

example, the chapter on feeding suggests (p 31) that birds 'tend to eat rather more than they need, especially if they are placed in an environment where there is little else to do but eat and drink'. Food restriction is described (pp 31–32) as 'beneficial both for the birds and for food conversion efficiency', ie for their health and economic performance. It is now widely accepted that if food restriction is to be practised, an environment that allows more diversity of behaviour is even more important for welfare than otherwise – yet this is not mentioned. As such, readers particularly interested in welfare may want to read this book in combination with others that give more emphasis to other aspects of welfare in addition to health. However, to return to the main point, readers who absorb and practise the principles covered here will improve the health and welfare of their poultry considerably: the concern of Sainsbury for the animals in his care, in his lectures and in his books shines throughout.

On many topics, then, the book teaches approaches rather than specific practices. Thus, while there is a chapter on important diseases which covers the diagnosis and treatment of each, the farmer who reads it is likely to end up better informed but more worried than hitherto. Providing a summary of vaccinations and other procedures to be followed, which would generally prevent most problems, would have helped. On other topics more detailed recommendations are made, such as on temperature and lighting. There is also a new chapter on organic poultry production, which gives a lot of information on the standards necessary to comply with European regulations on organic food. The majority of the chapters concentrate on chickens, although many of the ideas apply more generally, and then there are additional short chapters on the other species listed in the subtitle.

The book is largely up to date in a fast-moving world, although some of the husbandry methods covered in the chapter on 'alternative systems' are now more mainstream than this implies – and will become even more so over the next few years. It will be interesting to see how the industry changes in future. Sainsbury suggests (p 156), 'that if we had no vaccines or medicines we could perhaps be even more successful in rearing ... livestock, by relying on good feeding, housing hygiene, husbandry and management.' If this could be achieved, whether by economic pressure or legislation, many would feel that not just health, but welfare in general, would be improved.

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The Domestic Cat: The Biology of its Behaviour, 2nd edition

Edited by Dennis C Turner and Patrick Bateson (2000). Cambridge University Press: Cambridge. 244pp. Paperback. Obtainable from the publishers, The Edinburgh Bldg, Shaftesbury Rd, Cambridge CB2 2RU, UK (ISBN 0521636485). Price £13.95/US\$19.95.

The first edition of this book was published in 1988, with the aim of being the definitive reference work on domestic cat behaviour for years to come. Why was a second edition necessary? The editors, Dennis Turner and Patrick Bateson answer this question in their introductory chapter, 'Why the cat?' Recent pet population figures show that the cat is now more popular as a household pet than the dog in some countries, with over 8 million of them in France, over 7 million in the UK and over 6 million in Germany and Italy. In the USA there are over 56 million. No serious scientific treatise was available on cat behaviour until the late Paul Leyhausen published in German in 1956. The first edition of *The Domestic Cat* reviewed the results of many scientific studies up to the mid-80s but since then, the amount

of work has grown rapidly. The present edition draws on previous results as well as giving a clear view of current research on the development of young cats, the social life of cats, their predatory behaviour, and the nature of the relationship between cats and people.

It is interesting to see the new departments which have sprung up and supported studies on cat behaviour since the 1980s: the ones represented in the second edition are, the Anthrozoology Institute of the University of Southampton, the Wildlife Conservation Research Unit of the University of Oxford, the Department of Public Health Sciences of the University of Edinburgh, the Department of Wildlife Ecology at the Swedish University of Agricultural Sciences, the Unit of Biometrics, Genetics and Population Biology of the University Claude Bernard in Lyon, the Animal Welfare and Human-Animal Interactions Group of the Cambridge University Veterinary Department, the Center for the Interaction of Animals and Society in the University of Pennsylvania Veterinary School, and the Institute for Applied Ethology and Animal Psychology in Hirzel, Switzerland. It is also interesting to note that some of the studies have been supported by pet food companies.

This book follows the same pattern as the first edition, with many of the same authors, but there are some striking changes. Chapter 5 has been completely re-written by John Bradshaw and Charlotte Cameron-Beaumont, and discusses the signalling repertoire of the domestic cat and its undomesticated relatives. There is a clear account (insofar as it is understood) of how cats communicate through olfactory, auditory, visual and tactile means. Domestication has had some effect on communication: it seems that the meow (as distinct from the chirrup, the howl, the hiss, the pain shriek, the purr, the growl, the yowl, the spit, the chatter, the sexual advertisement call and the copulatory roar) is rare as a signal between adult cats but domestic cats can easily be persuaded to use it to communicate with humans.

Chapter 8 by Mike Fitzgerald and Dennis Turner updates the information available on the hunting behaviour of cats. They discuss methods, success rates, and the impact of hunting on prey populations. This is of current concern to several wildlife organizations and government departments. The deleterious effects of predation by cats on game birds and on birds on small islands have to be acknowledged, but the authors conclude that on mainlands the effects of hunting on bird populations are small compared to their significant effect on rodent populations.

In Chapter 9, 'Domestication and history of the cat', James Serpell has updated his text to include the ways in which DNA analysis has been used to study the origins of the domestic cat. The results suggest that *Felis sylvestris*, *F. libyca* and *F. catus* are closely related and should probably be classified as belonging to a single polytypic species, *F. sylvestris*. This would explain why hybridization seems to occur between the domestic cat and the Scottish wild cat, and between urban feral cats and *F. libyca* in Zimbabwe. Serpell favours *F. libyca* as the likely ancestor of *F. catus*, because of its more docile temperament, and the ease with which it can be persuaded to live in human settlements for rodent control. The etymological evidence to support this is that one of the most ancient words for cat is the Nubian word 'kadiz'. The sections on the cat in ancient Egypt and the association of the cat with witchcraft in Europe have also been updated.

In Chapter 10, Dennis Turner examines the relationship between cats and people, with special emphasis on socialization and the evidence for the existence of a sensitive period in early development when kittens are particularly likely to form attachments to humans. Studies show that this 'sensitive period' extends from about three weeks of age to about seven weeks of age. Attachments are then formed rapidly and fairly easily, although the outcome varies according to the amount of handling given by humans, the influence of the

mother and the inborn timidity or boldness of the kitten. Once cats reach the juvenile stage, and the initial socialization period is over, the term 'social referencing' may be used to describe the way they get to know new individuals, whether cats, humans or other. The importance of socialization is now recognized by animal protection societies and shelters who have the job of trying to find homes for cats – which may be difficult in view of the injuries that can be inflicted by a timid, frightened or aggressive cat. The current recommendation is that kittens should stay with their mother and littermates until weaning at eight weeks. Early separation can cause behavioural problems such as hyperactivity, excessive sucking and wool-chewing. As long as kittens are handled during the socialization period, it is relatively easy for them to relate closely to other people when they are placed in homes one, two or even three years later. Cats that have not been handled at all during the sensitive period can be rehabilitated, but this is a laborious task requiring much time and patience.

When animals were first used in pet-facilitated therapy, there was ridicule from some medical quarters. Perhaps this was because those humans had not been familiarized with animals during *their* sensitive phase of socialization. In 1981, Serpell demonstrated that companion animals are most frequently found in households in which the adults had experienced pets themselves as children, and that they are usually of the same species as experienced earlier. Turner has gone on from there to study the mechanisms explaining the human-cat bond, such as the attachment theory and the social support theory. There is now information on what influences a human in selecting a cat. (I suppose we will have to wait longer to find out what influences a cat in selecting a human.) Finally, Turner has studied the *approaches and responses between cats and their owners and shown that, in the most harmonious relationships, the cat makes most of the approaches and the human is willing to respond and comply. The secret is to accept the independent nature of the cat. Cat lovers have always known that, of course, but it is nice to have it confirmed.*

There is a completely new chapter on feline welfare issues, by Irene Rochlitz. The first issue tackled is the cat overpopulation problem. It is difficult to estimate the number of unowned cats in any country, although some organizations in the USA have done surveys from which they have come up with an estimate of 40 million, which is about 80 per cent of the owned population of 60 million. It is even difficult to collect figures on the numbers of cats entering animal shelters. In the USA, it is thought to be about 7 per cent of the total cat population annually. Some animal shelters in the USA and the UK are now keeping statistics on the reasons given by owners for relinquishing their cats, and also on the success of rehoming them. Most shelters in the UK now find it necessary to euthanize only about 10 per cent of the cats given to them. The author discusses what needs to be done to reduce the number of unwanted cats, (education of owners, neutering, and responsible pet ownership). Reference is made to the method of trapping, neutering, marking and returning to managed sites for the control of feral cats, as recommended by UFAW. There is a substantial section on the housing of cats, and there is now enough published information for recommendations to be made in the form of guidelines which may be applied in animal shelters, boarding catteries, laboratories and also in the home.

There are many books for the general reader describing the behaviour of domestic cats and giving advice on behavioural problems such as urine-spraying. There are also several good books on cat behaviour written for veterinarians and animal behaviour consultants and therapists. This one is rather different: it is for the serious student of cat behaviour who wants to understand the methods used by animal behaviourists and the ways in which the results obtained have been analysed and interpreted. The authors are all more or less actively

engaged in research on cat behaviour and so are able to discuss results in detail. This means that the areas covered are covered well but that some aspects of cat behaviour are hardly mentioned at all. There is very little, for example, on the effects of neutering on behaviour and nothing on grooming behaviour. The emotions of cats are not discussed at all. There are diagrams, graphs and a few line drawings, but the only other illustrations are the ink and wash drawings on the title pages of the chapters. This book will be of interest to many general readers but its greatest value will be to the growing number of workers in the field of companion animal behaviour, including those employed by animal welfare societies, to whom it will be an important work of reference as well as a source of reliable information.

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A Life for Deer: A Deer Vet Tells his Story and Theirs

John Fletcher (2000). Victor Gollancz: London. 226pp. Hardback. Obtainable from the publishers, Orion House, 5 Upper St Martin's Lane, London WC2H 9EA, UK; and www.fletcherScotland.co.uk (ISBN 0575070900). Price £20.00.

John Fletcher is a name well known to deer farmers all over the world. He has been described as the 'Pope of deer farming' – although, as has pointed out in the past, this is inaccurate, as he has a wife and two grown daughters.

His autobiographical book is a fascinating mixture of highly readable science, humour, history, erudite quotes and, at times, thought-provoking philosophy, particularly on the subjects of human diet and animal welfare.

The early science covers his efforts on the Hebridean island of Rum, off Scotland's west coast, during the years that he gained his PhD. This, after obtaining a veterinary degree from Glasgow, at the same cemented his fascination with Scotland's rugged scenery and his addiction to all things related to deer. His fourth chapter heading, 'Red deer ruled by sex' is a nice take-off of the sort of headline that one sees in tabloid newspapers. However, the delightful vignette that accompanies the heading takes the potential pornography out of the title as it shows a hind suckling a fawn. The experienced student of deer will note that they are both lying down – which is not as uncommon as it might seem, at least among red deer and wapiti. Every chapter is accompanied by one of these little illustrations, all drawn by Maggy Lenert. They add a nice touch.

John describes his pioneering work with the reproductive system that deer have developed, as well as his ventures into modern capture techniques and the use of a dart gun. Throughout, he gives generous acknowledgement to his co-workers, without whom none of his studies could have been conducted, let alone completed.

The humour ranges from self-contained anecdotes, starting with his nude rescue of his own transport truck from a Highlander far gone in drink, and his wooing and winning of Nickie, his wife of many years (although one wonders who led the way in this affair), to the subtle use of throwaway lines. For instance, in the latter case, he admits to being a less than objective observer in the matter of the sensual pouting of French girls' lips, and why French men lack this seductive attribute.

Beyond his broad knowledge and use of quotes from a variety of authors of deer-related subjects he has referred to such widely diverse writers as the poet John Donne, the Spanish philosopher Ortega y Gasset, the English Arabophile soldier T E Lawrence, author of *The*