

BOOK REVIEWS

Monitors: The Biology of Varanid Lizards. DENNIS KING AND BRIAN GREEN. Kreiger Publishing Company, Malabar, Florida, 2nd ed. 1999, vi + 128 pp., illus., plates, index. (ISBN 1-57524-112-9 paper, \$22.50.)

Few groups of reptiles have received as much attention from researchers as the fascinating monitor lizards, which include the largest living lizard, the Komodo dragon (*Varanus komodoensis*). The authors do a thorough job of reviewing the wide breadth of different types of studies for this group, bringing together an interesting book that should be useful to advanced herpetological hobbyists, students, and researchers alike. Both authors are widely recognized as leaders in the field of varanid research. Dennis King began his interest in monitor lizards with his Ph.D. thesis on *V. rosenbergi* populations of South Australia over 30 years ago, and has made excellent contributions in both the ecology and phylogenetics of monitors. Brian Green has been following the Kangaroo Island *V. rosenbergi* in a long-term demographic study, as well as, focusing on the physiology and energetics of a wide variety of varanid species. Together these authors rely on their intimate knowledge of these lizards to provide an insightful reference for the general biology of varanids.

The book contains 11 chapters, plus a prologue and epilogue, and an extensive suggested reading list. The book is filled with figures, tables, and nice illustrations, and also provides 21 beautiful color plates of various monitor species. Topics covered in the chapters include an introduction, taxonomy and phylogeny, feeding, reproduction, general behavior, thermal biology, respiration, water use, energy and food, parasites, and conservation. These chapters cover information on as many monitor species as possible from the wild but mainly focus on the well studied *V. rosenbergi*, comparing this species with the others when possible. Each chapter contains an up-to-date survey of the research for the given topic with the references listed by chapter in the suggested reading. The book will be invaluable to monitor enthusiasts for the nine pages of references in the suggested reading alone.

This book is an updated second edition of the 1993 Australian publication *Goanna* (King and Green, 1993). One of the changes in the new edition is the replacement of the Australian common name “goanna” with the more widely used names ‘monitor’ or ‘varanid,’ but all three are used interchangeably throughout the text. Other changes include the addition of a new chapter on parasites and a new section on foraging strategy. Monitor lizards host a wide range of both external and internal parasites making them a good group to study various aspects of parasitism. The new foraging strategy section discusses evidence that monitors are an especially intelligent group of lizards with good memories. The evidence for this comes in part from a study that argues one monitor species can distinguish among groups of snails containing numbers of up to six individuals. The other pre-existing chap-

ters have been updated since the previous edition and include some new studies on taxonomy and ecological physiology. However, the chapters among the two editions remain largely quite similar.

The authors of the book excel at describing anatomical and physiological characteristics both common to lizards or specific to varanids in relatively simple and easy to understand terms. For example, in the chapter on water use, the complex role of the cloacal chamber called the coprodaeum in water resorption from urine is nicely explained. The explanation is supported by two figures, one of the cloacal structure and the other of a histological cross-section of the coprodaeum showing the fine structure of the villi. The text also does a good job highlighting how varanids are unique from other lizard groups in many aspects of their anatomy and physiology. One such difference discussed is the various alterations to the varanid respiration system that allow them to rely much more on aerobic respiration than most other reptiles.

This book is successful in its primary goal of bringing together the most interesting studies of varanid research from the primary literature into a single readable text. The coverage of research is extensive enough that it should be useful to researchers, but the book is written for a more general audience making it suitable as a supplementary text for a general zoology or herpetology course. I would also recommend this book for researchers interested in the consequences of allometry or an active foraging lifestyle on the biology of organisms. Overall, this text provides a detailed look into many aspects of the biology of monitor lizards, which will hopefully stimulate more research on this fascinating group of lizards.

REFERENCE

King, D. and B. Green. 1993. *Goanna: The Biology of Varanid Lizards*. New South Wales University Press, Kensington, New South Wales.

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INTRODUCTION

Recently, there has been much attention to biology and ethics. In part, this is due to the influence of E. O. Wilson's work in sociobiology (1975), which offers a novel biological explanation for ethical behavior. In part, this is also due to the concern about the appropriate use of animals in biological research, a concern made particularly acute by the animal rights community. The following three books address the combination of these two forces. *Biology and the Foundation of Ethics* addresses the biological foundations of ethical behavior, including several works that address the

distinction between humans and animals vis-à-vis ethics. *Darwinian Dominion* touches on the same subject, but extends it to apply our contemporary understanding of evolution and ethics to issues associated with animal welfare. *Responsible Conduct with Animals in Research* is the third volume under review, a volume directed much more to the academic researcher involved in the use of animals. Taken together, the three books cover a wide-sweep of territory, representing the extensive treatment biology and its ethical dimensions are now receiving from scholars.

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Biology and the Foundation of Ethics. JANE MAIENSCHIEIN AND MICHAEL RUSE, eds. Cambridge: Cambridge University Press, 1999. viii + 336 pgs. \$64.95 (cloth), \$19.95 (paper).

Biology and the Foundation of Ethics, an edited volume of twelve commissioned papers, purports to address "important issues in biology and society." The editors are Jane Maienschein, who directs a biology and society program at Arizona State University, and Michael Ruse, who is well-known for pronouncements on social issues from his position as an historian and philosopher of biology at the University of Guelph, so the overall orientation of the volume may not be surprising. Closer inspection of the articles reveals the book to be much more directed toward examining how biology, in its evolutionary garb, has been used to support (or not to support) the moral behavior of humans. Thus, the title is much more specifically focused to the biological arguments for ethics than merely focused upon "important issues in biology and society."

Once the reader plunges into the varied submissions, ambiguity about the nature of the volume's theme re-emerges, since some articles are not directly related to the title, although they may bear a relationship to the more generic theme of biology and society. Admittedly, this represents a common hazard of an edited volume, as some authors stick more closely to the invited topic and others stray broadly from it. For example, Jean Gayon contributed a wonderful article about Nietzsche and Darwin, but what we learn is that Nietzsche may have read some parts of Darwin and we learn his major responses were to the general idea of evolution (whether Darwinian or not), to natural selection, and to "struggle for life." Given Nietzsche's philosophical position, he was predisposed to reject Darwin's contributions but we do not know exactly why or exactly to what he responded in Darwin, since the historical record does not yield any information. In short, we learn a lot about Nietzsche, but little about his debt to biology or evolution theory. Similarly, Diane Paul and Raphael Falk have written a fascinating article about two German geneticists, Nachtshiem and von Verschuer, but their submission deals primarily with the ethical behavior of Nachtshiem and von Verschuer within the context of Nazi Germany. Again, biology and the foundation of ethics do not seem to be the issue here; instead, Paul and Falk illustrate how

biologists are able to argue for the purity of their research regardless of the political setting in which they operate.

Two other articles approach the theme more closely, but they still remain tangential. James Lennox's study of Aristotle and the basis of virtue details how Aristotle claimed that virtue was a result of "reasoned choice," therefore a characteristic of human behavior only (humans are equipped to reason). While informative, this contribution could have been sculpted to fit the overall theme much better if Lennox had been directed to focus more on the "biology" (natural history) of ethics, which might have illustrated why these types of arguments continue to emerge within the western tradition. Similarly, Michael Bradie investigates the moral status of animals in the eighteenth century, but once again we are left to forge the connections to the general theme of the volume. The work is solid, informative, and interesting, but many readers will be left puzzled by its inclusion in the volume.

The other submissions are much more related to each other and much more consistent with a general theme. Phillip Sloan provides a framework for how ethics became reduced to the natural law arguments of the Enlightenment, under the influence of French ideas of transformism at the end of the eighteenth century. Paul Farber extends this theme by examining the role of Lanessan during the nineteenth century and his attempts to extend these same arguments. Myles Jackson details how two German philosophers, Goethe and Oken, could read divergent messages about ethics from nature. In a parallel fashion, Ruse compares the ethical writings of George Gaylord Simpson and Julian Huxley, collaborators in the modern synthesis but oppositional thinkers in terms of the natural placement of ethics. Marga Vicedo further develops the rich diversity that evolution offers the ethical biologist by examining the various positions of the American geneticists Conklin, Jennings, East, and Davenport. Robert Richards produced a much more controversial chapter, arguing that Darwin considered ethical behavior to have a biological origin, a position to which he was led by his tie to German romanticism. While there may be adequate historical arguments for the first part of Richards' thesis, the latter claim is supported only by the thinnest of evidence.

These six chapters are supported by two philosophical chapters, one written by Peter Woodcock and the other written by Robert J. McShea and Daniel W. McShea. Woodcock's chapter is a commendable attack against the argument that ethical behavior is rooted in biology, but his philosophical arguments are pitched to an audience with more than just a passing knowledge of philosophy. It may be, in fact, too philosophical to be appreciated by non-philosophers. On the other hand, the McShea article offers many biological examples to support the philosophical justifications for ethical behavior. It is certainly much more understandable than Woodcock and points in pretty much the same direction.

Having provided the above as an overview, I still am not convinced that *Biology and the Foundation of Ethics* will find a ready audience among biologists and other scientists. Certainly many of the articles are well-

written, clearly presented, and accessible. But many non-historians and non-philosophers may complete the book and ask, "So what?" The editors may have helped the reader more by keeping all the authors more closely tied to a clearly defined theme and/or by providing commentary to situate the articles. Certainly the present interest in the biological explanation of ethical behavior will draw readers to the volume. I am afraid, however, that most will come away without the illumination they had hoped to receive.

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Responsible Conduct with Animals in Research.

LYNETTE A. HART, ed. New York: Oxford University Press, 1998. xiii + 193 pgs. 60.00 (cloth), 27.00 (paper).

The use of animals in scientific research has recently attracted a growing critical audience within both the lay and the scientific communities. Thus, *Responsible Conduct with Animals in Research* should find a ready and receptive audience. Although the eleven chapters are all written by academic researchers or academicians associated with animal research (primarily in behavioral studies), the editor, Lynette Hart, sought a balanced perspective for the volume, especially in terms of addressing concerns expressed by advocates of animal rights. Nevertheless, some readers might be concerned by the absence of contributors from the animal rights community, as well as contributions from those using animals for more invasive research (e.g., biomedical research).

Despite these omissions, the chapters in the book cover valuable ground. Two contributors document their own struggles with using animals, struggles that ultimately led them to modify their research practices greatly. In his submission, John Gluck criticizes the "metaphor of research as war" (p. 46) for enabling researchers not to feel the moral distress that should accompany the harming of another sentient being. But while his personal reflections are of interest, they are not reflective enough to allow one to generalize from his experiences. Indeed, in light of these, should we use primates to attempt to learn more about parent-infant attachment? Similarly, Marc Bekoff's moving personal reflections on his changing attitudes toward the use of animals fails to guide us in another direction or to give us new critical tools to use in the debate. His concluding suggestion of "bonding with animals and calling animals by name are steps in the right direction" is much too simplistic and does not address the salient issues. At the same time, some readers may find both essays comforting; after all, both authors have elected to adopt new methods in their research programs.

Several other articles are intended to provide more direct advice to researchers. Donald Dewsbury constructs an historical overview of the involvement of the American Psychological Association in animal care

issues, starting with its first recommendations in 1925. He also raises the important issue of motive, since these same guidelines have been useful to the field of psychology, facilitating the use of animals by its members. Hart offers a contribution of her own, surveying present national regulations on the use of animals, concluding with brief comparative surveys of regulations in the U.K. and Europe. Three other submissions extend the regulatory recommendations to actual research practices. Melinda Novak and her colleagues provide guidelines concerning research techniques and methods, a contribution that is essentially a practical guide to the uninitiated. John Vandenberg raises general animal welfare issues associated with behavioral research, along with helpful and insightful suggestions for future changes to address problem areas. And in one of the more provocative articles, Gordon Burghardt argues for the use of animals, but suggests that researchers need to add or, better put, to reinstate the subjective aspect to research. Simply put, objective distance has hindered the advance of behavioral studies, he claims.

In a related fashion, Andrew Rowan and Marion Dawkins maintain the issue of subjectivity by arguing that researchers need to have a heightened sensitivity concerning the animal experiences as they become subject of experimental procedures. Rowan points to the traditional focus on animal pain, but argues for the extension of these concerns to include animal anxiety, especially since behavioral research frequently is not painful but does elicit anxious states within the animals. Similarly, Dawkins demonstrates how studies of animal behavior utilize behaviors that have motivational aspects to them, frequently taking advantage of this fact even when the motivated behavior is not rewarded. Clearly, he states, this may be deleterious to the animal's well-being.

Finally, there are two articles which attempt to open discussion to the general issue of the need to use animals in research. First, Arnold Arluke and Julian Groves defend their use in research, not in a polemical fashion but in a self-consciously constructed moderate tone, especially with a critical ear to the positions of animal rights advocates. Similarly, Harold Herzog argues that the range of animal rights positions is varied and, therefore, a simplistic dismissal of animals rights advocates, usually by casting all advocates as irrational, is unwarranted. Both articles seem to argue for reaching-out on the part of the research community to build a consensus position vis-à-vis the use of animals.

The book may not satisfy all those concerned about the continued use of animals in research, be that research of behavior or the more invasive biomedical research, especially since the latter is not discussed extensively in this volume. Nevertheless, those interested in the wide scope of issues may find much to ponder in this volume. It will be especially useful for graduate-level courses that address ethical issues in academic science.

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Darwinian Dominion: Animal Welfare and Human Interests. LEWIS PETRINOVICH. Cambridge: MIT Press, 1999. ix + 431 pgs.

Lewis Petrinovich carefully lays out his plan for *Darwinian Dominion* in the preface to the work, claiming his goal is to ask questions "regarding the permissible use of animals by humans," (page vii) framing these questions within philosophical positions informed by evolution theory. As such, the book also serves as the final installment in a trilogy of books seeking to apply "evolutionary principles to understand the nature of human morality."

The present volume is divided into two parts, the first detailing basic principles in support of Petrinovich's thesis. Here the reader is carefully led through a discussion of evolution theory followed by an introduction to the vast array of social interactions within primate societies. Petrinovich then provides an overview of the philosophical arguments surrounding the notion of natural rights, the basis for moral reasoning, and the issue of values, again presented with great clarity. Finally, the reader is led through a review of scientific research methods and practices, intended to address common critiques of science. This section concludes with a chapter dealing with the development of mental states in neonates and infants, followed by a chapter on cognition and the mind, where Petrinovich makes overt his belief in the biological connections between non-human and human cognition, introduced implicitly in the section's first two chapters.

Having thoroughly prepared the reader with the biological basis for his treatment of animal issues, the author turns to the second part of the book. Here, he discusses the ethical issues associated with the human use of animals, from issues of animal rights, to the use of animals in research, and, finally, to the use of animals for food and entertainment (zoos and pets). All of the material covered is timely, informed by recent work from the animal rights community and bioethicists (including the author's compelling critique of Singer's work), and clearly presented. Furthermore, the bibliography to *Darwinian Dominion* offers an extensive survey of the recent literature, certainly of value

to anyone who is interested in issues surrounding the use of animals by humans.

Despite the virtues of the book, and it has many, there are a few places that demand critical comment. First, the historical development of legislation surrounding animal rights could have benefited from deeper investigations into the nineteenth century, especially in the form of the important studies by James Turner and Harriet Ritvo (neither of whom is cited). Without this perspective, it appears that some of these issues are completely contemporary when, in truth, they are embedded in the sensitivities associated with the nineteenth century. Additionally, the book would have been strengthened by a discussion of the Nuremberg trials and their impact on the development of research protocols on humans, requirements that led to the increased and mandatory use of animals as research models. Similarly, the discussion of vegetarianism in the United States could have benefited from historical reflection, especially as its historical position in the nineteenth century illustrates its continued role in reform movements in the United States.

Finally, a few words need to be mentioned in terms of style. Too often authors are not given the editorial assistance normally associated with academic presses. Certainly a good editor would have helped the author to become more parsimonious, thereby eliminating the overwritten parts of the book. Such a close editing may have prevented the inclusion of the large number of typographical errors as well. But these stylistic issues do not seriously detract from the service Petrinovich has provided to the biological community. Some may object to the author's adoption of a biological basis for morality that is explicit throughout the book. But one cannot object to the author's thoroughness. *Darwinian Dominion* is an excellent sourcebook to matters that concern issues of animal rights.

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