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# QUAESTIONES ENTOMOLOGICAE

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### Book Review

ELTON, CHARLES S. 1966. The pattern of animal communities. xx + 412 pp. Methuen, London. Price - 90 shillings.

Much of the controversy in ecology has stemmed from the practice of generalising too far from inadequate field data. As O. W. Richards has said (A. Rev. Ent. 6 : 147, 1961), "disagreement probably arises from the absence of sufficient evidence of the right kind". It is welcome, therefore, to see two books (see p. 136), from the same publisher, which although rather different in outlook and purpose are concerned basically with providing 'evidence of the right kind'.

Charles Elton, the founder of 20th century animal ecology, has for the last 20 years been leading an 'ecological survey' of Wytham Woods, Oxford University's field site in Berkshire, England. This book is an attempt to communicate some of the results from this project and to analyse the pattern that exists there. Consequently, the results are strictly applicable only to this area, although the methods and major generalizations should be useful in studying other areas, at least those with similar climate and physiography. The basis for the survey is the classification of habitats devised by Elton and R. S. Miller (J. Ecol. 42 : 460-496, 1954), which is modified only slightly in this book. This classification, depending on Habitat Systems, divided laterally into Formation Types and stratified into Vertical Layers, with a small series of Qualifiers, will be well known to ecologists. After five chapters which describe the methods of ecological survey and the history and geography of Wytham Hill, there are twelve chapters each dealing with the communities associated with certain subdivisions of the habitat classification. The emphasis is on terrestrial communities, although one chapter deals with the small water bodies of woodland, and is predominantly concerned with Wytham, although there is one chapter on the terrestrial maritime zone.

A chapter on dispersal and invaders and one on the whole pattern complete the main body of the book.

The well known pyramid of numbers is now matched by an inverse pyramid of habitats. Herbivorous animals tend to show greater specialization of feeding habits than do the carnivores or the scavengers, which have a greater habitat range. The result is the gradual dissolving of the primary community pattern, and the realization that every community unit is partly interlocked with others. This 'girder system', it is suggested, has a stabilizing influence on communities, for even simple communities can exist in a stable state. The distinction is made, however, between instability and vulnerability. Relatively simple communities may be stable but at the same time vulnerable to invasions from other areas. Complexity, then, at the intra- and inter-community level, would seem to carry with it some stabilizing property.

One might ask, what has been achieved that might be considered a basic advance in ecological theory during the 20 years of this ecological survey, or even in the 40 years since the publication of Elton's first book on ecology? Unfortunately the answer seems to support those who consider that this approach to ecology has, for the present at least, reached a plateau of usefulness. A tremendous amount of information has been collected and this is perhaps an advantage of the ecological survey approach, in that the collection of data is not biased by preconceived ideas on what is or is not important. But the sorting and analysis of this data must present enormous problems, especially by the hand-sorting method used at the Bureau of Animal Populations and to someone with less experience and insight than Dr. Elton. In order even to confirm the suggestions that have been made, the ecological survey may well have to turn to the methods of those who "have embarked on various quantitative investigations", but who appear not to be held in very high esteem by the author of this book.

Ecology as a socially useful science - as work for entomologists, conservationists, wildlife management, and fisheries - will find little guidance from ecological survey. The methods are quite at odds with the urgency of practical problems. Even the generalizations from the Wytham Survey are of little help. This book finishes with one page on the regulation of numbers in populations and two and one half pages on conservation. The plea, put forward in Elton's previous book, *The Ecology of Invasions* (1958), for preserving in as rich a form as possible all the communities that may be interspersed among croplands is repeated in these last two pages. While the charm of diversification is obvious, the solution of pest problems ("invaders of unfamiliar kinds") does not necessarily follow, as pointed out by M. J. Way (*J. appl. Ecol.* 3(suppl): 29-32, 1966).

On the other hand, this book is a joy to read - it is an important work of English literature which is informative and inspirational. It is 'scientific natural history', and as such should recommend itself to both laymen interested in natural history and to professional biologists, especially those who need reminding that animals live outside! An important part of the book is the 88 beautiful black and white photographs which will be particularly appealing to those acquainted with the British countryside.

Gordon Pritchard