

often surprising to find that the same person could make accurate observations and draw the correct conclusions from them, and at the same time seem to be quite blind in another, though similar, field. Thus Aristotle was in some ways the father of scientific zoology, and many of his descriptions of animals and plants need little modification today. Yet, although he described the nit (the egg of the louse), he was convinced that it had no generative function, and that these insects arose only from the putrefaction of human flesh. This view was held for centuries, and to deny it could lead to a charge of heresy by the mediaeval church. Before the invention of the microscope naturalists could be excused for many misunderstandings, but it is difficult to comprehend why they were so badly misled regarding this parasite, which can be so easily studied throughout its life history with the naked eye.

But the situation may not have changed as much as we may like to think. Scientists and clinicians still find

it difficult to accept new evidence and relinquish long-held beliefs. I well remember how incredulous some dermatologists were when, during the last war, we demonstrated that the itch mite, the cause of the disease of scabies, was usually transmitted by close personal contact and seldom by blankets and other inanimate objects. One leading physician stated publicly that these scientific experiments were all very well, but he *knew*, from a lifetime of clinical experience, that blankets and other fomites were of major importance. Fortunately he could not call on the inquisition to stifle our results, which were soon accepted by his colleagues and by the Ministry of Health, so that treatment was improved and the disease was, temporarily, nearly eradicated in Britain.

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How behaviour works

The Hungry Fly: A Physiological Study of the Behaviour Associated with Feeding. By V. G. Dethier. Pp. 489. (Harvard University: Cambridge, Massachusetts, 1976.) £20.40.

THE appetites for sex and food are the two most important driving forces in animal behaviour, the one to maintain the species and the other to enable the performance of the first. Research on these appetites is therefore central to the study of behaviour. Most of our knowledge of the mechanisms involved in the appetite for food derives from work on the rat—an animal whose mentality is perhaps dangerously too near our own for complete objectivity. Some 30 years ago Dethier chose to work on the hunger of a simpler organism, the blowfly, with whom he and his students were less likely to identify. The result has been a volume of research scarcely less impressive than that on the rat, and in some respects much better in quality, notably on the electrophysiological correlates of taste and feeding.

The Hungry Fly is a kind of autobiographical account of these 30 years of research. It is difficult to categorise precisely, since the author seems not quite to have made up his mind whether to write a popular text or an advanced treatise. Thus, each chapter opens with a few rather elementary pages, some sprinkled with statements

that will seem either banal or erroneous to the professional biologist; but then plunges into the technicalities of chemosensory transduction or perseverating central excitatory states. The professional may be irritated by the introductions, the lay reader surely rapidly lost by the rest.

As one reads through the minutiae of experiments carried out in the 1950s that have since been superseded, one does begin to wish that the account was slightly less full. The book could surely have been slimmer, cheaper, and more assimilable if these false trails and some of the other fine detail had been omitted. Chapter 12, for example, describes at great length the neuro-

anatomy of the fly's brain with the aid of over 40 light micrograph serial sections (incidentally, without indicating scale, section position or thickness) and then ends frustratingly by saying that nothing whatever is known about the functional organisation of the dipterous brain.

Dethier uses the Lorenzian concepts of 'appetitive behaviour' and 'consummatory act' throughout his book, but the reader should not be thereby misled into thinking that he is still of that school of behaviourists who believe in these psychological notions of drive and motivation. His last chapter, perhaps the best in the book, spells out in brief, eloquent simplicity why there is no need to invoke these anthropomorphisms to explain the workings of behaviour, and why there is no need to consider the behaviour of the rat as qualitatively different from the simpler behaviour of the insect.

In effect, the book is a three-fold filling out and up-dating of Dethier's long 1969 review on the same subject. He says it is not about chemoreception and neurophysiology (though much of it is), but is a description of behaviour in terms of physiological mechanisms. In this respect it is a superb account, and will surely remain a classic on the shelves of behaviourist-physiologists for many years to come. It will probably also provide the more general biologist with insights into how behaviour works and what it is made of. Whether a wider public will be very much enlightened by it is less clear.

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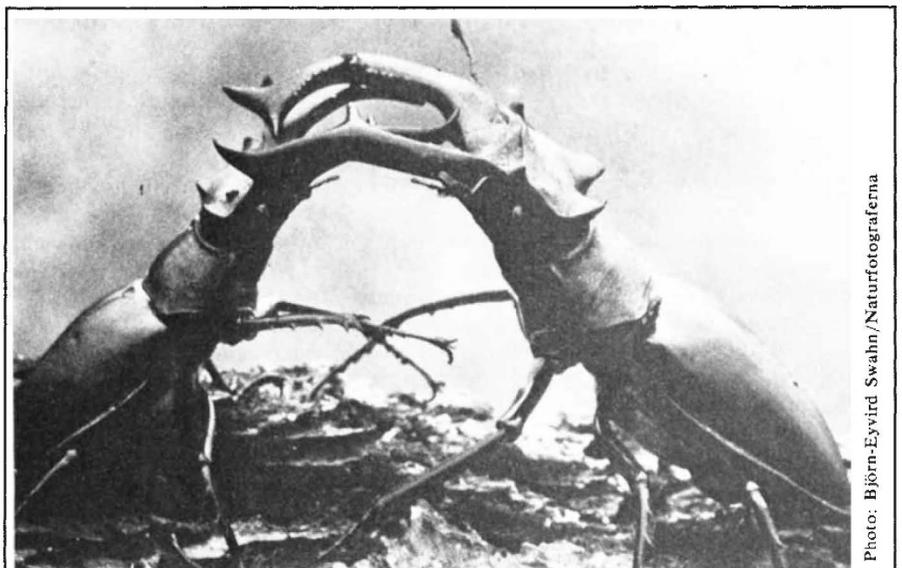


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Fighting stag beetles. Taken from *The Secret Life of Insects* by P. Passarin d'Entrèves and M. Zunino. Pp. 378. (Orbis: London, November 1976.) £8.95.