research data. This series of books based on LAREF discussions takes important steps for advancing the publication of refinement and enrichment techniques. This book, in particular, would be a valuable addition to any facility bookshelf of those concerned with the refinement and enrichment of the animals in their care. Viktor Reinhardt and everyone who contributed are to be congratulated for their continued efforts to improve the lives of laboratory animals.

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Handbook of Laboratory Animal Science, Volume II, Third Edition: Animal Models

Edited by J Hau and SJ Schapiro (2011). Published by CRC Press, Boca Raton, FL, USA. 465 pp Hardback (ISBN 978-14200-8455-9). Price £76.99.

This book describes the principles of various types of animal model and is a detailed account of the wide range of uses to which animals are put for the purposes of biomedical research. The Danish physiologist, August Krogh said that "For a large number of problems there will be some animal of choice, or a few such animals, on which it can be most conveniently studied" (Bekoff 2010, p 211), and this handbook certainly provides numerous exemplars of the Krogh principle. Some of the uses described will not be surprising, even to those who are not involved in laboratory animal science. However, I suspect that non-specialist readers of this book, even biologists, will be struck by the diversity of ways in which animals have been used as models for humans. Most people will be aware that animals are used in research to look for treatments for conditions such as: Alzheimers, Parkinsons and for the development of vaccines. Less familiar uses, to some, might include otolaryngological disorders, *Helicobacter* infection, hearing loss and tinnitus research and biodefence. However, not all research on animals is for medical reasons. There is an excellent chapter on how animals have been used to gain insights into human behaviour; not just abnormal behaviour, but also perfectly normal behaviour such as play, aggression, culture and cognitive behaviour to name just a few.

The handbook is aimed at explaining the science behind the use of animals to those who are, or are going to be, involved in laboratory animal science. However, despite a preface that emphasises the 3Rs (Russell & Burch 1959), I felt that an opportunity had been lost to address the ethical and animal welfare implications of various animal models. This book would have been an excellent place to introduce prospective scientists to ways to implement the 3Rs within their research, but mention of ethical or 3Rs issues is rare. I accept that the chapters describe good practice and therefore contain some refinements that reduce animal suffering. Also, some of the authors mention the need for appropriate husbandry and other techniques to avoid unnecessarily stressing the animals, which could compromise the science. But even if choice of model is usually determined by the science, I felt that there could have been useful discussion of the welfare costs or benefits of using different models. There could also have been more on alternatives to animal use, or perhaps on the lack of availability of such options.

There is mention of ethics in some chapters. For example, the chapter on psychological disorders includes a section noting the importance of humane endpoints and of keeping numbers to a minimum. There is also a reasonable introduction to ethical issues in the pharmacology and toxicology chapter; and the chapter on pain includes a discussion on ethics and ways in which pain can be minimised. These, however, are exceptions and, even in the pharmacology and toxicology chapter, species choice is not considered as an ethical issue.

Nonetheless, this book is an impressive and valuable contribution to the literature. While not light-reading it is extremely well-written and clear. The chapters provide authoritative introductions to a wide range of animal models and, as such, it will be a very useful resource for researchers, laboratory animal veterinarians and regulators, for those teaching laboratory animal science, as well as to any with an interest in the variety of uses to which animals are put in the biomedical sciences.

References

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Human-Livestock Interactions, Second Edition

PH Hemsworth and GJ Coleman (2011). Published by CABI, Wallingford, Oxon OX10 8DE, UK. 208 pp Hardback (ISBN 978-1-84593-673-0). Price £65.00, US$125.00, €90.90.

Good stockmanship is of key importance to achieving good welfare of farm animals in practice. The authors rightly point out that in considering farm animal productivity and welfare, much emphasis is placed on genetics, housing, nutrition and health and insufficient on stockmanship. The book aims to redress the balance, with Paul Hemsworth and Grahame Coleman arguing for a cultural change to recognising and appreciating the important role of the stockperson for animal welfare and production. I have observed many times in my career better welfare in a so-called 'bad' system of husbandry owing to good management and stockmanship than in a 'good' system where the human input is inadequate. Thus, I wholeheartedly endorse their campaign for improving stockmanship and for valuing stockmen as professionals.

Especially in the earlier chapters, which provide the theoretical basis, this book is not an easy read with a predominantly academic and wordy style as well as the politically correct but stilted use of 'stockperson'. I see nothing wrong with stockman as a word and have happily been a female stockman just as I am a female human rather than *huperson.* Perhaps for this reason husbandry does not even get a mention (nor does stockpersonship)! Further, there is consid-

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