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Book reviews

Topics in Current Chemistry, 73. Organic Chemistry. 88. Syntheses and Reactivity. Springer Verlag, Berlin and Heidelberg. No. 73: 1978, 271 pages, DM 98. No. 88: 1980, 170 pages; DM 98.

These two volumes of a very reliable series contain between them three articles of special interest to organometallic chemists.

Thus Vol. 73 has an excellent review (49 pages, 158 references) by W.S. Sheldrick of "Stereochemistry of penta- and hexacoordinate phosphorus derivatives"; this very well presented account is concerned essentially with structural aspects, and does not deal directly with the stereochemistry of substitution at phosphorus. Another article in this volume will certainly be of general interest to a good number of organometallic chemists, namely that by P. Caubere on "Complex bases and complex reducing agents. New tools in organic synthesis". The other reviews in the volume are: "Aromatic and heteroaromatic compounds by electrocyclic ring-closure with elimination" (J.C. Jutz), and "Some newer aspects of mass spectrophotometric *ortho* effects" (H. Schwartz).

In Vol. 88, one article, by L. Birkofer and O. Stuhl, is devoted to "Silylated synthons. Facile organic reagents of great applicability" (56 pages, 323 references); the content is made clear by the section headings: Reactions of organosilanes with unsaturated hydrocarbons; Reactions of silanes with carbonyl compounds; Synthesis of silylated heterocycles; Silylated reagents. This provides both a useful introduction and a source of reference to particular reactions, but the limited space given to what is now a very extensive subject necessarily means that the account must be highly condensed, and in many places is essentially little more than a systematic listing of the topics covered in the references cited, though some important reactions are generously illustrated by equations.

Part of the article (18 pages; 46 references) by N.T. Anh on "Regio- and stereo-selectivities in some nucleophilic reactions" is about the application of the author's frontier orbital treatment of the stereochemistry of substitution at silicon, but the greater part is concerned with additions to ketones, and especially asymmetric induction in such reactions. The other two articles in Vol. 88 are on "Steric effects in free radical chemistry" (C. Rüchardt) and "The 4a,4b-dihydrophenanthrenes" (K.A. Muszkat).

As usual with this series, the production is of high quality. I have previously expressed surprise that the editors or publishers of this series do not take the small extra trouble of having the final detail of the wording or translated material checked by an appropriate British or American chemist. This would, however, have the disadvantage of removing enjoyable oddities such as that produced by one author in these volumes in thanking his co-workers for "the essential 95% transpiration part of this work" and "their share in the 5% inspi-

ration". (It took me a moment or two to work out that the 95% portion is presumably "perspiration".)

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Vinyl Cations; by P.J. Stang, Z. Rappoport, M. Hanack, and L.R. Subramanian; Academic Press, New York, London, Toronto, Sydney and San Francisco, 1979, xi + 513 pages, $ 56.00; £ 36.40.

Information on vinyl cations has grown at an amazing pace in the past ten years, and the time was ripe for a comprehensive review. Four authors, all of whom have themselves made major contributions to the field, have cooperated in producing this volume, mainly writing separate chapters. The chapter headings give a clear guide to the content and approach taken: Introduction and historical background; Thermodynamics and theoretical calculations; Electrophilic additions to alkynes and participation of the triple bond in solvolysis; Electrophilic additions to allenes and participation of the allenyl bond in solvolysis; Bond heterolysis; Arylvinyl cations via solvolysis; Rearrangement of vinyl cations; Spectroscopic evidence for vinyl cations; Miscellaneous and conclusions. The whole provides an authoritative and up-to-date account of the subject.

Readers of this Journal will be disappointed at the brevity of the coverage of metal-containing vinyl cations; less than three pages are devoted to transition metal complexes having a vinylic carbonium ion centre attached to the metal, and there is no mention of the role of vinyl cations in electrophilic cleavages of alkynyl- metal bonds (e.g. of $RC{\equiv}CSiMe_3$ species by acids) in which the metal stabilizes a carbonium ion centre β to the metal. This is a minor criticism, however, of what is a most useful volume.

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