

the second in the past few years. This may reveal something about the collection technique used by Corliss, or about this journal, or about the general awareness of such phenomena and 'things that go bump in the night'; I doubt if it reflects a genuine distribution of such oddities. But the discovery of such a pattern shows just one example of the way in which the book can provide hours of harmless fun. At the price, it is excellent value for entertainment alone; there is also the added bonus that such a collection must inevitably include something which will become 'reputable' in the near future. Owners of the volume will then be able to say "Of course, I knew all about that back in 1974".

JOHN GRIBBIN

## Plan the countryside

*Rural Resource Development.* By M. C. Whitby, D. L. J. Robins, A. W. Tansey and K. G. Willis. Pp. 243 (Methuen: London, January 1974.) £2.50 cloth; £1.30 paper.

THE main concern of the authors is to present ways of analysis which will lead to more effective public decision making and lead to the better use of rural resources. At present many of the decisions affecting the countryside are reached in an illogical way; because recommendations at officer level concentrate on only a selected scheme, because of political considerations, because of the influence and pressure of organisations such as the Country Landowners' Association, the National Farmers' Union, and strong amenity bodies.

This book gives the elements of the economic theory of resource allocation to provide a framework for understanding the economic processes at work in the countryside; private rural economy is well documented whereas public issues have received less attention. The authors explore in some detail the factors which do, as well as those which should, lead to decisions. They contend that most public agencies seem to pursue inappropriate objectives under incorrectly specified constraints, and that suboptimal decisions are taken because cash revenue and expenditure are used instead of the assessment of social costs and benefits.

There is a chapter on recreation, conservation and amenity which explores the general question of allocating land to physically non-productive uses and of measuring the less tangible consequences of such allocation decisions. There is discussion of the very difficult subject of estimating the amenity value of land.

There are useful chapters on the statutory British planning system and on population trends and transport in

rural areas. A better understanding of all these matters would enable judgments to be made which used resources more efficiently, not only in cash terms, for society.

It can certainly be justly claimed that this is a useful source book for planners, landscape designers, students of environmental studies, agricultural economics and rural geography. There is an excellent list of references and a good index.

GEOFFREY BERRY

## Free radicals

*Free-radical Chemistry: Structure and Mechanism.* D. C. Nonhebel and J. C. Walton. Pp. xv+572. (Cambridge University: London, January 1974.) £15; \$35.

RAPIDLY growing scientific subjects periodically need exposition in comprehensive textbooks and it is many years since this subject has received an adequate broad survey that meets the requirements of both senior undergraduates and research workers. Recent quantitative measurements, mainly by gas chromatography and ESR spectroscopy, have so greatly enhanced knowledge of chemical reactions that publications of only 10 years ago are no longer factually correct and contain some theoretical deductions that are no longer fully valid.

This book from Scotland, which is now a very active region for research in free radical chemistry, meets a real need. It is a collaboration between a physical (Dr Walton) and an organic chemist (Dr Nonhebel) who have surveyed harmoniously physical measurements, gas reactions, reactions of atoms and simple alkyl radicals, as well as a wide range of more complex reactions in solution. They have paid particular attention to recent work and theories.

Polymer chemistry has been omitted for lack of space. But though polymerisation technology is still expanding its theoretical basis is changing but little and has been covered reasonably well in a long chapter on reactions of alkyl radicals.

A particularly long chapter is accorded to radical oxidations and reductions. This, a rapidly expanding sector of free radical chemistry, certainly merits detailed treatment, but the text gives far too much space to phenol oxidation in comparison with autoxidation or possibly to reactions involving transition metal ions which, for students, deserved particular attention since they bridge the deleterious scholastic gap between inorganic and organic chemistry.

Only the price should detract from the wide use of this excellently produced book.

W. A. WATERS

## Life in the sea

*Biological Oceanographic Processes.* By Timothy R. Parsons and Masayuki Takahashi. Pp. x+186. (Pergamon: Oxford and New York, October 1973.) £4.

THIS reads like the summary of an excellent four- or five-volume treatise that, unfortunately, has never been written. The authors insist that it is no more than an introduction to biological oceanography. A reader with no previous knowledge of the subject could, indeed, start from first principles. By page 10 he would reach the mathematics of diversity indices; four or five pages later he would cope with the application of statistics to the interpretation of samples; by page 21 he would have polished off biogeography and started on time-series variability.

The authors maintain this pace throughout. No new term is introduced without an excellent definition. One cannot even quarrel with their one non-definition: of detritus, they say that "while the word lacks definition it should not be regarded as lacking in importance" and then, having paused, off they go again and deal with the physics and chemistry of detritus in great depth—in four pages.

The book deals, almost exclusively,

with near-surface pelagic populations, their environment and their ecological processes. Benthic, littoral and bathypelagic systems are excluded. Indeed, almost everything is excluded that cannot be expressed in quantitative terms—and preferably summarised as an equation.

Some sections are superficial but what else can one expect in a book of such breadth? There are chapters dealing with the distribution and chemical composition of plankton, nutrients and seawater, heterotrophic and autotrophic processes, plankton feeding and production, organic and inorganic cycles and the transfer of energy and materials in the food chain. The authors claim that it is not a literature review but nearly 700 well-chosen references, alone, justify the purchase price of the book.

The last chapter, "some practical problems in biological oceanography", is trivial and unnecessary. Otherwise, this is an excellent book for professional oceanographers, biologists or, indeed, as the authors put it, "scientists in other professions who may require some quantitative expressions of biological oceanographic phenomena".

R. S. GLOVER