

the Edinburgh tourist scene, ironically in a churchyard which ostracizes dogs!). And if someone wants to assert that attribution of grief to animals, rather than pining or chronic separation anxiety, is anthropomorphic, it seems to me to describe their behaviour very precisely, whether or not it explains it.

Not everything is perfect, some quotations come from books which appear germane but escape the listed further reading. The advice on non-billing of anaesthetic deaths could be risky and the discussion of owners' misguided requests for euthanasia insufficiently emphasizes that this is actually their prerogative, whether we agree or not. I wonder whether it is true that more young dogs are euthanased for behavioural problems than any other cause, the same is said of adult dogs in the USA but that is not reflected in British experience. It is perhaps a tribute to the book that it is worth mentioning such minor matters which certainly do not detract from the overall achievement. There is a certain amount of overlap or repetition but even this may be helpful since many may well read particular sections rather than following the entire book in sequence, rewarding though that is.

The excellent 'Quo Vadis' report identifies 'people issues' including bereavement, as the most important gap in the knowledge and experience of new graduates (70% believed this). That is not surprising but what an excellent remedy this book provides by being both a concise treasure house of information and a stimulus to thought and reflection. Every veterinary surgeon will probably develop their own attitude to these demanding subjects but in doing so, it is essential to be aware of the feelings of others who may relate to animals surprisingly differently and who, at such times of crisis, are also in our care. In this book there is not a colon or a reverse transcript in sight, but it says far more about the everyday dilemmas which confront veterinary surgeons than many books which do. Essential for all who care.

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***Genetic Engineering and Animal Welfare: Preparing for the 21st Century***

Edited by J C Gonder, E D Prentice & L-M Russow (1999). Scientists Center for Animal Welfare. 127pp. Paperback. Obtainable from the publishers, 7833 Walker Drive, Suite 410, Greenbelt, MD 20770, USA (Library of Congress Catalog card number 98060426). Price \$40.00 plus \$7.00 post and packing outside the USA.

This small book with rather a grandiose title is the proceedings of a meeting by the US Scientists Center for Animal Welfare (SCAW). The volume is divided into three sections: a review of 'genetic engineering', xenotransplantation and ethics. The coverage of the topics ranges from severely factual (in the chapter by M B Dennis on the details of the US regulations on the care and use of laboratory animals) right through to a discussion of *Science, the Media and the Public* (J L Platt, J Schulof & B E Rollin) redolent with personal anecdotes.

For me the volume does not start off well with R Singleton's chapter on *Transgenic Mammals: Science and Ethics*. Having, correctly, dismissed a definition (by the Hasting Center) of a transgenic organism as '*one that carries genetic information not normally found in that species of organism*', he incorrectly redefines transgenics as '*the purposeful amplification, spread or dissemination of a gene within a species at a rate much faster than would of occurred in the absence of artificial interventions*'. The first definition excludes the huge number of transgenic experiments that are done within species (especially in mice) and the second ridiculously would include artificial insemination, multiple ovulation and embryo

transfer and even selective breeding: by this definition all domestic species would be transgenic. This is compounded by trying to distinguish artificially between 'knock-outs' (what about 'knock-ins'?) and 'other transgenics'. The example Singleton gives of a 'knock-out', the mouse *fosB* gene, fails to make the most important point that transgenics is a generic technology and a welfare evaluation has to be made on a case-by-case basis of each new transgenic line: some are totally benign whereas others produce serious welfare consequences. Mutations caused by transgenic technology are therefore no different in their range of effects to those natural mutations that have occurred in the wild or in mouse laboratories for best part of 100 years. Singleton does make, however, two important and valid points: i) transgenic technology will produce valuable animal models for use in developing treatments for some devastating human diseases, therefore a cost:benefit analysis of this type of research can be employed; and ii) the species barrier is not sacrosanct as genetic material is continuously crossing it in nature and this process is indeed a major force in evaluation.

The middle section of the book, on *Xenotransplantation*, is easily the most tightly focussed with a clear, detailed and objective description of the technology and a discussion of the ethical issues involved. The section suffered, however, from a severe lack of editorial control as all three chapters covered essentially the same ground. Those of R B Dell and of J L Platt, whilst each being first rate on their own (especially that of Platt which also has the advantage of providing references!), unfortunately not only deal with the same topics but also build these around two identical figures!

The final section of the book, on *Ethical Considerations*, gives me more concern. As a geneticist, I have been waiting for a long time for a clear and precise presentation of the ethical issues in transgenics: I did not find it in this section. I accept the argument that ethics cannot be formulaic but it does have to help us clarify the problems and lead to, at least, a framework to deal with the issues. Too many times, as in these chapters, ethics raises a series of unconnected questions, nebulous, dealing with generalities rather than specifics. The only attempt I know to establish an ethical framework comes in chapter 3 of the Banner Report (1995) which was commissioned by the UK Government to look at the *Ethical Implications of Emerging Technologies in Farm Animals*. The Report also deals with specific ethical and welfare issues of individual techniques in a coherent way that produces a useful set of guidelines for scientists, the Government and the public.

I cannot be the only scientist working in this field who believes we urgently need the more coherent comprehensive and comprehensible guidelines of the Banner Report rather than the opaque treatment of ethics in this book.

The final chapter is a roundtable discussion on *The Effect of Transgenic on the Public, Scientists and the Media*. Having been critical of much in the previous chapters, it may be hard to believe that I found this the most unsatisfactory of them all. As the Director of the Institute that cloned Dolly the sheep, I now have considerable experience of the issues raised in this chapter. Engaging in dialogue with the public through the media is absolutely essential for scientists working in areas at the forefront of technology which can cause substantial public concern (as we have seen in the UK from the recent genetically modified organism debate). It is extremely important for scientists to be proactive, open and consistent in explaining new research. Scientific research cannot itself be either 'good' or 'bad'; I don't believe it has any ethical content at all. It is, however, always capable of a range of applications each with its own ethical value. As scientists, we need to transmit this information to the Government and the public as effectively as possible so that technology

can be properly evaluated and regulated. Science is a worldwide activity, often driven by human curiosity; it cannot be stopped but its uses can be regulated. So much of biotechnology will have a dramatic and positive impact on both human food supplies and health. It is critical that scientists, ethicists and Governments work together to provide a suitable vehicle to deal with these complex issues. Unfortunately to me this book confuses rather than clarifies the problems.

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#### Reference

HMSO 1995 *Report of the Committee to Consider the Ethical Implications of Emerging Technologies in the Breeding of Farm Animals* (the Banner Report).

#### *Textbook of Small Animal Medicine*

Edited by J Dunn (1999). W B Saunders: London. 1065pp. Hardback. Obtainable from the publisher, 24-28 Oval Rd, London NW1 7DX, UK (ISBN 0702015822). Price £60.00/US\$125.00.

When I received this book for review I was somewhat daunted by its sheer size (well over 1000 pages) and its apparent complexity. It took only a short time to dispel this impression. This book has been very carefully planned and presented so as to provide both the student and busy clinician with a logical pattern allowing the development of history, clinical signs, laboratory techniques, etc through its diagnosis and treatment. Many of my generation, however well taught, would have benefited from such an introduction to clinical medicine.

The first quarter of the text, *Problem Oriented Medicine* clearly lays the foundations on which this approach stands. Each step is described and its importance in the whole explained, never losing sight of the ultimate good and thus the welfare of the patient. I was also impressed with authors' (editor's) emphasis on good communication with the owner. This included good history taking, keeping him informed of progress especially of hospitalized patients, and of course giving a cost estimate at each stage of the investigation. The remaining section of the text deals with specific diseases of each system (systems medicine). Here again each author develops his subject with meticulous detail from more detailed specific examination and assessment, using appropriate diagnostic aids (these all being described) through to a conclusion and recommendations for treatment. The text is supported by excellent illustrations, tables and photographs, both colour and black and white. The layout of this section of the book will allow future editions to be readily updated and expanded as new work comes forward. I am sure for example the final chapter on animal behaviour will expand in forthcoming years as our knowledge develops. The authors are to be congratulated on the clarity of their presentations and of course the editor in bringing together this complex book so successfully.

Finally, I would like to stress the clear animal welfare implications of this book. Welfare has become so clearly integrated with the health of the individual flock or herd, that any improvement in animal health and its maintenance must take welfare forward. This book will in the hands of both the new generation of veterinarians, as well as those in general practice can only help to achieve this continuing progress. I am sure it will become a standard text for students and find its way into most practice libraries.

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