THE NATION'S LARDER IN WARTIME

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FOOD IN RELATION TO HEALTH IN GREAT BRITAIN

THE HISTORICAL BACKGROUND

BY

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I have chosen to speak to-day about some of the changes which have occurred during the past two hundred years in the character of our national diet. In 1740 food was plentiful and cheap, and there is little cause to doubt that the person in humble circumstances, in both country and town, got ample and mostly good food. There had, it is true, been other times when food was cheap, but there had not then been the variety of food that was available at low cost to the poor in the middle of the eighteenth century. For hundreds of years the people of our country had been living, year in and year out, in the shadow of scurvy. Vegetables and fruits seldom came the way of the poor man. But garden vegetables and orchard fruit as we know them were brought to England by the Dutch gardeners who came over in the seventeenth century, and at the opening of the period we are reviewing garden vegetables were being produced in the small plots of the villagers, and many market gardens were springing up around the rapidly growing towns. It was at this period that the potato—not the sweet potato brought back by Hawkins in 1564, which soon lost its popularity, but *Solanum tuberosum* which we eat every day—became a staple article of diet in the north and west, and was being grown and rapidly becoming popular in the south.

A Working Man's Diet in the Eighteenth Century

The beginning of our period of two centuries saw the first clear signs of the wave of industrialization which was to sweep the country with ever-increasing force, but its effects were scarcely noticeable in 1740 so far as the diet of the mass of the people was concerned. In the north there were large supplies of dairy produce, and the ordinary person lived largely on milk, vegetables, potatoes, and oatmeal. In the south less milk was drunk, meat was more popular, and bread was wheaten.

I have taken the record of a labourer's family in the North of England in 1737. For his wife, two children, and himself he purchased over half a hundredweight of potatoes, fifteen quarts of milk, and nearly half a pound of butter a week. Meat seldom came their way. From the records of these purchases we can calculate what quantity of certain nutrients this family obtained. In the table which follows I direct attention to certain vitamins and mineral salts, because there will be nothing wrong with our wartime, or peacetime, diets if we have primary regard to these essential constituents.

On such a diet our eighteenth century labourer and his wife and children were excellently nourished. If more obvious proof of this assertion is wanted it is necessary only to look at the physique of those peasant

peoples throughout the world whose daily diets are based on these types of food. South-Eastern Europe provides many striking examples. Little meat is eaten, but the

	18th Century Working Man's Diet in North of England	Estimated Requirement of Adult
Calcium	1.2	1.0
Iron (mg.)	23	15
Vitamin A (units)	6,600	5,000
Vitamin B (units)	1,300	500-700
Vitamin C (mg.)	110	75-100

staple diet is a coarse whole-grain bread, thick vegetable stews, and goat's-milk cheese. These people are strong and hardy, their children are rosy-cheeked, sturdy, and with firm teeth.

It can be accepted that this primitive peasant type of diet will provide all the nourishment we require, both in childhood and maturity.

Fashion and Sophistication in Diet

A change in social conditions rapidly obliged the labouring people of England to adopt a less healthful diet than they had enjoyed in the first half of the eighteenth century. The accession of George III (1760) coincided with the opening of a sad chapter in social history. A series of fine seasons and good harvests gave place to a long succession of bad summers and spoilt crops. This was particularly unfortunate at a time when there was a rapid growth of town population, as the misery caused by high prices and scarcity was accentuated. Agriculture thrived, however, as a result of the scarcity, and it is at this period that the confiscation of the common lands, and even the tiny plots of the cottagers, which was legalized by the terrible Enclosure Acts, proceeded apace. The enclosure brought much land under a more efficient cultivation, but against this there has to be set the tragedy of the final dissolution of the simple village economy which had been the backbone of our social life for centuries. Agriculture became an industry, interested less in local requirements and more in the demands of the large and often distant towns.

The country people, flocking to the towns, tempted by the wages which industry was offering or because they could no longer support themselves in their village homes, soon acquired a craving for what they regarded as the higher standard of living of the townsfolk. For centuries the poor of the countryside had envied the rich man his table of red meats and his fine white wheaten bread. With the desire to eat more meat there grew something of the contempt which the rich man had always shown for the simple fare of the countryman.

Wheaten flour was prepared in the eighteenth century by grinding the grain in the type of stone mill which had been in use since time immemorial. In this process the berry was crushed between the millstones in such a manner that all parts—the floury endosperm, the tiny yellow germ, and the dark-coloured outer coats—were reduced to a fine powder—strictly speaking, the only genuine wholemeal flour, containing every bit of grain. It is greyish in colour because it contains the dark particles of bran, most of which are slightly larger than the particles of flour or broken-up germ. When this flour was sifted, or “bolted,” as millers term it, through fabric,

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grades of flour were obtained which, depending on the mesh of the material, varied in colour from a very pale cream to one little less dark than that of the original flour.

The Colour of Bread

The former flour was what England had known for centuries as the finest wheaten flour. From it was baked the famous manchet of Tudor times, which was a "white bread" in that its colour was a pale cream or slightly "off" white. It was this quality of bread that the artisans of the growing towns craved for, and before the nineteenth century was out they had suffered terribly for their pride. When grain was short and much poor-quality flour was on the market in the hard times late in the century, unscrupulous millers and bakers did not hesitate to resort to all kinds of practices in order to try to improve its colour. Enormous quantities of alum were employed to enable the baker to produce a better-looking loaf than he otherwise could have done with the poor-quality flour at his disposal.

Apart from this, however, we must remember that those who could get unsophisticated wheaten flour were obtaining a nutritious food, differing markedly in character from the flour we buy to-day. The latter is made by crushing the grain between a series of rollers instead of grinding it between rotating stones. In roller crushing the little germ is flattened into a tiny disc and does not become pulverized as does the mass of starchy material forming the greater part of the grain. The germ is, therefore, held back when the crushed grain is sieved, and the flour is that much the poorer.

[Professor Drummond here described in more detail the process of the roller mill and what was meant by given percentages of "extraction" flour.]

The differing character of the "white" flour yielded by the stone mill and by the roller mill which rapidly ousted the former in the 'eighties of the last century is shown in the following table:

	Stone-ground "White" Flour	"Straight run" Roller-mill Bleached White Flour
Extraction.. ..	81%	72%
Protein	11.2%	10.7%
Fat	1.2%	0.7%
Carbohydrate	67.0%	80%
Calcium mg. per 100 g. ..	50	22
Iron mg. per 100 g. ..	4	1
Vitamin A (units per 100 g.) ..	200	0
Vitamin B ₁ (units per 100 g.) ..	150	22
Calories per 100 g. ..	370	370

In respect of the major constituents—protein, fat, and carbohydrates—the differences are negligible. This is also reflected in the equivalent calorific value of the two types of flour. It was because of this that the new white flour seemed every bit as satisfying as had been the stone-ground flour of earlier times, and there is no doubt that it attracted the public enormously.

The Desire for Cheap Meat

Another consequence of industrialization was the growth of the desire of the town populations for cheap meat. Home production was able for a time to supply demand, but presently shortage caused rising prices and scarcity in town markets. One or two epidemics of cattle disease made the position worse, and in 1865 a visitation of the severity of a plague wiped out a large proportion of the livestock in certain areas. The high price of meat was the chief cause of the rapid development of canning in countries such as Australia and South America. This relatively cheap meat was already making an impression

on the English markets as early as 1850. It was rather poor stuff, judged by modern standards—coarse-textured, badly packed, and not infrequently imperfectly sterilized. In consequence of faulty preparation much of it putrefied on keeping. There was a big outcry at the revelations of a Government inquiry in 1852, which investigated extensive loss of Admiralty stores of canned meat owing to decomposition on storage. The bad reputation which canned meat acquired in those early days of the industry made a very deep impression on the public mind, and I believe it is at root responsible for the fallacy, once widely believed but now wholly discredited, that canned meats are peculiarly prone to cause food-poisoning.

Another new food habit which grew as industrialization spread was tea drinking. The most popular drink of the townsman at the opening of the period we are discussing was undoubtedly gin, or what was sold as gin, the large proportion of it rank poison. The evil was finally checked not as a result of legislation or advice from well-meaning individuals but because the rising price of grain soon made it impossible for the wretches who produced the dreadful stuff to make it at prices the poor could pay. The rise in the price of gin coincided with a surprising drop in the price of tea and a relative cheapening of sugar, and before long the habit of tea drinking was widespread all over the country.

Late in the nineteenth century cheap butter substitutes were introduced. The first were crude imitations of natural butter, but they were at least made almost wholly from animal fats and had a vitamin content little below that of butter. With the introduction of the cheaper vegetable oils as raw materials for margarine manufacture the poorer people were buying a butter substitute which had no vitamin value whatever. Twenty years passed before the seriousness of that fact was recognized, and nearly forty before action was taken to ensure that all margarine should be the equivalent of a summer butter.

Victorian Regression

Throughout the Victorian era the nutritive value of the diet of the labouring classes steadily declined. Bread they ate in plenty, meat whenever they could afford it, and vegetables, other than potatoes, in quite insufficient amounts, while the consumption of milk steadily declined from the fairly high levels that seem to have existed in the first half of the eighteenth century. The switch-over to roller-milled flour in the 'eighties made a big difference to the nutritive value of the poor man's diet. I have records of a typical London working-class family in 1871. They ate large quantities of bread, a good deal of cheese, few vegetables other than potatoes, whilst suet puddings, meat pies, and stews figure often in the list. I have analysed the daily diet of one of this family, and it is instructive to see how the nutritive value of the diet would have been reduced had they continued to live on similar meals after their flour (some ten years later) had changed from stone-ground to roller-milled:

Amounts per Day	Estimated Need of Adult	1871 Diet	Same Diet after Introduction of Roller-milled Flour
Calcium g.	1.0	0.7	0.5
Iron mg.	15	21	9
Vitamin A units	5,000	2,200	280
Vitamin B ₁ units	500-700	1,050	320

I have elsewhere ventured the opinion that at the close of the nineteenth century, when we were displaying to the world at Queen Victoria's Jubilee the might of our Empire, the nutritional condition of our working people

was probably worse than it had been since the great dearths and famines of Tudor and mediaeval times.¹

Since then, thanks in part to the steady rise in the standard of living and also in part to the rapid advance of knowledge which research work has produced, conditions have improved with encouraging rapidity. To-day we feel reasonably certain that we know what are the important constituents of our diets and how much of them we should eat to build up our bodies when we are young and keep them in good working condition when we have reached maturity.

Rising Standards

As a result of learning what foods are good for them, and also because the standard of living has been rising since the last war, the people of this country have increased their consumption of fruit by 88 per cent., of vegetables other than potatoes by 64 per cent., and the drinking of milk by about 50 per cent. since 1913. This must mean that they have been eating less of other foods, because the average individual subconsciously adjusts his or her meals to physiological requirements. The constancy of most of our weights tells us how well balanced that adjustment has been. The proportion of people who habitually overeat is not large. If it were we should more closely resemble our Georgian forefathers, whose large bellies and paunches are so obvious a feature of the eighteenth century prints.

A rise in the consumption of dairy produce, fruit, and vegetables means that the consumption of bread falls. The reverse is also true: when prices rise so as to place the more expensive foods beyond the reach of the poorer people the change is usually reflected in increased purchases of bread. In this sense bread is the food of poverty. I do not feel that the position of bread as an article of diet in our country will have become satisfactory until we recognize, and the millers and bakers also recognize, that it fulfils two quite distinct functions. From one point of view we must regard it as an essential food of every-day life, and, from the other, as a pleasant accompaniment of our meals. One calls for a healthful food which shall nourish the people and play a part in protecting against illness, and the other visualizes all the attractive types of bread and rolls we know so well.

[Professor Drummond illustrated his point by a reference to the "Oslo breakfast," or, in London, the "health dinner," an essential part of which was wholemeal bread. When the main part of the meal was finished the child could, if it was still hungry, eat as much bread and margarine as it wished and could choose between white and wholemeal bread.]

I believe the time is coming when two types of bread will be on sale in every baker's shop. One will be baked from 80 to 85 per cent. extraction flour, or even perhaps wholemeal, the other from the ordinary white flour we have to-day. People will buy some of each, eating the one as a health-giving food, and the other when they feel they want a change. But if this is to happen we must get rid of the extraordinary idea that brown breads and wholemeal breads are luxuries for which a higher price can be charged. That is just nonsense.

The Nutritional Front

My thesis has one main argument: Ensure a basic intake of essential protective foods for the population, and after that one need have few cares as to what is

eaten. Our enemies are fully aware of the importance of this principle. Their nutrition experts have played a big part in making plans for this war. If Germany is able to maintain supplies her resistance will not be broken on the nutritional front, as it was in the last struggle. Her scientists will see to that. The present German rations are based on the simple but sound principle that a "peasant diet" of "high extraction," or wholemeal bread, plenty of vegetables and potatoes, and some dairy produce in the form of cheese or separated milk, provides all the essentials of sound nutrition. We can profitably compare the nutrients such a diet provides with those we looked at earlier in this talk and also those which pre-war studies revealed as often characteristic of the diets of the poorer population:

	Estimate of Require- ments of Adult	1939-40 German Diet	18th Cen- tury Lab- ourer's Diet*	Orr's Mean Values for Families Spend- ing less than 8s. per Head on Food, 1936
Calcium g.	1.0	0.6-0.7	1.2	0.5
Iron mg.	16	17-32	23	9.6
Vitamin A units	5,000	2,300-2,700	6,600	1,220
Vitamin B ₁ units	500-700	580-940	1,300	350
Vitamin C mg.	75	55	110	55

*The range covers actual rations allotted to adults engaged in sedentary work to those for heavy workers. The figures also take into account a likely consumption of certain unrationed foods.

The German public is not at the moment getting so good a diet because potatoes and vegetables are in very short supply owing to the severity of the last winter, but the figures are instructive in showing how a supply of "high extraction" bread gives even the poorest people valuable protection against those deficiencies which characterize many ordinary working-class diets—namely, of calcium, iron, and vitamin B₁.

I for one am hoping that this war will give us a great opportunity for establishing in the minds of our people the importance of these principles. The Ministry of Food, the Board of Education, and many other bodies are now engaged in a big drive to spread the knowledge about the right foods and the right way to use them. If this campaign has the effect I believe it will have we shall soon reach the goal so dear to many of us—that is, when the poorest parents in the country will be as certain that their children get the foods required for health and strength as they are to-day that education will be provided.

Considerable improvement in the standard of medical education in the Presidency of Bengal is recorded in the last triennial report on the working of hospitals and dispensaries in the Presidency by Major-General P. S. Mills, I.M.S., Surgeon General with the Government of Bengal. There are nine medical schools in the Presidency—six Government and three private schools—in which training is given up to the standard of the final licentiate examination of the State Medical Faculty of Bengal, while medical education up to the standard of the M.B. degree of the University of Calcutta and the M.M.F. diploma of the State medical faculty of Bengal was provided as usual by the Calcutta Medical College and the Carmichael Medical College in Belgachia. In the Bengal medical schools, taken as a whole, there were 8,820 medical students under training during the three years, of whom 1,114 qualified. Some of the Government medical schools are reported as still being inadequately provided with accommodation and materials for medical training, and plans for improving them up to the requirements of the Bengal Council of Medical Registration have been energetically instituted. The medical qualifications obtained at the two medical colleges under the University of Calcutta were again recognized by the General Medical Council of Great Britain with effect from October, 1936, after a lapse of over six years.

¹ *The Englishman's Food*. By J. C. Drummond and Anne Wilbraham. 1939. Jonathan Cape.