

GUEST EDITORIAL



Dr George Pitt was the fourth Honorary Editor of the *British Journal of Nutrition*, serving from 1976–1982 in that capacity, and for a total of 20 years on the Editorial Board. He retired in 1990 as Leverhulme Reader in Biochemistry in the University of Liverpool and is now an Honorary Senior Fellow in the School of Biological Sciences in the University of Liverpool.

Unreferred: a chance to air my prejudices?

When authority was authority, deference was deference and I was a student, the *British Journal of Nutrition* had a stern reputation as a bastion of scientific and literacy rigour. From my undergraduate days I remember the dismay of my professor at the Journal's sending back of one of his papers, because of his statistical treatment of the results. In those days, long before the multiplication of professors reached the log phase, departments had only one, who bestrode our narrow world like a Colossus. We noted with awe that the Chairman of the Editorial Board exerted even greater power.

The Journal's reputation on the literacy side was fearsome. Tales of S. K. Kon's vigorous defence of the English language from sloppy abuse by us natives made us wary of submitting papers for fear of having our ignorance exposed.

My prejudices were confirmed when I eventually sent in a paper for Kon's scrutiny. He objected to my use of phenomena as the plural of phenomenon, asserting that since phenomenon was not a real Latin or Greek noun, phenomenons was correct, just as the plural of electron is electrons. I argued back, citing the *Oxford English Dictionary* as authority; at one stage we even had the Professor of Classics at the University of Reading involved. To no avail: phenomenons was what appeared in print. As a last petulant act of defiance I changed it on all the reprints sent out, but I knew I had been worsted.

During the last few years of Kon's long reign, R. A. Morton, my Professor, was a member of the Editorial Board, and I cut my teeth by refereeing papers on vitamin A. When Morton retired from the Board, I replaced him, working under Clive Balch's amiable Chairmanship. Invariably courteous and pleasant, he nevertheless seemed to be able to maintain standards without ostentatious effort.

In due course Clive handed over the Chairmanship to Geoffrey Taylor, and after 23 years the *BJN* office moved out of the National Institute for Research in Dairying to the University of Southampton. Geoffrey Taylor was a quiet, modest man who ran the *BJN* with an apparently gentle hand. I can recall only one uncharacteristic episode when he summarily dismissed a Statistical Editor. This was not, as some authors might have hoped, for raising niggling objections to what they regarded as obviously correct conclusions, but for tardiness in returning his reports.

The move of the office to Liverpool when I became Chairman of the Editorial Board was at least a big geographical change. Still smarting from my experience with 'phenomenons', I suggested to Christine Hughes (who is still a Technical Editor) that she could ease some of the more rigorous editing rules dating back to the Kon era. She was not wholly receptive to my message, considering those tried and trusted practices designed to ensure clarity and precision of meaning had much merit. As the years have gone by I too have come to see that Kon's view has a lot going for it – perhaps passed to me by some mysterious method of transmission, like a prion disease – and I in my turn have turned into a literacy reactionary.

For example, I am perturbed to see inside the cover that the *BJN* has two Deputy Chairs in the persons of Professor Bingham and Dr Lobley. Chairs? Chairs are what they sit on; Sheila Bingham and Gerald Lobley are both Deputy Chairmen. I am sorry to see the *BJN* supporting the fashionable misconception that a word ending in 'man' denotes a male.

I incline to detect more and more merit in the story told of Noah Webster, the great early 19th century American lexicographer. He was caught by his wife kissing the maid. 'Mr Webster,' she exclaimed, 'I am surprised.' 'No, my dear,' corrected Noah, 'it is we who are surprised; you are astonished.'

Come back, Professor Kon, all is forgiven. If only you could be made Chief Inspector of OFSTED, and restore literacy to our schools.

Like other Chairmen I always tried to maintain Kon's insistence on good statistical presentation. I confess I found the overseeing of this increasingly difficult. Brought up when statistical computations involved manual operation of a mechanical calculator, I considered that *t* tests, simple linear regression and fairly straightforward ANOVA equipped one adequately for professional life. The rapid developments in statistical mathematics brought in complex procedures that extended beyond the limits of my competence. The greater availability of professional statisticians in authors' own institutes sometimes meant that a Statistical Editor's comments, instead of being humbly and gratefully received by the authors, would be challenged by the home team's statistician, starting an erudite confrontational discussion. In such circumstances I fear I usually adopted the sage advice of Lord Mansfield, the great 18th century jurist, to a newly appointed colonial governor. 'Consider what you think justice requires, and decide accordingly. But never give your reasons, for your judgement will probably be right, but your reasons will certainly be wrong.'

The use of computers has facilitated and massively advanced not only statistical analysis, but also the acquisition, processing, presentation and interpretation of all numerical data. Consider the papers being published now in the Journal involving modelling, compartmental analysis and other complex mathematical treatments and look back on the simpler procedures that sufficed in the early volumes of the *BJN*. Many papers

now in the Journal demand a distinctly higher level of numeracy in the reader. We should welcome this. Nutrition has always been a quantitative subject; its progress has been, and will continue to be, aided by the more skilful use of mathematics, which will help to improve its reputation among physical scientists, who tend to look down on it as a soft option.

As one who by now would be hard pressed to integrate anything more difficult than $2x$, I (like many others) have to rely on the expertise of the Editorial Board to ensure the reliability of the conclusions presented to us. I trust they will continue to prevent what I have seen elsewhere – the application of complex mathematical procedures to give spurious precision to conclusions based on not very reliable data.

Refereed scientific journals fit uneasily into the libertarian culture of our permissive society, where censorship is often regarded as the most offensive ten letter word in the English language. Editors may no longer be the autocrats of yore, but they are still fairly intolerant, as indeed they should be to maintain standards. Refereeing sometimes comes under attack as a device suspected of being used to hamper the publication of new ideas challenging those on which the reviewer's reputation has been based. Anyone who seriously doubts the value of refereed journals should compare for accuracy the information in the *BJN* with that in the general media. Freedom of the press is often in practice a many tarnished thing. If Milton were alive today he would be too embarrassed to write *Areopagitica*.

Nutrition as an applied science draws heavily on more basic disciplines, and the advances made in them have impinged on nutritional research to its great advantage. Some of the papers in the early volumes of the *BJN* now look quaintly naive to us who can see further because we stand on the shoulders of others. But times change and some of our basic perceptions change with them. In volume 1 Dr Magnus Pyke, in a paper from the Ministry of Food, criticized English prison diets of 1944 for providing less than one third of their energy in the form of fat. He commented adversely on the diet of Borstal boys: the low fat content was particularly serious; the diet was too bulky because it contained lots of potatoes; and, providing only about 3200 kcal per day, it was an inadequate source of energy. It sounds just the diet modern health activists would wish for us all (after cutting the energy intake further, of course).

A fiftieth anniversary is one of those occasions when it is conventional to look back, and to those that have lived through that time, it can be salutary to do so.

Take my own particular interest, vitamin A. Half a century ago the pioneering workers were celebrating their successes of the previous 20 years in the golden age of vitamin research. The chemical structure of vitamin A had been established. It was known to be obtainable in the diet as the preformed vitamin, retinol, or as a carotenoid precursor which could be converted in the body to retinol. The dietary sources of both were known; post-mortem analyses of the liver stores of inhabitants of Western countries indicated that most had substantial reserves. The general satisfaction was heightened by the outcome of the so-called Sheffield experiment run during World War II with the intention of determining the adult human requirement for vitamin A. Despite a huge amount of work by a large and talented team, the quantitative results were meagre, mainly because it proved very difficult to induce vitamin A deficiency in the volunteers. The complacent feeling was that if one could not readily induce deficiency when every effort was being made to do so, it was unlikely to be a major nutritional hazard.

Another big advance in the late 1940s was the development of a large-scale commercial synthesis of retinol. For the first time ever mankind and their animals were no longer dependent on natural sources that might be difficult to obtain; we had unlimited supplies made in a factory, relatively cheaply.

With the general air of optimism about vitamin A in human and animal nutrition, interest tended to shift from practical nutritional problems to more basic scientific questions. To me, who has lived through this period, the expansion of knowledge has been stunning, notably of how vitamin A is handled by the body, how it operates in vision, and how it controls gene expression. But the general perception is that this research has leaked away from the field of nutrition. The more spectacular advances are now claimed by and redound to the credit of biochemistry and cell and molecular biology.

Nutrition tends to be left with the more practical aspects, and has a good record there with animals, who have massively benefited from the availability of synthetic vitamin A. Indeed, the livers of farm animals are now so packed with vitamin A that many authorities now recommend pregnant women not to eat liver in case the developing fetus might be damaged. In my opinion this is overcautious advice; the possible risk of hypervitaminosis A is too slight to justify banning liver, the traditionally recommended food packed with iron and rich in folic acid and other nutrients valuable in pregnancy. But we live in timorous times; one of the unfortunate consequences of the ending of the Cold War is that food has replaced nuclear weapons as the thing that people with nothing to worry about worry about. If Marlene Dietrich were still with us she would be singing 'see what the boys in the back room will have, and tell them to label it with a health warning.'

But the practical problems of human vitamin A nutrition had not, as hoped, gone away. A big shift in opinion occurred in the 1960s as numerous surveys revealed vitamin A deficiency to be widespread in tropical and subtropical countries. Vitamin A is, after iron, probably the most commonly deficient micronutrient.

This recognition inspired huge efforts to deal with vitamin A deficiency in the world. Fortification of foods and giving synthetic vitamin A by mouth or injection have had some success, but there are practical difficulties in implementing such programmes in poor countries. A potentially more promising do-it-yourself solution has been to encourage people to grow for themselves green leafy vegetables containing carotene. Many years of education have been devoted to spreading this message, and I in my time have offered loud-mouthed support. I would still argue that it is a serviceable approach that has had successes, but more reports are appearing that it is less effective than its advocates predicted; the bioavailability of β -carotene in green leafy vegetables appears to be lower than had been expected. Scientific research is great for diminishing cocksureness.

What has happened with vitamin A has happened in other fields of nutrition. The fundamental problem appears to be solved in principle. We then start looking more deeply to establish more firmly the scientific basis of our knowledge and to explain it. We use modern techniques on experimental animals and make real advances; the science of nutrition marches ahead. But the practical problems of human nutrition, confounded as they are by social and economic factors, are more difficult to handle. Progress is harder to make, and when it comes is usually based on relatively simple scientific ideas.

Despite the big advances they have made in the last half-century, nutritionists seem to me to have declined somewhat in the scientific pecking order. I think that may have come about to some extent because of the enterprise they have shown in taking techniques and concepts from other branches of science. In their original specialities these procedures tend to be used on simplified systems into which variables can be introduced in a controlled fashion. Applied to intact living animals, they become more messy; findings can be confounded by many factors. Nutrition is therefore perceived by others as lying at the soft, less reliable fringe of more rigorous scientific disciplines. Like many others, I have noted this prejudice among biochemists. In our defence let us proudly claim to be the true biological scientists working with living animals as they really are, instead of with artificially isolated snippets of life.

Nor are nutritionists held in high general regard, partly because of excessive expectations by the public, who regard us as highly trained professionals, mostly maintained by the taxpayer, who ought to be able to establish clearly all the facts about human diet. The difficulties of doing human experiments are disregarded. The media ask for clear, striking stories, without ifs, buts and caveats, and give undue prominence to maverick reports. The consequence is that human nutritionists are often regarded as a bunch of incompetents who go round contradicting each other.

Life never is fair; there is no point in crying into our beer or appearing on *Panorama* to complain that some people do not love us. We authors, editors and readers of the *BJN* form a rather diffuse professional group, loosely united by our interest in nutrition in its widest aspects. The Journal is not noted for publishing spectacular work that will win Nobel Prizes, but over 50 years it has put out a lot of solid papers adding their individual bricks to the temple of nutritional knowledge. It has a worthy record.

What of the future? The only confident prediction we can make is that most predictions will turn out to be wrong. Current lines of advance will continue in the immediate future, and the techniques of molecular biology, now making an occasional appearance, will become much more prominent. New high-technology machines and apparatus will appear, of various kinds, but all expensive to buy and run.

My guess is that research using experimental animals will decline as the current younger generation obsessed with animal welfare start to run society. On the other hand, I expect more work to be done on human nutrition, pushed by people who think the proper study of mankind is man, and demand better information

We may get something nobody has yet thought about. In the late 1940s a book was published in which a number of eminent scientists predicted how their speciality would develop in the last half of the 20th century; none mentioned computers. We are probably no more perceptive.

I am confident that in its second half century the *BJN* will press on with its good work, and that when it celebrates its centenary (yes, I am predicting that printed journals will still be a means of communication) the second 50 years will show even more striking advances. I very much regret that I shall not be around to be impressed by most of them unless someone comes up in the near future with a regimen that prolongs life extensively. (Don't bother to tell me to cut massively my energy intake; it's too late for that.)

GEORGE PITT