

It has long been the custom to give great credit to the Romans as importers of animals, much of which credit they undoubtedly deserve; yet evidence is singularly lacking as to what beasts, birds, fishes and so on they really did bring across the English Channel and naturalize in Britain. It is said that they introduced the pheasant; yet the bird bones found in Romano-British settlements have all been identified by experts as belonging to the domestic fowl. But we do find evidence that the pheasant was in Britain by Norman times. In a charter of 1098, the Bishop of Rochester assigned to that City among other things sixteen pheasants from certain Kentish manors, and in 1100 the Abbot of Malmesbury was given a royal licence to kill hares and pheasants, which latter we may presume were as naturalized and wild as the hares.

Mr. Fitter's industry in the collection of facts regarding the arrival in Britain of this variety of creatures has been immense. His lengthy volume is packed with information, the facts being clearly and concisely related, resulting in a most useful book that will be valuable for reference for many years to come.

FRANCES PITT

## THE ZOOGEOGRAPHY OF WESTERN NORTH AMERICA

### Zoogeography

Edited by Carl L. Hubbs. (A Symposium presented on August 26-27, 1957, at the Stanford University Joint Meeting of the American Institute of Biological Sciences and the Pacific Division of the American Association for the Advancement of Science, and a Symposium presented on December 28, 1957, at the Indianapolis Meeting of the American Association for the Advancement of Science.) Pp. x+509. (Publication No. 51.) (Washington, D.C.: American Association for the Advancement of Science; London: Bailey Bros. and Swinfen, Ltd., 1958.) 108s.

THIS volume contains seventeen full articles dealing with the wide variety of topics to be expected in two symposia on zoogeography. It does not deal much with the subject as a whole, and the title is really misleading, since most of the articles are concerned only or mainly with the western part of North America. The topics covered include the present and past distribution of land areas, habitats and climate (Tertiary and Pleistocene), physiological tolerance of vertebrates as bearing on distribution changes, Tertiary mammals and birds, Amphibia and reptiles, freshwater fish and invertebrates, Orthoptera, Dermaptera, longicorn beetles, and butterflies. The standard of scholarship is high, but inevitably for most of these groups more can be said of their present than of their past distribution, and we are constantly aware of the central difficulty of reconstructing faunal histories without the sort of fossil records that exist for the mammals, where the story can be best authenticated. Nevertheless, this volume is really valuable in drawing together into a coherent form a very large amount of information, and it represents much concentrated and intelligent research. As a great deal of the material upon which zoogeography is based inevitably accumulates in a rather haphazard manner, through the results of expeditions, museum bulletins, and so on, it is necessary to take stock at intervals and in this sort of way. It does not appear, however, that any very

new ideas were brought to the surface by these symposia. This being so, it is a pity that the only index is one of Latin names. Anyone who wants to find other subjects will have to search the 477 pages of text.

To the general reader, perhaps the following four papers are the most useful. P. B. King traces the growth of modern surface features in Western North America, through the comparatively small deposition and mountain movements up to Jurassic times, and then the major upward Cordilleran movements and their aftermath. D. E. Savage gives a thorough conspectus of the fossil land mammals and their bearing upon Western faunal history. R. R. Miller has a very informative paper on the present distribution and origins of freshwater fishes of the West. A large paper on Pleistocene palæo-ecology by P. S. Martin covers a wider scene, including all North America, the West Indies and the Galapagos Islands, and takes in the arrival of man, and his influence on the fauna.

## BUTTERFLIES AND MOTHS

### Les Papillons

Par Guy Mathot. ("Que Sais-je?" No. 797.) Pp. 128. (Paris: Presses Universitaires de France, 1958.) n.p.

"LES PAPILLONS" is not 'just another book on Lepidoptera'. There are very few books which aim at giving a popular account of world Lepidoptera and, in spite of the small size of this book (the page size is similar to the "Wayside and Woodland" series), it covers the subject very well.

There are six chapters: from egg to adult; morphology and anatomy of the imago; infra-specific variation; systematic studies on the principal groups of the world fauna; biogeography of the Lepidoptera; summary of biological studies.

The drawings in the book are not of a very high standard and the reproduction is poor, although this may be due to the poor quality of the paper. The text is very detailed in some parts, giving, for example, the chemical composition of various pigments, chromosome numbers and a table of wing loadings (p. 33). Some of the detail could have been left out in favour of other information. The table of wing loading (p. 33) and that (p. 43) giving the respiratory quotient seem unnecessary.

Small errors occur. The classification used (pp. 56-57) is not entirely satisfactory. The use of "Pyralidoidea" and "Pyralidae" instead of the shorter Pyralidoidea and Pyralidae is irritating. A few spelling mistakes have occurred, *A. kühniella* Zell. is *kuhiella* (p. 81). The genus "Paraponyx" (p. 81) is always wrongly spelled and should be *Paraponyx* (Hübner, 1825). Some of the nomenclature is out of date (for example, *Lycaena* is used p. 52) instead of *Polyommatus* (Latreille, 1804).

The lack of authors' names after the species anywhere in the book is regrettable. Even in a book popularizing the subject the student should be correctly instructed, and in this case the author's name should have been given, at least where the species was first used.

In spite of these criticisms, the book contains a wealth of information unobtainable in any book of comparative size. It will interest all collectors who wish to study more than just British Lepidoptera.

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