

anti-inflammatory agents; euthanasia; alleviation of pain associated with individual painful procedures.

Drug information

Understanding pharmacokinetics

Drug action and effects; pharmacodynamics; movement of drugs across membranes; drug absorption; drug distribution; drug elimination; dosage calculations; pharmacokinetic definitions; authors; references.

Groups of analgesic drugs

Opioids; NSAIDs; local anaesthetics; alpha-2 agonists; corticosteroids; N-methyl-D-aspartate (NMDA) antagonists; nitrous oxide.

Each of the 25 generic drugs listed include reviews of the following information: General chemical information; Therapeutic information [dose, frequency and route]; Nutritional information; Toxicity information; Environmental information and a CAUTION about consulting the manufacturers data sheets for doses, contraindications, withdrawal times etc.

Routes of administration

Oral; I/v; I/m; S/c; transdermal; topical; local; regional.

Bibliography includes:

- **J** refs (Journals: total = 314 eg J3 is *The Veterinary Record* from Volume 62 to Volume 155)
- **W** refs (Organisations and websites: total = 566 not in any recognisable order)
- **D** refs (Documents, PDF files etc: total = 193)
- **B** refs (Books: total = 507)
- **P** refs (Proceedings: total = 61 + 1)
- Video clips (total = 8)

References include those quoted in the other volumes of the 'encyclopaedia'.

The editors have an excellent grasp of the subject and they have exercised good judgement in making choices of what to include. However, it is easy to attribute the content to the editors despite their statement that they have generally quoted material directly from the references. They could have made clearer how much they reproduced directly from their sources.

The systematic and comprehensive approach used is similar to standard textbooks of pharmacology/physiology and this should generally be helpful; however, it is not easy to find where you are or to refer to particular pages. No indication is given on the contents page of the number of words/pages devoted to each section. No glossary of terms or index is provided, instead searchers are advised to use the 'Find on this page' facility of their Browser, but this is of limited help. The reference system is obscure and it would not meet the current advice to veterinary undergraduates.

The framework used for understanding animal pain may be used for most animal species and, as in the University of Edinburgh website 'Guidelines for Recognition and Assessment of Animal Pain', ruminants are the main examples.

This volume appears to be most useful for browsing because it will be difficult to use as a reference source not only because it lacks a comprehensive search facility but also because it is difficult to quickly direct readers to particular information.

The choice of colours for presentation of some of the information on the introductory pages may make it difficult for some to read.

The access/membership cost is £31 per year and those who need this level of information may find it more convenient, if not cheaper, to use one of the major data-base managers.

To reassure potential subscribers it would help to see a clear indication on the contents page of how often the volume is updated and a record of the changes made for each version.

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Animals in Translation: Using the Mysteries of Autism to Decode Animal Behaviour

T Grandin and C Johnson (2005). Published by Bloomsbury Publishing Plc, 38 Soho Square, London W1D 3HB, UK. 368 pp Hardback (ISBN 0 7475 6668 2). Price £16.99.

This is a very special book, providing refreshingly unconventional perspectives of animal behaviour and welfare. The first author is Temple Grandin, Associate Professor at Colorado State University, practical animal behaviourist and, as such, one of the world's foremost animal welfare experts in the meatpacking business. She has authored of a couple of well-received book and she is an autist. Catherine Johnson has a PhD in communication from the University of Iowa and has authored a few books on autism. But one would be mistaken to assume that this book is just to show the world what remarkable achievements are possible *despite* being autistic. To the contrary, Grandin and Johnson argue that the autist's way of experiencing the world may, in some respect, be closer to some animals than the world view of most non-autistic people. Thereby, Grandin and Johnson turn an apparent weakness into a strength.

It may not be clear what autism has to do with understanding animals and with animal welfare; it was not clear to me when I started reading this book. At first, the autist's view of the world may in part be parallel to some animals (in fact, the authors mainly consider domestic mammals, such as cattle, horses and dogs). However, Grandin and Johnson credibly argue that one of the main features in which humans differ from non-human animals is by their well-developed pre-frontal cortex, which makes them 'generalisers'. In fact, non-autistic humans cannot help but categorise the things they see and live within explanatory and guiding principles. Grandin and Johnson argue that because of their smaller-than-average pre-frontal cortex most autists mind the *details* of the world and may have great difficulties in forming categories and concepts. Temple Grandin assumes to share her detail-mindedness, to differing degrees, with animals; therefore, she may have an advantage in seeing what bothers animals in human-made

environments. The authors' way of presenting their central hypotheses is sincere and respectable, although, for a number of reasons, not everybody may be enthusiastic about relating human impairment with animal minds.

Grandin and Johnson integrate and discuss quite a wide spectrum of relevant scientific literature. Still, this is not a scientific book in the proper sense. Rather, the authors integrate Temple Grandin's own experience as a practical animal behaviourist with the scientific evidence wherever possible. This results in a very well informed, even wise and still easy-to-read text, giving a marvellously comprehensive, interpretative overview on the behaviour of mainly domestic animals and human-animal interactions. On the down side, 'comprehensive' means that not all explanations and interpretations may withstand scientific scrutiny, or will be testable at all. One of a number of possible examples for this is the authors' belief that, throughout the animals, individuals with light-weight bones are more nervous or 'hyper' than those with heavy-weight bones. This sounds strange even though it is an interesting idea. And in a few details the authors may be simply wrong, for example when they assume that animals are not ambivalent with respect to their emotions; they sure can be.

The authors' deep regard and concern for animals is generally paired with up-to-date knowledge, but may still give a supportive signal towards a segment of animal protectionists who consider love for animals as a surrogate for knowledge. Grandin and Johnson present a thought-provoking view of the relationship between (some) animals and humans, which should not be mistaken with 'the truth'. But this statement, of course, applies to all human interpretations of the world, including 'hard science'.

The authors quite rightly emphasise that animal cognition and (specialist) abilities were, and still are, vastly underestimated. It is indeed strange how a lack of evidence (often attributable to inadequate approaches) could ever support the traditional 'scientific' statements that animals would not be able think, are generally unconscious, or do not have language. This is anthropomorphic chauvinism: such statements are clearly not justified because a negative result can in no case be interpreted as positive evidence for the lack of ability. In particular, recent research in primates and birds keep weakening these Cartesian stereotypes. Conversely, science has fared well with cautious and conservative thinking. Ockam's razor is still *the* prime principle in science and always will be. Although accumulating evidence indicates astounding mental abilities, for example

in dogs and corvid birds, this is no justification to fall into the extreme position, that is to assume that all animals have language, are conscious and are just humans in disguise. Grandin and Johnson do avoid this common pitfall because the conceptual backbone of their book is to interpret the animals' world as much through their own eyes as possible.

The reputation of Temple Grandin in the animal welfare community might be affected by her positive relationships with McDonalds and other US fast-food companies, as well as by her relationship with the meat packing industry. However, this would be an unfortunate case of blindfolding by ideology. Grandin approaches this topic with a genuine mixture of pragmatism and idealism. She confesses that she loves cows the most but still eats meat herself, as do the majority of people in the western culture. So, she insists that if animals need to be killed for food, they should at least not suffer through that process. Her activities indeed appear to have made a big difference in how animals are treated ahead of slaughter today, at least in the US; therefore, it is no wonder that examples from the meat packing industry are common throughout this book.

The authors do a good job in switching back and forth, and integrating between the phenomena of autism, human psychology and animal behaviour. After an introduction to Grandin's personal story, chapters follow on *How animals perceive the world*, on *Animal feelings, aggression, suffering and thinking* and finally, on their *Extreme talents*. The book ends with an extensive and remarkably complete *Troubleshooting guide* for animal behaviour problems. There are also extensive notes and a well selected bibliography. The book is written in the style of a narrative, and the text is not without redundancies and a bit jumpy with respect to re-appearing topics. The authors abstain from unnecessary scientific jargon and use the unmistakable and charming language of the US-southwest. And even though the authors are intensely caring and concerned for animals, the text is pleasantly non-sentimental. All in all this makes for a remarkable book that is easy and enjoyable to read — despite its comprehensive content — and provides a refreshingly unusual perspective of animals. It therefore deserves to be read by all animal behaviourists, animal biologists and by everybody interested in animals and their welfare.

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