

to a very wide variety of published work, including the genetical, mathematical, and statistical, fields. The diagrams are profuse (so that at times I was left wondering whether a simple explanation in words would not have been more rewarding), and there is also a fine selection of photographs and drawings to illustrate a wide variety of animal species and their behaviour. It is perhaps churlish to suggest that a few of the drawings may show rather idealized animals—in particular, the silverback (adult) male gorilla looked somehow too young, or perhaps had not a sufficiently masculine head. But this is really picking a very small minority from drawings that are delightful as well as instructive.

One must inevitably wonder whether the rapid switching from invertebrate to vertebrate behavioural patterns is sometimes too abrupt—whether perhaps a series of intermediate examples might not help, rather than comparing species which are now far apart. It might even be better to have separate chapters on the invertebrate and the vertebrate response.

The book is divided into three parts, covering social evolution, social mechanisms, and finally the social species. The chapters on these last run from the colonial microorganisms and invertebrates to Man. The social insects, as befits an author who is an entomologist, are covered widely, but the cold-blooded vertebrates get only a quarter of the space which is accorded to social insects. Granted that the research output is not so massive on these cold-blooded vertebrates, there could have been further elaboration on such things as breeding behaviour of amphibians—only 'frogs' are covered here, though there is brief mention earlier of salamanders. Similarly, the section on the social behaviour of reptiles (pages 444 and 445) only covers certain lizards, with 6 lines on King Cobras (*Naja hannah*) and a section on crocodilians having interesting implications on possible behaviour of dinosaurs. But what about the rest of the snakes and the tortoises and terrapins, and particularly the marine turtles? The Green Turtle (*Chelonia mydas*) is considered earlier under 'Increased survival at birth', but although hatchling behaviour is related to the success of their approach to the water's edge, there is no mention of the massive effect of predation on the swarms of hatchlings both on the beaches and when they reach the sea, nor of other aspects of the social behaviour of turtles.

There are a few, but only a few, places where one would query the author's statements. The reference to Grey Seal (*Halichoerus grypus*) behaviour on p. 33 surely is wrong: Smith recorded a case of cross-suckling simply because it was unusual—in these Seals, as in domestic cattle or sheep—strange young will normally only get a chance of milk-stealing if the mother's attention is diverted or her own young is suckling at the same time, or after a very long period of forcible restraint of the mother from attacking the intruder. On p. 166 it is suggested that play is associated with a large brain complex, generalized behaviour, and a large capacity for learning. But surely it is generally felt that play is associated only with animals which have leisure time for what most otherwise be considered a luxury. Young mammals which do not have to search far for milk outside of sleeping periods can afford to play, as can adults of carnivores and primates. But the adult herbivores in general have to spend most of their time in finding and digesting food, so that little time is left for play.

Very minor queries relate to pages 203 and 204. Surely, duetting does not occur 'widely' in frogs. And is the Guillemot (or 'Murre', *Uria aalge*) to be thought of as a

large auk? But perhaps the term 'large' is too elastic for precise definition. Finally, I was worried that although Kruuk's work is considered in the context of hyaena behaviour, no consideration is given to the reversal of the traditional role of the Lion which it demonstrated. *Felis leo* is usually considered as the King of beasts, rather than as a scavenger.

None of us can hope to write a book without blemishes, but how many could aspire to producing a book of this size and complexity without being the subject of very serious criticisms? Professor Wilson has produced a source-book which is going to be a work of reference for a great many people for a number of years. They will be grateful that criticisms need only be labelled as the reviewer's foibles.

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Vitality, Community, Creativity: Prediction of Future Values, by ALFRED P. BERNHART. Printed by University of Toronto Press and distributed by the Author, 23 Cheriton Avenue, Toronto, Ontario, Canada: [x +] 389 pp., illustr., 23.6 × 16.2 × 2.0 cm, [no price indicated], [1976].

In this book, Professor Bernhart presents a unique concept by relating society's changing values to the multi-dimensions of human feelings and perception. His analysis of historic changes of these values leads to convincing predictions for the future rhythm of value-changes.

As an engineer, who is committed to the well-being of people and who is actively involved in the betterment of people's environment, I wholeheartedly subscribe to the importance of the newly evolving value of human well-being and its dominance over monetary considerations. In the same capacity I also agree with fellow-engineer Bernhart's view that technological progress is often motivated by narrow considerations, and I support his opinion that technological creativity requires thorough redirection.

Professor Bernhart's forecasts of future large urban forms sound alarming, yet one has to admit that such populous metropolises will become realities in the not-too-distant future. The emphasis on community, as suggested in this book, should make such agglomerations much more pleasant environments to live in than would otherwise be the case.

Stressing the human good, despite the many trouble-spots in today's world, makes for the heartwarmingly optimistic outlook which this book transmits. As the overall concept is so overwhelmingly impressive, small misconceptions can be easily tolerated—such as pinpointing the end of the next cultural phase in the year 2150; if the year were 2200 or 2300, for example, the concept would still remain intact.

The book's visual appearance, with its many colour pictures from all parts of the globe, leads the reader with ease into Bernhart's creative thoughts, with their important insights which could be valuable for each individual and for each community.

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ANNOUNCEMENT

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