

human hazard; case studies — eye and skin irritation; case studies — skin sensitisation; haematotoxicology *in vitro*; experimental design and reduction; data analysis and reduction; reduction and regulatory testing; aspects of cost–benefit analysis; antibody production; humane endpoints; eliminating vaccine testing in animals; validation and acceptance of new methods for biologicals; adverse effects: regulation and classification; adverse effects: recognition and assessment; adverse effects: alleviation and avoidance; refinement in experimental design and technique; refinement in behavioural research; refinement in housing and husbandry — rodents and rabbits; refinement in housing and husbandry — other non-rodents; the use of animals in education and training; outreach to scientists on the Three Rs; outreach to the general public on the Three Rs and demonstration of training programmes; ethical aspects of transgenesis; the role of ethical committees; and animal models.

The book concludes with a number of discussions or debates, intriguingly called point/counterpoint debates (with echoes of Bach and Aldous Huxley), twenty-six workshops on varied subjects, and closing plenary summing-up lectures.

This book is a testimony to the vigorous world-wide prosecution of research to improve biomedical science and laboratory animal welfare. It is sad that Charles Hume could not live to see this very impressive outcome of his pioneering efforts: he would have been deeply gratified. But the book is also itself a tremendously important contribution to the subject, and to the progress of biomedical science and laboratory animal welfare. It should be in every biomedical laboratory in the world.

*William M S Russell*

*Department of Sociology*

*University of Reading, UK*

***Food Safety and International Competitiveness: The Case of Beef***

J Spriggs and G Isaac (2001). Published by CABI Publishing, CAB International, Wallingford, Oxon OX10 8DE, UK, or CABI Publishing, 10 East 40th Street, Suite 3203, New York, NY 10016, USA. 208 pp. Hardback (ISBN 0 85199 518 7). Price £40.00/\$75.00.

This is a book with a difference. It addresses the concerns about food safety in the developed world driven in recent years most particularly by BSE and *Escherichia coli*. The attitudes of government, industry and consumers towards food safety are in the process of change and it is these changes in the USA, Canada, the UK and Australia that form the bases of the nine chapters in this informative treatise.

The chapter dealing with the recent history of food safety in the UK alone is a fascinating and illuminating insight into the thinking and action of government, industry and consumers for those readers who have not closely followed — or have forgotten — the twists and turns in the story of beef production in this country during the last couple of decades. The saga is made all the more intriguing because it is described by two authors based in Australia and Canada whose basic purpose in writing the book was to explore the role of the government and industry in providing for an optimal food safety system and to evaluate the institutional arrangements in the various countries under scrutiny. These arrangements have been changing, and a major objective of this study is to describe the major drivers for change, both national and international. These are many, but the power of consumer preferences and the introduction of HACCP (hazard analysis critical control points) principles in the countries under review are highlighted. There are also growing calls for governments to regulate the

production and processing methods used to create products in order to ensure that they do not have adverse environmental or animal welfare impacts.

It is fair to say, however, that within this study animal welfare does not loom large. Unsurprisingly the topic features under the arrangements applicable within the UK to a greater extent than in the other three countries under consideration. Food safety and international competitiveness are the mainstays of the book. A very useful description of the World Trade Organisation and the food safety content of the Codex Alimentarius (the FAO/WHO food code) underlines the direction and objectives of the study. There is no problem in this book in deciphering the very many abbreviations that appear within the 180 or so information-packed pages — a comprehensive abbreviation list appears at the beginning of the book, and I did not find it wanting once.

It is clear that individual identification of livestock forms part of food safety and this concept is new; cattle identification, of course, is not new, but in the past it has been primarily for tuberculosis control and to record breeding herds. Animal identification is an example of an external driver (EU Council Directive 92/102, The Registration and Identification of Livestock) influencing UK arrangements, while, staying within the UK, a significant internal driver is the strength of the environmental and animal welfare lobbies. This latter driver does exist in the USA, Canada and Australia, but to a much lesser extent. There are, however, indications that these countries are paying increasing regard to environmental and animal welfare aspects of beef production and processing. The Canadian Cattlemen's Association and the Cattle Council of Australia acknowledge animal welfare in their respective Integrated Food Safety Programme and Cattlecare Farm-Based Quality Assurance Scheme. It should be noticed that quality assurance schemes and their frequent association with the supermarket sector are of increasing influence within the UK beef (and other meats) industry compared to those in the other countries described.

There are deep divisions between the countries in their approach to food safety: some are more purely rational, whereas the authors contend that decisions in others veer towards the political, with Australia in the first category and the USA in the latter, and Canada and the UK (strictly in that order) in between. This contention is supported by the authors on p 171 when they state "At a time when governments in other countries are divesting their departments of agriculture of their responsibilities for consumer protection (because it is inconsistent with the role of producer promotion), the US government is going in the other direction".

This book is aimed at a wide readership in food science, agricultural and food economics, public health, and animal and veterinary sciences. The authors view their book as a discussion opener rather than a complete analysis. Nevertheless they have furnished the reader with a very comprehensive picture of beef production and processing in four countries from economic and trading points of view, illustrating how food safety issues are addressed in each.

The impact of environmental and welfare issues on the national legislation and arrangements in each country is also discussed throughout this highly interesting text. I suspect we shall see — and perhaps need — updates in this ever-changing field.

*John Pratt*  
*Aspley Guise*  
*Bedfordshire, UK*