

approach is direct, and the object the instruction of beginners. Accordingly, Berengario wrote a text lacking all literary charm and speculative interest, which the translator cannot greatly embellish. In fact, Dr. Lind has adhered rather closely to the original, with a result that is stiff and in some places could mislead an unwary reader. A sentence (referring to the chest) such as "The lateral parts are called ribbed and the sides and the region of the breasts" is common enough in Latin but fails to convey any clear meaning in English. Inevitably the translation abounds in technicalities, some those of the modern anatomist, others long disused. It would have been more convenient to the reader (though more troublesome to the printer) to have supplied notes on the page, rather than in two places at the end of the book. From p. 50, for example, there are two notes on the "guidez veins", one (p. 202) by the anatomical annotator Dr. Roofe simply identifying them with the jugulars, and another (p. 185) by the translator explaining the term at greater length. Some of the figures reproduced are very defective and it is not clear whether they are always found in this poor state.

In other respects this volume is handsomely produced and it is very useful to have such a rare and influential work as Berengario's (issued in English as late as 1660, though, of course, seriously out of date by then) made available in a modern translation. It gives a clear notion of the merits and limitations of Renaissance medical science, and one can only wish that the far more sophisticated works of Vesalius and his successors were equally accessible. For this reason Dr. Lind's translation will be valued by scholars and all who have an interest in the development of medicine.

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EVOLUTION OF BEHAVIOUR

Behavior and Evolution

Edited by Anne Roe and George Gaylord Simpson. Pp. viii+557. (New Haven, Conn.: Yale University Press; London: Oxford University Press, 1958.) 80s. net.

SYMPOSIA are very much the fashion; and this is understandable enough since the rate of development of the innumerable divisions and sub-divisions of science has now reached such a pitch that the difficulties encountered by a single author in attempting to synthesize and summarize even a very small field of only one science are almost insuperable. However much we come to depend on abstracting services, reviewing and summarizing journals and the like, we are apt to find ourselves faintly pursuing a rapidly receding objective. Indeed, the rate of movement of some branches of science recalls nothing so much as the recession of the extra-galactic nebulae—we fear communication will be lost, never again to be re-established.

The volume under review is the outcome of two conferences in which thirty-two well-known biologists participated in the attempt to provide an authoritative report on the significance of behavioural studies for the general picture of animal evolution. Many of the writers refer to the fact that you cannot separate behaviour from the mechanisms of behaviour, and that morphology and the adaptation of structures for particular purposes cannot be divorced from the study of the way in which the animal uses those

structures. This means strictly that a volume entitled "Behaviour and Evolution" should cover virtually the whole of zoology, from the palaeontological record through genetics, embryology and ecology to ethology and systematics and finally anthropology, ethnology and sociology.

Looked at in this way, it is seen that the subject is one for an encyclopædia or a library rather than a single book. This attempt to cast the net so wide, while it has resulted in the provision of a number of interesting and worth-while chapters, has been detrimental to the book as a unit. Scores of other chapters might well have been written. Thus it is interesting and stimulating to read A. S. Romer on "Phylogeny and Behavior with Special Reference to Vertebrate Evolution", and to learn what is known and what is guessed from the study of structure, of the behaviour of *Brontosaurus*, the *Cephalaspids* and other palaeontological milestones. But this, after all, is stuff which should be found in the elementary textbook and is of doubtful value as a contribution to a symposium volume. Similar criticisms could be levelled at the chapter on "Food-getting Behaviour" by Marston Bates, on the "Axes of Behavioral Comparison" by Henry Nissen and Carpenter's section on "Territoriality". All are interesting in themselves but all attempt to deal with such a wide and elementary field that the task is an impossible one.

What is in need of modern critical summary is the place of behaviour in relation to genetics, in relation to natural selection and adaptation resulting therefrom, and the contribution of behaviour study to the understanding of such matters as isolating mechanisms and the nature of species and other systematic categories. Taking this more restricted view of the subject, the book has a number of excellent chapters which make very rewarding and sometimes exciting reading. The taxonomic aspects of behaviour study are admirably dealt with in two chapters, one by R. A. Hinde and N. Tinbergen and the other by Ernst Mayr. H. T. Spieth has a stimulating section on "Behaviour and Isolating Mechanisms", showing that while behavioural isolating devices are typically innate, they may also contain important learned elements. A penetrating study of the place of behaviour in adaptation as a result of natural selection is contributed by C. S. Pittendrigh. Here, however, the attempt to synthesize seems to have gone too far. It is argued (1) that all organization is relative and directed towards an end; and (2) that the converse of organization is randomness. From this it follows (3) that everything which is non-random must be directed towards an end; and (4) that complexity, organization and adaptation are in the last analysis recognized by virtue of their non-randomness—both of which statements are surely highly doubtful.

The final section, Part 5, "Evolution and Human Behavior", while containing some most interesting contributions, again falls rather outside any central theme that such a book can have. Simpson, in his introductory essay and his epilogue, makes a valiant effort to pull the whole thing together and produce unity out of diversity, a task beyond even him. I believe a more satisfactory result would have accrued had the contributors been fewer in number, had they had longer in one another's company, and had their discussion (carefully edited and revised) been inserted as links binding the whole together.

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