

Nutritional Pattern of the Diet on the Eve of Decontrol

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Comparison with American and British prewar diets

It is more practical to think of the pattern of a diet in terms of food than of nutrients. For the purposes of the present paper the nutritional pattern of the diet has, therefore, been based on the familiar advice given by Sherman in his text books (cf. Sherman & Lanford, 1943; Sherman, 1946), and attributed by him to Gillett* in the early thirties, on the allocation of food expenditure between five groups of foods. The groups chosen for their nutritional properties were vegetables and fruit; milk and cheese; meats, fish and eggs; bread and cereals; and fats, sugar, other groceries and other food adjuncts. Gillett recommended that roughly one-fifth of total food expenditure of American city families should be allocated to each of these groups, the aim being to devise a diet more economical than the American average. The proportions must depend at any time and place on relative prices and the existence of such special schemes as cheap and free milk for mothers, infants and schoolchildren. Thus, these prewar American recommendations do not necessarily have any relevance to either prewar or postwar British practice. It is, however, instructive to compare British expenditure patterns with Gillett's recommendations.

The patterns of food expenditure on the five food groups in 1936-7 (Crawford & Broadley, 1938) and in 1952 (Ministry of Food: National Food Survey Committee, 1954) are compared in Table 1.

Table 1. *Patterns of domestic expenditure on food 1936-7 and 1952*

Food	Expenditure			
	1936-7		1952	
	/head /week (d.)	As percentage of total	/head /week (d.)	As percentage of total
Vegetables and fruit	15.1	14	45.4	18
Milk and cheese	12.8	12	31.7	13
Meat, fish and eggs	38.5	36	83.9	34
Bread and other cereals	14.5	14	46.4	19
Fats, sugar, other groceries and other food adjuncts	25.6	24	40.2	16
Total	106.5 (8s. 10½d.)	100	247.6 (20s. 8d.)	100

* At that time Director of the Nutrition Bureau of the Association for Improving the Conditions of the Poor in New York City, and subsequently Director of the Nutrition Service of the Community Service Society of the same city.

Two points must be made about the comparison. The first, that the 1936-7 proportion of expenditure on vegetables and fruit is low compared with that in 1952 partly on account of the seasonal nature of the earlier records. The second, that in 1952 the actual consumption of liquid milk was relatively higher than expenditure when welfare and school milk were taken into account.

The prewar pattern of British food expenditure was unlike the American recommendation with its greater emphasis on meat, fish and eggs and fats, sugar, at the expense of the so-called 'protective foods'—fruits and vegetables, and milk and cheese. The 1952 pattern was, on the other hand, more nearly similar as regards expenditure on vegetables and fruit and on bread and cereals. The proportion spent on milk and cheese was smaller than that recommended, but this must be interpreted in the light of the policy of fortifying flour with calcium carbonate as well as of the milk schemes. The most marked diversion from the American 'fifths' was the proportion spent on meats, fish and eggs which, at about a third of the total, was only slightly less than the prewar proportion. The British 1952 pattern divides approximately into thirds, i.e. one-third on vegetables, fruit, milk and cheese (the 'protective' group of McCollum); one-third on meats, fish and eggs; and one-third on bread and cereals, fats, sugar and other groceries (the foods providing most of the energy in the diet).

The 1952 pattern

Two further points should be made about the 1952 pattern. The first is that, in comparison with nutritional allowances recommended by the British Medical Association: Committee on Nutrition (1950), the average diet was adequate in all respects. The second is that the pattern represented an allocation of expenditure still restrained by rationing which had been in force for 13 years: thus, no permanent

Table 2. *Pattern of domestic expenditure by class, 1952*

	Expenditure							
	Class A		Class B		Class C		Old-age pensioner households	
	/head /week (d.)	As percent-age of total	/head /week (d.)	As percent-age of total	/head /week (d.)	As percent-age of total	/head /week (d.)	As percent-age of total
Food								
Vegetables and fruit	58.4	20.4	50.0	19.6	42.4	17.7	31.1	14.0
Milk and cheese	37.0	12.9	31.9	12.5	30.0	12.5	34.7	15.7
Meats, fish and eggs	96.2	33.5	85.3	33.5	81.5	34.0	74.0	33.5
Bread and other cereals	47.6	16.6	47.0	18.5	46.9	19.6	40.1	18.2
Fats, sugar, other groceries and other food adjuncts	47.6	16.6	40.4	15.9	38.9	16.2	41.2	18.6
Total	286.8	100.0	254.6	100.0	239.7	100.0	221.1	100.0
Proportion of total households	8.4%		26.8%		40.0%		7.3%	

Class A, income of head of household £650 and over; class B, £400-£649; class C, £225-£399.

conclusions about the pattern of expenditure under conditions of freedom are yet possible.

National Food Survey records have shown a remarkable nutritional uniformity in different social classes, industrial or occupational groups and geographical regions. As an illustration of the uniformity of pattern in different classes Table 2 gives the division of the 1952 data for certain classes determined according to the income of the head of the household (see Ministry of Food: National Food Survey Committee, 1954). All groups spent about one-third of their food budget on meats, fish and eggs. The patterns for classes A and B fitted the 'thirds' almost exactly, and class C and the old-age pensioner households spent about 30% on vegetables, fruit, milk and cheese, and 36-37% on the 'energy' group. Old-age pensioner households did, however, spend relatively more on milk and cheese than on vegetables and fruit.

The pattern of the diet may also be examined in relation to the contributions of these food groups to the nutrient totals. Table 3 shows their contributions to energy value, protein, calcium and iron totals for all households for 1952 (Ministry of Food: National Food Survey Committee, 1954).

Table 3. *Daily contributions of five groups of food to total energy value, protein, calcium and iron for all households, 1952*

Food group	Energy value		Protein		Calcium		Iron	
	Cal.	As percent- age of total	g	As percent- age of total	mg	As percent- age of total	mg	As percent- age of total
Vegetables and fruit	258	11	7	9	84	8	2.9	22
Milk and cheese	301	12	16	21	563	54	0.5	4
Meat, fish and eggs	357	14	21	27	23	2	3.7	29
Bread and other cereals	970	40	30	39	331	32	5.1	39
Fat, sugar, other groceries and other food adjuncts	561	23	3	4	42	4	0.8	6
Total	2447	100	77	100	1043	100	13.0	100

It will be seen that the proportions shown for nutrients were very different from those for expenditure. Protein and iron were nearest to the expenditure pattern, though for each the 'energy' group provided over 40% of the total. Indeed, bread and cereals alone supplied roughly 40% of the total energy, protein and iron, and cost just under 20% of the total. The energy and calcium patterns were far from the 'thirds'. Two-thirds of the energy value was derived from the 'energy' group which cost just over one-third of the total, and nearly two-thirds of the calcium came from the 'protective' group which cost just under one-third of the total.

Nutrient range between classes

The wide differences in nutrient intake shown in the diets of the various income groups before the war as revealed by the surveys of Orr (1936) and Crawford &

Broadley (1938) are well known. Data are not available on which to recalculate the prewar nutrient figures into terms comparable with present results. Thus, we are only able to compare class differences by studying the ranges between classes. When the nutrient range between the lowest and highest income groups expressed as a percentage of the average for all groups is compared, for prewar and recent years, a considerable decrease in class gradient is evident. This is shown strikingly in Table 4, which gives the class ranges for the different nutrients for 1936-7 and for the equivalent period of 1950. The reductions are marked for all nutrients, and particularly so for thiamine and calcium, features which are largely associated with the

Table 4. *Comparison of nutrient range between lowest and highest income groups, expressed as a percentage of the average for all groups, in 1936-7 and 1950*

	October 1936-March 1937	1st and 4th quarters 1950
Energy value	40	11
Protein	44	13
Calcium	88	20
Iron	47	18
Vitamin A	81	34
Thiamine	71	9
Vitamin C	113	42

improved nutrient content of postwar bread and flour and, for calcium, with the increased consumption of milk.

Consideration of different foods

In turning to a more detailed consideration of individual foods, four groups have been selected in which there were no rationing restraints at the time of the 1952 survey. These are milk, bread and flour, vegetables and fruits, and fish.

Milk was freely available after January 1950; the composition, but not the consumption, of bread and flour was controlled; supplies of vegetables have not been controlled since potatoes were freed from rationing in April 1948; since the cessation of the distribution scheme for oranges in May 1950 and of the restriction on banana sales in April 1951, fruit has been plentifully available; supplies of fish have never been directly controlled to consumers. Thus, the consumption data presented may give some indication of the preference of the type of families studied for these particular foods.

Milk. Trends in milk consumption up to 1950 have already been reported to this Society (Hollingsworth, 1951): whereas the average consumption of liquid milk had by 1949 increased by about 50% compared with prewar, that of class C, the main group of the working class, had nearly doubled and that of class D had trebled. Since 1949 class improvements of this order have been maintained. In 1952, class A actually consumed 6.2 pt. of liquid and processed milk per head per week compared with 5.3 pt. in class B, 4.9 pt. in class C, 4.7 pt. in class D and 5.1 pt. for all households (Ministry of Food: National Food Survey Committee, 1954). The equivalent figures for prewar were 5.2, 4.5, 2.9, 2.1 and 3.2 pt.

If milk consumption is examined according to size rather than class of household it is found that milk consumption per head decreases with increasing numbers of children and adolescents. For any year from 1950 onwards, when a national sample was introduced, milk consumption by these types of household has followed a similar pattern. In 1952, for instance, households containing no child or one child under 14 consumed about 5.8 pt./head/week; those with two children 5.4 pt.; those with three children 5.1 pt.; those with four or more children 4.7 pt.; and those with children and adolescents (aged 14–20 inclusive) 4.5 pt. (Ministry of Food: National Food Survey Committee, 1954). Variations in milk consumption are one of the keys to the differences found in the nutritional composition of the diet in households containing different numbers of young dependents (Brown, 1955; Gibson, Readman & Warnock, 1955). The larger households are those whose diets tend to be short of protein and calcium, and to be border-line in respect of riboflavin. Fresh and processed milks supplied over 50% of calcium, over 40% of riboflavin and about 20% of protein in the diets of households with various numbers of children, compared with 44%, 37%, and 16% respectively in those of households with children and adolescents. An increase in milk consumption in these latter households seems particularly desirable.

School milk is included in all estimates given. There is no evidence that uptake varies with class, but it appears to fall off as the age of the child increases. In 1952, for children aged 5–13 the average number of milk issues taken per child at school per day was 0.82; for children aged 14, 0.63; and for children aged 15 and over, 0.54 (Ministry of Food: National Food Survey Committee, 1954). This confirms the need for encouraging the older children, as well as adolescents, to drink more milk.

Bread and flour. When flour was controlled at 80% extraction, bread and flour provided in the average diet 30% of energy value, 32% of protein, 28% of calcium and iron, 35% of thiamine and 29% of nicotinic acid. Owing to the differences in consumption in the various classes and family groups, bread and flour are not of the same nutritional importance for all types of household. They are more important for class C and the old-age pensioner households than for class A, providing between 30 and 40% of the nutrients mentioned in the two former classes compared with between 20 and 30% in class A. They are also important in the diets of the larger families particularly those containing adolescents. The highest contributions, 33% of total energy value, 37% of protein, 32% of calcium, 30% of iron, 38% of thiamine, and 32% of nicotinic acid occurred in households with adolescents and children (Ministry of Food: National Food Survey Committee, 1954).

Fruits and vegetables. The distribution of vitamin C, unlike that of the nutrients provided by bread and milk, shows marked class and family-type differences (Table 5). In particular class A and, to a lesser extent, the childless households and those with one child appear to differ from the remainder in that they obtain absolutely more total vitamin C than other groups and relatively more from fruit and tomatoes, (Ministry of Food: National Food Survey Committee, 1954). In comparison the

Table 5. *Proportion of vitamin C, expressed as a percentage of the total intake, obtained from potatoes, fruit and tomatoes, and green vegetables by different types of household in 1952*

Household	Total*/head/day (mg)	Obtained from potatoes (%)	Obtained from fruit and tomatoes (%)	Obtained from green vegetables (%)
Class A	64	23	47	12
Class B	56	36	36	12
Class C	51	39	29	14
Old-age pensioner	44	36	27	16
Containing one male and one female adult and:				
No other	64	33	36	14
One child	59	36	36	12
Three children	44	39	32	11
Four or more children	43	44	26	12
Adolescents only	60	35	33	13
Children and adolescents	49	41	31	12
All households	53	36	34	13

*With allowances for cooking losses.

remaining classes and groups obtain a higher proportion of their vitamin C from potatoes.

This point is even more strikingly made when the expenditure on these foods per family is considered: whereas the addition of each child to the household was accompanied by an increase in household expenditure on potatoes, no such increase occurred for green vegetables and none for fruits and tomatoes after the second child (Ministry of Food: National Food Survey Committee, 1954).

Fish. Fish takes a small, and apparently decreasing, place in domestic food consumption, a feature which is disturbing from the nutritional aspect, in view of the potential value of fish as a cheap source of valuable nutrients, especially of protein. Thus in 1952, the fish purchased provided 30% more protein per penny than meat, and rather more compared with eggs. Further, sea fish is a potential source of iodine* and fatty fish is one of the few rich sources of vitamin D: in 1952 it provided 27% of the vitamin D for all households (if that from cod-liver oil and vitamin A and D tablets is excluded) (Ministry of Food: National Food Survey Committee, 1954), with proportions varying from 37% in adult households to 17% in those containing four or more children.

Consumption of fish by families of different size has been studied over 3 years (Ministry of Food, 1953), and it has been found that the demand for fresh and processed fish falls off steeply with the addition of each child, whereas that for cooked, canned and manufactured fish increases. Indeed, it seems that fresh and processed white and fat fish tend to be bought specifically for consumption by adults and adolescents. Table 6 shows that, on average over the 3 years, the total household purchases of fish remained constant, or (in 1950 and 1951) actually fell, as the

* A net consumption of 8-9 oz./head/week has been recommended as a source of iodine (Ministry of Health: Advisory Committee on Nutrition, 1937)

Table 6. Purchases of fish by different types of household in 1950, 1951 and 1952 (g/household/week)

Household	1950	1951	1952
Containing one male and one female adult and:			
No other	21.1	24.0	23.3
One child	19.8	21.8	21.0
Two children	20.5	23.6	21.8
Three children	19.4	25.6	23.7
Four or more children	18.7	20.9	27.5
Adolescents only	28.9	31.3	29.7
Children and adolescents	30.0	32.3	31.7

number of children increased, indicating that even if the children were assumed to eat no fish the consumption per adult would itself be reduced in the larger families. It seems valid to conclude from such figures that children not only do not eat much fish but that their presence in the family actually tends to discourage adult members from doing so. This is incidentally not a class difference, since childless households are not, in general, of higher income status than those with children. The records suggest that fish was replaced by eggs rather than by meat in such households under the supply conditions then prevailing.

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The Diets of Elderly Women Living Alone

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National Food Survey records reflect the food habits of complete families, but those supplied by informants living alone provide data from which it is possible to assess the food consumption of the individuals concerned. The opportunity was