Isopodes Terrestres

Deuxieme Partie. Par Prof. Albert Vandel. (Faune de France, Vol. 66.) Pp. 417–932. (Paris: Éditions Paul Lechevalier, 1962.) 110 NF.

THE welcome appearance of this volume completes Prof. Vandel's account of the terrestrial isopods of France and forms a valuable addition to the series *Faune de France*.

The first volume, published in 1960, was divided into two sections, a general introduction and a systematic part; Vandel (Volume 1, p. 96), in an outline of the classification, divided the sub-order Oniscoidea into two series, tylienne and ligienne, and the latter into three tribes Diplocheta, Synocheta and Crinocheta; of these, the series tylienne, containing the single family Tylidae and the tribes Diplocheta (Family Ligiidae) and Synocheta (Super-family Trichoniscoidea), are dealt with in Volume 1.

The second volume is almost entirely devoted to a systematic account of the French species belonging to the tribe Crinocheta, so it is unfortunate that in this volume the status of the tribe has been reduced to that of a sub-tribe without any explanation being given; this fact is bound to give rise to some confusion since Vandel (Volume 1, p. 95) refers to the characters on which Legrand (1946) established the Synocheta and Crinocheta and gives no indication that the two are not of an equal systematic level. Crinocheta is divided into two super-families, Atracheata and Pseudotracheata; the former contains six families of which four (Stenoniscidae, Tendosphaeridae, Squamiferidae and Oniscidae) are represented in the fauna of France and the latter seven, five of which (Cylisticidae, Porcellionidae, Armadillidiidea, Eubelidae and Armadillidae) include French species.

As in the first volume, super-families, families, etc., are defined and keys for the identification of genera and species are included wherever applicable. Each species belonging to the fauna of France is dealt with under the following heads: synonyms, morphology, affinities, reproduction, parasites, ecology, and geographical distribution; in many cases the descriptions of species are accompanied by excellent illustrations and in some cases distributional maps are also included.

The volume contains a glossary of relevant scientific terms which should prove of real value to the non-specialist reader; there is also an extensive bibliography and a systematic index, which refers to the contents of both volumes.   E. M. SHEPPARD

Applied Dynamic Programming

By Richard E. Bellman and Stuart E. Dreyfus. Pp. xxii + 363. (Princeton, N.J.: Princeton University Press; London: Oxford University Press, 1962.) 52s. 6d. net.

DYNAMIC programming is one of the characteristic techniques of modern applied mathematics. Basically it is a synthesis, and extension, of variational calculus and statistical decision theory, and its field of application is the multiplicity of problems covered by the terms 'operations research' and 'automatic control'. This very general technique has been made practicable only by the advent of the electronic computer. The principles have been explained by R. E. Bellman and his collaborators in two previous books and numerous papers, but *Applied Dynamic Programming* is the first systematic exposition of the associated computational methods.

The text is a discussion of a wide range of practical problems together with their solutions; they include the warehousing and inventory problem, the transportation and routing problem, space vehicle guidance and feed-back control. Since the straightforward numerical approach is often beyond the capacity of the largest computer a useful discussion of approximation methods is given. The effectiveness of policy space approximations is brought out, and the exploitation of the special features

of particular problems is rightly emphasized. It is disappointing to find that one important approximation method is relegated to a short appendix.

The presentation is refreshingly clear and direct and makes the principles accessible to people who do not enjoy struggling with mathematical refinements. Those already familiar with operations research will find this book a valuable addition to the literature on computational methods, while newcomers will find it a superb introduction to the way that problems are formulated and solved.   J. J. FLORENTIN

Modern Physics

An Introduction to Atomic and Nuclear Physics. By Prof. D. E. Caro, Dr. J. A. McDonell and Dr. B. M. Spicer. Pp. x + 222. (London: Edward Arnold (Publishers), Ltd., 1962.) 20s. net.

THIS book describes the principal steps in the development of atomic and nuclear physics from the discovery of X-rays and the electron to the identification of the anti-proton—the topics, that is, which are usually labelled 'modern physics', though one feels that the exclusion from this heading of, for example, recent work on solid-state physics is somewhat arbitrary. The authors are at the University of Melbourne and Monash University and they have aimed their book at first-year students there, but they have also tried to make it useful to students in their last year at school. In a 'blurb' to the English edition the publishers suggest its use in sixth forms, remarking that the book covers all the topics in the modern physics section of the syllabus for the General Certificate of Education Advanced-level Examination, though going farther than the immediate requirements of the examination syllabus.

The authors treat the subject historically in order to show not only what a theory is but also how it was developed. In this they are generally successful. The writing is clear, direct, and unusually free from the clichés of scientific exposition. Some of the headings to sections and chapters have the ring of newspaper headlines (of the more sober sort) but are none the worse for that. An unusual feature in books at this level is the inclusion of references to original papers. Although not detailed or taken to great depth, the discussions are by no means superficial. The book should be valuable to its intended readers and to teachers; it has the additional merit that it is cheap by contemporary standards.

K. E. B. JAY

Structural Geology of North America

By Prof. A. J. Eardley. Pp. xv + 743 (figures). Second edition. (New York: Harper and Row, 1962.) 162s.; 21.50 dollars.

WHEN the first edition of Prof. Eardley's text-book appeared in 1951, it was widely acclaimed as one of the most outstanding geological works of recent years, giving the only modern treatment of the structural evolution of North America. In the second, extensively revised, edition seven new chapters have been added, one on Precambrian orogenic belts and six on the igneous provinces of the western Cordillera, thus providing a fuller account of the eruptive rocks than has hitherto been available in text-book form. Fifteen coloured maps depicting the palaeogeography of the continent, one for each geological period, have been re-drawn to incorporate recent discoveries. Although the work is specifically addressed to advanced undergraduates in geology, its scope is such that it will be more fully used at the postgraduate level; and, by virtue of its comprehensive character and its readability, it will doubtless long continue to be used as a convenient reference book. Minor misprints are rather frequent and the unorthodox page size (11 in. × 8¼ in.) has disadvantages in a volume weighing 4¼ lb.