

THE DIET IN THE DIFFERENT GRADES OF SOCIETY IN DENMARK.

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IN the present communication a general survey of the diet in the different levels of society in Denmark will be given for the first time.

The material dealt with consists of about 1000 household accounts which the state statistical department has published in the course of time.

Table I

Content per unit (or "man value") per day of protein, fat and carbohydrate, and also calories in Danish diets.

Year		Protein gm.	Fat gm.	Carbo- hydrate gm.	Calories
<i>Copenhagen.</i>					
1897	27 labouring class families	94	99	376	2848
1909	76 " " " " " " " " " " " "	85	96	364	2730
1916	9 citizen families with income of 2000-3000 kroner	107	111	440	3276
"	49 " " " " " " 3000-5000 "	105	113	452	3335
"	23 " " " " " " over 5000 "	118	114	475	3488
<i>Provincial towns.</i>					
1897	23 labouring class families	84	75	385	2617
1909	99 " " " " " " " " " " " "	93	89	402	2863
1916	21 citizen families with income of 2000-3000 kroner	94	104	441	3166
"	41 " " " " " " 3000-5000 "	91	103	439	3128
"	9 " " " " " " over 5000 "	103	98	522	3475
<i>Country districts.</i>					
1897	115 labouring class families, Islands	93	94	439	3056
"	86 " " " " " " Jutland	102	89	473	3183
1909	65 " " " " " " " " " " " "	104	104	512	3485
"	70 artisan families	105	105	491	3413
1916	15 citizen families with income of 2000-3000 kroner	86	96	462	3142
"	37 " " " " " " 3000-5000 "	91	107	459	3246
"	13 " " " " " " over 5000 "	104	121	480	3517
1909	84 peasant families	117	111	553	3778
"	142 farmer " " " " " " " " " " " "	149	132	650	4509

Table I shows the constitution of the diet per day and per unit, or "man value," for the whole of the material to hand. The units are relative figures which correspond to the normal food consumption for males and females, adults and children, as discovered by physiological experiments. The so-called American scale is the following:

Men over 15 years	1.00
Women over 15 years	0.90
Children from 11 to 14 years	0.90
" " 7 ,, 10 ,,	0.75
" " 4 ,, 6 ,,	0.40
" under 4 years	0.15

Since in estimating the consumption in families of peasants and farmers some food may be included which in reality goes to domestic animals, these two groups of householders are not taken into account.

In Table I the figures for the daily amount of protein per unit lie between 84 and 118 gm. There is only one class—the most well-to-do Copenhagen families—which reaches the old standard of Voit of 118 gm. protein daily, but even the group which has the lowest daily consumption of protein, viz. 84 gm., may be said to get a sufficient amount of protein in the diet judging from our present knowledge of the subject.

For 12 of the 17 classes of families investigated the daily consumption per unit lies between 91 and 105 gm., only three being below and two above these limits. The figures for the daily consumption of fat per unit lie between 75 and 121, and the curve shows a well-defined apex about 100.

The amount of fat consumed therefore far exceeds the old standard of Voit—56 gm.—it is, in fact, more than double that quantity.

For 15 classes of families the amounts are between 89 and 114, and there is only one class above and one below these quantities.

The daily amount of carbohydrate per unit varies from 364 to 522 gm., the curve exhibiting a distinct apex at 450 gm. In 12 classes the daily consumption per unit lies between 402 and 480 gm., only three classes having a lower and two a higher consumption. These last two classes are the only ones which approach Voit's standard of 500 gm. per diem.

Table II shows the percentage of calories obtained from the proteins, fats and carbohydrates of the diet.

This table should render it obvious whether the various classes have chosen their diets economically. Since it is the proteins and fats that are more especially costly, it is most economical to draw upon the carbohydrates for a relatively large number of the calories required.

It will be clear from Table II how dear the mode of living is in all grades of society in Copenhagen in comparison with that in the provincial towns and country districts. Only the most well-to-do classes of the country families (for the most part doctor's families) live in the same costly manner as Copenhagen families.

About one-eighth of the calories are contributed by the proteins. The variations range from 11 to 14 per cent., in 13 cases however the values lie between 12 and 13½ per cent. The high figures apply particularly to Copenhagen. About three-tenths of the calories are derived from the fats. The variations range from 26 to 35 per cent., but the values have a marked

tendency to group themselves round 30 per cent. In this case also the high figures are most frequent in Copenhagen. But the percentage of calories supplied by the carbohydrates on the contrary are decidedly lower in Copenhagen than in either the provinces or the country districts. The variations range from 54 to 62 per cent., the curve showing a distinct apex at 58 per cent.

Table II.
*The percentage of calories in the diet contributed by
protein, fat and carbohydrate.*

Year					Protein gm.	Fat gm.	Carbo- hydrate gm.
<i>Copenhagen.</i>							
1897	27	labouring class families	...	...	13.5	32.3	54.1
1909	76	" " "	...	...	12.7	32.7	54.6
1916	9	citizen families with income of 2000-3000 kroner			13.4	31.5	55.1
"	49	" " " " 3000-5000 "			12.9	31.5	55.6
"	23	" " " " over 5000 "			13.9	30.4	55.8
<i>Provincial towns.</i>							
1897	23	labouring class families.	...	...	13.1	26.6	60.2
1909	99	" " "	...	...	13.3	29.0	57.7
1916	21	citizen families with income of 2000-3000 kroner			12.2	30.6	57.2
"	41	" " " " 3000-5000 "			11.9	30.6	57.5
"	9	" " " " over 5000 "			12.2	26.2	61.6
<i>Country districts.</i>							
1897	115	labouring class families, Islands	...	...	12.5	28.6	58.9
"	86	" " " Jutland	...	...	13.1	26.0	60.9
1909	65	" " "	...	...	12.2	27.7	60.1
"	70	artisan families	...	...	12.6	28.6	58.9
1916	15	citizen families with income of 2000-3000 kroner			11.2	28.4	60.3
"	37	" " " " 3000-5000 "			11.5	30.6	57.9
"	13	" " " " over 5000 "			12.1	32.0	55.9
1909	84	peasant families	...	...	12.7	27.3	60.0
"	142	farmer	...	...	13.6	27.3	59.2

With regard to details of the diet of the various classes the reader is referred to the previously published articles both in Danish and German. An index of the most important of them is appended. In Table III, however, a condensed account of the whole material is given and also the coefficients necessary to convert the calculation of the number of calories for 1897 and 1909 from the Rübner scale used at that time to the so-called American scale in use in 1916.

In the years 1897 and 1909 the accounts of the families of labourers and artisans were registered. In 1909 the household accounts of peasants and farmers were added, and in 1916 those of public servants and the families of other citizens were obtained for the first time.

In 1897 an attempt was made in provincial towns to get as much insight as possible into the economic factors. The level of the wages of the families of the labouring class in that year lay only 10-15 per cent. above the mean

wages level, but in 1909 it was 30 per cent. above in the provincial towns. Both in Copenhagen where the accounts of the labouring classes in the two years named were respectively 60 and 45 per cent. above the average wages level, and in the provinces, the workers providing data were not a strictly random sample because the ability to produce accounts through a whole year that could be used in the investigation, stamped the labouring families concerned as being on a higher level.

Table III
General survey of the families investigated.

Year	No. of investigated families	No. of "American" units per family	No. of individuals per family	Annual income per family in kroner	Coefficients for converting calories from the Rübner to the American scale	Expenditure on food expressed as a percentage of the total expenditure
<i>Copenhagen.</i>						
1897	27 labouring class families	3.65	4.9	1706	0.85	47
1909	76 " " "	3.43	4.6	1740	0.84	47
1916	9 citizen families	2.76	—	2000-3000	—	36
"	49 " " " " "	3.00	—	3000-5000	—	30
"	23 " " " " "	3.82	—	over 5000	—	25
<i>Provincial towns.</i>						
1897	23 labouring class families	4.01	5.6	995	0.83	52
1909	99 " " "	3.47	5.0	1442	0.85	48
1916	21 citizen families	2.59	—	2000-3000	—	31
"	41 " " " " "	3.49	—	3000-5000	—	32
"	9 " " " " "	4.91	—	over 5000	—	25
<i>Country districts.</i>						
1897	115 labouring class families, Islands	3.46	4.9	781	0.85	57
"	86 " " " Jutland	3.38	4.9	795	0.86	56
1909	65 " " " " "	3.32	4.7	924	0.87	64
"	70 artisan families	3.17	4.5	1052	0.88	55
1916	15 citizen " " " " "	2.95	—	2000-3000	—	35
"	37 " " " " "	4.05	—	3000-5000	—	33
"	13 " " " " "	4.06	—	over 5000	—	25
1909	84 peasant " " " " "	3.54	4.8*	1230	0.90	—
"	142 farmer " " " " "	6.41	7.8†	2546	0.90	—

* 0.3 of which were engaged in the management of the household.

† 3.5 " " " " " " " "

In Copenhagen 1909 was a year marked by a good deal of unemployment. Between 1897 and 1916 there was first of all a number of years of steadily increasing prosperity and steadily increasing level of prices for foodstuffs after which followed a couple of years with rapidly rising prices but without any increasing prosperity for the majority of families of ordinary citizens investigated in 1916, who for the most part are public servants (in the employ of the state or municipality).

From Table III it appears that the number of units in the case of the more

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carefully examined 17 classes of families varied from 2·59 to 4·91 with the closest grouping around 3·50.

As the investigations were carried out in years with very different levels of prices a direct comparison of the yearly incomes is of little interest, but the relation between the expenditure on food and the total expenses of a family needs some attention. This relation ranged from 25 to 64 per cent. and, as is usual in such cases, it varied inversely as the income of the family.

The constants with which the number of calories and amounts consumed must be multiplied to transfer them from Rübner's scale to the American scale all lie between 0·83 and 0·88 for the labouring class families and artisans.

In spite of the wide scope of these Danish food investigations—1000 household accounts for a whole year—they cannot be looked upon as more than an indication.

It will fall to the lot of future research, profiting by the experience already gained, to confirm or modify the results here reported.

APPENDIX

The detailed physiological reports of the diet of the various classes of families will be found in the following articles.

In Danish.

1. The diet of the Danish labouring class families. *Maanedsskrift for Sundhedspleje*, 1910, p. 101.
2. The diet of the Danish labouring class families in 1897 and 1909. *Ibid.* 1913, pp. 145 and 214.
3. The diet of the Danish peasant families in 1909. *Ibid.* 1914, p. 263.
4. The diet of the Danish citizen families in the towns and country districts in 1916. *Ibid.* 1919, p. 105.

In German.

1. Die Kost dänischer Arbeiterfamilien. *Zentralbl. f. Stoffw. und Verdauungskrankheiten*, 1910, Nr. 12.
2. Die Kost dänischer Arbeiterfamilien in den Jahren 1897 und 1909. *Arch. für soziale Hyg. und Demographie*, 1914, p. 145.
3. Die Kost dänischer Bauernfamilien im Jahre 1909. *Arch. für soziale Hyg. und Demographie*, 1921, p. 257.