

ethically justifiable. However, as far as the animals go, the association between stereotypies and an impoverished environment, particularly if experienced during early development, is clear. It could be argued that we now know enough about the environmental conditions that result in stereotypies and should be focusing our attention on devising environments that meet the needs of animals in our care. If we could achieve this admittedly very difficult target, there wouldn't be a problem that would need to be addressed. It would, at any rate, mean that the justification for research that involved the deliberate inducement of stereotypical or compulsive behaviour would need to be higher than at present.

I have no hesitation in recommending this book. It provides an excellent summary of the current state of research on stereotypies and should help to direct future research. As such it is essential reading for animal welfare scientists and I have no doubt that it will be placed on many animal welfare course reading lists. Professionals tasked with caring for animals that may develop stereotypies should also read it. It will help them to ask the right questions if stereotypies arise and may help them to review their current husbandry systems. I also hope that it will be brought to the attention of scientists using animals in research, as many research animals develop stereotypies. Not only have these animals experienced poor welfare at some stage, but they are also likely to become poor or abnormal subjects. Rectifying this situation thus benefits both the scientist and the animals.

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### Lameness in Cattle

C Watson (2007). Published by Crowood Press, Ramsbury, Wiltshire SN8 2HR, UK. 173 pp Paperback (ISBN 978186126 905 8). £19.95, US\$39.95.

Firstly a confession! This reviewer has been co-editor of a book with an identical title, written primarily for a veterinary readership. Cattle lameness is certainly a popular subject. Numerous books, including texts in Spanish, Swedish, German, Dutch and Slovenian have appeared over the last 20 years. The author's Gloucester practice partner Roger Blowey wrote *Cattle Lameness and Hoofcare* for the interested dairy farmer, first published in 1993 and later revised (2002). The EU has over the past five years sponsored and will shortly publish the conclusions of an extensive international series of laboratory and field studies of cattle lameness. Currently (March 2007) a DEFRA/ADAS roadshow, entitled 'Lameness in Dairy Cattle — Solutions' is attracting dairy farmers to sixteen venues throughout England.

The author on the flyleaf states that "lameness is without doubt the most important welfare issue facing the dairy industry today", quoting the words of the Farm Animal Welfare Council ten years ago. Chris Watson has spent all but his first four postgraduate years in a large modern Gloucester-based practice, concentrating primarily on dairy cattle. He has published papers on infertility, mastitis, and like many other outstanding clinicians, is an astute observer

of cattle behaviour. This book attempts to emphasise herd lameness problems and their solution or alleviation. His preface emphasises the need for active health initiatives based on good records and accurate diagnosis. To what extent can he persuade farmers that it pays them to adopt what may initially be relatively expensive preventive measures to avoid the continuing cost of lameness?

Ten relatively short chapters cover form and function (ie anatomy and physiology); incidence and recording of lameness; general examination and treatment of foot problems and foot trimming. Two sections follow on horn and then skin diseases (eg digital dermatitis or DD); diseases of joints and bones; a miscellaneous chapter; then the longest chapter (25 pages) on preventing lameness, and finally an investigation of a herd lameness problem. The book ends with 27 references, mostly British, but including 7 from USA, a glossary of terms ('abaxial' to 'white line') and a short index.

The better chapters are those dealing with prevention of lameness and the investigation of a herd problem. In earlier chapters this reader became confused by some diagrams, such as the relevance of the human foot shown alongside a bovine hindleg and such terms as 'cursorial adaptation', explained as "the need for a quick getaway". Many line diagrams are of poor quality, and suggest an overzealous attempt to keep them simple. Unfortunately neither diagrams nor the many colour illustrations are numbered, often making them difficult to relate to the text. In the first chapter some sections are hard to grasp as the author bravely tackles the disease process involved in 'laminitis', which is more correctly termed 'coriosis'. He puts forward two possible theories, one involving endotoxins, the other collagen, and finally prefers the term 'disruption'. While perhaps stimulating for a veterinary readership, a tired dairyman could easily switch off.

Chapter 2 on incidence and recording explains the meaning of prevalence (p 24) but its importance is not indicated till later (p 28). The concept of locomotion scoring is introduced (Table 1) with a four-point scale, and the dairy farmer is advised to practise this as the cows leave the milking parlour, but, I believe it is still more sensitive if the observer sees the cow turning a corner, when any lameness is likely to be exaggerated. The reader is thankfully left unaware of the plethora of loco scales, ranging from 1–3 to 0–9. But, when a trained observer (such as Becky Whay of the Bristol Veterinary School) checks the passing dairy herd out of the parlour, the number of lame cows will be about four times the number believed lame by the herdsman. This fact is profoundly important as these additional cows are all mildly lame, yet in urgent need of 'foot up' examination and treatment. The author fails to mention this discrepancy.

Restraint methods are well-illustrated and the detailed examination of the affected foot is good. Some legs are shown restrained by ropes, some by chains, yet others by canvas straps closed with either a buckle or velcro pads. From the welfare and comfort viewpoint the canvas strap must be preferred. Under management techniques using blocks to relieve weight on a diseased claw, the suggestion

that a quick method is to strap a wooden block onto the sound claw with adhesive tape, (even as a 'trial block') is unhelpful and should have been omitted. Surprisingly the author is an enthusiast of nail-on blocks, but admits the application "needs much skill".

The veterinarian-farmer borderline is seen in pages 52–53 under the headings of 'Antibiotics' and 'Immobilisation'. Chris Watson clearly states "Antibiotics should only be used with veterinary guidance", but later (p 91) antibiotic footbaths are discussed though dose levels must be regarded as 'purely empirical', despite the foreword by David Logue stating that the use of an antibiotic footbath (for digital dermatitis) "is generally frowned on and is even forbidden in some countries". In fact the Veterinary Medicines Directorate (VMD) "cannot condone any of the tabulated substances being used in footbaths as none are authorised for use in this form." Elsewhere NSAIDs and xylazine are mentioned for their usefulness in pain relief. True, but again please, under strict veterinary control!

Plaster casts may be good for the immobilisation of joints such as the carpus for localised joint ill but their application, which it would have been helpful to have described, is fraught with risk if used without padding between skin and cast. The illustration (p 53) apart from the clean carpal cast, also shows swelling of the left hock, suggesting a septic polyarthritis. Management of calfhock polyarthritis is not discussed.

The foot-trimming chapter presented more difficulty for this reviewer and had to be read three times before the different steps were understood (pp 59–61). There is no word on sharpening knives. Contradictions abound: "when using a knife single-handed, keep the other hand behind your back to prevent the temptation to hold the claw while trimming", yet the title page colour picture shows precisely that! Electric-powered cutting disks (twice illustrated on pages 56 and 57) are condemned "as it is easy to produce too much heat on the horn" suggesting that necrosis of the corium could result. Using implanted thermocouples Viennese studies some years ago showed there is no increase in temperature in the solar corium when using the grinder. Post-trimming lameness is due primarily to excessive thinning of the solar horn (often to less than 2 mm depth). The 'Dutch method' of trimming is rated very successful, but the classical book by Egbert Toussaint Raven, *Cattle Foot Care and Claw Trimming*, from the eighties is unfortunately omitted from the references.

Insufficient emphasis is given to written recording of the trimming eg claw abnormalities detected, the likely need for further trimming or a veterinary visit.

Rightly the reader is told to take the inner hind claw as a template, "neatening up" this claw before tackling the more overgrown outer claw. There is no attempt to prescribe the steps, under the heading 'Removing horn' (p 60). The ideal length of the trimmed dorsal (front) wall, regarded by some as critical, at 7–7.5 cm, depending on cow bodyweight, is not mentioned. Nowhere did your reviewer find the important fact that the average cow has a weight distribution of about 52:48% for foreleg and hindlegs, nor that most

dairy cows have a hindlimb lateral: medial claw balance of 60:40 which may be still more skewed in untrimmed overgrown hind claws.

Solar ulceration is well covered (pp 64–70) with good illustrations and diagrams. The aetiology is rightly simplified for the anticipated readership. In some illustrations (as on p 64 to point towards a bead of pus) arrows would have been helpful. In others the reader may rightly ask "what features of a sole ulcer can I see here?" The reader should be warned that solar ulceration is often in the outer claw of both hind feet and that while the severe lesion is managed conventionally by paring and by blocking the medial claw, one should be alerted to the incipient lesion in the other hind leg which may progress quickly due to increased sole pressure.

Digital dermatitis (DD) accounts for 14 of the 19 pages devoted to diseases of the digital skin. The reviewer missed reference to the age incidence. A clean farm usually becomes infected with DD following the purchase of in-calf heifers. This means not only the necessity of a pre-purchase check for heel lesions but also a period of isolation (biosecurity) to prevent the potentially disastrous introduction of DD. The reviewer has often seen severe lesions of 'hairy warts' (typical in parts of USA) in bulls.

Some controversial statements appear: "DD of the interdigital space is probably now the most common form of DD and one by-product of this may be involvement with interdigital hyperplasia". We can only assume this conclusion is from his Gloucestershire practice observations.

Chapter 7 on diseases of joints and bones first points correctly to the need for 'skilled professional help' (= veterinary). Surgical illustrations include examples of 'coring' (fenestration and curettage of deep digital sepsis) using either an electrical drill or trocar (p 102) but some details are irrelevant for the stockperson reader, while valuable for the vet. Other veterinary interventions considered include arthrotomy, arthrodesis and digit amputation.

Fracture of the pedal bone is briefly discussed without mention of the aetiology or the good prognosis following blocking the ipsilateral claw. 'Locking patella' and stifle injuries are briefly outlined.

Dislocation of the hip receives more coverage of aetiology and diagnosis. But while surgical manipulation by pulleys in the cast cow may be a dramatic colour print, the next, showing open reduction through a large gluteal incision, is as unhelpful as the comment "the hip can be grabbed with both hands".

Finally, among pelvic problems the iliac wing fracture is not dropped as a result of the weight of the rumen (p 112) but due to traction of the fascia lata.

Sound animal welfare measures loom large in many sections, not least in chapter 8 (miscellaneous foot and leg conditions) with its pertinent emphasis on hock damage. Preventive measures are discussed further both in chapter 9 under environmental factors, straw yards and cubicles and in chapter 10 including cow comfort.

Some repetition is evident in chapter 9 on preventing lameness when ruminal acidosis is related to 'laminitis' a

term previously rejected in favour of 'coriosis'. Good advice is then given on adaptation of the freshly-calved cow to dry matter levels, protein and other elements of the feed. Following trials in the author's practice on supplemental biotin published in 2001, there is a guarded recommendation for its addition at 20 mg day<sup>-1</sup> to dairy cow rations.

The diagram (p 138) showing how a cow gets up, like others, is overly simplified. Many better diagrams can be found in other textbooks.

The principles of cubicle design and recommended dimensions are well described and illustrated for the farm manager and dairy personnel. Kerb height suggestions follow the well-known Liverpool study that the ideal should not exceed 150–200 cm, despite being contradicted in another study that showed no relationship between kerb height and lameness incidence. Floor surfaces and cubicle cow tracks are well covered, as is the introduction of freshly-calved heifers to the main herd. Perhaps correct use of a backing gate in the collecting yard pre-milking could have been briefly covered.

The last chapter on investigation of a herd lameness problem is pivotal. Accepting that herd records are critical, it would have been good to have illustrated several good examples. This necessitates not only a record of the cow ID but also the date of lameness, diagnosis and treatment. Lameness scores should be entered as suggested in the second chapter (p 27). The veterinary site investigation starts with the vet following the path of a typical herd member from collecting yard through parlour, dispersal yard and cubicles, to the loafing and feed areas. A general recording sheet, and both cubicle and straw yard sheets are shown.

The reader is introduced to the CCI or Comfort Cow Index (the proportion of cows actually lying in the cubicles), PEL ('proportion eligible lying'), and SSI ('Stall Standing Index'). These are followed by brief mention of further aids such as CCTV and web cameras. All three sophisticated indices can only be defined and measured if there is plenty of manpower to do the counting, whether directly or via images (CCTV, web cameras) at frequent intervals. Such time is rarely available in most dairy units.

In contrast, the Lameness Record Summary is feasible, practical and sets herd parameters against herd targets (eg lameness incidence 59%, target < 20%). A time budget from a real investigation is listed, ie the average time spent eating, lying, in the milking parlour etc. The resulting short- and long-term advice for a specific farm is very useful. The text ends with a brief summary of herd investigation, the formulation of a 'health initiative' and monitoring of progress.

Further reading lists seven titles, three being websites. After the limited (27) reference list is a glossary of terms, one of which is very confusing: "ventral = the upper side of the body, ie upwards". The short index lacks terms such as biosecurity, condition scoring, disinfection, sandcrack, TMR, weight-bearing, overgrowth, pedometer, and stress lines, some of which are mentioned in the text. Biosecurity is neglected, and disinfection of foot-trimming equipment is ignored. Both are very relevant to DD.

The author is congratulated on his industry and enthusiasm in putting over his considerable knowledge of the dairy herd. Some parts of the book, hard to follow, could have been improved by a sub-editor. All the colour illustrations appear to stem from the author's camera and are often of poor quality with substandard colour rendition (usually excessive green or yellow), or are superfluous, as on page 152 showing a cow lying awkwardly jammed across a cubicle with an accompanying text "Is the cow trying to tell us something?" A local dairy farmer who read the book pencilled in "I'm stuck!" The problem itself is not discussed.

Dairy personnel will find much of interest on careful reading. Anyone directly involved in dairy cow welfare will be keen to implement some of the author's suggestions. Practising veterinarians should find something to support their own recommendations for optimal production coupled with high welfare standards.

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### ***The Goatkeeper's Veterinary Handbook, Fourth Edition***

P Dunn (2007). Published by Old Pond Publishing Ltd, 36 White House Road, Ipswich IP1 5LT, UK. 287 pp Hardback (ISBN 978-1-903366-91-2). £17.95.

When the first edition of this book appeared there were no other British veterinary texts on goats and virtually no other titles for the species from most parts of the world with the exception of North America. The success of *The Goatkeeper's Veterinary Book* is reflected in it now achieving its fourth edition. During the 25 years since the first edition, goat numbers in Britain have fluctuated as has their uses. Today there are possibly fewer pet goats but recently milk production and the sale of milk products has been on the increase with many farms now achieving viable commercial enterprises. There are also niche markets for meat although keeping goats for fibre production has decreased. The increased interest in goats has, in its wake, spawned two other veterinary books on goats and their diseases.

Peter Dunn spent part of his initial career at Reading University before moving to France where he and his wife ran a commercial goat herd. This has provided over 15 years of experience in working with the species as well as dealing with the veterinary problems. In the last few years he has divided his time between farming activities and veterinary work in Britain with Defra, from where he has recently retired.

The first edition of *The Goatkeeper's Veterinary Book* was divided into the problems resulting from the growth, production or management of the animals. This is different to the other British goat books available which concentrate more on dealing with the diseases via the organ-system approach. Peter Dunn's framework is a very logical way of dealing with the necessary division of the problems encountered and the same format has been adopted in this fourth edition. Thus, following a general chapter on the principles of health and management, the author concerns himself with the kid. Most other chapters focus on the diseases which occur as a result of