

Book review

Phosphorus — An Outline of its Chemistry, Biochemistry and Technology (Second Edition); by D.E.C. Corbridge, Elsevier Scientific Publishing Co., Amsterdam, 1980. X + 560 pages, US\$ 95.00/Dfl. 195.00.

In many ways phosphorus rivals carbon in its structural versatility, the great diversity of its synthetic methods, the general variety of its compounds and its biochemical and industrial importance.

In this book it has been attempted to discuss all aspects of phosphorus chemistry in 546 pages of text. As in the first edition the book contains chapters on the Element (23 pages), Phosphides and Simple Compounds (37 pages), Phosphates, Inorganic (52 pages), Phosphorus—Carbon Compounds (53 pages), Phosphorus—Nitrogen Compounds (47 pages), Esters and Biochemistry (68 pages), Phosphorus—Sulfur Compounds (22 pages), Polyphosphines, Rings and Polymers (28 pages), Phosphorus with Groups III and IV (20 pages), and Special Topics (49 pages). Additionally, the second edition includes a new chapter on Metal—Phosphorus Coordination Compounds (24 pages), Sections on Hydrogen Bonding (13 pages), Medicinal Phosphorus Compounds (12 pages), and Hydrazides and Azides (2 pages).

With coverage of this scope in one book, a recent series covering only "Organic Phosphorus Compounds" consists of seven volumes with 4220 pages, it is obvious that details on any one topic are minimal. Often treatment consists just in cataloging various reactions, without discussing details of mechanism, usefulness or scope of a given reaction. The reaction diagrams which show the products derivable from a key starting material are given without comment. Unfortunately, references are not cited at the appropriate points in the text to allow a check of specific statements. The author has, however, provided each chapter at the end with a list of recent review articles or monographs. A check on the correctness of these references would have been beneficial. Thus on page 216: ref. 15 is not in Vol. 2 but Vol. 3 of ref. 10; ref. 17: Journal citation missing; ref. 19 is not in Vol. 2 but Vol. 4 of ref. 10; ref. 20 the authors are M. Fild and R. Schmutzler and the article is not in Vol. 3 but in Vol. 4 of ref. 10; page 218: ref. 66 author and title incorrect; ref. 70 title incorrect; ref. 71 title incorrect; ref. 73 title incorrect. More serious is the unacceptable number of typographical and other errors in the book. Thus on page 72 $C_{12}H_{25}Cl$ is not octyl chloride; page 73 eq. 148 is wrong; page 155 pyrrole is not a phosphorus compound; page 161 the use of the same numbers in brackets for equations and for numbering different types of reactions is confusing; page 161, Ph_2P-Li is not diphenyl lithiophosphine but lithium diphenylphosphide; page 164 what does the sentence mean: Sulphur is removed from some phosphorus compounds (55), while it is removed from episulphides (56) more readily is from epoxides (51)? page 163 bottom, products depend on the ratio of the reactants; page 154 what

is sodiophosphine? $RP(SR')_2$ are named phosphinothious esters on page 164 but on page 369 they are named phosphonodithious esters; page 164 and page 165 eq. 68, 70, 79, 80, 81 there should be triple bonds and not double bonds; page 166, 167 there are no such compounds as potassium phosphines; page 167 eq. 98 it must be $HgBu_2^t$ and not $HgBu^t$; page 168 lower trialkyl phosphines on exposure to air or oxygen give not only phosphine oxide; page 174 Fig. 4.4 reaction of $Me_2PCl + ROH$ does not give $Me_2P-P(O)OR$; page 185 hexamethylcarbodiphosphorane is not known as bis-triphenylphosphoranylidene methane; page 193 eq. 282 does not describe the preparation of a hydridotrifluorophosphorane, page 346 eq. 159 does not describe the preparation of Tabun; page 528–530 the sign of the ^{31}P -chemical shifts used in the book are not in accord with today's practice (plus sign for downfield shifts with reference to H_3PO_4 , and minus sign for upfield shifts); page 530 the $^1J(PH)$ coupling constant depends on the oxidation number of phosphorus and is not always in the order ~ 600 Hz (compare R_2PH $^1J(PH) \sim 200$ Hz).

The list could be continued but this may suffice to demonstrate my point.

The author has succeeded in giving a bird's eye view of the whole chemistry of phosphorus, and, were it not for the many typographical and other errors which cause misconceptions for any but the specialist reader, this would be a very useful book.

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