

and the public. The reason, apparently, is because within two generations humans forget what has gone before.

I've never been a fan of history but in this case it was really very engaging. Even since the early 1900s there has been huge conflict between breeders and the show community and the veterinary profession. I think many of us still feel that this is the case. There will, I suppose, always be an inevitable conflict between those prioritising looks and those prioritising health.

The book has a detailed look into ethical dilemmas and how different moral philosophers would characterise these struggles. It asks the question, "What will be gained if I speak up?" I think this is deeply pertinent to so many of us.

There is an excellent section, in answer to this, on how you *can* approach these health problems with your clients. We are so often playing catch-up when first presented with a new puppy. The owner has had hours with a breeder, often done no research, and it can be enormously difficult to raise the issues without alienating them on that first contact. The advice with regards to this is really very good.

I loved the section on the importance of nurses and nurse clinics. I believe that good nurses are the absolute cornerstone of veterinary practice and are often underused. This section looks not only at how nurse clinics could help with care of these animals but prevention of issues as well. This is a real opportunity to bond clients you might worry about losing.

At the time of writing only around 13% of practices were offering free pre-purchase advice. This really needs to change if we are to have any hope of dissuading prospective owners and improving animal welfare. Nurses are very probably the key to this.

This *Wider viewpoints* section for me was unexpected and absolutely superb. Anyone with an interest in ethics and welfare as well as clinical education will love it, I'm sure. I was pleased to say that at the very least the book is clear from the outset that we really should be talking to clients about this and have the courage to speak up.

What's missing besides the other species? I hold my hands up and confess to being possibly the wrong person for this review as my beliefs are entrenched, but it is me so I can only write it from my point of view. I'm often contacted by vets who are suffering mental health issues related to the deluge of these animals in their clinics. They feel powerless and overwhelmed. I would have liked to have seen more mention of this. I feel it's a significant mental burden on an already fragile profession that we shouldn't ignore. I would also like to have seen more ethical debate around the subject of reproduction. Personally, I believe that it is deeply ethically questionable to perpetuate breeds, through veterinary intervention, that are not only almost certain to suffer but that are incapable of reproducing naturally.

As I said at the start, I find it very sad that, after around 150 years of vets and welfare organisations trying to change the trend for brachycephaly, this book has still had to be written. BUT, given our current circumstances, we absolutely need it. We need the clinical education but we, very much, also need to consider the deeper issues, which this book certainly does. Rowena and Dan should be rightly proud of this work and the

outstanding expertise they have gathered to bring it together. Whether we like the *status quo* or not, this book is an essential and invaluable resource for anyone working with these animals or interested in the wider ethics of such extreme conformation.

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### **Broom and Fraser's Domestic Animal Behaviour and Welfare, Sixth Edition**

DM Broom (2021). Published by CABI, Nosworthy Way, Wallingford, Oxon OX10 8DE, UK. 545 pages Paperback (ISBN: 978-1789248784), Hardback (ISBN: 978-1789249835). Price £44.99 (Paperback), £94.99 (Hardback).

The Broom and Fraser book on domestic animal behaviour and welfare is a classic tome, which many of us have frequented in one or more of its many previous versions. The first edition dates back to 1974 and, like the two subsequent editions (1980 and 1990), covered farm animals only. From the 4th edition, published in 2007, it was enlarged to comprise all (or most) domestic animals.

This latest and 6th edition has been revised by Professor Emeritus Don Broom alone, as Professor Andrew Fraser passed away in September 2021 at the age of 94. The book has been modernised in its layout, with most if not all figures re-drawn or re-coloured to give a very professional and unified look. The structure of the book is similar to previous editions, with the initial group of chapters introducing welfare concepts and their assessment, as well as fundamental aspects of behaviour and their measurements. The next 14 chapters are grouped into topics covering organisation of behaviour and specific types of behaviour such as social, reproductive, and parental behaviour. This is followed by eight chapters on different welfare topics, such as transport, stunning and slaughter, and abnormal behaviour. Finally, the remaining chapters cover the welfare of the main farm animal and companion species but not laboratory species such as rats and mice.

The back cover advertises a completely updated and revised edition, and with new chapters or sections on climate change, sustainability, ethics, philosophy, big data, modern technologies, brain function, and emotion — as well as of course behaviour and welfare. For this reason, the 6th edition is 100 pages longer than its predecessor published in 2015. And, indeed, many recent references have been added, and review papers are often mentioned at the end of paragraphs and sections whenever relevant, which is useful for further, more in-depth reading. In addition, some scientific articles and books are suggested at the end of each chapter, guiding the reader to other sources of information.

The glossary has moved to the front as a reminder to the reader that it may be prudent to refresh some of the definitions. These same definitions are repeated in the text *in italics* at the first mention of a word or concept, which makes the reading easy. I was intrigued by the definition of an animal (including humans), having never thought about such a definition before: "A living being with a nervous system and other complex

mechanisms for obtaining energy, using energy and reproducing”, and found myself trying to think of non-animal exceptions that would be covered by this (I failed).

It is rare to have a book this comprehensive that is not an edited volume from a multitude of chapter authors. By being written by originally two authors and now updated by one of them, it gives the book a good flow and redundancy is kept to a minimum. That said, it also means that the author, although well-read and widely published, cannot be an expert in all the subjects covered. Single-author books do give the writer more freedom, and the reader should embrace this, and be willing to disagree with certain concepts or definitions. Broom’s way of describing emotion as a physiologically describable component of a feeling may differ from the way others use these terms. He does not hesitate to name the worst (human) treatment of any farm animal (spoiler alert: the confinement of sows in stalls or tethers) and calls the rearing of fast-growing broilers the most serious animal welfare problem in the world based on the severity of the problems and number of individuals affected. With bold statements like that it would have been nice to have had more recent information included, eg about the developments in some of the large broiler production companies where a shift to slower growing breeds is happening — even if slowly. In the final and newly added chapter on *Welfare in a moral world*, Broom lists some terminology changes. I can support the no-longer novel notion that humans are included when using the word animal, and that sustainable systems should comprise keeping animals without compromising their welfare. I am not sure that using non-human animal names to describe certain human behaviours, such as ‘stubborn as a donkey’ is a great problem, and I personally do not agree with the suggestion to abolish *innate* as a term, nor that differentiating between mind and brain is illogical (Box 42.1).

Although newer references are dotted across all chapters, there is still a lot of work cited from the 1970s and 1980s, likely to have been left from the much earlier editions. Old does not always mean outdated and irrelevant, nor that the results are necessarily no longer valid. It is interesting to know that the concept of rank order stems from work on chickens in the 1920s (Schjelderup-Ebbe 1922). Another example is Fig 30.1 (p 309), which is a simple drawing of data obtained more than 50 years ago. It illustrates in four simple diagrams the differences in feeding time between cows of high and low rank when different types and combinations of barriers are fitted to the feed trough. I am also sure that the finding that pigs eat more when food is diluted with low-energy material, work done in 1967 by Owen and Ridgman, is still valid. With the advent of accelerometers, however, things have moved on since rumination was measured by placing a rubber tube around the jaw of the animal.

There is no doubt that this book is valuable as a one-stop source of information and references on many aspects of behaviour and welfare in domestic animals at home and on the farm. Having been written by one of the most well-known and acclaimed figures in animal behaviour and welfare comes

with great responsibility, as students and lecturers will be dipping into parts of this book when looking for information on specific subjects they may know little about. For this reason, it is particularly important that the information is both up-to-date and factual. And some errors have snuck in or been overlooked in the revision. For example, the section on pheromones includes an example about mice reacting to the smell of human shirts, and has a picture of a dog and a horse sniffing each other, but the definition of a pheromone is an odour or odorant that transmits information between conspecifics, ie *within* the same species (Wyatt 2014). The section on religious slaughter without stunning leaves the reader with the impression that most if not all halal slaughter occurs in non-stunned animals, whereas the opposite is often the case: 58% of halal slaughter in England and Wales is carried out with pre-stunning (DEFRA 2019), and all poultry in Denmark, where pre-stunning is compulsory at slaughter, is certified halal. Another example is the suggestion that low atmospheric pressure stunning (LAPS) can be used to humanely stun pigs, where the reference cited (Bouwsema & Lines 2019) emphasised that the effects of LAPS on pigs were, at the time of publication, uncertain, and more recent studies have (unfortunately) shown it to be unsuitable for use in this species (McKeegan *et al* 2020).

The book has almost 100 pages of references, which is a great resource in itself, not least because of the many older studies cited that may not be available in the electronic science databases. Because of its broadness, this book is a very good starting point for anyone interested in domestic animal behaviour and welfare, as many of the concepts described and issues raised are as pertinent today as when the first edition was published. As always, for comprehensive information on specific items, the reader will need to dip into more detailed sources, some of them listed in the suggested reading.

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