

tions to practical situations, including the estimation of the size of an animal population, the distribution of misprints in a book, or of raisins in a cake, or of flaws in a material; and the exposition is made the more colourful by reference to card games, birthdays and the spread of rumours.

The later chapters include one on random walk and ruin, and several covering Markov chains, recurrent events and time-dependent stochastic processes. These topics, apart from their current interest to research workers, have important applications in the study of industrial operations, and an example of the latter is the subject of machine interference, an aspect of which is treated on pp. 416-422.

The book is very well produced and only one error has been noticed. On p. 164,  $x^2$  not  $x$  should appear in the definition of  $\varphi(x)$ ; the same mistake occurs on p. 166. The title page still describes the work as Volume 1. But it is generally known that Volume 2 has not appeared, and it is believed that it will not appear. On the other hand, on p. 173 it is still stated that a certain matter "must be postponed to the second Volume". Thus, an enigma still surrounds the present work, and it would be good if the publishers could clarify the position.

L. S. GODDARD

#### The Birds of the British Isles

By Dr. David Armitage Bannerman. Vol. 7: Anatidae (Conclusion). Pp. x+256+27 plates. (Edinburgh and London: Oliver and Boyd, Ltd., 1958.) 63s. net.

DR. BANNERMAN'S seventh volume covers the dabbling and diving ducks, including the sawbills. He has been able to draw upon even richer material than usual, as the ducks have always been special favourites of some ornithological writers, such as J. G. Millais; they are also well known to sportsmen, who have added to the store of information—especially about habits in winter-quarters in Africa and southern Asia. In our own day and country, too, wildfowl have been the subject of special inquiries into their numbers and habits; not least interesting is the increase, within living memory, of the British breeding populations of several species formerly scarce at that season. Yet again, ducks can be caught for ringing not only when young but also in decoys in winter; and they yield a good proportion of recovery records. Thus, for example, the author is able to quote descriptions of breeding harlequin (a remarkably rare visitor to us) in Iceland and of wintering garganey (one of our less common summer birds) on an equatorial lagoon; and he can cite records of ducks ringed in Britain that have travelled far into the U.S.S.R. The late George Lodge had likewise fine scope for his art in depicting the many distinctively plumaged drakes, contrasted with their relatively sombre mates; one would have liked some of the ducklings as well.

LANDSBOROUGH THOMSON

#### Natural Selection and Heredity

By P. M. Sheppard. Pp. 212. (London: Hutchinson and Co. (Publishers), Ltd., 1958.) 18s. net.

IF this book had been entitled "Natural Selection and Mendelian Heredity" with a sub-title *à la* Darwin, "Or an account of Speciation according to neo-Mendelian Principles", and had stopped at the end of Chapter 8, it could be called a good book. It is clearly written; at least, as clearly as the intricacies of the neoMendelian hypothesis will allow. But it is not certain for whom it was written. In some

places it explains matter with a simplicity which is almost childish (p. 116), while at others it demands a mind of marked mathematical acuity to follow the argument (p. 107).

However, after having devoted eight chapters—just two-thirds of the book—to the "agents" which "control speciation", the author deals with protective coloration (for some reason which is obscure), with mimicry where one hoped for some modern enlightenment on this intricate problem, with a chapter of six pages on ecological genetics, and then, *mirabile dictu*, a chapter entitled "The Origin of Species". After all this there is a conclusion where it is naively stated that all the evidence (dealt with so superficially in the last four chapters) supports the idea that the major advances in evolution, the origin of orders, classes and phyla, are controlled by a mechanism "in no way different" from the neoMendelian tortuosities described at such length in the earlier part of the book. The fact that nowhere in the book is the origin of a new structure dealt with is overlooked. Since all the major steps in the evolutionary scale involve the appearance of entirely new structures, this surely detracts from the value of the argument. However, does this matter? The author admits the possibility of cytoplasmic inheritance (p. 171), and throughout the book deals with environmental variation (p. 63), and this, coupled with the recent statement by one of our leading neoMendelians in a review of three books, whose authors have had the temerity to write on evolution, that, of course, "the nucleus is not alone responsible for heredity", makes one wonder whether the present book has anything more than a purely hypothetical interest.

H. GRAHAM CANNON

#### Sixth Symposium (International) on Combustion

Yale University, New Haven, Connecticut, August 19-24, 1956. Pp. xxv+943. (New York: Reinhold Publishing Corporation; London: Chapman and Hall, Ltd., 1957. Published for The Combustion Institute.) 224s.

THIS weighty volume contains 125 original papers, of which six are invited surveys and most of the rest report original work, either theoretical or experimental. Group subjects include laminar and turbulent flame propagation, fast reactions and fast flame stabilization, combustion chamber instability, ignition, combustion of liquid and solid fuels and of explosives, techniques and applications.

The publishers' work has been excellently done, but one could wish that the editors had insisted upon the provision of abstracts uniform in location and style. Many of the papers lack this feature entirely.

The meagre discussion is incompletely reported. It is scarcely fair to record critics' comments and not the authors' replies. The reverse is disconcerting. If this is the best that can be done, the space had better be saved. Reports of three panel discussions are of more interest, especially the first and most substantial on "Future Problems in Combustion Research".

Some of the papers are unsatisfactory in that the date of the Symposium rather than the state of the work has rather obviously been the factor determining publication. Despite any or all such criticisms, however, the book contains a wealth of material that will probably justify the high price in the eyes of the many workers in the field of combustion.

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