

Industrial Research Organization, who has himself been responsible for much work on this subject. The remainder of the volume has been written by J. K. Dixon and J. E. Longfield, both of the American Cyanamid Co., who give, in successive chapters, an account of the partial oxidation of hydrocarbons, mainly on catalysts of the vanadium pentoxide or metallic platinum types, detailed attention being given to the theoretical aspect of these reactions. This is supplemented by two further chapters on the mechanism of catalytic oxidation generally and by a rather disappointingly short section on miscellaneous catalytic oxidations.

The spreading of the publication of the complete work over some six years (the first volume appeared in 1954) has necessarily rendered some of the volumes to some degree out of date and incomplete; but this is inevitable in a rapidly moving subject, and Prof. Emmett has probably acted wisely in publishing the material as it was received. The now complete work is to be strongly recommended as a necessary acquisition both by technical and academic libraries and by individual chemists. It will be found to be an exhaustive source of reference in almost all branches of modern catalysis, and should be particularly useful as a foundation for further research.

E. B. MAXTED

## EVOLUTION

### Implications of Evolution

By Dr. G. A. Kerkut. (International Series of Monographs on Pure and Applied Biology. Division: Zoology. Vol. 4.) Pp. x+174. (London and New York: Pergamon Press, 1960.) 30s. net.

DR. KERKUT begins his book with seven 'assumptions' which he thinks are implied in any acceptance of the theory of evolution. The first three of these are that non-living things gave rise to living material, that this happened only once, and that all living things—viruses, bacteria, animals and plants—are interrelated. Even if we read conclusions in place of assumptions, it is by no means true that all or even a majority of the biologists who believe in evolution would accept any of these as necessarily true or as implied in their belief. Evolution is the theory that in the history of life change has taken place by 'descent with modification', and the study of the course of change is phylogeny, not the theory of evolution. If we accept evolution, it by no means necessarily follows that phylogeny is monophyletic, and certainly not that any conclusions about the origin of life are implied.

Dr. Kerkut's aim in the main part of his book is to show that these 'assumptions' are ill founded, especially that we have no good reason to believe that the viruses, bacteria, rickettsias and higher organisms are related, or that the invertebrates, and even the vertebrate classes, are monophyletic. Though our views on these questions have little bearing on our belief in evolution, they are certainly questions of interest, and it is good to have them discussed by one who disagrees with widely held views. But any discussion of such questions, if it is to carry weight, must be on a fair consideration of all the relevant evidence, and I cannot agree that Dr. Kerkut gives us that. He does not discuss all the evidence, and not always the parts of the evidence that seem weightiest to most biologists. To take one

example, in considering the morphology of the cell as indicating that all animals are related, he mentions only the mitotic figure—itsself one might think strong enough evidence, though he does not agree—and says nothing of the rest of cell morphology—the visible and submicroscopic structure of the cell and nuclear membranes, Golgi apparatus, mitochondria, etc. It is on these many similarities, together with other evidence, that most biologists think that the cell cannot have been evolved more than once.

Other objections to the argument of the book might be raised, but to me the most general criticism is that evidence that bears against its thesis is often not discussed. As Darwin so well realized, one is much more likely to convince by over-stating one's opponent's arguments and answering them, rather than by passing them by without discussion. On these grounds the arguments of this book cannot, in my view, be thought conclusive. It is well produced; misprints, though they occur, are not especially numerous.

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## ZOOLOGICAL LITERATURE FOR 1957

### The Zoological Record

Vol. 94: Records of Zoological Literature relating chiefly to the year 1957. Edited by G. Burder Stratton. Pp. 1842. (London: The Zoological Society of London, 1960.) 160s.

THE orange-coloured bindings of the "Zoological Record" stand out in any library, for they have been coming out for nearly a century and now occupy many feet of shelving. The volumes have changed very little over the years, and the present one—Volume 94, referring mainly to the literature of 1957—retains almost the same format and the somewhat out-dated system of classification of the earlier numbers. Vermes, for example, is almost Aristotelian in its breadth, and includes Platyhelminthes, Nematelminthes, Rotifera, Annelida, as well as an assortment of smaller groups. However, there are certain advantages in changing as little as possible a reference work of this nature, and the sections into which it is divided are conveniently arranged, so that any person consulting the "Record" will have no difficulty in finding the publications on any particular subject or by any author, with the least possible delay. The contents, apart from their general usefulness to all workers in the subject, are also of interest as a rough indication of trends in zoological research work, based on the number of publications in the various sections. These trends are difficult to understand, for while Insecta remains by far the biggest section, Mollusca now takes second place although its economic or medical significance is somewhat limited. Owing to difficulties of recording, the sections dealing with Amphibia and parasitic Protozoa have not been included in the present volume, but it is hoped that they will appear in the near future.

Zoologists throughout the world are greatly indebted to the Zoological Society of London for undertaking the publication of this invaluable compilation with such little delay, for most of the sections of Volume 94 were available in 1959 and three even in 1958, the year following the literature to which they refer.

EDWARD HINDLE