

1) Aside from Mesozoic ammonites, there are few indications of mobile carnivores in the depicted assemblages. This leads two of the authors to the conclusion that "it is unlikely that there were many active carnivores in the Ordovician" (p. 72). As likely in this reviewer's opinion is that the nature of most of the active carnivores is not to have a thickly mineralized skeleton, so that their presence would, almost by definition, be underrepresented.

2) There are only a few indications (aside from burrows!) of mobile infaunal dwellers.

3) The assemblages are dominantly either suspension feeders (usually most abundant in environments inferred to have been strongly agitated or shallow) or stationary detritus feeders (usually most abundant in environments inferred to have been weakly agitated or deep, where edible organic matter is not so readily oxidized).

The fossilized suspension-feeding organisms include all of the brachiopods, crinoids, bryozoans, corals, and sponges and some bivalves. The fossilized detritus-feeding organisms include the trilobites, many gastropods, and many bivalves. Taken together, the suspension feeders and detritus feeders broadly represent the organisms that remain (and feed) in one place for long periods of time. In modern faunas, this mode of life is strongly related to the occurrence of thick hard parts. These "shelly faunas" may contain approximately 70 percent of the "sessile" genera that originally existed in the assemblages. If so, the assemblages shown in the book are representative of most of the benthic "stationary" genera originally present, but they would underrepresent most of the mobile fauna originally present.

The next edition of the book might benefit from some additions. One is a consideration of the matter of nomenclature for the assemblages. At present, some assemblages are named after genera, others after broader taxa, others after a position on the shelf, others after substrate type, and yet others after position on a reef. The variety of designations inhibits comparison of assemblages of different ages and reflects historical accident rather than conceptual analysis. The editor of such a book is in a position to provide coherence on this nomenclatural matter. Another useful addition would be an essay treating the question of how and in what way the recorded assemblages seem to be, and not to be, representative of both the inferred and the observed geological record. The nature of the fossilization potential of different

assemblages, of different environments, and of different modes of preservation should be discussed. Maybe the observed fossil record has more to do with chemistry (through diagenesis) than with biology; what then? Also useful would be a table of contents that included all the subdivisions of the chapters, instead of just listing the communities discussed. Finally, one misses a map of Great Britain showing all the places (and there are many) mentioned in the text.

In concluding this review, I am reminded of yet another way to evaluate the book. One could take the 98 most diverse marine assemblages listed by Bambach in *Paleobiology* (1977) according to their proportionate representation by geologic age in McKerrow's book (four Cambrian, 13 Ordovician, and so on) and ask if one would end up with a similar picture of assemblages over geologic time. Certainly the general impression one gets from the pictorial representations of McKerrow's book coincides with Bambach's main conclusion that the number of taxa per fossil assemblage increases significantly through geologic time. Although there are problems such as might be expected in a pioneer effort at synthesis, the broad viewpoint adopted in McKerrow's book will lead to a much more comprehensive view of fossil assemblages than heretofore has been possible.

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Behavioral Pharmacogenetics

Drugs and the Inheritance of Behavior. A Survey of Comparative Psychopharmacogenetics. P. L. BROADHURST. Plenum, New York, 1978. viii, 206 pp. \$19.50.

Behavioral pharmacogenetics is an emerging discipline that can broadly be defined as the study of the relative contribution of genetic factors to individual differences in behavioral responses to pharmacologically active agents. As the carefully chosen title and subtitle of this book suggest, it is the merging of elements of common interest from the fields of pharmacology, genetics, and psychology. Earlier comprehensive treatments of the topic include *Psychopharmacogenetics* (B. E. Eleftheriou, Ed., Plenum, New York, 1975) and Broadhurst's own chapter in volume 7 of the *Handbook of Psychopharmacology* (L. L. Iversen, S. D. Iversen, and S. H. Snyder,

Eds., Plenum, New York, 1977). The present monograph is a significant extension of the earlier chapter by Broadhurst.

It should be noted that there are at least two general strategies that can be used to study behavioral pharmacogenetics. One approach is to use the tools of genetics to produce or find subjects that differ in their behavioral responses to drugs and then to look for underlying physiological or biochemical mechanisms that might mediate the differences. The second approach, which might be considered an extension of the first, is more concerned with using the tools of behavior-genetic analysis to reveal as much as possible about the genetic architecture of the drug-induced phenotypes. It is the latter, biometrical approach that Broadhurst takes as a frame of reference.

Although the monograph was not designed as an exhaustive review of the literature, I found it to be remarkably thorough in its coverage of recent studies. An index of this thoroughness is the inclusion of results that were reported as abstracts of papers presented at various scientific meetings. The coverage of the literature is augmented by summaries presented in tabular form. A major part of the monograph consists of three chapters on strain and species differences in responses to amphetamine and other stimulants, to nicotine, anxiolytics, convulsants, and amnesics, and to alcohol, opiates, and barbiturates. These chapters provide a valuable summary of the designs and results of studies using a strain comparison approach. In addition, the author suggests ways in which these studies could be fruitfully extended in future research.

In other chapters, selection, diallel crossbreeding, and the use of recombinant inbred strains are described, and the ways in which these techniques have been used in areas relevant to pharmacogenetics are discussed. The power of the techniques lies in furnishing data necessary for a more complete description of the sources of variance contributing to the phenotypes being investigated (the genetic architecture of the trait in question). Although the groundwork has been laid for the use of all three techniques in pharmacogenetics, it is Broadhurst's contention that none of them has been employed to its fullest potential. More research using each technique is needed, and Broadhurst suggests ways of maximizing the information gained from future studies.

The monograph will be of considerable interest to researchers concerned with

all aspects of pharmacogenetics. It provides a useful survey of research in the field as well as guidelines for at least one aspect of future research in pharmacogenetics.

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