

chlorines as an example outweigh this disadvantage.

Pollutants and Animals is accurate, clearly written and very readable. Technical terms such as axon, isomer and isotope are defined and so it can be read by the informed layman as well as by scientists with a professional interest in pollution research and control, or in teaching or learning about pollution. Dr Moriarty shows how ideas have progressed in recent years, and, by pointing out significant gaps in knowledge, also succeeds in putting over the authentic 'feel' of doing research in this field. Studies which should be extended include those on the possible biological effects of pesticide metabolites, the behaviour of DDT in mud, the extent to which DDT is converted into DDE and transformed to PCBs in the physical environment, and laboratory studies on the interactions of different pollutants on fish.

Dr Moriarty's comments on the limitations of the LD₅₀ test are salutary for those who rely too much on this particular indicator of hazard. The desirability of obtaining more residue data when toxicological tests are made, is another practical requirement to

which Dr Moriarty draws attention.

Conventional wisdom has it that organochlorine insecticides always become concentrated in food chains. In his critique of the pioneer work of Hunt and Bischoff at Clear Lake, Dr Moriarty shows how that hypothesis has had to be modified in the light of subsequent research. Similarly, it is commonly believed that populations of birds of prey have declined as the result of sublethal effects of organochlorines. Dr Moriarty, in a perceptive review of this very complicated subject, shows how lethal and sublethal effects have varied in their relative importance between different species.

This book should be of great interest to those concerned with the organisation of science. It demonstrates not only the desirability, but the necessity of relating chemistry, toxicology and population dynamics in order to provide the scientific base for pollution control. The multidisciplinary team of which Dr Moriarty was a distinguished member, was a casualty of the split of the Nature Conservancy. Some way must be found of supporting similar teams in the future. Anyone reading this excellent book will come to appreciate why. □

Food from the sea

G. E. Fogg

Marine Photosynthesis: With Special Emphasis on the Ecological Aspects. (Elsevier Oceanography Series, 13.) By E. Steemann Nielsen.) Pp. ix+141. (Elsevier Scientific: Amsterdam, Oxford and New York, 1975.) Dfl.52.00; \$21.75.

PROFESSOR Steemann Nielsen has contributed more than any other person to our knowledge of photosynthesis in the sea. His introduction in 1952 of the radiocarbon technique gave us a simple and sensitive means, which has been very widely used, for measuring the rate of photosynthesis in natural waters; and his laboratory experiments have deepened our understanding of the manner in which the photosynthetic activity of phytoplankton organisms varies in response to conditions in the sea. In this book, the first to be devoted to a kind of photosynthesis which provides at least half the Earth's supply of food materials, he brings together these contributions and sets them against the background of modern ideas about the mechanism of the photosynthetic process and its evolutionary history.

This background is sketched in the first two chapters; there follow discussions of underwater daylight, the units in which irradiance should be expres-

sed, the kinds of photosynthetic organisms in the sea, the effects of various factors on their photosynthetic activity, the interrelationships of photosynthesis and respiration, and physiological adaptation to irradiance and temperature. The later chapters deal with photosynthesis *in situ*, and the primary production of the sea and its importance to man. It is a pity that in this account the author should have confined himself rather strictly to presenting his own work and avoided discussion of controversial matters such as the importance of extracellular products of photosynthesis.

Several independent groups of investigators now believe that they have demonstrated that healthy populations of natural phytoplankton frequently release as much as half of their photosynthetic product directly into the surrounding water. This much is briefly mentioned but after a longer discussion of the errors which may arise in the determination of extracellular products of photosynthesis the reader may be left with an impression, which the facts do not actually justify, that this important phenomenon is no more than an experimental artefact. Similarly, there is insufficient consideration of the implications of experiments by other workers on temperature adaptation.

Nevertheless, this is a wide-ranging and authoritative account which will be valuable and stimulating to students and research workers alike. □

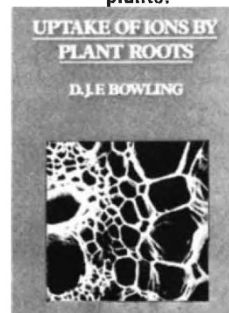
MUTATION RESEARCH

Problems, Results and Perspectives

C. AUERBACH

April 1976: 528 pages: 86 line illustrations: 412 11280 9: hardback: £10.50

This book is intended for the senior-undergraduate and the postgraduate or research worker who wants either a review of the whole field of mutation or information about a specific problem within it. The book incorporates results on all types of organism: from prokaryotes and eukaryotes to animals and plants.



UPTAKE OF IONS BY PLANT ROOTS

D. J. F. BOWLING

March 1976: 222 pages: 4 pages of plates and 54 line illustrations: 412 12000 3: hardback: £6.50

This book provides an up-to-date assessment of our knowledge and understanding of mineral ion uptake by plant roots. The book offers an integrated approach covering movement of the ions in the soil and uptake into the root as well as transport in the xylem.

STATISTICAL ANALYSIS OF SPATIAL PATTERN

M. S. BARTLETT

February 1976: 100 pages: 412 14290 2: hardback: £3.50

The statistical analysis of spatial pattern and dependence has important applications in many areas of biology, geography and other sciences using quantitative methods. This monograph presents some of the relevant techniques, including methods only recently developed and not hitherto available in book form.



Chapman & Hall
11 New Fetter Lane, London EC4P 4EE

Circle No. 25 on Reader Enquiry Form.