

Nature and Man

By John Hillaby. (Progress of Science Series, No. 9.) Pp. 64 + 28 plates. (London: Phoenix House, Ltd.; New York: Roy Publishers, 1960.) 9s. 6d. net.

ANY series of books designed to help young people to keep up with the progress of science deserves encouragement. In one of this new series, John Hillaby, European science correspondent of *The New York Times* and zoological correspondent of *The Guardian*, has attempted to show the perpetual struggle between man, animals and plants and how the balance of Nature often becomes greatly disturbed from what seem trivial beginnings. From his travels in many parts of the world Hillaby has seen the awful results which sometimes follow the upsets to natural life and records these in tense and dramatic style.

Among the topics described are the blocking of the Congo River by the devil's lilac and the expenditure of £3 million on chemicals to clear it for traffic; the fearsome effect of too many lemmings, muskrats and rabbits and other animals; soil-erosion (unfortunate, perhaps, that Hillaby had to go to Athens to witness a soil-storm when his own native Pennines are being deposited in Sheffield and other cities); and the consequences of over-shooting big game.

There is also a chapter on the ways in which young people can train for careers in the conservation of Nature. Whether the author is right to pitch a book with this approach to young people of "12 and upwards" is very questionable. In many secondary modern schools the suggestion that Elton's "Animal Ecology" could form useful further reading for children of this age would receive a not unjustified rejection.

T. H. HAWKINS

Principles of Sugar Technology

Edited by Pieter Honig. Vol. 2: Crystallization. Pp. xviii + 567. (Amsterdam: Elsevier Publishing Company; London: D. Van Nostrand Company, Ltd., 1959.) 95s.

THIS volume was produced by a selected group of experts as with the first volume. There is a vast mass of useful material to be found in these pages and there is little to be criticized. The crystallography of sucrose might have been improved by the incorporation of some of the useful work done in the University of Bristol, namely, by N. Albon and W. J. Dunning (see *Nature*, 180, 1348; 1957). This was on growth steps of sucrose crystals. Further work was not then published, but is to be found in the thesis of N. Albon at Bristol. Also in Doremus, Roberts and Turnbull (Wiley, 1958) and in *Acta Crystallographica*, Honig directs attention to the loss by inversion on solutions above 65° Brix, as being greater than given by the Stadler tables. He also mentions that pan work actually gives an increased amount of loss of sucrose progressively from affination syrup, first crop, and second crop. The invert produced was lower progressively, showing that combination had taken place. The use of symbols is misleading; C.V. is used for crystallization velocity without explanation, whereas C.V. is already used for the coefficient of variation. A few spelling mistakes occur, including, p. 193, "fosfation". These are poor examples of an otherwise very good book. It is one that should be on the shelves in all sugar factories, refineries and head offices, and should be utilized for new work as well as for judging everyday work.

H. C. S. DE WHALLEY

Les Modèles du Noyau

Par Michel Trocheris. (Bibliothèque des Sciences et Techniques Nucléaires.) Pp. 152. (Saclay: Institut National des Sciences et Techniques Nucléaires; Paris: Presses Universitaires de France, 1959.) 26 N.F.

THE nineteen-fifties have been marked by a vigorous growth in the theory of nuclear structure and the models used to represent it. This book originated in a series of lectures delivered at Saclay in 1955, and the value of its publication nearly five years later might seem questionable. The subject-matter of this book, however, is by no means as general as its title might suggest; it is concerned with an elementary introduction to some of the techniques used in calculations based on the models considered (the Fermi gas, the shell model and the Bohr-Mottelson collective model), rather than the physics of the models themselves or their detailed application to experimental data. Such techniques are often less time-dependent than the models which suggest them, but the meagreness of physical discussion must inevitably limit the usefulness of the book. A second limitation is the almost complete omission of nuclear reaction and decay properties from the discussion. Such properties are as important to present-day nuclear models as the spectra and static moments.

Within these limits the author has written a clear, elementary account of the subject, and this book may form a useful bridge between an undergraduate course of quantum mechanics and the specialized monographs on the various nuclear models.

J. M. SOPER

Nutzenergie aus Atomkernen

Von Dr. Karl Rudolf Schmidt. (Einführung in Physik und Technik von Kernreaktor und Atomkraftwerk, Band 1.) Mit Beiträgen von Hans Günter Heitmann, B. Logermann und Wolfgang Mayer. Pp. xvi + 594. (Berlin: Walter de Gruyter und Co., 1959.) 106 D.M.

OF the many books currently available on reactor science and engineering, this must surely be the most ambitious in scope, dealing as it does with almost all aspects of the subject. Starting with elementary atomic and nuclear physics, it leads on to radiation and radioactivity, particle accelerators, nuclear stability and the chain reaction. This in turn leads to elementary neutron physics, reactor theory and lattice calculations.

To note that the subject of nuclear forces, for example, is dealt with in about half a page is not to criticize the book, since its aim is clearly to serve largely as an introduction to the physics side of the title, while providing a more complete analysis of the engineering and technological side. This latter, which takes up more than half the book, deals very thoroughly with such diverse aspects as chemical separation, ion exchange methods, trans-plutonium elements, thermodynamics (including turbine theory, heat transfer, heat exchangers, etc.) and a long section on the properties of materials of interest to reactor designers.

The text is very well supplemented by tables, graphs, references and even nomograms, but, surprisingly, has no index, while topics like reactor kinetics, fission-product poisoning, and shielding are apparently examined in Volume 2, rather than in the physics part of Volume 1, and reactor stability is ignored entirely.

K. R. E. SMITH