

Editorial

It is a great challenge to take over as senior editor of *NRR* from Mike Gurr who has carried the baton for the last 8 years, having taken it over from the founder of the journal, Roy Smith. The task is made lighter by the participation of so many people in the production of the journal, including the rest of the editorial team (not forgetting the overseas editors whose ideas for topics are so valuable), referees, and all the technical experts who get the written word into the form in which you are now reading it. Most of all it is the authors of the reviews who ensure the success of the journal and we continue to be fortunate to attract the best, both in response to our invitations and those who submit proposals for consideration by the editorial board. The easiest way for most people to contact us with ideas for reviews is by email: j.m.forbes@leeds.ac.uk

In this issue we have the usual wide variety of topics which illustrates our aim to cover Nutrition in its broadest sense. On the one hand we have the unravelling of the ways in which selenium interacts with the role of iodine in the thyroid hormone system, elegantly described by *Arthur and colleagues* who have themselves been so much to the forefront of this area, which encompasses nutrition and endocrinology, and which has great medical relevance.

On the other hand we have the second part of *Annison and Bryden's* epic review on digestion and metabolism in ruminant animals. The first part, published in Volume 11, covered metabolism in the rumen while the current article follows the nutrients and metabolites into the body and through the liver to muscle, adipose tissue and mammary gland. Having been involved in some key findings himself, Frank Annison is very well placed to review the achievements in this field. Although he was invited to contribute to our series by eminent nutritionists as a 'senior citizen', he and Bryden have provided a thoroughly up-to-date and stimulating combination of history and current challenges.

Reid and Hammersley tackle the issue of whether or not arousal is reduced after a meal high in carbohydrate, taking in more detail one area covered by *Rogers* in Volume 8. Existing literature is critically reviewed and the authors conclude that many attempts to study this effect have been naive, ignoring as they do considerations of what arousal actually is, how it can be measured, and invoking serotonin as a mediator when the available evidence does not warrant this. Treatments must be applied in blind, or preferably double-blind, protocols in experiments involving human subjects in order to avoid cognitive effects interfering with relationships between applied variables, such as the macronutrient content of a meal, and mood or emotion. The great difficulties highlighted in performing good research in interactions between nutrition and psychology reflects the discussions of *Macdiarmid and Blundell* in Volume 11.

Many readers will recognize *Waterlow* as a father of protein studies in man and a former President of The Nutrition Society. His contribution is, indeed, that of an eminent nutritionist but, more than that, he gives us a scholarly critique of studies of nitrogen balance and highlights 'mysteries' where further research is required to clarify this most important subject.

'Prevention and cure of coronary heart disease, osteoporosis and cancer' sounds like an extravagant claim by the most bullish drug company. Notwithstanding, *Anderson and colleagues* chart in detail the effects of phyto-oestrogens on various factors thought to be involved in these classes of disease. In particular they highlight the possible protective action of soyabeans and their products but, wisely, provide lists of questions awaiting clear answers. The authors cover the subject in an authoritative manner and warn against the uncritical self-administration of the various phyto-oestrogen oral preparations currently available until current research results are confirmed.

There is considerable concern about the widespread use of antibiotic-like additives in the food of many farm animals. *Partenen and Mroz* summarize the results of a great deal of research into the effects of organic acids in the diets of pigs, showing that they can in some respects replace antibiotics. However, there has been considerable variation between the results of various experiments and the authors call for more research to clarify the optimum type and concentration of acid(s) to be used to restrict microbial growth and enhance the efficiency of animal production. Credibility for such dietary additives can only be assured if sound explanations for their modes of action are available and the authors discuss possible mechanisms for the observed effects, which are by no means fully resolved.

Ward, in his review of the application of transgenesis to improving nutrient utilization in farm animals, outlines the various methods that have been used to transfer genes in animals, and discusses various genes that have already been, or are likely to be, transferred in order to improve nutrient utilization. These include the gene for growth hormone which is claimed now to be close to commercial testing after some 15 years of research and development, giving some idea of the time-scale of this type of development. As far as enhancing metabolic pathways in the animal is concerned, attempts to boost the supply of cysteine, the first limiting amino acid for wool growth, have seen disappointing results with sheep despite initial promise from rat experiments. Introduction of genes for the synthesis of threonine or lysine is much more complex, as is that for glucose synthesis from acetate, produced by fermentation in the rumen. Introduction of the pathways for cellulose digestion into the digestive tract of animals to enable them to use cheap, fibrous foodstuffs is also under investigation.

Is this the onset of a 'brave new world' of tailor-made animals to alleviate hunger in the developing world, or the blind alley of Frankenstein meddling? I can accept and encourage continued research but am more sceptical about the widespread use of transgenic animals in commercial agriculture. However, *Ward* takes a responsible point of view and emphasizes the role of modelling to predict optimum ways of manipulating genes for more efficient production of animal products. In this way better predictions can be made of genetic manipulations which will produce real benefits without compromising the welfare of the animals or the safety of their products for human use. The author acknowledges that reduced consumption of animal products is likely in the long term to assist in supporting the increasing human population of the world from existing land resources.

It is a common theme of research reviews that 'more research is required' and the reviews in this issue of *NRR* are no exception. It is undoubtedly true that most research raises more questions than it answers but we must be sure to make it clear whenever questions have been answered unequivocally and not to be too timid in drawing conclusions.

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