Progress in the Reduction, Refinement and Replacement of Animal Experimentation
Proceedings of the 3rd World Congress on Alternatives and Animal Use in the Life Sciences, held in Bologna, Italy, from 29 August to 2 September 1999.
Edited by M Balls, A-M van Zeller and M E Halder (2000). Published by Elsevier Science BV. Obtainable from Elsevier Science BV, P O Box 211,1000 AE Amsterdam, The Netherlands, or in the USA/Canada from Elsevier Science Inc, P O Box 945, Madison Square Station, New York, NY 10160-0757, USA. Two-volume set: Developments in Animal and Veterinary Science, volumes 31A and 31B. 1858 pp. Hardback (ISBN 0 444 50529 6). Price €292.69/$337.50.

The First World Congress on Alternatives was held in Baltimore in 1993, the Second in Utrecht in 1996. This massive two-volume work contains the Proceedings of the Third Congress, held in Bologna in 1999. The organising committee was chaired by Professor Michael Balls and Dr Andrew Rowan. The Congress was hosted by Professor Balls and ECVAM (European Centre for the Validation of Alternative Methods), with the co-operation of the University of Bologna, the oldest in Europe, which "has played a pioneering role [in Italy] in setting up a review process by an ethical committee" (p 1485). The many organisations and individuals who played a part in contributing to the organisation of the Congress, in sponsorship or support of it, are acknowledged in the Congress Chairmen's Preface. The participants in the Congress adopted the Three Rs Declaration of Bologna, which concludes as follows (p 15):

> "Humane science is a prerequisite for good science, and is best achieved in relation to laboratory animal procedures by the vigorous promotion and application of the Three Rs. The 'Three Rs' should serve as a unifying concept, a challenge, and an opportunity for reaping benefits of every kind — scientific, economic and humanitarian."

It is interesting that the Three Rs have since then been endorsed by the European Science Foundation (September 2000) and recommended in an editorial of the British Medical Journal (February 2001).

The Congress also approved Amendments to the Declaration of Helsinki on biomedical research (1964, 1975, 1983, 1989) to include the use of alternatives. The Congress was attended by nearly 800 participants from 39 countries, so the Declaration and the Amendments of Bologna represent a wide consensus among world scientists.

To organise for publication this mammoth compilation of lectures, discussions and workshops was a Herculean task, which the editors have achieved to perfection. They and the publishers are to be congratulated on the production of this splendid work, profusely illustrated and with a really useful index, repeated in both volumes for easy reference.

In a short review it is quite impossible to do justice to the vast wealth of information in these volumes, but a simple listing of the sections into which the book is divided will give some indication of the scope and importance of the topics covered. After special contributions and plenary lectures on general aspects of the alternatives field, the following subjects are then treated, with from four to eight lectures included in each: carcinogenicity testing; metabolism-mediated effects; genomics, proteomics and gene regulation; embryonic stem cells; the use of reconstituted tissues and co-cultures; barrier systems *in vitro*; the biocompatibility of materials; validation of alternative methods; the regulatory acceptance of alternative methods; predicting toxicity from structure; integrated testing and predicting

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.

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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