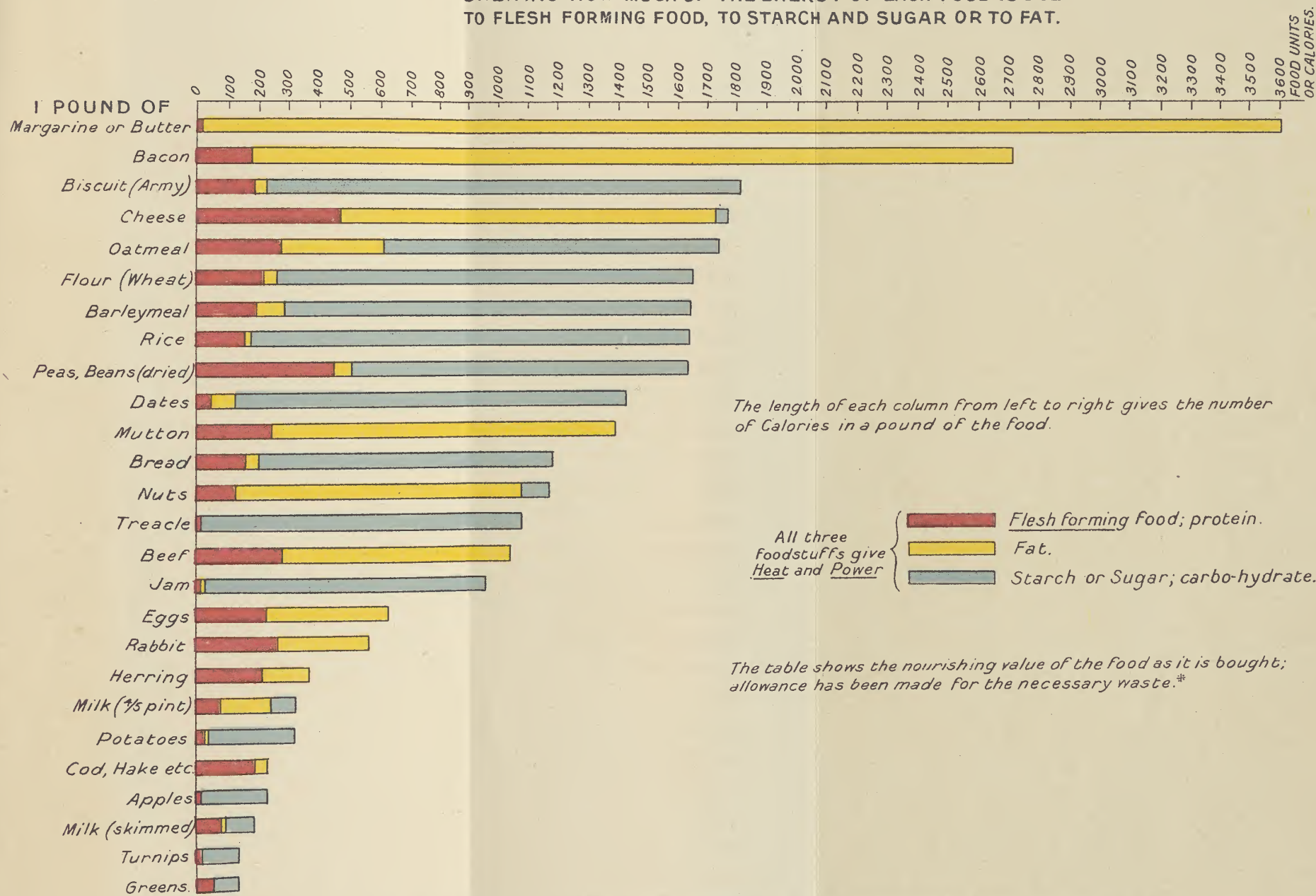
The amount of meat which can be bought for any sum of money depends partly upon how much bone must be taken with it. This varies with the condition of the animal and the way the joint is cut. Here is a list showing the quantity of meat and of bone which was obtained in a number of purchases. The price 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. per lb.	Cost of meat without bone. per lb.
	lbs.	lbs.		<i>s. d.</i>	<i>s. d.</i>
Ox tongue (with root)...	7	0	0	0 8	0 8
Ox heart ... ..	4	0	0	0 10½	0 10½
Flank of mutton ... ..	1½	$\frac{1}{4}$	17	0 11	1 1
Ox liver ... ..	11	0	0	1 2	1 2
Shin of beef ... ..	10¼	5	49	0 8	1 4
Ox tail ... ..	2½	$\frac{3}{4}$	30	1 0	1 5
Rabbit ... ..	1½-2	$\frac{1}{2}$	33-25	1 1	<i>1s. 7½d.-1s. 5d.</i>
Shoulder of mutton ... ..	5	$\frac{3}{4}$	15	1 6	1 9
Sirloin of beef ... ..	14	2¾	20	1 5	1 9
Leg of mutton ... ..	7½	1	13	1 8	1 11
Fowl ... ..	2¼-3½	$\frac{3}{4}$	33-21	1 7	<i>2s. 4d.-2s.</i>

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 small pieces are the cheapest, like the whole ox tongue with roots, the heart, the flank of mutton, and the ox liver. 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.

# A TABLE OF FOOD VALUES.

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



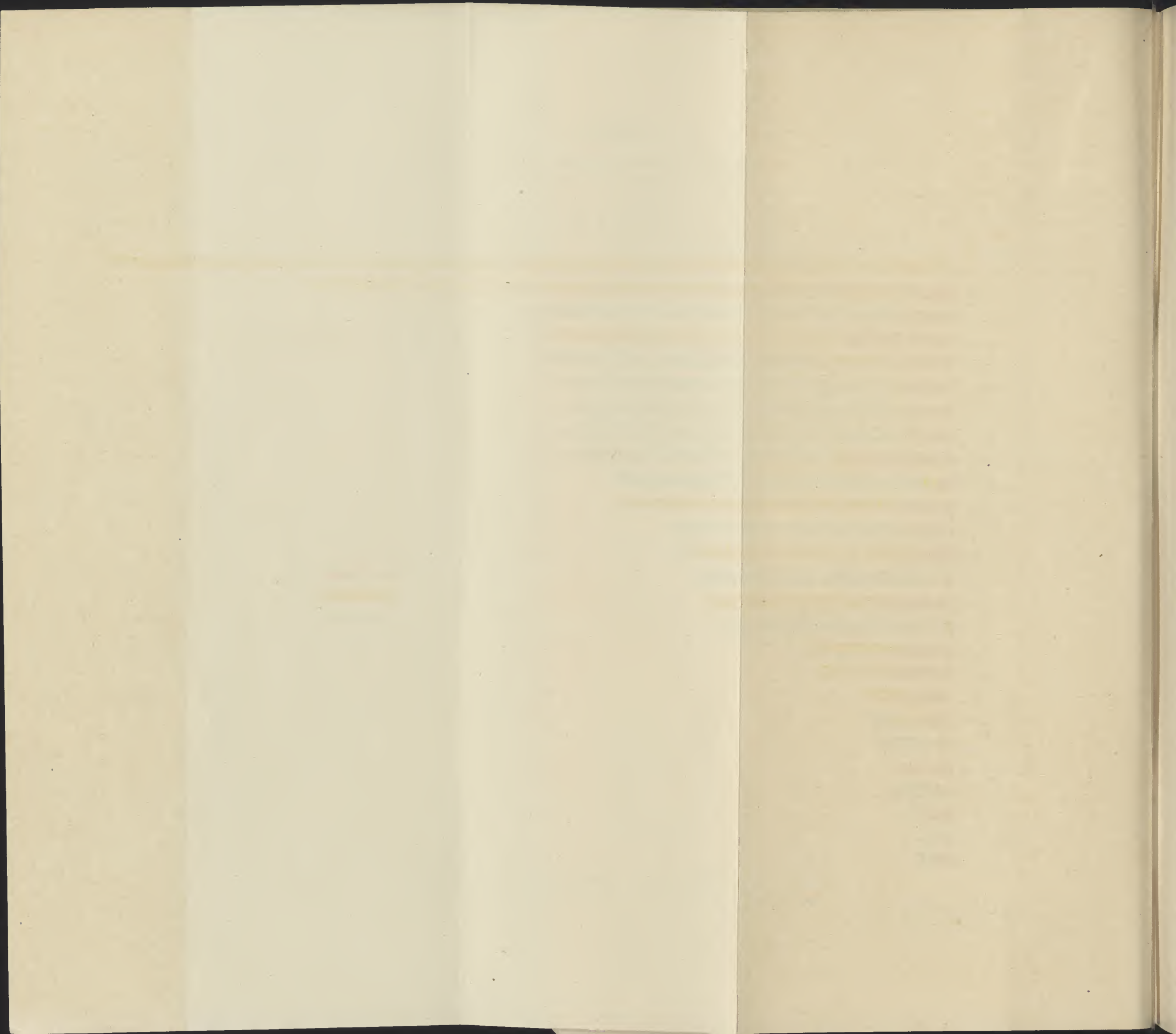
The length of each column from left to right gives the number of Calories in a pound of the food.

All three foodstuffs give Heat and 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.\*

(\* Exceptions are bacon, mutton and beef; in these no allowance is made for bone which may vary from none to a great deal. Figures showing the amount of bone in some joints will be found on p. 18. )





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 an excellent sausage roll. This is a good plan for using up material at canteens.

**Recipe.**—Take 1½ lb. (or proportionately larger quantities) of ox heart or any bits of beef, ½ lb. of odd pieces of bacon or ham, as fat as possible; 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 barley flour, and whole barley or 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.

Meat which has been kept for several weeks in cold storage is as nutritious as fresh meat. Tinned meat 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.

## XII.

### 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  $1\frac{3}{4}$  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 1s. Calories.
		<i>s. d.</i>	<i>s. d.</i>	
Sprat ... ..	0	0 3	0 3	2,640
Herring (salted) ... ..	18	0 6	0 7½	1,320
Mackerel ... ..	50	0 6	1 0	1,290
Herring (fresh) ... ..	34	0 8	1 0	990
Catfish, rock turbot or rock salmon (bought skinned and headed).	22	0 9	0 11½	753
John Dory (bought skinned and headed)	14	0 10	0 11½	678
Salmon ... ..	23	2 4	3 0½	407
Cod ... ..	49	1 1	2 1½	300
Haddock ... ..	45	0 11	1 8	365

The sprat, the herring and the mackerel 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 ration of bread, gives nearly all the protein which an adult needs in the day. A great number of salted herrings have usually been 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 running 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, failing potatoes, with rice or beans, and margarine or butter. If potatoes are to be had, take a small ring of skin off each one, place them 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 or a kipper gives the same amount of nourishment as a fresh herring, though 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.



The sprat, when it can be had, is especially economical because the whole is eaten, like whitebait.

The other fish are much dearer, when the amount of food they give and the price paid for it is taken into account. The least expensive of them is the catfish, also called rock salmon or rock turbot. Many people do not eat the catfish. 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 more costly salmon and turbot should be bought by those who can afford them. The salmon, indeed, gives better value than the 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 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.

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

**Kedgeree.**—Boil 6 oz. of rice for twenty minutes and strain thoroughly. Melt 2 oz. of margarine or dripping 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 deep 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.

### XIII.

#### 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 10d., gives 888 calories, or 89 for a penny; a pound of turnips gives only 127 calories, but the whole pound can be bought for a penny. A penny spent on barley flour



at 4d. a pound gives 410 calories. Hence barley flour is the cheapest of the three, next the turnip, and last the cheese, though it must be remembered that cheese contains more of the flesh-forming protein.

With the aid of the table on page 6, 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 2,708 calories in a pound. At 1s. 8d. per lb., that is 20 pence, a shilling will buy  $2,708 \times 12 \div 20 = 1,625$  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 at the beginning of June. 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>	
Maize meal ... ..	0 3½	5,294	Milk (per quart) ... ..	0 5½	1,773
Barley flour or meal ...	0 4	4,926	Raisins ... ..	0 11	1,676
Rice, unpolished, and rice flour ... ..	0 4½	4,349	Bacon (streaky) ... ..	1 8	1,625
Oatmeal ... ..	0 5	4,156	Salt pickled herring ... ..	0 6	1,588
Peas (dried) ... ..	0 5	3,900	Turnips ... ..	0 1	1,524
Margarine ... ..	1 0	3,566	Mutton (frozen) ... ..	0 11½	1,436
Lard ... ..	1 5	2,880	Nuts ... ..	1 0	1,165
Dripping ... ..	1 4	2,791	Cheese ... ..	1 7½	1,094
Lentils ... ..	0 7½	2,600	Beef (fat) ... ..	1 6¼	1,065
Tapioca ... ..	0 7¾	2,555	Beef (frozen) ... ..	1 0	1,039
Suet ... ..	1 4½	2,490	Rhubarb ... ..	0 1½	840
Beans (haricot) ... ..	0 8	2,438	Mutton (legs) ... ..	1 8	826
Dates ... ..	0 7	2,436	Greens ... ..	0 2	744
Skim or separated milk (per quart) ... ..	0 2¼	2,266	Herrings (fresh) ... ..	0 8	559
Potatoes (for 7 lbs.) ...	0 11¾	2,223	Rabbit ... ..	1 1	514
Parsnips ... ..	0 1½	1,936	Eggs (fresh, per dozen)	2 2¾	420
Bacon (American) ... ..	1 6	1,806	Fruit (apples) ... ..	0 8½	309
Butter ... ..	2 2	1,802	Tripe ... ..	0 11	295
Syrup ... ..	0 7¼	1,774	Salmon ... ..	2 4	283
			Haddock ... ..	0 11	211

#### XIV.

#### HOW TO MAKE UP THE CONTROLLER'S ALLOWANCE MOST CHEAPLY.

The weekly allowance of 3 lb. of flour, 2½ lb. of meat and ½ lb. of sugar gives about 1,209 calories a day, if all the meat is reckoned as butcher's meat. If two ounces of it is in the form of bacon, the calories are increased to about 1,417.

What are the best foods to use in order to make up the total value to the 2,500 or 3,000 calories which we require?

We will first enquire what is the cheapest way of making up the Food Controller's allowance.

The list on p. 22 shows that, at present prices, maize meal, barley flour or meal, rice, oatmeal, dried peas, margarine, lard, tapioca or sago, beans, skim milk, potatoes, and syrup give the best value.

With maize meal at  $3\frac{1}{2}d.$  a pound, a shilling buys 5,294 calories. A shillingworth of barley meal, at  $4d.$ , buys 4,926 calories; of rice, at  $4\frac{1}{2}d.$ , 4,349 calories; of oatmeal, at  $5d.$ , 4,156 calories. At the Scotch price of  $4\frac{1}{2}d.$ , oatmeal comes third with 4,890 calories. The rest of those named give between two and four thousand calories each, except syrup, which comes below two thousand. 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 such a calculation can be made for any change of price, as shown in the last chapter.

In estimating the cost of the following diet it is assumed that the bread is baked at home, which saves a fifth of its price, and that only the cheapest parts of meat are bought, such as ox heart, liver, or sheep's heart. As these contain no bone, some bones for soup should be bought separately. The fuel value of this meat will be a little lower than that of higher priced meat since it contains less fat.

The allowance gives for each person per day:—

						Calories.
Flour	...	...	...	...	6.9 oz. equal	710
Meat	...	...	...	...	5.7 ,, ,,	370
Sugar	...	...	...	...	1.14 ,, ,,	130
						1,210

						Calories.
We may take	oatmeal (or	barley meal)	5 oz. equal			540
Rice	...	...	1 ,,	..		102
Skim Milk	...	...	1 pint	..		212
Margarine	...	...	$1\frac{1}{4}$ oz.	..		279
Lard	...	...	$\frac{1}{3}$ ,,	..		83
Potato	...	...	6 ,,	..		114
Syrup	...	...	1 ,,	..		67
						2,607

The potato could be replaced by just over an ounce of split peas. This contains  $3\frac{1}{4}$  oz. of protein,  $2\frac{1}{2}$  of fat, and 13 of carbohydrate.

It may be distributed as follows:—

A diet of 2,600 Calories, showing how the Food Controller's allowance may be made up most cheaply at present prices.

*Breakfast.*—Porridge from oatmeal or barley meal, 2 oz.; skim milk, 10 oz.; bread, 3 oz.; margarine,  $\frac{1}{2}$  oz.; syrup,  $\frac{1}{2}$  oz.

*Dinner.*—Bread, 2 oz.; flour,  $1\frac{1}{2}$  oz. made into a pudding with some lard and 4 oz. meat; potato, 6 oz. (or boiled split peas, 1 oz.); rice, 1 oz., boiled with skim milk, 10 oz.; and sugar,  $\frac{1}{4}$  oz.

*Supper.*—Soup from bones, with bread, 2 oz.; oatcake or barley scones from oat or barley meal, 3 oz.; margarine  $\frac{3}{4}$  oz.; syrup,  $\frac{1}{2}$  oz.

Taking the ox or sheep's heart at 1s. a pound, flour at 1s. 10 $\frac{1}{4}$ d. for 7 lb., and sugar at 5 $\frac{1}{2}$ d., the cost of the diet amounts to 6s. 9d. a week.

No allowance is made for tea, cocoa, pepper, salt, yeast, or vinegar and soda, for raising the bread. There is nearly 1 oz. of sugar unapportioned which would be used for tea or cocoa or saved for cooking another day. The lard would be used for the pastry of the meat pudding and for making oatcake or barley scones.

The diet may be increased to

#### A diet of 3,000 calories,

by adding at breakfast:—oatmeal, 1 oz.; margarine  $\frac{1}{2}$  oz.; at dinner:—potato, 6 oz. (or an ounce of unpearled or pot barley); at supper:—margarine,  $\frac{1}{4}$  oz.; syrup,  $\frac{1}{2}$  oz.

With these additions the cost is 7s. 10d. a week. The diet is then, though plain, a full and nourishing one for a man doing light work. It contains 3 $\frac{1}{2}$  oz. protein and 3 $\frac{1}{2}$  oz. fat.

Those doing continuous hard muscular work, such as farm labourers and many munition workers, will need to increase this further by eating more bread and margarine.

In the following diet part of the oat or barleymeal is replaced by cheese and a little turnips or greens, with an increase in cost of 1s. 2d. a week. With turnips at 1d. a pound, a shilling buys 1,524 calories, with cheese at 1s. 7 $\frac{1}{2}$ d., a shilling buys 1,094 calories.

#### A diet of 3,000 calories, costing 1s. 2d. a week more.

*Breakfast.*—Porridge, from 2 oz. oatmeal or barleymeal; syrup,  $\frac{1}{2}$  oz.; sugar,  $\frac{1}{4}$  oz.; bread, 3 oz.; margarine, 1 oz.; skim milk, 5 oz.

*Dinner.*—Bread, 3 oz.; meat, 4 oz.; potato, 12 oz. (or 2 oz. pot barley or split peas); turnip or greens, 4 oz.; pudding as in last diet.

*Supper.*—Bread, 3 oz.; oatcake, 1 oz.; syrup, 1 oz.; cheese, 2 $\frac{1}{2}$  oz.; margarine, 1 oz.; skim milk, 5 oz. (with tea or cocoa); sugar,  $\frac{1}{2}$  oz.

This costs 9s. 0d. a week, without reckoning tea, coffee, cocoa, pepper, &c. It gives 3,014 calories, with 3 $\frac{1}{2}$  oz. of protein and of fat.

As soon as rigid economy is relaxed the cost of food increases greatly. Thus, if the bread is bought from the baker, and some herring at 8d. a lb., greens at 2d. a lb., and jam at 8d. a lb. are added, the day's food is then less plain, but the additional cost is 2s. 4d. a week.

#### A more varied, but dearer diet, of 3,000 calories.

*Breakfast.*—Porridge, from oatmeal, 2 oz.; sugar,  $\frac{1}{2}$  oz.; milk, new, 5 oz.; bread, 3 oz.; margarine, 1 oz.; jam, 1 oz.

*Dinner.*—Bread, 1 oz.; meat, 5 $\frac{1}{2}$  oz. (with bone); beans, 2 oz.; greens, 8 oz.; pudding, of flour, 1 $\frac{1}{2}$  oz.; margarine,  $\frac{1}{4}$  oz.; sugar,  $\frac{1}{4}$  oz.; and a little ground ginger.

*Supper.*—Bread, 3 oz.; herring, 8 oz.; potato, 6 oz. (or 1 oz. pot barley or split peas); cheese, 2 oz.; margarine,  $\frac{3}{4}$  oz.; oatcake, from oatmeal, 1 oz.; milk, 5 oz.; sugar,  $\frac{1}{4}$  oz.

The pudding could be flavoured with cinnamon or mixed spice instead of ginger, or with a teaspoonful of syrup, treacle, jam or marmalade, or 1 oz. of figs or dates.

This is a full diet for an active man doing light work. It contains 3,027 calories, with 4 $\frac{1}{2}$  oz. of protein and of fat. The cost is 11s. 4d. a week. Most men engaged in busy life, but doing no labouring work, will not need such large meals, and women and young children will take a great deal less.



## XV.

## HOW THE ALLOWANCE MAY BE MADE UP BY THE WELL-TO-DO AND THOSE EARNING GOOD WAGES.

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 allowance of flour, meat and sugar, continue to buy their ordinary foods, so that the dearer foods may be used as well as the cheaper. Further, we are told that it is more important to save flour and potatoes than to save meat at the present time. Hence, the well-to-do, including those earning good wages, should try to reduce the amount of flour, bread and potato which they eat, rather than to cut down further the weekly allowance of meat.

In the following example 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 fat beef with 20 per cent. of bone.

The allowance gives for each person per day.

Flour, 6·9 oz.	=	710	calories
Meat, 5·7 „	=	462	„
Sugar, 1·14 „	=	130	„

Total = 1,302 calories.

Two ounces of bread may be saved from this, which will reduce the calories to ... .. 1,154

We may take:—

Butter, 1 oz.	...	...	225	calories.
Fish, 4 oz.	...	...	56	„
Cheese, 1 oz.	...	...	111	„
1 egg	...	...	78	„
Milk, $\frac{3}{4}$ pint	...	...	300	„
Marmalade, jam, 1 oz.	...	...	59	„
Unpearled or pot barley, 1 oz.	...	...	103	„
Oatmeal, 1 $\frac{1}{2}$ oz.	...	...	162	„
Rice, $\frac{1}{2}$ oz.	...	...	51	„
Fruit, 5 oz.	...	...	90	„
Greens, 4 oz.	...	...	32	„
Carrot, onion, turnip (for stew) 2 oz.	...	...	19	„

Total ... .. 2,440 calories.

This is an average daily amount per head for a family of moderate appetite and light occupation. It contains 3 $\frac{1}{2}$  oz. of protein and over 3 oz. of fat. It may be distributed as follows:—

A diet of 2,400 calories, which includes no potato, and uses 2 oz. less bread than the Food Controller's allowance.

*Breakfast.*—1 egg; bread, 3 oz.; butter,  $\frac{1}{4}$  oz.; marmalade,  $\frac{1}{2}$  oz.; coffee; milk, 7 oz.

*Dinner.*—Meat,  $5\frac{1}{2}$  oz. (= 3 to 4 oz. cooked), stewed with carrot, onion, turnip (2 oz.) and unpearled or pot barley 1 oz.; greens, 4 oz.; bread, 1 oz.; milk pudding (as below), 5 oz.

*Tea.*—Bread, 1 oz.; oatcake (1 oz. oatmeal); butter,  $\frac{1}{2}$  oz.; jam,  $\frac{1}{2}$  oz.; tea; milk, 3 oz.

*Supper (or Lunch).*—Bread, 2 oz.; fish, 4 oz.; butter,  $\frac{1}{4}$  oz.; cheese, 1 oz.; oatcake,  $\frac{1}{2}$  oz.; stewed fruit, 5 oz.

Sugar would be used from the daily allowance for the stewed fruit, and a little for the rice pudding. The pudding is taken to contain for each person: rice, ground rice, tapioca or sago,  $\frac{1}{2}$  oz.; sugar,  $\frac{1}{10}$  oz.; milk, 5 oz. This gives 5 oz. of pudding. The unpearled or pot barley is eaten with the meat instead of potato. There is a fraction of meat to spare, but to balance this a little bacon fat may be used in making the oatcake.

If there are tall, active men in the house, the diet may be increased by adding a savoury on oatcake at dinner:—

Sardine, $\frac{1}{2}$ oz	...	...	=	30	calories.
Oatmeal, $\frac{1}{2}$ oz.	...	...	=	54	,,

and a mould at supper of:

Cornflour (maize), $\frac{1}{2}$ oz.	...	...	=	51	,,
Milk, 5 oz.	...	...	=	100	,,

This brings the total to 2,637 calories. An additional egg at breakfast (78 calories) and another ounce of butter in the day (225 calories), and doubling the oatcake at tea, gives a total of 3,086 calories.

This is enough for a household of men, unless engaged in severe labour. It contains 4 oz. protein and  $4\frac{1}{4}$  oz. of fat.

It may be distributed as follows:—

A similar diet increased to over 3,000 Calories.

*Breakfast.*—Bread, 3 oz.; butter,  $\frac{1}{2}$  oz.; marmalade,  $\frac{1}{2}$  oz.; eggs, 2; milk, 7 oz.; coffee; sugar,  $\frac{1}{2}$  oz.

*Dinner.*—Meat,  $5\frac{1}{2}$  oz. (= 3 to 4 oz. cooked); unpearled or pot barley, 1 oz.; carrots, onions, turnips, 2 oz.; greens, 4 oz.; bread, 1 oz.; milk pudding, 5 oz.; sardine on oatcake.

*Tea.*—Bread, 1 oz.; butter, 1 oz.; oatcake (oatmeal, 2 oz.); jam,  $\frac{1}{2}$  oz.; milk, 3 oz.; tea.

*Supper (or Lunch).*—Bread, 2 oz.; butter,  $\frac{1}{2}$  oz.; cheese, 1 oz.; oatcake,  $\frac{1}{2}$  oz.; fish, 4 oz.; corn flour mould; stewed fruit, 5 oz.; sugar,  $\frac{1}{2}$  oz.

## XVI.

### WEEKLY BUDGETS.

In the following Weekly Budgets the total amount of food bought each week for a family is given on three different scales of expense. These meals have actually been taken by households doing light continuous work. The amount of flour and bread, meat and sugar is within the Controller's allowance in each case. The average daily value of all the diets is about 2,500 calories for each person, with  $3\frac{1}{2}$  ounces of protein. If a family is composed entirely or mainly of tall or thin men, or men or women doing hard work, one-fifth more may be added to these figures; if entirely of women and girls, less will be needed.

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.

In the first two diets the amounts are calculated for a family of four. A simple sum will reduce them for a family of two or three, or increase them for six, eight or more. The third, more expensive, diet is for a household of eight, including children and servants.

Diet I is the plainest. The cost was about 8s. 9d. a head at present prices. For people with small appetites the cost is 7s. 6d. to 8s. per week.

**Plain diet. 4 persons. (Cost 8s. 9d. per head, per week.)**

**Purchases.**—Bread, 15 lb.; flour,  $\frac{3}{4}$  lb.; meat, 10 lb.; sugar, 2 lb.; fish,  $2\frac{1}{4}$  lb.; 7 eggs; milk,  $8\frac{1}{4}$  quarts; margarine,  $1\frac{1}{2}$  lb.; dripping,  $\frac{1}{2}$  lb.; oatmeal,  $6\frac{1}{2}$  lb.; barley, 1 lb. 2 oz.; rice, 1 lb.; tapioca,  $\frac{1}{2}$  lb.; lentils and beans,  $1\frac{1}{2}$  lb.; potatoes,  $3\frac{1}{2}$  lb.; vegetables, 1 lb.; tea, 6 oz.; syrup,  $1\frac{1}{4}$  lb.; cocoa, 2 oz.; (stock  $5\frac{1}{4}$  quarts).

**Daily fare.**—There is bread at each meal, but little or none is eaten at dinner unless there is soup or broth. **Breakfast:** Porridge, margarine, tea, sugar, milk. Tea should only be taken if supper must be late. It includes oatcake, margarine, golden syrup, tea, sugar, milk. Those taking only three meals eat these foods at dinner or supper. **Supper:** Oatcake, margarine, cocoa, milk, sugar.

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

**Sunday.**—B. Boiled eggs. D. Boiled mutton, white sauce, potatoes, treacle pudding. S. Mutton pie.

**Monday.**—D. Fish soup, boiled sausages, onions, barley. S. Potted meat.

**Tuesday.**—D. Hot pot, tapioca pudding. S. Cold mutton pie.

**Wednesday.**—D. Broth, potted meat, potatoes. S. Curried mince.

**Thursday.**—D. Broth, beefsteak pie, beans. S. Stewed mutton.

**Friday.**—D. Lentil soup, kedgeree, rice. S. Curried fish.

**Saturday.**—D. Broth, stewed liver, onions, barley. S. Cold mutton.

Potatoes were taken on two days. There was no meat on Friday. The amounts per head per week of the rationed articles of food are flour (including that in bread), 3 lb.; meat,  $2\frac{1}{2}$  lb.; sugar,  $\frac{1}{2}$  lb.

The next diet is more varied, and costs 4s. more.

**II.—Medium diet. 4 persons. (Cost 12s. 9d. per head, per week.)**

**Purchases.**—Bread, 11 lb.; flour,  $2\frac{1}{2}$  lb.; meat, 10 lb.; sugar, 2 lb.; fish,  $1\frac{1}{4}$  lb., and 10 kippers; 2 dozen eggs; milk,  $11\frac{1}{2}$  quarts; cheese,  $\frac{3}{4}$  lb.; butter, 2 lb.; suet and dripping,  $\frac{1}{2}$  lb.; oatmeal, 4 lb.; barley,  $\frac{1}{4}$  lb.; rice,  $1\frac{1}{2}$  lb.; lentils and beans,  $\frac{1}{2}$  lb.; potatoes, 3 lb.; vegetables, 4 lb.; fruit, 2 lb.; jam, jelly and marmalade, 2 lb.; syrup,  $\frac{1}{4}$  lb.; (stock, 4 quarts); tea,  $\frac{1}{2}$  lb.; cocoa, 2 oz.

**Daily fare.**—Bread at each meal. **Breakfast:** Oatcake, butter, marmalade, tea, sugar, milk. Tea (if supper is late): Oatcake or barley scones, butter, jam or jelly, tea, sugar, milk, plain cake.

**Other dishes.**

**Sunday.**—B. Bacon. D. Stuffed mutton, peas, potatoes, treacle pudding, figs, milk. S. Macaroni cheese, bread, oatcake, butter, jam.



**Monday.**—B. Poached eggs. D. Fish soup, boiled sausages, onions, barley, milk pudding, milk. S. Cold tongue, oatcake, butter, jelly.

**Tuesday.**—B. Kippers. D. Lentil soup, cod, rice, ginger pudding, milk. S. Macaroni cheese, oatcake, butter, jelly.

**Wednesday.**—B. Scrambled eggs. D. Broth, stewed beef, turnips, potatoes, custard, dates, milk. S. Curried mutton, rice, oatcake, butter, jam.

**Thursday.**—B. Fish cakes. D. Jellied beef, beetroot, potatoes, rice pudding, milk. S. Mutton cutlets, oatcake, butter, jelly.

**Friday.**—B. Boiled eggs. D. Irish stew, apple dumpling, milk. S. Kippers, oatcake, butter, jam.

**Saturday.**—B. Fried eggs. D. Broth, mince, haricot beans, sago pudding, milk. S. Beef mould, beetroot, oatcake, butter, jelly.

Potatoes were taken on three days. There was no meat on Tuesday. The rationed foods for each person came to: flour (including that in bread),  $2\frac{3}{4}$  lb.; meat,  $2\frac{1}{2}$  lb.; sugar,  $\frac{1}{2}$  lb.

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. It contains the full allowance of meat, but a pound per head less than the allowance of flour. In a house with children this can only be attained if a fair amount of oatmeal and barleymeal is bought, and the grown-ups eat as little bread as possible. 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.

### III.—More expensive diet. 8 persons. (Cost 14s. 5d. per head, per week.)

**Purchases.**—Baker's bread, 8 lb. (in addition to home-made oatmeal or barleymeal bread); flour, 10 lb.; beef, 6 lb.; chicken, 4 lb.; mutton, 8 lb.; sausage, 1 lb.; bacon, 1 lb.; suet,  $3\frac{1}{2}$  lb.; sugar, 4 lb.; salmon, 6 lb.; other fish, 5 lb.; 2 dozen eggs; milk, 14 quarts; Stilton cheese, 1 lb.; other cheese,  $\frac{3}{4}$  lb.; butter, 2 lb.; oatmeal,  $7\frac{1}{2}$  lb.; barley,  $\frac{3}{4}$  lb.; barleymeal, 4 lb.; rice, 2 lb.; flaked maize,  $\frac{1}{4}$  lb.; lentils, 2 oz.; pea-meal,  $\frac{1}{2}$  lb.; beans,  $2\frac{1}{4}$  lb.; sago,  $\frac{1}{2}$  lb.; potato, 3 lb.; parsnips, 2 lb.; greens, 2 lb.; salad; turnips, 3 lb.; onions, 1 lb.; jam,  $\frac{1}{2}$  lb.; honey, 2 oz.; syrup, 2 lb.; tea,  $\frac{3}{4}$  lb.; coffee,  $\frac{1}{2}$  lb.; biscuits, 2 oz.; cocoa, 2 oz.; tinned and dried fruits, 4 lb.; oranges, 3 lb.

**Daily fare.**—Oatcake or barleymeal bread ( $\frac{1}{4}$  meal,  $\frac{3}{4}$  national flour) and baker's bread are used at each meal. At breakfast, porridge, syrup, milk and cream, tea or coffee, sugar, and butter are served. 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. Oatcake, sausages. D. Fish soup, chicken, salad, potatoes, barleymeal pancakes (with orange and sugar). T. Butter, barley scones, jam, gingerbread, plain cake. S. Rice mould, peaches, Stilton cheese, butter, oatcake.

**Monday.**—B. Potted meat. D. Soup, sirloin, beans, brussels sprouts, Yorkshire pudding, cheese, biscuits. T. Butter, barley scones, ginger bread. S. Soup, fish pie, butter, cheese.

Tuesday.—B. Eggs. D. Fish soup, cold beef, turnips, barley, fig pudding. T. Butter, rice cake, jam. S. Blanc-mange, stewed apples, butter, cheese.

Wednesday.—B. Beef mould, oatcake. D. Soup, fish, boiled rice, parsnips, spice pudding. T. Butter, gingerbread. S. Poached eggs on toast, chocolate blanc-mange, Stilton cheese, butter.

Thursday.—B. Bacon, honey. D. Cold beef, potato and turnip mixed, milk pudding, apple sago. T. Butter, gingerbread. S. Boiled eggs, milk pudding, butter.

Friday.—B. Fried haddock, eggs, honey. D. Salmon, butter sauce, rice, treacle pudding, milk and sago pudding. T. Butter, jam, buns. S. Blanc-mange, cheese, butter.

Saturday.—B. Eggs. D. Soup, mutton, beans, rice pudding, stewed figs. T. Butter, barleymeal scones. S. Beef mould, preserved fruits, cream, butter, cheese.

Potatoes were eaten on Sunday, also a little, mashed with turnips, on Thursday. There was no meat on Friday. The meat for the week came to 2½ lb.; sugar, ½ lb.; and flour, or its equivalent in bread, 2 lb. for each person.

## XVII.

### 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.

The food which small children eat is less than the Controller's allowance. It is when the child grows older and is running about that the quantity it needs is important from the rationing point of view. 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 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 allowance 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 be taught to 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.

**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 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, raisins, currants, ginger, spice, cabinet, college, castle, date, fig, roly with jam, treacle or syrup; fruit puddings, pancakes (half flour and half barley flour or meal) 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, barley scones, rice cakes, gingerbread made with oatmeal, syrup, jam, sandwiches of cress, tomato, lettuce, radish; green and fruit salads; stewed fruit.

There is difficulty in keeping the flour and bread eaten by older children within the ration of 3 lb. of flour a week. The allowance is an average one, and is not intended to deprive children of the food needed for their proper growth. In many cases parents, if their occupation be not laborious, will be able to take less bread themselves and leave more for the children. If bread can be made at home and barley flour or meal, oatmeal, or maize are obtainable, the mixtures of these with national flour, described on pages 14 to 16, will help out the flour and give a larger amount of wholesome and nourishing bread. Such cereals must also be used freely for puddings so far as they can be had and means allow. In those schools and institutions which, owing to the raised price of substitutes, cannot keep strictly to the bread and flour ration, it is hoped that at least a pound of flour less will be used for each child in the week than was formerly consumed. In some schools the diet contained too much starchy food, such as bread, and in these an increase of the protein foods, such as meat, fish, cheese and beans, and of fats 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 25, 27 and 28.

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, though it must be remembered that there are always a few boys and girls in a school who, though healthy, lose a little weight in the term because they take more exercise than they do at home.

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.

## XVIII.

### 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 (after soaking all night).	3-4 hours.
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 the 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 the 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 the box.

## XIX.

## COMPOSITION OF FOODS.

*The figures refer to foods as bought, all necessary waste being allowed for except the bones in butcher's meat.*

Food.	Protein.	Fat.	Carbo- hydrate.	Calories per lb.	Calories per oz.
<b>CEREALS :</b>					
Wheat flour ... ..	11	1	75	1,651	103
Bread ... ..	8	1	52	1,176	74
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 ... ..	7	4	66	1,544	97
Rye ... ..	12	1	72	1,625	102
Macaroni ... ..	13	1	74	1,665	104
Tapioca ... ..	—	—	88	1,650	103
Sago ... ..	9	—	78	1,635	102
Cornflour (maize) ... ..	7	1	78	1,645	103
Arrowroot ... ..	—	—	97	1,815	113
<b>MEAT :</b>					
Beef (fat) ... ..	17	31	—	1,620	101
Beef (medium fat) ... ..	15	18	—	1,038	65
Beef (tinned) ... ..	26	19	—	1,280	80
Liver ... ..	20	5	—	585	37
Tripe ... ..	12	1	—	270	17
Mutton ... ..	13	27	—	1,390	87
Lamb ... ..	15	19	—	1,080	68
Bacon ... ..	10	60	—	2,708	169
Ham ... ..	14	33	—	1,662	104
Pork ... ..	10	40	—	1,873	117
Sausage ... ..	13	44	—	2,130	133
Suet ... ..	5	82	—	3,425	214
Dripping ... ..	—	99	—	4,186	262
Lard ... ..	2	94	—	4,008	250
<b>POULTRY, RABBITS :</b>					
Fowl ... ..	15	10	—	701	44
Eggs ... ..	12	9	—	624	39
Rabbits ... ..	14	7	—	557	35
<b>FISH :</b>					
Cod, hake, &c. ... ..	10	1	—	228	14
Herring ... ..	11	4	—	373	23
Salmon ... ..	15	9	—	660	41
Tinned and salted fish ... ..	20	10	—	794	50
Tinned salmon ... ..	19	7	—	679	42
Sardines ... ..	24	12	—	952	59
<b>DAIRY PRODUCE :</b>					
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



Food.	Protein.	Fat.	Carbo- hydrate.	Calories per lb.	Calories per oz.
VEGETABLES :					
Beans, peas and lentils (dried) ...	24	1	60	1,625	102
Beans (in pods) ...	5	—	15	371	23
Potato ...	2	—	15	311	19
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
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