British Journal of Nutrition (2001), **85**, 761–763

Book reviews

The Cambridge World History of Food. Edited by K F Kiple and K C Ornelas. Cambridge, UK: Cambridge University Press. 2000. Two volume boxed set at £110. ISBN 0521402166.

This is a handsome set of books that would grace any bookcase. Two, 1000 page volumes with attractive pictorial wrappers in a matching slip case. As a book collector, my 'covet reflex' was triggered as soon as I opened the packing. My other reason for not posting them on to another reviewer was their size and weight. Their size and structure would make them cumbersome to use as a regular reference source and the attractive wrappers will deteriorate to leave a plain cloth binding. Even a confirmed book addict might start wishing for a CD-ROM version.

Internally these volumes are austere in comparison to their sumptuous exterior. These are not books for the casual browser. Page after page of close-packed two-column text with no colour and a sparsity of diagrams, tables, illustrations or anything else that would encourage the casual browser, e.g. bulleted lists or text box summaries. It is possible to go 100 pages without a table or diagram. There are only nineteen maps and 120 figures in the two volumes, including a number that are purely decorative. Were authors asked to minimise their use of illustrations and formatting to reduce production costs? Even some articles that seem to cry out for graphical material were devoid of graphs and tables, e.g. those dealing with nutrition and time trends in mortality. There is, for example, a verbal description and discussion of the American Food Guide Pyramid but no picture, are all non-American readers familiar with this image? An illustrated comparison of such food guides in different countries might have been appropriate for a 'World History'. As someone prone to confuse their Pleistocene with their Plasticine, I would have appreciated a detailed time line in the introduction showing the various periods in human history and the timing of some of the key events in world food history.

These volumes do not claim to be an integrated homogeneous book, but rather a collection of 170 essays with 224 contributors. Although the publicity material emphasises the international diversity of these contributors, there is a very heavy bias towards North America. Almost 80 % of the essays originate from North America and only four come from Asia, Africa and South America combined. The essays are grouped into seven sections and there is also a large dictionary of the plant foods at the end of volume 2. The seven major sections are: six essays on the methods used to investigate historical diets; sixty on important staple foods; thirteen on dietary liquids; thirty-seven on the nutrients, deficiency diseases and other food-related disorders; twenty-four on the history and evolution of dietary practices in different parts of the world; eighteen on history, nutrition and health; thirteen on contemporary food-related policy issues. There is not only an extensive subject index, but also an index of Latin names of plant foods and a useful index of names of people referred to in the text.

The section on the nutrients when combined with some of the articles from other sections would seem to cover much of the ground covered by standard nutrition texts. As a nutritionist, I found this to be the most disappointing section of the books. I would not recommend these volumes to my students as a source for reliable information about nutrition and nutrients *per se*. I think that much of the nutrition content could be greatly condensed and still leave a work that does justice to the ambitious title. I did wonder what sort of editorial brief the various authors were given; they certainly did not all seem to be writing with common objectives or even for the same readership. Why were some nutrients and their associated deficiency diseases discussed in separate essays whereas others were not? What was the logic behind the weighting of the various essays? Vitamin K receives eleven pages whereas the eight B vitamins receive just four pages between them (riboflavin merits only a paragraph). Vitamin A gets ten pages but with no separate section on xerophthalmia. A list of essays on deficiency diseases that includes pica and osteoporosis but not rickets, xerophthalmia or macrocytic anaemia seems at least superficially odd. Throughout the volumes, I found some of the weighting of articles, and occasionally even the choice of articles, surprising.

There are almost inevitably important inconsistencies in the nutritional material in different essays. In one essay we are told that hunter-gatherers had Ca intakes up to six times current US levels and that current, historically low, Ca intakes are a major aetiological factor in osteoporosis. In another essay we are told that the 'natural human diet' is low in Ca and that the current excessive Ca intake in the Western diet is a major factor in the development of coronary artery disease. Consumption of cow's milk is identified as the major cause of this excessive Ca intake and a reduction in milk consumption especially amongst the elderly in Western countries is advocated. There is a tendency in several of the essays to quote only the evidence that fits the author's theory and to ignore rather than refute that which does not. A complete spectrum of views can be found about the adequacy of the protein in vegetable foods. In the article on protein we are told that except for children subsisting on bulky and low-protein staples, protein deficiency is unlikely unless energy supply is limited. Data presented in this article suggests that the protein content of rice is adequate and that children satisfying their energy needs are less prone to protein deficiency than adults. Yet in another article we are told that even brown

rice is 'remarkably deficient in protein', and in the article on rice itself, that rice has sufficient protein for adults but not for children. I would have liked to have seen an in-depth discussion of changing attitudes to protein requirements over the last century and its practical consequences, clearly a topic of major interest and importance in recent world food history. As a nutritionist, I found some dubious nutritional assumptions and assertions in a few of the articles.

In such a large collection of individual contributions there are bound to be variations not only in opinion, but also in approach and quality. In my sampling I found plenty of interesting and useful contributions, I nevertheless found more low points than I had hoped for. The individual essays vary not only in quality but also in their academic level and in the approach to referencing.

The publicity material and other reviewers have made great play of the mass of fascinating and sometimes bizarre anecdotes about food and nutrition that are liberally scattered through these volumes. For instance, I did not know that the availability of coconut oil was a stimulus to the development of the British fish and chip shop. My own favourite was the widespread use of the privy pig in China and Korea to process human excrement into flesh for human consumption! This certainly puts modern concerns about hygiene standards in animal husbandry into perspective. I was able to answer most of my test questions using the index but I failed on a few. I could find no reference to lycopene, despite an article on tomatoes. I found no mention of Quorn even using its Latin name, despite a long article on fungi and one on substitute foods; there is just a brief reference to single-cell protein generally. I did find the origins of the term hamburger. I did find a reference to semolina, but needed a dictionary to clarify exactly what, as a schoolboy, I had been forced to eat.

This was an ambitious project and despite some criticisms I am pleased to have these volumes on my bookshelf. They will be of great value to students of subjects ranging from food science to anthropology, and indeed to anyone with an academic interest in anthropology or the history of food, diet and culture. For me the essays dealing with individual foods and drinks together with the dictionary of plant foods will be the most useful addition to my bookshelf. The cost will probably deter many personal buyers, but any institution running food-related, anthropology or social history courses will want a copy in their library. Perhaps some of the larger public libraries might consider investing in a copy.

GP Webb

DOI: 10.1079/BJN2001354

Forage Evaluation in Ruminant Nutrition. Edited by D I Givens, E Owen, R F E Axford and M M Omed. Wallingford, Oxon, UK: CABI *Publishing*. 2000. pp 480. £75 ISBN 0 85199 344 3.

Recognising the quantity and the diversity of forages used in ruminant nutrition, the stated objectives of this book are to review the current status of forage evaluation and to consider new technologies and new nutritional characteristics of forage that might be important in their evaluation in the future. The book consists of twenty-one chapters grouped within six sections.

In Section 1 (chapters 1–3), the scale and importance of forage in ruminant production, worldwide, is described. This is followed by a review of the processes of forage utilisation by ruminants and an excellent critical overview of current procedures to estimate the nutritional potential of forage. (Many of these procedures are discussed in more detail in subsequent chapters.) The authors conclude that models of animal response to nutrients rather than current animal requirement models are required. Factors influencing forage intake are reviewed in chapter 3 together with the current status of the prediction of forage intake. Compared with the plethora of publications available on this topic, it is rather selective. Section 2 (chapters 4–7) considers the estimation of the energy value of forages. Building on issues raised in Section 1, the authors of chapter 4 argue that 'mathematical integration of new and existing data and concepts into mechanistic models is essential to improve the prediction of energy supply'. They also demonstrate the utility of *in vitro* techniques in this regard. In chapter 5, the impact of whole-tract digestibility on measurements of metabolisable energy concentration and the loss of energy as heat during forage digestion are discussed. This chapter suggests that consideration of energy as a single entity rather than as a combination of nutrients is a limitation to progress in forage evaluation. Chapters 6–8 consider measurement of digestibility *in vivo* and its prediction by faecal-derived inocula or commercially-available enzymes. These methodology-rich chapters should be useful to those embarking on the measurement of forage digestibility. Chapters 9 and 10 consider the measurement of rumen forage digestion using *in situ* and cumulative gas production techniques respectively. There is some repetition between the description of the *in situ* technique in chapters 9 and 12 and in the use of digestibility to predict intake in chapters 9 and 3. One application of the cumulative gas production technique which is not highlighted is as a screen for methane production from various rations, an issue of increasing concern with regard to the impact of ruminant agriculture on the environment. In addition, while the confounding effects of volatile fatty acid composition in comparisons of gas production curves is recognised, I feel this does not receive sufficient attention and no strategies to adjust for this problem are suggested. Section 3 (chapters 11–13) considers the estimation of the protein value of forages *in vivo*, *in situ* and *in vitro* respectively. In Chapter 11 purine derivative excretion as a method of estimating microbial protein flow to the small intestine is highlighted. While use of intestinally-cannulated animals together with flow markers is mentioned, the authors appear to prefer the former technique! Chapter 12 provides an excellent account of the *in situ* estimation of protein degradation in the rumen and in the small intestine while Chapter 13 summarises the current situation with regard to measurement of these processes using enzymes or rumen microbial-cell preparations. As with many *in vitro* techniques, validation against appropriate *in vivo* data is sparse and problematical.