

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.

Wendy Clarence

Canadian Council on Animal Care,
Ottawa, Canada

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

Bekoff M 2010 *Encyclopedia of Animal Rights and Animal Welfare*. Greenwood Press: Santa Barbara, CA, USA

Russell WMS and Burch RL 1959 *The Principles of Humane Experimental Technique*. Methuen & Co Ltd: London, UK

Robert Hubrecht

UFAW, Wheathampstead, UK

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-

erable repetition throughout. Whilst at times this has value in terms of introducing, consolidating or summarising ideas, it tends to be overdone. The book is, however, commendably current, with several 2010 citations. It also weaves its review of current knowledge into a logical sequence.

As a general caveat, readers who are not experienced scientists should note that many of the tables and figures quoted are not statistically significant. They merely tend to support the contentions of the authors, who do not always make this clear and neither do they offer alternative explanations for observed differences. To give just one example — they suggest a main reason for subsequently higher milk yields in dairy calves reared in isolation in hutches is the potential benefit of increased human contact preparing them for human contact during milking. Yet the calves most likely would be healthier (the main reason for the development of the system) and their increased productivity stem from that.

The more casual reader (eg farm manager) could glean most of the relevant information by reading chapter 1 and then jumping to chapters 6–8, which are more reader-friendly. Chapter 2 provides a comprehensive review of current concepts of and methods of evaluating animal welfare, which should be of interest to most readers and of particular value to students. In addition, this chapter notes that stakeholders in animal welfare include the wider community which needs informing as it affects the political, regulatory and retailer decisions that in turn impact animal welfare. Currently, most people believe the system is the key determinant of animal welfare and do not recognise how crucial the stockman is in both intensive and extensive systems. Thus, there is the opportunity for educating the public to appreciate this, thereby elevating the status of the stockman.

It seems extraordinarily sad to me that in less than a century, farm workers skilled in animal husbandry, with a knowledge and pride passed down the generations, have partly disappeared; to be replaced by a comparatively ignorant, inexperienced, low-paid and hence poorly motivated and itinerant work-force. In this context, I can see some merit for a scientific examination of ‘human-animal interactions’ but no justification for endlessly repeating experiments to prove the blindingly obvious that if you are repeatedly nasty to animals (ie shouting, hitting, slapping and shocking them) they will not only be frightened but will wisely tend to avoid you and other humans as well. However, the evidence that the fear is not just short term but develops into chronic, physiological stress is compelling and useful. Moreover, there is now a substantial body of evidence that productivity is suppressed when animals are stressed as a result of negative handling by humans. The bulk of this evidence has been derived from work with pigs and dairy cows both experimentally and on commercial farms, where as much as one-third of the variation in productivity can be ascribed to how the stockmen handle the animals. Importantly, the nature of stimuli or actions which animals find positive or aversive has now been characterised for pigs, cows and poultry and to some extent for beef cattle and these are not always intuitive. For example,

pigs and cows generally like tactile contact such as stroking or a hand placed on their back; whereas poultry often find this aversive and prefer visual contact and slow movements.

The logical segue from a knowledge of the negative impact of poor handling is first to determine what causes people handling animals to behave the way they do. Second, how to modify their behaviour so that they behave more positively, with benefits not only for animal welfare but also productivity. The book therefore reviews a number of relevant theories in human psychology including learning, attitudes and the theory of reasoned action. In developing effective cognitive-behavioural approaches to training, the authors also embrace barriers to change of attitude. These do not apply merely to those handling the animals but also for example to changing a prevalent managers’ attitude that it is ‘not worth training people as they will move on’ with its consequent vicious cycle. Recent research has considered the stockperson more holistically, embracing their personal and community life. In an ideal world, this can predict the better people to employ to care for animals: realistically it may only have relevance to identifying training needs as the pool of people willing to take on the job may be limited. The authors point out that training should not focus exclusively on managers nor rely on classroom-based methods.

Finally, they describe good uptake within the Australian Pig Industry of ‘ProHand’ which is a multi-media self-paced training tool aimed at pig farmers and stockmen. Similar tools were developed in Europe as part of the Welfare Quality® programme. They note that uptake of such tools tends to be slow and based on prevalent animal welfare culture and regulatory framework. This tends to be lagging in some parts of the world — for example “the main pressure for improvement in animal welfare in the USA comes from animal rights groups, and usually results in changes to housing or welfare audits with no obvious emphasis on stockperson training, despite the fact that most welfare incidents reported in the media are a results of inappropriate behaviour by stockpeople”.

Although the book does not explicitly state it, one message which shines through for me is the likely degradation which occurs in the human-livestock relationship when people have to care for large numbers of animals with which they cannot develop an empathetic bond akin to the companion animal bond or even recognise them as individuals. In one study in which stockmen were trained to have a more positive attitude and behaviour towards pigs, those participating couldn’t remember which pigs they had assisted to mate just before the study began and neither did they have good records (Coleman *et al* 2000, cited in chapter 7). Sadly, the trend to ever-larger livestock units seems set to continue, thus the importance of selecting, motivating and training people to work in such challenging environments will increase. This book sets the framework for a professional approach to doing this and also outlines areas where further development is needed. As such, it usefully fills a gap in knowledge, and more importantly in current practice, which is why it is in its second edition. I hope it is

successful in changing attitudes, for the benefit of farm animals and those who care for them. In particular, I hope that society as a whole and animal rights campaigners in particular come to appreciate that people are greater determinants of animal welfare than systems.

Claire Weeks
University of Bristol, UK

Domestic Animal Behavior for Veterinarians and Animal Scientists, Fifth Edition

KA Houpt (2011). Published by Wiley-Blackwell, 2121 State Avenue, Ames, Iowa 50014-8300, USA. 416 pp Hardback (ISBN 978-0-8138-1676-0). Price £54.99, CAD\$95.99, US\$79.99, €71.90.

Previous editions of this book will be familiar to many of you as they have graced countless library shelves, in vet schools and institutions offering animal science education, since the first edition was published in 1982. In the six years since the fourth edition of Katherine Houpt's comprehensive guide to domestic animal behaviour was published, the field of animal behaviour has progressed considerably. This is largely reflected in the recently published fifth edition, most notably by the addition of a new chapter on 'Behavioural genetics'.

This book follows the same format as previous editions. Each chapter focuses on a different aspect of animal behaviour, including communication, maternal behaviour, and aggression and social structure. All chapters open with a short overview of the subjects covered and this is followed by a general introduction to the behaviour under focus. The species-specific behaviour of cattle, pigs, sheep, goats, horses, cats and dogs are then considered in turn. Formatting the book in this manner serves to highlight the similarities and differences between the behaviour of the seven species the book encompasses. Anyone reading the book chapter-by-chapter rather than dipping in and out cannot help but make comparisons between species and promoting this more active reading style is a real strength of this book. As well as the usual behavioural descriptions that form part of texts on domestic animal behaviour, the book also includes more unusual information on each species which grasps the reader's interest and attention — for example, the tendency of sows to avoid eating blue food and that goats rival dogs in their response to human pointing and gazing gestures. There is some variation between species in the depth of discussion and content within each chapter, reflecting the differences in the quantity and focus of behavioural research undertaken on each of these domestic species. However, these differences are interesting in themselves as they raise questions for the reader about how the behaviour of another species would compare in that situation. Each chapter is well referenced and while some of the sources cited and figures used are slightly dated they more than adequately support the chapter content.

While the preface of the fourth edition of *Domestic Animal Behaviour* contains the caveat that welfare, though

important, is not directly covered within this publication, there is no similar qualification in the fifth edition. Consequently, reading the book as a welfare scientist leaves one with the feeling that some important issues have either not been raised or addressed. Although I agree with the author that there are a considerable number of welfare-focused publications available which have the scope to provide more discussion on the subject, I feel that the possible causes and welfare implications of some of the behaviours, and the ways of preventing them, that are discussed in the book warrants at least an acknowledgement, even if a full discussion is not considered appropriate in a book primarily focused on behaviour.

The content of chapters 1–8 is rather outdated in places, particularly concerning ways of tackling aggressive behaviour and management-derived problems, such as non-nutritional inter-suckling in calves. Applying serrated rings to the noses of calves to deter inter-calf suckling may be a practice accepted in the industry but in the context of a veterinary/animal science textbook, their use should surely be questioned? The suggested 'drastic treatment programme' for aggressive horses and cats (keeping them isolated in the dark with the human their only source of food, light and companionship) seems not only draconian but an ill-advised addition to a text commonly read by students, as the potential dangers of such a treatment for the human (especially when conducted on horses, are not addressed). The welfare consequences of such actions for the animals concerned are not discussed either and again this is particularly worrying considering that this book is used as a reference tool for vets and students. It is important to encourage anyone working with animals to consider the consequences of their actions for the animals concerned and this is sadly lacking in the book. Many of the behaviours covered may be derived from inappropriate management practices and this also needs to be recognised within the text.

The issue of dominance in relation to unwanted behaviour in horses and companion animals features conspicuously in the chapter on 'Aggression and social structure'. The concept of dominance in relation to human-animal interactions is increasingly being questioned and no longer accepted in many circles. Using force or restraint to gain dominance over an animal is mentioned within the text for cats and horses, either through strapping up the forelimb (horses) or by holding the animal down for a few minutes a day (cats). As for previous behaviours, the risks and welfare consequences of these actions are not considered. Future editions of this book would greatly benefit from a thorough revision of these early chapters in light of the progression in thinking in the field of animal behaviour and human-animal interactions.

Chapter 9 ('Miscellaneous behavioural disorders') is largely more contemporary in the described approaches to addressing unwanted behaviour than previous chapters. It is formatted slightly differently to the previous chapters in that it does not begin with a short summary or general introduction. Instead, the most commonly encountered