

## Mutual gains in a cruel world

Marian Stamp Dawkins

**The Covenant of the Wild: Why Animals Choose Domestication.** By Stephen Budiansky. *William Morrow: 1992. Pp. 190. \$18.*

THIS book puzzled me. On the one hand, I found it refreshing to read Budiansky's coherently argued but unfashionable views on fashionable topics such as the ethics of hunting and farming. On the other, I felt let down because, having said that many people have the wrong ideas about farms and domestication, he does not follow this

the human where the honey is and the human opens the nest, giving the bird some of the spoils. At other times, the association has become more intimate and the animal is now no longer wild, as with domesticated dogs, although there is still mutual benefit. Dogs gain food, protection and companionship, while humans gain a great deal from the presence of dogs. Even farm animals such as sheep and horses, the author argues, are symbionts, gaining from the protection of humans and living in far greater numbers around the world than they ever would if left to their own devices. He also criticizes the romantic view that some animal-rights supporters have of life in the wild. People are easily shocked by the horror stories of the laboratory, he says, but are ignorant of the greater horror stories of nature, such as

IMAGE  
UNAVAILABLE  
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Who's kidding whom? An eleventh-century illustration of animal domestication.

through to saying what he thinks the right ideas might be. I was tempted to keep asking, "So what?"

Budiansky's thesis is that human relationships with other species are not so much the 'exploitation' they are often made out to be, but arise from quite natural coevolutionary processes like those between other pairs of species. For example, acacia trees grow special shelters for ants. In return, the ants defend the trees against herbivores. The association is not one of the ants 'exploiting' the trees or the trees 'duping' the ants, but one of mutual cooperation. Similarly, birds flocking together are all selfishly making use of the fact that 20 pairs of eyes are better than one. All individuals gain from this behaviour, even though they could be described as mutually parasitic on each other.

In Budiansky's view, many human associations with animals are mutualistic in nature, with both partners, not just the human masters, gaining in the process. Sometimes, as with honey guides (birds that eat honey but cannot open a bees' nest without assistance from a larger animal), human and wild animal both have obvious gains: the bird shows

the death and killing that are regular features of the lives of wild animals.

So, because Budiansky argued that many of the ways in which humans behave towards other animals are no different in principle from the ways in which animals behave towards each other, I was expecting him to arrive at some sort of conclusion about the moral issues surrounding human treatment of animals. Was he about to say that as so many things (even killing) are 'natural', we should not worry about them from an ethical point of view? Or was he going to say that we still should, despite the far worse things that go on in nature? When he said neither, I felt as though I had been left in the middle of nowhere after the last bus had gone. But, on reflection, perhaps it wasn't a bus that I missed, but a bandwagon. Perhaps the strength of the book is that it raises issues and makes points and then doesn't tell one what conclusions to draw. It is readable and thought-provoking, and doesn't pretend to be anything more. □

Marian Stamp Dawkins is in the Department of Zoology, University of Oxford, South Parks Road, Oxford OX1 3PS, UK.

## Channel cheer

Charles F. Stevens

**Electrogenic Ion Pumps** By Peter Läuger. *Sinauer/W. H. Freeman: 1991. Pp. 313. \$44.95, £34.95.*

ALL cells live or die by their ion pumps, those marvellous molecular machines that use energy to move critical ions — sodium, potassium, calcium, chloride and hydrogen — to where the cell needs them. Peter Läuger, who died a year-and-a-half ago in a tragic accident, has left us a modern, readable and scholarly review of this important class of molecules.

The pump familiar to all biologists, the sodium-potassium ATPase that keeps potassium on the inside and moves sodium to the outside of all animal cells, is but one member of a larger family of pumps that use ATP hydrolysis to transport ions. But nature has invented other families of pumps that use other sources of energy: light, phosphate hydrolysis, decarboxylation and the transfer of electrons in oxidation-reduction reactions. One of the strengths of this monograph is that all of these pump classes are treated in the context of the general principles of coupling energy expenditure to ion transport.

Another strength is that information from the various approaches to pumps is well integrated. Results from biochemical, ultrastructural, physiological and molecular biological studies are all combined with the sophisticated theoretical perspective that was Läuger's trademark. Although an appropriate amount of theory is here, this is not primarily a theoretical treatment of pump function. Indeed, it is the experimental approaches to pumps that predominate in the discussion. Pump molecular biology has been moving rapidly, and Läuger might well have included more from this area were he able to write the book now.

*Electrogenic Ion Pumps* is divided into two parts, the first a discussion of common principles and the second a consideration of specific pumps. The first section begins with an overview of known ion pumps and what they are good for. Most of this part is devoted to the basic principles of pump function and a survey of the way they are studied. This is where the theory is.

The second section treats six specific pumps, one chapter for each. Here bacteriorhodopsin, the *Neurospora* proton pump, the sodium-potassium ATPase, the sarcoplasmic reticulum calcium pump, proton-pumping ATPases and cytochrome oxidase are discussed systematically and in detail. Each chapter