

Divalent Carbon Species

Carbenes. Vol. 1. MAITLAND JONES, JR., and ROBERT A. MOSS, Eds. Wiley-Interscience, New York, 1973. xii, 356 pp., illus. \$24.95. Reactive Intermediates in Organic Chemistry.

This latest book in the series *Reactive Intermediates in Organic Chemistry* consists of three chapters: "Carbenes from diazo compounds" by Baron and co-workers (including Jones); "The application of relative reactivity studies to the carbene olefin addition reaction" by Moss; and "Generation of carbenes by photochemical cycloelimination reactions" by G. W. Griffin and N. R. Bertoniere.

By far the most successful chapter is the one on carbenes from diazo compounds. It is a definitive and comprehensive treatment of the most common method for producing those highly reactive divalent carbon species that have fascinated (and baffled) chemists in recent years. The review emphasizes the structure of carbenes, the mechanisms of their reactions (particularly as a function of their physical state and multiplicity), and their enormous synthetic potential for the production of highly strained small-ring systems. The treatment is most thorough (nearly 700 references, including a few from 1972) and, more important, highly discerning. The authors view dubious results with a healthy skepticism, equitably present conflicting views on controversial topics, and suggest experiments which need to be done. In addition to its usefulness to researchers in the area, this chapter should also appeal to the general chemical public. The writing style is entertaining without being cute (for example: "Cyclopropenylcarbenes are a member of that class of carbene that has nothing to do, or perhaps only very interesting things to do"). The authors' affection and respect for the field are clearly demonstrated in these pages. Although carbene reactions have often been defamed for their unpredictability, this chapter should go a long way toward demonstrating that for the knowledgeable chemist there are no unexpected reactions.

The chapter by Moss (equal in length to the preceding one) is an excellent summary of the state of the art in carbene reactivity. After a critique of the value of, and pitfalls in, relative reactivity studies, Moss presents 55 tables and illustrative discussions of both steric and electronic effects on the

carbene and the substrate. The review is comprehensive (including several addenda from late 1972) and, like the first chapter, casts doubt on unsupported results and makes recommendations for additional work. Because of the nature of the topic, this chapter should be of more limited appeal, but carbene researchers will find it very valuable.

The section by Griffin and Bertoniere (much shorter than the other two) concerns the various photochemical fragmentations which produce carbenes. Ample evidence is presented for the identical (or nonidentical) nature of carbenes from diverse precursors. Nearly one-third of the references (virtually none from 1972) are to work done in Griffin's laboratory, and many of the results are heretofore unpublished. The subject matter should interest a moderately wide audience, although the chapter is a barely expanded version of Griffin's excellent 1971 review in *Angewandte Chemie*.

The book is notably free of typographical errors, but the drawings (particularly those concerned with three-dimensional stereochemistry in the first chapter) are less than satisfactory. No mention is made of what topics will be covered in volume 2, but this should not deter the interested chemist from purchasing volume 1.

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Books Received

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Bibliography of Magnetic Materials and Tabulations of Magnetic Transition Temperatures. T. F. Connolly and Emily D. Copenhaver. IFI/Plenum, New York, 1972. viii, 180 pp. \$20. Solid State Physics Literature Guides, vol. 5.

Comprehensive Chemical Kinetics. Vol. 12, Electrophilic Substitution at a Saturated Carbon Atom. C. H. Bamford and C. F. H. Tipper, Eds. Elsevier, New York, 1973. xiv, 256 pp., illus. \$31.50.

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