

Editorial

As I have pointed out before, the core of the journal is based on papers that the editors have commissioned as a result of discussion about the ‘hot topics’ we think our readers would like to know about. Having selected topics, we then try to find authors for the job. Inevitably, the first names that spring to mind are research workers who have already made their mark. However, these are frequently very busy people who, although keen to write for us, find that demands on their time do not allow them to accept or, increasingly, cause them eventually to request us to extend their time limit. Sometimes unfortunately, they never contact us again, perhaps from sheer embarrassment.

I should like to make a plea to all senior research workers who are attracted to writing a review for us but who are overwhelmed by the sheer volume of other more pressing tasks. Will you please consider giving the main task to a more junior colleague: a bright young researcher who is beginning to make his or her mark but is not yet in the public eye? Such scientists may well be right on top of the literature because it is essential for their research and would gain enormously from the experience of reviewing and writing. Your role as the senior member of the team would be to advise initially on the overall shape and scope of the review, give guidance during the writing, assess the completed work and suggest improvements before it is dispatched to us. I hope that all senior nutrition researchers who read this editorial will take note of this suggestion.

From time to time it is our policy to make our primary choice of review, not on the basis of the topic, but on the grounds that we would like to hear from eminent experienced nutritionists, retired from active research, on any subject of their choice. A prime example was our invitation several years ago to Dr Elsie Widdowson to write for us and she chose as her subject “Self experimentation”. We currently have several invitations out to well known nutritionists, whose offerings will appear in subsequent issues of NRR. In this issue, we are pleased to publish the first part of an excellent wide ranging review of ruminant nutrition and metabolism by *Annison and Bryden*. Professor Frank Annison has spent an eminent career studying various aspects of metabolism in ruminants. After spending some time at the University of New England, Armidale, Australia, for many years he directed a team at the Unilever Research Laboratory, Colworth House, near Bedford, UK. There he undertook basic metabolic research in ruminants, which although fundamental in nature was designed to underpin the needs of the animal feeds industry. He later transferred to the University of Sydney to head the Department of Animal Husbandry (later Animal Science), from which he recently retired. In this issue Frank, with his colleague Bryden, reviews metabolism in the rumen. In volume 12, These authors will present the sequel, covering the utilization of nutrients absorbed from the rumen and the upper alimentary tract to support growth and reproduction.

Readers of volume 11(1) who are interested in food choice and the control of food intake will no doubt have formed their own view of the concepts developed by *Day and colleagues*. One such reader was Professor Fred Provenza. All reviews we receive are sent to one or more referees. Fred’s referee’s commentary was so extensive (fair but forthright!) that I suggested to my fellow editors that they should (with the agreement of authors and referee) be published. Originally it was our intention to present the commentary in somewhat modified form but, such was Fred’s enthusiasm for his subject and his strong advocacy of an alternative viewpoint, that what emerged was another full-blown review. Furthermore, it seemed only fair to allow the original authors to make a response. We are therefore publishing in this issue: “Self-organizing

of foraging behaviour: from simplicity to complexity without goals” by *Provenza and colleagues* and a short ‘response’ “Does the study of feeding behaviour benefit from a teleonomic framework?” by *Kyriazakis and Day*. I apologize to all those readers of *NRR* for whom this subject is not of interest if they feel that too much space has been devoted to it in succeeding issues. However, I took the decision to publish on the grounds that this provided an excellent opportunity for *NRR* to provide a vehicle for stimulating debate in an important area. For those who find the subject interesting but obscure, the following comments may be helpful.

Day et al. propose that animals are working to a blueprint which they are motivated to follow in order to reach the ‘goals’ set by their genes. They propose that (i) feeding behaviour is directed towards achieving a goal, and (ii) animals are motivated actively to sample food items to assess whether they are nutritionally beneficial or harmful. *Provenza et al.*, by contrast, see the ‘goal’, if it exists, as being short-term—the animal responds in order to feel comfortable now—and deny the motivation of actively sampling items to assess their nutritional value. In their reply, *Kyriazakis and Day* accept that such concepts as motivation are difficult (impossible) to prove or disprove and therefore, according to strict scientific method, invalid. However, they see such concepts as necessary to explain animal behaviour, in this case feeding behaviour, while the opposite view is that such constructs are merely descriptive and not in any way explanatory.

Provenza et al. argue that animals’ responses are short-term and ‘self-organizing’. They are considering how the animal works, without addressing how it got that way through evolution and from that perspective it seems that goals and motivation are indeed redundant concepts. The optimality/evolutionary viewpoint starts with goals and then addresses the mechanisms that evolved to achieve those goals in a particular environment (with all its uncertainties and variability).

The apparently contrasting approaches of the two groups of authors could be reconciled by considering the evolutionary context of the individual and its mechanisms for responding to its environment.

In view of the criticism expressed by *Provenza et al.* to the proposals of *Day et al.*, *Kyriazakis and Day* define what they mean by ‘goals’ in the context of feeding behaviour. They refer to meeting the needs for nutrients to supply the programmed rates of growth, egg production etc. Presumably the demands for nutrients generate signals of imbalance that are the immediate drivers of behaviour in *Provenza’s* model. Are the differences between the two groups anything more than semantic, therefore? In the sense that *Day et al.* postulate a specific drive, especially in young animals, to test novel items for their nutritional value, there are deep-rooted differences. Modelling the underlying controls of feeding behaviour in order to predict food intake over more than a few days requires a knowledge of potential rates of nutrient demands, e.g. for maintenance, growth, reproduction. Thus, both approaches depend on knowledge of genetic potential but only *Kyriazakis and colleagues* have specifically used this knowledge to predict food intake and diet selection but their success in modelling has not been influenced, as far as can be seen, by such concepts as motivation or intrinsic and extrinsic exploration.

Kyriazakis and Day quote from some of the papers of Provenza and his group, in which uncertainty is expressed in the interpretation of some of the results. The implication is that the proposal of an *a priori* hypothesis would have allowed an explanation of the unexpected results. Would that biological science were so predictable!

Still on the subject of dietary intake but at the level of more obvious practical relevance to all practitioners of human nutrition, *Macdiarmid and Blundell* review the vexed question of under-reporting of food intake. Accurate knowledge of what and how much people eat is

crucial to most quantitative studies of human nutrition. If, as now seems clear, under-reporting is widespread, we need to know who under-reports, why, and by how much? The authors provide valuable insights into these complex problems. Their conclusions should greatly assist the task of those who need to collect food intake data in their work but evidently much more knowledge is required in this difficult area, in which nutrition, physiology, psychology and sociology are closely interlinked.

Since its inception, *NRR* has carried many reviews on aspects of the vitally important subject of infant nutrition. A continuing theme is the need to provide appropriate nutrition to babies who, for whatever reason, are not breast fed. *Forsyth*, in this issue, reviews current knowledge of the lipids of human milk and the application of this knowledge to the provision of appropriate infant formulas. The author provides helpful recommendations for the lipid content and composition of formulas and identifies where more research is needed. The extent to which preformed long chain polyunsaturated fatty acids of both *n*-3 and *n*-6 families are needed and what are safe levels are clearly priorities.

Irritable bowel syndrome is a frequently occurring yet poorly understood disorder. As *Shaw and colleagues* reveal in this issue, it is an immensely complex disorder with no clear knowledge about cause. Genetic and psychological factors are clearly involved. The authors review the nature of interactions between dietary and other factors, including stress, and the extent to which 'causal' or merely 'triggering' factors can be elucidated. Current symptom-based diagnoses merely indicate the source of irritation and do not address issues of causality. Elucidation of triggering factors may lead to more rational diagnosis.

Last but by no means least, *Weir and Scott* review the whole subject of plasma homocysteine concentration and its relevance to disease. They describe the nature of homocysteine and the manner in which its plasma concentration is regulated. A wide range of plasma homocysteine concentrations is observed in all populations. There are powerful genetic factors underlying this range of values. The authors review epidemiological associations between plasma homocysteine concentration and cardiovascular disease and, importantly for readers of this journal, describe the role of diet, particularly several B vitamins, in influencing plasma homocysteine concentration. They recommend addition of folic acid to food staples as a simple, cheap and effective public health measure to reduce risk from high blood concentrations of homocysteine in the population.

During the course of preparing this issue, it was brought to my attention that some information, reported in volume 4 of *NRR*, might be unsound. Readers will find an appropriate *erratum* notice following this editorial.

This is for me a landmark editorial, as it is my last as editor of *NRR*. Professor J. M ('Mike') Forbes will take over as general editor from volume 12, 1999. The most effective ways in which potential authors can assist Mike in his new task are as follows.

- Read and take careful note of instructions to authors. Please present your paper in a format that is as close to the *NRR* house style as possible. That will save an enormous amount of editing time.
- Especially, please check your references carefully. About 95% of the work on the final editing of reviews is concerned with reference errors. Even the very best papers contain some reference errors, most have several and the worst (increasing in frequency) have literally scores. Common errors are references in the list but not in the text or in the text but not in the list. Many have missing or wrong pages, volume number or year or are not in the *NRR* style.

- Respond to queries reasonably quickly. If you do not think you will be able to meet deadlines, please tell us sooner rather than later. Please do not, as several authors have done in the past year, 'go into a black hole' and fail to answer any communications.

Finally, I wish to thank all the people who have assisted me so ably during my period as general editor: the UK editorial team, the international editors, my colleague, friend and copy editor Brian Bone, Nutrition Society staff and the staff at CAB International.

And, dear readers and authors . . .

. . . keep the papers coming!

Michael I. Gurr
St Mary's
December 1998.