Government that there should be no relaxation of rationing until the needs of occupied Europe have been supplied. Mr. Le Gros Clark introduced an amendment that, as an essential preliminary, a wide campaign of education be undertaken to explain to the public the necessity for such a measure. The amended resolution was carried with acclamation.

RATIONS AND FOOD CONSUMPTION IN SWEDEN DURING 1942-43

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AN investigation of the individual food consumption of fifty-two households and one lumbermen's canteen in Sweden has been made during the winter 1942-43. In seventeen of these households the breadwinner was a lumberman, in twenty a millworker, and in fifteen households a clerk in a factory or a bank. Thus men doing physically heavy outdoor work, heavy factory work and very light indoor work were represented. The total number of persons concerned was 212, of whom 76 were men, 59 women and 77 children under fifteen years of age. The investigation continued for fourteen successive days, during which the subjects weighed and checked all food eaten. Moreover, a complete account was kept over household purchases of food and the food received in kind.

order to illustrate the influence of the occupation upon the energy metabolism, we have worked out what we call the activity quotient, namely,

$$\frac{\text{energy supply (net)} - \text{basal metabolism} \times 100}{\text{basal metabolism}};$$

in other words, the energy supply exceeding the basal needs was expressed as a percentage of this latter value. This quotient proved to be for the lumbermen 186, for the millworkers 132 and for the clerical workers 67 per cent. The total activity in regard to the physical work done in 24 hours thus varied as 3:2:1. The women showed in this respect a low activity quotient with 76, 59 and 58 per cent for, respectively, the lumbermen's, the millworkers' and the clerks' wives. The children showed a great dispersion; no differences could be traced between boys and girls.

Comparisons between the consumption and the rations showed that the lumbermen exceeded their rations of flour and grain as well as fats by an average of 60 per cent. Even the millworkers exceeded substantially their rations of these foods, whereas the clerical workers and the women lived within their rations. For the youngest children, generally speaking, consumption was considerably below their allotments.

The investigation has accentuated the desirability of a strongly differentiated system of food rationing where the greatest possible consideration should be given to occupation, age and sex. A general principle during partial rationing should be to balance the rations so that an individual's energy requirement can be covered by a reasonable consumption of free

DAILY RATIONS IN SWEDEN IN FEBRUARY 1943

	Meal and grain (gm.)	Fats (gm.)	Meat (gm.)	Sugar (gm.)	Peas (gm.)	Cheese (gm.)	Eggs (gm.)	Calories contained in the daily rations
Children born 1942-43	152.0	35.7	14.3	60.6	8.0	4.2	5.4	1146
" " 1939-42	152.0	35.7	14.3	60.6	8.0	4.2	5.4	1146
" " 1938	193.7	35.7	28.6	60.6	8.0	4.2	5.4	1334
" " 1936-37	193.7	35.7	28.6	60.6	8.0	4.2	5.4	1334
" " 1931-35	214.5	44.6	28.6	60.6	8.0	4.2	5.4	1476
" " 1927-30	235.3	44.6	28.6	60.6	8.0	4.2	5.4	1549
" " 1924-26	235.3	44.6	28.6	60.6	8.0	4.2	5.4	1549
Ordinary rations	193.7	35.7	28.6	60.6	8.0	4.2	5.4	1334
Heavy workers	360.3	53.6	28.6	60.6	8.0	4.2	5.4	2060
Lumbermen living at home	443.7	53.6	57.1	60.6	8.0	4.2	5.4	2736
Lumbermen not living at home	402.0	53.6	55.6	100.0	18.7	4.2	5.4	2781
Pregnant women	193.7	53.6	28.6	60.6	8.0	32.8	22.5	1569

From these data calculations were made of the consumption of different foods, the supply of the more important food factors, the cost of food and the diet. This material makes possible comparative inquiries into the influence of occupation, age and sex upon the diet and standard of nutrition.

The lumbermen showed the highest consumption of energy, with an average of 4,600 (large) calories for 24 hours, thereafter came the millworkers with 3,800 calories, and far behind them the clerical workers with 2,600 calories. The women's consumption of energy was 2,500 calories for lumbermen's wives and 2,200 calories for the other groups. The children's energy consumption increased linearly with age. A scale of food energy standards has been worked out on the basis of these results. This showed that the children's consumption of energy was higher than what was earlier reckoned on, while on the other hand the women's consumption was lower.

From the body-weight, height, age and sex, the basal metabolism of each subject was calculated according to well-known empirical formulæ. In

foods. Thus it was shown that millworkers, whose rations gave 2,000 calories per day and whose energy consumption was 3,800 calories, received 2,500 calories from rationed foods and only 1,300 calories from free foods. Probably we must therefore reckon with the fact that in practice not more than 1,500 calories might be taken from such foods as milk, potatoes and other roots, which during the winter 1942-43 were not rationed in Sweden.

As concerns the children's consumption, certain foods, as, for example, flour and meat, showed a high correlation with age, whereas other foods such as milk and sugar did not show any increase with age. Among the adults there were great quantitative differences in the consumption of different foods between men and women in workmen's households. In the households of clerical workers, men and women had a very uniform diet.

The protein supply for men and children was kept well above the desirable level, while the women on average just reached this level, which means that a considerable number of women did not receive the

desirable supply of proteins. This was particularly the case among the millworkers' wives. The supply of calcium and phosphorus was in the main satisfactory for all groups, whereas the consumption of iron among the smaller children and the women was below the desirable level.

The vitamin A supply showed a very wide dispersion. Starting from a minimum requirement of 2,000 i.u., the supply of vitamin A to the men of all three groups was above this value. The optimal supply of 4,000 i.u. has not been reached by any but a few lumbermen. Only one fourth of the number of the children seemed to have reached the optimal level for their age. With regard to the supply of vitamin B, the minimum and optimum requirement for adults is generally given as 0.75–1.50 mgm. vitamin B per day. The women and children have, on the average, not reached this optimum, and a few women showed a consumption below the minimum requirement. The supply of vitamin C was for all groups in the main above what has been considered to be the minimum, namely, 25 mgm. per day. The mean values for all groups of adults except those for the millworkers' and the lumbermen's wives were greater than 50 mgm., which is generally considered as the optimum. Among the children the supply of vitamin C was only exceptionally below 20 mgm. The mean value was about 40 mgm., but the dispersion was very great. The supply of vitamin C did not show any correlation with age, in contrast to the consumption of vitamin A and B, which increased linearly with age.

In conclusion, it can be said that the diet of our subjects seemed to be relatively satisfactory according to generally accepted ideas.

The women's consumption of food was, however, so small that their intake of iron and of vitamins A and B became rather low. The fact is, however, that the relation between the energy metabolism and the requirement of the different food factors is not as yet sufficiently well known to permit us to draw any safe conclusions concerning the women's nutritional standards. The same is the case in regard to the children's requirement of minerals and vitamins at different ages.

The money value of the food has been computed for all household groups and subjects by adding together the cash outlays for food and the value of the produce received in kind. The cash outlays for food for fourteen days amounted to 48 Sw. crowns for the lumberman's household, 51 crowns for the millworker's household and 71 crowns for the clerical worker's household, which was equivalent to 53, 39 and 28 per cent of the respective cash income. The total value of the food amounted to respectively 75, 58 and 76 crowns.

The cost of the daily food was on the average 1.73 crowns for the lumberman, 1.96 crowns for the millworker and 1.70 crowns for the clerical worker. The cost of food per 1,000 calories was respectively 0.38, 0.52 and 0.65 crowns.

Concerning the children, the food cost for the young children was about 0.90 crowns a day and for the school-children about 1 crown a day. The increase with age was thus inconsiderable. On the other hand, the food cost for the children belonging to clerical workers' families increased from 1 crown to 1.50 crowns. These children enjoyed also a relatively more expensive diet than the children of the manual workers. Thus the price per 1,000 calories for young children belonging to clerical workers'

households was 0.73 crowns, whereas food of the clerical workers' young children cost about 0.50 crown.

These figures might be taken as an expression for the difference in the standard of diets between the household groups in question. The lumbermen's households, where the men as well as the women and the school-children showed a higher food consumption than in the other household groups, lived upon a cheaper diet, which, however, in qualitative respect was not inferior to that of the other groups. Their diet was, however, rather monotonous. The clerical workers' households, which showed the lowest food consumption but the highest food expenses, showed, however, from the qualitative aspect a standard which was only insignificantly higher. Their diet was, however, much more varied, which among other things expressed itself in their choice of dishes and variation in the way of preparing them.

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THE ELM TREE

By ALEXANDER L. HOWARD

THE elm tree, which on account of its peculiar habit of growth has become an outstanding feature of the English countryside, of which the genius of both British and Continental painters have taken full advantage, seems doomed to extinction; the tree is beset by too many enemies. With the breaking up of the large estates there is no one left to preserve it. For upwards of one hundred years no Government has existed in Great Britain which has shown any well-defined interest or devoted any tangible efforts towards reafforestation, and only in the course of the last twenty years, or less, has the subject been given consideration. Even during this period the main effort has been directed towards the financial rather than the national aspect.

It is interesting and instructive to contrast the labour and pains taken by those who preceded us—Virgil, Pliny, Evelyn and others—to ensure a plentiful supply of trees with those feeble efforts which are practised to-day. For upwards of two hundred years few foresters have studied the means of the reproduction of elms, or the dangers imminent to the young trees, although we have possessed the knowledge of every kind of device, with explicit instructions as to how to plant, rear and establish them.

Although the life of the elm may be sustained for upwards of six hundred years, and it is rarely struck by lightning, it is very liable to be blown down. The roots, travelling horizontally, will not hold down their weight. At an earlier age than other trees the elm is apt to become rotten at the heart. The tree is a prey to elm bark disease, which is very destructive; and what is worse, man has been very cruel and unkind to it. As an example of disease, the beautiful avenue of elms in Windsor Park has been condemned as beyond recovery. The wood, although ill-considered and costing less than that of most hardwood trees, is, nevertheless, extremely useful, and indeed more generally employed than is commonly known.

There are about twenty species, of which only