encouraging the latter. It is wrong to recommend¹ that "Reduction of fat intake should apply particularly to saturated fats—namely, fats of animal origin—because fish are and poultry can be rich in EFA, just as vegetable fats can be rich (for example, unprocessed oils) or poor (for example, hard margarines). As pointed out in my letter on "Prescription for a better British diet" (7 April, p 952), we should be interested in the ratio of EFA to certain of the non-EFA.

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Total cardiovascular mortality in men (age adjusted 45-64 y) in seven countries, 1968-77 (in the north of Belgium it was 4.7 and in the south 6.0 per 1000 in 1976).

- ¹ Sinclair, H M, *Lancet*, 1956, **1**, 381.
- ² Sinclair, H M, *Symposium of the Zoological Society of London*, 1968, **21**, 275.
- ³ Kritchevsky, D, et al, *Atherosclerosis*, 1973, **17**, 225.
- ⁴ Ström, A, and Jensen, R H, *Lancet*, 1951, **1**, 126.
- ⁵ Dedichen, J, et al, *Transactions of 5th Conference of the Josiah Macy Junior Foundation*, NY, 1951, p 117.
- ⁶ Joint Working Party of the Royal College of Physicians of London and the British Cardiac Society, *Journal of the Royal College of Physicians of London*, 1976, **10**, 219.

SIR,—Sir John McMichael (20 January, p 173) repeats statements regularly referred to by opponents of the lipid heart hypothesis. One of these, the cholesterol-thyroidectomy problem, has already been dealt with by Dr P B S Fowler (10 March, p 681). Another is the "observation" of Groen et al¹ about Trappist and Benedictine monks, which has been discussed by Dr J I Mann (17 March, p 732).

On the other hand, I agree completely with Sir John that common margarines with their high content of saturated fat and *trans* fatty acids, and oils with a high erucic acid content, are unsuitable in a prudent diet. But this cannot result in a condemnation of all vegetable oils with a low saturated fatty acid content. Many countries with a high vegetable oil, low butter consumption (the south of France, Italy, Greece, Spain) have much lower coronary and total mortality in middle age groups than in most other western countries. For example, coronary and total mortality (age adjusted 45-64) respectively were in 1975: Greece 1.6 and 8.6 per 1000, England and Wales 4.8 and 12.5 per 1000.² In Belgium about 40% of all vegetable oils are accounted for by corn oil, a product only available since 1955. Soybean oil and peanut oil are near 30% each. No visible harm resulted from this. On the contrary.

The existence of different food habits between the north and the south of Belgium has been documented³ and recently confirmed⁴⁻⁶: saturated fat and food cholesterol is higher in the south, polyunsaturated higher in the north. This goes together with a higher serum cholesterol and a higher coronary, cardiovascular, and total mortality in the south.^{3,4} Other possible confounding variables such as sugar intake, serum triglycerides, vegetable and fruit consumption, total crude fibre, meat consumption, salt intake, blood pressure, smoking habits, stomach cancer, lung cancer, and total cancer were found either equal or slightly higher in the north.^{3,4,6,7} More important, however, is that since 1968 the consumption of butter (higher in the south), the intake of common (bad) margarines (higher in the north), and the intake of salt have decreased substantially in both regions.^{5,8} Concomitantly, a decrease in coronary, total cardiovascular, and total mortality was observed in both the north and the south, resulting in a sizable decrease for Belgium as a whole. This was not as evident in neighbouring countries, including England and Wales (see accompanying figure, in which the United States has been included for comparison).

We do not conclude that those findings prove a causal relationship between saturated fat and coronary atherosclerosis, but at least they are consistent with it. Together with all the accumulated evidence in favour of the lipid-heart hypothesis it "provides a sufficient

basis for immediate and positive dietary advice," to quote Dr Ruth Kay (3 March, p 623).

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- ¹ Groen, J J, et al, *American Journal of Clinical Nutrition*, 1962, **10**, 456.
- ² Joossens, J V, et al, *Lancet*, 1977, **1**, 1069.
- ³ Joossens, J V, *Acta Cardiologica*, suppl, in press.
- ⁴ Vastesaeger, M, *Acta Cardiologica*, suppl, in press.
- ⁵ Fondou, M, *Acta Cardiologica*, suppl, in press.
- ⁶ Kesteloot, H, and Van Houste, O, *Bruxelles Médical*, 1974, **24**, suppl, p 29.
- ⁷ Vastesaeger, M, et al, *Acta Cardiologica*, 1974, **29**, 441.
- ⁸ Joossens, J V, *Het Medisch Jaar 1978*, p 2. Utrecht, Bohn, Scheltema, and Holkema, 1978.

A Welsh diet for Britain?

SIR,—Our studies of the nineteenth century Welsh diet may be of interest to those of your contributors and readers anxious to modify present-day dietary patterns (Dr R Passmore and others, 24 February, p 527, and subsequent correspondents).

Our primary sources have been the values given by Edward Smith (a careful and painstaking investigator) in his reports of surveys of the diet of Welsh agricultural workers in 1863^{1,2}; caution must, of course, be exercised in interpreting Smith's figures³ but comments by other observers of nineteenth-century Welsh dietary patterns leave little doubt that Smith's reports were in essence a valid representation of the facts. For our calculations we used the values given by Paul and Southgate⁴; in some cases (for example, cheese and buttermilk) the calculations were based on analyses of samples prepared by us in accordance with nineteenth-century practice in Wales.

The diet was an extremely simple one and, as Smith indicated, differed substantially in certain respects (for example, consumption of cheese and bread) from that of corresponding groups in England. The mean daily adult intakes of bread, potatoes, cheese, and buttermilk or skimmed milk were 903 g, 490 g, 38 g, and 348 ml respectively and these four foodstuffs alone accounted for over 80% of both the energy and the protein intakes. Eggs, fruit, and alcohol were not taken and meat (mainly bacon) and vegetables were eaten only sparingly; the daily intake of oatmeal was 50 g per adult. Despite its simple structure the diet provided energy and all the essential nutrients at levels in excess of present-day recommended dietary intakes⁵; interestingly, too, it has a remarkable resemblance to the type of diet adumbrated by Mellanby as a "target diet" for a self-sufficient Britain.⁶

Of much greater interest to those preoccupied with the dietary induction of disease is the structure

of the "Wales 1870" diet in terms of "risk determinants"—dietary factors believed to have a correlative relationship with the incidence of certain diseases of affluence. In the accompanying table the "Wales 1870" diet is compared with the "Wales 1977" diet⁷ in terms of certain commonly accepted risk determinants; the recommendation for the risk determinant is a consensus of the recommendations of 18 committees that have sought to recommend a prudent diet for the prevention of cardiovascular and other diseases associated with affluence and a rapidly developing technology.⁸

"Risk determinants" in the "Wales 1870" diet compared with the "Wales 1977" diet and recommended targets

	Recommendation ^a	"Wales 1870"	"Wales 1977" ^{7,8}
Fat (% of total energy)	No greater than 33	25	40
PUFA (% of total fat)	Increase present intake	18.5	9.1
PUFA: SFA	c 1.0	0.42	0.20
Cholesterol (mg/day)	Maximum 300	130	517
Sucrose (g/day)	Decrease present intake	26	133
Dietary fibre (g/day)	Increase present intake	65	21

PUFA = polyunsaturated fatty acids; SFA = saturated fatty acids.

The "Wales 1870" diet scores heavily as regards its risk determinants—a not entirely unexpected finding if one accepts that the emergence of such diseases is at least in part a consequence of the failure of the metabolic adaptability of the tissues to keep pace with rapidly induced changes in the diet. A partial or complete reversion to a "Wales 1870" type of dietary pattern could therefore be a most desirable change.

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- ¹ Smith, E, Report from Commissioners, 13, Public Health Act, Public Records, vol XXVIII, 1864.
- ² Report of the National Eisteddfod of Wales, Chester, 1866, Carnarvon, Rees, 1866.
- ³ Barber, T C, Oddy, D J, and Yudkin, J, *The Dietary Surveys of Dr Edward Smith, 1862-3*. London, Queen Elizabeth College (Staples Press), 1970.
- ⁴ Paul, A A, and Southgate, D A T, McCance and Widdowson's *The Composition of Foods*. HMSO, London, 1978.
- ⁵ Department of Health and Social Security, *Recommended Intakes of Nutrients for the United Kingdom*. London, HMSO, 1969.
- ⁶ Mellanby, K, *Can Britain Feed Itself?* London, Merlin Press, 1975.
- ⁷ Ministry of Agriculture, Fisheries, and Food, *Household Food Consumption and Expenditure, 1977*. London, HMSO, 1978.
- ⁸ Robbins, C J (editor), *Food, Health and Farming*. Reading, Centre for Agricultural Strategy, 1978.

Does adipocyte hypercellularity in obesity exist?

SIR,—Let us end the discussion between Dr R T Jung and others (29 July, 1978, p 319, and 7 April, p 956) and ourselves (20 January, p 197) regarding adipose hypercellularity with a summarising statement which we believe shows that the differences in opinion are not very large. Actually there is probably only a quantitative difference in evaluation.

Let us first state that we both find that fat cell weight does not increase any more after a certain elevation of body fat mass. After this point, with increasing body fat subcutaneous fat cell number therefore must increase. The only difference here is a slightly varying degree of obesity where this is occurring.