

little will of his own and no private life (or none that is mentioned). But his 'discovery' of ecology at the end brings a touch of strong, almost Wordsworthian feeling:

So, finally I chiselled out this goal:
To learn to live with nature,
not oppose it,
Exploit, burn up and devastate:
To change from miners into
farmers . . .
. . . crashing down those barriers
which divide
Science from man and man from
natural
Things and man from man and all
that is
Of simple panoramic love and
permanence.

D. G. KING-HELE

Dangerous insects

Insects and Other Arthropods of Medical Importance. Edited by Kenneth G. V. Smith. Pp. xiv+561. +12 plates. (British Museum (Natural History): London, 1973.) £6.50.

THIS is a revised and expanded edition of an earlier book by Dr J. Smart, published in 1944, which dealt mainly with the fauna of the Old World and included little biological information. The present work is much larger, covers the whole world and is by 16 authors. The primary purpose of the book is still to enable non-specialists to identify to generic or subgeneric level arthropods, especially insects, of medical importance. Many species which are essentially parasites of animals are also included because many of them also attack man, if only on rare occasions. It will probably come as a surprise to the non-specialist to learn that several moths feed on eye liquids of vertebrates and that one is even capable of piercing the skin and sucking blood.

Three hundred of the 523 pages are devoted to the order Diptera whose importance has been greatly increased by the recognition of many new viruses. Of the 553 different combinations of vector and disease listed in their tables summarising the records, 10 involve bacteria, 47 nematodes, 90 protozoa, 11 rickettsias, 9 spirochaetes and 386 viruses (mostly carried by mosquitoes and recognised in the past 30 years). Many of these viruses are, of course, very localised and often quite unimportant and the long known diseases such as malaria, plague and typhus are much more serious. Nevertheless, the only arthropod groups of much importance in disease transmission besides the Diptera are the Siphonaptera (fleas)

and the Acari (ticks and mites). Though disease transmission is the chief way in which insects are medically important, they may also be troublesome by biting or stinging, or by fragmenting into particles which are irritating or to which man may become allergic. Even scorpions which are relatively rare may kill 1,000 people, mostly young children, each year in Mexico.

The illustrated keys for the identification of all the more important groups are excellent and will be very useful to anyone with some knowledge of entomology. In most groups, there are also keys for the identification of the early stages (larvae and pupae). The information about the biology of the various groups and of the kind of trouble they cause is concise but sufficient, together with the long lists of references, to give a useful introduction to the subject.

Readers should note that a short mimeographed list of errata has been inserted in each copy. It is chiefly concerned with some errors in the names of groups of Acari in the table of disease vectors.

O. W. RICHARDS

Halides galore

The Chemistry of the Carbon-Halogen Bond. Edited by Saul Patai. Part 1: Pp. xiii+1-608; part 2: Pp. xiii+609-1215. (Wiley-Interscience: London and New York, December 1973.) £22 (two volumes).

Fluorine in Organic Chemistry. By R. D. Chambers. Pp. xv+391. (Interscience Monographs on Organic Chemistry.) (Wiley-Interscience: New York and London, January 1974.) £10.75.

THE first monograph deals with the thirteenth functional group to appear in Professor Saul Patai's monumental series, now within sight of completion. As with previous volumes, editorial policy has been to go to press without promised chapters that had not been received by a deadline. This time there are five casualties: formation of C-X bond; modern synthetic uses of organic halides; synthesis and uses of isotopically labelled halides; fluorocarbons (see below); and, finally, optical rotatory dispersion and circular dichroism of organic halides. Of these the first two are losses indeed.

There are, however, plenty of interesting and valuable articles in what remains. Among them are: heterolytic mechanisms of substitution involving carbon-halogen bonds (P. B. D. de la Mare and B. E. Swedlund, 141 pages); directing, activating and deactivating effects (G. Modena and G. Scorrano, 106 pages); elimination reactions in solution (R. A. More O'Ferrall, 68

pages) three excellent reviews on major aspects of the subject that are of general interest. There is also an interesting chapter on homolytic mechanisms of substitution (E. S. Huyser, 60 pages), but as this deals entirely with C-H→C-X, it seems to belong more appropriately under alkanes. Then there is a series of chapters dealing with more specialist aspects of the C-X linkage: mass spectrometry (A. G. Loudon, 42 pages), pyrolysis (K. W. Egger and A. T. Cocks, 70 pages), photochemistry (P. G. Sammes, 48 pages), radiation chemistry (R. E. Bühler, 70 pages), biochemistry (S. Doonan, 52 pages), electrochemistry (J. Casanova and L. Ebersson, 70 pages) and thermochemistry (R. Shaw, 23 pages).

There is a very long chapter on analysis of organic halogen compounds (J. Zabicky and S. Ehrlich-Rogozinski, 160 pages) which, though interesting, seems to be overweight compared with space devoted to other topics. There are the usual introductory chapters on general and theoretical aspects of the carbon-halogen bond (G. H. Wagnière, 48 pages) and structural chemistry of the C-X bond (J. Trotter, 14 pages); and also one on hydrogen bonding and complex-forming properties (J. W. Smith, 36 pages). Then there are the topics that don't quite fit in anywhere else; perchloro-, perbromo- and periodo-compounds (T. Chivers, 62 pages), and, last of all, rearrangements involving halides (C. Raape, 44 pages—an interesting chapter with a good account of Favorskii and Ramberg-Bäcklund rearrangements).

All in all a good volume, though as with previous volumes one is often puzzled at the way in which space is allocated between the various topics. The reproduction of structural formulae is in general fairly good, and the layout relatively clear. Literature coverage seems to be very thorough, but to extend only into 1971 (the end?), with some citations extending into 1972 in a few articles.

The non-delivery of the fluorocarbon chapter in Professor Patai's collection is more than compensated for by the appearance of Dr Chambers' book. This does not set out to provide synoptic coverage of the subject, but seeks to place selective aspects in a general mechanistic framework, for example, total, and selected, fluorination; replacement of OH by F; nucleophilic displacement of F; eliminations; polyfluoroaliphatics and aromatics; organometallic compounds. It is an interesting, useful and well documented survey, but the author is ill served by bad layout and by poor unattractive representation of reaction schemes. Literature coverage is essentially till the end of 1971.

PETER SYKES