

13 themes, and the main topics are food ethics, environmental ethics, food security, teaching bioethics and veterinary ethics, the ethics of biotechnology, ethical perspectives and values on climate change, sustainable agriculture and the organic food sector. There are three leading papers, and 69 short (five page) papers from a total of 142 contributors, the majority of whom are from applied ethics, animal science, food science, agricultural economics, and philosophy departments at Universities or Institutes in Europe.

This book will be of most value to teachers in applied ethics. It should provide ideas on how to structure teaching and deliver general principles without over-indulging in fundamental philosophy or over-emphasising the role of ethics teaching in problem resolution.

There are some papers of direct interest to animal welfare. Vonne Lund explored the extent to which the four *prima facie* principles of biomedical ethics (autonomy, non-maleficence, beneficence, and justice) can be applied to animal care. Tjard Buning examined cultural differences in animal use and what the term 'natural behaviour' means and includes. There were two papers on animal protection legislation, from Austria and Norway, and five papers on the structure of teaching bioethics and veterinary ethics. Stef Aerts and colleagues gave a considered analysis of the ethics and practice of male chick destruction in hatcheries. Some more unusual topics included the ethics of animal use in obesity-related research, can killing be justified ethically on the grounds that animals can be replaced, and the ethical advantages of producing meat *in vitro* instead of using live animals.

Some interesting chapters which fell outside conventional animal welfare science included an engaging discussion of how natural law theory can support ethical matrices by Roxanna Lynch, and Raymond Anthony's article on why individuals in society do not make morally responsible choices, especially food choices. Helena Röcklinsberg debated the repercussions of decreasing greenhouse gas emissions through manipulation of animal production and how this could affect future directions in livestock farming. Ariane Willemsen discussed the moral obligations society has towards plants.

Fourteen papers reported original research findings and these were often surveys from postgraduate projects. Amongst these, was a timely paper from Nina Nissen on European perceptions towards USA-style enhanced meats. Richard Lee gave a discerning paper into the ways international standards are established by epistemic groups (networks of professionals with expertise in a topic). The case example he described (dietary fibre considered by the Codex Alimentarius Commission) had little direct bearing on animal welfare, but the lessons learnt in terms of how standards are negotiated, how risks are assessed, and how conflicts between technical and policy needs are addressed, were revealing.

To summarise, this book brings together a diverse group of authors and topics. There is likely to be something of interest to anyone involved with animal ethics but, because of the diversity, an individual's interest may be confined to a limited number of papers in this book.

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Principles & Applications of Domestic Animal Behaviour

EO Price (2008). Published by CABI, Wallingford, Oxfordshire OX10 8DE, UK. 336 pp Paperback (ISBN 978-1-84593-398-2). Price £29.95, €47.05, US\$59.95.

This book is based on EO Price's research and teaching during 36 years at the University of California, Davis and at the State University of New York in Syracuse. His own research has been mainly on rat behaviour and reproductive behaviour in cattle, sheep and goats. The book is meant as an introductory textbook for university students. However, I think it may also work well on a Master of Science level, when students have had only a short introductory course in behaviour.

The book focuses on the development of behaviour, to which he has devoted four chapters, and social behaviour, which has eight. However, the social chapters are on areas as diverse as reproductive behaviour, maternal and neonatal behaviour, and different aspects of social behaviour such as communication, agonistic behaviour, social organisation, personal space and social dynamics. The chapters on development cover the interaction between heredity and environment, behavioural genetics, early experience and behavioural development and learning. There are also chapters on more diverse areas, for example, biological rhythms, human-animal interactions, animal handling and atypical behaviours.

I find the book very well organised and well written. It is easy to read and the author provides many examples throughout the book. There are a lot of relevant photos, drawings, figures and tables to illustrate what is written in the running text. There is also a nice connection to other areas relevant to behavioural science, such as physiology, genetics and production. There are many examples of how housing and management affects the behaviour of farm animals, with good examples of what functions well and what doesn't for animals in captivity.

The text deals with many aspects of animal welfare, even though this does not appear to be the author's aim. For example, there is a section describing how sheep can be protected from coyotes and wolves by using different species of dogs. Here, he also brings up practical examples of using llamas or burros as protection against predators. In the social chapters, he provides many examples on how communication and knowledge about how rank orders function can help animals in different situations, thus giving examples of how welfare can be improved by changing the methods of, for example, feeding the animals. However, animal behaviour does not always have to deal with animal welfare. There are many instances when behaviour in itself is important for production as, for example, in reproduction where the author gives examples of how rearing of piglets in isolation can alter their subsequent performance of sexual behaviour, thus leading to low mating success.

If there is anything lacking from this book it would be a chapter on motivation and particular environmental factors

that may stimulate the performance of behaviour. Motivation can be a way of looking at behavioural needs, and thus is important for the welfare of farm animals. An area connected to this is environmental enrichment, which has been studied a lot in zoo and laboratory animals, but less so in farm animals. Play behaviour is another area, which has not been studied in great detail but which could be of importance to farm animals.

Even though the book appears at first glance to be focused on farm animals, there are many examples from research in other species, for example learning in the African grey parrot, blood sampling in Rhesus monkeys, social behaviour in dogs, fearfulness tests in mink, etc.

The book has 25 pages of references covering the last 40 years of research in the applied animal behaviour area. There is also an extensive index at the end of the book which helps finding specific areas and species. The general layout of the book is very good, but I feel it could be improved by a section containing questions that students can use when reading the book and discussing in class. This could have been introduced after each chapter or been included as a separate chapter at the end of the book.

I definitely recommend this book to anyone interested in the behaviour of farm animals and other animals in captivity.

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Scientific Assessment and Management of Animal Pain: Volume 10, Technical Series

Co-ordinated by DJ Mellor, PM Thornber, AC David Bayvel and S Kahn (2008). Published by the World Organisation for Animal Health (OIE), 12 rue de Prony, 75017 Paris, France. 218 pp Paperback (ISBN 978-92-9044-720-7). Price £41.00, €25.00.

In recognition of the relevance of animal pain and pain management to its Global Animal Welfare Initiative, the OIE has commissioned this issue (Volume 10) of its Technical Series. It comprises a series of papers, including updated versions of papers presented to the Australian Animal Welfare Strategy (AAWS) Science Summit on Pain and Pain Management, held in Melbourne on 17 May 2007, with other contributions from international experts. The book begins with an introduction entitled, 'Pain management: an international perspective', followed by four chapters: 'Overview', 'Clinical perspectives', 'Research perspectives' and 'Laboratory animal perspectives'. With the exception of the first chapter which contains five, each chapter is made up of two or three papers, each containing a summary at the beginning and a reference list at the end. All figures are in black and white. The book concludes with a final paper 'Future prospects for animal pain and its management' which largely summarises previous papers.

My first impressions of this book were rather disappointing, largely due to the repetition that occurs in the first chapter. Following a first paper, which interestingly enough bears

the same title as the introduction, the three papers that follow could usefully be combined, since their content is similar. All feature, in some form or another, the perceptions and attitudes to pain and welfare of the public as well as those working with animals. Having said that, this repetition, which tends to be a feature throughout the book, albeit to a lesser extent than in this first chapter, should not be considered to be a reflection on the authors, but rather a consequence of the fact that the book is made up of a collection of papers, prepared in the main for a single scientific meeting. The title of that meeting would suggest that its purpose was to formulate an animal welfare strategy for Australia and this is reflected in the book's content which could be considered to be somewhat parochial as well as heavily biased towards farm animals. Indeed, with the exception of a single paper entitled 'Practical pain management in dogs and cats', there is very little mention of companion animals throughout the publication.

Nevertheless, after that rather disappointing start, there are papers in this book which fulfil its stated purpose, namely "to assist the reader to gain a clearer understanding of current scientific thinking and the likely directions of scientific research in future". Two such papers are 'Pain-free animals: an acceptable alternative?' in Chapter 1 and 'Pain and pain management: a pharmacological perspective' in Chapter 2. Both are well-written, concise, and easy-to-read. The former contains an informative overview of the genetic manipulations involved in the creation of pain-free mice, followed by the description and discussion of an interesting study designed to determine what people, including laboratory scientists and animal welfare advocates, think of the development and use of pain-free animals. This will doubtless be of use in informing the ongoing debate on the use of experimental animals in medical research. By contrast, 'Pain and pain management: a pharmacological perspective' has no experimental component, but is full of useful factual information. The authors have succeeded in making difficult concepts, such as peripheral and central sensitisation, easy to understand and have completed the picture by including a comprehensive description of the mediators and modulators involved therein, as well as potential analgesic targets. There then follows an excellent description of the salient features of analgesic drugs, both traditional and new. Unfortunately, during discussion of non-steroidal anti-inflammatory drugs, some side-effects, namely liver toxicity, articular cartilage degeneration and various disorders of the cardiovascular system are erroneously classified as nephropathies. However, given the experience of the authors I feel sure this is a typographical error that arose during publication of the manuscript. The other two papers in Chapter 2 are the aforementioned 'Practical pain management in dogs and cats' and 'Behavioural effects of pain in animals'. There is some repetition in these with respect to signs of and assessment of pain, but neither deal with the subject in much depth. Similarly, there is repetition between 'Practical pain management in dogs and cats' and 'Pain and pain management: a pharmacological