

FURTHER OBSERVATIONS UPON THE INFLUENCE OF THE GROWING FAMILY UPON THE DIET IN RURAL DISTRICTS IN SUSSEX

BY FRASER BROCKINGTON

TABLE I shows the expenditure in shillings per man unit¹ per week on various items of food in the diet (shown in income groups according to the number of children in the family), in eighty out of ninety-eight families with children attending four rural schools in West Sussex.

For the purposes of comparison, this expenditure may be judged by that recommended in the standard diet of the B.M.A. (1933)² report for a child 8-10 years. Two aspects of this comparison, adequacy and balance, have been especially noticed.

A. ADEQUACY

In Tables II-VI expenditure upon the various items is represented as a percentage of the standard diet.

It will be seen that, as has been noted in a previous paper,³ the expenditure per man unit upon total food declines with the increasing family and improves proportionately in successive income groups. Expenditure upon the separate items of food may be summarized as follows: (1) Expenditure upon meat, eggs, and fish, taken together, exceeds the standard in higher incomes and, where the family is small, in lower incomes; it declines steadily in all groups as the family grows. (2) Expenditure on milk (fresh and tinned being taken together) is below standard in all groups, and remains fairly constant in the neighbourhood of 60%, excepting in the largest families of five, six, and seven children where it falls to about 25%. (3) Expenditure upon cheese is similarly below the standard in all groups, again varying for the most part between 40 and 70% with a tendency to increase rather than diminish as the family grows. (4) Expenditure upon tea is well above 100% in the higher groups, where it remains roughly constant; in the 35-45s. group there is a decline as the family grows, which reduces the amount below 100% after the third child; in the lowest group no family reaches standard. (5) Expenditure upon bread is, generally speaking, considerably above standard; the decline with increasing family is less marked as e.g. from 139 to 108% in the 35-45s. group as the family grows from one to seven children; with two exceptions this does not fall below standard in any group. (6) Expenditure upon butter and margarine taken together is also well above the standard with the exception of

¹ The scale of cost coefficients used is that of the B.M.A. (1933) diets.

² British Medical Association (1933). *Rep. of Comm. on Nutrition*, p. 30.

³ *J. Hyg., Camb.*, **38**, 40 (1938).

Table I. *Showing expenditure on various items of food in income groups according to the number of children in the family.*
Shillings spent per unit per week

No. of children in family ... Standard diet*	Under 35s.							35-45s.							45-55s.							55-100s.							100-200s.								
	1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	3	5	10
1-35 Meat	1.69	1.01	0.82	0.37	0.66	1.81	1.70	1.12	1.12	0.65	0.71	0.57	1.76	1.74	1.42	1.02	0.58	2.30	1.76	1.76	1.76	1.11	1.39	1.33	0.96	2.31	2.91	2.91	1.68	1.18							
Eggs	0.32	—	—	0.19	—	0.21	0.28	0.30	0.24	—	0.13	—	0.40	0.43	0.35	0.34	0.13	0.59	0.43	0.18	0.24	0.10	—	—	0.21	0.87	0.65	0.64	0.24								
Fish	—	0.08	—	0.27	—	—	0.07	0.03	—	0.03	0.09	—	0.25	—	0.10	0.21	0.23	—	0.25	0.08	0.12	0.15	—	—	0.28	0.29	0.50	0.32	—								
1-47 Milk:																																					
Fresh	0.86	0.59	0.47	0.93	0.37	0.82	0.73	0.57	0.74	0.26	0.63	0.41	1.12	1.07	1.01	0.50	—	1.18	1.04	0.96	0.32	0.60	0.41	0.76	1.01	1.69	1.01	0.87	0.41								
Tinned	0.14	0.12	0.40	—	—	0.10	—	0.13	—	0.18	—	—	—	0.08	—	0.10	0.41	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cheese	0.24	0.26	0.15	0.16	0.33	0.21	0.33	0.34	0.42	0.23	0.31	0.24	0.37	0.33	0.29	0.35	0.11	0.37	0.29	0.33	0.28	0.33	0.21	0.45	0.29	0.18	0.29	0.35									
Tea, etc.	0.28	0.34	0.32	0.35	0.11	0.55	0.42	0.47	0.35	0.28	0.22	0.24	0.59	0.53	0.46	0.50	0.25	0.43	0.76	0.47	0.39	0.31	0.40	0.36	0.34	0.70	0.35										
1-02 Bread	1.59	0.81	1.49	1.34	0.88	1.42	0.87	1.18	1.24	1.26	1.31	1.10	1.33	1.32	0.99	1.33	2.16	1.20	1.37	1.14	1.12	1.30	1.68	0.96	1.37	0.86	1.96	1.83									
0-36 Butter	0.30	0.57	0.64	0.25	0.33	0.45	0.45	0.39	0.23	0.54	0.21	—	0.73	0.49	0.54	0.41	0.25	0.75	0.58	0.43	0.51	0.34	0.34	0.18	0.34	0.60	0.37	0.55									
Margarine	0.26	0.05	0.22	—	0.15	0.21	0.15	0.21	0.13	0.12	0.12	0.19	0.24	0.30	0.23	0.26	0.17	0.17	0.17	0.12	0.14	0.18	0.26	0.16	—	0.13	0.40	—									
0-30 Sugar	0.21	0.32	0.34	0.27	0.18	0.44	0.32	0.28	0.27	0.27	0.29	0.12	0.42	0.39	0.36	0.27	0.41	0.33	0.41	0.34	0.36	0.39	0.23	0.43	0.39	0.44	0.20										
0-15 Jam	0.14	—	0.17	0.32	0.22	0.15	0.11	0.12	0.05	0.16	0.09	0.11	0.36	0.19	0.12	0.24	0.17	0.29	0.14	0.11	0.16	0.15	0.31	0.12	0.34	0.22	0.15	0.24									
0-45 Vegetables	0.69	0.66	0.65	0.70	0.28	0.56	0.71	0.54	0.18	0.39	0.27	0.24	1.00	0.70	0.78	0.24	0.41	0.61	0.62	0.56	0.62	0.51	0.48	0.41	0.72	0.73	0.48	0.47									
0-54 Fruit	0.05	—	0.10	—	—	0.06	0.05	0.01	—	0.11	—	—	0.16	0.18	0.14	0.05	—	0.23	0.06	0.21	0.10	0.12	0.20	—	0.24	0.38	0.36	0.12									
0-24 Various	0.34	0.38	0.24	—	0.11	1.07	0.40	0.49	0.43	0.13	0.30	0.07	0.83	0.61	0.53	0.95	0.17	0.78	0.14	0.30	0.69	0.71	0.24	0.35	1.59	0.25	0.90	0.33									
7-26 Total	7.11	5.27	5.99	5.15	3.62	8.08	6.60	6.18	5.56	4.58	4.68	3.29	9.76	8.36	7.35	6.77	5.45	9.42	8.02	7.03	6.33	6.81	6.18	5.59	10.16	9.83	9.87	6.45									
3-36 First class protein (animal)	2.39	2.15	1.82	1.92	1.36	3.14	3.13	2.62	2.52	1.36	1.89	1.22	4.12	3.66	3.13	2.53	1.46	4.53	3.77	3.29	2.26	2.77	1.95	2.78	4.77	5.93	4.11	2.36									
No. of families	3	2	2	1	1	4	9	10	3	3	2	1	2	6	3	2	1	3	4	6	3	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	
No. of school children	3	3	3	3	3	4	15	20	6	10	9	5	2	8	5	5	5	3	6	10	11	7	4	4	1	5	2	6									
No. of children under 15	3	4	6	4	5	4	16	30	12	15	12	7	2	9	9	5	6	3	7	14	11	9	5	5	1	6	2	7									
% of total children under 15											14.2										24.7							7.3									

* B.M.A. (1933) per unit per week expenditure for a child 8-10 years, at prices ruling in winter of 1936/37.
 Note. In all tables those items are in black type in which the food obtained other than by purchase represents more than half the total.

Table II. Family income less than 35s. Comparison of expenditure upon food with that in the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Expenditure per unit per cent of the standard diet

Constituents of the diet	Number of children in family					Total
	1	2	3	4	5	
Meat, eggs and fish	148.9	74.8	60.7	61.5	48.9	
Milk (fresh and tinned)	68.0	48.3	59.2	62.3	25.2	
Cheese	44.4	48.1	27.8	29.6	61.1	
Tea, coffee and cocoa	77.8	94.4	88.9	97.2	30.6	
Bread	156.0	79.4	146.1	131.4	86.3	
Butter and margarine	155.5	172.2	238.9	69.4	133.3	
Sugar	70.0	106.7	113.3	90.0	60.0	
Jam	93.0	71.1	113.3	213.3	146.6	
Vegetables	153.3	146.7	144.4	155.6	62.2	
Fruit	18.5	66.7	18.5	70.7	28.3	
Various	141.6	158.3	100.0	70.9	45.8	
Total	99.4	72.6	82.5	70.9	49.9	
Animal protein	71.1	64.0	54.2	57.1	40.5	
No. of families	3	2	2	1	1	9
No. of school children	3	3	3	3	3	15
No. of children under 15	3	4	6	4	5	22

Containing 10% of total children

Table III. Family income between 35 and 45s. Comparison of expenditure upon food with that in the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Expenditure per unit per cent of the standard diet

Constituents of the diet	Number of children in family							Total
	1	2	3	4	5	6	7	
Meat, eggs and fish	149.6	151.9	107.4	100.7	50.3	50.3	68.9	42.2
Milk (fresh and tinned)	62.6	49.7	47.6	50.3	29.9	42.9	42.9	27.9
Cheese	38.9	61.1	63.0	77.8	42.6	57.4	44.4	44.4
Tea, coffee and cocoa	152.8	116.7	130.6	97.2	77.8	61.1	66.7	66.7
Bread	139.2	85.3	115.7	121.6	123.5	128.4	107.8	107.8
Butter and margarine	183.3	166.7	166.7	144.4	175.0	91.7	52.8	52.8
Sugar	146.7	106.7	93.3	90.0	90.0	96.7	40.0	40.0
Jam	100.0	73.3	80.0	33.3	106.7	60.0	73.3	51.1
Vegetables	124.4	157.8	120.0	40.0	86.7	60.0	53.3	24.2
Fruit	11.1	9.3	1.85	—	20.4	—	—	—
Various	445.8	166.7	204.2	179.2	54.2	125.0	29.2	29.2
Total	111.3	90.9	85.1	76.6	63.1	64.5	43.3	43.3
Animal protein	93.4	93.1	75.0	75.0	40.5	56.2	36.3	36.3
No. of families	4	9	10	3	3	2	1	1
No. of school children	4	15	20	6	10	9	5	69
No. of children under 15	4	16	30	12	15	12	7	96

Containing 43.8% of total children

Table IV. Family income between 45 and 55s. Comparison of expenditure upon food with that in the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Expenditure per unit per cent of the standard diet

Constituents of the diet	Number of children in family						Total
	1	2	3	4	6*		
Meat, eggs and fish	193.3	160.7	138.5	116.3	69.6		
Milk (fresh and tinned)	76.1	78.2	68.7	40.8	27.9		
Cheese	68.5	61.1	53.7	64.8	20.4		
Tea, coffee and cocoa	163.9	147.2	127.8	138.9	69.4		
Bread	130.4	129.4	97.1	130.4	211.8		
Butter and margarine	269.4	219.4	213.9	186.1	116.7		
Sugar	140.0	130.0	120.0	90.0	136.7	128.9	
Jam	240.0	173.3	80.0	113.3	113.3	113.3	
Vegetables	222.2	117.2	173.3	53.3	91.1	41.4	
Fruit	29.6	33.3	25.9	9.3	—	—	
Various	345.8	254.2	220.8	395.8	70.8		
Total	134.4	115.1	101.2	93.2	75.1		
Animal protein	122.6	108.9	93.1	75.3	43.4		
No. of families	2	6	3	2	1	14	
No. of school children	2	8	5	5	5	25	
No. of children under 15	2	9	9	5	6	31	

Containing 14.2% of total children

* An exceptional family buying fish in place of cheese.

Table V. Family income between 55 and 100s. Comparison of expenditure upon food with that in the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Expenditure per unit per cent of the standard diet

Constituents of the diet	Number of children in family							Total
	1	2	3	4	5	6	7*	
Meat, eggs and fish	220.7	180.7	149.6	108.9	121.5	98.5	107.4	
Milk (fresh and tinned)	80.3	70.7	65.3	33.3	51.0	27.9	59.9	
Cheese	68.5	53.7	61.1	51.8	61.1	33.9	83.3	
Tea, coffee and cocoa	119.4	211.1	130.6	108.3	108.3	86.1	111.1	
Bread	117.6	134.3	111.8	109.8	127.4	164.7	94.1	
Butter and margarine	255.6	208.3	152.8	180.6	144.4	166.7	94.4	
Sugar	110.0	136.7	113.3	120.0	130.0	130.0	76.7	77.8
Jam	193.3	93.3	100.0	115.6	100.0	155.6	80.0	80.0
Vegetables	135.6	137.8	73.3	106.7	113.3	206.7	91.1	41.4
Fruit	42.6	84.8	38.9	23.5	22.2	47.0	—	145.8
Various	325.0	58.3	141.7	287.5	285.8	100.0	85.1	77.0
Total	129.7	110.5	96.8	87.2	82.4	58.0	82.7	
Animal protein	134.8	112.2	97.9	67.3	82.4	58.0	82.7	
No. of families	3	4	6	3	2	1	1	20
No. of school children	3	6	10	11	7	4	4	45
No. of children under 15	3	7	14	11	9	5	5	54

Containing 24.7% of total children

Table VI. *Family income between 100 and 200s. Comparison of expenditure upon food with that in the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Expenditure per unit per cent of the standard diet*

Constituents of the diet	Number of children in family					Total
	1	3	5	10		
Meat, eggs and fish	257.0	300.7	195.7	105.2		
Milk (fresh and tinned)	68.7	115.0	80.3	40.1		
Cheese	53.7	33.3	53.7	64.8		
Tea, coffee and cocoa	100.0	94.4	194.4	97.2		
Bread	134.3	84.3	192.2	179.4		
Butter and margarine	94.4	202.8	213.9	152.8		
Sugar	143.3	130.0	146.7	66.7	97.8	
Jam	226.7	146.7	100.0	160.0	160.0	
Vegetables	160.0	162.2	106.7	104.4	59.6	
Fruit	44.4	70.4	66.7	22.2		
Various	662.5	104.2	375.0	137.5		
Total	139.9	135.4	136.0	88.8		
Animal protein	142.0	179.2	122.3	70.2		
No. of families	1	2	1	1	5	
No. of school children	1	5	2	6	14	
No. of children under 15	1	6	2	7	16	

Containing 7.3% of total children

families having six or seven children in the income group 35-45s. (7) Expenditure on sugar and jam taken together is above the standard in higher groups, and in some families in lower groups; in the 35-45s. group there is a decline as the family grows from 131 % with one child to 51 % with seven children. (8) Expenditure upon vegetables and fruit taken together lies generally speaking very much below standard; vegetables, usually obtained from the garden, are above standard and partially compensate for a low expenditure on fruit; expenditure upon these items declines as the family grows from 75 to 28 %, 63 to 24 %, 117 to 41 % and 85 to 41 % in successive groups. (9) The group "various" is to some extent a measure of the investigator's failure to itemize the remainder of the diet; this, in the standard diet, consists of cereals and the excess in the tables will probably have been appropriated from the energy ratio of the diet and not from the meat, eggs, fish, milk, or cheese, which allowed of more exact computation. Generally speaking, the "various" is too high, becoming less as the income declines, and as the family grows, where straitened circumstances allow expenditure to be more definitely determined.

Over half of the children in these families (53.8 %) live in income groups below 45s. and of these the majority are in the group 35-45s. (which contains 43.8 %). This latter group provides an average picture of the majority of rural workers' families before the income is increased by additional earnings from elder children. It is of interest to contrast the adequacy of the provision of the various items of the diet in this group in families where there is one child as compared with seven. It is seen that the provision of meat, eggs, and fish falls from 150 to 40 %; milk from 63 to 28 %; tea from 153 to 68 %; butter and margarine from 183 to 53 %; sugar and jam from 131 to 51 %; vegetables and fruit from 63 to 24 %; bread from 139 to 108 %; and the "various" from 446 to 29 %; in the case of cheese there is a small rise from 39 to 44 %; lastly expenditure on first-class protein falls from 93.45 % of the standard where there is one child to 36 % where there are seven children. On the whole the growth of the family to these large proportions has produced a marked deterioration in the diet. Bread is the only item which has been maintained up to standard. In contrast most of the remaining items have fallen to less than half, and first-class protein to a little over one-third, despite the slight additional expenditure on cheese.

B. BALANCE

The balance of the diet is shown in the following Tables VII-XI, where the expenditure on each item has been represented as a percentage of the total. A comparison is made with the same standard diet (B.M.A. (1933) for a child 8-10 years) of which the percentages borne by each item to the total of the diet can be seen in the table.

The proportion of the diet represented by each item may be summarized as follows: (1) Meat, eggs, and fish together are above the standard in all groups with the exception of two instances in the lowest income range, the

Table VII. Family income less than 35s. Comparing balance of the diet with that of the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Per cent of expenditure on each item to total expenditure on food

Constituents of the diet	Number of children in family					Standard diet B.M.A. (1933) for child 8-10 years
	1	2	3	4	5	
Meat, eggs and fish	28-27	20-67	13-69	16-12	18-23	18-23
Milk: Fresh	12-10	11-20	7-85	18-06	10-22	10-22
Tinned	1-97	2-28	6-68	—	—	—
Cheese	3-38	4-93	2-50	3-11	9-12	7-44
Tea, coffee and cocoa	3-94	6-45	5-34	6-80	3-04	4-96
Bread	22-36	15-37	24-87	26-02	24-32	14-05
Butter and margarine	7-88	11-76	14-36	4-85	13-26	4-96
Sugar	2-95	6-07	5-68	5-24	4-97	4-13
Jam	1-97	—	2-84	6-21	6-08	2-07
Vegetables	9-70	12-52	10-85	13-60	7-73	6-20
Fruit	0-70	—	1-67	—	—	6-20
Various	4-78	7-21	4-01	—	—	7-44
Animal protein	45-72	39-09	30-71	37-29	3-04	3-31
No. of families	3	2	2	1	1	Total 9
No. of school children	3	3	3	3	3	15
No. of children under 15	3	4	6	4	5	22
% of total children	10					

Table VIII. Family income between 35 and 45s. Comparing balance of the diet with that of the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Per cent of expenditure on each item to total expenditure on food

Constituents of the diet	Number of children in family							Standard diet B.M.A. (1933) for child 8-10 years
	1	2	3	4	5	6	7	
Meat, eggs and fish	25-00	31-06	23-46	24-46	14-85	19-87	17-33	18-60
Milk: Fresh	11-39	11-06	9-22	13-31	5-68	13-46	12-46	20-25
Tinned	—	—	2-10	—	3-93	—	—	—
Cheese	2-60	5-00	5-50	7-55	5-02	6-62	7-29	7-44
Tea, coffee and cocoa	6-81	6-36	7-61	6-29	6-86	4-70	7-29	4-96
Bread	17-57	13-18	19-09	22-30	27-51	27-99	33-43	14-05
Butter and margarine	8-17	9-09	9-71	9-35	13-76	7-05	5-78	4-96
Sugar	5-45	4-85	4-53	4-86	5-90	6-20	3-65	4-13
Jam	1-86	1-67	1-94	0-90	3-49	1-92	3-34	2-07
Vegetables	6-93	10-76	8-74	3-24	8-52	5-76	7-29	6-20
Fruit	0-74	0-76	0-16	—	2-40	—	—	7-44
Various	13-24	6-06	7-93	7-73	2-84	6-41	2-13	3-31
Animal protein	38-99	47-12	40-28	45-32	29-48	39-95	37-08	46-29
No. of families	4	9	10	3	3	2	1	Total 32
No. of school children	4	15	20	6	10	9	5	69
No. of children under 15	4	16	30	12	15	12	7	96
% of total children	43-8							

Table IX. Family income between 45 and 55s. Comparing balance of the diet with that of the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Per cent of expenditure on each item to total expenditure on food

Constituents of the diet	Number of children in family						Standard diet B.M.A. (1933) for child 8-10 years	
	1	2	3	4	6*	Total		
Meat, eggs and fish	26.74	25.96	25.44	23.19	17.25			
Milk: Fresh	11.48	12.80	13.74	7.39	7.52			
Tinned	—	0.96	—	1.48	—			
Cheese	3.79	3.95	3.95	5.17	2.02		7.44	
Tea, coffee and cocoa	13.62	6.34	6.26	7.39	4.59		4.96	
Bread	9.94	15.79	13.47	19.65	39.63		14.05	
Butter and margarine	4.30	9.45	10.48	9.90	7.71		4.96	
Sugar	3.69	4.67	4.90	3.99	7.52		4.13	
Jam	10.25	2.27	1.63	3.55	3.12		2.07	
Vegetables	1.64	8.37	10.61	3.55	7.52		6.20	
Fruit	8.50	2.15	1.90	0.74	—		7.44	
Various	42.01	7.30	7.21	14.03	3.12		3.31	
Animal protein	2	43.67	43.13	37.23	26.79		46.29	
No. of families	2	6	3	2	1		14	
No. of school children	2	8	5	5	5		25	
No. of children under 15	2	9	9	5	6		31	
% of total children	14.2							

* This family was exceptional in purchasing fish in place of cheese.

Table X. Family income between 55 and 100s. Comparing balance of the diet with that of the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Per cent of expenditure on each item to total expenditure on food

Constituents of the diet	Number of children in family							Standard diet B.M.A. (1933) for child 8-10 years	
	1	2	3	4	5	6	7*		
Meat, eggs and fish	31.63	30.42	28.73	23.22	24.08	21.52	25.94	18.60	
Milk: Fresh	12.53	12.97	13.66	5.06	9.69	6.63	13.60	20.25	
Tinned	—	—	—	2.68	1.42	—	2.15	7.44	
Cheese	3.92	3.62	4.64	4.42	4.84	3.40	8.05	4.96	
Tea, coffee and cocoa	4.56	9.48	6.09	6.16	5.73	5.02	7.16	14.05	
Bread	12.74	17.08	16.22	17.69	19.09	27.18	17.17	4.96	
Butter and margarine	9.76	9.35	6.40	10.27	7.64	9.71	6.08	—	
Sugar	3.50	5.11	4.84	5.69	5.73	6.31	4.11	4.13	
Jam	3.08	1.75	1.56	2.53	2.20	5.02	2.15	2.07	
Vegetables	6.48	7.73	7.97	9.79	7.48	7.77	7.33	6.20	
Fruit	2.44	0.75	2.99	1.53	1.76	3.24	—	7.44	
Various	8.28	1.75	4.84	10.90	10.43	3.88	6.26	3.31	
Animal protein	48.08	47.01	47.03	35.38	40.03	31.55	49.74	46.29	
No. of families	3	4	6	3	2	1	1	20	
No. of school children	3	6	10	11	7	4	4	45	
No. of children under 15	3	7	14	11	9	5	5	54	
% of total children	24.7								

* An anomalous family receiving 8s. worth of free food.

family with seven children in the 35-45s. group, and that with six children in the 45-55s. group; the proportion above the standard increases as the income rises, so that, e.g. where there are three children, the proportion of total expenditure in the five groups is 14, 23, 25, 29, 27 % as compared with 18.6 % in the standard. (2) Milk remains very constant between 10 and 14 % as compared with 20 % in the standard and neither the improving income nor the increasing family affects this to any marked extent. (3) Cheese begins in each group at about 3 % of the total expenditure as compared with 7.44 % in the standard, and as the family grows in size the proportion in the diet increases; this can be seen in the income group 35-45s. where the proportion rises from 2.6 to 7.3 %. (4) Tea on the whole remains very constant in the neighbourhood of 6 % (compared with 4.96 % in the standard), and it is little affected by the improving income or the increasing family; in the highest income group (100-200s.) the proportion falls where there are one or two children to 3 %. (5) Bread is supplied as an increasing proportion of the diet both as the income is smaller and as the family grows larger; the proportion remains persistently above the standard (14.05 %), with the exception of the smallest families in the higher groups. In the lowest group the proportion is high at 22 % even where there is only one child, and rises slightly to 24 % where there are five children. In the 35-45s. group the proportion rises from 18 % with one child to 33 % with seven, in the 45-55s. group from 14 % with one child to 40 % with six, and in the 55-100s. group from 13 % with one child to 27 % with six. (6) Butter and margarine represent a varying proportion of the diet between 4 and 14 %, more usually about 9, as compared with 4.96 % in the standard, and there does not seem to be any marked influence on their provision as a proportion of the diet by either increasing income or family. (7) Sugar and jam taken together are at about the standard (6.2 %) in all groups where the family is small. There is a definite increase only in large families, as, for example, where with four and five children in the 35s. group and six children in the 45-55s. and 55-100s. groups the proportion is about 11 %. (8) Vegetables and fruit together rarely reach the standard (13.64 %); the proportion of vegetables (nearly always more than half from the garden) usually exceeds the 6.2 % of the standard, but the proportion of fruit is in all but a few instances a very small fraction of the standard (7.44 %). It will be remembered that this survey took place in the winter and it would seem likely that in the summer fruit would become available to many families without payment. Neither the increasing family nor the improving income influences greatly the proportion of these two articles in the diet. (9) The proportion in which "various" is present in the diet generally speaking exceeds the 3.31 % of the standard in proportion as the income is larger and the family smaller. (10) First-class protein is present in the diet up to standard (46.28 %) only in higher income groups before the family has grown beyond three children. In the lowest group, under 35s., with an average of 38 %, it is somewhat below standard in all sizes of family;

Table XI. *Family income between 100 and 200s. Comparing balance of the diet with that of the diet recommended by the B.M.A. (1933) report for a child 8-10 years. Per cent of expenditure on each item to total expenditure on food*

Constituents of the diet	Number of children in family										Standard diet B.M.A. (1933) for child 8-10 years
	1	3	5	10							
Meat, eggs and fish	34.15	41.30	27.25	22.02							18.60
Milk: Fresh	9.94	17.19	8.81	6.36							20.25
Tinned	—	—	3.14	2.79							7.44
Cheese	2.85	1.83	2.94	5.43							4.96
Tea, coffee and cocoa	3.54	3.46	7.09	5.43							14.05
Bread	13.48	8.75	19.86	28.37							4.96
Butter and margarine	3.35	7.43	7.80	8.53							4.13
Sugar	4.23	3.97	4.46	3.10							2.07
Jam	3.85	2.24	1.52	3.72							6.20
Vegetables	7.09	7.43	4.86	7.29							6.20
Fruit	2.36	3.87	3.65	1.86							7.44
Various	15.65	2.54	9.12	5.12							3.31
Animal protein	46.94	60.32	42.14	36.60							46.29
No. of families	1	2	1	1							Total
No. of school children	1	5	2	6							5
No. of children under 15	1	6	2	7							14
% of total children											16
											7.3

in the second group, 35-45s., with an average of 40% it approaches more nearly to the standard. Indeed, each level of income produces an improvement in the proportion so that where there are three children the proportions in successive groups are 31, 40, 43, 47, 60%. In the higher groups there is a decline in the proportion as the family grows, but in the lowest two groups where the proportion is at the outset below the normal there is little further decline. There appears, in fact, to be an effort to prevent lack of balance between protein and energy foods; since the meat, fish, and eggs decline steadily and milk remains stationary, this effort to balance is maintained by an increase in the proportion of cheese. Thus in the 35-45s. group, while meat, eggs and fish decline from 25 to 17.3%, cheese improves from 2.6 to 7.3%.

On the whole the influence of a smaller income and a growing family is, firstly, to increase the proportion of bread in the diet so that in the largest families in each group this constitutes in the neighbourhood of a third of the total expenditure upon food; and secondly, to produce a reduction in the proportion of first-class protein mainly by lessening the consumption of meat, eggs, and fish. This latter influence is combated by the housewives' increasing provision of cheese as a more economical protein.

SUMMARY

1. Adequacy and balance in expenditure on the various items of food in the diet has been compared to the standard B.M.A. (1933) diet for a child aged 8-10 in eighty out of ninety-eight families with children attending four rural schools in Sussex.

2. The proportion that these items bear to the standard declines as the income is lower and the family larger. With the exception of bread, butter and cheese there is, in fact, a marked deterioration in the diet as the family grows, particularly in the lower groups. Bread, although declining, remains above the standard, with a few isolated exceptions, in all groups, and the proportion of cheese, although only about 60% of the amount recommended in the standard diet, remains roughly constant; butter and margarine fall below the standard only in the largest families. In contrast meat, eggs, fish, and milk, are reduced to considerably less than 50% of the standard in the larger families.

3. The balance of the diet is less defective but it is, nevertheless, profoundly influenced by growth of the family, especially where the income is small. The most marked alteration is the steadily increasing proportion of bread both as the income is lower and the family larger. In the largest families in all groups bread constitutes in the neighbourhood of one-third of the total expenditure. The tendency produced by reduction of income and increase of family to lessen the proportion of first-class protein in the diet (mainly by lessening the consumption of meat, eggs, and fish) is combated to some extent by an increasing provision of cheese, a more economical protein.

(*MS. received for publication* 18. III. 38.—Ed.)