

The authors clearly state that “if in doubt, stop or leave well alone and seek the help of someone with more experience, usually your veterinary surgeon”. Whilst politically difficult, some indication of veterinary fees would have been welcome in the text because recently published studies have indicated that farmers are five times more likely to shoot a ewe presenting with dystocia than to request veterinary assistance. What would the authors recommend if the cost of veterinary attention/surgery was greater than the financial value of the sheep? More discussion of welfare considerations and moral issues would also have been very welcome from such experienced authors. However, such debate has been avoided by the veterinary profession at large for the past 20 years and it would prove extremely difficult to counter such apathy in a textbook dedicated to practical instruction.

It proves very difficult to strike the correct balance between providing detailed instructions to allow clients to correct dystocia and related conditions, and straying onto subjects which clients should not undertake. In this respect, replacement of vaginal/uterine prolapse must be deemed an act of veterinary surgery. This is an aspect of veterinary work that has increased in this reviewer’s daily work since the adoption of extradural anaesthesia. A series of photographs showing correction of a vaginal prolapse in the standing ewe simply by blocking tenesmus after extradural injection would have emphasised veterinary expertise to an increasingly sceptical farming audience.

The authors have succeeded in producing the essential basic information on ovine obstetrics and related problems in a very practical format which will be readily understood and appreciated by shepherds and students. The book is very affordable and provides the essential introductory information which can be further developed in practical sessions organised by veterinary practitioners. The authors have done the hard work; it is now up to veterinary practitioners to develop the concepts and concerns detailed in this book in their practices. This book should be left in the practice waiting room for perusal when farmers visit the practice with a stock held for sale. It is especially recommended to veterinary surgeons who have clients entering the sheep sector of the industry.

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Wild Health: How animals keep themselves well and what we can learn from them

C Engel (2002). Published by Weidenfeld and Nicolson, Orion House, 5 Upper Saint Martin’s Lane, London, UK. 276 pp. Hardback (ISBN 0 297 64684 2); Price £20.00. Paperback (ISBN 0 753816768); Price £8.99.

It has long been held that most wild animals live healthy lives while modern man and his domesticated livestock are often plagued with disease and degenerative conditions. Of course, wild animals which become sick, injured or infirm are likely to be quickly killed and consumed by predators and scavengers. Only those larger ones at the top of food chains are likely to survive for any length of time. Diseased small animals (or their remains) are not often found. Wild animals are usually alive and healthy (although often with some parasite load) or else dead and eaten.

Cindy Engel discusses in the early parts of her book *Wild Health* the whole concept of health and disease. She clearly distinguishes between infection and illness (showing signs/symptoms of disease): many animals become infected with disease organisms but, through a whole battery of protective mechanisms and, without showing outward signs of illness, either throw off the infection or fight it to a standstill. Some become ill but finally control or eliminate the infection but others, of course, may succumb and die.

Dr Engel makes the very valid point that this balance, which wild animal populations can seemingly strike between themselves and the disease challenges from their environment, is only likely to occur when they are free to range undisturbed over their natural habitat and are not exposed to either high levels of pollutants or extremes of environmental change. Under these wild conditions animals may have been able, over long periods of time, to evolve physiological, immunological and behavioural defence mechanisms which can at least partly protect them from disease. It is these behavioural defence mechanisms or, as the author puts it, “the actions animals take to stay well”, which are the real subject of study of the book. Domesticated, captive (zoo) and feral (escaped domestic stock which have established themselves in the wild) animals and modern man may still have some of these inherent behavioural mechanisms but are probably so restricted by their environments that they are not able to implement them effectively.

“The actions animals take to stay well” are classified as being either *health maintaining*, eg grooming, selecting a balanced diet, keeping clear of faeces, or *illness responding*, eg seeking isolation or shelter, receiving aid from others in the group, self medicating. It is the last example — self medicating — which occupies much of the attention of Dr Engel and which, I suspect, will be of most interest to the majority of readers.

Many plants manufacture and store in their various organs a large variety of so-called secondary (biological) compounds which can have, amongst other things, repellent characteristics towards grazing/browsing animals or which have been produced in protective response to attack by biological agents. These secondary compounds can sometimes be poisonous if consumed in large quantities but may, however, have anti-parasitic/anti-infectious properties if eaten in relatively small amounts.

Dr Engel suggests that animals are often surrounded by plants that contain pharmacologically active compounds and, in a more restricted way, by naturally occurring minerals eg bentonite (toxin absorbing) clays, some soils which, if consumed, can have health benefits. She believes that self-medication is most likely to be motivated through learning processes. Animals may find that the eating of certain plants or mineral materials removes unpleasant sensations or induces pleasant ones. There may be some “cultural” transmission of this type of behavioural information: young animals may notice that older members of their group are, at times, eating unusual materials and may try the same. It is suggested that some human herbal remedies have been discovered by observant humans noticing the seemingly beneficial effects conferred on animals when they eat certain plants.

Most, but not all, of the evidence for self-medication by animals seems to be somewhat anecdotal. Cindy Engel makes the point that while some of it is rather trivial, some is well documented and is from careful, experienced, knowledgeable field workers. This latter type of evidence is particularly valuable if it has been obtained as part of a long-term study of the candidate self-medicators in their undisturbed natural habitat, ie the incident(s) can be assessed against a full knowledge of the history and biology of the animals and their environment. However, as Dr Engel points out, there have been relatively few long-term studies of animals in their natural surroundings. She does, however, point out the importance of applying, wherever possible, Michael Huffman’s guidelines on the “proof” of self-medication. These were developed as part of a long-term study of chimpanzees in the wild. They suggest that before self-medication can be freely accepted in any particular case: 1) the animal should show signs of being ill (backed up, if possible, by some quantifiable biochemical/pathological/physiological tests); 2) the animal should seek out and consume something which is not part of its normal diet (and which has little direct nutritional value);

3) the animal should show signs of health improvement on consumption of the material (backed up, if possible, by some positive change in the quantifiable tests); and 4) the material should, on laboratory examination, show the presence of sufficient active ingredients to bring about possible changes in the animal's health. The author's emphasis on these guidelines indicates how critically she approaches the scattered published evidence on "the actions animals take to stay well" and especially on the possible action of self-medication.

In looking at the material presented to back up the claim that animals perform behaviours which guard or enhance their health status, one has to remember the golden rule of the careful scholar: "the plural of anecdote is not necessarily data". And, of course, negative findings are by their very nature in these cases not usually noticed and are, if noticed at all, very rarely documented!

There is much relevant evidence quoted in this book. Some is anecdotal, some even of traveller's tale status, but there are also a fair number of cases based on sound observation. There are also a few instances of self-medication which largely fulfil Michael Huffman's guidelines and there are a few laboratory-controlled behavioural experiments showing that animals will, at times, take in "needed" pharmacologically active compounds. My overall impression is that some (perhaps even much) of the material discussed in this publication is beginning to look like real data.

Cindy Engel is to be congratulated on producing a most interesting, wide ranging, well written, fully documented and clearly indexed volume. There are, as predicted in her Introduction, oversimplifications in particular specialist fields. These oversimplifications, however, seem to be few and of relatively minor importance.

This is a unique and important book. It is a must for the libraries of all biomedical, environmental, agricultural and veterinary colleges, universities and institutes. It will also, I suspect, be widely purchased in its paperback form by a whole range of scientific workers and field investigators and by general readers interested in the overall area of health ecology.

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The Trade in Wildlife: Regulation for Conservation

Edited by S Oldfield (2003). Published by Earthscan Publications Ltd, 120 Pentonville Road, London N1 9JN, UK. 255 pp. Hardback (ISBN 1 85383 959 0); Price £48.00. Paperback (ISBN 1 85383 954 X); Price £17.95.

There is increasing concern over conservation of habitats and species, yet the wildlife trade is often not seen as an important factor in the loss of biodiversity. The regulations covering the wildlife trade are even less well understood, although we need to be aware of what protection wildlife has. The book is based on a seminar on the subject held in 2001, and editor Sara Oldfield introduces the topics and how the issues are related in regulation, enforcement and disparities in implementation.

The background section explores the structure of wildlife trade and what regulation is meant to achieve. Broad *et al*, in their chapter, are concerned with cost and benefits, the relationship between biodiversity and sustainable development, and the important role of middlemen in the trade. Dickson argues that trade measures may not be the best way to achieve species conservation, but he does not explore areas that might be more effective. He notes that the goals of the Convention on International Trade in Endangered Species (CITES) differ between participants. For example, developed countries have an interest in ethics,