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B7 Agriculture and diseases of the circulatory system

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'One should eat to live, not live to eat' (Moliere)

THE MODERN DIET

Increasing per caput incomes with industrialisation have long been associated with types of dietary change which concerns this paper's subject (Perisse, 1969). Industrialisation brings progressive change in the direction of more dietary fat, decreasing starchy carbohydrate, increasing sucrose and a shift from vegetable protein towards animal protein. That such observations have been mistaken for immutable laws of industrialisation has hindered the enlightened discussion of developing a greater accord between the production of food and its consequences for health of populations. Since the 1950s there have been indications throughout the industrial world that the population eating patterns were in need of correction and a constant battle to redirect the food machine has followed.

The DHSS view of the UK diet

In 1978 the Department of Health spelt out its view of a healthier diet (DHSS, 1978). It stated:-

> "A more prudent diet would include less of the visible fats - cream, butter, margarine, the fat on meat, fried foods - and less of the invisible fats in cakes, biscuits, puddings, pastry and ice cream. Less sugar would be eaten - fewer sweets, chocolates, puddings - and less sugar added to fruit, soft drinks, tea, coffee and other beverages. To replace some of the food energy lost by these changes, the amount of bread and potatoes, fruits and vegetables in the diet would be increased. The thickness of each slice

of bread could be increased, and the amount of butter or margarine spread on it decreased.

Bread, especially wholemeal bread, and some other foods, for example porridge, would increase the amount of cereal fibre in the diet and reduce constipation. Other aspects of the value to health of increasing dietary fibre are being investigated.

On the whole the British diet contains more than enough protein. It is not always appreciated that, in addition to meat, fish, eggs, cheese and milk, bread and some vegetable foods such as peas, beans or lentils, are all substantial sources of protein. It is not necessary to eat every one of these foods every day.

A reduction in the amount of salt in the diet might be beneficial. Again it is not necessary to exclude salt so that food becomes unpalatable, but to eat less salt can allow the flavour of some foods to be tasted. Manufacturers have been encouraged to use less salt in infant foods and have done so."

This view has been discussed in many other countries and, particularly with reference to preventing Coronary Heart Disease (CHD), a number of broadly compatible national and professional statements on the desired direction of dietary change have been published (Trusswell, 1981). Doll, both in relation to avoidable cancers (Doll, 1981) and in putting the case for prevention (Doll, 1983), has emphasised the strength of the case for dietary change, although he concedes that there is some uncertainty over the precise degree of change which is most appropriate.

Disagreement over numerical targets is however usually a manifestation of different approaches to planning methods rather than of any underlying flaw in the scientific derivation of the targets. This is made explicit in the 1982 report of the WHO in The Prevention of Coronary Heart Disease which was chaired by Professor Geoffrey Rose (WHO, 1982).

The most important recent contribution to the discussion of food and health in the UK has come from the National Committee on Nutrition Education (NACNE). This committee was set up 4 years ago on the recommendations of the Secretary of State for Social Services to produce and make public clear guidelines on healthy eating for use in the UK. The main sponsor members of NACNE were the DHSS, MAFF, the British Nutrition Foundation and the Health Education Council. Their still unpublished report links all important avoidable diet-related disease to one set of quantified dietary recommendations which apply to the whole population of healthy people. Their recommendations are summarised in Table 1.

Table 1

Summary of the proposals for nutritional guidelines for health education in Britain

- reduce total fat contribution to energy by 25% to 30% of total energy intake
- reduce saturated fatty acid intake by 50% to not more than 10% of total energy
- reduce salt intake by 25% to 9g/head/day
- reduce sucrose intake by 50% to 20kg/head/year
- increase dietary fibre intakes to about 30g/head/day

Population, not high risk individuals

A final point on the application of these guidelines is necessary before looking at their translation into foods and hence agriculture. These recommendations are aimed at the whole population and are deemed for the maintenance of health in healthy people. In preventing mass disease, like CHD, it is not appropriate to attend only to the high-risk individuals and ignore the rest of the population. The reason is as follows. While an increasing level of risk factor like raised blood cholesterol carries an increasing risk of death from heart attack, it is important to remember that a low level of risk is still a risk and individuals at low risk still get heart attacks. In the whole population, the largest number of heart attack deaths are in the lower risk groups. Only 10 to 15% of the population are at high risk so their higher rate of death still produces only a small number of total deaths. Thus, to reduce the total deaths it is important to seek a reduction in all risk levels of the whole population.

CHANGES IN DIETARY PATTERNS

There are four ways in which national diets may change.

Changing the consumption of a particular food

Eating more potatoes and fruit, eating less butter, sugar and salt are examples. This is the simplest form of change and, unfortunately, is often taken as the only option in planning for healthier diets.

Foods can be substituted within food groups or meal patterns

Both the substitution of poultry for some red meat and the substitution of low saturated fat margarine for butter are ways of reducing overall saturated fat intakes without reducing the amount of food eaten. Pulses can be substituted for some meat dishes to reduce total and saturated fat, maintain protein, increase fibre and reduce unit meal costs.

Changing food composition

The move to greater consumption of low-fat liquid milk is happening now in the UK with the potential to reduce overall fat intakes by up to 10% without affecting the use and intake of liquid milk. The food manufacturing processes offer the greatest range of opportunity with reduction in fat, sugar, salt through recipe modification. Few people realise that a simple food like All Bran has nearly 20g of added sugar and 4g of salt per 100g portion.

Creation of 'new' foods

Snack pot noodles, cornflakes, fish fingers are 'new' to the shopping list. Also new are courgettes, Spanish melons, and baked-potato takeaways. Not all manufactured food is criticised on health grounds and the food industry has the power to increase the number of new foods which help consumers of food meet the dietary targets.

Allowing for one or more of these means of change, the possibility of dietary modification is far from remote. Consider the target of 25% total fat reduction. Table 2 shows the sources of fat in the average UK household diet. Dairy fat includes fat from liquid milk and butter, each contributing nearly half of their third of the total. The first three items contribute about 83% of the total fat.

Table 2

Household food consumption of fat in the UK, 1980

Food	Per cent of total fat
Dairy (milk, butter, cheese)	31.6
Meat and meat products	27.4
Visible fats	23.8
Eggs	2.7
Cereals	9.8
Fruit	0.9
Fish	1.1
Vegetables	1.7
Other	1.0
	100

Source: MAFF (1982)

Looking more closely within the meat category (Table 3) it can be seen how much variation there is in the amount of fat in the food as well as in the proportions of different fatty acids in different meat fats. With dairy fat, the simple expedient of drinking liquid milk as semi-skimmed would reduce the total fat by about 7.5% and by 15% if skimmed milk was drunk.

Table 3

The contribution of meat products to dietary fat in the UK

Meat	Consumption per day		% of fat	% of fat
	Amount-g	% of total fat	in food-g	saturated
Beef and veal	33.5	5.1	15.2	41.2
Mutton and lamb	17.3	3.8	22.0	47.4
Pork	14.7	3.4	23.1	38.2
Bacon and ham	17.6	5.2	29.5	40.4
Poultry	26.6	1.3	4.9	30.0
Sausages	14.1	4.0	28.4	40.0
Other meats and meat products	44.8	6.3	14.1	41.3
Fish	18.3	1.1	6.0	18.2

Source: Robbins & Walker (1982)

In line with the NACNE recommendation, Walker and I designed changes to the average consumption levels of foods, based on National Food Survey data, and produced the shift in patterns shown in Table 4.

Table 4

Change in consumption to meet NACNE (based on 1980 NFS)

Food group	Proposed change
Milk liquid	same quantity, semi-skimmed
Butter	half reduction
Beef and veal	smaller quantities of leaner cuts
Mutton and lamb	
Pork	
Bacon, ham	same
Liver	double
Poultry	half increase
Sausages	half less
All other meats	
Fish	double
Bread	half increase (50% to be wholemeal)
Cakes, pastries	one third less
Biscuits	
Other cereals	half increase
Fresh fruit	double
Fresh vegetables	half increase
Dried beans	quadruple
Margarine	cut by one third
Oils	(use low saturated forms)
Sugar and preserves	half reduction

Source: C J Robbins and C Walker (unpublished)

The impact of these changes on the composition of the diet can be seen in Table 5.

Table 5

Difference in composition between present and healthy diets with regard to key nutritional parameters

	Energy		Protein	Fat	Fatty acids				CHO	Dietary fibre
	kcal	MJ	g	g	SFA g	MFA g	PUFA g	P:S Ratio	g	g
New diet *	2250	9.58	81	72.2	28.8	13.6	13.6	0.47	287	27
Present diet* (1980)	2405	10.09	73	105.6	46.8	39.6	11.3	0.24	264	20

Source: C J Robbins and C Walker (unpublished)

* Including alcohol

IMPLICATIONS FOR AGRICULTURE AND THE FOOD INDUSTRY

The recommended dietary correction expressed by NACNE refers to the historic changes I have shown. The present diet was achieved through a complicated process which included dramatic changes within both agriculture and the food industry. To some extent the changes in these sectors have been led by the growth of multiples in food distribution. So long as it is not assumed that the present technological base in the food industry, and the particular mix of resources allocation within the sectors are not considered immutable or even derived from some optimisation decision process, then the opportunities for modifying agriculture and the food industry in line with health will be found easily.

Such change is strongly resisted and resented in the industry at present. This is understandable given the history of agricultural policy and development of the food industry under the patronage of MAFF with, hitherto, little pressure to consider the health consequences of the emerging industries (Robbins & Bowman, 1983). One needs only to consider the conflict between the DHSS advice 'to reduce the consumption of total fat, especially saturated fat' and the MAFF's rigorous support for the continued production of surplus dairy and beef fat.

Nor should the food industry cry "destruction" in the wake of the growing health lobby. The recommendations are indeed moderate - far more extreme changes would produce greater gains to health, but with unacceptable and unnecessary difficulty in their application. The food industry should be consoled with the undeniable fact that the population will continue to eat food. The issue of the moment is no more than ensuring that the supply of food is designed in line with the health interest of the population and not only the internal economic interests of the supply chain.

Such approaches are common in other countries and are beginning to be adopted in District Health Authorities in this country where food and health policies are being formulated and implemented (Brent, 1982). The need for a national level food and health policy has been argued for recently by both Blaxter (1983) and Passmore (1983). Passmore, who was involved in the successful rationing plans in Britain, wrote of the current situation, "There is no overall policy. This for me is a matter of regret".

The way forward can be found along many pathways (Jollans, 1980, Robbins, 1978, Robbins & Bowman, 1983). The important step is in recognising the need and possibilities. As CAS have shown in their work, the range of existing policy instruments is sufficient for providing both the incentives and coherence to a healthier future for the agriculture and food industries.

The agriculture and food industries should rise to the challenge to lead in the supply and distribution of foods which foster the nation's health.

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