Ethopharmacology of Agonistic Behaviour in Animals and Humans. Edited by B. Olivier, J. Mos & P. F. Brain

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lation. One hypothetical mechanism of ageing is the effect of metabolic oxygen reduction and its intermediates, the oxygen free radicals and hyperoxides. Although cells possess defences against these radicals, some penetrate and consequently damage cell organelles. The cells have repair mechanisms but these lose efficiency or break down completely with increasing age, resulting in a growing accumulation of harmful products. It appears that death is the inevitable result of material wear and tear. The rate of living theory, implying that the sum of actions determines the length of life, seems to say so. However, different animals can have different metabolic potentials; the total amount of oxygen they consume unscathed during their life can vary. Such variation is not only found among members of different phylogenetic groups but also among close relatives living in dissimilar environmental conditions. It seems, then, that the speed of the doomsday clock has been differentially adjusted by evolution for the various species in their natural environment.

This is the conclusion of K.-G. Collatz, the senior editor, who in his introductory chapter convincingly champions the cause for an evolutionary view in any study of ageing or senescence. In a second chapter K. P. Sauer, C. Gruener & K.-G. Collatz again emphasize the importance of evolutionary studies, illustrating their point with two instructive examples from Sauer's own work on diapause and life span in two natural populations of cabbage moths and of scorpionflies. The theme is once more taken up in a fascinating chapter by the book's second editor, R. S. Sohal, who breathes new life into the sextogenarian (Pearl 1928), in parts even octogenarian (Rubner 1908), rate of living theory by consolidating the old versions with recent scientific developments. A chapter by Linda Partridge describes her elegant work, familiar to the readers of *Animal Behaviour* (Partridge & Farquhar 1983), on the effect of limited and unlimited sex on the fruitfly's life span, again stressing the evolutionary implications of longevity.

The other 13 chapters are concerned with the mechanism rather than the function of ageing and senescence. They are not the less fascinating for that, providing multifacetted windows through which we are allowed to glimpse at the cellular, nuclear, hormonal, mitrochondrial and proteinaceous changes that define senescence.

Insect Aging was conceived as a compendium of the existing information on the process of ageing in insects. It discharges its brief admirably, the scope is wide and all aspects of the field are represented. The chapters are short and to the point, reflecting a tight editorial control. I found *Insect Aging* an unexpectedly good read, in addition to being a valuable work of reference. It is a book not only for gerontologists or entomologists but for any scientist concerned with the effects of senescence on his or her animals of study. After all, the biochemical principles of ageing are the same, or very similar, in all animal groups. The ultimate effects of these processes may vary between animals but inevitably there is a bodily decline, always fatal, in the post-reproductives of any species, be they insect or human. Alas!

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Ethopharmacology of Agonistic Behaviour in Animals and Humans. Edited by B. OLIVIER, J. MOS & P. F. BRAIN. Dordrecht: Martinus Nijhoff (1987). Pp. x+270. Price £48.95.

This book is a compilation of studies presented at the International Society of Research on Aggression meeting in Chicago 1986. It brings together leading scientists on the ethopharmacology of agonistic behaviour in a variety of mammalian species including humans. The book presents the state of the art in this heterogeneous field of research. Ethopharmacology includes those studies that use ethological methods in the analysis of behavioural changes induced by drugs. Indeed, each chapter of this book is a nice demonstration that a careful behavioural analysis is extremely valuable in the interpretation of drug action. From that viewpoint, the book is a must for scientists involved in behavioural pharmacology. However, as is often the case with symposium proceedings, the scientific cohesion of the various contributions is limited, and it does not present an extensive overview of the various aspects of the field. For example, three chapters are grouped around the theme of experimental models of social and aggressive behaviour, namely a contribution by R. Dantzer on the pharmacological aspects of frustration aggression, one chapter on social cooperation by B. D. Berger & R. Schuster, and one chapter on

hypothalamic stimulation-induced aggression by M. R. Kruk and co-authors. This leaves many other experimental models undiscussed.

Only two chapters concern flight and defence behaviour: one by A. K. Dixon & H. P. Kaeserman on the ethopharmacology of flight behaviour and one contribution by R. J. Rodgers & J. I. Randall on the interesting phenomenon of analgesia induced by the social environment.

The rest of the chapters are grouped according to the species involved in the study, i.e. mice, rats, monkeys and humans. There is, however, a considerable diversity in the basic scientific questions underlying the various contributions. Some authors use drugs as a tool to analyse the neurochemical basis of agonistic behaviour. Excellent examples of this approach can be found in a chapter by B. Olivier and co-authors on the role of serotonergic neurotransmission in agonistic behaviour, or a chapter by J. Panksepp et al. on social play in rats. In another type of approach, the question is centred around a better understanding of the behavioural action of a certain drug itself. This can be found in a chapter by J. Mos & B. Olivier giving an extensive analysis of the supposed pro-aggressive action of benzodiazepines and by V. P. Poshivalov who advocates the use of advanced mathematical analyses of behaviour combined with molecular pharmacology in the study of anxiogenic, anxiolytic, aggressogenic and anti-aggressive properties of drugs. Two contributions are devoted to human aggression. The chapter by M. H. Sheard reviews the pharmacological management of pathological forms of human aggression in a psychiatric setting, whereas D. R. Cherek & J. L. Sternberg report some laboratory studies on psychopharmacology of aggression in humans. This chapter fits in nicely with contributions with a more applied, biomedical background, in particular the studies on the effects of alcohol on aggression by P. Brain et al., J. T. van Winslow et al. and R. J. Blanchard & D. C. Blanchard.

In summary, this book provides a number of interesting articles in the wide field of ethopharmacology of agonistic behaviour, and will be extremely useful for researchers of agonistic behaviour and those people who want to obtain a quick insight into the state of the art in this field. However, the book has its limitations for those readers who want to obtain more insight into the causal neurochemical mechanisms of agonistic behaviour.

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The Natural History of Whales and Dolphins. By PETER G. H. EVANS. London: Christopher Helm (1987). Pp. xv+343. Price £13.95.

In 1976 the Bergen Meeting organized by the Food and Agricultural Organization, 'Mammals in the seas', initiated a new phase of whale research and an international decade of cetacean research. At the same time new techniques for the study of the environment and of animal ecology and behaviour were being implemented. This excellent book is one of the fruits of these developments. Over 300 pages, each with a much greater than usual amount of print, are packed with up-to-date information. (Of more than 800 references half are to papers published since 1980, many in 1986.) This information is particularly well-organized and clearly presented. The text is authoritative and very readable despite the unusually high information content, fact is clearly distinguished from surmise and stimulating speculation, the figures are clear and well-planned, and there is a well-chosen series of relevant and unusual colour photographs. Another important feature is a series of tables giving a mass of data compiled by species, with sources, on such topics as diet, energy budgets, group sizes, breeding seasons, size and growth parameters, age at maturity, gestation, lactation and calving intervals, and population estimates. The meticulous, full and up-to-date referencing enables the reader to pursue the topics discussed—almost all aspects of whale biology—in greater detail. In making comparisons the four volumes of *Mammals in the Seas* (1978–1982), Bonner's *Whales* (1980) and Gaskin's *The Ecology of Whales and Dolphins* (1982) spring to mind. While they remain important, Evans' book supersedes them, including material from over 400 subsequently published papers.

Short introductory chapters summarize the unique features of cetaceans which fit them for the aquatic environment, and their evolutionary history. A full classification is based on current views with biological summaries by species; it is well-illustrated with sensitive pencil drawings of all species. Another chapter explores the reasons for the evolution of some 80 species in the vast, continuous oceans where isolating mechanisms are less obvious than on land.

Food and feeding is presented in terms of morphology, the oceanographic background, minimization of energy expenditure by efficient searching, diets and energy budgets. Social organization and behaviour is one of the longest chapters covering group size and social structure, mating systems related to feeding behaviour, home range size, migrations and habitat use, aggression, play, parental care, courtship and mating, communica-