

Whilst the authors are very clear on the need to encourage practitioners to move toward evidence-based practice, I found too many generalities, loose language and lack of clear definitions to the extent that I do not think that they have achieved their goal. For example, the authors expressed the view that it was not possible to define stress (although they did state that distress was worse than stress). They frequently referred to cortisol as the stress hormone but did not explain that it is secreted at times of arousal and, therefore, its secretion may be indicative of either positive or negative affective states and thus require behavioural observations to confirm their valence of such responses (Mason & Mendl 1993); indeed, the notion of affective states was generally absent throughout the book. Similarly, while I wholly agree that an understanding of genetics is valuable as an animal's genotype affects its behaviour, the entire discussion seemed to revolve around single gene effects: there was no mention of some variability being due to the combined effects of several genes; and only a couple of paragraphs on some extremely specific gene-environment effects.

Given this journal's subject matter, I was disappointed that there was not a greater consideration of the impact of handling on animal welfare (nor was it defined along with many other key terms); I was also particularly concerned at the emphasis on negative reinforcement (particularly in relation to horses), and the use of electric prods in cattle-handling without any significant questioning of such practices.

I was impressed by the coverage of loading horses; and, also, the emphasis on planning, before starting, any handling operations. Having been involved as an expert in numerous legal cases in which people have been injured or killed by livestock, this particular point cannot be stressed enough in my experience. Indeed, if there is no planning before handling, this implicitly leads to an uncritical continuation of old practices — and that would be at odds with the goal of this book.

The book contains many diagrams that clearly illustrate the process of moving livestock, and a website has been created by one of the authors that includes some useful video clips. However, some of the diagrams are not consistent with the text. For example, the text associated with Figure 5.5 states: "... the handler... staying no farther forward than the shoulder and no farther back than its hip"; but the diagram shows the handler well behind the horse. Similarly, Figure 2.12 included a time budget for dairy cattle that did not include rumination (the beef cattle time budget did). The lack of adequate proof-reading really distracted my reading of the book: there are inconsistencies and far too many typographical errors, a few of which rendered sentences impossible to understand.

In summary, I feel that the objectives of the book were extremely worthy; and I am sincerely disappointed that it did not entirely achieve its goals. As a consequence of its various deficiencies, I think that naïve readers of this text would experience some confusion and thus not be ready to move forward in evidence-based efficient livestock handling.

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The Domestic Dog: Its Evolution, Behavior and Interactions with People, Second Edition

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The first edition of *The Domestic Dog* was a hugely popular text featuring on the bookshelves of many with an interest in and enthusiasm for dogs and will undoubtedly be well-thumbed and dog-eared by those who have the pleasure of studying them. This, the second edition, is therefore a long-awaited and anticipated update. In the last 22 years, there have been significant advances in our understanding of the domestic dog and this book presents an impressive overview of the vast body of knowledge collated throughout that time, offering an up-to-date and comprehensive text.

The book is organised into four different parts. The first part comprises three chapters describing the origins and evolution of the dog. Part II, the largest of the four, hosts eight chapters exploring behaviour, cognition and training. The three chapters forming part III explore the relationships between dogs and people and how each impacts upon the other. The final five chapters of part IV: 'Life on the margins', focuses on dogs on the periphery of society, the problems they face and how they might be managed. Of the 20 different chapters, seven are entirely new; reflecting research areas which did not exist twenty years ago, or which at the time, were in their infancy. Contributions are made by both original and new authors. The multitude of different breeds fulfilling roles from companionship through to those upon whom certain parts of human society are heavily reliant, eg dogs serving in assistance or service roles, are featured. As well as these, the book also features dogs living wild or feral on the fringes of human society.

Throughout the book it is evident that despite the growth of the canine science field, dogs remain under-represented in animal welfare science and there is still much we don't know. Extensive scientific inquiry is required if we are to fully understand and provide for their welfare needs, especially given their ever-growing popularity and the increasing number of roles we expect them to fulfil. The behavioural development of dogs (Chapter 6) is a good example of this and I was surprised to read that very little research had been conducted into the impact of early life stress during prenatal and neonatal periods on long-term behaviour; at odds with the high prevalence of behaviour problems within the population. But even where science exists, it has been subject to misinterpretation and application. For example, in the same chapter, it is suggested that a misinterpretation of the available evidence has led to well-established practices of weaning and re-homing puppies before 7-8 weeks for socialisation and at a time where abrupt separation and weaning risks acute and or chronic stress. This has understandably led the authors to call for a review of how we socialise and enable puppies to cope with being removed from their mother and thus prevent behavioural problems. This is particularly timely as the breeding, sale and trade of puppies is increasingly a major dog welfare issue and a hot topic publicly and politically. Given our lack of understanding in this area, adopting an evidence-based approach to breeding, weaning and rearing dogs may not be immediately possible although is undoubtedly critical if we are to breed dogs which can live harmoniously with us and ensure they experience good welfare.

However, despite current gaps in our knowledge and the lag behind other species, there has been remarkable progress in some areas and this has challenged the way in which we live with dogs. For example, in the first edition, there was no chapter on social cognition and emotions but this is an area which has been intensively researched over recent years, resulting in a fascinating chapter on these capacities (Chapter 10), showing how similar dogs and humans are in many ways. Such knowledge can only serve to improve the dog-owner bond. Similarly, research into the social behaviour of wolves and dogs has also affected our relationship with dogs. Wolf social structures are now considered largely irrelevant when considering dog social behaviour and the supposed desire to achieve a higher social status is thought to be highly unlikely as a motivation for behaviours such as aggression. This has revolutionised how we train and manage behavioural problems in dogs and challenges those who choose to use punitive techniques when doing so. The progress in this area is best described in Chapter 8, which rather than the familiar and traditional approach of describing wolves to understand dog social structure, uses the model of feral and companion dogs. The use of dominance concepts and hierarchies are deconstructed and more simple explanations are presented for agonistic behaviour based on associative learning, prior experience and context. In Chapter 11, the impact of dominance-based theory and its rationale for firm-handed

training is touched upon and how the adoption of principles like 'do no harm' has led to significant improvements for dog well-being. However, rather confusingly, there is still reference to the term 'dominance aggression' in other sections of the book, eg Chapters 6 and 9. Even though this is just a few references, this may prove confusing for those who choose to dip in and out of the book, rather than read from cover-to-cover.

Another area in which there have been considerable advances in knowledge is aggression; this has an entire chapter (3) devoted to it. The role of breed as a factor in aggression has been, and remains, a subject of much debate and particularly the focus on certain breeds being more dangerous than others. Since the first edition of this book the predictive power of breed is much better understood as is aggressive behaviour as a whole. Collating this research results in a chapter much greater in length than its predecessor and provides a strong argument against the breed-specific approaches that abound in dog control policy and legislation. This makes it a must-read chapter for anyone working in the public policy area of dog control.

Throughout the book there is reference made to the high number of dogs relinquished to shelters due to behavioural problems. Thus, two chapters are devoted to training and behaviour modification, 11 and 12, respectively. These are excellent in content and strong contenders as my favourites. Eleven starts with a brief but fascinating history of dog training before moving onto the science of learning. It is covered effectively and very succinctly and provides technical information along with examples to illustrate the concepts. This makes it very accessible to a range of readers as does the section on working through the ways in which common problems can be managed. Anyone faced with the minefield of finding a dog trainer or consultant will find useful information on how to do so. It is unexpected in a text like this but it doesn't feel out of place. The chapter leads nicely into the next on the role of applied animal behaviour. The complexity of this field is obvious and those wishing to work in this field, or wishing to seek professional help, would do well to read this comprehensive overview by way of an introduction.

Interactions between dogs and people is the focus of the three chapters in part III and starts with a completely new chapter: 'Dogs as helping partners and companions for humans'. This chapter introduces the many roles which dogs now fill and presents an abundance of evidence conducted into the physical and psychological benefits for people of canine companionship. However, there is very little in this chapter which considers the physical and psychological impact of such roles on the dog. Whilst this may be due to a lack of research, the absence of any acknowledgement that the use of dogs in these roles may detrimentally affect their welfare feels like an obvious omission.

The next chapter starts with an excellent and up-to-date overview of welfare and its assessment followed by a section on the welfare issues which arise from selective

breeding and the role of dogs as companions. There is a very thorough section on the genetic welfare problems resulting from the selection of dogs originally for specific functions and more recently for aspects of appearance. Some readers may be shocked to read that, despite their considerable impact on welfare, exaggerated anatomical features and hereditary disease and conditions have only been a real focus of interest and attention in the last eight years. Thereafter, a handful of other welfare issues are described. Given the international scope of the book, they don't necessarily reflect those most affecting dogs in the UK. However, it could easily be argued that those are covered elsewhere in the book.

The last chapter within part III pulls together the range of human attitudes and behaviour towards dogs and is unexpectedly one my favourites. Cross-cultural attitudes towards dogs are as diverse as dogs themselves and in some cases are highly polarised. It should be somewhat reassuring that dogs in Western society, compared to other parts of the world, are considered friends but this is not always the case. As the author, Serpell, says "we love dogs and invest in them with quasi-human status, but only so long as they refrain from behaving like dogs".

The final part of the book: 'Life on the margins', looks at those dogs which live on the periphery of human society but to some degree are still dependent on us. The third chapter within this part was of particular interest to me as the impact of cats on wildlife is a regular discussion between myself and colleagues. The impact that dogs have on wildlife is vast and the fact that a third of all the wildlife species interacting with domestic dogs are classified as globally threat-

ened makes for uncomfortable reading. However, not all interactions with wildlife are negative and we are increasingly seeing the acute olfactory ability of dogs further harnessed to the benefit of animals, enabling the detection of a diverse range of species for conservation purposes, eg dormice, great crested newts and brown tree snakes. Hopefully the next edition will make reference to this.

In reviewing this book, I was asked to highlight its potential implications for welfare. So much of this book's content affects dog welfare: understanding where the domestic dog comes from and how they develop and learn behaviours. Likewise, how they think and feel, behave towards and interact with their conspecifics, other animals, and us and the different roles they fulfil within society and attitudes towards them. All of this is fundamental to ensuring we can meet their physical and psychological needs. Because of this, the book's implications for welfare cannot be over-emphasised.

Without doubt that this book will become a seminal text; updating those interested or working in the field of canine science, informing dog enthusiasts and those who hold a general interest, but also providing an insight into the world of canine science to those who may be considering a career in this area. I thoroughly enjoyed reading this book and I just hope that we don't have to wait another two decades for the next edition.

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