

A NEW BOOK FOR NATURALISTS

British Mammals

By Dr. L. Harrison Matthews. (New Naturalist Series.) Pp. xii+410+64 plates. (London and Glasgow: Wm. Collins, Sons and Co., Ltd., 1952.) 25s. net.

ANYONE attempting to survey our present knowledge of British mammals within the space of four hundred pages must be as much concerned with what to leave out as what to put in. Dr. Harrison Matthews must have been aware of this, as well as of the fact that no one person is competent to treat the subject equally authoritatively in all its aspects. He has wisely given us British mammals as he knows them best, which is mainly, though by no means entirely, from their physiology and anatomy. Early in the book he states his avowed intention not to deal with their habits, since these have been fully dealt with by previous authors. The result is a book which at first appears to be somewhat unbalanced; yet, as its story unfolds, it becomes increasingly evident that this treatment has achieved its end where a more co-ordinated and balanced planning might have succeeded less well. His method is to bring out in each group the salient points of interest.

The literature on British mammals, even within the past twenty years, is considerable; but most of it is not readily accessible to the naturalist. There have been several non-technical books on the subject; but the standard works of Millais and of Barrett-Hamilton and Hinton were still the main source of information. The present volume does not supersede these, but is complementary to them in precisely the way most needed.

The first chapter opens with a brief review of the literature since Wotton and Toppell, followed by cursory observations on taxonomy and genetics, the whole somewhat inappropriately headed "Mammal Natural History". In the next chapter, "Mammal Structure and Function", the author reveals his bias but equips the reader for his further reading with a survey of mammalian anatomy and the physiology of reproduction. The author's repeated return to the latter throughout the book constitutes one of its most valuable features, especially in the pages on delayed implantation. The various groups are then dealt with in systematic order. In his treatment of the Insectivora, the emphasis is on the physiology and anatomy of the reproductive organs, with notes on hibernation and the senses. One would have liked more detailed information on the mechanics of hibernation; and the omission of any reference to Adrian's work on the olfactory reactions of hedgehogs (and of rabbits) is a little surprising. In the biology of bats the author is on one of his favourite subjects and thus gives us an excellent authoritative account of their use of echo-location. Field naturalists may criticize the inclusion of a second, somewhat inadequate, key to the identification of bats; but presumably, knowing the great difficulty of identifying bats in the field, the author was over-anxious to be helpful.

The section on rabbits, hares and rodents contains most interesting material on plagues and population cycles, refection, seasonal changes of colour, reabsorption of embryos in rabbits, and an exposition of the origin and taxonomy of the subspecies of British voles and mice. These are most valuable chapters, though field naturalists will occasionally find difficulty

in accepting some of the minor details, such as, for example, that the dormouse is "common in suitable places throughout the southern and western counties".

One most pleasing feature is the expression throughout the book of the changed attitude on the part of zoologists to the so-called vermin, the predatory carnivores, so important in the control of real vermin, yet for so long mercilessly persecuted. This is particularly evident in the pages devoted to stoats, weasels, badgers, martens, otters and foxes; and linked with it is a refreshing discourse on their relatively high mental equipment. In this and the next three chapters, on seals, deer and whales respectively, the author is at his best.

The book concludes with an account of the probable origin of the British mammalian fauna. The whole is rounded off with a systematic table, a list of the works referred to in the text, and a very detailed index.

Apart from very minor criticisms, the only adverse comment worth while is that the author tends to cast his net too wide and make too frequent incursions into non-British fields; but if this be a fault there is the compensation that our understanding of our indigenous mammals is broadened thereby. In any event, Dr. Matthews is to be congratulated on having brought together so much valuable information and interesting material in a book "which every naturalist must read".

MAURICE BURTON

INTRODUCTION TO THEORETICAL PHYSICS

Éléments de physique moderne théorique

Par Prof. Georges Guinier. (Bibliothèque de la science moderne.) Tome 1: Mécanique ondulatoire. Pp. 159. Tome 2: Structure de l'atome et du noyau. Pp. iii+161-309. (Paris: Libr. Bordas, 1949-50.) n.p.

THESE two books by Prof. G. Guinier are concerned chiefly with the theory and application of Schrödinger's wave-equation for systems of simply one or two particles. Thus in Vol. 1, after an introductory chapter on wave-particle dualism, which includes the relativistic treatment of the Compton effect and a fairly good discussion of group and phase velocity, Schrödinger's equation is introduced through the usual optical analogy and applied to the customary problems of a harmonic oscillator, rigid rotator, hydrogen atom and the passage of particles through barriers. Then, after introducing Bohr's correspondence principle and the uncertainty principle, the helium atom is treated, very nicely, and the book ends with a discussion of angular momentum, electron spin and the Pauli exclusion principle. The first chapter of Vol. 2 continues this story in discussing the periodic table, the hydrogen molecule and Van der Waals forces, these last being ascribed to the zero-point energy of coupled oscillators. Then there is a long chapter on applications to spectra—atomic, molecular and X-ray—including a discussion of the normal and abnormal Zeeman effects, the Paschen-Bach effect and even hyperfine structure, although, of course, there is no systematic treatment of the Dirac equation. Finally there is a chapter on nuclei, though the only serious theory here is Gamow's justification of the Geiger-Nuttall law.