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Food and fibre

Enthusiasm for fibre is sweeping the world. The journals are full of it, the popular press revels in it, and doctors take time off from prescribing it only to attend international conferences on it (Edinburgh 1973; Chicago 1974; Marabou, Sweden 1976; Washington 1977). A detached observer must be amused because the new craze is in fact one of the oldest inventions of nature. Fibre is simply plant cell walls. As such, it is the very basis of life on this planet, for only when cell walls evolved could plant life begin and hence, ultimately, animal life.

The natural diet of any plant-eating animal, including man, is obviously a fibre-rich diet. In "discovering" fibre modern man is waking up to the fact that his food is systematically deprived of fibre on its journey from field to grocery shop. A modicum of food processing is inevitable in urban civilisation, if only to keep food fresh, but food technology has recently developed a momentum of its own, and supermarket shelves are now crowded with highly contrived products. Almost all of these contain refined—that is, fibre-depleted—carbohydrate, especially sugar and white flour. Today most people get most of their carbohydrate in these forms. Consequently the average Briton obtains 18% of his daily calories from fibre-free sugar and about 20% from wheat flour that retains only a third of its original fibre.

Fibre is tough stuff, which is why it is removed. It is abundant in the outer layers of seeds, protecting the embryo within. Hence whole foods such as fruit and vegetables and unrefined cereals (wholemeal flour, brown rice, rolled oats, crude maize meal) have a rough texture in the mouth, and they have to be chewed. Chewing is work. This slows down the intake of food and may even deter it. Fibre-rich foods are probably digested and absorbed more slowly than refined foods, though experiments are needed to prove this. Certainly the extraction of water and electrolytes is delayed,^{1 2} thanks no doubt to the remarkable water-holding properties of fibre,³ and the contents of both small and large intestines are bulkier.¹ The extra bulk would be expected to stimulate stretch receptors more and promote motor activity. But in fact the fibre-fed colon generates lower and less frequent pressure waves (at least in patients with initially high pressures—namely, those with diverticular disease and irritable bowel syndrome⁴⁻⁷), even though it transmits its contents more rapidly. Thus, fibre seems to make the motor work of the colon more efficient. It certainly makes defecation easier.

Cleave⁸ saw that the same refining process which leads to underfilling of the colon and all its consequences leads also to overfilling of the mouth—that is, to overnutrition and all its consequences. The concept is so simple, and at the same time so big, that it is not easily accepted by academics trained in the complexities of biochemistry and the minutiae of cell biology. Furthermore, it is more respectable nowadays to solve problems by statistical tests than by logical argument.

The logic is hard to resist. Modern man has been lampooned as "fat, toothless, and constipated," and the statistics show that this is no exaggeration. Half the over-40s have only false teeth,⁹ half exceed 110% of ideal body weight,¹⁰ and most are on their way to diverticular disease.¹¹ Nearly all eat almost all their carbohydrate in refined form. Since fibre dilutes calories and makes them harder to get,¹² keeps the teeth clean and intact, and renders the stools soft, there is at least a case for the theory that fibre-depleted foods are intrinsically damaging to health.

It will take years of research to convict or acquit refined carbohydrates of all the charges laid against them. In the meantime, how much fibre should we eat to keep healthy? It is an impossible question to answer. Even with traditional nutrients, the daily requirements are mostly disputed, arbitrary, or unknown. (For example, the energy requirements of similar subjects doing the same job may differ by 100%¹³.) Fibre is not even a nutrient—it is the packaging that surrounds nutrients—so we can hardly apply the same rules. Moreover, it varies enormously, both qualitatively and quantitatively, in different plants, in the various parts of a plant, and at different ages of the plant. Can the requirements of such a variable dietary component be determined? The only practical way would be for the individual to adjust his intake of fibre-containing foods until he obtained the desired effects. But even here there are problems. The desired effects of fibre are almost impossible to define numerically. Thus for stools we have no consensus on the ideal weight, frequency, consistency, and transit time.¹⁴ We do not know, and it is impracticable to measure, how quickly an individual should ingest and absorb his carbohydrate or how much chewing he should do to keep his mouth healthy. In the end research may produce some answers. For the moment there is something to be said for the simple view that if a man decides to take all his plant foods in unrefined form nature itself will ensure that his intake of fibre is right.

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Mr Terence Millin

Last week we inadvertently described Mr Terence Millin as "the late" (p 348, col 1). We apologise to Mr Millin and his family for any distress caused by the mistake, and we wish him long life and happiness at his home in County Wicklow.

As we go to press we regret to record the death of Lord Cohen of Birkenhead on 7 August. An obituary will appear in a later issue.