Technology and food production

C. R. W. Spedding

Food Production and Consumption: The Efficiency of Human Food Chains and Nutrient Cycles. Edited by A. N. Duckham, J. G. W. Jones and E. H. Roberts. Pp. xx+541. (North-Holland: Amsterdam and Oxford, 1976.) Dfl.120; \$48.95.

THIS is a bold and ambitious book that deserves to be treated as a serious attempt to encompass in one volume the entire food production system of the world, from photosynthesis to marketing and consumption. Rigorous criticism is therefore a better use of limited reviewing space than mere description of contents. The latter can be summarised as being organised into 28 chapters (by 31 authors) in five parts (introduction; ecological aspects; biological components; social and economic aspects; a strategic synthesis). The book is well produced and edited, and relatively free from minor errors.

The quality of the individual contributions is inevitably uneven but as a compilation of basic facts the book is extremely valuable, although more could usefully have been included on, for example, the inefficiencies of animal populations and nitrogen fixation in plants. The enterprise, however, was intended as much more than a compilation; what has to be assessed, therefore, is the success of the synthesis achieved.

Energy is used as "the major currency" and, although the arguments are strong, it is perhaps rash to base a total synthesis too heavily on this alone. It is argued that the value of land depends largely on its ability to derive an income from solar energy. The world is, however, full of exceptions to this: the very ability referred to is dependent on other inputs with costs that have to be justified by probable profit and this is often not related at all to current energetic efficiency.

Furthermore, there are dangers regarding food as merely a biological necessity. Space, water and oxygen are also biological necessities, but who would accept an argument based on providing the minimum biological requirements for these necessities? If man wants more than the minimum out of life, 'better' food would seem at least as reasonable an optional extra as cars, bingo or television.

Indeed, the book recognises that there is little hope of diverting cereals from livestock even though this could result in more food being available. The question of "available to whom?" remains a worrying one. The confidence generated by the conclusion that there are "no insuperable biological problems in feeding the world up to 2000 AD" evaporates somewhat when it is realised that both hunger and over-consumption now exist independently of technical knowledge, even when applied.

The conclusion that food systems are extremely inefficient is well documented but there is, in my view, too little emphasis on the problems of tackling such inefficiency. Identifying a problem has to be followed by selection, from all the technical possibilities, of an appropriate solution.

Although a systems approach is advocated, the book is mainly based on an examination of food chains—linear linkages without feedbacks. The editors recognise this but do not greatly emphasise that, when governments are recommended to focus on particular

inefficiencies, they should do so with due regard to all the consequences. The difficulties of doing this ought to be amongst the reasons for the modelling activity recommended.

It will certainly be necessary, as is strongly argued, to aim at high yields *without* high inputs of support energy, but this may not be sufficient. No-one would quarrel with the conclusion that "the greatest potential improvement thus lies in the area of conventional agricultural technology", but this is always likely to be so in the short term (if we mean by improvement greater food production). But if much more food was grown and harvested, the dilemma would remain, that the hungry people are also desperately poor.

Despite these criticisms, this volume is a constructive step in the right direction and will be of great value to all those interested in the application of technology to efficient food production.

C. R. W. Spedding is Professor of Agricultural Systems and Head of the Department of Agriculture and Horticulture at the University of Reading, UK.

Foresight and responsibility in land use

John Andrews

The Thames Transformed: London's River and Its Waterfowl. By J. Harrison and P. Grant. Photographs by P. Harrison. Pp. 240 (André Deutsch: London, 1976.) £5.95.

INDUSTRIALISED British estuaries have recently begun to receive the attention necessary to retain or restore their natural productivity. The Thames exemplifies the work, its results and the complex problems to be solved if the international importance of wildlife in our major estuaries is to be maintained.

One-third of *The Thames Transformed* deals with the inner estuary, describing well the decline of water quality to the point where the river was a deoxygenated broth in which neither bird, fish nor weed could persist, and outlining the remarkable work of the London County Council/Greater London Council and the Port of London Authority in restoring reasonable conditions in which wildlife could return. Ironically, continued improvement has now reduced the massive *Tubifex* population on which the wildfowl feed, so that their numbers are declining, whereas waders have lost

feeding areas due to reclamation.

The authors are experienced amateur ornithologists, Jeffery Harrison being known particularly for work on wildfowl and his concern for the north Kent marshes. Nearly half the book is devoted to this area—the Essex shore is dismissed in a cursory eighteen pages—and deals almost exclusively with wildfowl, including detailed historical accounts of occurrences. There is no discussion of the ninety-thousand waders or other bird populations, nor of the botanical, entomological and other important scientific features of the outer estuary. Concentration on the wildfowl produces recommendations about the agricultural management of the marshes which are not in the best interests of the total biological resource, whereas the conflict between wildfowl—particularly brent—and farmers, is glossed over. The identification of current industrial and recreational threats is valuable but too brief to demonstrate fully the complexity of the problems, both from the point of view of the 'developer' faced with real social and economic issues, and of the 'conservationist' striving to maintain scientific interest.

The authors suggest that the north Kent marshes should become a National Park rather than a National Nature Reserve, perhaps because the Nature Conservancy Council (NCC) has never had the finance required. Indeed, the money for research and land acquisition which resulted from the Maplin Airport threat, were gained for NCC