Different behaviour

Richard J. Cowie

Animal Behavior: An Evolutionary Approach, 3rd Edn.
By John Alcock.
Sinauer/Blackwell Scientific: 1984. Pp.596. $25, £19.80.
Biology of Animal Behavior.
By James W. Grier.
Times Mirror/Mosby/Blackwell Scientific: 1984. Pp.693. $28.95, £32.50.

WITH new textbooks on animal behaviour appearing every few months, it is an achievement for any one of them to reach a second edition. John Alcock has gone one better, and his well established textbook is now appearing for the third time. What is more, revision of the previous edition has not just been cosmetic. The book has been largely rewritten and the material has been reorganized into a more logical sequence. John Alcock is a good writer, and like its predecessors this edition is a joy to read. It is also well produced, and the layout, figures, photographs and binding are superb. A nice addition is a series of colour photographs on the inside of the covers.

Major changes to the content are the inclusion of a chapter on the development of behaviour and expansion of the section on sexual selection and mating systems. Both are improvements, but the book still has weaknesses which mar its usefulness as a general introductory text. These weaknesses stem from Alcock's interest in the evolution or function of behaviour, at the expense of a causal approach. For example, there is no mention in the index of such key concepts as motivation, ritualization or habituation, and the important topic of classical learning theory is dealt with in two short paragraphs under the sub-heading of plastic developmental systems.

Besides these obvious omissions there are two further points which concern me. The first is Alcock's tendency to invent explanations in terms of evolutionary advantage for almost every behaviour mentioned, including many aspects of human behaviour. Whilst I recognize the temptation to do this, there is a danger that naive readers may accept these speculations as established fact. My second worry is Alcock's failure to present any of the more mathematical models which have been successfully used to predict how animals do behave. This is particularly true for the many optimality models, which the author praises for producing quantitative predictions (p.200) but fails to describe in any detail. However, despite these weaknesses — or perhaps because of them — I am sure the book will remain popular with many students.

Whereas Alcock's book is restricted in outlook but well organized and enjoyable to read, Grier's book is just the opposite. It is one of the most comprehensive textbooks on animal behaviour that I have seen, but the sheer volume of information and the order in which it is presented leaves one a little breathless and bemused. That is not to say that the book is badly written and in general Grier's summary of each topic is good. He tackles many controversial subjects, such as the sociobiology debate, in an informed and balanced way.

Besides covering the more usual subjects, the author provides a crash course in both molecular and Mendelian genetics, an interesting historical perspective to the study of behaviour, and chapters on the observation and measurement of behaviour, abnormal behaviour, and applied behaviour, although these last two chapters are too simplistic to be of much use. The book is well laid out with many photographs and figures, the latter being generally well explained with lengthy captions, although some are confusing (for example those on p.42 and 43). There are numerous small details in which I would disagree with Grier, but overall I was very impressed with his encyclopaedic treatment of the subject and his evident grasp of many diverse areas of zoology.

If I were to choose one of these books to sit down and read for my own enjoyment, it would be Alcock's. But if I had to recommend one as a textbook to students it would be Grier's. □

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Buffalo at home on the range in the Tsavo National Park, Kenya. The picture is reproduced from Ecology of Natural Resources *by François Ramade, published by Wiley.*

Anything is possible

P.N.R. Usherwood

Neuroethology.
By Jeffrey M. Camhi.
Sinauer/Blackwell Scientific: 1984. Pp.416. $30, £24.

THE TASK of keeping abreast of developments in the biological sciences grows daily, even within the strict confines of one's own specialism. It was with some misgivings, therefore, that I approached this review, especially since my only credential was a brief love affair with invertebrate neuroethology in the late 1960s. However, my fears were unfounded since here is a book which is both highly informative and thought-provoking. Its aim is to introduce readers to the major concepts and research strategies which characterize neuroethology, a field of biology which continues to struggle for identity in an uncompromisingly compartmentalized world. Neuroethology remains an essentially schizophrenic experience, spanning neurobiology and ethology and making brave efforts to marry their languages and dogmas, but regrettably achieving little more, so far, than the connection of their fringes.

Neuroethology is essentially a book of two parts, one an introduction to the field, the other an account of nervous integration and behaviour. It is best when the author draws from personal research experience, one highlight being his description of cockroach escape behaviour and its neurobiological basis. My only criticism is that the emphasis is strongly anatomical and phenomenological with inadequate attention given to the advances in molecular neurobiology which have illuminated the past decade. There are good chapters on the visual and auditory worlds of animals, which contain essential background on physical factors in the environment, and useful accounts of sensory processing and motor control. Each chapter is concluded by questions for discussion and a good list of articles for further reading.

The author finishes, quite rightly, by marvelling at the complexity which characterizes the nervous systems of even "simple" animals and suggests, for example, that even after examining the circuit diagram of neurones in the leech we are left wondering how it works. This injection of mystery hints at a latent vitalism which denies the essentially mechanistic nature of neuroethology. He also lists six principles of neuroethology which he suggests have already been established and then argues that these are probably not global but restrictive and conditional. This lack of unifying principles is understandable in a fledgling science but it is unlikely to encourage the meek to enter the field. But Camhi has rekindled my interest in an old flame and all biologists with an interest in animal behaviour and nervous systems, simple and complex, will find his book well worth reading. □

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