

counterparts rather than being a detailed description of the management of the animals. In reality the content of the book is strangely disparate from that outlined in the preface. I could not find the discourse on the economic consequences of the provision of laboratory animal welfare that was promised in the preface, and identification of key areas that need further research was more of a passing afterthought in some cases rather than a key component of the text. However, I did find detailed blueprints for the management of the species which, the preface had told me, would not be there!

This particular volume is split into two parts: the first concentrates on the general principles of laboratory animal maintenance and experimental use that produce good research and the second part is species-specific on the welfare questions to be considered for each laboratory animal species.

The first section covers the theory of animal welfare starting with an essay on the variety of ways to define it. It then moves on to how the legislative framework and educative requirements of those using animals affect welfare, the effect of infectious agents on welfare and the importance of health monitoring, the effect of housing, care and environment, the effect of nutrition including feeding methodology, and finally, principles and recommendations relating to experimental procedures including dosing, sampling, anaesthesia and euthanasia.

The second section has a chapter on each of mice, rats, guinea pigs, rabbits, dogs, pigs, and non-human primates and then ends with a chapter that examines welfare issues under laboratory constraints with specific reference to mice and marmosets.

For each species there are sections covering such topics as biology, behavioural needs, optimal environment, health, common experimental techniques, administration and sampling, and assessment of well being. The extent of each of these sections for each species varies quite widely; for example, the guinea pig chapter contains much information on their social organisation, the effects of prenatal social environment on physiology and behaviour, and makes recommendations on social housing. However, for this species there is relatively little on experimental techniques. The rabbit chapter concentrates particularly on behavioural needs and housing, and, similarly for dogs, there is much on behaviour and environment. For rats and mice there is more on housing, husbandry and experimental procedures. For non-human primates the emphasis is on housing, social groupings, the five freedoms, and the recognition of distress.

The final chapter looks at issues of laboratory animal welfare from an ethological perspective, since a thorough ethological knowledge of the species will play a vital role in improving its captive conditions and the carrying out of experimental procedures, and the animals' quality of life and the quality of the data will inevitably be linked. There are examples of ethograms for scoring behaviour and nociception.

Each chapter is fully referenced and the authors are a selection of leading European laboratory animal scientists. The cover of the book has four black and white photos of laboratory animals; presumably the intention was to indicate typical welfare scenarios. One is of a rat receiving an intraperitoneal injection while being restrained in the inverted position, and certainly to the casual observer who spots this on your desk, they may not associate this with optimal welfare.

Despite being not quite what was promised in the preface, this is nonetheless a very useful book to get an overview of laboratory animal welfare and an introduction to the use of the different species. It is undoubtedly one of those 'must have' books for every laboratory animal professional to have on their bookshelf and towards which to direct one's students.

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### ***The Evolution of Morality and Religion***

DM Broom (2003). Published by Cambridge University Press, The Edinburgh Building, Cambridge, CB2 2RU, UK. 259 pp. Paperback (ISBN 0 521 52924 7). Price £18.99. Hardback (ISBN 0 521 82192 4). Price £50.00.

Evolutionary biology has continued to advance in recent years and this book, along with others authored by such people as Matt Ridley and Robert Hinde, tackles what to some is still a taboo question, namely how did morality and religion evolve? Its author, Donald Broom, is well-known and widely respected in the animal welfare world but I am not sure that this book will be remembered as his best. In part this is because the field is still advancing rapidly; in part because to write well in this field — and I am not sure anyone so far has managed this — requires a deep knowledge not only of evolutionary biology (which Broom has) but also of moral philosophy and theology.

Broom begins with a helpful and balanced account of previous theories about the evolution of morality. There is then a long chapter on cooperation and altruism which will be of value to the lay reader, although there are many standard textbook accounts of animal behaviour and socio-biology that cover the material more successfully.

The book really gets going, in terms of its original contribution, in Chapter 3 which looks at the biological capabilities needed for altruism and morality. Broom's treatment of the role of feelings in moral actions is convincing, and he makes excellent use of evolutionary biology in evaluating the extent to which non-humans respond to death.

In Chapter 4, 'What is right and what is wrong?', Broom reveals that "One of the central arguments in this book is that there is a genetic basis for moral behaviour in humans and other species but since all genes interact with environmental variables in complex ways, the extent of moral behaviour will vary." He goes on to examine whether we are naturally selfish or naturally moral and provides a helpful

guide to the views of such authorities as Aristotle, Hobbes, Kant and Mary Midgley on these issues. I particularly valued the analysis of Homeric codes of morality.

However, this chapter also reveals what comes across as a certain superficiality, even naivety, of treatment in places. For example, Broom writes “It is my view that the concept of rights causes too many problems. All behaviour and laws should be based on the obligations of each person to act in an acceptable way towards each other person rather than to assert the rights of anyone. Hence it would be better if any public statement which refers to rights, such as national constitutions and laws, were rewritten to avoid the use of the term rights.” There is a huge academic literature on whether rights exist (and what the question actually means, anyway) but is it really credible, in the foreseeable future, to envisage a country like the USA completely rewriting its constitution?

I was surprised to read “Although many aspects of utilitarianism are helpful when deciding what is morally right (eg Feldman 1980), as a general approach it is flawed.” Broom goes on to advance precisely those criticisms of utilitarianism that none other than John Stuart Mill used to defend it. Later on I came across “Pictures from Bibles and other Christian books often portray Paradise as a situation where the needs of all are provided for and all people are good. They may also show a child, a chick, a lamb and a lion resting together. This indicates a condemnation of normal interspecific biological relationships and perhaps a fear of man’s biology.” A fear of man’s biology?

The chapter on the evolutionary basis of religion is, I am glad to say, one of the most successful. Broom treats the subject rigorously, though I am sure his conclusions will not please all those with a religious faith. The heart of it is summed up in the following paragraph. “If morality has evolved and morality is the core of religions then the basis for religions has evolved. All human societies have a propensity for religion because religion provides a valuable structure for the moral code which is valuable in all of those societies. The religious framework makes it easier for the average person, or perhaps more importantly the likely transgressors of moral codes, to understand what should and should not be done. Those societies which formed such a framework were more likely to remain stable because anti-social, disruptive actions would have been less likely to occur. They were also less likely to have uncooperative, unproductive individuals among their members.”

To many readers with a religious faith I suspect this reasoning will lead them to hope that Broom would address the question of whether or not religious faith is valid. (The connections between how a thought evolved and whether or not that thought is valid are not straightforward.) However, Broom doesn’t do this explicitly, though it gradually becomes clear that his view of religious faith would be held by many to be ‘thinner’ than that conventionally held by religious believers. Thus, his argument for the worth of prayer is that “Prayers are often communicated to other individuals and the conscience, which is affected by other

individuals, may guide the person who has spelt out the problem. Hence it may be said that God is hearing prayers and helping via the individual concerned and via others.” This is rather like saying that the miracle of the feeding of the 5000 is that everyone shared their sandwiches. More generally, Broom concludes that “The great value of religion is as a structure supporting and mechanisms promoting moral codes” and that “God did not create the universe but started to have an impact after sentient beings had evolved and interacted significantly with one another.” This conclusion follows logically from Broom’s argument. Whether it becomes widely accepted among religious believers and others we shall see.

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### ***Practical Lambing and Lamb Care, Third Edition***

A Eales, J Small and C Macalodowie (2004). Published by Blackwell Publishing Ltd, 9600 Garsington Road, Oxford OX4 2DQ, UK. 247 pp. Paperback (ISBN 1 4051 1546 7). Price £24.99.

Good welfare is dependant — probably more than anything else — on good stockmanship. Whilst reading a book cannot, by itself, improve the practical skills of a stockperson, it is nevertheless essential to have a thorough understanding of why people are asked to do things in a certain way. Training in practical skills can be taught down on the farm — although, sadly, this is a neglected area. However, without knowledge of the supporting science, training is incomplete.

When the late Andy Eales and John Small published their first edition of this book (*Practical Lambing, A Guide to Veterinary Care at Lambing* published by Longman, 1986) it filled a real need for a handy lambing-time pocket book covering the essentials any competent shepherd should know, and it was successful in achieving its objectives. It was, for example, the first time the essentials of how to detect, treat and prevent hypothermia in lambs was spelled out in language easily understood by non-scientists and, in particular, shepherds and sheep farmers. The research carried out by these workers must have saved — and continues to save — the lives of thousands of lambs that previously would have perished because of a lack of understanding of what precisely to do. The second edition improved on the success of the first edition by including sections that added to the usefulness of the book and as a result became of interest to a wider readership.

This third edition — with the additional authorship of Colin Macalodowie — is even more comprehensive and informative, with significant updating of husbandry and health matters in several sections. The majority of losses of neonatal lambs are as a result of failures in management during the entire period of pregnancy and even prior to conception. The book takes account of this and covers, in